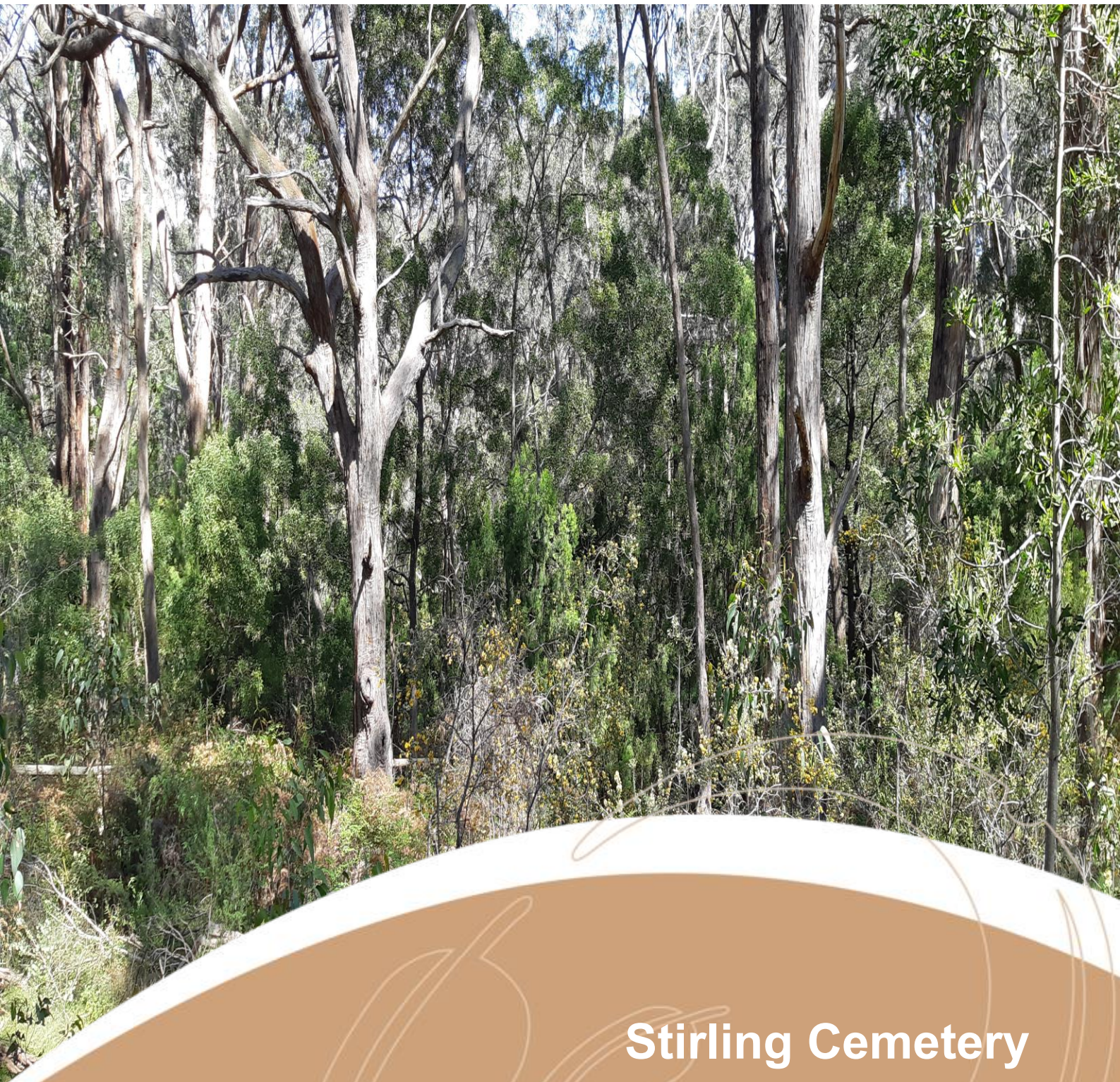
ebs ecology



Stirling Cemetery

Native Vegetation Assessment

Stirling Cemetery - Native Vegetation Assessment

05 November 2019

Version 1

Prepared by EBS Ecology for Adelaide Hills Council

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GLOSSARY AND ABBREVIATION OF TERMS

ALA	Atlas of Living Australia
AMLR	Adelaide and Mount Lofty Ranges
BAM	Bushland Assessment Manual
BDBSA	Biological Database of South Australia
DEW	Department for Environment and Water
DotEE	Department of the Environment and Energy
EBS	EBS Ecology
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ha	hectare
km	kilometre
MNES	Matters of National Environmental Significance
m	metre
N.D.	no date
NPW Act	*National Parks and Wildlife Act 1972*
NRM	Natural Resource Management
NVF	Native Vegetation Fund
NV Act	*Native Vegetation Act 1991*
NVC	Native Vegetation Council
Pers. Comm	Personal Communication
PMST	Protected Matters Search Tool
the Project	The proposed development of Stirling Cemetery to expand burial areas
SA	South Australia/South Australian
SEB	Significant Environmental Benefit
sp.	species
spp.	species (plural)
ssp.	subspecies
TEC	Threatened Ecological Community
UBS	Unit Biodiversity Score
TBS	Total Biodiversity Score

EXECUTIVE SUMMARY

EBS Ecology (EBS) was engaged by Adelaide Hills Council to conduct an ecological assessment for the proposed development of the Stirling Cemetery to expand burial areas. The areas proposed for clearance are 0.22 ha and 0.12 ha in size. The ecological assessment was comprised of a desktop and field survey to: (1) determine how matters of Federal and State significance may be impacted by the proposed development; and (2) calculate the Significant Environmental Benefit (SEB) requirement for the clearance of native vegetation associated with the Project. The field assessment was conducted on 27 September 2019 and included a vegetation survey that followed the Bushland Assessment Manual (BAM) method developed by the Department of Environment and Water (DEW), which incorporates a basic fauna assessment.

This report presents the results of the desktop and field assessments in the form of a native vegetation clearance proposal. This meets the requirements of the *Native Vegetation Act 1991* (NV Act).

Desktop results

The desktop assessment identified that the following nationally threatened flora and fauna species listed under the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) have potential to occur within the Project area:

- Southern Brown Bandicoot (*Isoodon obesulus obesulus*) – *Endangered*
- Bassian Thrush (*Zoothera lunulata halmaturina*) – *Vulnerable*
- *Euphrasia collina subsp. osbornii (Osborn's Eyebright)* – *Endangered*

No nationally Threatened Ecological Communities (TECs) are known to occur within 5 km of the Project area. Nationally listed migratory species were considered unlikely to occur within the Project area and no nationally threatened flora or fauna species were observed during the field survey.

The desktop assessment also identified six flora and seven fauna species that are considered threatened under the *National Parks and Wildlife Act 1972* (NPW Act) that may potentially occur within the Project area:

- *Acacia gunnii* (Ploughshare Wattle) – State Rare
- *Baumea gunnii* (Slender Twig-rush) – State Rare
- *Eucalyptus dalrympleana ssp. Dalrympleana* (Candlebark Gum) – State Rare
- *Eucalyptus viminalis ssp. Viminalis* (Manna Gum) – State Rare
- *Pterostylis curta* (Blunt Greenhood) – State Rare
- *Rytidosperma tenuior* (Short-awn Wallaby-grass) – State Rare
- *Isodon obesulus* (Southern Brown Bandicoot) – Nationally Endangered, State Vulnerable
- *Antechinus flavipes* (Yellow-footed Antechinus) State Vulnerable
- *Trichosurus vulpecula* (Common Brush-tail) – State Rare
- *Calyptorhynchus funereus whiteae* (Yellow-tailed Black-Cockatoo) – State Vulnerable
- *Petroica multicolor boodang* (Scarlet Robin) – State Rare

- *Zoothera lunulata* (Bassian Thrush) – State Rare
- *Pseudophryne bibronii* (Brown Toadlet) State Rare

Field assessment results

One of the threatened flora species listed under the NPW Act (*Eucalyptus dalrmpleana ssp. Dalrympleana* (Candlebark Gum)) was observed during the field assessment:

The native vegetation assessment established 2 BAM Sites (Small area <0.5 ha) within two of the three Vegetation Associations present in the Cemetery area (Project area). These vegetation associations were:

- *A1 - Eucalyptus obliqua (Messmate Stringybark) woodland with some juvenile emergent E. dalrympleana ssp. dalrympleana (Candlebark Gum). Mid-storey of Acacia melanoxylon (Blackwood) and Exocarpus cupressiformis* (Native Cherry)*, with a dense understorey dominated by Pultenaea daphnoides (Large-leaf Bush Pea) and Lepidosperma sp. (Sword sedge).*

This vegetation community is characterised by high species diversity (35 native flora species) and was determined to be in moderate to good condition, with a Vegetation Condition Score of 58.5 out of a maximum 80 points. In the area assessed, the overstorey stratum was interrupted up by a small number of large exotic pine trees (*Pinus radiata*) and the understorey vegetation, although highly diverse with native species, was highly modified throughout by high weed diversity and biomass as well as partial clearance in some areas.

- *A2 - Eucalyptus baxteri (Brown Stringybark), Eucalyptus obliqua (Messmate Stringybark) woodland with a dense sclerophyll understorey dominated by Pultenaea daphnoides (Large-leaf Bush-pea), Acacia myrtfolia (Narrow-leaf Myrtle Wattle) and the sedge Lepidosperma semiteres (Wire Rapier-sedge).*

This vegetation community is in moderate to good condition (Vegetation Condition Score of 66.41 out of a maximum of 80 points), with some disturbance (edge effects - relative to other vegetation present within the same vegetation community) caused by adjacent activities in the cemetery area. The area had a largely intact understorey with a very high diversity of native plant species (57 species).

