

Native Vegetation Clearance

Mount Lofty Golf Estate

Data Report

Clearance under the *Native Vegetation Regulations 2017*

9 May 2023

Prepared by Dr. M Louter and A. Carpenter (NVC Accredited Consultants) – EBS Ecology



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Version 5 – Final (Updated)

Prepared by EBS Ecology for Mount Lofty Estate Pty Ltd

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Cover photograph: VA A1a – *Eucalyptus viminalis* ssp. *viminalis* and *Eucalyptus obliqua* over *Acacia melanoxylon*.

EBS Ecology
112 Hayward Avenue
Torrensville, South Australia 5031
t: 08 7127 5607
<http://www.ebsecology.com.au>
email: info@ebsecology.com.au

Glossary and abbreviations

ALA	Atlas of Living Australia
BAM	Bushland Assessment Method
BDBSA	Biological Databases of South Australia
Clearance	The killing, destruction, removal or damage of vegetation including pruning.
DA	Development Application
DAWE	Department of Agriculture, Water and the Environment (Commonwealth) (now DCCEEW)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth) (previously DAWE)
DEH	Department for Environment and Heritage
DEW	Department for Environment and Water
EBS Ecology	Environmental and Biodiversity Services Pty Ltd, trading as EBS Ecology
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ha	hectare(s)
IBRA	Interim Bio-regionalisation of Australia
km(s)	kilometre(s)
LSA Act	<i>Landscape South Australia Act 2019</i>
m(s)	metre(s)
MGCP	Mount George Conservation Park
Mount Lofty Estate	Mount Lofty Golf Estate Pty Ltd
MNES	Matters of National Environmental Significance, as defined under the EPBC Act
mm(s)	Millimetre(s)
Native vegetation	A plant or plants of a species indigenous to South Australia (including dead trees >600mm diameter, and planted vegetation protected under the Native Vegetation Act such as SEB's or Heritage Agreements)
NPW Act	<i>National Parks and Wildlife Act 1972</i>
NV Act	<i>Native Vegetation Act 1991</i>
NV Regs	<i>Native Vegetation Regulations 2017</i>
NVC	Native Vegetation Council
PDI Act	<i>Planning, Development and Infrastructure Act 2016</i>
PMST	Protected Matters Search Tool
the Project	The proposed redevelopment of the Stirling Golf Course at the Stirling Golf Club consisting of a redeveloped golf course, hotel, hotel pods and associated infrastructure.

the Project Area	Proposed development at the Stirling Golf Club, 35 Golflinks Road, Stirling South Australia 5152
SA	South Australia / South Australian
Search Area	5 km buffer of the Project Area considered in the desktop assessment database searches.
SEB	Significant Environmental Benefit
ssp.	Subspecies
sp.	Species (singular)
SSCC	SA Seed Conservation Centre
STAM	Scattered Tree Assessment Method
TEC	Threatened Ecological Communities
Trice	Trice – Project & Development Managers
TSSC	Threatened Species Scientific Committee
UBS	Unit Biodiversity Score
VA(s)	Vegetation Association(s)
var.	variety
%	Percent

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1. Application information

Table 1. Application details.

Applicant:	Mount Lofty Estate Pty Ltd		
Key contact:	David Bills, Trice – URPS E: dbills@urps.com.au M: 0404 056 648		
Landowner:	<i>If the applicant is not the landowner, written permission must be provided</i>		
Site Address:	Stirling Golf Club, 35 Golflinks Road, Stirling South Australia 5152		
Local Government Area:	Adelaide Hills Council	Hundred:	Onkaparinga
Title ID:	CT/5891/805	Parcel ID	D59212 A53

Table 2. Summary of the proposed clearance.

Purpose of clearance:	Clearance required for the construction of a new hotel, hotel pods and associated infrastructure.
Native Vegetation Regulation:	Regulation 12, Schedule 1; clause 27, <i>Impact assessed development</i>
Description of the vegetation under application:	<p>VA A1a – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> and <i>Eucalyptus obliqua</i> over <i>Acacia melanoxylon</i> and degraded understorey;</p> <p>VA A1b – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> and <i>Eucalyptus obliqua</i> over <i>Acacia melanoxylon</i> and degraded understorey;</p> <p>VA A1c – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> +- <i>Eucalyptus obliqua</i> over exotic understorey;</p> <p>VA A2 – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> +- <i>Eucalyptus obliqua</i> over <i>Pultenaea daphnoides</i>; and</p> <p>VA A3 – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> +- <i>Eucalyptus obliqua</i> +- <i>Acacia Melanoxylon</i> over exotics.</p> <p>A total of 151 scattered trees, including 16 <i>Acacia melanoxylon</i> (Blackwood), 52 <i>Eucalyptus obliqua</i> (Messmate Stringybark), one <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> (Rough-bark Manna Gum), 76 State Rare <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and six <i>Exocarpos cupressiformis</i> (Native Cherry) from poor to excellent in health.</p>
Total proposed clearance – area (ha) and/or number of trees:	<p>A total of 1.716 ha of native vegetation is proposed for clearance, including:</p> <p>0.261 ha of VA A1a – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> and <i>Eucalyptus obliqua</i> over <i>Acacia melanoxylon</i> and degraded understorey.</p> <p>1.307 ha of VA A1b – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> and <i>Eucalyptus obliqua</i> over <i>Acacia melanoxylon</i> and degraded understorey;</p> <p>0.048 ha of VA A1c – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> +- <i>Eucalyptus obliqua</i> over exotic understorey;</p>

0.013 ha of VA A2 – *Eucalyptus viminalis* ssp. *viminalis* +- *Eucalyptus obliqua* over *Pultenaea daphnoides*.

0.087 ha of VA A3 – *Eucalyptus viminalis* ssp. *viminalis* +- *Eucalyptus obliqua* +- *Acacia Melanoxylon* over exotics

A total of 106 scattered trees are proposed for removal within the Project Area, which includes 10 *Acacia melanoxylon* (Blackwood), 44 *Eucalyptus obliqua* (Messmate Stringybark), one *Eucalyptus viminalis* ssp. *cygnetensis* (Rough-bark Manna Gum), 48 State Rare *Eucalyptus viminalis* ssp. *viminalis* (Manna Gum) and three *Exocarpos cupressiformis* (Native Cherry) from poor to excellent in health.

Level of clearance: Level 4

Overlay (Planning and Design Code): Native Vegetation Overlay and State Significant Native Vegetation Overlay

Map of proposed clearance area:



Mitigation Hierarchy: **Avoidance**
 The area in which the 18 pods are proposed to be constructed will impact on several scattered trees and an extensive amount of vegetation association A1b.

	<p>scattered trees are planned for retention in this area and will be avoided. These trees will still be accounted for as a result of applicable CFS Buffers (see Section 5).</p> <p>The proposed new vehicle access in the southern part of the Project Area utilises an existing partially cleared, albeit unofficial walking entrance and avoids better quality vegetation adjacent to this area. The proposed area for the carpark adjacent to the Scent Factory redevelopment also avoids direct impacts to vegetation associations A1b and A3 (see Figure 4) See Section 4.1.5 for photos of the areas proposed for the new vehicle access and car park.</p> <p>Minimization</p> <p>The proposed footprint of the main hotel building was selected based on the existing site footprint, minimising additional impact to surrounding vegetation despite the proposed footprint being larger.</p> <p>Efforts to minimise the extent, duration and intensity of impacts on the clearance of native vegetation around the pods has been considered at multiple stages of the planning process. A total of 13 iterations (as of 30/08/2022) have been documented which include a reduction in the number of pods, and relocation of where these pods are proposed to be located. Initial designs included plans for up to 50 pods to be constructed in the northern extent of the Project Area requiring clearance of a substantial amount of native vegetation. Further detail on these iterations is provided in Attachment 9.</p> <p>Where applicable, reasonable and feasible measures to prevent pollution of waterways and drainage lines in the area downstream of the proposed works during and post construction will be implemented.</p> <p>Installation of exclusion fencing and signage to delineate the limits of clearing and vegetation to be retained will be installed in order to minimise disturbance in the Project Area.</p> <p>Furthermore, clearing of vegetation, including the clearing of native vegetation and fauna habitat, will be minimised to the greatest extent practicable through the selection of plant (machinery) that will avoid impact on retained trees.</p> <p>Rehabilitation or restoration</p> <p>The rehabilitation or restoration of some areas that are impacted by the clearance of native vegetation will be achieved through revegetation, with a preference for species local to the Adelaide Hills. Some areas will not be able to be rehabilitated due to CFS constraints and the need to maintain specific bushfire attack level ratings.</p>
SEB Offset proposal	Payment of \$615,436.80 which includes a \$32,084.39 administration fee into the NV fund.

2. Purpose of clearance

2.1. Description

Trice – Project & Development Managers (Trice) on behalf of Mount Lofty Estate Pty Ltd (Mount Lofty Estate) have engaged EBS Ecology (EBS) to undertake a native vegetation clearance assessment for the clearance associated with the proposed redevelopment of the Stirling Golf Course at the Stirling Golf Club, consisting of a redeveloped golf course, hotel, hotel pods and associated infrastructure (The Project), located in Stirling, South Australia (SA).

Objectives

The objectives of the native vegetation assessment were to:

- Undertake a desktop assessment of the likelihood of occurrence and status of threatened flora and fauna protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and State *National Parks and Wildlife Act 1972* (NPW Act);
- Assess native vegetation within the Project Area for clearance using the Native Vegetation Council (NVC) endorsed Bushland Assessment Method (BAM) and Scattered Tree Assessment Method (STAM); and
- Calculate the Significant Environmental Benefit (SEB) offset requirements based on the impact footprint.

2.2. Background

Current and surrounding land use

The Project Area is located at the Stirling Golf Club at 35 Golflinks Road, Stirling, which is located approximately 2.5 kilometres (km) northwest of Bridgewater and 15 km south east of Adelaide (Figure 1). The area is adjacent to Mount George Conservation Park (MGCP). Cox Creek runs through the Project Area from the adjacent MGCP. There are also three artificially constructed lakes or dams to the north of the Stirling Golf Club clubhouse and in the northern section of the Project Area (see Figure 1 pg. 11).

Remnant pockets of native vegetation coexist with large remnant scattered trees and planted vegetation (including exotic vegetation associated with the golf course) within the Project Area. Five vegetation associations (VAs) were recorded within the Project Area. The understorey in these associations was heavily degraded and introduced flora species such as *Fumaria capreolata* (White-flower Fumitory), *Iris* sp. (Iris) and *Rubus fruticosus aggregate* (Blackberry) were dominant in areas.

A total of 151 native scattered trees were also recorded within the Project Area. All trees were of a mature age and ranged from poor to excellent in health. Some trees contain hollows which could provide suitable habitat for fauna species.

Administrative boundaries

This Project is located within the Adelaide Hills Council Local Government Area and the Hills and Fleurieu Landscape Management Region (DEW 2022a).

Bioregions

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The Project Area occurs in the Mount Lofty Ranges subregion of the Flinders Lofty Block Bioregion. At a local scale, the IBRA subregions are further categorised by Environmental Associations and the Project Area falls within the Uraidla Environmental Association.

Approximately 15% (46,342 ha) of the Mount Lofty Ranges IBRA Subregion and approximately 26% (3,674 ha) of the Uraidla IBRA Environmental Association is mapped as remnant vegetation. Of this, 27% (12,706 ha) and 20% (749 ha) is formerly conserved and protected, respectively (DCCEEW 2022a).

2.3. General location map



Figure 1. The Project Area at the Stirling Golf Club.

2.4. Details of the proposal

A clearance report is required for the proposed redevelopment of the Stirling Golf Course at the Stirling Golf Club.

The proposed Mount Lofty Golf Estate's new development is summarised as follows:

- Hotel - 3-5 level hotel building comprising:
 - 56 hotel suites.
 - 15 x two bedroom serviced apartments.
 - 15 x three bedroom serviced apartments.
 - 2 penthouse serviced apartments.
 - Back of house, plant storage and maintenance areas.
 - A 537m² function room.
 - A 212m² restaurant with 89 m² external terrace.
 - 186m² sports bar.
 - A 189m² gallery and cafe.
 - A 94m² wellness centre with 125m² gym and spa/massage treatment rooms.
- Private retreats – 'Pods'
 - 17 x one bedroom units.
 - 1 x back of house Service Pod.
- Adaptive reuse of the existing perfumery:
 - Refurbishment of the existing local heritage place to accommodate a multipurpose space for use as café, retail or functions.
 - Extension to the Perfumery to include a covered outdoor dining area.
 - Orchard and perfumery garden plantings to reimagine the former use of the building as a "Scent Factory".
 - Note: the perfumery building will temporarily house the golf club whilst construction is occurring.
- Golf Course Facilities Building - 2-5 level building comprising:
 - Retention of 18-hole golf course with improvements.
 - Refurbished function facilities, cart storage and 138m² clubhouse in new building.
 - New 97m² pro-shop, administration areas, gym and change rooms.
- Car Parking, Access and Waste Management
 - A total of 200 car parking spaces in two car parking areas.
 - Emergency vehicle access via western entry from Golflinks Road.
 - Main access point via Golflinks Road.
 - Designated service bay for waste collection and service vehicles.
 - Porte cochere and valet area for guests and buses.

- A separate entry from Old Carey Gully Road to provide maintenance vehicle access and public access to the perfumery building.
- Designated waste storage areas.
- Subdivision – following construction of the proposed development, it is proposed to divide the site into three (3) allotments:
 - Allotment 532, with an approximate area of 9,924m² together with a right of way 'A', comprising the hotel building and pods.
 - Allotment 533, with an approximate area of 5,056m² together with a right of way 'B', comprising the golf club and facilities building.
 - Allotment 531, with an approximate area of 38.4 hectares, comprising the balance of the golf course, subject to easements 'A' and 'B'.

The proponents additionally intend to rebrand the development as the Mount Lofty Golf Estate which was the original name of the course when it opened in 1925. The aim of the development will be to improve access to tourists and capitalise on the growing tourism market.

The development has been declared a major project by the Minister for Planning and Local Government (the South Australian Government Gazette 2020, p. 5848) and will be assessed by a state-run process. At the time of preparing this report, the development design has not been finalised and layout will be guided by the reports of numerous specialists. Preliminary design drawings of the Project Area (as provided to EBS on 07/03/2023) are provided in Attachment 1.

2.5. Approvals required or obtained

- *Environment Protection and Biodiversity Conservation Act 1999* – Not required.
- *Native Vegetation Act 1991* – this data report.
- *National Parks and Wildlife Act 1972* – EBS has the required flora collection permit (K25613-22).
- *Landscape South Australia Act 2019* – A Water Affecting Activity Permit is not required for this Project; A permit to transport declared weeds on a public road may be required for this Project.
- *Planning, Development and Infrastructure Act 2016* – Approval is required for this Project.
- *Aboriginal Heritage Act 1988* – Approval will be required if any sites, objects or remains are uncovered during the works.

2.6. Native Vegetation Regulation

The Project is in accordance with Division 5 of the *Native Vegetation Regulations 2017*, which allows for the clearance of native vegetation in relation to specific activities as set out in Schedule 1, Parts 4, 5 or 6 of the Regulations. The Project is considered to be permitted under the following regulation:

Regulation 12(27) — Impact assessed development

- (1) Clearance of vegetation that is incidental to a proposed development to which section 115 of the *Planning, Development and Infrastructure Act 2016* applies, provided that—

- (a) an environmental impact statement and an Assessment Report relating to the development have been prepared under the *Planning, Development and Infrastructure Act 2016*; and
- (b) the Minister responsible for the administration of the *Planning, Development and Infrastructure Act 2016* referred the environmental impact statement to the Council for comment and report and—
 - (i) the Council provided comments that were included (wholly or substantially) in the relevant Assessment Report; or
 - (ii) the Council failed to provide comments within 30 business days after receiving the Minister's invitation for comment and report; and
- (c) the Minister has granted a development authorisation for the proposed development under section 115 of the *Planning, Development and Infrastructure Act 2016*.

2.7. Development Application information

The Project falls within the Recreation – Rec Zone and both the Native Vegetation and State Significant Native Vegetation Overlays apply.

3. Method

3.1. Desktop assessment

A desktop assessment was undertaken to determine the potential for any threatened fauna species, and Threatened Ecological Communities (TECs) (both Commonwealth and State listed) to occur within the Project Area. This was achieved by undertaking database searches using a 5 km buffer of the Project Area (Search Area).

3.1.1. PMST report

A Protected Matters Search Tool (PMST) report was generated on 30/03/2023 to identify nationally threatened flora and fauna, migratory fauna and TECs under the EPBC Act relevant to the Project Area (DCCEEW 2023). Only species and TECs identified in the PMST report that are likely or known to occur within the Search Area were assessed for their likelihood of occurrence within the Project Area. Marine species were removed from this list as the vegetation under assessment is terrestrial.

3.1.2. BDBSA data extract

A Biological Databases of South Australia (BDBSA) search was obtained from the Department for Environment and Water (DEW) to identify flora and fauna species that have been recorded within 5 km of the Project Area (data extracted 16/08/2022; DEW 2022b, Recordset number: DEWNRBDBSA220816-1). The BDBSA is comprised of an integrated collection of species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia and the Australasian Wader Study Group, which meet DEW's standards for data quality, integrity and maintenance. Only species with records since 1995 and a spatial reliability of less than 1 km were assessed for their likelihood of occurrence.

3.1.3. Likelihood of occurrence

The criteria for the likelihood of occurrence of threatened species within the Project Area are described in Table 3.

Table 3. Criteria for the likelihood of occurrence of threatened species within the Project Area.

Likelihood	Criteria
Highly Likely/Known	Recorded in the last 10 years, the species does not have highly specific niche requirements, the habitat is present and falls within the known range of the species distribution or; The species was recorded as part of field surveys.
Likely	Recorded within the previous 20 years, the area falls within the known distribution of the species and the area provides habitat or feeding resources for the species.
Possible	Recorded within the previous 20 years, the area falls inside the known distribution of the species, but the area 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.

3.2. Field assessment

The initial field assessment was undertaken by NVC Accredited Consultant J. Skewes and N. Piscioneri on 26 August 2022. An additional field assessment was undertaken on 30 September 2022. Both field assessments were undertaken on foot and were in accordance with the Bushland Assessment Method (BAM) (NVC 2020a) and Scattered Tree Assessment Method (STAM) (NVC, 2020b). Each tree was identified to species, photographed, measured at 1 m for diameter, height, dieback and the number and size of hollows were recorded. Species lists of both native and exotic understorey species were compiled.

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.* 2008). The BAM 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 to occur in the PMST, and fauna with BDBSA records since 1995 and with a spatial reliability of less than 1 km, within 5 km of the Project Area, were included in the BAM scoresheets. Species determined as unlikely to occur within the Project Area will be removed by the Native Vegetation Branch if the finding is supported. Marine and/or wetland species were omitted from the scoresheets given the Project Area is terrestrial.

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 colonising native species may be present, but represent <5% of the ground cover; and
 - The area around the trees consists of introduced pasture or crops.

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

The numbers of uncommon and threatened scattered tree using fauna species entered into the Scattered Tree Scoresheet were calculated by cross-referring the BDBSA data extract (see [Section 3.1.2](#)) and the lists of scattered tree using fauna in the *Scattered Tree Assessment Manual* (NVC 2020b). 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. Field survey

Fauna surveys were conducted in conjunction with the flora assessments along the site. All native and exotic fauna species opportunistically encountered (directly observed, or tracks, scats, burrows, nests and other signs of presence) during the native vegetation assessment were recorded. 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. For each opportunistic fauna observation, the species, number of individuals, GPS location, detection methodology (sight, sound or sign) and habitat were recorded.

3.3. Limitations

3.3.1. Desktop assessment

The desktop assessment was based on existing datasets and references from a range of sources. EBS has not attempted to verify the accuracy of any such information. The findings and conclusions expressed by EBS are based solely upon information in existence at the time of the assessment.

Flora and fauna records were sourced from the PMST and BDBSA. The BDBSA only includes verified flora and fauna records submitted to DEW or partner organisations. It is recognised that knowledge is poorly captured, and it is possible that significant species occur 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 give 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.

The EPBC Act protected matters report and BDBSA flora and fauna records were limited to a 5 km buffer around the Project Area. Fauna species, in particular birds can traverse distances in excess of 20 km. It is also acknowledged that the presence of species may not be adequately represented by database records. Hence the EPBC and BDBSA results may not highlight all potential threatened flora and fauna species that may occur in the area, within a 5 km radius. A precautionary approach has therefore been adopted, with reference to existing EPBC and BDBSA records and native vegetation cover. The combination of database records and background research have provided a solid baseline foundation for determining the flora and fauna that are likely to, or are known to, occur within the Project Area.

3.3.2. Flora

The ecological assessment was conducted just before spring. Threatened orchid species and numerous forbs, herbs and grasses are only just beginning to flower at this time of year, and therefore it is possible that species were present that were undetectable at the time of the field survey.

4. Assessment outcomes

4.1. Vegetation assessment

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

Remnant pockets of native vegetation coexist with large remnant scattered trees and planted vegetation (including exotic vegetation associated with the golf course) within the Project Area. The understorey in areas of native vegetation not directly associated with the golf course were heavily degraded and introduced flora species such as *Fumaria capreolata* (White-flower Fumitory), *Iris* sp. (Iris) and *Rubus fruticosus aggregate* (Blackberry) were dominant in these areas. MGCP is directly adjacent (to the east and southeast) of the Project Area (see Figure 1, pg. 14) and supports a large assemblage of both nationally and State listed flora and fauna (DEH 2006). Five VAs were recorded within the Project Area:

- VA A1a – *Eucalyptus viminalis* ssp. *viminalis* and *Eucalyptus obliqua* over *Acacia melanoxyton* and degraded understorey;
- VA A1b – *Eucalyptus viminalis* ssp. *viminalis* and *Eucalyptus obliqua* over *Acacia melanoxyton* and degraded understorey;
- VA A1c – *Eucalyptus viminalis* ssp. *viminalis* +- *Eucalyptus obliqua* over exotic understorey;
- VA A2 – *Eucalyptus viminalis* ssp. *viminalis* +- *Eucalyptus obliqua* over *Pultenaea daphnoides*; and
- VA A3 – *Eucalyptus viminalis* ssp. *viminalis* +- *Eucalyptus obliqua* +- *Acacia Melanoxyton* over exotics.

A map of the VAs within the Project Area is provided in Figure 2 (on page 23). Any fairways and greens associated with the golf course are classified as exotic vegetation but are not mapped.

A total of 151 scattered trees, including 16 *Acacia melanoxyton* (Blackwood), 52 *Eucalyptus obliqua* (Messmate Stringybark), one *Eucalyptus viminalis* ssp. *cygnetensis* (Rough-bark Manna Gum), 76 State Rare *Eucalyptus viminalis* ssp. *viminalis* (Manna Gum) and six *Exocarpos cupressiformis* (Native Cherry) were recorded within the Project Area.

A map of all scattered trees recorded in the Project Area is provided in Figure 3 (on page 24). All trees were categorised based on their Unit Biodiversity Score (UBS). A tree with a UBS of less than 4 was categorised as low in quality and should be retained as much as possible but may be removed. A tree with a UBS between 4 and 7 was categorised as moderate in quality and should be retained where possible and a tree with a UBS of greater than 7 was categorised as high in quality and should be avoided. All trees were of a mature age and ranged from poor to excellent in health. Some trees contain hollows which could provide suitable habitat for fauna species.

No flora species listed under the EPBC Act were recorded within the Project Area.

One flora species listed under the NPW Act as Rare was recorded in the Project Area:

- *Eucalyptus viminalis* ssp. *viminalis* (Manna Gum).

This species was present in large numbers throughout the Project Area in remnant patches of native vegetation and as scattered trees.

A total of 89 flora species, including 41 introduced species were recorded within the Project Area. Timing of the survey likely influenced this result, with spring annual forbs and grasses only just beginning to flower or appear. Flora species recorded during the survey are provided in [Appendix 1](#).

No fauna species listed under the EPBC Act were recorded within the Project Area.

Two fauna species listed under the NPW Act were recorded in the Project Area:

- Common Brushtail Possum (*Trichosurus vulpecula*) – State Rare; and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) – State Vulnerable.

The scat of the Common Brushtail Possum was observed in VA A1a directly adjacent to the main building of the Golf Club.

Four Yellow-tailed Black Cockatoo were observed flying over the Project Area and later perched in native vegetation within VA A1a.

A total of 26 fauna species were recorded within the Project Area, 23 were birds and three were mammals. Two of these species are introduced fauna. Fauna species observed during the survey are provided in [Appendix 2](#).

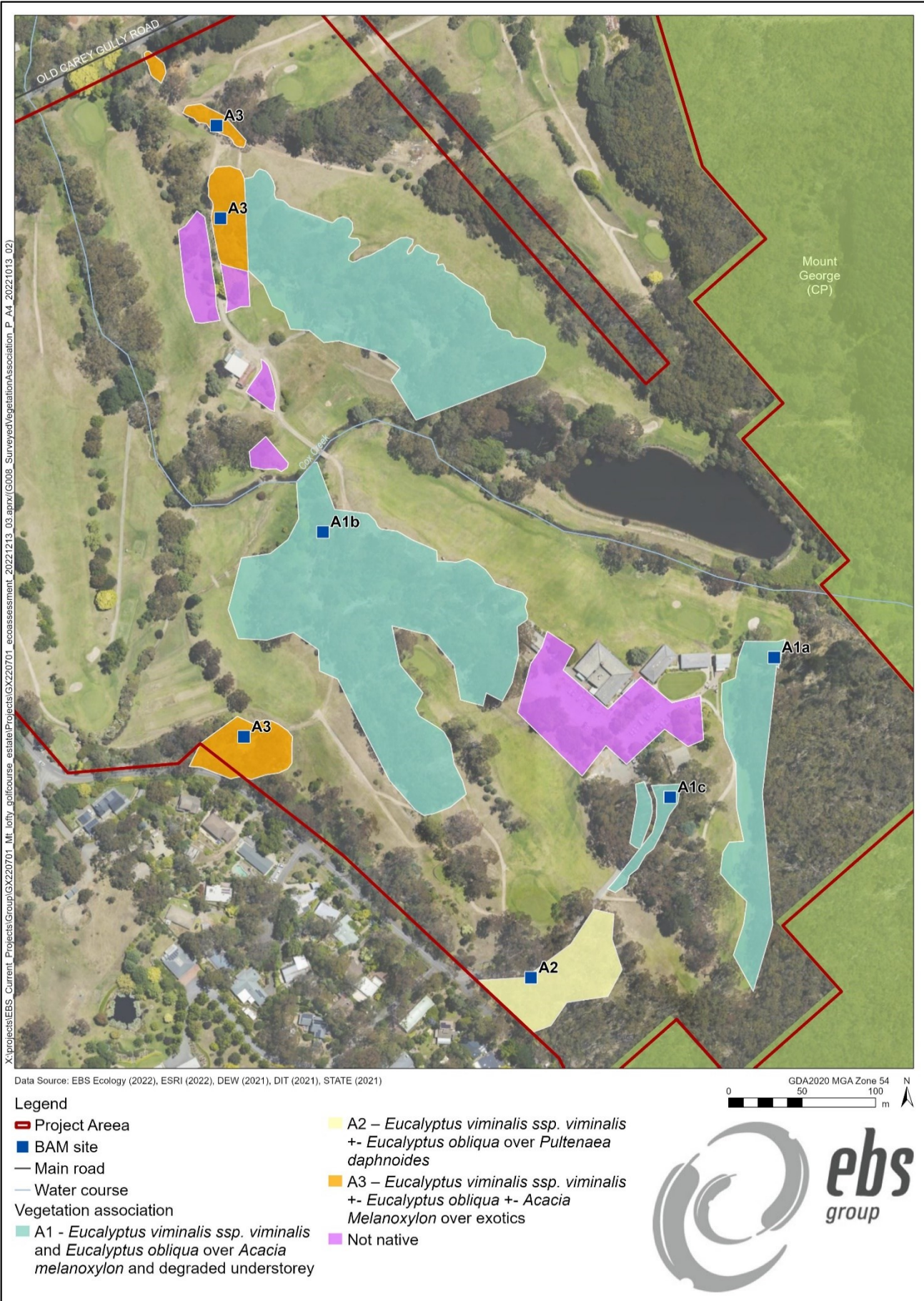


Figure 2. VAs and non-native vegetation recorded within the Project Area. Any fairways and greens associated with the golf course are classified as exotic vegetation but are not mapped.



