Native Vegetation Clearance

524 Kensington Road, Wattle Park

Data Report

Clearance under the *Native Vegetation Regulations 2017*

2 September 2022

Prepared by J. Carpenter (NVC Accredited Consultant), A. Carpenter and E. West – EBS Ecology

Native Vegetation Clearance 524 Kensington Road Wattle Park Data Report

2 September 2022

Version 1

Prepared by for Outset Design Pty Ltd

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Cover photograph: *Eucalyptus microcarpa* (Grey box) located within the Project Area.

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Glossary and abbreviations

BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia (maintained by DEW)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DAWE)
DEW	Department for Environment and Water (South Australia)
EBS	Environment and Biodiversity Services Pty Ltd (trading as EBS Ecology)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ha	Hectare(s)
IBRA	Interim Biogeographical Regionalisation of Australia
km	Kilometre(s)
NatureMaps	Initiative of DEW that provides a common access point to maps and geographic information about South Australia's natural resources in an interactive online mapping format
NPW Act	*National Parks and Wildlife Act 1972*
NV Act	*Native Vegetation Act 1991*
NVC	Native Vegetation Council
PMST	Protected Matters Search Tool (under the EPBC Act; maintained by DAWE)
Project	New dwelling
Project Area	524 Kensington Road, Wattle Park
SA	South Australia(n)
Search Area	5 km buffer of the Project Area considered in the desktop assessment database searches
SEB	Significant Environmental Benefit
sp.	Species
spp.	Species (plural)
ssp.	Sub-species
STAM	Scattered Tree Assessment Method
TEC	Threatened Ecological Community
var.	Variety (a taxonomic rank below that of species and subspecies, but above that of form)

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1. Application information

Table 1. Application details.

Applicant:			
Key contact:			
Landowner:			
Site Address:			
Local Government Area:	Burnside	**Hundred:**	Adelaide
Title ID:	CT 6110 692	**Parcel ID**	F130054 A100

Table 2. Summary of the proposed clearance.

Purpose of clearance:	Clearance required for a detached dwelling including associated demolition, earthworks, water tanks, swimming pool, pool plant and equipment enclosure.
Native Vegetation Regulation:	Regulation 12, Schedule 1; clause 33, New dwelling or building.
Description of the vegetation under application:	A total of 22 scattered trees occurs in the impact footprint, including 20 metre (m) CFS buffer. These trees consist of: • 13 *Eucalyptus microcarpa* (Grey Box), • 6 *Acacia pycnantha* (Golden Wattle), and • 3 *Eucalyptus leucoxylon* (South Australian Blue Gum) The above trees include a low number of larger, older remnant trees with a trunk diameter at 1 metre (m) above the ground of up to 66 centimetres (cm). All species are naturally regenerating, with young trees <10 cm diameter accounting for nearly half of the assessed trees. Understorey consists of exotic grasses and forbs with planted and self-seeded *Olea europaea* (European Olive) and *Pinus halepensis* (Aleppo Pine) common, sometimes in dense thickets. Within the building envelope, vegetation consists mostly of gardens and orchard plantings of exotic species. Outside the 20 m CFS clearance buffer, additional native scattered trees occur. These were surveyed but are not included in the clearance application as they will be retained and not impacted by the Proposal.
Total proposed clearance	22 scattered trees are proposed to be cleared.
Level of clearance:	Level 4
Overlay (Planning and Design Code):	Native Vegetation Overlay and Regulated and Significant Tree Overlay
Map of proposed clearance area:	See Figure 1.
Mitigation Hierarchy:	**Avoidance:** Native vegetation may have been avoided through placement of garage in driveway rather than lower Peppertree Lane. **Minimisation:** Impacts have been minimised through the design process, such as using existing dwelling footprint.
SEB Offset proposal	Payment of $9,387.74 (including Administration Fee of $489.41) into the Native Vegetation Fund.