SEB Summary

- Overall, the native vegetation assessment determined a combined clearance impact of **26.73 points**.
- The proposal is either ‘at variance’ or ‘seriously at variance’ with four Principles of Clearance.
- The total payment into the Native Vegetation Fund (NVF) required would be **$31,873.86**, which includes a $1,713.80 administration fee.
- Or alternatively, the on-ground SEB offset area required is **3.34 hectares**.

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1 APPLICANT INFORMATION

The native vegetation clearance application information for the proposed development of the Stirling Cemetery to expand burial areas is provided in Table 1.

Table 1. Native vegetation clearance application information for the proposed vegetation clearance at Stirling Cemetery, Aldgate in South Australia.

Applicant:	Adelaide Hills Council		
Key contact:	Tonia Brown Biodiversity Officer | Open Space Adelaide Hills Council | PO Box 44 Woodside SA 5244 p 08 8408 0451 e tbrown@ahc.sa.gov.au w ahc.sa.gov.au EBS contact: Stuart Collard (Senior Ecologist) Email: Stuart.Collard@ebsecology.com.au		
Landowner:	Adelaide Hills Council		
Site Address:	Mount Barker Rd, Aldgate, South Australia 5154		
Local Government Area:	Adelaide Hills Council	Hundreds:	105100 (Noarlunga)
Certificate of Title:	CT/5137/585	Section Allotment:	H105500 S1579
Summary of Application			
Proposed clearance area:	The proposed clearance area falls within Stirling Cemetery, Aldgate. Summary: Project Footprint: 0.34 ha Site A1: 0.22 ha native vegetation clearance Site A2: 0.12 ha native vegetation clearance		
Applicable regulation and purpose of the clearance	The Project does not comply with any regulation. The purpose of the clearance is to expand the area available for burials in the Stirling Cemetery.		
Level of risk	The Project is escalated to a **Level 3** clearance as it is seriously at variance with principle 1(b) and at variance with principle 1(c)		
Proposed SEB offset:	The proposed offset is a payment.		

2 BACKGROUND

2.1 Purpose of the proposal

EBS Ecology (EBS) was engaged by the Adelaide Hills Council to conduct an ecological assessment for a proposed vegetation clearance area at Stirling Cemetery, Aldgate. The total area of clearance proposed is 0.34 ha in two different areas of the cemetery. The ecological assessment comprised a desktop and field survey to determine: (1) how matters of Federal and State significance may be impacted by the proposed clearance and (2) a Significant Environmental Benefit (SEB) calculation for the Project. The field assessment was conducted on 27 September 2019 and included a vegetation survey that followed the Bushland Assessment Manual (BAM) method approved by the Department of Environment and Water (DEW), which incorporates a fauna assessment.

This report summarises the data collected from the desktop and field study and provides an overview of:

- The type and condition of vegetation within the Project Sites, including threatened ecological communities, threatened species and declared weeds;
- fauna species present or likely to occur,
- the significance of vegetation as wildlife habitat; and
- any other ecological constraints associated with the Project.

2.2 Project area

The Project area occurs within a Council-owned Cemetery, Stirling Cemetery, which is located within the Adelaide and Mount Lofty Ranges (AMLR) Natural Resource Management (NRM) Region and the Local Government Area of Adelaide Hills Council.

Stirling Cemetery is located approximately 1.5 kilometres (km) ESE of Aldgate in the Adelaide Hills Council area. The cemetery covers 7.22 ha, much of which is remnant native vegetation, with a series of existing minor trails running through the vegetation areas. The cemetery is bounded by Strathalbyn Rd to the north, Oxford and Cambridge Roads to the west and private residential properties to the south and east.

2.3 Project footprint

The final impact footprint of the proposed vegetation clearance is expected to be 0.34 hectares (ha), comprising 2 vegetated areas (Area 1 and Area 2) that are adjacent to exiting burial Sites (Figure 1).

2.4 IBRA

The Project area lies within the Flinders Lofty Block IBRA Bioregion, the Mount Lofty Ranges IBRA Subregion and the Uraidla IBRA Association (DotEE 2012).

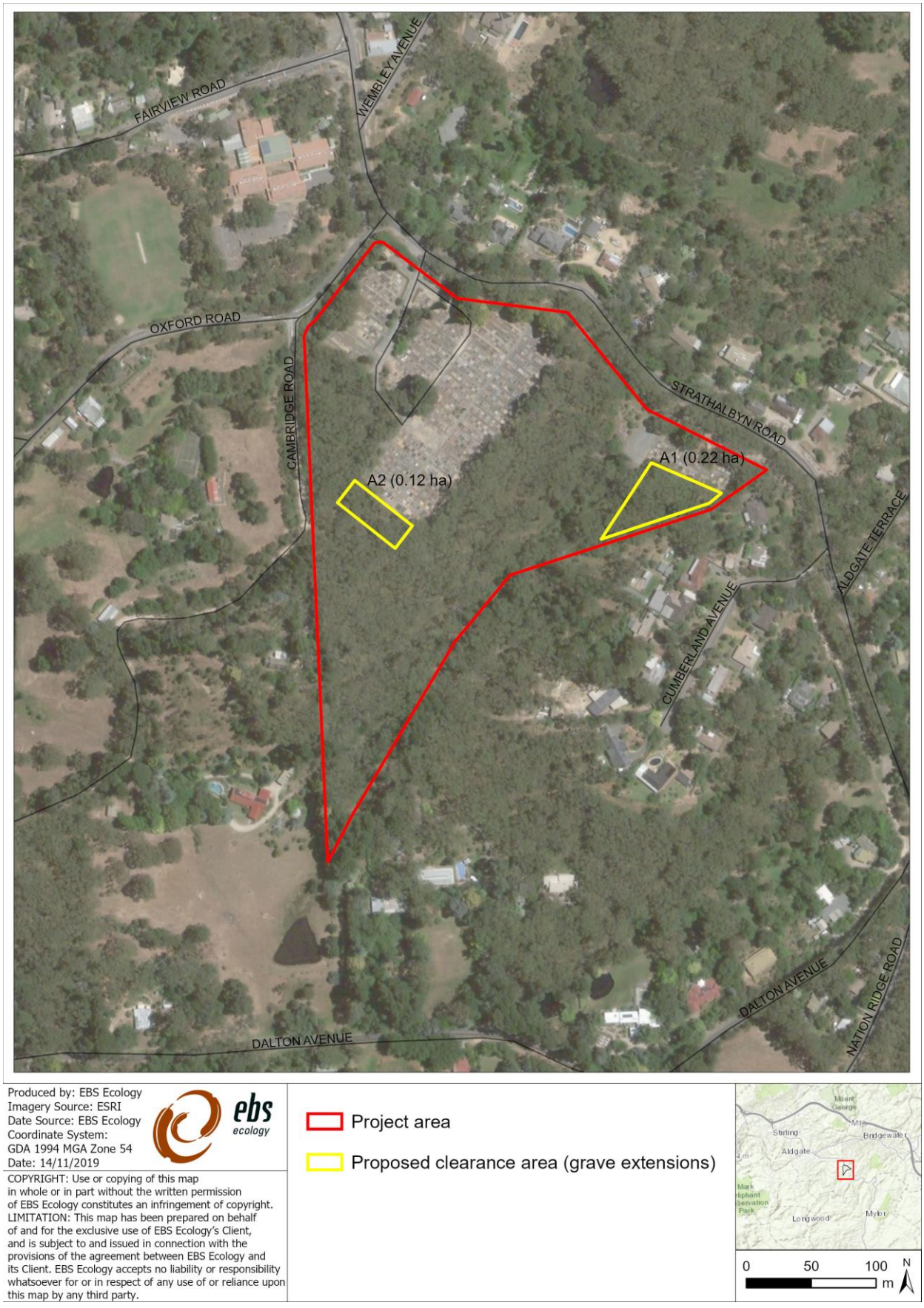


Figure 1. Project area location in Aldgate, South Australia showing proposed clearance areas Sites A1 and A2 (the Project Footprint).

2.5 Legislative requirements

2.5.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Environment Protection and Biodiversity Conservation Regulations 2000* provide a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the Act as 'matters of national environmental significance'. Any action that has, will have, or is likely to have a significant impact on matters of national environmental significance (MNES) requires referral under the EPBC Act.

2.5.2 Native Vegetation Act 1991

Native vegetation within the Project area is protected under the *Native Vegetation Act 1991* (NV Act) and *Native Vegetation Regulations 2017*. Any proposed clearance of native vegetation in South Australia (unless exempt under the *Native Vegetation Regulations 2017*) is to be assessed against the NV Act Principles of Clearance and requires approval from the Native Vegetation Council (NVC). A net environmental benefit is generally conditional on an approval being granted.

The NV Act applies in the Project area. Therefore, native vegetation must not be cleared unless approval is granted by the Native Vegetation Council (NVC) in accordance with *Section 29* of the Act.

There is no regulation exemption for the removal of native vegetation for the establishment of new grave sites in cemeteries. Therefore, the proposed clearance must be assessed against the Principles of Clearance as stated in Schedule 1 of the NV Act.