Figure 3. Scattered trees recorded within the Project Area, categorised according to Unit Biodiversity Score (UBS).


4.1.2. Details of the vegetation associations proposed to be impacted

All five VAs within the Project Area are proposed to be impacted:

- VA A1a – *Eucalyptus viminalis* ssp. *viminalis* and *Eucalyptus obliqua* over *Acacia melanoxylon* and degraded understorey (Table 4);
- VA A1b – *Eucalyptus viminalis* ssp. *viminalis* and *Eucalyptus obliqua* over *Acacia melanoxylon* and degraded understorey (Table 5);
- VA A1c – *Eucalyptus viminalis* ssp. *viminalis* +- *Eucalyptus obliqua* over exotic understorey (Table 6);
- VA A2 – *Eucalyptus viminalis* ssp. *viminalis* +- *Eucalyptus obliqua* over *Pultenaea daphnoides* (Table 7); and
- VA A3 – *Eucalyptus viminalis* ssp. *viminalis* +- *Eucalyptus obliqua* +- *Acacia Melanoxylon* over exotics (Table 8).

The five impacted VAs in the Project Area are detailed in Table 4 to Table 8.

Table 4. Summary of VA A1a.

Vegetation Association	A1a – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> and <i>Eucalyptus obliqua</i> over <i>Acacia melanoxylon</i>
	<p>Photo direction and location: south (easting: 294303, northing: 6125455)</p>
General description	<p>Woodland dominated by an overstorey of <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and <i>Eucalyptus obliqua</i> (Messmate Stringybark). Mid storey species include <i>Acacia melanoxylon</i> (Blackwood) and <i>Leptospermum continentale</i> (prickly Tea-tree). The ground cover was dominated by <i>Acrotriche serrulata</i> (Cushion Ground-berry) and <i>Lepidosperma semiteres</i> (Wire Rapier-sedge). Vegetation was in very good condition with some weed incursions particularly on the edge of the VA closest to the golf course fairway. Weed species that were dominant include <i>Iris</i> sp. (Iris), <i>Rubus fruticosus aggregate</i> (Blackberry) and <i>Cytisus scoparius</i> (English Broom).</p>
Threatened species or community	<p>No EPBC Act flora species were assessed as potentially occurring within the Project Area based on recent records and suitable habitat.</p> <p>The following flora species listed under the NPW Act were determined as likely to occur in the Project Area:</p> <ul style="list-style-type: none"> • <i>Acacia gunnii</i> (Ploughshare Wattle) – State Rare; • <i>Deyeuxia densa</i> (Heath Bent-grass) – State Rare; • <i>Deyeuxia minor</i> (Small Bent-grass) – State Vulnerable; • <i>Dianella longifolia</i> var. <i>grandis</i> (Pale Flax-lily) – State Rare; • <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) – State Rare and observed within the Project Area; • <i>Gastrodia sesamoides</i> (Potato Orchid) – State Rare;

- *Rytidosperma tenuius* (Short-awn Wallaby-grass) – State Rare.

An additional 30 flora species listed under the NPW Act were assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat (see [Appendix 4](#)).


A total of 15 threatened fauna species listed under the EPBC Act and/or NPW Act were assessed as highly likely / known or likely to occur within the Project Area based on survey effort, suitable habitat and recent records:

- Bassian Thrush (*Zoothera lunulata halmaturina*) – nationally Endangered and State Rare;
- Beautiful Firetail (*Stagonopleura bella samueli*) – nationally Endangered and State Rare;
- Chestnut-rumped Heathwren (*Hylacola pyrrhopygia parkeri*) – nationally Endangered and State Endangered;
- Common Brushtail Possum (*Trichosurus vulpecula*) – State Rare and observed within the Project Area;
- Elegant Parrot (*Neophema elegans elegans*) – State Rare;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – nationally Vulnerable and State Rare; and
- Jacky Winter (*Microeca fascinans fascinans*) – State Rare;
- Little Eagle (*Hieraetus morphnoides*) – State Vulnerable;
- Peregrine Falcon (*Falco peregrinus macropus*) – State Rare;
- Scarlet Robin (*Petroica boodang boodang*) – State Rare;
- Southern Brown Bandicoot (*Isodon obesulus obesulus*) – nationally Endangered and State Vulnerable.
- Square-tailed Kite (*Lophoictinia isura*) – State Endangered;
- White-winged Chough (*Corcorax melanorhamphos*) – State Rare;
- Yellow-footed Antechinus (*Antechinus flavipes*) – State Vulnerable; and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) – State Vulnerable and observed within the Project Area.

An additional 17 fauna species listed under the EPBC Act and/or NPW Act were assessed as possible to occur within the Project Area based on survey effort, suitable habitat and recent records (see [Appendix 6](#) and [Appendix 7](#)).

Landscape context score	1.17	Vegetation Condition Score	14.10	Conservation significance score	1.10
Unit biodiversity Score	18.15	Area (ha)	0.261	Total biodiversity Score	4.74

Table 5. Summary of VA A1b.

Vegetation Association	A1b – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> and <i>Eucalyptus obliqua</i> over <i>Acacia melanoxylon</i> and degraded understorey.
	
<p>Photo direction and location: west (easting: 293995, northing: 6125540)</p>	
General description	<p>Woodland dominated by an overstorey of <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and <i>Eucalyptus obliqua</i> (Messmate Stringybark). Mid storey species include <i>Acacia melanoxylon</i> (Blackwood) and <i>Pultenaea daphnoides</i> (Large-leaf Bush Pea). The ground cover was dominated <i>Pteridium esculentum</i> ssp. <i>esculentum</i> (Bracken Fern) and introduced flora species. Vegetation was in poor to moderate condition with substantial weed incursions. Weed species that were dominant include <i>Iris</i> sp. (Iris) <i>Fumaria capreolata</i> (White-flower fumitory) and <i>Rubus fruticosus aggregate</i> (Blackberry) amongst others.</p>
Threatened species or community	<p>No EPBC Act flora species were assessed as potentially occurring within the Project Area based on recent records and suitable habitat.</p> <p>The following flora species listed under the NPW Act were determined as likely to occur in the Project Area:</p> <ul style="list-style-type: none"> • <i>Acacia gunnii</i> (Ploughshare Wattle) – State Rare; • <i>Deyeuxia densa</i> (Heath Bent-grass) – State Rare; • <i>Deyeuxia minor</i> (Small Bent-grass) – State Vulnerable; • <i>Dianella longifolia</i> var. <i>grandis</i> (Pale Flax-lily) – State Rare; • <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) – State Rare and observed within the Project Area; • <i>Gastrodia sesamoides</i> (Potato Orchid) – State Rare;

- *Rytidosperma tenuius* (Short-awn Wallaby-grass) – State Rare.

An additional 30 flora species listed under the NPW Act were assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat (see [Appendix 4](#)).


A total of 15 threatened fauna species listed under the EPBC Act and/or NPW Act were assessed as highly likely / known or likely to occur within the Project Area based on survey effort, suitable habitat and recent records:

- Bassian Thrush (*Zoothera lunulata halmaturina*) – nationally Endangered and State Rare;
- Beautiful Firetail (*Stagonopleura bella samueli*) – nationally Endangered and State Rare;
- Chestnut-rumped Heathwren (*Hylacola pyrrhopygia parkeri*) – nationally Endangered and State Endangered;
- Common Brushtail Possum (*Trichosurus vulpecula*) – State Rare and observed within the Project Area;
- Elegant Parrot (*Neophema elegans elegans*) – State Rare;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – nationally Vulnerable and State Rare; and
- Jacky Winter (*Microeca fascinans fascinans*) – State Rare;
- Little Eagle (*Hieraetus morphnoides*) – State Vulnerable;
- Peregrine Falcon (*Falco peregrinus macropus*) – State Rare;
- Scarlet Robin (*Petroica boodang boodang*) – State Rare;
- Southern Brown Bandicoot (*Isodon obesulus obesulus*) – nationally Endangered and State Vulnerable.
- Square-tailed Kite (*Lophoictinia isura*) – State Endangered;
- White-winged Chough (*Corcorax melanorhamphos*) – State Rare;
- Yellow-footed Antechinus (*Antechinus flavipes*) – State Vulnerable; and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) – State Vulnerable and observed within the Project Area.

An additional 17 fauna species listed under the EPBC Act and/or NPW Act were assessed as possible to occur within the Project Area based on survey effort, suitable habitat and recent records (see [Appendix 6](#) and [Appendix 7](#)).

Landscape context score	1.15	Vegetation Condition Score	13.92	Conservation significance score	1.10
Unit biodiversity Score	17.61	Area (ha)	1.307	Total biodiversity Score	23.01

Table 6. Summary of VA A1c.

Vegetation Association	A1c – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> +- <i>Eucalyptus obliqua</i> over exotic understorey
	
<p>Photo direction and location: south (easting: 294232, northing: 6125361)</p>	
General description	<p>Woodland dominated by an overstorey of <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and <i>Eucalyptus obliqua</i> (Messmate Stringybark). Mid storey species include <i>Acacia melanoxylon</i> (Blackwood) and <i>Pultenaea daphnoides</i> (Large-leaf Bush Pea). Vegetation was in poor condition with several weed incursions particularly on the edge of the VA closest to the main driveway. Weed species that were dominant include <i>Vinca major</i> (Blue Periwinkle), <i>Allium triquetrum</i> (Three-cornered Garlic) and <i>Ulex europaeus</i> (Gorse) amongst others.</p>
Threatened species or community	<p>No EPBC Act flora species were assessed as potentially occurring within the Project Area based on recent records and suitable habitat.</p> <p>The following flora species listed under the NPW Act were determined as likely to occur in the Project Area:</p> <ul style="list-style-type: none"> • <i>Acacia gunnii</i> (Ploughshare Wattle) – State Rare; • <i>Deyeuxia densa</i> (Heath Bent-grass) – State Rare; • <i>Deyeuxia minor</i> (Small Bent-grass) – State Vulnerable; • <i>Dianella longifolia</i> var. <i>grandis</i> (Pale Flax-lily) – State Rare; • <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) – State Rare and observed within the Project Area; • <i>Gastrodia sesamoides</i> (Potato Orchid) – State Rare;

- *Rytidosperma tenuius* (Short-awn Wallaby-grass) – State Rare.

An additional 30 flora species listed under the NPW Act were assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat (see [Appendix 4](#)).


A total of 15 threatened fauna species listed under the EPBC Act and/or NPW Act were assessed as highly likely / known or likely to occur within the Project Area based on survey effort, suitable habitat and recent records:

- Bassian Thrush (*Zoothera lunulata halmaturina*) – nationally Endangered and State Rare;
- Beautiful Firetail (*Stagonopleura bella samueli*) – nationally Endangered and State Rare;
- Chestnut-rumped Heathwren (*Hylacola pyrrhopygia parkeri*) – nationally Endangered and State Endangered;
- Common Brushtail Possum (*Trichosurus vulpecula*) – State Rare and observed within the Project Area;
- Elegant Parrot (*Neophema elegans elegans*) – State Rare;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – nationally Vulnerable and State Rare; and
- Jacky Winter (*Microeca fascinans fascinans*) – State Rare;
- Little Eagle (*Hieraetus morphnoides*) – State Vulnerable;
- Peregrine Falcon (*Falco peregrinus macropus*) – State Rare;
- Scarlet Robin (*Petroica boodang boodang*) – State Rare;
- Southern Brown Bandicoot (*Isodon obesulus obesulus*) – nationally Endangered and State Vulnerable.
- Square-tailed Kite (*Lophoictinia isura*) – State Endangered;
- White-winged Chough (*Corcorax melanorhamphos*) – State Rare;
- Yellow-footed Antechinus (*Antechinus flavipes*) – State Vulnerable; and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) – State Vulnerable and observed within the Project Area.

An additional 17 fauna species listed under the EPBC Act and/or NPW Act were assessed as possible to occur within the Project Area based on survey effort, suitable habitat and recent records (see [Appendix 6](#) and [Appendix 7](#)).

Landscape context score	1.18	Vegetation Condition Score	11.39	Conservation significance score	1.10
Unit biodiversity Score	14.79	Area (ha)	0.048	Total biodiversity Score	0.71

Table 7. Summary of VA A2.

Vegetation Association	A2 – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> +- <i>Eucalyptus obliqua</i> over <i>Pultenaea daphnoides</i>
	
<p>Photo direction and location: southwest (easting: 294138, northing: 6125237)</p>	
General description	<p>Woodland dominated by an overstorey of <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and <i>Eucalyptus obliqua</i> (Messmate Stringybark). Mid storey species include <i>Acacia melanoxylon</i> (Blackwood) and <i>Pultenaea daphnoides</i> (Large-leaf Bush Pea). The ground cover was dominated by <i>Ixodia achillaeoides</i> ssp. <i>alata</i> (Hills Daisy) and <i>Lepidosperma semiteres</i> (Wire Rapier-sedge). Vegetation was in very good condition with some weed incursions particularly on the edge of the VA closest to the main driveway. Weed species that were present include <i>Allium triquetrum</i> (Three-cornered Garlic), <i>Pittosporum undulatum</i> (Sweet Pittosporum) and <i>Cytisus scoparius</i> (English Broom).</p>
Threatened species or community	<p>No EPBC Act flora species were assessed as potentially occurring within the Project Area based on recent records and suitable habitat.</p> <p>The following flora species listed under the NPW Act were determined as likely to occur in the Project Area:</p> <ul style="list-style-type: none"> • <i>Acacia gunnii</i> (Ploughshare Wattle) – State Rare; • <i>Deyeuxia densa</i> (Heath Bent-grass) – State Rare; • <i>Deyeuxia minor</i> (Small Bent-grass) – State Vulnerable; • <i>Dianella longifolia</i> var. <i>grandis</i> (Pale Flax-lily) – State Rare; • <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) – State Rare and observed within the Project Area; • <i>Gastrodia sesamoides</i> (Potato Orchid) – State Rare; • <i>Rytidosperma tenuius</i> (Short-awn Wallaby-grass) – State Rare.

An additional 30 flora species listed under the NPW Act were assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat (see [Appendix 4](#)).


A total of 15 threatened fauna species listed under the EPBC Act and/or NPW Act were assessed as highly likely / known or likely to occur within the Project Area based on survey effort, suitable habitat and recent records:

- Bassian Thrush (*Zoothra lunulata halmaturina*) – nationally Endangered and State Rare;
- Beautiful Firetail (*Stagonopleura bella samueli*) – nationally Endangered and State Rare;
- Chestnut-rumped Heathwren (*Hylacola pyrrhopygia parkeri*) – nationally Endangered and State Endangered;
- Common Brushtail Possum (*Trichosurus vulpecula*) – State Rare and observed within the Project Area;
- Elegant Parrot (*Neophema elegans elegans*) – State Rare;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – nationally Vulnerable and State Rare; and
- Jacky Winter (*Microeca fascinans fascinans*) – State Rare;
- Little Eagle (*Hieraetus morphnoides*) – State Vulnerable;
- Peregrine Falcon (*Falco peregrinus macropus*) – State Rare;
- Scarlet Robin (*Petroica boodang boodang*) – State Rare;
- Southern Brown Bandicoot (*Isodon obesulus obesulus*) – nationally Endangered and State Vulnerable.
- Square-tailed Kite (*Lophoictinia isura*) – State Endangered;
- White-winged Chough (*Corcorax melanorhamphos*) – State Rare;
- Yellow-footed Antechinus (*Antechinus flavipes*) – State Vulnerable; and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) – State Vulnerable and observed within the Project Area.

An additional 17 fauna species listed under the EPBC Act and/or NPW Act were assessed as possible to occur within the Project Area based on survey effort, suitable habitat and recent records (see [Appendix 6](#) and [Appendix 7](#)).

Landscape context score	1.18	Vegetation Condition Score	25.73	Conservation significance score	1.10
Unit biodiversity Score	33.39	Area (ha)	0.013	Total biodiversity Score	0.44

Table 8. Summary of VA A3.

<p>Vegetation Association</p>	<p>A3 – <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> +- <i>Eucalyptus obliqua</i> +- <i>Acacia Melanoxylon</i> over exotics.</p>
	
<p>Photo direction and location: southwest (easting: 293942, northing: 6125402)</p>	
<p>General description</p>	<p>Woodland dominated by an overstorey of <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and <i>Eucalyptus obliqua</i> (Messmate Stringybark). Mid storey species include <i>Acacia melanoxylon</i> (Blackwood) and <i>Pteridium esculentum</i> ssp. <i>esculentum</i> (Bracken Fern). Vegetation was in very poor condition with multiple introduced species recorded. Weed species that were dominant include but are not limited to <i>Allium triquetrum</i> (Three-cornered Garlic), <i>Ulex europaeus</i> (Gorse), <i>Rubus fruticosus aggregate</i> (Blackberry) and <i>Watsonia</i> sp. (<i>Watsonia</i>).</p>
<p>Threatened species or community</p>	<p>No EPBC Act flora species were assessed as potentially occurring within the Project Area based on recent records and suitable habitat.</p> <p>The following flora species listed under the NPW Act were determined as likely to occur in the Project Area:</p> <ul style="list-style-type: none"> • <i>Acacia gunnii</i> (Ploughshare Wattle) – State Rare; • <i>Deyeuxia densa</i> (Heath Bent-grass) – State Rare; • <i>Deyeuxia minor</i> (Small Bent-grass) – State Vulnerable; • <i>Dianella longifolia</i> var. <i>grandis</i> (Pale Flax-lily) – State Rare; • <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) – State Rare and observed within the Project Area; • <i>Gastrodia sesamoides</i> (Potato Orchid) – State Rare; • <i>Rytidosperma tenuius</i> (Short-awn Wallaby-grass) – State Rare.

An additional 30 flora species listed under the NPW Act were assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat (see [Appendix 4](#)).

A total of 15 threatened fauna species listed under the EPBC Act and/or NPW Act were assessed as highly likely / known or likely to occur within the Project Area based on survey effort, suitable habitat and recent records:

- Bassian Thrush (*Zoothra lunulata halmaturina*) – nationally Endangered and State Rare;
- Beautiful Firetail (*Stagonopleura bella samueli*) – nationally Endangered and State Rare;
- Chestnut-rumped Heathwren (*Hylacola pyrrhopygia parkeri*) – nationally Endangered and State Endangered;
- Common Brushtail Possum (*Trichosurus vulpecula*) – State Rare and observed within the Project Area;
- Elegant Parrot (*Neophema elegans elegans*) – State Rare;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – nationally Vulnerable and State Rare; and
- Jacky Winter (*Microeca fascinans fascinans*) – State Rare;
- Little Eagle (*Hieraetus morphnoides*) – State Vulnerable;
- Peregrine Falcon (*Falco peregrinus macropus*) – State Rare;
- Scarlet Robin (*Petroica boodang boodang*) – State Rare;
- Southern Brown Bandicoot (*Isodon obesulus obesulus*) – nationally Endangered and State Vulnerable.
- Square-tailed Kite (*Lophoictinia isura*) – State Endangered;
- White-winged Chough (*Corcorax melanorhamphos*) – State Rare;
- Yellow-footed Antechinus (*Antechinus flavipes*) – State Vulnerable; and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) – State Vulnerable and observed within the Project Area.

An additional 17 fauna species listed under the EPBC Act and/or NPW Act were assessed as possible to occur within the Project Area based on survey effort, suitable habitat and recent records (see [Appendix 6](#) and [Appendix 7](#)).

Landscape context score	1.18	Vegetation Condition Score	1.38	Conservation significance score	1.10
Unit biodiversity Score	1.79	Area (ha)	0.087	Total biodiversity Score	0.16

Bushland Assessment Method Scoresheets for all VAs are provided in Attachment 2 to Attachment 6.

4.1.3. Details of the scattered trees proposed to be impacted

A total of 106 scattered trees are proposed for removal within the Project Area, which includes 10 *Acacia melanoxylon* (Blackwood), 44 *Eucalyptus obliqua* (Messmate Stringybark), one *Eucalyptus viminalis* ssp. *cygnetensis* (Rough-bark Manna Gum), 48 State Rare *Eucalyptus viminalis* ssp. *viminalis* (Manna Gum) and three *Exocarpos cupressiformis* (Native Cherry) from poor to excellent in health. (Table 9).

Further detail on scattered trees is provided in the Scattered Tree Assessment scoresheet (Attachment 7).

Scattered tree using fauna species in the Project Area are provided in [Appendix 3](#).

Photographs of scattered trees are provided in the Scattered Tree Photo File (Attachment 8).

Table 9. Details of the 106 scattered trees proposed to be impacted.

Tree or Cluster ID	Tree species	# Trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	Fauna Habitat Score
6	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	2	20.0	0	50.5	0	3.67	1.8
7	<i>Eucalyptus obliqua</i>	1	12.5	0	37	10	1.23	1.8
8	<i>Acacia melanoxylon</i>	1	9.0	1 medium	44	10	2.54	1.8
9	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	23.0	1 small	148	10	8.58	1.8
10	<i>Eucalyptus obliqua</i>	1	16.0	1 small	89	15	4.35	1.8
11	<i>Eucalyptus obliqua</i>	1	8.0	0	24	20	0.42	1.8
12	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	17.0	0	60	40	2.13	1.8
13	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	25.0	1 small 1 medium	111	15	8.71	1.8
14	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	24.0	0	93	25	5.95	1.8
15	<i>Eucalyptus obliqua</i>	1	11.0	1 small	96	40	2.42	1.8
16	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	18.0	0	71	5	3.91	1.8
17	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	16.0	0	45	5	2.27	1.8
18	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	16.0	0	62.5	15	2.50	1.8
19	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	17.0	2 small 2 medium	112	5	7.03	1.8
20	<i>Eucalyptus obliqua</i>	1	14.0	0	49	80	0.59	1.8
21	<i>Eucalyptus obliqua</i>	1	14.0	0	110	75	2.02	1.8

Tree or Cluster ID	Tree species	# Trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	Fauna Habitat Score
22	<i>Eucalyptus obliqua</i>	1	12.0	0	53	80	0.54	1.8
23	<i>Eucalyptus obliqua</i>	1	13.0	0	54	15	1.99	1.8
24	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	26.0	1 small 3 medium 1 large	160	3	11.25	1.8
26	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	11.0	0	97	85	1.13	1.8
27	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	10.0	0	70	10	2.12	1.8
28	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	23.0	1 medium	164	10	9.08	1.8
29	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	20.0	1 small	99	20	6.09	1.8
30	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	20.0	1 small	120.5	10	7.01	1.8
31	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	13.0	1 large	70	75	2.03	1.8
32	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	16.0	0	86	25	3.51	1.8
33	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	17.0	1 medium	91	20	4.39	1.8
34	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	24.0	1 small	98	20	7.01	1.8
35	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	14.0	1 large	75	20	4.05	1.8
36	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	18.0	0	112	15	4.53	1.8
37	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	18.0	2 small	106	20	4.84	1.8
41	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	21.0	0	96	3	6.14	1.8
42	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	18.0	0	76.5	3	4.15	1.8
43	<i>Eucalyptus obliqua</i>	1	16.0	0	72	5	3.66	1.8
44	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	12.0	0	45	5	1.42	1.8
45	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	14.0	0	58	0	2.43	1.8
46	<i>Eucalyptus obliqua</i>	1	17.0	0	53	10	2.50	1.8

Tree or Cluster ID	Tree species	# Trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	Fauna Habitat Score
47	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	17.0	0	89	3	4.27	1.8
48	<i>Eucalyptus obliqua</i>	1	16.0	0	55	5	2.51	1.8
49	<i>Eucalyptus obliqua</i>	1	15.0	0	60	5	2.51	1.8
50	<i>Eucalyptus obliqua</i>	1	20.0	4 small	101	10	6.66	1.8
51	<i>Acacia melanoxylon</i>	1	13.0	0	44	3	4.07	1.8
52	<i>Eucalyptus obliqua</i>	1	16.0	1 small	90.5	10	4.51	1.8
53	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	23.0	1 small 1 medium	140	3	9.60	1.8
54	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	19.0	0	95	5	4.67	1.8
55	<i>Eucalyptus obliqua</i>	1	16.0	0	62	10	2.59	1.8
56	<i>Eucalyptus obliqua</i>	1	18.0	0	87	3	4.47	1.8
57	<i>Eucalyptus obliqua</i>	1	12.0	0	76	15	2.35	1.8
58	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	25.0	0	116	3	7.63	1.8
59	<i>Eucalyptus obliqua</i>	1	17.0	0	69	10	3.61	1.8
60	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	20.0	1 small 1 medium	90	10	7.00	1.8
61	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	17.0	1 small	70	3	4.29	1.8
62	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	13.0	0	69	65	1.19	1.8
63	<i>Eucalyptus obliqua</i>	1	12.0	0	57	90	0.52	1.8
64	<i>Eucalyptus obliqua</i>	1	21.0	0	48	75	1.36	1.8
65	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	24.0	0	57	35	3.64	1.8
66	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	17.0	2 small	56	10	3.64	1.8
67	<i>Eucalyptus obliqua</i>	1	20.0	0	53	15	3.48	1.8
68	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	15.0	0	60	10	2.42	1.8
69	<i>Eucalyptus obliqua</i>	1	15.0	0	51	40	1.33	1.8
70	<i>Eucalyptus obliqua</i>	1	16.0	0	60	3	3.34	1.8
71	<i>Exocarpos cupressiformis</i>	1	6.0	0	9	0	1.11	1.8

Tree or Cluster ID	Tree species	# Trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	Fauna Habitat Score
72	<i>Exocarpos cupressiformis</i>	1	6.5	0	19	0	2.00	1.8
73	<i>Exocarpos cupressiformis</i>	1	8.0	0	11	0	1.93	1.8
74	<i>Eucalyptus obliqua</i>	1	18.0	1 small	74	10	4.48	1.8
75	<i>Eucalyptus obliqua</i>	1	18.0	0	69	30	3.31	1.8
76	<i>Eucalyptus obliqua</i>	1	18.5	0	64	5	3.83	1.8
77	<i>Eucalyptus obliqua</i>	1	16.0	0	49	60	1.18	1.8
78	<i>Eucalyptus obliqua</i>	1	16.5	1 small	71	5	4.23	1.8
79	<i>Acacia melanoxylon</i>	1	9.0	0	20	20	0.96	1.8
80	<i>Acacia melanoxylon</i>	6	5.0	0	6	0	0.33	1.8
81	<i>Eucalyptus obliqua</i>	1	17.0	0	66	5	3.64	1.8
82	<i>Eucalyptus obliqua</i>	1	18.0	0	113	40	3.95	1.8
83	<i>Eucalyptus obliqua</i>	1	19.0	2 small	105	10	6.49	1.8
84	<i>Eucalyptus obliqua</i>	1	19.0	1 small	97	20	5.93	1.8
85	<i>Eucalyptus obliqua</i>	1	19.5	1 small	117	20	6.55	1.8
86	<i>Eucalyptus obliqua</i>	1	17.0	1 small	52.5	10	3.57	1.8
87	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	20.0	1 small	94	10	6.33	1.8
88	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	19.0	0	50	15	2.53	1.8
89	<i>Eucalyptus obliqua</i>	1	19.5	0	67	20	3.73	1.8
96	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	20.5	2 small 1 medium	115	20	7.39	1.8
100	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	13.5	0	29.5	10	1.11	1.8
104	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	18	1 small	73	10	4.38	1.8
105	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	20	2 small 1 medium	144	15	8.30	1.8
120	<i>Eucalyptus obliqua</i>	1	17.0	1 small	84.5	15	4.45	1.8
121	<i>Eucalyptus obliqua</i>	1	16.0	1 small	81	5	4.47	1.8
122	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	22.0	2 small	166	5	9.08	1.8
123	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	23.0	3 small	143	15	8.21	1.8

Tree or Cluster ID	Tree species	# Trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	Fauna Habitat Score
124	<i>Acacia melanoxylon</i>	1	7.0	0	5	0	0.42	1.8
125	<i>Eucalyptus obliqua</i>	1	16.0	3 small 1 medium 1 large	123	5	7.12	1.8
126	<i>Eucalyptus obliqua</i>	1	18.0	2 small	83.5	20	4.49	1.8
127	<i>Eucalyptus obliqua</i>	1	18.5	1 small	82	10	4.84	1.8
131	<i>Eucalyptus obliqua</i>	1	16.0	0	74	70	1.41	1.8
132	<i>Eucalyptus obliqua</i>	1	17.0	2 medium 1 large	76	40	4.10	1.8
133	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	19.5	2 small 2 medium	95	10	7.01	1.8
134	<i>Eucalyptus obliqua</i>	1	18.5	0	106	15	4.59	1.8
135	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	20.0	2 small 3 medium	103	5	7.55	1.8
139	<i>Eucalyptus obliqua</i>	1	19.0	3 small	100	5	6.56	1.8
144	<i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i>	1	17.0	5 small	110	25	7.31	1.8
145	<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	1	19.5	0	78	5	4.40	1.8

4.1.4. Site map showing areas of proposed impact

A map of the impacted vegetation associations in the Project Area is provided in Figure 4. Any fairways and greens associated with the golf course are classified as exotic vegetation but are not mapped.