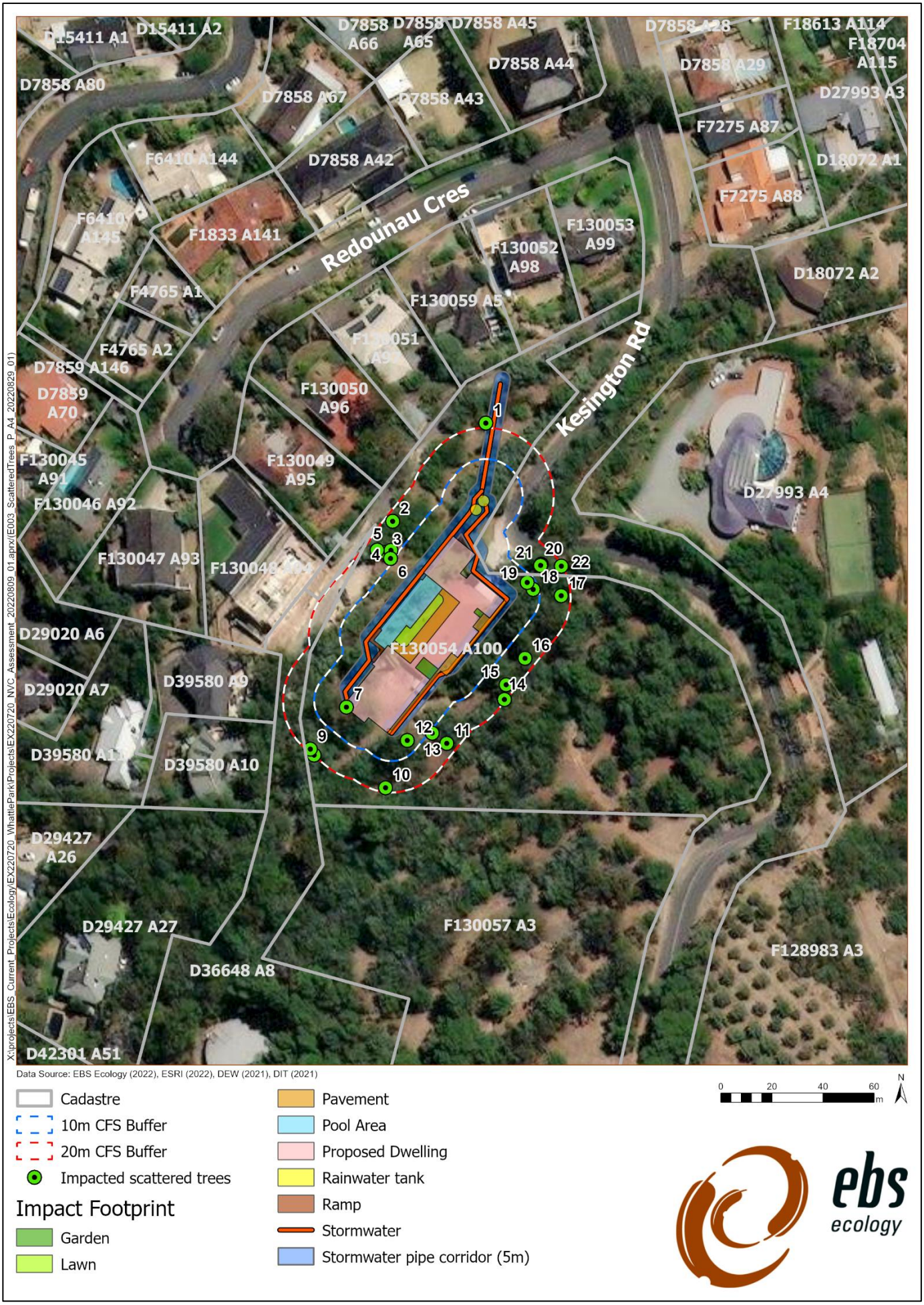


Figure 1. Location of the Proposal at 524 Kensington Road, Wattle Park, South Australia.

2. Purpose of clearance

2.1. Description

EBS Ecology (EBS) was engaged by Outset Design Pty Ltd to undertake a native vegetation clearance assessment for the clearance associated with the construction of a new dwelling, including associated demolition, earthworks, water tanks, swimming pool, pool plant and equipment enclosure (the Proposal) at 524 Kensington Road, Wattle Park (the Project Area).

2.2. Background

2.2.1. Current and surrounding land use

The Project Area is located on private property at 524 Kensington Road, Wattle Park, located approximately seven kilometres (km) east of Adelaide CBD (Figure 1).