2.5.3 National Parks and Wildlife Act 1972

Native plants and animals in South Australia are protected under the *National Parks and Wildlife Act 1972* (NPW Act). It is an offence to take a native plant or protected animal without approval. Threatened plant and animal species are listed in Schedules 7 (endangered species), 8 (vulnerable species) and 9 (rare species) of the Act. Persons must not:

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

3 METHODS

3.1 Desktop assessment

Databases compiled and managed by the Department of the Environment and Energy (DotEE) and Department of Environment and Water (DEW) (South Australia) were analysed to determine the flora and fauna known to or potentially occurring within 5 km of the Project area. The aim of the desktop assessment was to determine whether any species or threatened ecological communities listed under the *Environment Protected Biodiversity Conservation* (EPBC) *Act 1999* or *National Parks and Wildlife* (NPW) *Act 1972* have potential to occur within the Project area.

3.1.1 EPBC Act Protected Matters Search Tool (PMST)

A Protected Matters Report was generated on 1 October 2019 to identify matters of national environmental significance under the EPBC Act. The online Protected Matters Search Tool (PMST), maintained by the DotEE was used to identify any flora and fauna species or ecological communities of national environmental significance under the EPBC Act that may occur or may have suitable habitat within the Project area. A 5 km buffer from the Project area was used as the search area (DotEE 2018).

3.1.2 Biological Database of South Australia (BDBSA)

A 2019 data extraction from the Biological Database of South Australia (BDBSA) was used to generate a list of all State and Nationally-listed threatened flora and fauna records within 5 km of the Project area (Recordset no. DEWNRBDBSA190528-1).

3.1.3 Likelihood of Occurrence Assessment

An assessment to determine the likelihood of occurrence for threatened species, migratory species and threatened ecological communities (TECs) within the Project area was conducted. Each of the threatened species and TECs identified by the PMST and BDBSA data extract were assigned a rating (highly likely, likely, possible and unlikely), which described their likelihood of occurrence with the Project area. The following criteria were considered when assigned a likelihood rating:

- Presence during the field surveys;
- Presence of suitable habitat as informed by the field surveys;
- Date of the most recent record (taking into consideration the date of the last surveys conducted in the area);
- Proximity of the records (distance to the Project area);
- Location of the records, taking into consideration the landscape, remnancy and vegetation type of the Project area, with higher likelihood assigned to species that were found in similar locations/condition/vegetation associations; and
- Knowledge of the species, including; habitat preferences, causes of its decline, local population trends and the conspicuousness of the species.

3.2 Bushland assessment

The vegetation survey was performed in accordance with the *Bushland Assessment Manual* method (NVC 2019) by an accredited ecologist. This methodology produces a SEB area and a value for payment into the Native Vegetation Fund derived from the clearance of native vegetation. The overall calculation is based upon the following parameters:

- Landscape context;
- Vegetation condition;
- Conservation significance score;
- Mean annual rainfall; and
- Area of clearance.

The factors used to determine each of these parameters are described in Table 2.

The BAM small area (<0.5 ha) assessment was used because the two areas proposed for clearance were both modified by edge effects associated with adjacent grave sites (e.g. weed invasion and other disturbances).

Table 2. The factors and parameters used to calculate the total SEB area and value.

Parameter	Factors
Landscape context	• Percentage vegetation cover within 5 km. • Block shape. • Distance to remnant of >50 ha. • Remnancy of IBRA Association (percentage of vegetation remaining). • Percentage of vegetation protected within the IBRA Association. • The presence of riparian vegetation, swamps or wetlands.
Vegetation condition	• Native species diversity. • Number of native lifeforms and their cover. • Number of regenerating species. • Weed cover and the level of invasiveness of dominant species. • Cover of bare ground, fallen timber, exotic species in the understorey. • Tree health and the number of individuals supporting hollows.
Conservation significance score	• The presence of federal or state listed threatened ecological communities, and their conservation rating. • Number of threatened plant species recorded at the Site, and their conservation rating. • Number of threatened fauna species for potential habitat occurs within the Site, and their conservation rating.
Mean annual rainfall	The mean annual rainfall for each Site.
Area of clearance	The area of native vegetation (in ha) to be cleared for the Project.

3.3 Site fauna assessment

Fauna observed during the BAM were opportunistically recorded over the Project area. For each fauna species observed, the following data were recorded:

- Species;
- Method of observation (observed, heard, or sign of presence); and
- Number of individuals (if observed).

Whilst traversing the Project area and Bushland Assessment Sites, the value of habitat for threatened species was assessed.

3.4 Limitations

Flora and fauna records from the BDBSA (compiled by DEW) were limited to a 5 km buffer around the Project area. The 5 km buffer is prescribed by the BAM for determining the number of federal and state threatened species that may occur within the Project area. The reliability of the BDBSA data ranges from 100 m to over 100 km. Fauna species, particularly birds, can traverse distances in excess of 5 km. Hence, these records may not identify all threatened flora and fauna species that may occur in the area.

The fauna survey was performed to determine the likelihood of presence for threatened fauna species, but the assessment was limited to opportunistic observations. Therefore, it is likely that not all fauna species present within the Project area were observed during the fauna assessment. Consequently, the compiled list of fauna observations does not represent all species expected to occur within the Project area. Two of the threatened fauna species identified in the desktop assessment are nocturnal and although signs for these species are visible during daytime surveys, a nocturnal survey would be required to determine their presence.

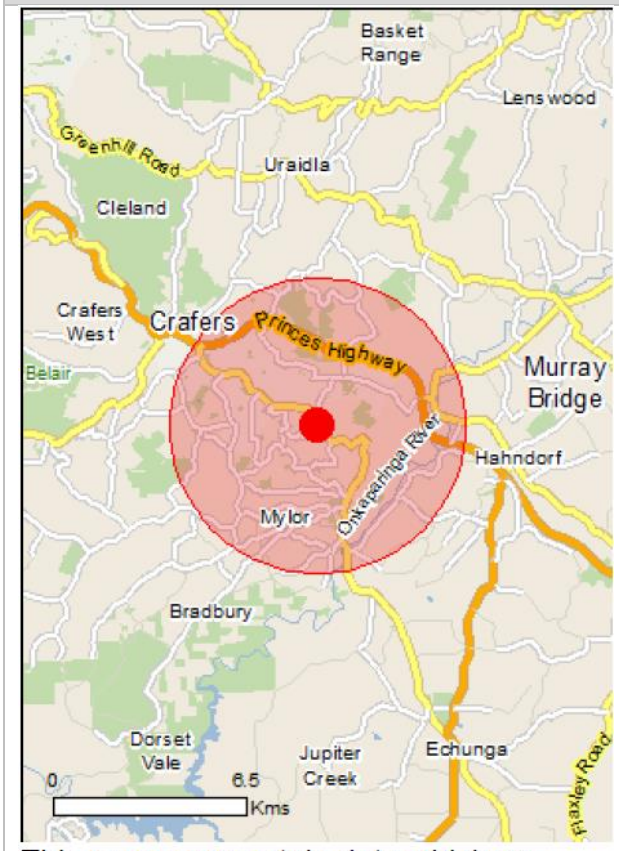
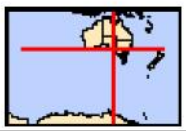
The findings and conclusions expressed by EBS are based solely upon information in existence (and able to be identified) at the time of the field assessment. The combination of field data, database records and background research has provided a solid foundation, in addition to existing resources, for determining the flora and fauna that are likely to, or are known to, occur within the Project area.

4 DESKTOP ASSESSMENT RESULTS

4.1 Matters of National Environmental Significance

The PMST included a search area within a 5 km radius of the Project area and identified 31 nationally threatened species and 14 listed migratory species, protected under the EPBC Act that may be relevant to the Project area. Table 3 summarises the results of the EPBC Protected Matters Report and the relevant Matters of National Environmental Significance (MNES) discussed further below. Note that some of these matters are not impacted by or relevant to the Project (e.g. marine areas and listed marine species) and are therefore not discussed.

Table 3. Summary of the results of the EPBC Act Protected Matters Search (DotEE 2019).

Search area (5 km buffer)	Matters of National Environment Significance under the EPBC Act 1999	Identified within the search area
	World Heritage Properties	None
	National Heritage Properties	None
	Wetlands of International Significance	None
	Great Barrier Reef Marine Park	None
	Commonwealth Marine Areas	None
	Threatened Ecological Communities	None
	Threatened Species	31
	Migratory Species	14
	Commonwealth Lands	2
	Commonwealth Heritage Places	None
	Listed Marine Species	22
	Whales and other Cetaceans	None
	Critical Habitats	None
	Commonwealth Reserves	None
	State and Territory Reserves	34
	Regional Forest Agreements	None
	Invasive Species	44
This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010 Coordinates Buffer: 5.0Km 	Nationally Important Wetlands	None

4.1.1 Threatened Flora

The desktop assessment identified 15 flora species of national significance. Of these, one flora species of national significance is thought to possibly occur in the Project area; Nationally Endangered *Euphrasia collina subsp. osbornii (Osborn's Eyebright).* Habitat within the Project area was considered possibly suitable for these orchids. *Euphrasia collina subsp. osbornii* are extremely rare, but there are nearby records, including a recent record from 2000, approximately 2 km to the south of the Project area, in similar habitat near Mylor (Figure 2).

4.1.2 Threatened Fauna

The desktop assessment identified 45 fauna species of national significance. Most of these species were deemed unlikely to occur. However, the Endangered Southern Brown Bandicoot (*Isoodon obesulus obesulus*), Vulnerable Grey-headed Flying Fox (*Pteropus poliocephalus*) and Vulnerable Bassian Thrush (*Zoothera lunulata halmaturina*) were the three nationally threatened fauna species that were deemed to 'possibly' occur within the Project area (Table 4).