A map of the impacted scattered trees in the Project Area is provided in Figure 5. All trees were categorised based on their Unit Biodiversity Score (UBS). For more information on this categorisation see [Section 4.1.1](#).

Any clearance figures presented in [Section 5](#) are calculated by considering a 20 m buffer due to CFS constraints with the exception of a 35m clearance buffer from the eastern most building face.



Figure 4. Vegetation associations impacted within the Project Area.



Figure 5. Scattered trees impacted within the Project Area categorised according to UBS.

4.1.5. Photo log

General photos of the Project Area are provided in Figure 6 to Figure 9.



Figure 6. Non-native vegetation surrounding the Scent factory redevelopment.



Figure 7. Location of the proposed car park to the north of the Scent factory.



Figure 8. The proposed new vehicle access in the southern part of the Project Area that is currently an unofficial walking entrance.



Figure 9. Remnant scattered trees adjacent the main access road in the southeast of the Project Area.

4.2. Threatened species assessment

4.2.1. Matters of National Environmental Significance

The EPBC Act PMST report identified 37 threatened species and 13 migratory species protected under the EPBC Act, which may be relevant to the Project Area. Table 10 summarises the results of the PMST report and the relevant MNES are discussed further below.

The assessment of likelihood of national and state listed threatened flora and fauna (identified by the PMST) to occur in the Project Area is summarised in Table 11 to Table 13.

Note that some of these matters are not impacted by, or relevant to, the Project (e.g., Fish and listed marine species which are afforded specific protection within Commonwealth marine areas), and these matters are therefore not discussed further.

Table 10. Summary of the EPBC Act Protected Matters Search Tool results (5 km buffer).

Matters of National Environment Significance under EPBC Act 1999	Identified within the search area
World Heritage Properties	None
National Heritage Properties	None
Wetlands of International Importance	None
Great Barrier Reef Marine Park	None
Commonwealth Marine Areas	None
Listed Threatened Ecological Communities	None
Listed Threatened Species	37 (18 flora and 19 fauna)
Listed Migratory Species	13

4.2.2. Listed Threatened Ecological Communities (TEC)

No TECs will be impacted by the proposed project as there are no TECs located within 5 kilometres of the Project Area.

4.2.3. Threatened flora

The PMST (DCCEEW 2023) identified 11 flora species listed as threatened under the EPBC Act as known or likely to occur within 5 km of the Project Area (Table 11). None of the species were assessed as potentially occurring within the Project Area based on recent records and suitable habitat. A BDBSA search identified 73 additional State listed flora species, that have records within 5 km of the Project Area, with <1 km reliability (Table 11) (DEW 2022b). A total of seven of the species were assessed as known / highly likely or likely to occur within the Project Area based on survey effort, recent records and suitable habitat:

- *Acacia gunnii* (Ploughshare Wattle) – State Rare;
- *Deyeuxia densa* (Heath Bent-grass) – State Rare;
- *Deyeuxia minor* (Small Bent-grass) – State Vulnerable;
- *Dianella longifolia* var. *grandis* (Pale Flax-lily) – State Rare;

- *Eucalyptus viminalis* ssp. *viminalis* (Manna Gum) – State Rare and observed within the Project Area;
- *Gastrodia sesamoides* (Potato Orchid) – State Rare;
- *Rytidosperma tenuius* (Short-awn Wallaby-grass) – State Rare.

An additional 30 flora species listed under the NPW Act were assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat.

BDBSA flora records located within 5 km of the Project Area are provided in [Appendix 4](#).

A detailed likelihood assessment of threatened flora species information including distribution and preferred habitat information for the Project Area is provided in [Appendix 5](#).

Table 11. Threatened flora identified by the PMST and/or BDBSA search in the Project Area (green shading = known / highly likely or likely to occur, orange shading = possible to occur) (DCCEEW 2023; DEW 2022b).

Scientific name	Common name	Conservation status		Source	PMST likelihood/ Year of last record	Likelihood of occurrence within the Project Area
		Aus	SA			
<i>Acacia gunnii</i>	Ploughshare Wattle		R	2	2022	Likely
<i>Acacia iteaphylla</i>	Flinders Ranges Wattle		R	2	2022	Possible
<i>Acacia stricta</i>	Hop Wattle		R	2	2005	Unlikely
<i>Amphibromus archeri</i>	Pointed Swamp Wallaby-grass		R	2	2018	Possible
<i>Austrostipa tenuifolia</i>			R	2	2018	Possible
<i>Baloskion tetraphyllum</i> ssp. <i>tetraphyllum</i>	Tassel Cord-rush		V	2	2012	Unlikely
<i>Bauera rubioides</i>	Wiry Bauera		R	2	2011	Unlikely
<i>Blechnum nudum</i>	Fishbone Water-fern		R	2	2022	Unlikely
<i>Blechnum wattsii</i>	Hard Water-fern		R	2	2010	Unlikely
<i>Boronia nana</i> var. <i>hyssopifolia</i>	Dwarf Boronia		R	2	2022	Possible
<i>Boronia parviflora</i>	Swamp Boronia		R	2	2018	Unlikely
<i>Caladenia argocalla</i>	White-beauty Spider-orchid	EN	E	1	Likely	Unlikely
<i>Caladenia behrii</i>	Pink-lipped Spider-orchid	EN	E	1	Likely	Unlikely
<i>Caladenia gladiolata</i>	Bayonet Spider-orchid	EN	E	1	Likely	Unlikely
<i>Caladenia leptochila</i> ssp. <i>leptochila</i>	Narrow-lip Spider-orchid		R	2	2020	Possible
<i>Caladenia necrophylla</i>	Late Spider-orchid		R	2	2008	Unlikely
<i>Caladenia pusilla</i>	Pigmy Caladenia		R	2	2013	Possible
<i>Caladenia rigida</i>	Stiff White Spider-orchid	EN	E	1	Likely	Unlikely

Scientific name	Common name	Conservation status		Source	PMST likelihood/ Year of last record	Likelihood of occurrence within the Project Area
		Aus	SA			
<i>Caleana major</i>	Large Duck-orchid		V	2	2000	Unlikely
<i>Callistemon brachyandrus</i>	Prickly Bottlebrush		R	2	2019	Unlikely
<i>Cardamine paucijuga</i>	Annual Bitter-cress		R	2	2011	Possible
<i>Coronidium gunnianum</i>	Pale Everlasting		E	2	2006	Possible
<i>Deyeuxia densa</i>	Heath Bent-grass		R	2	2021	Likely
<i>Deyeuxia minor</i>	Small Bent-grass		V	2	2020	Likely
<i>Dianella longifolia</i> var. <i>grandis</i>	Pale Flax-lily		R	2	2019	Likely
<i>Dicksonia antarctica</i>	Soft Tree-fern		E	2	2020	Unlikely
<i>Dipodium pardalinum</i>	Leopard Hyacinth-orchid		V	2	2012	Possible
<i>Diuris behrii</i>	Behr's Cowslip Orchid		V	2	2015	Possible
<i>Diuris chryseopsis</i>	Cowslip Orchid		E	2	1998	Unlikely
<i>Drosera binata</i>	Forked Sundew		R	2	2017	Possible
<i>Drosera stricticaulis</i>	Erect Sundew		V	2	1998	Unlikely
<i>Eryngium ovinum</i>	Blue Devil		V	2	2013	Possible
<i>Eryngium vesiculosum</i>	Prostrate Blue Devil		R	2	2010	Possible
<i>Eucalyptus dalrympleana</i> ssp. <i>dalrympleana</i>	Candlebark Gum		R	2	2022	Possible
<i>Eucalyptus fasciculosa</i>	Pink Gum		R	2	2021	Possible
<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	Manna Gum		R	2	2022	Known/Highly Likely
<i>Euphrasia collina</i> ssp. <i>osbornii</i>	Osborn's Eyebright	EN	E	1	Known	Unlikely
<i>Gastrodia sesamoides</i>	Potato Orchid		R	2	2021	Likely
<i>Gleichenia microphylla</i>	Coral Fern		R	2	2022	Unlikely
<i>Glycine latrobeana</i>	Clover Glycine	VU	V	1	Likely	Unlikely
<i>Gonocarpus micranthus</i> ssp. <i>micranthus</i>	Creeping Raspwort		R	2	2018	Possible
<i>Goodenia brunnea</i>			R	2	2018	Unlikely
<i>Grevillea aquifolium</i>	Prickly Grevillea		R	2	1997	Unlikely
<i>Hypolepis rugosula</i>	Ruddy Ground-fern		R	2	2022	Unlikely
<i>Juncus amabilis</i>			V	2	2009	Unlikely

Scientific name	Common name	Conservation status		Source	PMST likelihood/ Year of last record	Likelihood of occurrence within the Project Area
		Aus	SA			
<i>Lagenophora sublyrata</i>	Slender Bottle-daisy		V	2	2019	Possible
<i>Leionema hillebrandii</i>	Mount Lofty Phebalium		R	2	2022	Possible
<i>Logania saxatilis</i>	Rock Logania		R	2	1996	Unlikely
<i>Luzula flaccida</i>	Pale Wood-rush		V	2	2020	Possible
<i>Lycopodiella lateralis</i>	Slender Clubmoss		R	2	2017	Unlikely
<i>Lycopodium deuterodensum</i>	Bushy Clubmoss		E	2	2009	Unlikely
<i>Machaerina gunnii</i>	Slender Twig-rush		R	2	2018	Unlikely
<i>Melaleuca armillaris</i> ssp. <i>akineta</i>	Needle-leaf Honey-myrtle		R	2	2008	Unlikely
<i>Mentha diemenica</i>	Slender Mint		R	2	2011	Possible
<i>Nymphoides crenata</i>	Wavy Marshwort		R	2	1995	Unlikely
<i>Poa umbricola</i>	Shade Tussock-grass		R	2	2018	Unlikely
<i>Prasophyllum pallidum</i>	Pale Leek-orchid	VU	R	1	Likely	Unlikely
<i>Prasophyllum pruinatum</i>	Plum Leek-orchid	EN	E	1	Known	Unlikely
<i>Pterostylis cucullata</i>	Leafy Greenhood	VU	E	1	Likely	Unlikely
<i>Pterostylis setifera</i>	Bristly Greenhood		E	2	2018	Unlikely
<i>Pultenaea graveolens</i>	Scented Bush-pea		R	2	2022	Possible
<i>Pultenaea kraehenbuehlii</i>	Tothill Bush-pea		R	2	2018	Unlikely
<i>Ranunculus glabrifolius</i>	Shining Buttercup		V	2	2000	Possible
<i>Rytidosperma laeve</i>	Smooth Wallaby-grass		R	2	2017	Possible
<i>Rytidosperma tenuius</i>	Short-awn Wallaby-grass		R	2	2022	Likely
<i>Schizaea fistulosa</i>	Narrow Comb-fern		V	2	2008	Unlikely
<i>Schoenus latelaminatus</i>	Medusa Bog-rush		V	2	2012	Unlikely
<i>Schoenus lepidosperma</i> ssp. <i>lepidosperma</i>	Slender Bog-rush		R	2	2018	Unlikely
<i>Scutellaria humilis</i>	Dwarf Skullcap		R	2	2021	Unlikely
<i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i>			R	2	2015	Possible
<i>Sphaerolobium minus</i>	Leafless Globe-pea		R	2	2008	Unlikely
<i>Sprengelia incarnata</i>	Pink Swamp-heath		R	2	2017	Unlikely

Scientific name	Common name	Conservation status		Source	PMST likelihood/ Year of last record	Likelihood of occurrence within the Project Area
		Aus	SA			
<i>Thelymitra aristata</i>	Great Sun-orchid		E	2	2008	Possible
<i>Thelymitra batesii</i>			R	2	2021	Possible
<i>Thelymitra circumsepta</i>	Naked Sun-orchid		E	2	2018	Unlikely
<i>Thelymitra grandiflora</i>	Great Sun-orchid		R	2	2019	Possible
<i>Thelymitra ixioides</i>	Spotted Sun-orchid		E	2	2013	Possible
<i>Thelymitra latifolia</i>	Blue Star Sun-orchid		V	2	2004	Possible
<i>Thelymitra matthewsii</i>	Spiral Sun-orchid	VU	E	1	Likely	Unlikely
<i>Thysanotus tenellus</i>	Grassy Fringe-lily		R	2	2015	Unlikely
<i>Todea barbara</i>	King Fern		E	2	2018	Unlikely
<i>Veronica derwentiana</i> ssp. <i>homalodonta</i>	Mount Lofty Speedwell	CE	E	1	Likely	Unlikely
<i>Xanthosia tasmanica</i>	Southern Xanthosia		R	2	2015	Possible
<i>Xyris operculata</i>	Tall Yellow-eye		R	2	2008	Unlikely

Conservation status: Aus: Australia (EPBC Act). SA: South Australia (NPW Act).

Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. ssp.: the conservation status applies at the sub-species level.

PMST result: Likelihood of species or species habitat to occur within 5 km of the Project Area.

Source of Information:

1: PMST (DCCEEW 2023) – 5 km buffer applied to Project Area;

2: BDBSA (DEW 2022b) – 5 km buffer applied to Project Area.

4.2.4. Threatened fauna

The PMST (DCCEE 2023) identified 11 nationally listed threatened fauna species as known or likely to occur within 5 km of the Project Area, consisting of eight birds and two mammals. A BDBSA search identified two additional nationally listed threatened fauna species that have records within 5 km of the Project Area (Table 12), which did not appear on the PMST (DEW 2022b). In total, five threatened fauna species were assessed as likely to occur within the Project Area based on survey effort, suitable habitat and recent records:

- Bassian Thrush (*Zoothera lunulata halmaturina*) – nationally Endangered and State Rare;
- Beautiful Firetail (*Stagonopleura bella samueli*) – nationally Endangered and State Rare;
- Chestnut-rumped Heathwren (*Hylacola pyrrhopygia parkeri*) – nationally Endangered and State Endangered;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – nationally Vulnerable and State Rare; and
- Southern Brown Bandicoot (*Isodon obesulus obesulus*) – nationally Endangered and State Vulnerable.

One additional nationally listed threatened species was assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat:

- White-throated Needletail (*Hirundapus caudacutus*) – nationally Vulnerable and migratory and State Vulnerable.

A BDBSA search identified 29 additional State listed fauna species that have records within 5 km of the Project Area (Table 12) (DEW 2022b). A total of 10 of these species were assessed as highly likely / known or likely to occur within the Project Area based on survey effort, recent records and suitable habitat:

- Common Brushtail Possum (*Trichosurus vulpecula*) – State Rare and observed within the Project Area;
- Elegant Parrot (*Neophema elegans elegans*) – State Rare;
- Jacky Winter (*Microeca fascinans fascinans*) – State Rare;
- Little Eagle (*Hieraetus morphnoides*) – State Vulnerable;
- Peregrine Falcon (*Falco peregrinus macropus*) – State Rare;
- Scarlet Robin (*Petroica boodang boodang*) – State Rare;
- Square-tailed Kite (*Lophoictinia isura*) – State Endangered;
- White-winged Chough (*Corcorax melanorhamphos*) – State Rare;
- Yellow-footed Antechinus (*Antechinus flavipes*) – State Vulnerable; and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) – State Vulnerable and observed within the Project Area.

An additional 16 species were assessed as possible to occur within the Project Area based on recent records and suitable habitat.

BDBSA fauna records located within 5 km of the Project Area are provided in [Appendix 6](#).

Birdlife Australia fauna records located within 5 km of the Project Area are provided in [Appendix 7](#).

A detailed likelihood assessment of threatened fauna species information including distribution and preferred habitat information for the Project Area is provided in [Appendix 8](#).

Table 12. Threatened fauna and migratory species, identified by the PMST and/or BDBSA search in the Project Area (green shading = known / highly likely or likely to occur, orange shading = possible to occur) (DCCEEW 2023; DEW 2022b).

Scientific name	Common name	Conservation status		Source	PMST likelihood/ Year of last record	Likelihood of occurrence within the Project Area
		Aus	SA			
AMPHIBIA						
<i>Pseudophryne bibronii</i>	Brown Toadlet		R	2	2009	Possible
AVES						
<i>Anhinga novaehollandiae novaehollandiae</i>	Australasian Darter		R	2, 3	2018 / 2018	Possible
<i>Biziura lobata menziesi</i>	Musk Duck		R	2, 3	2015 / 2002	Possible
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN	E	1	Known	Unlikely
<i>Cereopsis novaehollandiae novaehollandiae</i>	Cape Barren Goose		R	3	2009	Possible
<i>Charadrius mongolus</i>	Lesser Sand Plover	EN	E	3	2002	Unlikely
<i>Climacteris affinis</i>	White-browed Treecreeper		R	2	2021	Possible
<i>Corcorax melanorhamphos</i>	White-winged Chough		R	2, 3	2020 / 2020	Likely
<i>Falco hypoleucos</i>	Grey Falcon	VU	R	1	Likely	Unlikely
<i>Falco peregrinus macropus</i>	Peregrine Falcon		R	2, 3	2015 / 2020	Likely
<i>Falcunculus frontatus frontatus</i>	Eastern Shriketit		R	2, 3	2006 / 2006	Possible
<i>Grantiella picta</i>	Painted Honeyeater	VU	R	1	Likely	Unlikely
<i>Hieraetus morphnoides</i>	Little Eagle		V	2	2019	Likely
<i>Hirundapus caudacutus</i>	White-throated Needletail	VU, Mi (T)	V	1	Likely	Possible
<i>Hylacola cauta cauta</i>	Shy Heathwren		R	3	1998	Possible
<i>Hylacola pyrrhopygia parkeri</i>	Chestnut-rumped Heathwren	EN	E	1, 2, 3	Known / 2020 / 2020	Likely

Scientific name	Common name	Conservation status		Source	PMST likelihood/ Year of last record	Likelihood of occurrence within the Project Area
		Aus	SA			
<i>Leipoa ocellata</i>	Malleefowl	VU	V	1	Likely	Unlikely
<i>Lewinia pectoralis pectoralis</i>	Lewin's Rail		V	2	2010	Possible
<i>Lophoictinia isura</i>	Square-tailed Kite		E	2	2019	Likely
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater		V	2, 3	2002 / 2000	Possible
<i>Microeca fascinans fascinans</i>	Jacky Winter		R	2, 3	2018 / 2001	Likely
<i>Neophema elegans elegans</i>	Elegant Parrot		R	2	2021	Likely
<i>Oxyura australis</i>	Blue-billed Duck		R	3	2018	Possible
<i>Pachycephala inornata</i>	Gilbert's Whistler		R	3	2007	Possible
<i>Petroica boodang boodang</i>	Scarlet Robin		R	2, 3	2022 / 2020	Likely
<i>Petroica phoenicea</i>	Flame Robin		V	3	2003	Possible
<i>Plectorhyncha lanceolata</i>	Striped Honeyeater		R	2	2020	Possible
<i>Polytelis anthopeplus monarchoides</i>	Regent Parrot	VU	V	2	1996	Unlikely
<i>Rostratula australis</i>	Australian Painted Snipe	EN	E	1	Likely	Unlikely
<i>Stagonopleura bella samueli</i>	Beautiful Firetail	EN	R	1, 3	2020	Likely
<i>Turnix varius varius</i>	Painted Buttonquail		R	2	2012	Possible
<i>Zanda funerea whiteae</i>	Yellow-tailed Black Cockatoo		V	2, 3	2022 / 2020	Highly Likely / Known
<i>Zapornia tabuensis</i>	Spotless Crane		R	2	2010	Possible
<i>Zoothera lunulata halmaturina</i>	Bassian Thrush	EN	R	1, 2, 3	Known / 2022 / 2018	Likely
MAMMALIA						
<i>Antechinus agilis</i>	Agile Antechinus		E	2	2021	Possible
<i>Antechinus flavipes</i>	Yellow-footed Antechinus		V	2	2021	Likely
<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot	EN	V	1, 2	Known / 2021	Likely

Scientific name	Common name	Conservation status		Source	PMST likelihood/ Year of last record	Likelihood of occurrence within the Project Area
		Aus	SA			
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	R	1, 2	Likely / 2020	Likely
<i>Trichosurus vulpecula</i>	Common Brushtail Possum		R	2	2022	Highly Likely / Known
REPTILIA						
<i>Egernia cunninghami</i>	Cunningham's Skink		E	2	2022	Unlikely
<i>Varanus rosenbergi</i>	Heath Goanna		V	2	2014	Unlikely
<i>Varanus varius</i>	Lace Monitor		R	2	2013	Unlikely

Conservation status: Aus: Australia (EPBC Act). SA: South Australia (NPW Act).

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. Mi (W): listed as a Migratory Wetland species under the EPBC Act. Mi (Ma): listed as a Migratory Marine species under the EPBC Act.

PMST result: Likelihood of species or species habitat to occur within 5 km of the Project Area.

Source of Information:

- 1: PMST (DCCEEW 2023) – 5 km buffer applied to Project Area;
- 2: BDBSA (DEW 2022b) – 5 km buffer applied to Project Area;
- 3: Birdlife Australia (DEW 2022b) – 5 km buffer applied to Project Area.

4.2.5. Migratory fauna

The PMST (DCCEEW 2023) identified five nationally listed migratory species as known or likely to occur within 5 km of the Project Area (Table 13). In total, two nationally listed migratory species were assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat:

- Fork-tailed Swift (*Apus pacificus*) – nationally migratory;
- Satin Flycatcher (*Myiagra cyanoleuca*) – nationally migratory and State Endangered.

BDBSA fauna records indicate that the Satin Flycatcher (*Myiagra cyanoleuca*) has been previously recorded within 5 km of the Project Area. BDBSA fauna records located within 5 km of the Project Area are provided in [Appendix 6](#).

A detailed likelihood assessment of nationally listed migratory species information including distribution and preferred habitat information for the Project Area is provided in [Appendix 9](#).

Table 13. Migratory species, identified by the PMST and/or BDBSA search in the Project Area (orange shading = possible to occur) (DCCEEW 2023; DEW 2022b).

Scientific name	Common name	Conservation status		Source	PMST likelihood/ Year of last record	Likelihood of occurrence within the Project Area
		Aus	SA			
<i>Apus pacificus</i>	Fork-tailed Swift	Mi (Ma)		1	Likely	Possible
<i>Gallinago hardwickii</i>	Latham's Snipe	Mi (W)	R	1	Likely	Unlikely
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Mi (T)	E	1, 2	Likely / 2005	Possible
<i>Rhipidura rufifrons</i>	Rufous Fantail	Mi (T)		1	Known	Unlikely
<i>Tringa nebularia</i>	Common Greenshank	Mi (T)		1	Likely	Unlikely

Conservation status: Aus: Australia (EPBC Act). SA: South Australia (NPW Act).

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. Mi (W): listed as a Migratory Wetland species under the EPBC Act. Mi (Ma): listed as a Migratory Marine species under the EPBC Act.

PMST result: Likelihood of species or species habitat to occur within 5 km of the Project Area.

Source of Information:

1: PMST (DCCEEW 2023) – 5 km buffer applied to Project Area;

2: BDBSA (DEW 2022b) – 5 km buffer applied to Project Area;

4.3. 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 impacts of the proposal include the complete removal of 1.716 ha of native vegetation and 62 scattered trees.

All construction access and earthworks fall within the works extent of the Project Area.

Potential indirect impacts of the proposal include:

- Any clearance required by the SA Country Fire Service such as fuel reduced zones around the hotel and hotel pods, but also any clearance for fire mitigation measures such as fire breaks, fire access tracks and turn around points;
- Any altered hydrology (raised or lowered water table, flooding, impounding water or reduced water supply) that will impact on the condition or health of native vegetation;
- Any possible impacts from temporary dust generation during construction works, including smothering of vegetation;
- Any potential impacts on the root zone of vegetation, such as adding fill to adjust ground level, compaction of soils, severing of roots through trenching for infrastructure, and the construction of hard surfaces which may reduce the infiltration of water; and
- Any vegetation that will be significantly reduced in size and isolated from other vegetation such that it will potentially compromise its long-term ecological function and viability.

4.4. Addressing the Mitigation Hierarchy

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

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

The area in which the 18 pods are proposed to be constructed will impact on several scattered trees and an extensive amount of vegetation association A1b. scattered trees are planned for retention in this area and will be avoided. These trees will still be accounted for as a result of applicable CFS Buffers (see Section 5).

The proposed new vehicle access in the southern part of the Project Area utilises an existing partially cleared, albeit unofficial walking entrance and avoids better quality vegetation adjacent to this area. The proposed area for the carpark adjacent to the Scent Factory redevelopment also avoids direct impacts to vegetation associations A1b and A3 (see Figure 4) See [Section 4.1.5](#) for photos of the areas proposed for the new vehicle access and car park.

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

The proposed footprint of the main hotel building was selected based on the existing site footprint, minimising additional impact to surrounding vegetation despite the proposed footprint being larger.

Efforts to minimise the extent, duration and intensity of impacts on the clearance of native vegetation around the pods has been considered at multiple stages of the planning process. A total of 13 iterations (as of 30/08/2022) have been documented which include a reduction in the number of pods, and relocation of where these pods are proposed to be located. Initial designs included plans for up to 50 pods to be constructed in the northern extent of the Project Area requiring clearance of a substantial amount of native vegetation. Further detail on these iterations is provided in Attachment 9.

Where applicable, reasonable and feasible measures to prevent pollution of waterways and drainage lines in the area downstream of the proposed works during and post construction will be implemented.

Installation of exclusion fencing and signage to delineate the limits of clearing and vegetation to be retained will be installed in order to minimise disturbance in the Project Area.

Furthermore, clearing of vegetation, including the clearing of native vegetation and fauna habitat, will be minimised to the greatest extent practicable through the selection of plant (machinery) that will avoid impact on retained trees.