2.2.2. Administrative boundaries

This Project is located within the Burnside Local Government Area and the Green Adelaide Landscape Management Region.

2.2.3. Bioregions

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The bioregions are further refined into subregions and environmental associations. The Project Area is in the Flinders Lofty Block Bioregion, the Mount Lofty Ranges Subregion and the Mt Terrible environmental association. Approximately 41% (7,889 hectares (ha)) of the Mt Terrible environmental association is mapped as remnant vegetation. Of this, 41% (3,206 ha) is formerly conserved and protected. This association is made up of woodlands consisting of species such as *Eucalyptus leucoxylon* (SA Blue Gum), *Eucalyptus fasciculosa* (Pink Gum) or *Eucalyptus camaldulensis* (River Red Gum) *Eucalyptus ovata* (Swamp Gum) and *Eucalyptus odorata* (Peppermint Box) and open forest of messmate stringybark or brown stringybark (DCCEEW 2022).

2.3. Details of the proposal

The Proposal entails a proposed development at 524 Kensington Road Wattle Park. The proposed development is a detached dwelling including associated demolition, earthworks, water tanks, swimming pool, pool plant and equipment enclosure. The existing site plan is shown in Figure 2, with the proposed development shown in Figure 3.

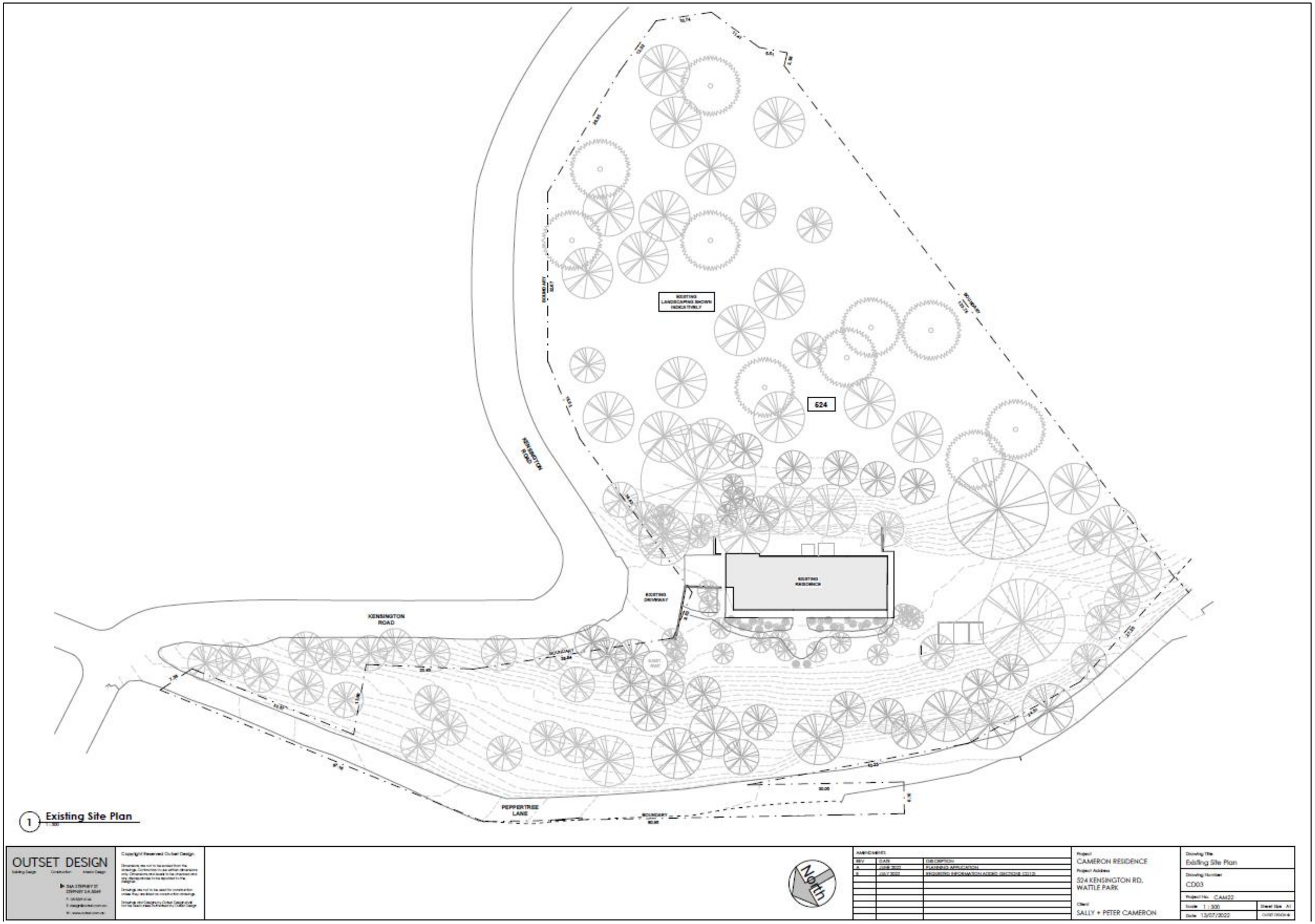


Figure 2. Existing site plan (provided to EBS on 28/07/2022).