- Multiple records of the **Southern Brown Bandicoot** from the surrounding area (5 km radius, Figure 3) suggest that this nocturnal species is likely to occur at the Site. The species was recorded within the Project area boundary in 2002 (Figure 3).
- The **Grey-headed Flying Fox** may occur within the Project area (Table 4). Urban environments rather than natural environments are more beneficial to Grey-headed Flying Foxes in the Adelaide region. This is due to the diversity of non-indigenous food plants that provide a suitable food resource year-round (Williams *et al.* 2006). Grey-headed Flying Foxes consume the blossoms of eucalypts, and therefore, if eucalypt species were flowering profusely within the Project area, then Grey-headed Flying Foxes may utilise these trees for foraging.
- The **Bassian Thrush** inhabits forests and woodlands that are dense, moist and offer access to leaf litter (Pizzey and Knight 2014). The most recent record for the species in area surrounding the Project area was in 2016. The woodland present in the wet gully at Site A1 is therefore regarded as potentially suitable habitat for this species.

4.1.3 Migratory Fauna

The desktop assessment identified 14 Migratory species. Of these, 12 species were deemed unlikely to occur. Two migratory fauna species; White-throated Needletail (*Hirundapus caudacutus*) and Fork-tailed Swift (*Apus pacificus*), could potentially occur within the Project area (Table 4). Both migratory fauna species are aerial passerines that breed outside Australia, and therefore, would likely only ever fly over the Project area, rather than use any available habitat features.

4.2 Matters of state significance

4.2.1 Threatened Flora

Twenty-one (21) State threatened flora species have been historically recorded within 5 km of the Project area (Figure 2). Five species of State conservation significance have been classified as possibly occurring within the Project area (Table 4), including:

- *Acacia gunnii (Ploughshare Wattle)*
- *Eucalyptus dalrympleana ssp dalrympleana* (Candlebark Gum)
- *Eucalyptus viminalis ssp viminalis* (Manna Gum)
- *Pterostylis curta* (Blunt Greenhood)
- *Rytidosperma tenuius* (Short-awn Wallaby-grass)

Eucalyptus dalrympleana ssp dalrympleana was recorded in Site A1 and is discussed further under Section 5.2. The other four plant species were not recorded during the field survey of the proposed clearance areas, but they have been recorded previously within other parts of the Project area (AHC 2017).

All species determined to possibly occur at the Site have records within 5 kilometres, some of them including multiple specimens and/or known from similar nearby habitats. Given the small survey areas, it is expected that these species would have been observed if present. However, it is noted that both areas were densely vegetated, and some species may not have been visible, so there remains some possibility that rare flora could be present in the Project footprint area.

4.2.2 Threatened Fauna

Nineteen (19) State threatened fauna species consisting of 12 bird, four mammal, one reptile and two amphibian species have been historically recorded within 5 km of the Project area (Figure 3). Based on a desktop assessment, seven (7) of these species were considered to have potential to occur within the Project area:

- *Isodon obesulus obelsulus* (Southern Brown Bandicoot) – Nationally Endangered, State Vulnerable
- *Antechinus flavipes* (Yellow-footed Antechinus) – State Vulnerable
- *Trichosurus vulpecula* (Common Brush-tail) – State Rare
- *Calyptorhynchus funereus whiteae* (Yellow-tailed Black-Cockatoo) – State Vulnerable
- *Petroica multicolor boodang* (Scarlet Robin) – State Rare
- *Zoothera lunulata* (Bassian Thrush) – State Rare
- *Pseudophryne bibronii* (Brown Toadlet) – State Rare

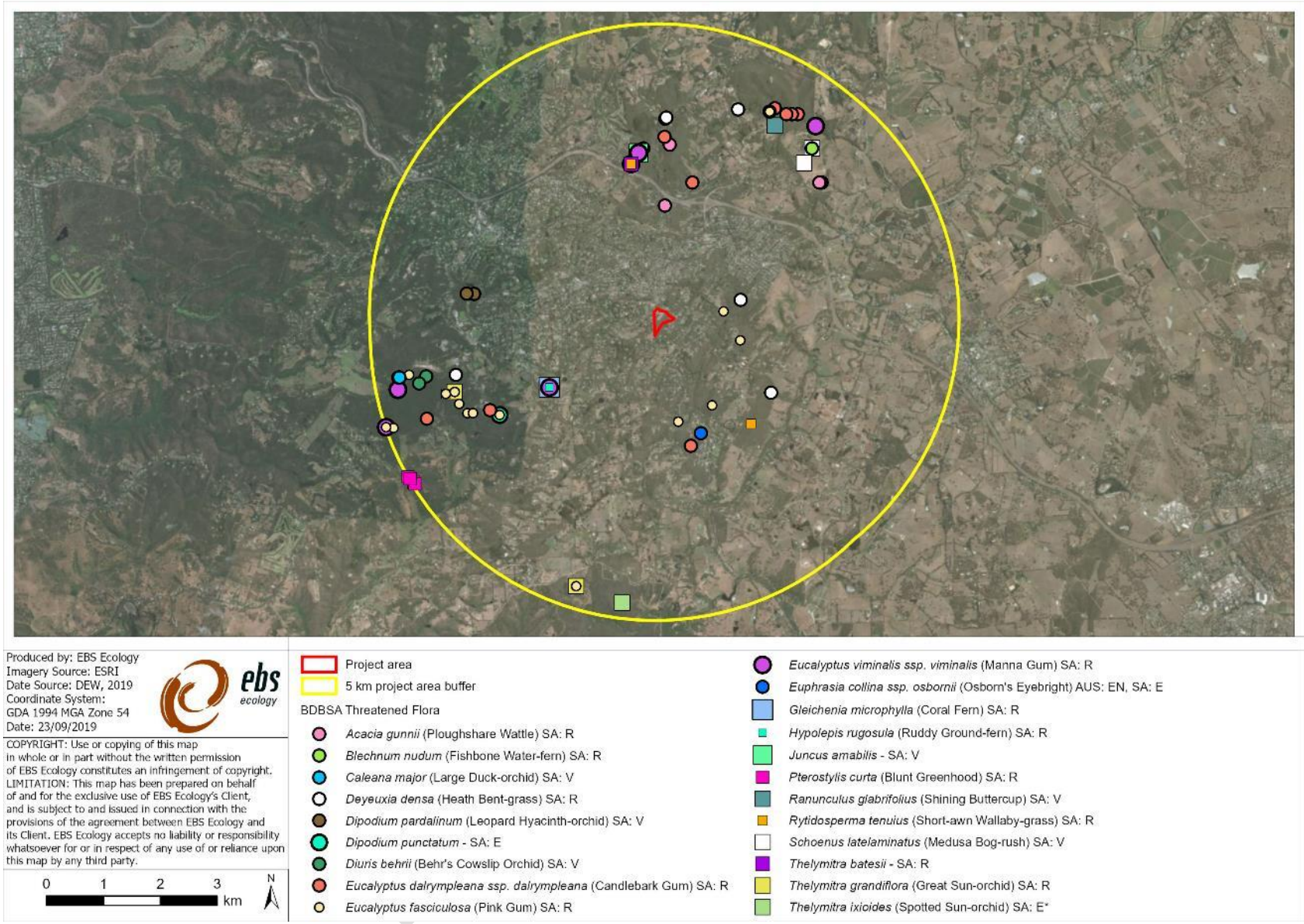


Figure 2. State and nationally threatened flora species within a 5 km radius of the Project area.