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.

The rehabilitation or restoration of some areas that are impacted by the clearance of native vegetation will be achieved through revegetation, with a preference for species local to the Adelaide Hills. Some areas will not be able to be rehabilitated due to CFS constraints and the need to maintain specific bushfire attack level ratings.

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

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

An offset in the form of a payment into the native vegetation fund is the preferred option for Mount Lofty Estate Pty Ltd.

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

Table 14. Assessment against the Principles of Clearance.

Principle of clearance	Considerations
Principle 1(a) – it comprises a high level of diversity of plant species	<p><u>Relevant information</u></p> <p>A total of 89 flora species (48 native and 41 introduced) were observed within the Project Area during the field assessment:</p> <ul style="list-style-type: none"> • A1a – 28 flora species (11 native and 17 introduced species); • A1b – 40 flora species (21 native and 19 introduced species); • A1c – 27 flora species (14 native and 13 introduced species); • A2 – 40 flora species (27 native and 13 introduced species); and • A3 – 15 flora species (2 native and 13 introduced species). <p>Native Plant Species Diversity Scores:</p> <p>A1a – 8 A1b – 16 A1c – 12 A2 – 14 A3 – 2</p>
	<p><u>Assessment against the principles</u></p> <p><u>At Variance</u> A1b, A1c and A2</p> <p><u>Not at Variance</u> A1a and A3</p>
	<p><u>Moderating factors that may be considered by the NVC</u></p> <p>There is a substantial amount of native vegetation within the Project Area and or local vicinity comprising a number of native species.</p>
Principle 1(b) – significance as a habitat for wildlife	<p><u>Relevant information</u></p> <p>Remnant pockets of native vegetation coexist with large remnant scattered trees and planted vegetation (including exotic vegetation associated with the golf course) within the Project Area. The understorey in areas of native vegetation not directly associated with the golf course was heavily degraded and introduced flora species such as <i>Fumaria capreolata</i> (White-flower Fumitory), <i>Iris</i> sp. (Iris) and <i>Rubus fruticosus aggregate</i> (Blackberry) were dominant in these areas. Five vegetation associations and 151 scattered trees, including 16 <i>Acacia melanoxylon</i> (Blackwood), 52 <i>Eucalyptus obliqua</i> (Messmate Stringybark), one <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> (Rough-bark Manna Gum), 76 State Rare <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and six <i>Exocarpos cupressiformis</i> (Native Cherry) were recorded within the Project Area.</p> <p>A total of 106 scattered trees, which includes 10 <i>Acacia melanoxylon</i> (Blackwood), 44 <i>Eucalyptus obliqua</i> (Messmate Stringybark), one <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> (Rough-bark Manna</p>

Principle of clearance	Considerations
	<p>Gum), 48 State Rare <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum), three <i>Exocarpos cupressiformis</i> (Native Cherry) from poor to excellent in health.</p> <p>Vegetation associations were heavily degraded and introduced flora species were present in large numbers (particularly in A3). All trees were of a mature age and ranged from poor to excellent in health. Some trees contain hollows which could provide suitable habitat for fauna species.</p> <p>A total of 26 fauna species were recorded within the Project Area, 23 were birds and three were mammals. Two of these species are introduced fauna.</p> <p>No fauna species listed under the EPBC Act were recorded within the Project Area.</p> <p>Two fauna species listed under the NPW Act were recorded in the Project Area:</p> <ul style="list-style-type: none"> • Common Brushtail Possum (<i>Trichosurus vulpecula</i>) – State Rare; and • Yellow-tailed Black Cockatoo (<i>Zanda funerea whiteae</i>) – State Vulnerable. <p>A total of 15 threatened fauna species listed under the EPBC Act and/or NPW Act were assessed as highly likely / known to occur within the Project Area based on survey effort, suitable habitat and recent records:</p> <ul style="list-style-type: none"> • Bassian Thrush (<i>Zoothera lunulata halmaturina</i>) – nationally Endangered and State Rare; • Beautiful Firetail (<i>Stagonopleura bella samueli</i>) – nationally Endangered and State Rare; • Chestnut-rumped Heathwren (<i>Hylacola pyrrhopygia parkeri</i>) – nationally Endangered and State Endangered; • Common Brushtail Possum (<i>Trichosurus vulpecula</i>) – State Rare and observed within the Project Area; • Elegant Parrot (<i>Neophema elegans elegans</i>) – State Rare; • Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) – nationally Vulnerable and State Rare; and • Jacky Winter (<i>Microeca fascinans fascinans</i>) – State Rare; • Little Eagle (<i>Hieraaetus morphnoides</i>) – State Vulnerable; • Peregrine Falcon (<i>Falco peregrinus macropus</i>) – State Rare; • Scarlet Robin (<i>Petroica boodang boodang</i>) – State Rare; • Southern Brown Bandicoot (<i>Isodon obesulus obesulus</i>) – nationally Endangered and State Vulnerable. • Square-tailed Kite (<i>Lophoictinia isura</i>) – State Endangered; • White-winged Chough (<i>Corcorax melanorhamphos</i>) – State Rare; • Yellow-footed Antechinus (<i>Antechinus flavipes</i>) – State Vulnerable; and • Yellow-tailed Black Cockatoo (<i>Zanda funerea whiteae</i>) – State Vulnerable and observed within the Project Area. <p>An additional 17 fauna species listed under the EPBC Act and/or NPW Act were assessed as possible to occur within the Project Area based on survey effort, suitable habitat and recent records.</p> <p>Vegetation Associations Threatened Fauna Score – 0.1 (All VAs)</p>

Principle of clearance	Considerations
	<p>Unit biodiversity Score: A1a – 18.15 A1b – 17.61 A1c – 14.79 A2 – 33.39 A3 – 1.79</p> <p>Trees; Fauna Habitat Score – 1.8 (all trees) Biodiversity Score – from 0.33 to 11.25</p> <hr/> <p><u>Assessment against the principles</u></p> <p><u>Seriously at Variance</u> A1a, Alb, A1c, A2, A3 and all trees</p> <hr/> <p><u>Moderating factors that may be considered by the NVC</u></p> <p>Two threatened fauna species listed under the NPW Act were recorded in the Project Area and many other threatened fauna species were assessed as likely or possible to occur within the Project Area. Pockets of remnant native vegetation were often degraded by the presence of introduced flora species and fragmented from more intact remnant native vegetation but may be used by fauna as wildlife corridors to more intact and better quality native vegetation, particularly to the surrounding areas in MGCP. Similarly, a total of 52 of the 106 scattered trees that area proposed to be cleared within the Project Area contain hollows which could provide suitable breeding habitat for fauna species. Moreover, all these scattered trees provide suitable perching and foraging habitat for a number of fauna species within the Project Area.</p> <p>Given there are areas of better quality bushland surrounding the Project Area, in MGCP for instance, the clearance of 1.716 ha and 106 scattered trees is unlikely to lead to a long-term decrease in the population size of threatened fauna species or reduce their occupancy. Clearance is however likely to further fragment pockets of remnant native vegetation that provide wildlife corridors to better quality habitat surrounding the Project Area. The habitat is not considered to be critical to the survival of threatened fauna species and clearance is unlikely to lead to a decline in species or interfere with the recovery of any species.</p> <p>Introduced fauna species are present within the Project Area. Clearance of native vegetation is unlikely to introduce more invasive fauna species into the Project Area.</p>
Principle 1(c) – plants of a rare, vulnerable or endangered species	<p><u>Relevant information</u></p> <p>Remnant pockets of native vegetation coexist with large remnant scattered trees and planted vegetation (including exotic vegetation associated with the golf course) within the Project Area. The understorey in areas of native vegetation not directly associated with the golf course was heavily degraded and introduced flora species such as <i>Fumaria capreolata</i> (White-flower Fumitory), <i>Iris</i> sp. (Iris) and <i>Rubus fruticosus aggregate</i> (Blackberry) were dominant in these areas. Five vegetation associations and 151 scattered trees, including 16 <i>Acacia melanoxylon</i> (Blackwood), 52</p>

Principle of clearance	Considerations
	<p><i>Eucalyptus obliqua</i> (Messmate Stringybark), one <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> (Rough-bark Manna Gum), 76 State Rare <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and six <i>Exocarpos cupressiformis</i> (Native Cherry) were recorded within the Project Area.</p> <p>A total of 106 scattered trees, which includes 10 <i>Acacia melanoxylon</i> (Blackwood), 44 <i>Eucalyptus obliqua</i> (Messmate Stringybark), one <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> (Rough-bark Manna Gum), 48 State Rare <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and three <i>Exocarpos cupressiformis</i> (Native Cherry) from poor to excellent in health. Vegetation associations were heavily degraded and introduced flora species were present in large numbers (particularly in A3). All trees were of a mature age and ranged from poor to excellent in health. Some trees contain hollows which could provide suitable habitat for fauna species.</p> <p>No flora species listed under the EPBC Act were recorded within the Project Area.</p> <p>One flora species listed under the NPW Act as Rare was recorded in the Project Area:</p> <ul style="list-style-type: none"> • <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum). <p>This species was present in large numbers throughout the Project area in remnant patches of native vegetation and as scattered trees.</p> <p>The following flora species listed under the NPW Act were determined as likely to occur in the Project Area:</p> <ul style="list-style-type: none"> • <i>Acacia gunnii</i> (Ploughshare Wattle) – State Rare; • <i>Deyeuxia densa</i> (Heath Bent-grass) – State Rare; • <i>Deyeuxia minor</i> (Small Bent-grass) – State Vulnerable; • <i>Dianella longifolia</i> var. <i>grandis</i> (Pale Flax-lily) – State Rare; • <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) – State Rare and observed within the Project Area; • <i>Gastrodia sesamoides</i> (Potato Orchid) – State Rare; • <i>Rytidosperma tenuius</i> (Short-awn Wallaby-grass) – State Rare. <p>An additional 30 flora species listed under the NPW Act were assessed as possible to occur within the Project Area based on survey effort, recent records and suitable habitat.</p> <p>Threatened Flora Score(s) – All VAs – 0 All trees of species <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (0.3) All other trees (0)</p>
	<p><u>Assessment against the principles</u></p> <p><u>At Variance</u> All trees of species <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i></p>

Principle of clearance	Considerations
	<p><u>Not at Variance</u> All VAs All other tree species</p> <hr/> <p><u>Moderating factors that may be considered by the NVC</u></p> <p>One flora species listed under the NPW Act as Rare was recorded in the Project Area and many other threatened flora species were assessed as likely or possible to occur within the Project Area. The understorey in some areas of native vegetation not directly associated with the golf course was heavily degraded and introduced flora species were abundant, particularly in VA A3. However, some vegetation associations, such as A2 had a high presence of native species including spring flowering species such as <i>Pterostylis spp.</i> and <i>Bulbine bulbosa</i> for example. A total of 25 of the 62 scattered trees proposed for clearance are of the species <i>Eucalyptus viminalis ssp. viminalis</i> which is currently listed as Rare under the NPW Act. Many of these trees including those not listed under the NPW Act provide suitable perching, foraging, and breeding habitat for a number of fauna species within the Project Area.</p> <p>Given there are areas of better-quality bushland surrounding the Project Area, in MGCP for instance, the clearance of 1.716 ha and 106 scattered trees is unlikely to lead to a long-term decrease in the population size of threatened flora species or reduce their occupancy. Clearance is however likely to further fragment pockets of remnant native vegetation and fragment interconnecting pockets of scattered trees, such as the State Rare <i>Eucalyptus viminalis ssp. viminalis</i>. The habitat is not considered to be critical to the survival of threatened flora species and clearance is unlikely to lead to a decline in species or interfere with the recovery of any species. Introduced flora species are present in large numbers within the Project Area. Clearance of native vegetation is unlikely to introduce more invasive flora species into the Project Area.</p>
<p>Principle 1(d) – the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered</p>	<p><u>Relevant information</u></p> <p>No threatened communities under the EPBC Act or threatened ecosystems under the DEW Provisional list of threatened ecosystems are considered present within the clearance area.</p> <p>Threatened Community Score: 1</p> <hr/> <p><u>Assessment against the principles</u></p> <p>Not at Variance</p> <hr/> <p><u>Moderating factors that may be considered by the NVC</u></p> <p>N/A</p>
<p>Principle 1(e) – it is significant as a remnant of vegetation in an area which has been</p>	<p><u>Relevant information</u></p> <p>Uraidla IBRA Association remnancy – 26% Mount Lofty Ranges IBRA Subregion remnancy – 15%</p> <p>Five vegetation associations and 151 scattered trees, including 16 <i>Acacia melanoxylon</i> (Blackwood), 52 <i>Eucalyptus obliqua</i> (Messmate Stringybark), one <i>Eucalyptus viminalis ssp. cygnetensis</i> (Rough-</p>

Principle of clearance	Considerations
extensively cleared	<p>bark Manna Gum), 76 State Rare <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and six <i>Exocarpos cupressiformis</i> (Native Cherry) were recorded within the Project Area. All trees were of a mature age and ranged from poor to excellent in health. Some trees contain hollows which could provide suitable habitat for fauna species.</p> <p>Total Biodiversity Score – 447.54</p> <p><u>Assessment against the principles</u></p> <p><u>Seriously at Variance</u></p> <p><u>Moderating factors that may be considered by the NVC</u></p> <p>Native vegetation within the Uraidla IBRA Association has been extensively cleared in some areas. The Project Area is directly adjacent to MGCP and vegetation associations and scattered trees within the Project Area represent some of the vegetation that has not been cleared in this area. Areas within the Project Area have been cleared for the construction of the golf course but species within the Project Area have not been selectively removed within the Uraidla IBRA Association. Remnants that remain within the Project Area are in moderate condition but weed incursions are present, particularly on the edge of VA A1a.</p>
Principle 1(f) – it is growing in, or in association with, a wetland environment	<p><u>Relevant information</u></p> <p>Cox Creek runs through the Project Area from the adjacent MGCP. There are also three artificially constructed lakes or dams to the north of the Stirling Golf Club clubhouse and in the northern section of the Project Area. The areas of impact within the Project Area are not located within Cox Creek or any of the three artificially constructed lakes or dams.</p> <p><u>Assessment against the principles</u></p> <p><u>Not at Variance</u></p> <p><u>Moderating factors that may be considered by the NVC</u></p> <p>N/A</p>
Principle 1(g) – it contributes significantly to the amenity of the area in which it is growing or is situated	<p><u>Relevant information</u></p> <p>Remnant pockets of native vegetation coexist with large remnant scattered trees and planted vegetation (including exotic vegetation associated with the golf course) within the Project Area. Five vegetation associations and 151 scattered trees of species <i>Acacia melanoxylon</i> (Blackwood), <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> (Rough-bark Manna Gum), <i>Eucalyptus obliqua</i> (Messmate Stringybark), <i>Eucalyptus viminalis</i> ssp. <i>viminalis</i> (Manna Gum) and <i>Exocarpos cupressiformis</i> (Native Cherry). All trees were of a mature age and ranged from poor to excellent in health. Vegetation associations were heavily degraded and introduced flora species were present in large numbers</p>

Principle of clearance	Considerations
	(particularly in A3). Some trees contain hollows which could provide suitable habitat for fauna species. As such, any vegetation within the area would likely contribute to the amenity of the area.
	N/A
	<u>Moderating factors that may be considered by the NVC</u>
	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.

4.6. Risk assessment

The level of risk associated with the application

Table 15. Summary of the level of risk associated with the application.

Total clearance	No. of trees	106
	Area (ha)	1.716
	Total biodiversity Score	447.54
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1 (b)
Risk assessment outcome		Level 4

4.7. NVC guidelines

Other information that demonstrates that the clearance complies with any relevant NVC guidelines related to the activity

N/A

5. Clearance summary

A 35m clearance buffer from the eastern building face as a result of CFS constraints is applied. This applies to BAM A1a. A 20m CFS buffer is applicable elsewhere.

All BAM scoresheets have a loss factor of 1.0 applied and do not contain any trees. This is to reflect the clearance of understorey only.

Details of correspondence with NVC regarding the 35m buffer to the eastern most point of the hotel, and details on applicable loss factors is provided in Attachment 10.

Clearance Area(s) Summary table

BAMS

Block	Site	Species diversity score	Threatened Ecological community	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	1a	8	1	0	0.1	18.15	0.261	4.74	1	0	0	4.98	\$6,352.72	\$349.40
A	1b	16	1	0	0.1	17.61	1.307	23.01	1	0	0	24.16	\$31,055.06	\$1,708.03
A	1c	12	1	0	0.1	14.79	0.048	0.71	1	0	0	0.75	\$951.78	\$52.35
A	2	14	1	0	0.1	33.39	0.013	0.44	1	0	0	0.46	\$593.02	\$32.62
A	3	2	1	0	0.1	1.79	0.087	0.16	1	0	0	0.16	\$207.78	\$11.43
						Total	1.716	29.06				30.51	\$39,160.36	\$2,153.83

Scattered trees Summary table

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Total Biodiversity score	Loss factor	SEB Points required	SEB Payment (inclusive of admin and GST)
6	2	1.8	0.3	7.34	1.0	7.71	\$10,067.76
7	1	1.8	0	1.23	1.0	1.29	\$1,688.57
8	1	1.8	0	2.54	1.0	2.67	\$3,490.97
9	1	1.8	0.3	8.58	1.0	9.01	\$11,775.36
10	1	1.8	0	4.35	1.0	4.56	\$5,963.30
11	1	1.8	0	0.42	1.0	0.44	\$571.03
12	1	1.8	0.3	2.13	1.0	2.24	\$2,923.52
13	1	1.8	0.3	8.71	1.0	9.15	\$11,952.29
14	1	1.8	0.3	5.95	1.0	6.25	\$8,160.51
15	1	1.8	0	2.42	1.0	2.54	\$3,314.38
16	1	1.8	0.3	3.91	1.0	4.11	\$5,367.26
17	1	1.8	0.3	2.27	1.0	2.38	\$3,115.17
18	1	1.8	0.3	2.50	1.0	2.62	\$3,423.04
19	1	1.8	0.3	7.03	1.0	7.39	\$9,649.96
20	1	1.8	0	0.59	1.0	0.62	\$805.50
21	1	1.8	0	2.02	1.0	2.12	\$2,768.51
22	1	1.8	0	0.54	1.0	0.57	\$745.41
23	1	1.8	0	1.99	1.0	2.09	\$2,735.33
24	1	1.8	0.3	11.25	1.0	11.82	\$15,440.72
26	1	1.8	0.3	1.13	1.0	1.19	\$1,552.06
27	1	1.8	0.3	2.12	1.0	2.23	\$2,914.60
28	1	1.8	0.3	9.08	1.0	9.53	\$12,450.63
29	1	1.8	0.3	6.09	1.0	6.40	\$8,356.70
30	1	1.8	0.3	7.01	1.0	7.36	\$9,618.26
31	1	1.8	0.3	2.03	1.0	2.13	\$2,782.90
32	1	1.8	0.3	3.51	1.0	3.69	\$4,815.90
33	1	1.8	0.3	4.39	1.0	4.61	\$6,018.15
34	1	1.8	0.3	7.01	1.0	7.36	\$9,618.26
35	1	1.8	0.3	4.05	1.0	4.25	\$5,554.08

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Total Biodiversity score	Loss factor	SEB Points required	SEB Payment (inclusive of admin and GST)
36	1	1.8	0.3	4.53	1.0	4.76	\$6,216.52
37	1	1.8	0.3	4.84	1.0	5.09	\$6,646.17
41	1	1.8	0.3	6.14	1.0	6.44	\$8,418.64
42	1	1.8	0.3	4.15	1.0	4.36	\$5,697.00
43	1	1.8	0	3.66	1.0	3.85	\$5,026.51
44	1	1.8	0.3	1.42	1.0	1.49	\$1,941.57
45	1	1.8	0.3	2.43	1.0	2.56	\$3,340.35
46	1	1.8	0	2.50	1.0	2.63	\$3,432.31
47	1	1.8	0.3	4.27	1.0	4.48	\$5,857.64
48	1	1.8	0	2.51	1.0	2.64	\$3,449.57
49	1	1.8	0	2.51	1.0	2.64	\$3,442.93
50	1	1.8	0	6.66	1.0	6.99	\$9,132.02
51	1	1.8	0	4.07	1.0	4.27	\$5,577.73
52	1	1.8	0	4.51	1.0	4.74	\$6,188.97
53	1	1.8	0.3	9.60	1.0	10.08	\$13,173.55
54	1	1.8	0.3	4.67	1.0	4.90	\$6,406.20
55	1	1.8	0	2.59	1.0	2.72	\$3,554.36
56	1	1.8	0	4.47	1.0	4.69	\$6,134.13
57	1	1.8	0	2.35	1.0	2.47	\$3,220.73
58	1	1.8	0.3	7.63	1.0	8.01	\$10,470.21
59	1	1.8	0	3.61	1.0	3.80	\$4,958.68
60	1	1.8	0.3	7.00	1.0	7.35	\$9,600.17
61	1	1.8	0.3	4.29	1.0	4.50	\$5,882.15
62	1	1.8	0.3	1.19	1.0	1.25	\$1,636.57
63	1	1.8	0	0.52	1.0	0.55	\$713.93
64	1	1.8	0	1.36	1.0	1.43	\$1,865.96
65	1	1.8	0.3	3.64	1.0	3.82	\$4,989.77
66	1	1.8	0.3	3.64	1.0	3.82	\$4,987.02
67	1	1.8	0	3.48	1.0	3.66	\$4,780.19
68	1	1.8	0.3	2.42	1.0	2.54	\$3,315.03

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Total Biodiversity score	Loss factor	SEB Points required	SEB Payment (inclusive of admin and GST)
69	1	1.8	0	1.33	1.0	1.40	\$1,827.71
70	1	1.8	0	3.34	1.0	3.50	\$4,576.57
71	1	1.8	0	1.11	1.0	1.17	\$1,524.20
72	1	1.8	0	2.00	1.0	2.10	\$2,745.98
73	1	1.8	0	1.93	1.0	2.02	\$2,641.84
74	1	1.8	0	4.48	1.0	4.70	\$6,146.76
75	1	1.8	0	3.31	1.0	3.48	\$4,542.06
76	1	1.8	0	3.83	1.0	4.02	\$5,251.70
77	1	1.8	0	1.18	1.0	1.23	\$1,612.80
78	1	1.8	0	4.23	1.0	4.44	\$5,796.67
79	1	1.8	0	0.96	1.0	1.01	\$1,318.95
80	6	1.8	0	2.01	1.0	2.11	\$2,752.18
81	1	1.8	0	3.64	1.0	3.82	\$4,991.60
82	1	1.8	0	3.95	1.0	4.15	\$5,419.37
83	1	1.8	0	6.49	1.0	6.82	\$8,909.50
84	1	1.8	0	5.93	1.0	6.23	\$8,141.61
85	1	1.8	0	6.55	1.0	6.88	\$8,985.67
86	1	1.8	0	3.57	1.0	3.75	\$4,893.27
87	1	1.8	0.3	6.33	1.0	6.65	\$8,690.62
88	1	1.8	0.3	2.53	1.0	2.66	\$3,472.90
89	1	1.8	0	3.73	1.0	3.91	\$5,114.49
96	1	1.8	0.3	7.39	1.0	7.76	\$10,140.97
100	1	1.8	0.3	1.11	1.0	1.17	\$1,526.13
104	1	1.8	0.3	4.38	1.0	4.59	\$6,002.59
105	1	1.8	0.3	8.30	1.0	8.71	\$11,381.15
120	1	1.8	0	4.45	1.0	4.68	\$6,111.03
121	1	1.8	0	4.47	1.0	4.70	\$6,138.34
122	1	1.8	0.3	9.08	1.0	9.53	\$12,456.01
123	1	1.8	0.3	8.21	1.0	8.62	\$11,265.13
124	1	1.8	0	0.42	1.0	0.44	\$578.38

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Total Biodiversity score	Loss factor	SEB Points required	SEB Payment (inclusive of admin and GST)
125	1	1.8	0	7.12	1.0	7.48	\$9,769.86
126	1	1.8	0	4.49	1.0	4.71	\$6,159.40
127	1	1.8	0	4.84	1.0	5.09	\$6,645.06
131	1	1.8	0	1.41	1.0	1.48	\$1,938.28
132	1	1.8	0	4.10	1.0	4.30	\$5,621.27
133	1	1.8	0.3	7.01	1.0	7.36	\$9,611.47
134	1	1.8	0	4.59	1.0	4.82	\$6,292.15
135	1	1.8	0.3	7.55	1.0	7.93	\$10,360.47
139	1	1.8	0	6.56	1.0	6.88	\$8,995.76
144	1	1.8	0	7.31	1.0	7.69	\$10,034.45
145	1	1.8	0.3	4.40	1.0	4.62	\$6,041.54
Total	106			418.48		439.41	\$574,122.61

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	447.54	469.92	583,352.41	\$32,084.39	\$615,436.80

Economies of Scale Factor	0.5
Rainfall (mm)	917 - 926

6. Significant Environmental Benefit

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

ACHIEVING AN SEB

Indicate how the SEB will be achieved by ticking the appropriate box and providing the associated information:

- Establish a new SEB Area on land owned by the proponent.
- Use SEB Credit that the proponent has established.
- 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

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:

The total SEB offset required for the clearance of 1.716 ha and 106 scattered trees is **\$615,436.80**, which includes a **\$32,084.39** administration fee.