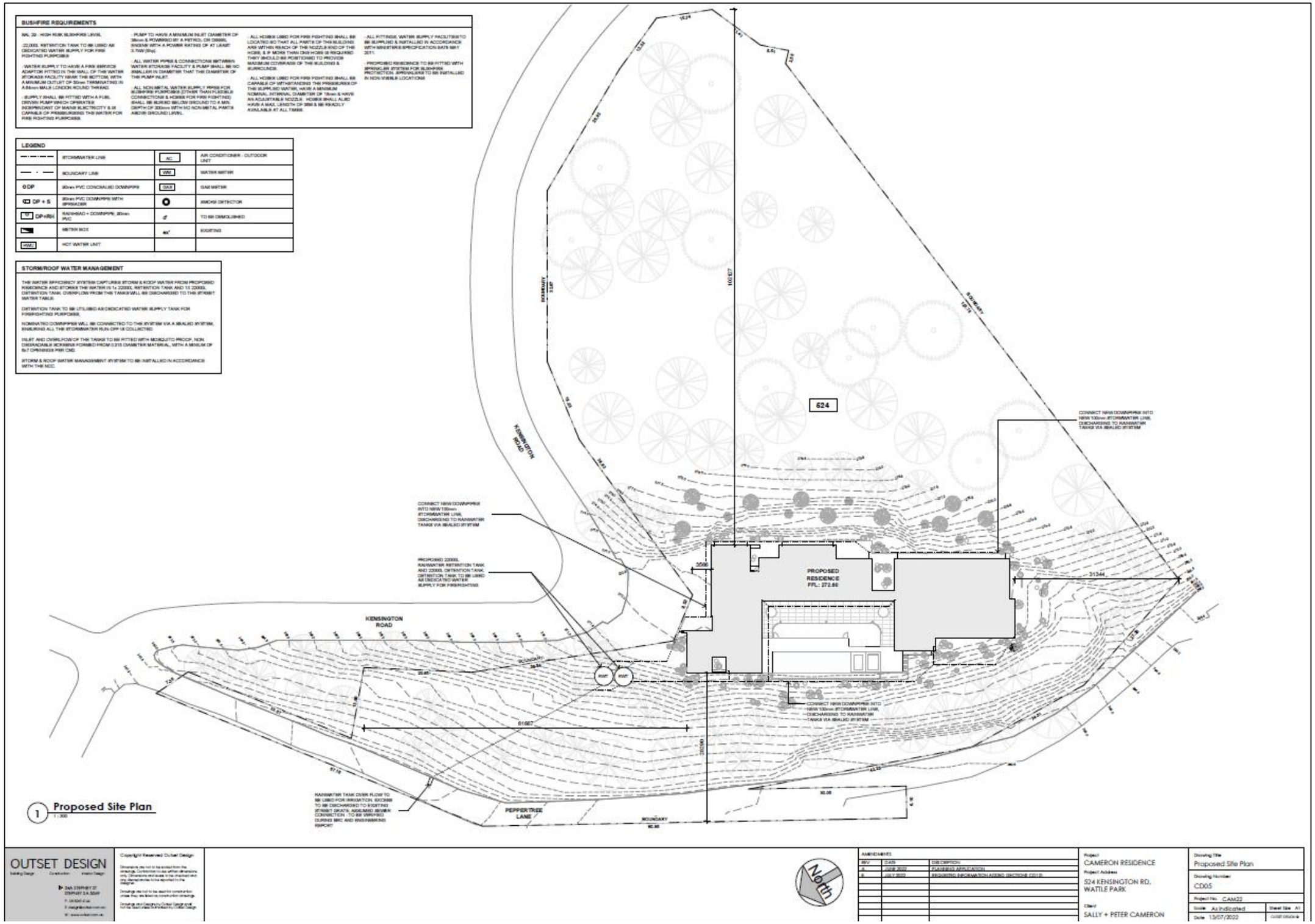


Figure 3. Proposed landscaping plan (provided to EBS on 28/07/2022).

2.4. Approvals <u>required</u> *or* <u>obtained</u>

- *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 (K25613-20).
- *Landscape South Australia Act 2019* – A Water Affecting Activity Permit may be 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.

2.5. Native Vegetation Regulation

Regulation 12 (33) New dwelling or building

(1) Clearance of vegetation required in order to erect a building or structure or other facility that is ancillary to a building, provided that any development authorisation required by or under the *Planning, Development and Infrastructure Act 2017* has been obtained (Application ID 22020424**)**.

(2) Subclause (1) does not apply to

a. clearance of vegetation established in accordance with a condition of a consent for clearance of vegetation; or
b. clearance of vegetation undertaken in connection with subdivision of the land on which the vegetation is growing or is situated; or
c. clearance that would be contrary to—
    i. a condition of a consent for clearance of vegetation; or
    ii. a condition imposed in connection with clearance of vegetation permitted under these regulations; or
    iii. a condition in respect of clearance permitted under the revoked regulations.

2.6. Development Application information

Planning zones and overlays that apply to the Project Area are listed in Table 3. The Urban Tree Canopy Overlay does not overlap the proposed development, although it may overlap the boundary of the property.

Table 3. Zones and Overlays that exist within the Project Area

Zone	Overlays
Hills Face (HF)	Hazards (Bushfire – High Risk)
Hills Neighbourhood (HN)	Airport Building Heights (Regulated)
	Native Vegetation
	Regulated and Significant Tree
	Environment and Food production Area
	Hazards (Flooding – Evidence required)
	Prescribed Wells Area
	Stormwater Management