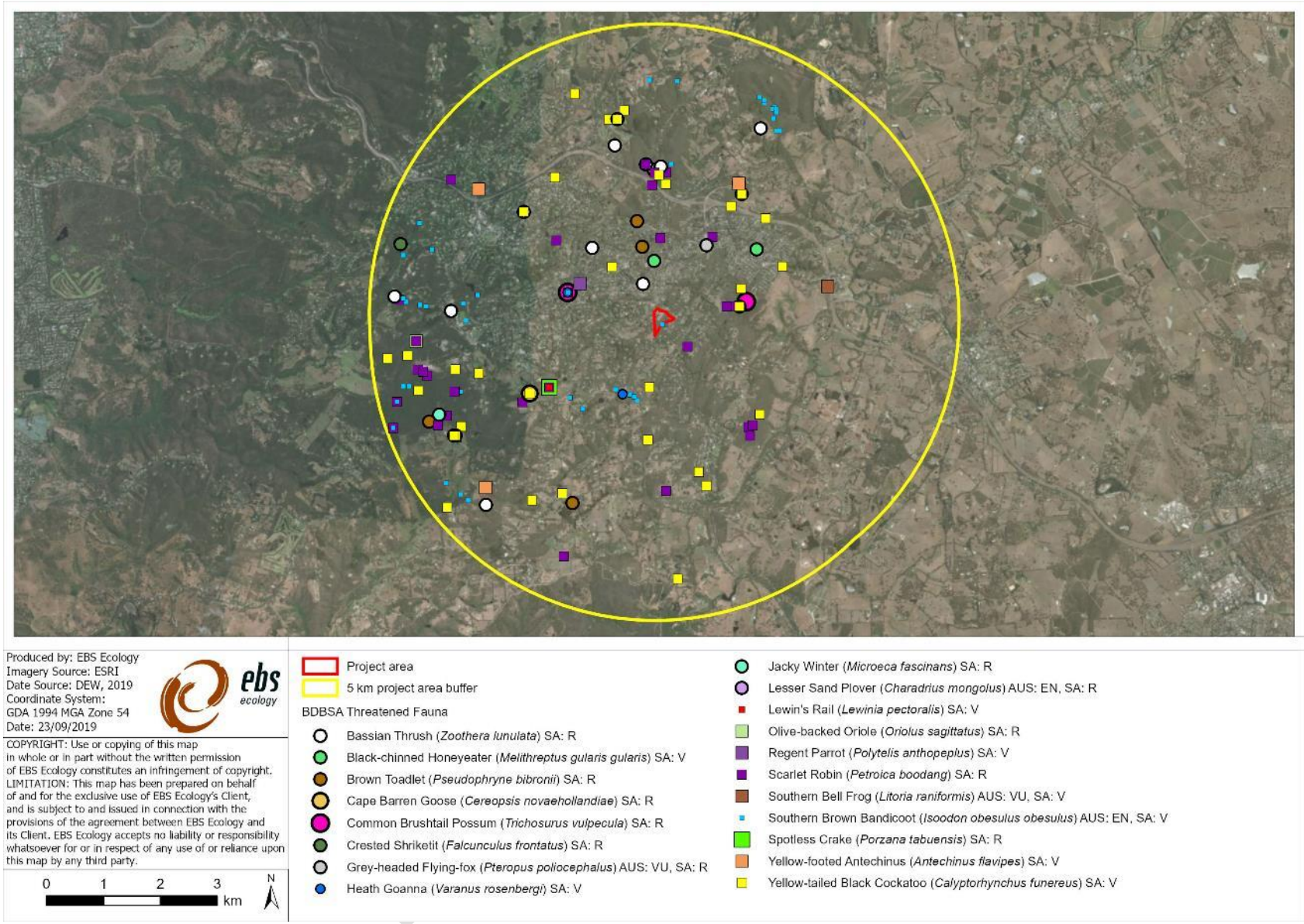


Figure 3. State and nationally threatened fauna species recorded within 5 km of the Project area.

Table 4. Threatened flora and fauna species and their likelihood of occurrence within the Project area.

Scientific name	Common name	Conservation status		Data Source	Last Record (Year)	Likelihood of occurrence within Project area*	Comment
		Aus	SA				
PLANTAE	**PLANTS**						
Acacia gunnii	Ploughshare Wattle		R	2	2018	Likely	Previously recorded within the Project area by AHC (2017).
Blechnum nudum	Fishbone Water-fern		R	2		Unlikely	No suitable habitat or recent records
Caleana major	Large Duck-orchid		V	2		Unlikely	No suitable habitat or recent records
Caladenia argocalla	White-beauty Spider-orchid	EN	E	1	1916	Unlikely	*Caladenia argocalla* has not been recorded within 5 km of the Project area. This species inhabits *Eucalyptus leucoxylon subsp leucoxylon, E. fasciculosa, E. goniocalyx, and E. camaldulensis* woodlands and forests (Quarmby 2010) and is therefore considered unlikely to occur within the Project area.
Caladenia behrii	Pink-lipped Spider-orchid	EN	E	1	2001	Unlikely	*Caladenia behrii* has not been recorded within 5 km of the Project area. This species inhabits a diversity of Eucalyptus woodlands more open grassy woodland (Quarmby 2010) but was deemed unlikely to occur.
Caladenia gladiolata	Bayonet Spider-orchid, Clubbed Spider-orchid	EN	E	1		Unlikely	*Caladenia gladiolata* (has only been recorded from Mt Remarkable and Scott Creek, where it has occurred in *E. leucoxylon ssp leucoxylon* and *E. fasciculosa* vegetation associations (Quarmby 2010). As such, unsuitable habitat is present within the Project area for this species to occur.
Caladenia rigida	Stiff White Spider-orchid	EN	E	1	N.D.	Unlikely	This species has not been recorded within 5 km of the Project area. This species inhabits open grassy forests and woodlands (Quarmby 2010) and is therefore considered unlikely to occur within the Project area.
Caladenia tensa	Greencomb Spider-orchid, Rigid Spider-orchid	EN		1		Unlikely	This species has not been recorded has not been recorded within 5 km of the Project area. This species inhabits drier areas, particularly mallee communities and dry woodlands (TSSC 2016a).

Scientific name	Common name	Conservation status		Data Source	Last Record (Year)	Likelihood of occurrence within Project area*	Comment
		Aus	SA				
Corybas dentatus	Toothed Helmet-orchid	VU		1		Unlikely	No suitable habitat or recent records
Deyeuxia densa	Heath Bent-grass		R	2	1996	Unlikely	No suitable habitat or recent records
Dipodium pardalinum	Leopard Hyacinth-orchid		V	2		Unlikely	No suitable habitat or recent records
Dipodium punctatum			E	2		Unlikely	No suitable habitat or recent records
Diuris behrii	Behr's Cowslip Orchid		V	2		Unlikely	No suitable habitat or recent records
Eucalyptus dalrympleana ssp. dalrympleana	Candlebark Gum		R	2	2018	Likely	Previously recorded within the Project area by AHC (2017).
Eucalyptus fasciculosa	Pink Gum		R	2	2019	Unlikely	No suitable habitat or recent records
Eucalyptus viminalis ssp. viminalis	Manna Gum		R	2	2018	Likely	Previously recorded within the Project area by AHC (2017).
Euphrasia collina subsp. osbornii	Osborn's Eyebright	EN	E	1,2	2000	Possible	*Euphrasia collina subsp. osbornii* (Osborn's Eyebright) has been recorded within 5 km of the Project area. This species inhabits open eucalypt woodlands, coastal cliffs and inland swamps. Where this species occurs within these habitat types, the ground is relatively moist and open (Moritz and Bickerton 2010). The Project area could potentially contain suitable habitat for this species, but was not recorded in current or previous plant surveys (see AHC 2017)
Gleichenia microphylla	Coral Fern		R	2	2010	Unlikely	No suitable habitat or recent records
Glycine latrobeana	Clover Glycine	VU	V	1	2013	Unlikely	*Glycine latrobeana* (Clover Glycine) has not been recorded near the Project area recently. This species primarily inhabits grassland and grassland woodlands, and less often occurs within dry forests

Scientific name	Common name	Conservation status		Data Source	Last Record (Year)	Likelihood of occurrence within Project area*	Comment
		Aus	SA				
							and rarely within heathland (Carter and Sutter 2010). Therefore, it is probable that the vegetation within the Project area is unsuitable for this species.
Hypolepis rugosula	Ruddy Ground-fern		R	2	2012	Unlikely	No suitable habitat or recent records
Juncus amabilis			V	2	2009	Unlikely	No suitable habitat or recent records
Olearia pannosa subsp. pannosa	Silver Daisy-bush	VU	V	1		Unlikely	*Olearia pannosa subsp. pannosa* (Silver Daisy-bush) has not been recorded near the Project area. This species does not occur along the spine of the Mount Lofty Ranges, rather it occurs to the west of the ranges, where it grows within mallee and drier woodland and forest communities (DEH 2008b).
Prasophyllum pallidum	Pale Leek-orchid	VU	R	1		Unlikely	*Prasophyllum pallidum* (Pale Leek-orchid) has not been recorded within 5 km of the Project area.
Prasophyllum pruinosum	Plum Leek-orchid	EN	V	1, 2	2017	Possible	*Prasophyllum pruinosum* (Plum Leek-orchid) has no records within 5 km of the Project area.
Pterostylis cucullata ssp. sylvicola	Leafy Greenhood	VU	E	1, 2	2016	Unlikely	*Pterostylis cucullata* ssp. *sylvicola* (Leafy Greenhood) has not been recorded within 5 km of the Project area. In South Australia, the only substantial population of this species is located at Belair NP (TSSC 2016). It prefers open forest habitats that are dominated by *E. viminalis*, *E. camaldulensis* or *E. obliqua* (TSSC 2016b).
Pterostylis curta	Blunt Greenhood		R	2	1930	Likely	Previously recorded within the Project area by AHC (2017)
Ranunculus glabrifolius	Shining Buttercup		V	2	2000	Unlikely	No suitable habitat or recent records.
Rytidosperma tenuius	Short-awn Wallaby-grass		R	2	2019	Likely	Previously recorded within the Project area by AHC (2017).

Scientific name	Common name	Conservation status		Data Source	Last Record (Year)	Likelihood of occurrence within Project area*	Comment
		Aus	SA				
Schoenus latelaminatus	Medusa Bog-rush		V	2	2012	Unlikely	No suitable habitat or recent records.
Thelymitra batesii			R		2014	Unlikely	No suitable habitat or recent records.
Thelymitra grandiflora	Great Sun-orchid		R		2014	Unlikely	No suitable habitat or recent records.
Thelymitra epipactoides	Metallic Sun-orchid	EN				Unlikely	No suitable habitat or recent records.
Thelymitra ixiodes	Spotted Sun-orchid		E	2		Unlikely	No suitable habitat or recent records.
Thelymitra matthewsii	Spiral Sun-orchid	VU				Unlikely	No suitable habitat or recent records.
Veronica derwentiana subsp. homalodonta	Mount Lofty Speedwell	CE	E	1		Unlikely	*Veronica derwentiana subsp. homalodonta* (Mount Lofty Speedwell) has not been recorded near the Project area. The species inhabits moist gullies near creek lines (DEH 2008d).
AVES	BIRDS						
Actitis hypoleucos	Common Sandpiper	Mi	R	1		Unlikely	This is a wetland and coastal species (Pizzey and Knight 2014), and therefore, does not have suitable habitat within the Project area.
Apus pacificus	Fork-tailed Swift	Mi		1		Possible	This is an aerial passerine, that inhabits a wide variety of habitats, including cities, woodlands, forests and deserts (Pizzey and Knight 2014). As this species is present regionally and has suitable habitat in the Project area, it is possible that it may occur, but only flying over.
Botaurus poiciloptilus	Australasian Bittern	EN	V	1		Unlikely	This is a wetland species (Pizzey and Knight 2014), and therefore, does not have suitable habitat within the Project area.