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8. Appendices

Appendix 1. List of flora species observed in the Project Area

Scientific Name	Common Name	EPBC Act	NPW Act
<i>Acacia mearnsii</i> *	Black Wattle		
<i>Acacia melanoxylon</i>	Blackwood		
<i>Acaena echinata</i>	Sheep's Burr		
<i>Acrotriche serrulata</i>	Cushion Ground-berry		
<i>Agapanthus praecox</i> ssp. <i>Orientalis</i> *			
<i>Allium triquetrum</i> *	Three-cornered Garlic		
<i>Anagallis</i> sp.*			
<i>Arthropodium</i> sp.	Vanilla-lily		
<i>Banksia marginata</i>	Silver Banksia		
<i>Briza maxima</i> *	Large Quaking-grass		
<i>Bulbine bulbosa</i>	Bulbine-lily		
<i>Bursaria spinosa</i> ssp. <i>spinosa</i>	Sweet Bursaria		
<i>Caesia calliantha</i>	Blue Grass-lily		
<i>Callitris gracilis</i>	Southern Cypress Pine		
<i>Cassytha</i> sp.	Dodder-laurel		
<i>Cenchrus clandestinus</i> *	Kikuyu		
<i>Craspedia variabilis</i>	Billy-buttons		
<i>Cytisus scoparius</i> *	English Broom		
<i>Dactylis glomerata</i> *	Cocksfoot		
<i>Daviesia leptophylla</i>	Narrow-leaf Bitter-pea		
<i>Dianella revoluta</i> var. <i>revoluta</i>	Black-anther Flax-lily		
<i>Dichondra repens</i>	Kidney Weed		
<i>Dillwynia hispida</i>	Red Parrot-pea		
<i>Diuris pardina</i>	Spotted Donkey-orchid		
<i>Drosera whittakeri</i>	Scented Sundew		
<i>Epacris impressa</i>	Common Heath		
<i>Eucalyptus obliqua</i>	Messmate Stringybark		
<i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i>	Rough-bark Manna Gum		
<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	Manna Gum		R
<i>Exocarpos cupressiformis</i>	Native Cherry		
<i>Freesia cultivar</i> *	Freesia		
<i>Fumaria capreolata</i> *	White-flower Fumitory		
<i>Galium aparine</i> *	Cleavers		
<i>Genista monspessulana</i> *	Montpellier Broom		
<i>Geranium</i> sp.	Geranium		

Scientific Name	Common Name	EPBC Act	NPW Act
<i>Gonocarpus</i> sp.	Raspwort		
<i>Hakea</i> sp.	Hakea/Needlewood		
<i>Hedera helix</i> *	English Ivy		
<i>Hibbertia</i> sp.	Guinea-flower		
<i>Hypochaeris glabra</i> *	Smooth Cat's Ear		
<i>Iris</i> sp.*	Iris		
<i>Ixodia achillaeoides</i> ssp. <i>alata</i>	Hills Daisy		
<i>Kennedia prostrata</i>	Scarlet Runner		
<i>Lepidosperma semiteres</i>	Wire Rapier-sedge		
<i>Leptospermum continentale</i>	Prickly Tea-tree		
<i>Leptospermum myrsinoides</i>	Heath Tea-tree		
<i>Lomandra densiflora</i>	Soft Tussock Mat-rush		
<i>Lomandra juncea</i>	Desert Mat-rush		
<i>Lomandra micrantha</i> ssp. <i>micrantha</i>	Small-flower Mat-rush		
<i>Lomandra multiflora</i> ssp.	Many-flower Mat-rush		
<i>Luzula meridionalis</i>	Common Wood-rush		
<i>Moraea flaccida</i> *	One-leaf Cape Tulip		
<i>Moraea setifolia</i> *	Thread Iris		
<i>Narcissus</i> sp.*			
<i>Onopordum acanthium</i> *	Scotch Thistle		
<i>Oxalis perennans</i>	Native Sorrel		
<i>Oxalis pes-caprae</i> *	Soursob		
<i>Oxalis purpurea</i> *	One-o'clock		
<i>Pentameris pallida</i> *	Pussy Tail		
<i>Phalaris aquatica</i> *	Phalaris		
<i>Pinus radiata</i> *	Radiata Pine		
<i>Pittosporum undulatum</i> *	Sweet Pittosporum		
<i>Plantago lanceolata</i> var.*	Ribwort		
<i>Platylobium obtusangulum</i>	Holly Flat-pea		
<i>Pteridium esculentum</i> ssp. <i>esculentum</i>	Bracken Fern		
<i>Pterostylis nana</i>	Dwarf Greenhood		
<i>Pterostylis nutans</i>	Nodding Greenhood		
<i>Pterostylis pedunculata</i>	Maroon-hood		
<i>Pultenaea daphnoides</i>	Large-leaf Bush Pea		
<i>Quercus ilex</i> *			
<i>Ranunculus arvensis</i> *			
<i>Rhamnus alaternus</i> *	Blowfly Bush		
<i>Romulea</i> sp.*	Onion-grass		
<i>Rosa canina</i> *	Dog Rose		
<i>Rubus fruticosus aggregate</i> *	Blackberry		
<i>Rumex</i> sp.*	Dock		

Scientific Name	Common Name	EPBC Act	NPW Act
<i>Senecio hypoleucus</i>	Pale Groundsel		
<i>Senecio pterophorus</i> *	African Daisy		
<i>Sonchus sp.</i> *	Sow-thistle		
<i>Sporobolus africanus</i> *	Rat-tail Grass		
<i>Stackhousia monogyna</i>	Creamy Candles		
<i>Styphelia humifusa</i>	Cranberry Heath		
<i>Tetradlea pilosa</i>	Hairy Pink-bells		
<i>Themeda triandra</i>	Kangaroo Grass		
<i>Ulex europaeus</i> *	Gorse		
<i>Viburnum tinus</i> *	Laurestinus		
<i>Vicia sativa ssp.</i> *	Common Vetch		
<i>Vinca major</i> *	Blue Periwinkle		
<i>Watsonia sp.</i> *	Watsonia		

Conservation status:

Aus: Australia (EPBC Act). **SA:** South Australia (NPW Act). **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. **Mi (W):** listed as a Migratory Wetland species under the EPBC Act. **Mi (T):** listed as a Migratory Terrestrial species under the EPBC Act. **Mi (Ma):** listed as a Migratory Marine species under the EPBC Act.

* indicates an introduced species.

Appendix 2. List of fauna species observed in the Project Area

Scientific Name	Common Name	EPBC Act	NPW Act	Number of individuals
AVES				
<i>Acanthiza lineata</i>	Striated Thornbill			3
<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill			2
<i>Anthochaera carunculata</i>	Red Wattlebird			1
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo			1+
<i>Cacatua sanguinea gymnopsis</i>	Little Corella			1+
<i>Caligavis chrysops</i>	Yellow-faced Honeyeater			2
<i>Chenonetta jubata</i>	Maned Duck			1+
<i>Colluricincla harmonica</i>	Grey Shrikethrush			1
<i>Cormobates leucophaea</i>	White-throated Treecreeper			2
<i>Corvus mellori</i>	Little Raven			1
<i>Dacelo novaeguineae novaeguineae</i>	Laughing Kookaburra			3
<i>Dicaeum hirundinaceum hirundinaceum</i>	Mistletoebird			1
<i>Egretta novaehollandiae</i>	White-faced Heron			1 (flying over)
<i>Gymnorhina tibicen</i>	Australian Magpie			1+
<i>Malurus cyaneus</i>	Superb Fairywren			1+
<i>Phaps chalcoptera</i>	Common Bronzewing			1
<i>Platycercus elegans</i>	Crimson Rosella			2
<i>Rhipidura albiscapa</i>	Grey Fantail			1
<i>Smicronis brevirostris</i>	Weebill			1+
<i>Strepera versicolor</i>	Grey Currawong			1
<i>Trichoglossus moluccanus moluccanus</i>	Rainbow Lorikeet			2
<i>Turdus merula merula*</i>	Common Blackbird			1+
<i>Zanda funerea whiteae</i>	Yellow-tailed Black Cockatoo		V	4
MAMMLIA				
<i>MACROPODIDAE</i>	Kangaroos			1
<i>Oryctolagus cuniculus*</i>	European Rabbit			1+
<i>Trichosurus vulpecula</i>	Common Brushtail Possum		R	scat observed only

Conservation status:

Aus: Australia (EPBC Act). SA: South Australia (NPW Act). 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. Mi (W): listed as a Migratory Wetland species under the EPBC Act. Mi (T): listed as a Migratory Terrestrial species under the EPBC Act. Mi (Ma): listed as a Migratory Marine species under the EPBC Act.

* indicates an introduced species.

Appendix 3. Scattered tree using fauna species in the Project Area

Scientific name	Common name	EPBC Act	NPW Act	MLR	Resource use	Habitat / status
AVES	Birds					
<i>Ninox boobook</i>	Australian Boobook			NT	P, H	w
<i>Aegotheles cristatus cristatus</i>	Australian Owlet-nightjar			RA	H	w
<i>Daphoenositta chrysoptera pileata</i>	Black-capped Sittella/Varied Sittella			VU	F	w
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater		V	CR	P, F	w
<i>Climacteris picumnus picumnus</i>	Brown Treecreeper			VU	P, H	w
<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater			NT	P, F	w
<i>Melopsittacus undulatus</i>	Budgerigar			RA	P, H	s
<i>Nymphicus hollandicus</i>	Cockatiel			RA	P, H	s
<i>Artamus cyanopterus</i>	Dusky Woodswallow			RA	P	w
<i>Neophema elegans elegans</i>	Elegant Parrot		R	VU	P, H	w
<i>Chalcites basalis</i>	Horsfield's Bronze Cuckoo			NT	P	s
<i>Microeca fascinans fascinans</i>	Jacky Winter		R	CR	P	w
<i>Hieraaetus morphnoides</i>	Little Eagle		V	EN	P	w
<i>Anas superciliosa</i>	Pacific Black Duck			RA	H	s
<i>Geopelia placida placida</i>	Peaceful Dove			VU	P	w
<i>Falco peregrinus macropus</i>	Peregrine Falcon		R	RA	P, H, N	w/r
<i>Parvipsitta porphyrocephala</i>	Purple-crowned Lorikeet			NT	P, H, F	w/s
<i>Merops ornatus</i>	Rainbow Bee-eater			VU	P	s
<i>Psephotus haematonotus haematonotus</i>	Red-rumped Parrot			NT	P, H	w/r
<i>Pachycephala rufiventris</i>	Rufous Whistler			NT	P, F	w/s
<i>Todiramphus sanctus sanctus</i>	Sacred Kingfisher			NT	P, H	w
<i>Petroica boodang boodang</i>	Scarlet Robin		R	VU	P	w
<i>Zosterops lateralis</i>	Silvereye			NT	P, F	w/s
<i>Pardalotus punctatus</i>	Spotted Pardalote			NT	P, F	w/s

Scientific name	Common name	EPBC Act	NPW Act	MLR	Resource use	Habitat / status
<i>Lophoictinia isura</i>	Square-tailed Kite		E	EN	P	s
<i>Plectorhyncha lanceolata</i>	Striped Honeyeater		R	EX	P, F	w
<i>Petrochelidon nigricans</i>	Tree Martin			NT	P, H	w/s
<i>Artamus superciliosus</i>	White-browed Woodswallow			RA	P	s
<i>Melithreptus lunatus</i>	White-naped Honeyeater			NT	P, F	w
<i>Ardea pacifica</i>	White-necked Heron			VU	P, N	s
<i>Rhipidura leucophrys leucophrys</i>	Willie Wagtail			NT	P, N, F	w/r
<i>Acanthiza nana</i>	Yellow Thornbill			NT	P, F	w
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill			NT	P, N	w/r
<i>Zanda funerea whiteae</i>	Yellow-tailed Black Cockatoo		V	VU	P, H	w
MAMMALIA	Mammals					
<i>Trichosurus vulpecula</i>	Common Brushtail Possum		R	LC	H, N, F	w/r
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum			RA	H, N, F	w/r
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	R	RA	P, F	r
<p>EPBC Act: Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable</p> <p>NPW Act: CE = Critically endangered, E = Endangered, V = Vulnerable, R = Rare</p> <p>MLR: LC = Least Concern (Common), NT = Near Threatened (Uncommon), RA = Rare, VU = Vulnerable, EN = Endangered, CR = Critically Endangered</p> <p>Resource use: P = perching/roosting, N = nesting, H = using hollow for nesting/roosting, F = feeding</p> <p>Habitat/status: s = seasonal (includes waterbirds using trees near seasonal wetlands, seasonal and nomadic species), w = woodland birds that occasionally use adjacent scattered trees, r=species that can reside in scattered trees.</p> <p>Sources: BSBSA records within 5 km of the Project Area (DEW 2022b), Scattered Tree Assessment Manual (NVC 2020b).</p>						

Appendix 4. BDBSA flora recorded within 5 km of the Project Area

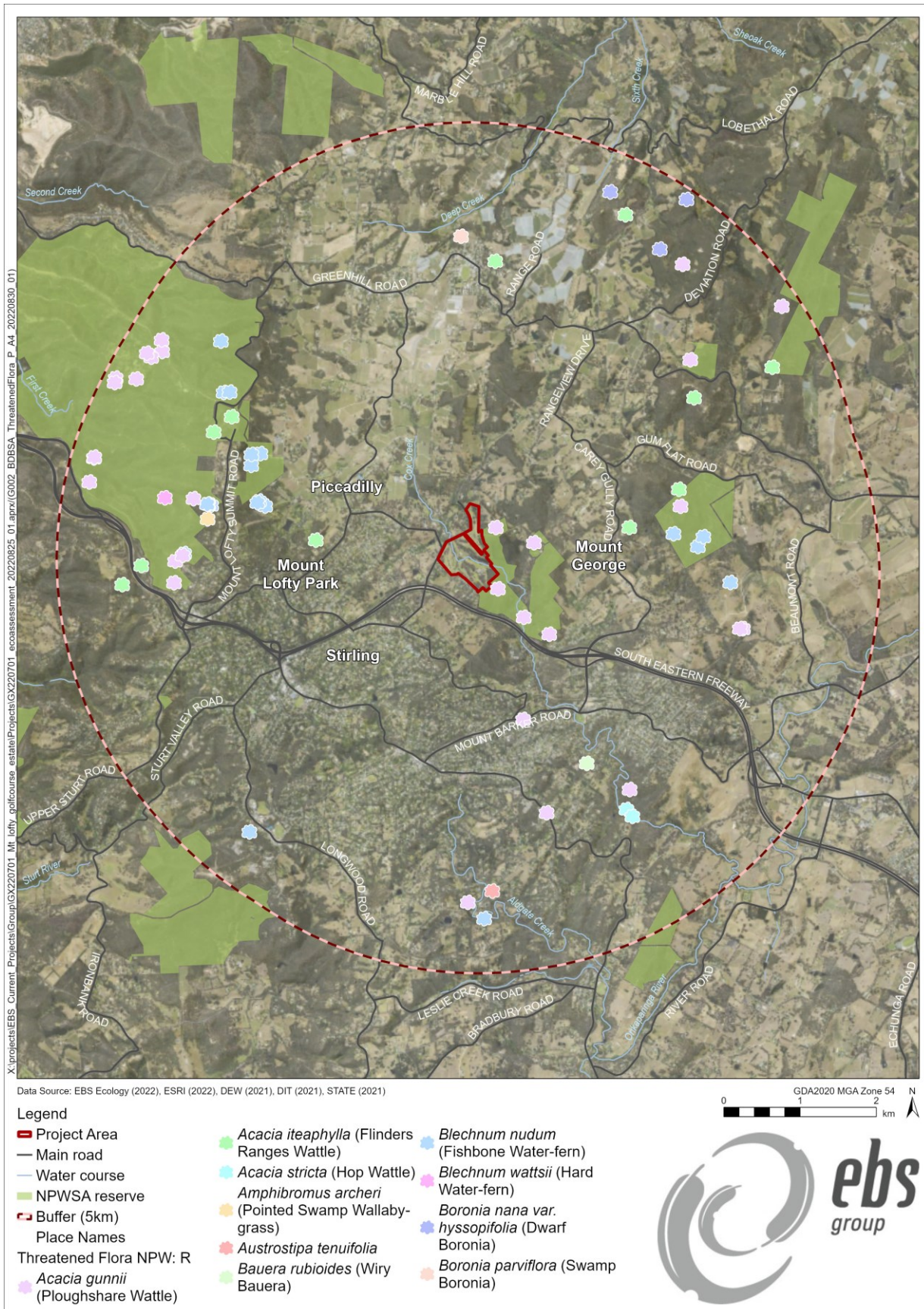


Figure 10. BDBSA flora record for State listed Rare species, located within 5 km of the Project Area (Map 1 of 5).

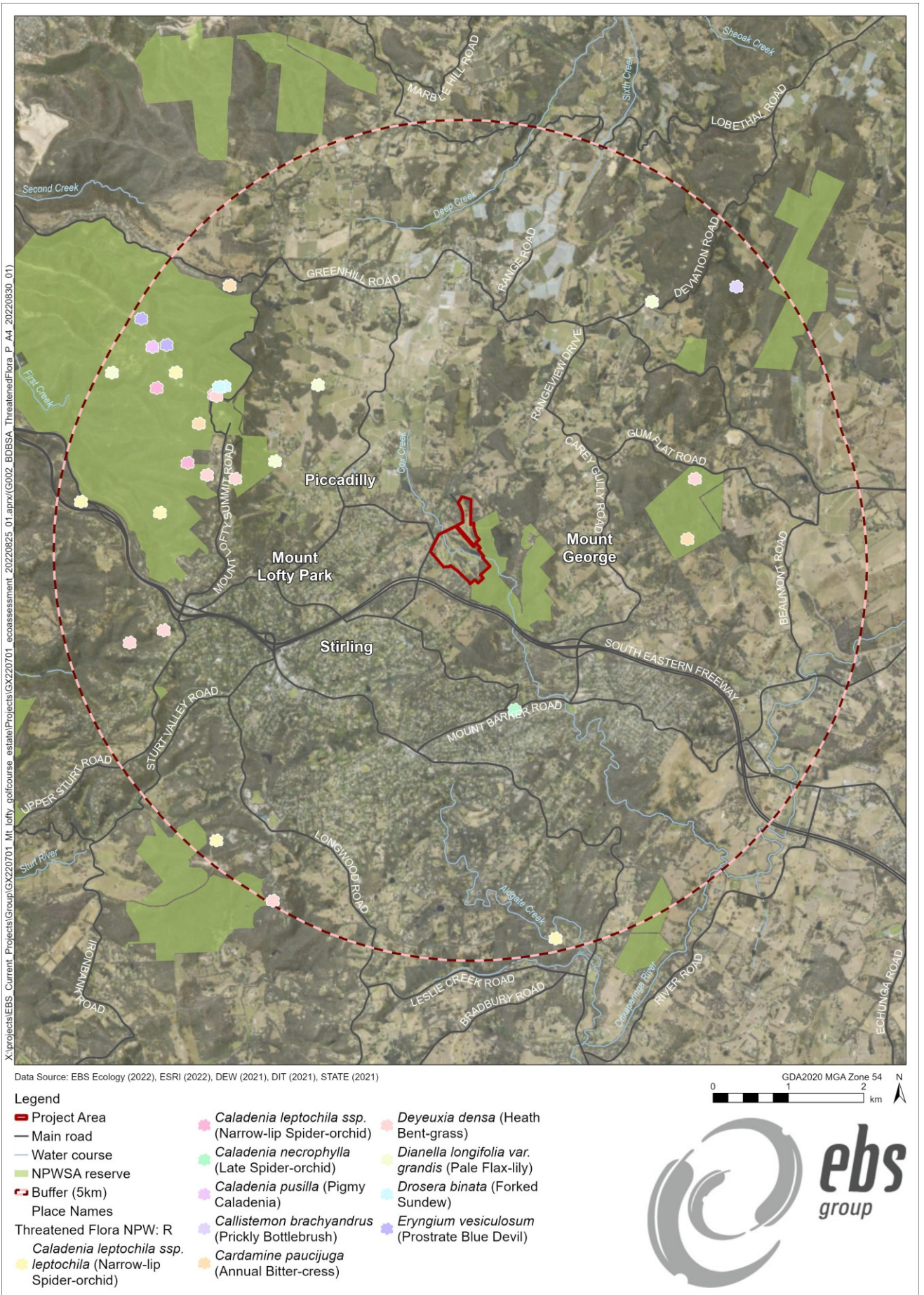


Figure 11. BDBSA flora record for State listed Rare species, located within 5 km of the Project Area (Map 2 of 5).

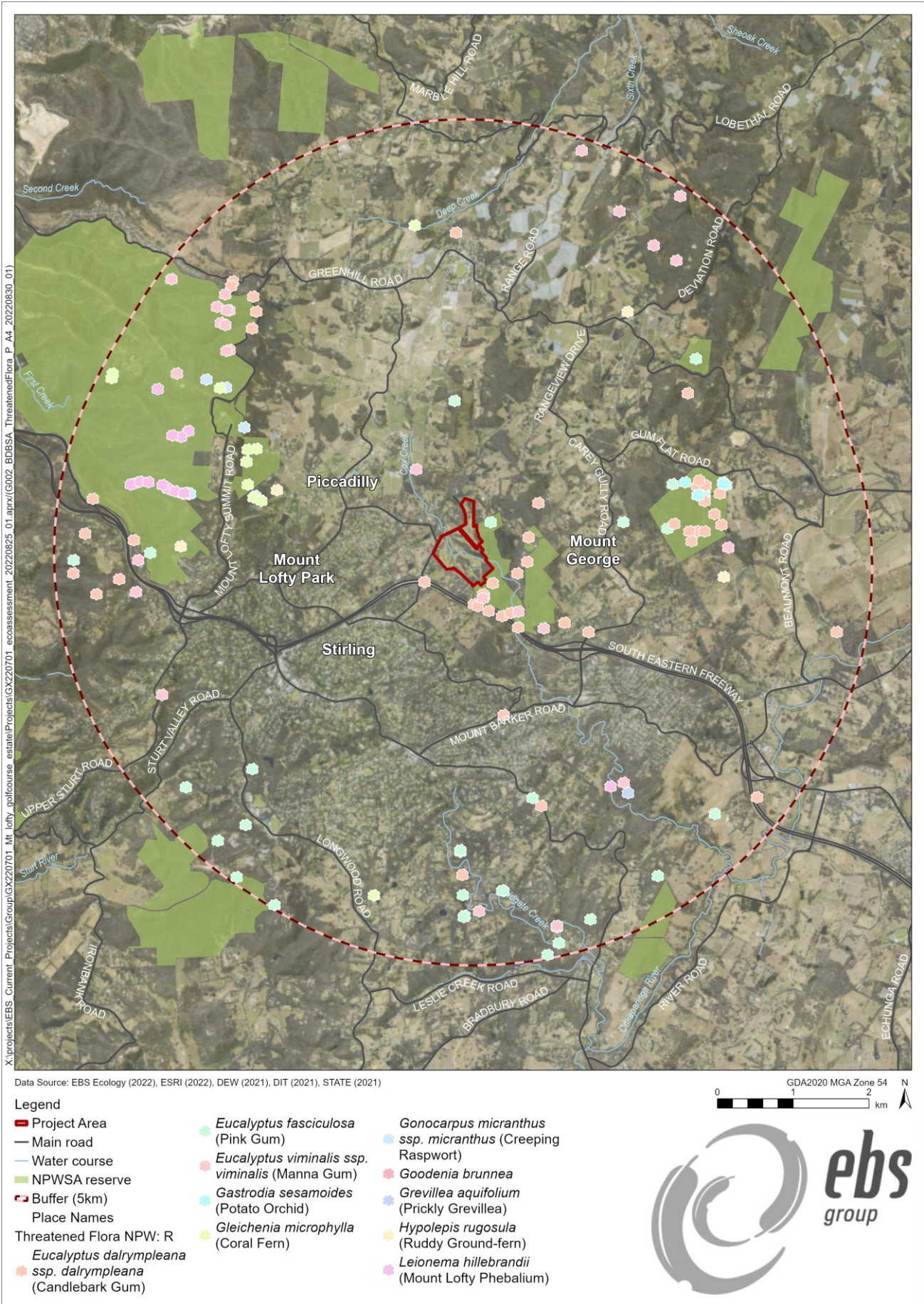
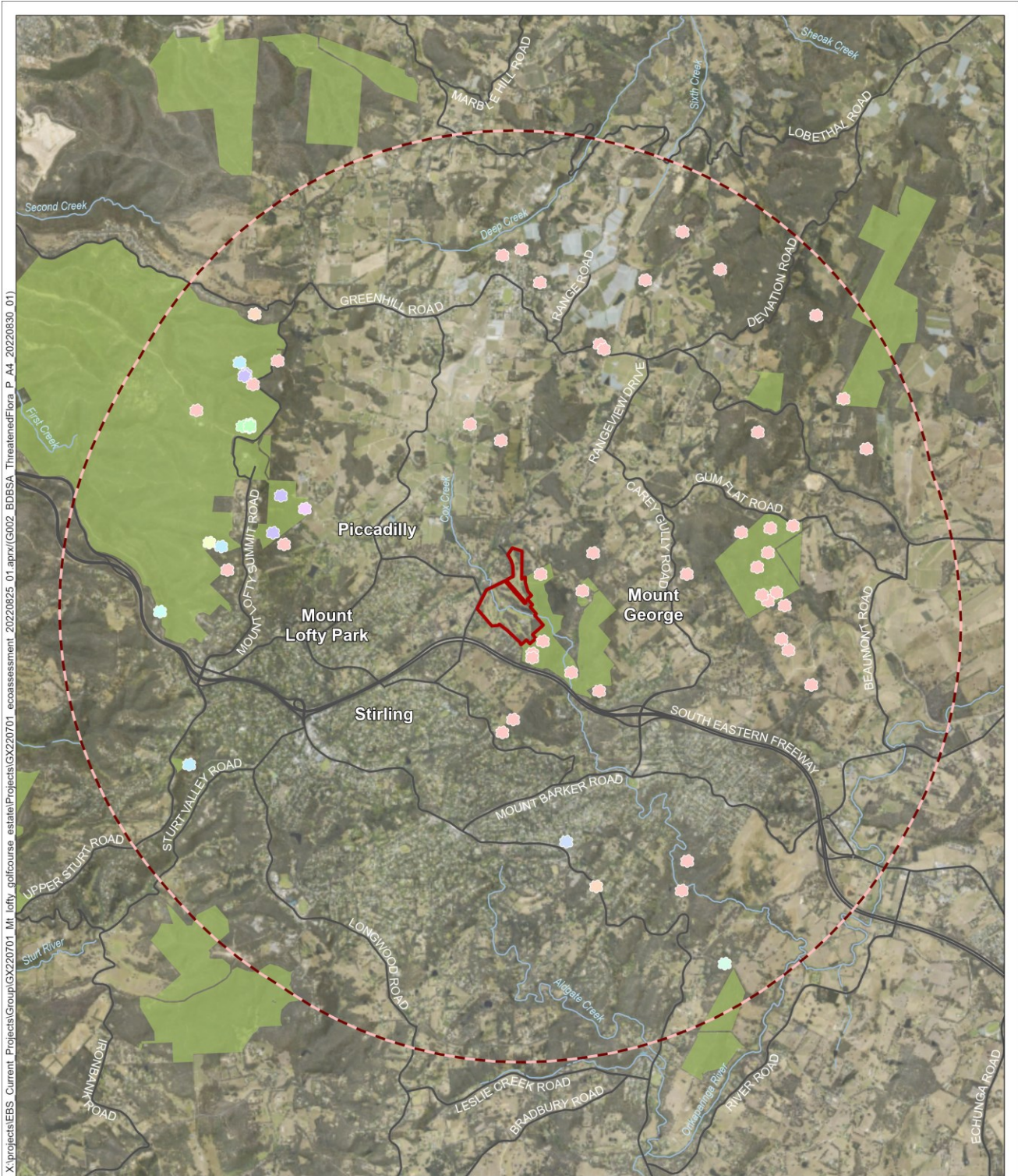


Figure 12. BDBSA flora record for State listed Rare species, located within 5 km of the Project Area (Map 3 of 5).



X:\projects\EBS - Current - Projects\Group\GX220701 - Mt. Lofty golfcourse estate\Projects\GX220701 - ecoassessment - 20220825 01.aprx\G002 - BDBSA - ThreatenedFlora - P. A4 - 20220830 - 01

Data Source: EBS Ecology (2022), ESRI (2022), DEW (2021), DIT (2021), STATE (2021)

Legend

- ▬ Project Area
- Main road
- Water course
- NPWSA reserve
- ▬ Buffer (5km)
- Place Names
- Threatened Flora NPW: R
- *Logania saxatilis* (Rock Logania)

- *Lycopodiella lateralis* (Slender Clubmoss)
- *Machaerina gunnii* (Slender Twig-rush)
- *Melaleuca armillaris* ssp. *akineta* (Needle-leaf Honey-myrtle)
- *Mentha diemenica* (Slender Mint)

- *Nymphoides crenata* (Wavy Marshwort)
- *Poa umbricola* (Shade Tussock-grass)
- *Pultenaea graveolens* (Scented Bush-pea)
- *Pultenaea kraehenbuehlii* (Tothill Bush-pea)
- *Rytidosperma laeve* (Smooth Wallaby-grass)

GDA2020 MGA Zone 54
0 1 2 km



Figure 13. BDBSA flora record for State listed Rare species, located within 5 km of the Project Area (Map 4 of 5).

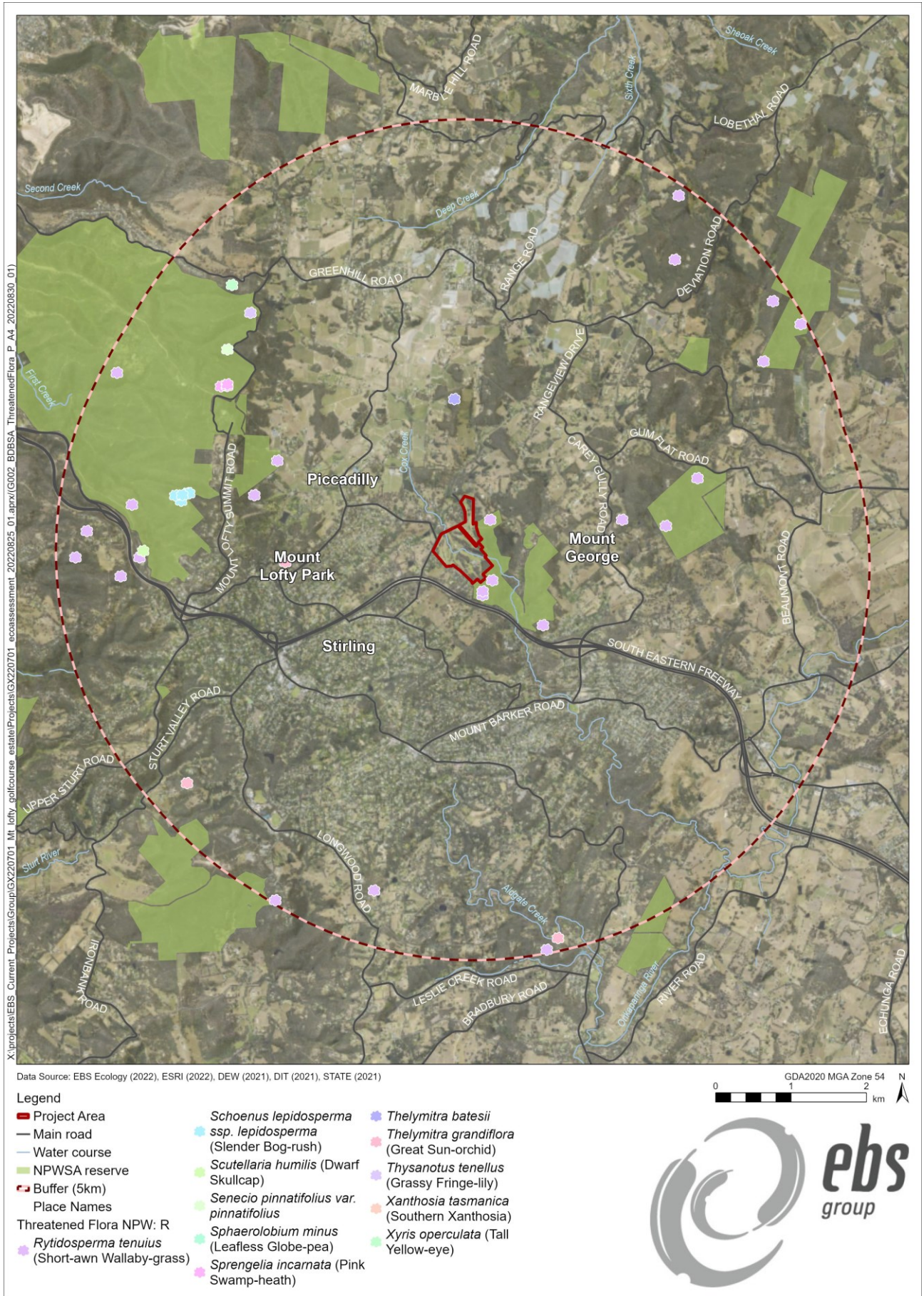


Figure 14. BDBSA flora record for State listed Rare species, located within 5 km of the Project Area (Map 5 of 5).

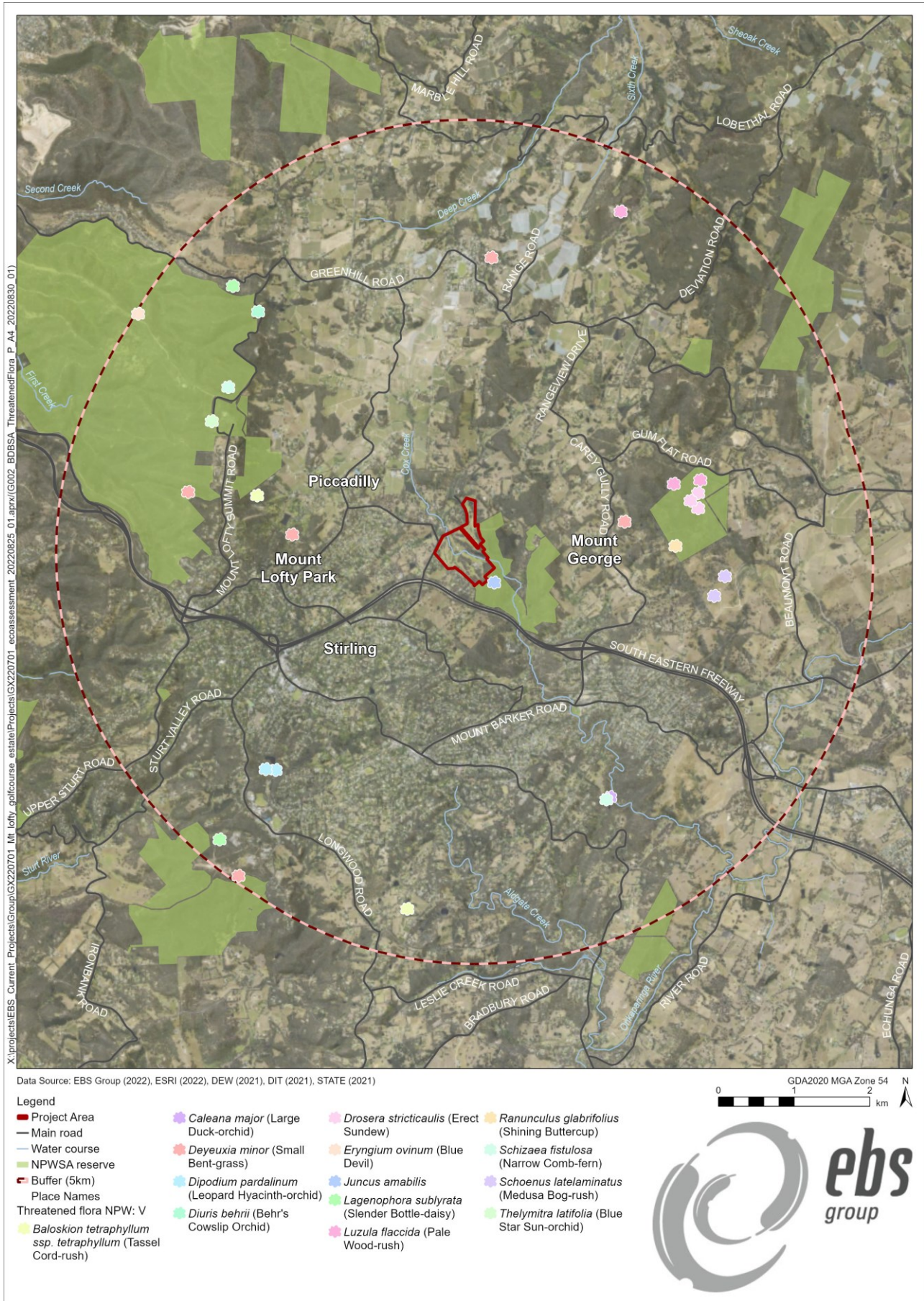


Figure 15. BDBSA flora record for State listed Vulnerable species, located within 5 km of the Project Area.

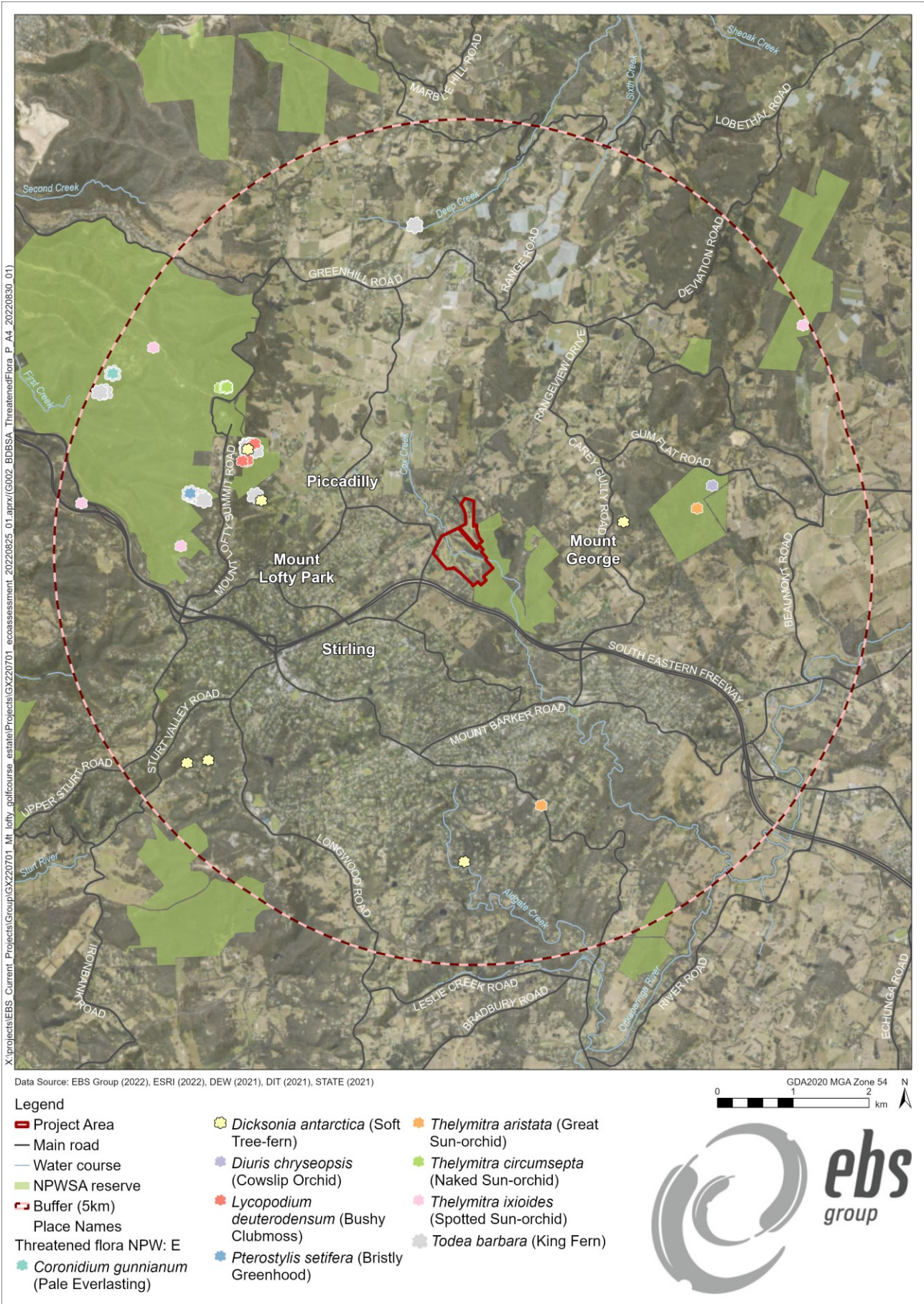


Figure 16. BDBSA flora record for State listed Endangered species, located within 5 km of the Project Area.

Appendix 5. Assessment of likelihood of national (EPBC Act) and State (NPW Act) listed threatened flora identified by the PMST (DCCEEW 2023) and BDBSA (DEW 2022b) to occur in the Project Area (green shading = known / highly likely or likely to occur, orange shading = possible to occur).

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Acacia gunnii</i>	Ploughshare Wattle		R	2	2022	Usually on rocky hillsides and amongst rocky outcrops in open forest, associated with <i>Eucalyptus obliqua</i> and <i>Eucalyptus baxteri</i> (SSCC 2018).	Likely – Some suitable habitat within the Project Area and <i>E obliqua</i> observed during the field survey.
<i>Acacia iteaphylla</i>	Flinders Ranges Wattle		R	2	2022	Naturally occurs in the Flinders Ranges, across to the Gawler Ranges, and on the Eyre Peninsula. Naturalised beyond its native range in some parts of south-eastern and southern SA (SSCC 2018).	Possible – Some suitable within the Project Area. Although widely planted, regeneration of this species is likely.
<i>Acacia stricta</i>	Hop Wattle		R	2	2005	Found primarily in small, localised areas in the southeast of SA between Millicent and Mount Gambier in association with <i>Eucalyptus baxteri</i> over a heathy understorey, often in damp areas (SSCC 2018).	Unlikely – Despite recent records, this species is generally confined to the southeast of SA.
<i>Amphibromus archeri</i>	Pointed Swamp Wallaby-grass		R	2	2018	Grows in damp areas such as lagoons, waterholes, and swamps, often on predominantly sandy soils. Found in KI, in the Mount Lofty Ranges and in the southeast of SA (SSCC 2018).	Possible – Recent records and some suitable habitat including water sources are present in the Project Area, though not within proposed areas of impact.
<i>Austrostipa tenuifolia</i>			R	2	2018	Found on the Eyre Peninsula, Mount Lofty Ranges, the Murray, and the upper South-east in South Australia, growing sandy soils in grassland or grassy woodland associated with <i>Callitris</i> or <i>Allocasuarina</i> (SSCC 2018).	Possible – Recent records, though associated vegetation community is not present in Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Baloskion tetraphyllum</i> ssp. <i>tetraphyllum</i>	Tassel Cord-rush		V	2	2012	Very limited occurrences in the lower South-east of South Australia, between Millicent and Mount Gambier, usually in swamping areas (SSCC 2018).	Unlikely – Despite recent records, this species is generally confined to the southeast of SA.
<i>Bauera rubioides</i>	Wiry Bauera		R	2	2011	Found on Kangaroo Island and in the southern Mount Lofty Ranges in South Australia, growing in damp heathland and heathy forests (SSCC 2018).	Unlikely – Despite recent records, this species is generally confined to Kangaroo Island.
<i>Blechnum nudum</i>	Fishbone Water-fern		R	2	2022	Found on Kangaroo Island and southern Mount Lofty Ranges in South Australia, growing along stream banks in shaded gullies (SSCC 2018).	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.
<i>Blechnum wattsii</i>	Hard Water-fern		R	2	2010	SA: SL KI SE. The habitat of this species is usually identical to those of <i>Blechnum minus</i> and <i>Blechnum nudum</i> . These three species always co-occur and are often intermingled within the same clump. Grows in wet forest types such as rainforest, wet eucalypt forest and riparian vegetation where it can form the dominant groundcover. Grows in great profusion in permanently damp areas and is most abundant on stream banks and near waterfalls. It can sometimes form extensive colonies on flatter sites or in gully bottoms.	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.
<i>Boronia nana</i> var. <i>hyssopifolia</i>	Dwarf Boronia		R	2	2022	Occurs in the SE region of SA. Growing in sandy heath with <i>Eucalyptus obliqua</i> , <i>Leptospermum continentale</i> , <i>Stylidium graminifolium</i> , <i>Thelionema caespitosum</i> and dune crests with <i>Eucalyptus baxteri</i> association.	Possible – Some suitable habitat within the Project Area including <i>Eucalyptus</i> spp.
<i>Boronia parviflora</i>	Swamp Boronia		R	2	2018	Found on the western end of Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia growing in wet heath and swampy areas (SSCC 2018).	Unlikely – Minimal suitable swampy habitat in Project Area. Isolated nearby record not positively identified.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Caladenia argocalla</i>	White-beauty Spider-orchid	EN	E	1	Species or species habitat likely to occur within area	Endemic to the Mount Lofty Ranges Region of SA. Occurs in intact grassy woodlands often with <i>E. leucoxyton</i> (South Australian Blue Gum) and <i>Allocasuarina verticillata</i> (Drooping Sheoak). Usually grows on a gentle slope with a southerly aspect and in clay loam soils. Flowering from late September to October (Quarmby 2010).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Caladenia behrii</i>	Pink-lipped Spider-orchid	EN	E	1	Species or species habitat likely to occur within area	Occurs on the Fleurieu Peninsula of SA. Grows in fertile, shallow loams, amongst <i>Eucalyptus goniocalyx</i> / <i>E. fasciculosa</i> woodland and amongst <i>E. obliqua</i> / <i>E. microcarpa</i> / <i>E. leucoxyton</i> woodland. The understorey is usually open and shrubby. Also recorded amongst <i>E. fasciculosa</i> & <i>Xanthorrhoea semiplana</i> . Generally found in quartzite-derived soils on steep south facing slopes but also on ridge tops and occasionally near creek beds. Often grows alongside bushwalking paths, vehicle tracks or roads due to the openness of these locations (TSSC 2021).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Caladenia gladiolata</i>	Bayonet Spider-orchid	EN	E	1	Species or species habitat likely to occur within area	Occurs singly or in small groups in shrubby or grassy woodland and forest in well-drained soils dominated by <i>Eucalyptus leucoxyton</i> , <i>Eucalyptus cladocalyx</i> or <i>Eucalyptus fasciculosa</i> . Only known from a few populations (Quarmby 2010).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Caladenia leptochila</i> ssp. <i>leptochila</i>	Narrow-lip Spider-orchid		R	2	2020	Found growing in clay or gravelly soils in shrubby forest in the Mount Lofty Ranges (Jones, 2006).	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Caladenia necrophylla</i>	Late Spider-orchid		R	2	2008	Mainly occurs in the south-east region of SA but has also been found in EP, KI, MU regions. Grows in heathy open forest, coastal shrub, heathland, tea-tree scrub.	Unlikely – Despite recent records, this species is generally confined to the southeast of SA.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Caladenia pusilla</i>	Pigmy Caladenia		R	2	2013	SA: FR EP SL KI SE. Within the Eyre Peninsula region grows in Koppio Hills and Blue gum woodland. On KI, grows on mounds near river, sandy clay in heath. Within the Southern Lofty region, grows in stringybark scrub.	Possible – Some suitable habitat within the Project Area including stringybark scrub.
<i>Caladenia rigida</i>	Stiff White Spider-orchid	EN	E	1	Species or species habitat likely to occur within area	Inhabits ridge tops and hillslopes in grey-brown loam often associated with coarse quartzite gravel or sandstone pebbles. Vegetation is usually an open-forest with a relatively open understorey of low shrubs and sedges (Quarmby 2010).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Caleana major</i>	Large Duck-orchid		V	2	2000	Usually found in Eucalyptus woodland, coastal or swampy shrubland and heathland. Forms small colonies in white sands in open <i>Eucalyptus baxteri</i> forest and often associated with <i>Banksia ornata</i> (ALA 2022).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Callistemon brachyandrus</i>	Prickly Bottlebrush		R	2	2019	Found along the Murray River in South Australia mainly between Swan Reach and Waikerie growing in the sandy soils of alluvial flats (SSCC 2018).	Unlikely – Despite recent records, this species is generally confined to the mid-Murray region of SA.
<i>Cardamine paucijuga</i>	Annual Bitter-cress		R	2	2011	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in rich soils in moist to dry habitats (SSCC 2018).	Possible – Some suitable habitat within the Project Area.
<i>Coronidium gunnianum</i>	Pale Everlasting		E	2	2006	Found in the southern Mount Lofty Ranges, Burra Gorge and a single record from the lower South-east in South Australia, growing in grasslands and riverine woodlands on soils that are prone to inundation (SSCC 2018).	Possible – Some suitable habitat within the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Deyeuxia densa</i>	Heath Bent-grass		R	2	2021	Commonly in heaths, sedgelands and in stream banks in damp, open to lightly shaded sites.	Likely – Some suitable habitat within the Project Area and recent records.
<i>Deyeuxia minor</i>	Small Bent-grass		V	2	2020	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower-South-east growing in damp areas under light eucalypt cover or margins of wet sclerophyll forest (SSCC 2018).	Likely – Some suitable habitat within the Project Area and recent records.
<i>Dianella longifolia</i> var. <i>grandis</i>	Pale Flax-lily		R	2	2019	Occurs under a variety of overstorey Eucalypt species but is a grassy woodland specialist, e.g., Blue Gum, Candlebark, Manna Gum, Stringybark and Grey Box.	Likely – Some suitable habitat within the Project Area and recent records.
<i>Dicksonia antarctica</i>	Soft Tree-fern		E	2	2020	SA: SL SE. Grows in numerous types of plant communities and is particularly abundant in wet forest communities. It occurs in forest types ranging from rainforest to sheltered gullies within dry sclerophyll forest and subalpine forest.	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.
<i>Dipodium pardalinum</i>	Leopard Hyacinth-orchid		V	2	2012	Occurs from Naracoorte on the Victorian border to the Mount Lofty Ranges. In the Adelaide-Mount Lofty region the species is found in <i>Eucalyptus obliqua</i> woodland growing in association with <i>Acacia myrtifolia</i> , <i>Xanthorrhoea semiplana</i> ssp. <i>tateana</i> and <i>Pteridium esculentum</i> (Willson and Bignall 2009).	Possible – Recent records and some suitable habitat is present in the Project Area including <i>Eucalyptus obliqua</i> , though associated understorey species not present.
<i>Diuris behrii</i>	Behr's Cowslip Orchid		V	2	2015	Found in the southern Flinders Ranges and the Mount Lofty Ranges with a few records from Eyre Peninsula growing in native grassland, open woodland and grassy forest; grows on more fertile soils, especially amongst <i>Themeda</i> sp. (Kangaroo Grass) and <i>Triodia</i> on gentle slopes and flats (SSCC 2018).	Possible – Recent records and some suitable habitat is present in the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Diuris chryseopsis</i>	Cowslip Orchid		E	2	1998	Presumed extinct in the Mt Lofty Ranges (but may have been rediscovered in Kuitpo Native Forest Reserve) and found only between Naracoorte and Mount Gambier in South Australia, growing in damper grassy patches in woodland around waterholes, along creeks, on cooler slopes in rich, moist soils (SSCC 2018).	Unlikely – No recent records and this species is generally confined to the southeast of SA.
<i>Drosera binata</i>	Forked Sundew		R	2	2017	Found in the southern Mount Lofty Ranges, on the western end on Kangaroo Island and in the lower South-east in South Australia, growing in wet sand and sandy peat in swamps, on creek banks and seepage lines in rock-faces (SSCC 2018).	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Drosera stricticaulis</i>	Erect Sundew		V	2	1998	Found on southern Eyre Peninsula and on Dutchmans Stern in the Flinders Ranges in South Australia, growing on sandy clay-loam along watercourses and granite outcrops (SSCC 2018).	Unlikely – No recent records and this species is generally confined to the Eyre Peninsula in SA.
<i>Eryngium ovinum</i>	Blue Devil		V	2	2013	Found in the wetter parts of the Mount Lofty Ranges and a few sites in the lower South-East in South Australia, growing in open woodland on damp clay and sandy soils (SSCC 2018).	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Eryngium vesiculosum</i>	Prostrate Blue Devil		R	2	2010	Found scattered in South Australia, from the Lake Eyre region to the lower South-east, growing in sandy flats in low-lying damp areas (SSCC 2018).	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Eucalyptus dalrympleana</i> ssp. <i>dalrympleana</i>	Candlebark Gum		R	2	2022	Often in poorer sandy soils, in woodland or as an emergent in low shrublands. Commonly associated with <i>E. baxteri</i> , <i>E. cosmophylla</i> , <i>E. diversifolia</i> , <i>E. leptophylla</i> and <i>E. leucoxydon</i> (Nicolle, 2013).	Possible – Very recent records, some suitable habitat and associated species are present within the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Eucalyptus fasciculosa</i>	Pink Gum		R	2	2021	Grows on moist, well-drained alluvial soils near watercourses but also grows on drier sites at higher altitudes. Tolerates snow and some flooding (Nicolle, 2013).	Possible – Very recent records and some suitable habitat is present within the Project Area.
<i>Eucalyptus viminalis</i> ssp. <i>viminalis</i>	Manna Gum		R	2	2022	Generally recorded as growing in mallee scrubland but has also been found growing in coastal heathlands, sclerophyll forests and woodlands. It is also found in heathy openings in wet sclerophyll forest and in a swamp at Mt Compass (Nicolle, 2013).	Known / Highly Likely – Recorded within the Project Area.
<i>Euphrasia collina</i> ssp. <i>osbornii</i>	Osborn's Eyebright	EN	E	1	Species or species habitat known to occur within area	Confined to SA. Has been collected in the Upper SE (Yumali-Meningie Road), on eastern KI. (Dudley Peninsula-W of Cape Willoughby), Eyre Peninsula (Venus Bay), Yorke Peninsula, Northern Lofty region (Clare, Burra), Southern Lofty region (inc. Fleurieu Peninsula and Mt Compass) and the Flinders Ranges. Generally recorded as growing in mallee scrubland but has also been found growing in coastal heathlands, sclerophyll forests and woodlands. It is also found in heathy openings in wet sclerophyll forest and in a swamp at Mt Compass (Moritz and Bickerton 2010).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Gastrodia sesamoides</i>	Potato Orchid		R	2	2021	Found in the southern Mount Lofty Ranges, Kangaroo Island and the lower South-east in South Australia, growing in areas of high rainfall in wet sclerophyll forests, dry sclerophyll forests, woodlands and riparian areas (SSCC 2018).	Likely – Some suitable habitat within the Project Area and recent records.
<i>Gleichenia microphylla</i>	Coral Fern		R	2	2022	Found southern Mount Lofty and the lower South- East in South Australia, growing in sunny damp sites around swamps and at bases of cliffs in open forest (SSCC 2018).	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Glycine latrobeana</i>	Clover Glycine	VU	V	1	Species or species habitat likely to occur within area	Inhabits native grasslands, dry sclerophyll forests, woodlands and low open woodlands, typically with a grassy ground layer, and growing on undulating plains. Prefers gentle south-west facing ridge slopes and lower south facing river valley slopes (Carter and Sutter 2010).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Gonocarpus micranthus</i> ssp. <i>micranthus</i>	Creeping Raspwort		R	2	2018	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing on wet, peaty soils and is generally confined to damp or boggy situations (SSCC 2018).	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Goodenia brunnea</i>			R	2	2018	This goodenia grows in rocky situations and near watercourses primarily in the far north-west of South Australia.	Unlikely – No recent records and this species is generally confined to the far northwest of SA.
<i>Grevillea aquifolium</i>	Prickly Grevillea		R	2	1997	On calcareous sand in sclerophyllous woodland, and in heath on sands, limestone pavements and sandstone outcrops.	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Hypolepis rugosula</i>	Ruddy Ground-fern		R	2	2022	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing along shady streams or open wetter areas. Where it forms dense thickets. It is frequently in ditches or on embankments beside tracks (SSCC 2018).	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.
<i>Juncus amabilis</i>			V	2	2009	Found in the southern Mount Lofty Ranges and the South-east in South Australia, growing damp sites.	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Lagenophora sublyrata</i>	Slender Bottle-daisy		V	2	2019	Found on Kangaroo Island, southern Mount Lofty Ranges and lower South-east in South Australia, growing in moist gullies and near water (SSCC 2018).	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Leionema hillebrandii</i>	Mount Lofty Phebalium		R	2	2022	Found in heathy woodland and forest gullies. Often in open rocky habitat along steep gullies.	Possible – Very recent records and some suitable habitat is present in the Project Area.
<i>Logania saxatilis</i>	Rock Logania		R	2	1996	Occurs in the FR, NL, MU, SL regions of SA. Associated with Grassy Woodlands in the foothills and hills face of the Southern Lofty Ranges.	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Luzula flaccida</i>	Pale Wood-rush		V	2	2020	Found in the southern Mount Lofty Ranges and the lower South-east in South Australia, growing in moist rather shady sites in grassy woodland or open grassland (SSCC 2018).	Possible – Very recent records and some suitable habitat is present in the Project Area.
<i>Lycopodiella lateralis</i>	Slender Clubmoss		R	2	2017	The species occurs in scattered swampy places in the vicinity of Mt Compass, Mt Lofty and on KI.	Unlikely – Recent records nearby and some suitable habitat within the Project Area but Project impact area does not incorporate creek / watercourse.
<i>Lycopodium deuterodensum</i>	Bushy Clubmoss		E	2	2009	Found in one location in the southern Mount Lofty Ranges in South Australia, growing on steep hill slopes over sandstone and quartzite on the edge of a gully swamp within open stringybark forest with a dense understorey of bracken, sedges, shrubs, herbs and grasses (SSCC 2018).	Unlikely – No recent records despite some suitable habitat within the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Machaerina gunnii</i>	Slender Twig-rush		R	2	2018	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in wet heathlands and swampy woodlands (SSCC 2018).	Unlikely – No recent records nearby despite some suitable habitat within the Project Area.
<i>Melaleuca armillaris</i> ssp. <i>akineta</i>	Needle-leaf Honey-myrtle		R	2	2008	Found primarily in the Gawler Ranges of South Australia, where it grows on ridges and granite outcrops (Brophy et al. 2013).	Unlikely – No very recent records and this species is generally confined to the Gawler Ranges in SA.
<i>Mentha diemenica</i>	Slender Mint		R	2	2011	This species is scattered throughout <i>Eucalyptus ovata</i> dominated woodland.	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Nymphoides crenata</i>	Wavy Marshwort		R	2	1995	Fresh water to 1.5 m deep in swamps, lagoons, channels and streams; also frequent in temporarily inundated depressions.	Unlikely – No recent records nearby despite some suitable habitat within the Project Area.
<i>Poa umbricola</i>	Shade Tussock-grass		R	2	2018	Associated with woodland communities where it is often straggling among rocks.	Unlikely – Despite recent records, rocky outcrops in which this species requires are not present.
<i>Prasophyllum pallidum</i>	Pale Leek-orchid	VU	R	1	Species or species habitat likely to occur within area	Pale Leek-orchid is known singly or in groups in better soils of woodland and grassy open forest. Recorded in woodlands and forests dominated by <i>Eucalyptus leucoxyton</i> , <i>E. goniocalyx</i> , <i>E. fasciculosa</i> , <i>E. microcarpa</i> , <i>Callitris gracilis</i> / <i>Eucalyptus fasciculosa</i> , and <i>Allocasuarina verticillata</i> (Bates 2009).	Unlikely – No recent records despite some suitable habitat within the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Prasophyllum pruinatum</i>	Plum Leek-orchid	EN	E	1	Species or species habitat known to occur within area	It has been recorded in the Adelaide and MLR region from eight geographically isolated and distinct locations, which extend from the Barossa Valley to Belair NP. Preferred habitat includes open woodland and grassy forest, in the open or in the shelter of broom-like shrub growing in fertile loams, usually with other leek-orchids (Bates, 2009).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Pterostylis cucullata</i>	Leafy Greenhood	VU	E	1	Species or species habitat likely to occur within area	There are two subspecies of <i>Pterostylis cucullata</i> . One is a coastal ssp. that occurs in stabilised coastal sand dunes, on open ground but under a scrub layer. The other ssp. is a montane variety which occurs on riverbanks or protected alluvial flood plains (TSSC 2016a).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Pterostylis setifera</i>	Bristly Greenhood		E	2	2018	Found in a variety of habitats, in SA in open areas of mallee type vegetation and small red sand dune areas covered with <i>Callitris</i> .	Unlikely – Despite recent records no mallee habitat is present within the Project Area.
<i>Pultenaea graveolens</i>	Scented Bush-pea		R	2	2022	Found in the southern Flinders Range and the southern Mount Lofty Ranges in South Australia, with a single record from Kangaroo Island, growing in dry sclerophyll woodland (SSCC 2018).	Possible – Very recent record and some suitable habitat within the Project Area.
<i>Pultenaea kraehenbuehlii</i>	Tothill Bush-pea		R	2	2018	Endemic to South Australia and found only in the Tothill Range except for one record from Cleland National Park, growing in open grassland to open low woodland sometime dominated by <i>Allocasuarina verticillata</i> (SSCC 2018).	Unlikely – Project Area not within known isolated population, and no suitable habitat occurs.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Ranunculus glabrifolius</i>	Shining Buttercup		V	2	2000	Found only in Mount George Conservation Park in SA where it occurs in damp ground in depressions or beside watercourses.	Possible – Recent records and only found in Mount George Conservation Park which is adjacent to the Project Area. Project impact area does not incorporate creek / watercourse.
<i>Rytidosperma laeve</i>	Smooth Wallaby-grass		R	2	2017	Ecologically variable, from alpine moorland to open grassland or light woodland, often in seasonally damp habitats (Sharp and Simon 2022).	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Rytidosperma tenuius</i>	Short-awn Wallaby-grass		R	2	2022	Grows in altitudes between 5–750 m, on Tablelands usually in somewhat damp habitats, rarely dominant; along the coastal shelf a very common constituent of disturbed road verges.	Likely – Very recent records and some suitable habitat is present in the Project Area.
<i>Schizaea fistulosa</i>	Narrow Comb-fern		V	2	2008	In SA, this species is usually found on raised soil mounds in swamps or under scrub in moist situations. It is often found associated with <i>S. bifida</i> . There appear to be intermediate forms between these two species in SA.	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.
<i>Schoenus latelaminatus</i>	Medusa Bog-rush		V	2	2012	Grows in seasonally wet areas along creek beds and in marshy paddocks.	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Schoenus lepidosperma</i> ssp. <i>lepidosperma</i>	Slender Bog-rush		R	2	2018	Grows in damp areas in heath or woodland in sandy soils.	Unlikely – Some suitable habitat within the Project Area including water sources, though not within areas of proposed impact.
<i>Scutellaria humilis</i>	Dwarf Skullcap		R	2	2021	Grows in various habitats, often in moist sheltered areas, particularly along creeks or gullies; widespread from coastal to inland districts. Single isolated record from Cleland National Park, most records further south on Fleurieu Peninsula.	Unlikely – Despite recent records the Project Area is outside of its typical distribution.
<i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i>			R	2	2015	Commonly found in moist gullies where they are locally widespread. Predominantly occurs in areas of moderate to high rainfall.	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Sphaerolobium minus</i>	Leafless Globe-pea		R	2	2008	Scattered mainly across higher rainfall areas in sclerophyll forests, woodlands and heathlands.	Unlikely – No recent records nearby despite some suitable habitat within the Project Area.
<i>Sprengelia incarnata</i>	Pink Swamp-heath		R	2	2017	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in wet heathland, sedgeland and other swampy vegetation on peaty or sandy soils (SSCC 2018).	Unlikely – Despite recent records, Cleland National Park is the closest area that this species occurs in. It is unlikely to occur in the Project Area.
<i>Thelymitra aristata</i>	Great Sun-orchid		E	2	2008	Found primarily in the south-east in South Australia, north of Mt Gambier, growing in clay or gravel soils in forest or scrubland around swamp margins in damp sands (SSCC 2018). Past records from Mount George Conservation Park adjacent the Project Area.	Possible – Recent records and some suitable habitat is present in the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Thelymitra batesii</i>			R	2	2021	Endemic to South Australia and found in the southern Flinders Ranges and the Mount Lofty Ranges, growing in heathy woodlands and heathy open forest on sandy and gravelly clay loam soils (SSCC 2018).	Possible – Very recent records and some suitable habitat is present in the Project Area.
<i>Thelymitra circumsepta</i>	Naked Sun-orchid		E	2	2018	Occurs in the SL region of SA. Found among low shrubs in open forest or in open rocky sites on well-drained and moisture retentive soils.	Unlikely – despite recent records, no suitable rocky or open forest sites occur in Project Area.
<i>Thelymitra grandiflora</i>	Great Sun-orchid		R	2	2019	Occurs singly or as small clumps of plants in forest clearings, woodland and scrub in well drained gravelly clay soils which may be laterite or podsols, or mixed with sand, extending to dry rocky ridges in better soils (Bates 2009).	Possible – Very recent records and some suitable habitat is present in the Project Area.
<i>Thelymitra ixioides</i>	Spotted Sun-orchid		E	2	2013	Found in the southern Mount Lofty Ranges and the lower South-east in South Australia, growing in woodland or swampy ground (SSCC 2018).	Possible – Recent records and some suitable habitat is present in the Project Area.
<i>Thelymitra latifolia</i>	Blue Star Sun-orchid		V	2	2004	In SA found from the southern Flinders Ranges southward through the Mount Lofty Ranges to the South-east. Found in woodlands in various soil types from leached pale sands to yellow gravelly clays and may occur near swamps.	Possible – Recent records and some suitable habitat is present in the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Thelymitra matthewsii</i>	Spiral Sun-orchid	VU	E	1	Species or species habitat likely to occur within area	Currently known to occur in Vic., SA and NZ. Favours open forests and woodlands in well-drained sand and clay loams. It is a post-disturbance coloniser that is usually found in open areas around old quarries and gravel pits, on road verges, disused tracks and animal trails. In SA, it is known from three fairly old collections from KI and SW of Keith. It has recently been found to occur south of Meningie, and on western KI. Widely but sporadically distributed in Vic and SA. Grows in heathy open forest and woodlands on well-drained sand, gravel and clay loams, especially where there has been soil disturbance. Open ground layer is common (Duncan 2010).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Thysanotus tenellus</i>	Grassy Fringe-lily		R	2	2015	Perennial Fringed lily species located in SA where it prefers <i>Eucalyptus</i> woodlands, <i>Lomandra effusa</i> Open Sedgeland, <i>Dodonaea lobulata</i> shrublands and Bluebush shrublands (Sirisena 2010).	Unlikely – No recent records nearby despite some suitable habitat within the Project Area.
<i>Todea barbara</i>	King Fern		E	2	2018	Occurs in the MLR where it occurs in swamps, swampy gullies and creek beds. All extant populations occur adjacent to permanent water, springs or soaks.	Unlikely – Recent records nearby and some suitable habitat within the Project Area but Project impact area does not incorporate creek / watercourse.
<i>Veronica derwentiana</i> ssp. <i>homalodonta</i>	Mount Lofty Speedwell	CE	E	1	Species or species habitat likely to occur within area	Occurs in moist areas, gullies, creeklines and high rainfall areas. Largely occurs in <i>Eucalyptus obliqua</i> Forests with or without additional overstorey species (such as <i>Eucalyptus fasciculosa</i> , <i>Eucalyptus viminalis</i> ssp. <i>cygnetensis</i> & <i>Eucalyptus leucoxylon</i>) (TSSC 2009).	Unlikely – No recent records despite some suitable habitat within the Project Area.
<i>Xanthosia tasmanica</i>	Southern Xanthosia		R	2	2015	Found on Kangaroo Island and the southern Mount Lofty Ranges in South Australia, growing in shallow sand on rocky coastal heath and in woodland (SSCC 2018).	Possible – Recent records and some suitable habitat is present in the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Xyris operculata</i>	Tall Yellow-eye		R	2	2008	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in wet heathlands and swampy areas (SSCC 2018).	Unlikely – No recent records and this species is generally confined to the areas around Mount Compass and on Kangaroo Island.