Scientific name	Common name	Conservation status		Data Source	Last Record (Year)	Likelihood of occurrence within Project area*	Comment
		Aus	SA				
Calamanthus (Hylacola) pyrrhopygius	Chestnut-rumped Heathwren	EN	E	1, 2	1984	Unlikely	This is a small passerine that inhabits heathy woodlands and scrublands (Pizzey and Knight 2014). As heathy habitat was not present within the Project area, it is considered unlikely to occur.
Calidris acuminata	Sharp-tailed Sandpiper	Mi		1		Unlikely	This is a wetland and coastal species (Pizzey and Knight 2014), and therefore, does not have suitable habitat within the Project area.
Calidris ferruginea	Curlew Sandpiper	CE, Mi		1		Unlikely	This is a wetland and coastal species (Pizzey and Knight 2014), and therefore, does not have suitable habitat within the Project area.
Calidris melanotos	Pectoral Sandpiper	Mi	R	1		Unlikely	This is a wetland and coastal species (Pizzey and Knight 2014), and therefore, does not have suitable habitat within the Project area.
Calyptorhynchus funereus	Yellow-tailed Black Cockatoo		V	2	2015	Likely	Suitable habitat within Project area and multiple recent records from within 5km.
Cereopsis novaehollandiae	Cape Barren Goose		R	2	2002	Unlikely	No suitable habitat within Project area.
Charadrius mongolus	Lesser Sand Plover	EN	R	2	2002	Unlikely	No suitable habitat in Project area.
Cinclosoma punctatum anachoreta	Mt Lofty Ranges Spotted Quail-thrush	CE	E	1		Unlikely	Not observed in the Mt Lofty Ranges since 1984 and therefore is likely to be regionally extinct. As such, this species is deemed unlikely to occur in the Project area.
Falcunculus frontatus	Crested Shrike-tit		R	2	2001	Unlikely	Very few recent records and unlikely in this habitat.
Gallinago hardwickii	Latham's Snipe	Mi	R	1		Unlikely	This is a wetland species (Pizzey and Knight 2014), and therefore, does not have suitable habitat within the Project area.

Scientific name	Common name	Conservation status		Data Source	Last Record (Year)	Likelihood of occurrence within Project area*	Comment
		Aus	SA				
Grantiella picta	Painted Honeyeater	VU	V	1		Unlikely	The Project area is outside of the range of the species and it is deemed unlikely to occur.
Hirundapus caudacutus	White-throated Needletail	Mi		1		Possible	This is an aerial passerine that predominantly occurs in coastal and sub-coastal areas. This species inhabits the airspace above a wide range of habitats that range from plains to forests to cities (Pizzey and Knight 2014). As such, this species could potentially occur flying over the Project area but is unlikely to directly use the habitat.
Leipoa ocellata	Malleefowl	VU	V	1		Unlikely	No suitable habitat for this species within the Project area.
Lewinia pectoralis	Lewin's Rail		V	2	2010	Unlikely	Only 1 nearby record. The habitat present in Project area is unlikely to support this wetland species.
Melithreptus gularis gularis	Black-chinned Honeyeater		V	2	2002	Unlikely	One record from 2002 in Aldgate.
Microeca fascinans	Jacky Winter		R	2	2000	Unlikely	Last nearby record in 2000. This species prefers more open habitat.
Motacilla cinerea	Grey Wagtail	Mi		1		Unlikely	This is a vagrant to South Australia and has only been recorded within the State on a few occasions (Pizzey and Knight 2014). Given its rarity, this species is considered unlikely to occur within the Project area.
Motacilla flava	Yellow Wagtail	Mi		1		Unlikely	This is a vagrant to South Australia and has only been recorded within the State on a few occasions (Pizzey and Knight 2014). Given its rarity, this species is considered unlikely to occur within the Project area.
Myiagra cyanoleuca	Satin Flycatcher	Mi	E	1		Unlikely	This species is a vagrant to the Mount Lofty Ranges, and therefore, very rarely occurs. As such, the species is unlikely to occur within the Project area.

Scientific name	Common name	Conservation status		Data Source	Last Record (Year)	Likelihood of occurrence within Project area*	Comment
		Aus	SA				
Numenius madagascariensis	Far Eastern Curlew	CE, Mi	V	1		Unlikely	This is a wetland and coastal species (Pizzey and Knight 2014), and therefore, does not have suitable habitat within the Project area.
Oriolus sagittatus	Olive-backed Oriole		R	2	1985	Unlikely	Rare vagrant to South Australia.
Pandion haliaetus	Osprey	Mi	E	1		Unlikely	A raptor that inhabits coastal environments and major rivers (Pizzey and Knight 2014). As such, there is no suitable habitat for the species to occur within the Project area.
Pedionomus torquatus	Plains-wanderer	CE	E	1		Unlikely	A ground-dwelling species that inhabits native grasslands and herblands (Pizzey and Knight 2014). Therefore, there is no suitable habitat present within the Project area.
Petroica boodang	Scarlet Robin		R	2	2012	Possible	Despite its isolation from other large native vegetation patches, the habitat in the Project area is suitable for this species and there are multiple nearby records.
Polytelis anthopeplus	Regent Parrot		V	2	1996	Unlikely	No suitable habitat for this species and well out of normal range.
Porzana tabuensis	Spotless Crake		R	2	2010	Unlikely	This species prefers permanent wetland environments and therefore no suitable habitat exists within the Project area
Rhipidura rufifrons	Rufous Fantail	Mi		1		Unlikely	This species is a vagrant to the Mount Lofty Ranges, and therefore, very rarely occurs. As such, the species is unlikely to occur within the Project area.
Rostratula australis	Australian Painted-snipe	EN	V	1		Unlikely	No suitable wetland habitat present within the Project area.
Thinornis rubricollis rubricollis	Hooded Plover	V		1		Unlikely	No suitable coastal habitat is within the Project area.
Tringa nebularia	Common Greenshank	Mi		1		Unlikely	No suitable wetland habitat within the Project area.
Zoothera lunulata halmaturina	Bassian Thrush	VU	R	1, 2	2016	Possible	This species inhabits the forests and woodlands that are dense, moist and offer access to leaf litter (Pizzey and Knight 2014).

Scientific name	Common name	Conservation status		Data Source	Last Record (Year)	Likelihood of occurrence within Project area*	Comment
		Aus	SA				
							Recent (2016) record. As such, the woodland present in the wet gully at Site A1 is potentially suitable habitat for this species.
REPTILIA	Reptiles						
Varanus rosenbergi	Heath Goanna		V	2	2014	Possible	Recent (2014) record from residential property in Aldgate.
AMPHIBIA	FROGS						
Litoria raniformis	Growling Grass Frog/ Southern Bell Frog	VU	V	1,2	1978	Unlikely	No recent records, no suitable habitat.
Pseudophryne bibronii	Brown Toadlet		R	2	2009	Possible	Suitable damp, semi-riparian habitat is present in the Project area.
MAMMALIA	MAMMALS						
Antechinus flavipes	Yellow-footed Antechinus		V	2	2010	Possible	Suitable habitat is present within Project area.
Dasyurus maculatus maculatus	Spot-tailed Quoll	E		1		Unlikely	No recent records for this species in the Mount Lofty Ranges.
Isoodon obesulus obesulus	Southern Brown Bandicoot	EN	V	1, 2	2014	Likely	This species inhabits woodlands and forests that are moist and offer significant understorey cover. Previous records from the Project area and multiple records from surrounding areas suggest that this species is likely to occur.
Pteropus poliocephalus	Grey-headed Flying-fox	VU	R	1, 2	2014	Possible	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. 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.
Trichosurus vulpecula	Common Brushtail Possum		R		2012	Likely	Recent records – Project area provides suitable habitat e.g.hollows.

Conservation status

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

Source of Information

1. **EPBC Act Protected Matters Report– 5 km buffer applied to Project area.**
2. **Biological Database of South Australia data extract (2019) - 5 km buffer applied to Project area.**

The rationale used to determine the likelihood of threatened species is detailed in Section 3.1.3 of this report.

5 FIELD ASSESSMENT RESULTS

The field assessment was conducted on 27 September 2019 by Stuart Collard (Senior Ecologist).

5.1 Bushland assessment

The Bushland assessment method (small <0.5 ha Site) was used to assess the vegetation in the two areas (Site A1 and Site A2) identified for potential clearance (see Figure 1). Both Sites contained vegetation with a complex structure, with trees, shrubs, forbs, mat plants, grasses, sedges and vines all present. A variety of weed species, listed as Weeds of National Significance under the EPBC Act or Declared Weeds under the NRM Act, were present and included (Appendix 1):

Site A1 – Vegetation assessment summary

The vegetation community at Site A1 is described in Table 5 and a representative photo of Site A1 is found in Figure 4.

Table 5. Summary of vegetation characteristics – Site A1.