Conservation status:

Aus: Australia (EPBC Act). **SA:** South Australia (NPW Act). **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. **Mi (W):** listed as a Migratory Wetland species under the EPBC Act. **Mi (Ma):** listed as a Migratory Marine species under the EPBC Act.

PMST result: Likelihood of species or species habitat to occur within 5 km of the Project Area.

Source of Information:

1: PMST (DCCEEW 2023) – 5 km buffer applied to Project Area;

2: BDBSA (DEW 2022b) – 5 km buffer applied to Project Area;

Abbreviations within Distribution and preferred habitat:

EP: Eyre Peninsula; **FP:** Fleurieu Peninsula; **FR:** Flinders Ranges; **KI:** Kangaroo Island; **MLR:** Mount Lofty Ranges; **MU:** Murraylands; **NL:** Northern Lofty; **NP:** National Park; **NSW:** New South Wales; **QLD:** Queensland; **SL:** Southern Lofty; **SE:** Southeast / South-Eastern; **SW:** South-Western; **Tas:** Tasmania; **Vic:** Victoria; **WA:** Western Australia; **YP:** Yorke Peninsula.

Appendix 6. BDBSA fauna recorded within 5 km of the Project Area

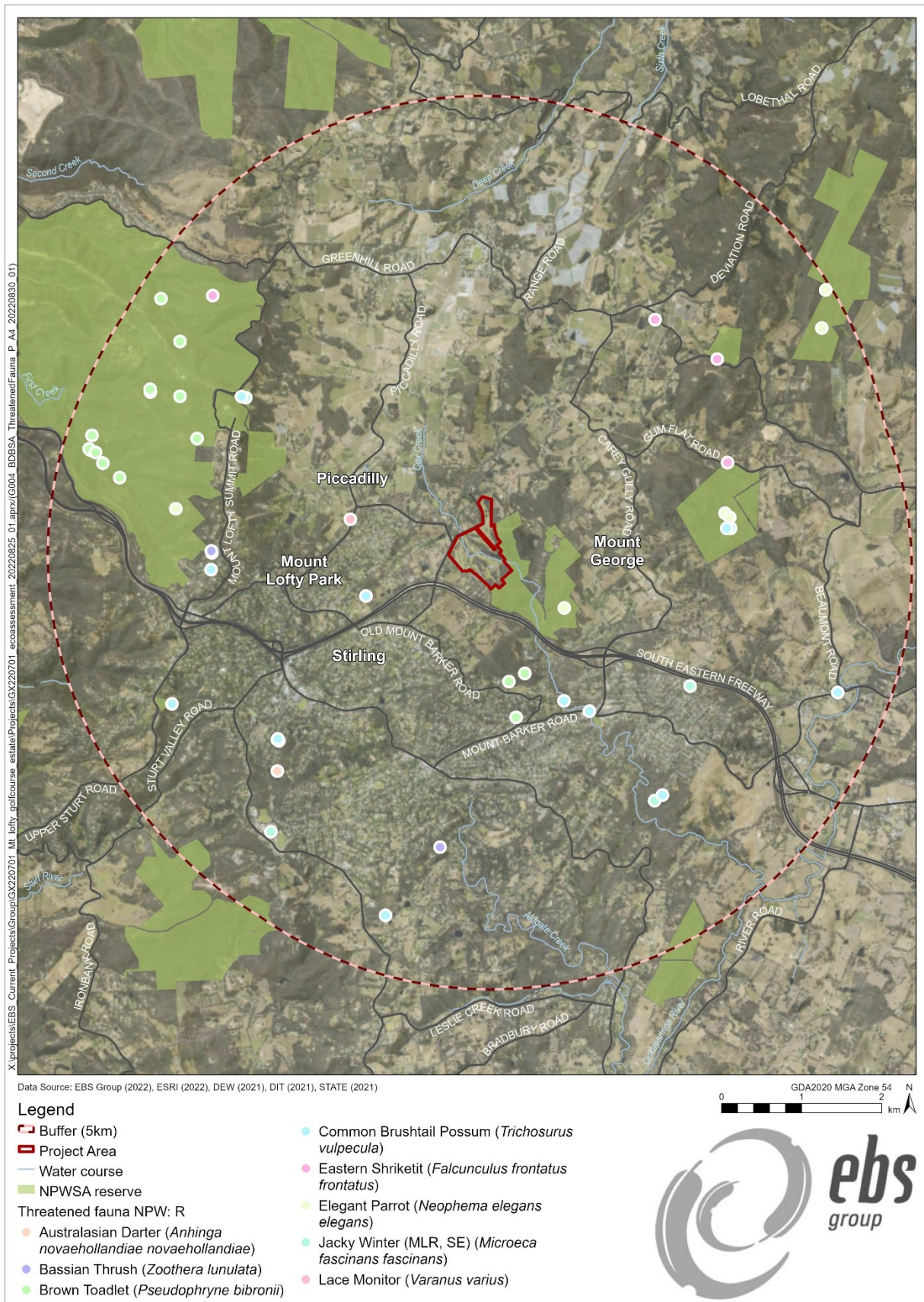


Figure 17. BDBSA fauna record for State listed Rare species, located within 5 km of the Project Area (Map 1 of 2).

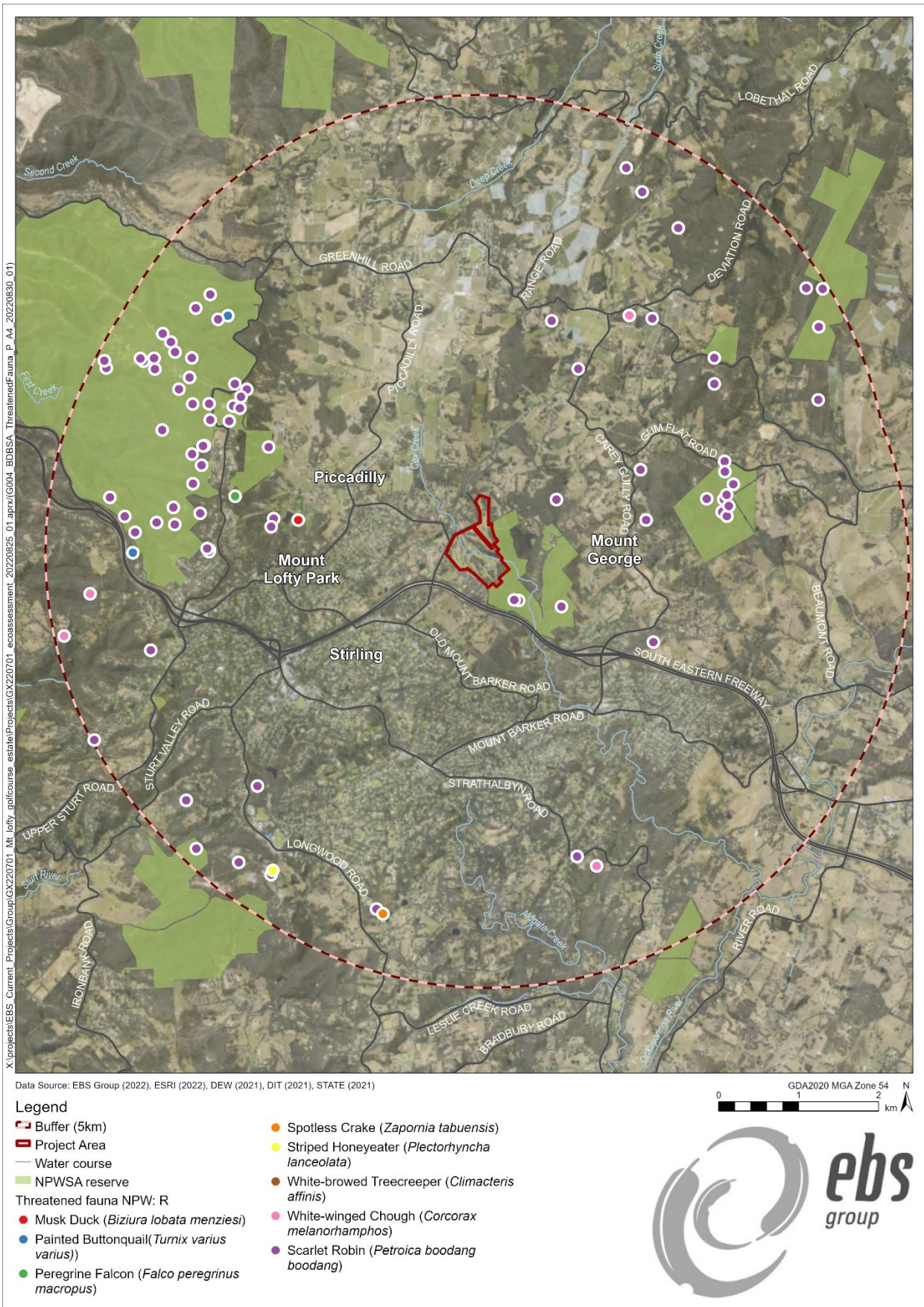


Figure 18. BDBSA fauna record for State listed Rare species, located within 5 km of the Project Area (Map 2 of 2).

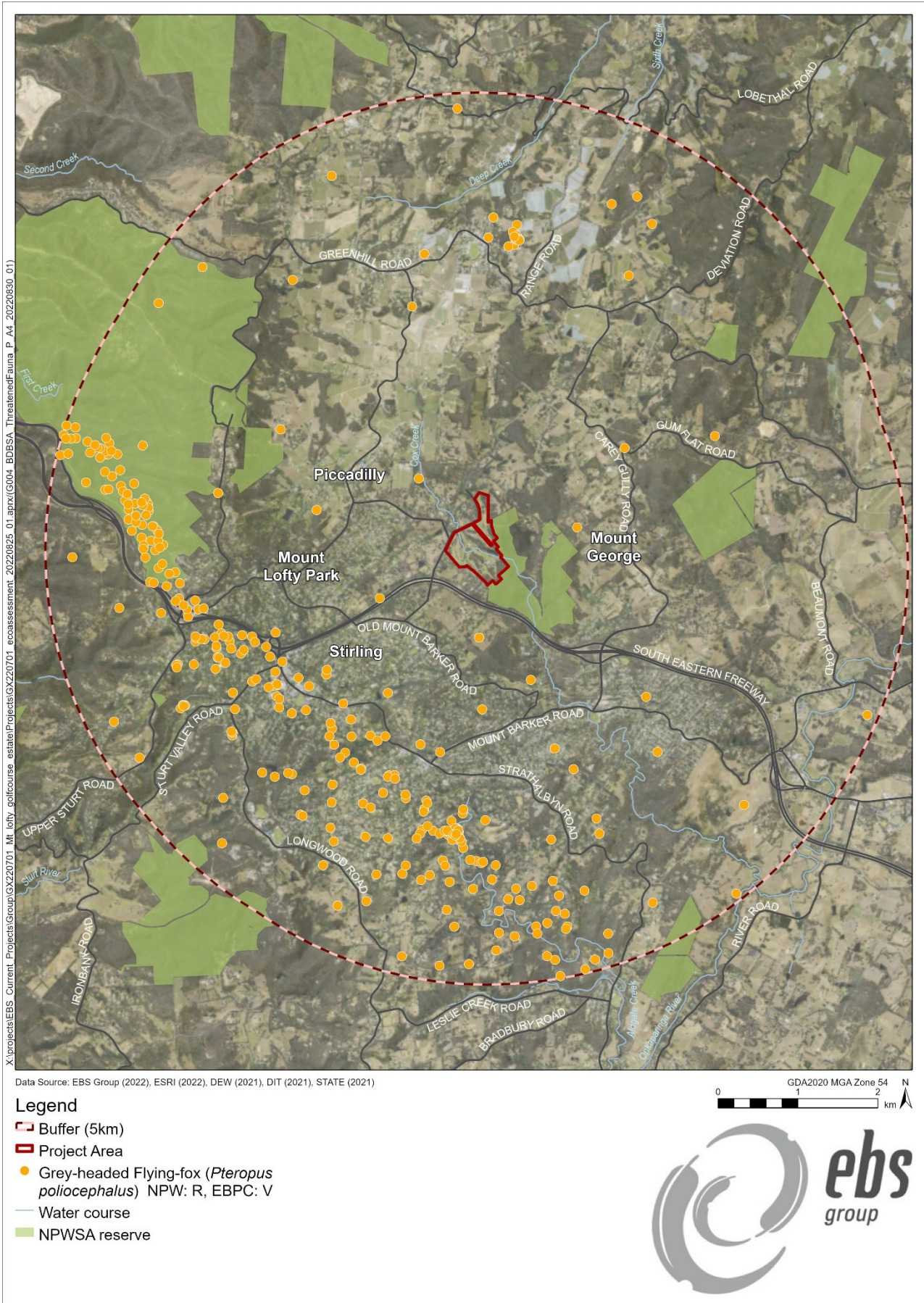


Figure 19. BDBSA fauna record for *Pteropus poliocephalus* (Grey-headed Flying-fox), located within 5 km of the Project Area.

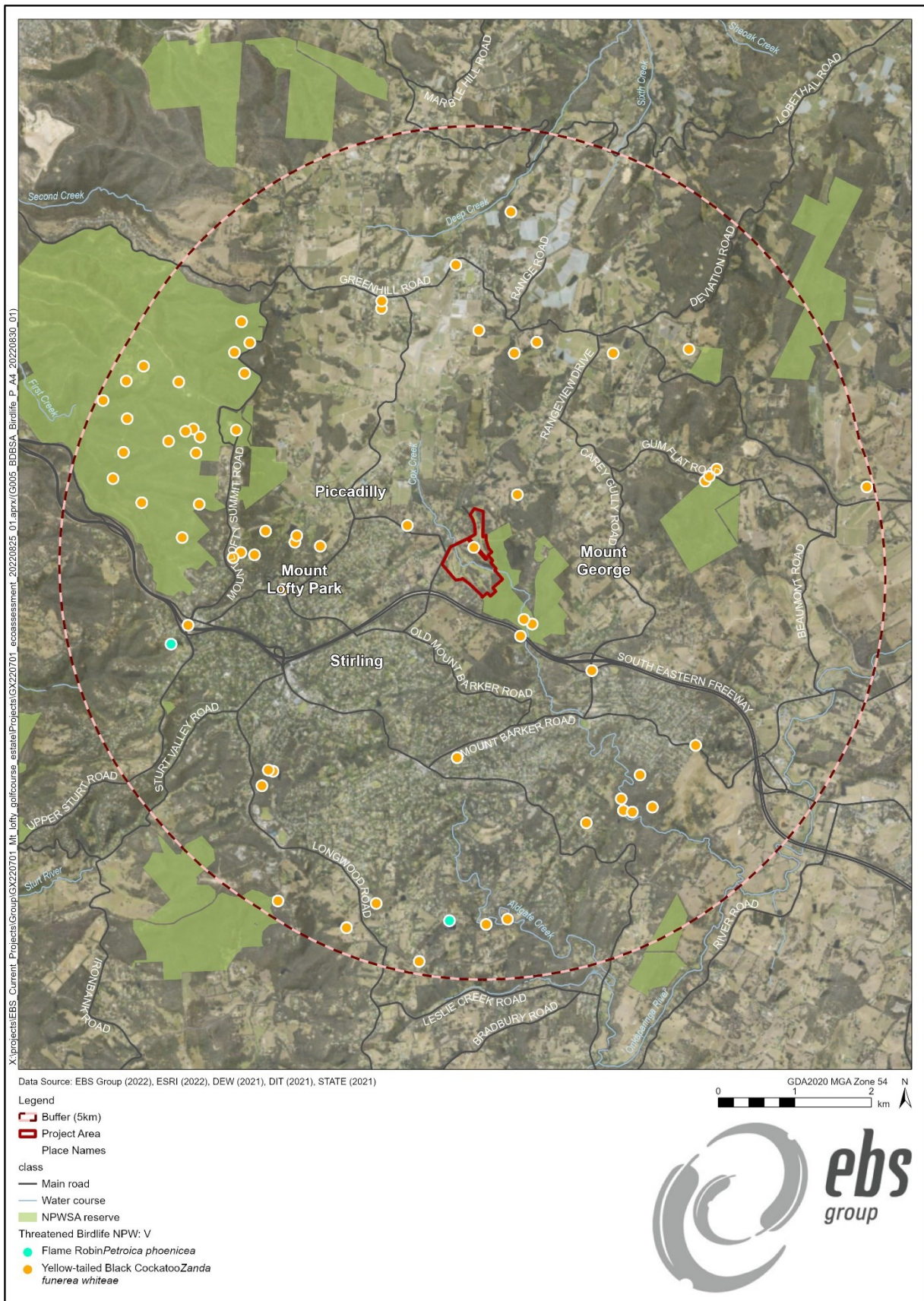


Figure 20. BDBSA fauna record for State listed Vulnerable species, located within 5 km of the Project Area.



Figure 21. BDBSA fauna record for State listed Endangered species, located within 5 km of the Project Area.

Appendix 7. BDBSA Birdlife recorded within 5 km of the Project Area

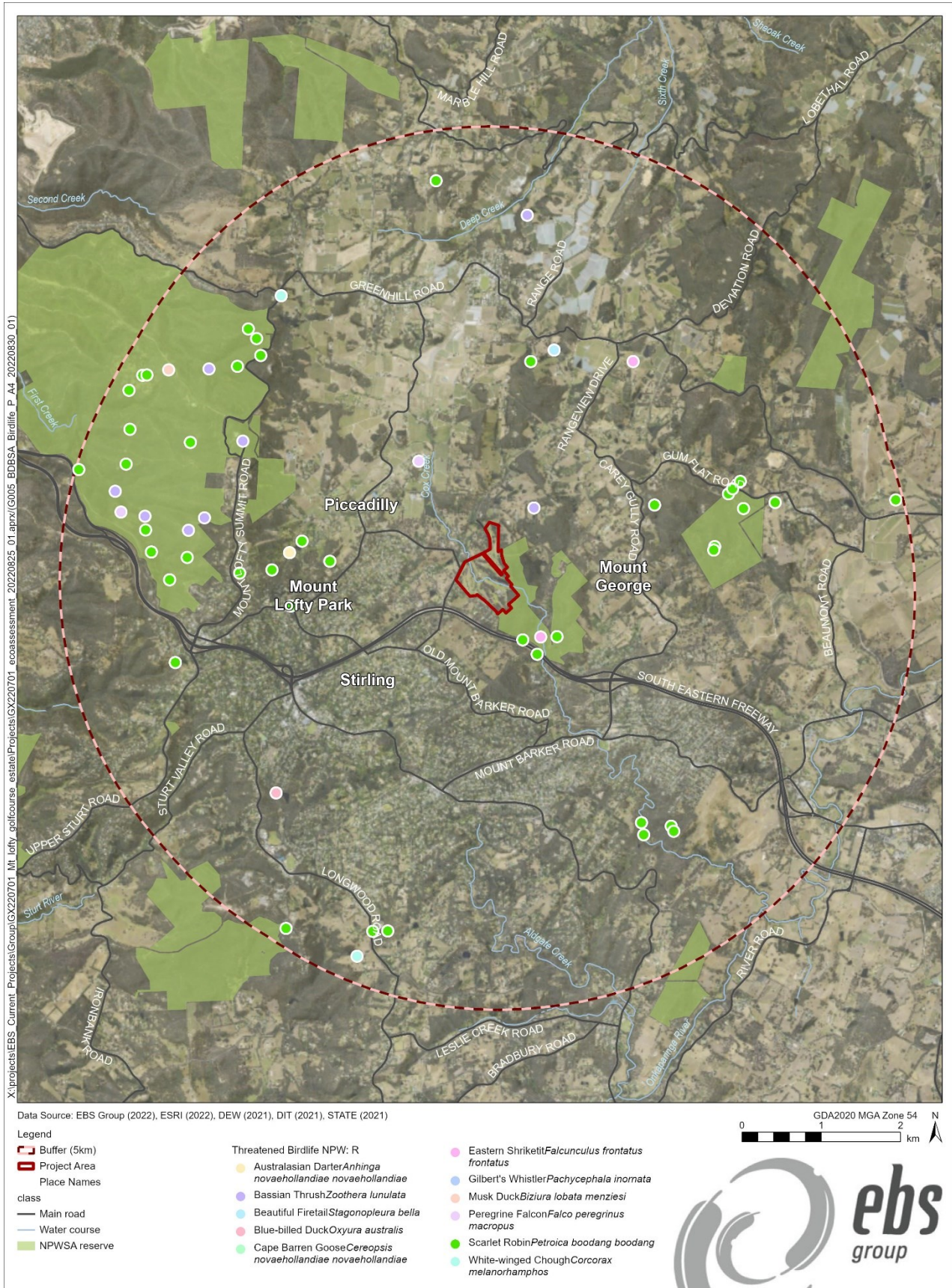


Figure 22. BDBSA Birdlife record for State listed Rare species, located within 5 km of the Project Area.

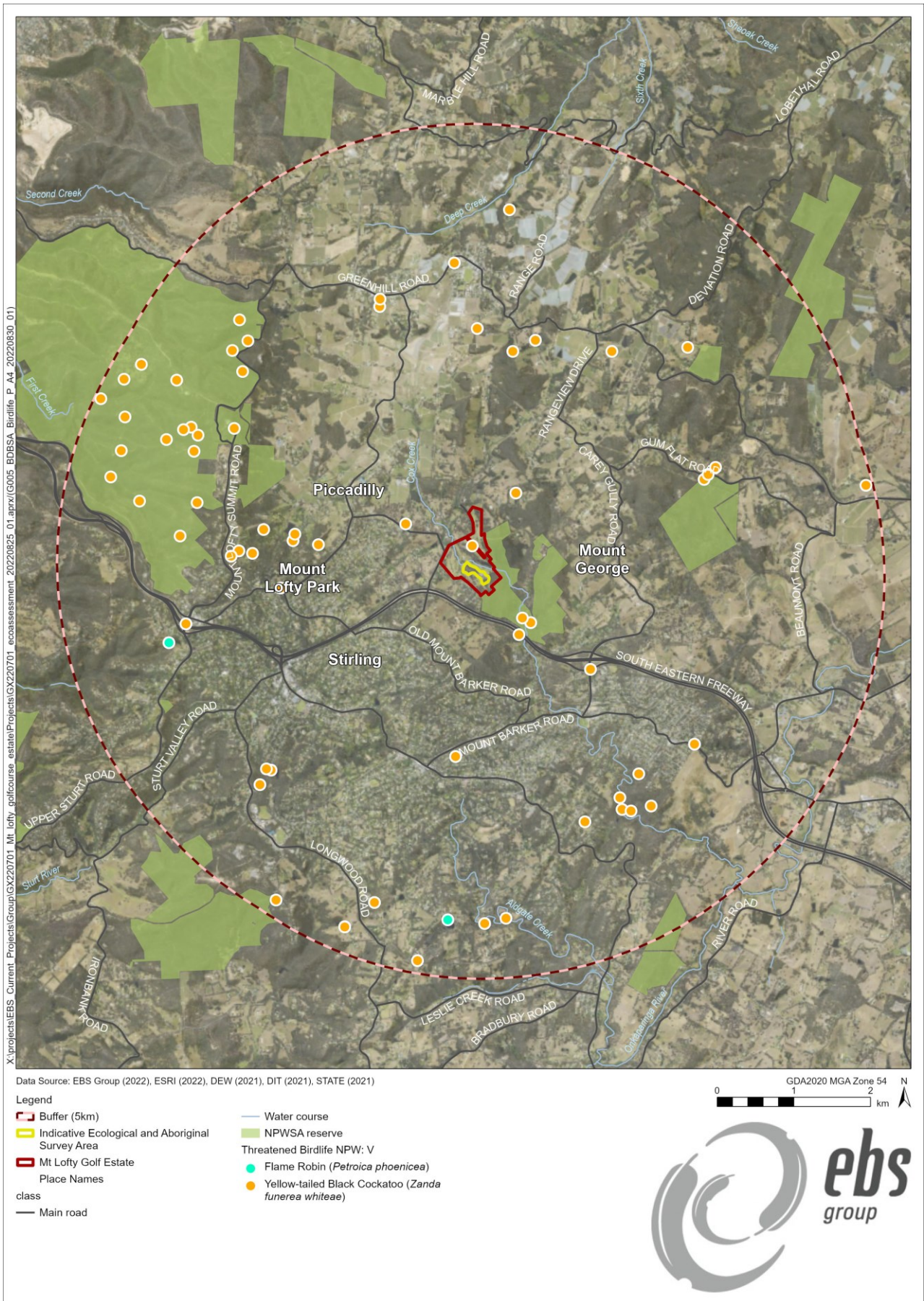


Figure 23. BDBSA Birdlife record for State listed Vulnerable species, located within 5 km of the Project Area.

Appendix 8. Assessment of likelihood of national (EPBC Act) and State (NPW Act) listed threatened fauna identified by the PMST (DCCEEW 2023) and BDBSA (DEW 2022b) to occur in the Project Area (exclusively marine species have been omitted) (green shading = known / highly likely or likely to occur, orange shading = possible to occur).

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
AMPHIBIA (AMPHIBIANS)							
<i>Pseudophryne bibronii</i>	Brown Toadlet		R	2	2009	In SA, it occurs in the SE, KI, MLR and FR regions. Found in damp areas with cover provided by logs and stones. Occupies forests, heathlands and grasslands. Occasionally utilizes small temporary dams and vegetated roadside drainage lines and ditches which are characterized by leaf litter and grassy debris (Wilson and Bignall 2009).	Possible – Some suitable habitat within the Project Area including water sources, most recent nearby record over 10 years old.
AVES (BIRDS)							
<i>Anhinga novaehollandiae novaehollandiae</i>	Australasian Darter		R	2, 3	2018 / 2018	Habitat is lakes, rivers, swamps; rarely coastal (Pizzey and Knight 2013).	Possible – Some suitable habitat within the Project Area including water sources.
<i>Biziura lobata menziesi</i>	Musk Duck		R	2, 3	2015 / 2002	Lakes, reservoirs and wetlands including well-vegetated swamps and fresh and brackish habitats (Pizzey and Knight 2013).	Possible – Some suitable habitat within the Project Area including permanent water sources.
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN	E	1	Species or species habitat known to occur within area	Freshwater wetlands and rarely in estuaries or tidal wetlands, favouring wetlands dominated by sedges, rushes and reeds growing over a muddy or peaty substrate (Pizzey and Knight 2013).	Unlikely – No recent records despite suitable habitat present.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Cereopsis novaehollandiae novaehollandiae</i>	Cape Barren Goose		R	3	2009	Mostly inhabits small, windswept and generally uninhabited offshore islands, but ventures to adjacent mainland farming areas in search of food in summer (Birdlife Australia 2022).	Possible – Some suitable habitat within the Project Area including water sources and open grassy areas.
<i>Charadrius mongolus</i>	Lesser Sand Plover	EN	E	3	2002	Likes tidal mudflats, sand flats and shelly beaches, salt marshes and mangroves (Pizzey and Knight 2013).	Unlikely – No suitable habitat, migratory species which does not depend on vegetation present in the Project Area
<i>Climacteris affinis</i>	White-browed Treecreeper		R	2	2021	Distributed across southern arid and semi-arid areas of Australia, from Western Australia, through South Australia, New South Wales and into north-western Victoria. Habitat is Acacia woodlands, belah and Callitris.	Possible – Some suitable habitat within the Project Area but vagrant species to general area.
<i>Corcorax melanorhamphos</i>	White-winged Chough		R	2, 3	2020 / 2020	Prefers drier forests, woodlands of <i>Eucalyptus</i> sp., crops and pastures (Pizzey and Knight 2013).	Likely – Some suitable habitat within the Project Area and recent records.
<i>Falco hypoleucos</i>	Grey Falcon	VU	R	1	Species or species habitat likely to occur within area	The species is mainly found where annual rainfall is less than 500 mm and is essentially always confined to the arid and semi-arid zones. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (Schoenjahn et al. 2020).	Unlikely – No recent records and habitat within the Project Area is unsuitable.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Falco peregrinus macropus</i>	Peregrine Falcon		R	2, 3	2015 / 2020	Found everywhere from woodlands to open grasslands and coastal cliffs – though less frequently in desert regions. This species prefers open habitats such as grasslands, tundra and meadows and nests on cliff faces and in crevices (Pizzey and Knight 2013).	Likely – Some suitable habitat within the Project Area. Likely to occur as flyover only.
<i>Falcunculus frontatus frontatus</i>	Eastern Shrike-tit		R	2, 3	2006 / 2006	Eucalyptus woodlands and forest, within a wide range of woodland/forest communities. Prefers dense grasslands, often on the edges of open forests, and bracken (Birdlife Australia 2022).	Possible – Some suitable habitat within the Project Area, most recent nearby record over 15 years old.
<i>Grantiella picta</i>	Painted Honeyeater	VU	R	1	Species or species habitat likely to occur within area	Forest, woodland, dry scrub, often with abundant mistletoe. Dependent on mistletoe berries (DAWE 2021a).	Unlikely – No recent records despite some suitable habitat.
<i>Hieraetus morphnoides</i>	Little Eagle		V	2	2019	Occurs in sparse populations in eastern South Australia where it 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 2022).	Likely – Some suitable habitat within the Project Area. Likely to occur as flyover only.
<i>Hirundapus caudacutus</i>	White-throated Needle-tail	VU, Mi (T)	V	1	Species or species habitat likely to occur within area	Almost exclusively aerial in Australia, recorded most commonly above wooded areas (Pizzey and Knight 2013).	Possible – Some suitable habitat present. Possible to occur as flyover only.
<i>Hylacola cauta cauta</i>	Shy Heathwren		R	3	1998	Prefers dense shrubby or heath understorey in mallee woodland, mallee shrubland or mallee heath in coastal and semi-arid regions, often where spinifex (<i>Triodia</i>) occurs and with dense shrubs such as Banksia, Hakea and Grevillea, also tea-tree (<i>Leptospermum</i>) and cypress pine (<i>Callitris</i>) (Gregory, 2020).	Possible – Some suitable habitat within the Project Area. Very suitable habitat adjacent to the Project Area in Mount George Conservation Park.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Hylacola pyrrhopygia parkeri</i>	Chestnut-rumped Heathwren	EN	E	1, 2, 3	Species or species habitat known to occur within area / 2020 / 2020	Inhabits heaths of coastal, mountain and hinterland areas, dense undergrowth of forests and woodlands. Found in South-eastern Australia. In SA occurs in the SE, Adelaide Mount Lofty Ranges and Northern Yorke districts (Wilson and Bignall 2009).	Likely – known to occur in adjacent Mount Gorge CP, may utilise Project Area fringe from time to time, though unlikely to be core habitat as the understorey vegetation was open, disturbed and weedy in most places.
<i>Leipoa ocellata</i>	Malleefowl	VU	V	1	Species or species habitat likely to occur within area	In South Australia, the Malleefowl is distributed from the south-east, north to the Murray-Mallee region and west to Streaky Bay, south of 32°S. The species also occurs west of the Eyre Peninsula. 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, Broombush Melaleuca uncinata vegetation or coastal heathlands (Benshemesh 2007).	Unlikely – No recent records and no mallee habitat within the Project Area.
<i>Lewinia pectoralis pectoralis</i>	Lewin's Rail		V	2	2010	Swamp woodlands; rushes, reeds, rank grass in swamps, creeks paddocks; wet heaths, tree ferns; samphire in saltmarsh.	Possible – Some suitable habitat within the Project Area including water sources.
<i>Lophoictinia isura</i>	Square-tailed Kite		E	2	2019	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses (Pizzey and Knight 2013).	Likely – Some suitable habitat within the Project Area. Likely to occur as flyover only.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater		V	2, 3	2002 / 2000	The Black-chinned Honeyeater is found in the upper levels of open eucalypt forests and woodlands dominated by box and ironbark eucalypts. It is often found along waterways, especially in arid and semi-arid areas and in northern Australia. It is occasionally seen in gardens and street trees (Birdlife Australia 2022).	Possible – Some suitable habitat within the Project Area.
<i>Microeca fascinans fascinans</i>	Jacky Winter		R	2, 3	2018 / 2001	Widely distributed throughout mainland Australia. Prefer open woodland (Eucalypt and mallee) with an open shrub layer and bare ground. Often seen in farmland and parks (Morcombe, 2021).	Likely – Some suitable habitat within the Project Area. Very suitable habitat adjacent to the Project Area in Mount George Conservation Park.
<i>Neophema elegans elegans</i>	Elegant Parrot		R	2	2021	Wide variety of habitats, including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland (Pizzey and Knight 2013).	Likely – Some suitable habitat within the Project Area. Very suitable habitat adjacent to the Project Area in Mount George Conservation Park.
<i>Oxyura australis</i>	Blue-billed Duck		R	3	2018	Habitat is permanent swamps with dense vegetation. Large open lakes, tidal inlets and bays (Pizzey and Knight 2013).	Possible – Some suitable habitat within the Project Area including permanent water sources.
<i>Pachycephala inornata</i>	Gilbert's Whistler		R	3	2007	Usually inhabit semi-arid mallee or box-ironbark eucalypt, acacia, cypress-pine or Belah shrublands and woodlands (Birdlife Australia 2022).	Possible – Some suitable habitat within the Project Area.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Petroica boodang boodang</i>	Scarlet Robin		R	2, 3	2022 / 2020	This species occurs in foothill forests, woodlands and watercourses. In autumn-winter, they occur in more open habitats such as river red gum woodlands, golf courses, parks, orchards and gardens (Birdlife Australia 2022).	Likely – Some suitable habitat within the Project Area. Very suitable habitat adjacent to the Project Area in Mount George Conservation Park.
<i>Petroica phoenicea</i>	Flame Robin		V	3	2003	Endemic to south-eastern Australia, and ranges from near the Queensland border to southeast South Australia and also in Tasmania. Breeds in eucalypt forests and woodlands, with access to open areas, such as subalpine woodland, recently burnt forest, recently logged forest and pine plantations (Birdlife Australia 2022).	Possible – Some suitable habitat within the Project Area.
<i>Plectorhyncha lanceolata</i>	Striped Honeyeater		R	2	2020	The Striped Honeyeater is found in eastern Australia, mainly inland, from the Yorke Peninsula, South Australia to the coast of New South Wales, around Toukley, and north to Charters Towers, Queensland. The Striped Honeyeater is found in forests and woodlands, often along rivers, as well as mangroves and in urban gardens (Birdlife Australia 2022).	Possible – Some suitable habitat within the Project Area but vagrant species to general area.
<i>Polytelis anthopeplus monarchoides</i>	Regent Parrot	VU	V	2	1996	The Regent Parrot (eastern) is confined primarily to the semi-arid interior of south-eastern mainland Australia. It inhabits riparian or littoral River Red Gum (<i>Eucalyptus camaldulensis</i>) forests or woodlands and adjacent Black Box (<i>E. largiflorens</i>) woodlands (Baker-Gabb and Hurley 2011).	Unlikely – No very recent records despite some suitable habitat.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Rostratula australis</i>	Australian Painted Snipe	EN	E	1	Species or species habitat likely to occur within area	The Australian Painted Snipe inhabits many different types of shallow, brackish or freshwater terrestrial wetlands, especially temporary ones which have muddy margins and small, low-lying islands. Suitable wetlands usually support a mosaic of low, patchy vegetation, as well as lignum and Canegrass (Birdlife Australia 2022).	Unlikely – No recent records despite some suitable habitat.
<i>Stagonopleura bella samueli</i>	Beautiful Firetail	EN	R	1, 3	2020	Occurs in the AMLR/Eyre Peninsula region of SA where it resides in a wide range of Eucalypt dominated vegetation communities that have a grassy understorey, including woodland, forest and mallee. Only small pockets have been observed near the coast (Birdlife Australia 2022).	Likely – Some suitable habitat within the Project Area. Very suitable habitat adjacent to the Project Area in Mount George Conservation Park.
<i>Turnix varius varius</i>	Painted Buttonquail		R	2	2012	These birds range almost continuously, in appropriate habitat, from about the Atherton Tableland in Qld, round the coast to the EP and north to the southern Flinders Ranges in SA, avoiding only the driest regions of Qld and NSW. Temperate and eastern tropical forests and woodlands form the habitats of this species (Morcombe 2021).	Possible – Some suitable habitat within the Project Area.
<i>Zanda funerea whiteae</i>	Yellow-tailed Black Cockatoo		V	2, 3	2022 / 2020	Eucalyptus forests and woodlands. Plantations of Eucalyptus and introduced Pinus sp. (Pizzey and Knight 2013)	Highly Likely / Known – Observed during the field survey and some suitable habitat is present in the Project Area.
<i>Zapornia tabuensis</i>	Spotless Crane		R	2	2010	Mostly found in well vegetated freshwater wetlands with rushes and reeds. Will also frequent muddy areas, reedbeds or wetlands.	Possible – Some suitable habitat within the Project Area including water sources.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Zoothera lunulata halmaturina</i>	Bassian Thrush	EN	R	1, 2, 3	Species or species habitat known to occur within area / 2022 / 2018	Damp, densely forested areas and gullies are favoured by the Bassian Thrush, usually with a thick canopy overhead and leaf-litter below (DAWE 2022).	Likely – Some suitable habitat within the Project Area. Very suitable habitat adjacent to the Project Area in Mount George Conservation Park.
MAMMALIA (MAMMALS)							
<i>Antechinus agilis</i>	Agile Antechinus		E	2	2021	Forests in the south-eastern corner of Australia. Prefers areas with dense ground cover and hiding places such as fallen logs.	Possible – Some suitable habitat within the Project Area generally confined to the far southeast of SA.
<i>Antechinus flavipes</i>	Yellow-footed Antechinus		V	2	2021	Inhabits dry forests on the inland side of the Great Dividing Range, Australia (Kelly et al. 2008).	Likely – Some suitable habitat within the Project Area. Very suitable habitat adjacent to the Project Area in Mount George Conservation Park.
<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot	EN	V	1, 2	Species or species habitat known to occur within area / 2021	This species prefers dense ground cover, tall grass and low shrubbery. They live near swamps and rivers as well as in thick scrub in drier areas. They make their nests on the ground and in logs. The nests consist of sticks, leaves, grass, and soil (TSSC 2016b).	Likely – Some suitable habitat within the Project Area. Very suitable habitat adjacent to the Project Area in Mount George Conservation Park.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	R	1, 2	Foraging, feeding or related behaviour likely to occur within area / 2020	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, that provide fruit or a rich source of nectar (DAWE 2021b). This species may occur within the Project Area; however, they would only be expected to visit for short periods if suitable flower or fruit resources are available.	Likely – Some suitable foraging habitat within the Project Area. Project Area is less than 50 km from nearest camp at Botanic Park in Adelaide
<i>Trichosurus vulpecula</i>	Common Brushtail Possum		R	2	2022	Utilises various woodland habitats and suburban environs. Feeds on flowers, fruit, buds and leaves of native vegetation. Requires hollows (within dead or alive tree) or on ground for daytime nesting (Strahan & van Dyck 2008).	Highly Likely / Known – Some suitable habitat including hollows within the Project Area. Scat from this species was observed within the Project Area.
REPTILIA (REPTILES)							
<i>Egernia cunninghami</i>	Cunningham's Skink		E	2	2022	Occurs in forests and rock outcrops where they bask on top of outcrops and will scurry between rock ledges to shelter.	Unlikely – despite very recent records, no rock outcrops are present in the Project Area for shelter.

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
<i>Varanus rosenbergi</i>	Heath Goanna		V	2	2014	Habitat across southern Australia includes coastal heaths, humid woodlands, and wet and dry sclerophyll forests (Cogger 2014).	Possible – recent records within 10 years. Species occupies large ranges which incorporate heath, wet and dry forest, and woodlands, such as those found in the Project Area. No termite mounds observed in Project Area but may occur nearby.
<i>Varanus varius</i>	Lace Monitor		R	2	2013	This species is a large arboreal lizard which is found in eastern and south-eastern Australia from Cape York Peninsula (Queensland) to south-eastern South Australia. Lace Monitors occur in well-timbered areas from dry woodlands to cool temperate forests in southern Australia (Cogger, 2014). Restricted distribution in SA, occurring in upper reaches of the SA Murray Darling Basin and isolated population in the southern Flinders Ranges.	Unlikely – outside of known distribution. Nearby record is isolated and thought to be escapee from Cleland Wildlife Park.

Conservation status:

Aus: Australia (EPBC Act). **SA:** South Australia (NPW Act). **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. **Mi (W):** listed as a Migratory Wetland species under the EPBC Act. **Mi (Ma):** listed as a Migratory Marine species under the EPBC Act.

PMST result: Likelihood of species or species habitat to occur within 5 km of the Project Area.

Source of Information:

1: PMST (DCCEEW 2023) – 5 km buffer applied to Project Area;

2: BDBSA (DEW 2022b) – 5 km buffer applied to Project Area;

3: Birdlife Australia (DEW 2022b) – 5 km buffer applied to Project Area.

Abbreviations within Distribution and preferred habitat:

EP: Eyre Peninsula; **FP:** Fleurieu Peninsula; **FR:** Flinders Ranges; **KI:** Kangaroo Island; **MLR:** Mount Lofty Ranges; **MU:** Murraylands; **NL:** Northern Lofty; **NP:** National Park; **NSW:** New South Wales; **QLD:** Queensland; **SL:** Southern Lofty; **SE:** Southeast / South-Eastern; **SW:** South-Western; **Tas:** Tasmania; **Vic:** Victoria; **WA:** Western Australia; **YP:** Yorke Peninsula.

Appendix 9. Assessment of likelihood of nationally (EPBC Act) listed migratory species identified by the PMST (DCCEEW 2023) and BDBSA (DEW 2022b) to occur in the Project Area (exclusively marine species have been omitted) (orange shading = possible to occur).

Scientific name	Common name	Conservation status		Source	PMST result / Latest sighting (year)	Distribution and habitat preferences	Likelihood of occurrence within the Project Area
		Aus	SA				
AVES (BIRDS)							
<i>Apus pacificus</i>	Fork-tailed Swift	Mi (Ma)		1	Species or species habitat likely to occur within area	Widespread but almost exclusively aerial. Mostly occur over inland plains and dry or open habitats.	Possible – Some suitable habitat present. Possible to occur as flyover only.
<i>Gallinago hardwickii</i>	Latham's Snipe	Mi (W)	R	1	Species or species habitat likely to occur within area	This is a wetland species which prefers shallow water dominated by tussocks, sedges, rushes and reeds (Pizzey and Knight 2013).	Unlikely – No recent records despite some suitable habitat.
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Mi (T)	E	1, 2	Species or species habitat likely to occur within area / 2005	Known inhabitant of forest, woodland, mangroves and coastal heath scrub. Prefers dense, wet gullies of heavy eucalypt forest in breeding season (Morcombe, 2021).	Possible – Some suitable habitat within the Project Area.
<i>Rhipidura rufifrons</i>	Rufous Fantail	Mi (T)		1	Species or species habitat known to occur within area	Occur in moist eucalypt forests and rainforests, where they usually inhabit the dense, shady undergrowth of gullies (Birdlife Australia 2022).	Unlikely – No recent records and habitat within the Project Area is unsuitable.
<i>Tringa nebularia</i>	Common Greenshank	Mi (T)		1	Species or species habitat likely to occur within area	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 (Morcombe 2021).	Unlikely – No recent records despite some suitable habitat.

Conservation status:

-
Aus: Australia (EPBC Act). SA: South Australia (NPW Act). 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. Mi (W): listed as a Migratory Wetland species under the EPBC Act. Mi (T): listed as a Migratory Terrestrial species under the EPBC Act. Mi (Ma): listed as a Migratory Marine species under the EPBC Act.

PMST result: Likelihood of species or species habitat to occur within 5 km of the Project Area.

Source of Information:

1: PMST (DCCEEW 2023) – 5 km buffer applied to Project Area;

2: BDBSA (DEW 2022b) – 5 km buffer applied to Project Area;

Abbreviations within Distribution and preferred habitat:

EP: Eyre Peninsula; FP: Fleurieu Peninsula; FR: Flinders Ranges; KI: Kangaroo Island; MLR: Mount Lofty Ranges; MU: Murraylands; NL: Northern Lofty; NP: National Park; NSW: New South Wales
QLD: Queensland; SL: Southern Lofty; SE: Southeast / South-Eastern; SW: South-Western; Tas: Tasmania; Vic: Victoria; WA: Western Australia; YP: Yorke Peninsula.



EBS Ecology
112 Hayward Avenue
Torrensville, SA 5031
www.ebsecology.com.au
t. 08 7127 5607