BCM benchmark community	SMLR 4 Gully Forest
Location UTM Zone 54	E: 282816, N: 6125358
Overstorey species	*Eucalyptus obliqua (Messmate strigybark)*
Midstorey species	*Acacia melanoxylon (Blackwood), Exocarpos cupressiformis (Native Cherry)*.
Understorey species	*Pultenaea daphnoides (Large-leafed Bush-pea)*, *Lepidosperma sp. (Sedge)*
Threatened species	*Eucalyptus dalrympleana* (Candlebark Gum) (SA Rare)
Declared weeds	None
Landscape context score	1.07 (maximum score 1.25)
Vegetation condition	58.50 (maximum score 80)
Conservation significance score	1.18 (maximum score 1.5)
Unit biodiversity score	73.86 (maximum score 150)

Site A2 – Vegetation assessment summary

The vegetation community at Site A2 is described in Table 6 5 and a representative photo of Site A1 is found in Figure 5.

Table 6. Summary of vegetation characteristics – Site A2.

BCM benchmark community	SMLR 2 Forest with an open sclerophyll shrub understorey
Location UTM Zone 54	E: 294753, N: 6122252
Overstorey species	*Eucalyptus baxteri (*Brown Stringybark*) and Eucalyptus obliqua (*Messmate Stringybark*)*
Midstorey species	-
Understorey species	*Pultenaea daphnoides* (Large-leaf Bush-pea), *Acacia myrtfolia* (Narrow-leaf Myrtle Wattle), *Lepidosperma semiteres* (Wire Rapier-sedge).
Threatened species	-
Declared weeds	None
Landscape context score	1.05 (maximum score 1.25)
Vegetation condition	66.41 (maximum score 80)
Conservation significance score	1.10 (maximum score 1.5)
Unit biodiversity score	76.71 (maximum score 150)

Figure 4. Representative photo of Site A1.

Figure 5. Representative photo of Site A2.

5.2 Threatened flora

One State Rare flora species; *Eucalyptus dalrympleana ssp dalrympleana* (Candlebark Gum), was observed within Site 1A. This species is described as an “erect to spreading tree to 40 m tall with smooth, pinkish-tan to pale grey to white bark throughout or rough on lower trunk up to a few metres. Juvenile leaves opposite, round, bluish. Adult leaves to 220 mm long and 35 mm wide, lanceolate to falcate, often wavy, glossy, green. Flowers axillary in groups of 3. Buds to 9 mm long and 6 mm wide, smooth, bud-cap cone-shaped, same length as the base. Flowers white appearing in autumn” (SA Seedbank 2019). The species was present in Site A1 as two small (<2 m) juvenile plants. The species is known from multiple populations near the Project area (Figure 6) and it is possible that there are other juvenile plants within the impact footprint at Site A1.

No other National or State-listed flora species were observed in Site A1 or Site A2, despite extensive search efforts.

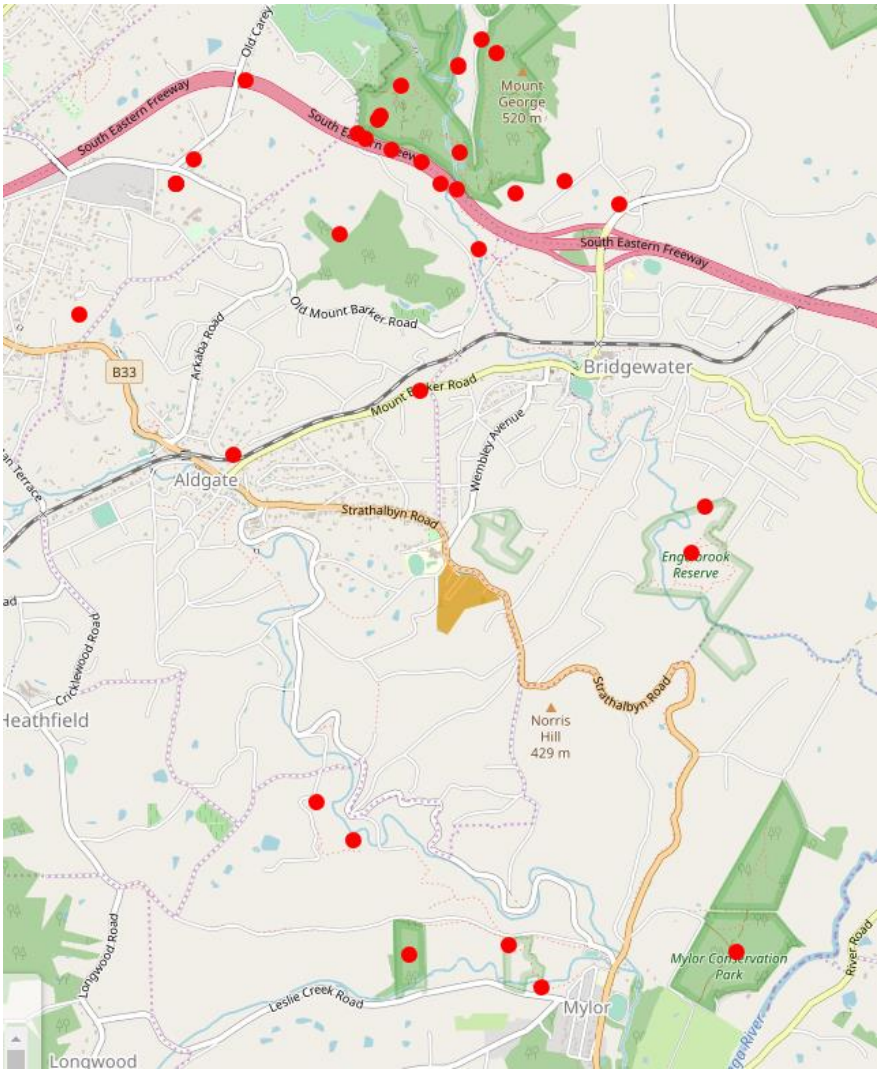


Figure 6. *Eucalyptus dalrympleana ssp dalrympleana* records observed near the Project area (Stirling Cemetery – yellow polygon) (Data source: Atlas of Living Australia, 2019).

5.3 Fauna assessment

A total of 23 fauna species was observed across the Project area during the field assessment. All but one of these, the Sleepy Lizard (*Tiliqua rugosa*) were bird species, predominantly parrots and honeyeaters (Table 7). Only one of the observed bird species (Common Blackbird (*Turdus merula*)) was exotic.

No National or State-listed fauna species were observed in either Site A1 or Site A2 or within the wider Project area.

Table 7. Fauna species observed within the Project area during the fauna assessment.

Scientific name	Common name	Conservation Status	
		Aus	SA
Acanthiza pusilla	Brown Thornbill	-	-
Acanthiza lineata	Striated Thornbill	-	-
Sericornis frontalis	White-browed Scrubwren	-	-
Gymnorhina tibicen	Australian Magpie	-	-
Accipiter fasciatus	Brown Goshawk	-	-
Dacelo novaeguineae	Laughing Kookaburra	-	-
Coracina novaehollandiae	Black-faced Cuckoo-shrike	-	-
Phaps chalcoptera	Common Bronzewing	-	-
Cormbates leucophaeus	White-throated Treecreeper	-	-
Anthochaera carunculata	Red Wattlebird	-	-
Acanthorhynchus tenuirostris	Eastern Spinebill	-	-
Phylodonyris pyrrhoptera	Crescent Honeyeater	-	-
Lichenostomus chrysops	Yellow-faced Honeyeater	-	-
Phylodonyris novaehollandiae	New Holland Honeyeater	-	-
Colluricincla harmonica	Grey Shrike-thrush	-	-
Pachycephala pectoralis	Golden Whistler	-	-
Pardalotus striatus	Striated Pardalote	-	-
Platycercus elegans	Crimson Rosella	-	-
Trichoglossus haematodus	Rainbow Lorikeet	-	-
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	-	-
Rhipidura albiscapa	Grey Fantail	-	-
**Turdus merula*	European Blackbird	-	-
Tiliqua rugosa	Sleepy Lizard	-	-

* Exotic

6 CLEARANCE SUMMARY

6.1 Presence of substantially intact vegetation

Clearance proponents must also address whether 'substantially intact vegetation' is present in accordance with *Section 3A* of the NV Act.

Substantially intact vegetation is defined as:

> *1. A stratum of native vegetation will be taken for the purposes of this Act to be substantially intact if, in the opinion of the NVC —*
>
> *a. the stratum has not been seriously degraded by human activity during the immediately preceding period of 20 years; or*
>
> *b. the only serious degradation of the stratum by human activity during that period has been caused by fire.*
>
> *2. In this section — stratum of native vegetation means a layer of a plant community consisting of plants that comprise native vegetation and that have a similar growth habit.*

Both Sites that were assessed have been subjected to significant disturbance caused by a range of factors. **Site A1** was influenced by disturbances in all four identified vegetation strata (overstorey, mid-storey, understorey and ground-layer). Pine trees (*Pinus radiata*) in the canopy of Site A1 meant that the predominant overstorey stratum of stringybarks was not completely intact (10% estimated pine canopy cover). In the mid-layer, some mechanical disturbance and historical vegetation modification was evident. The understorey and ground layer vegetation in this Site is heavily impacted by weeds and although diverse with native species cannot be regarded as intact.

Site A2 was characterised by three strata, namely an overstorey of trees (*E. obliqua and E. baxteri*), an understorey shrub layer of mostly Acacia and Pultenaea species and a highly diverse ground layer. In general, the Site was less affected by weeds (than Site A1) in the understorey and ground layers. The canopy at the assessment Site was not 'intact', but this was probably not caused by human intervention – instead, a large stringybark tree had fallen over naturally, leaving a large gap in the canopy. Evidence of natural recruitment/regeneration of eucalypts suggests that the canopy, given time, may re-form. The shrub layer and ground cover components of the vegetation are considered to be largely intact for this Site.

6.2 Assessment against the 'Principles of Clearance'

No regulation exemptions apply to the removal of native vegetation for the establishment of new grave Sites in cemeteries. Therefore, the proposed clearance must be assessed against the Principles of Clearance a stated in Schedule 1 of the NV Act. An assessment against each of the relevant principles is provided at Table 8.

Table 8. Assessment of the proposed clearance against the 'Principles of Clearance'.

Principle	Comment	Outcome
(a) It comprises a high level of diversity of plant species (patches of vegetation only).	Plant species diversity at both Sites A1 and A2 is high to very high (>80% of benchmark species richness - refer Attachments 1 & 2), relative to the benchmark community. However, the clearance area is small i.e. < 10% relative to the area of surrounding remnant.	Proposed clearance is **at variance** with this principle.
(b) It has significance as a habitat for wildlife.	Many vertebrate fauna species were observed using Sites A1 and Site A2 during the field survey. suggesting that these areas have high value for wildlife, including threatened species. The trees had few large or visible hollows. Unit biodiversity scores were > 60 for both assessment sites.	Proposed clearance is **seriously at variance** with this principle.
(c) It includes plants of a rare, vulnerable or endangered species.	One State Rare species, *Eucalyptus dalrympleana ssp dalrympleana* (2 individual juvenile plants) was present at Site A1.	Proposed clearance of Site A1 is **at variance** with this principle.
(d) The vegetation comprises the whole, or a part, of a plant community that is rare, vulnerable.	Neither community in Site A1 nor Site A2 is classed as rare or vulnerable.	Proposed clearance is **not at variance** with this principle.
(e) It is significant as a remnant of vegetation in an area which has been extensively cleared.	The Project area clearance proposal is for 0.34 ha with a TBS of <50. An assessment of landscape context surrounding the Project area determined that there is 25% vegetation cover in the surrounding area (5 km radius) and 26 % in the IBRA association. There is 15% vegetation cover in the IBRA sub-region.	Proposed clearance is **not at variance** with this principle.
(f) It is growing in, or in association with, a wetland environment.	Site A1 is adjacent to a riparian area and forms part of a catchment for a swamp that develops downstream of the proposed clearance area.	The vegetation proposed for clearance is not growing in, or in association with a wetland environment and is therefore **not at variance** with this principle.
(g) It contributes significantly to the amenity of the area in which it is growing or is situated.	Site A1 is adjacent to a cemetery carpark on one side and a residential property on another. Site A2 is adjacent to a popular walking trail and may affect the amenity value of this part of the trail.	The proposed clearance is **at variance** with this principle.

6.3 Mitigation hierarchy

When exercising a power or making a decision under the NVC must have regard to the proponent addressing the mitigation hierarchy. The NVC will assess the measures taken to avoid and minimize impacts on biodiversity and rare or threatened species or ecological communities within the property or immediate vicinity of the development.

6.3.1 Avoidance

A high level assessment was undertaken to determine if an alternate site in the district could be suitable for the establishment of a new cemetery however all sites that were considered (both Council owned and privately owned) had similar considerations to the current cemetery with high levels of biodiversity value that would limit cemetery operations. An indicative cost to establish a new cemetery of a similar size to what is currently occupied by graves would be at least $1.5M - $2M which is not considered viable. Zoning in the area and the likely objection from adjoining landowners would be a large consideration in the establishment of a new cemetery.

The Council is progressing plans to increase infrastructure in the cemeteries that are closest to this site however the nearest cemetery is at Uraidla (which is at capacity and closed for new burials). The next closest is Scott Creek. The Council recognises that the Stirling Cemetery site is its most popular cemetery with the highest number of burials per annum of all of its cemeteries and the closure of this cemetery will have a significant impact on the Stirling and surrounding communities.

6.3.2 Minimisation

The Council has assessed the site to determine what alternate areas of the site may be suitable for expansion, having regard to topography, water courses, native vegetation, accessibility and infrastructure. The areas identified are the preferred locations with the minimum environmental impact due to the assessment of those considerations. It is noted that the land is dedicated as a Public Cemetery and to be used for those purposes in perpetuity.

The Council is exploring the option to reuse graves however the process required under the Burial and Cremation Act 2013 requires a minimum 2-year notice period to be provided to expired interment right holders before that could be undertaken. At this time, the Council has not yet formed a position on whether they will consider grave re-use at this cemetery given the historical nature of the cemetery and many of the graves, noting that the cemetery is heritage listed.

6.3.3 Rehabilitation or restoration

The Council acknowledges the high level of biodiversity on the site and has considered what would be an appropriate outcome to allow expansion that would enable approximately 10 years of future capacity. It is the intention that if approval for clearance was granted that a Heritage Agreement would be established over the balance of the site for the protection and enhancement of the biodiversity. At the point that the new area reached capacity, the cemetery would be closed for new burials, except if they were to be accommodated in existing plots. Ongoing weed control, particularly for declared weeds is undertaken across to Project area.

6.3.4 Offset

Any adverse impact on native vegetation or ecosystems that cannot be avoided or minimised should be offset by implementing a SEB that outweighs that impact. Biodiversity offsets address any residual impacts after prevention and mitigation measures have been implemented. The NVC will only approve clearances if these steps have been fulfilled. Offsetting is only considered by the NVC when a proponent has identified and documented appropriate measures to avoid and minimise negative impacts (direct or indirect) on biodiversity. Biodiversity offsets are only appropriate for projects that have rigorously applied the Mitigation Hierarchy. Offsets must never be used to circumvent responsibilities to avoid and minimise damage to biodiversity and the NVC will consider this when determining whether the clearance can proceed.

An offset in the form of a payment into the native vegetation fund is the preferred option for the Adelaide Hills Council. However, an on-ground offset, including placing a Heritage Agreement on and enhancing to condition of disturbed areas of the remaining native vegetation within the wider Project area may also be considered as part of an offset.

7 SIGNIFICANT ENVIRONMENTAL BENEFIT

7.1 What is a significant environmental benefit (SEB)?

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

7.2 SEB obligation

Where clearance of patches of remnant vegetation is proposed, as is the case for this project, the SEB offset area is calculated using the BAM scoresheet, developed by DEW. BAM scoresheets, completed for Sites A1 and A2, are provided in Attachments 1 & 2 respectively.

A loss factor of 1.0 was applied to the scoresheet as the intention is to completely remove the vegetation, if approved. The total SEB requirement for the clearance of all native vegetation in the Project footprint (0.34 ha) is 26.73 SEB points or 3.34 ha (Table 9). Alternatively, the payment into the Native Vegetation Fund (NVF) required is **$32,873.86**, which includes an administration fee of $1,713.80 (Table 9).

Table 9. Summary of the SEB requirements for Site A1 and Site A2 within the Project footprint.

Assessment for clearance	VA (site) 1	VA (site 2) A2	Total
Area of clearance (ha)	0.22	0.12	**0.34**
Loss Factor	1	1	**-**
SEB points required	17.06	9.67	**26.73**
Hectares required	2.13	1.21	**3.34**
Mean annual rainfall for the Site (mm)	906	880	**-**
Payment into the Native Vegetation Fund ($)	**$20,100.63**	**$11,059.43**	**$31,160.06**
Administration fee ($)	**$1,105.53**	**$608.27**	**$1,713.80**
Total ($)	**$21,206.16**	**$11,667.70**	**$32,873.86**

7.2.1 Achieving an SEB

The proponent intends to achieve the SEB by one or a combination of the methods checked below:

☐ Establishing a new SEB Area on land owned by the proponent. Provide information below.

☐ Using SEB Credit that the proponent has established. SEB Credit Ref. No. _____

☐ Applying to have SEB Credit assigned from another person or body. The application form needs to be submitted with this Data Report.

☐ Applying to have an SEB to be delivered by a Third Party. The application form needs to be submitted with this Data Report.

☒ Payment into the Native Vegetation Fund.

8 DISCUSSION AND RECOMMENDATIONS

The clearance requirement of 0.34 hectares is located within largely intact vegetation and has threatened species present.

The intended use for the Project area does not align with a regulation exemption and was therefore assessed under *Section 28* of the *Native Vegetation Act 1991*. The Project area was of high species richness and was found to be at variance (or seriously at variance) with 4 out of the 7 relevant Principles of Clearance. As a result, the clearance was escalated from a level 2 to level 3 impact.

It should be noted that a follow-up Site visit was undertaken by EBS on 3 October 2019 to assess for flowering orchid species. During this subsequent visit to the site, possible signs of the Nationally Endangered Southern Brown Bandicoot were present at Site A1, including fur and diggings that may have been left or made by this species.

Given the current uncertainty around the presence of threatened species at the site EBS recommends the following measures to be taken into account:

- Assess the need for an EPBC referral relating to the likely presence of the Southern Brown Bandicoot within the Project area and proposed clearance Sites A1 and A2.
- Collate recent records for Southern Brown Bandicoot within the Project area (if additional to those in the current desktop search).
- Consider spotlight searches to verify the presence or absence of nocturnal marsupials, including Southern Brown Bandicoot, Common Brushtail Possum, Grey-headed Flying-fox and Yellow-footed Antechinus.

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10 ATTACHMENTS

Attachment 1 – BAM Scoresheet Site A1

Attachment 2 – BAM Scoresheet Site A2

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