	Urban Tree Canopy

3. Method

3.1. Flora assessment

The native vegetation assessment was undertaken by NVC Accredited Consultant J. Carpenter and E. West on 11 August 2022 in accordance with the Scattered Tree Assessment Method (STAM) (NVC, 2020a). Under the *Native Vegetation Act 1991*, native vegetation is defined as the following:

Native vegetation means a plant or plants of a species indigenous to South Australia including a plant or plants growing in or under waters of the sea but does not include.

- *a) A plant or part of a plant that is dead unless the plant, or part of the plant, is of a class declared by regulation to be included in the definition; or*
- *b) A plant intentionally sown or planted by a person unless the plant was sown or planted –*
  - *(i) In compliance with a condition imposed by the Council under this Act or by the Native Vegetation Authority under the repealed Act, or with the order of a court under this Act or the repealed Act; or*
  - *(ii) In pursuance of a proposal approved by the Council under Part 4 Division 2; or*
  - *(iii) In circumstances involving the use of money paid into the Fund for the purpose of achieving a significant environmental benefit; or*
  - *(iv) In compliance with a condition imposed by a Minister, statutory authority or prescribed person or body under –*
    - *(A) The River Murray Act 2003; or*
    - *(B) The Water Resources Act 1997; or*
    - *(C) Any other Act prescribed by the regulations for the purposes of this paragraph.*

3.1.1. 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 2020c).

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 3.2.2) and the lists of scattered tree using fauna in the *Scattered Tree Assessment Manual* (NVC 2020). The resource use of each species identified was considered when determining each tree's suitability for threatened fauna species (e.g. species that only use hollows in scattered trees were only assigned to scattered trees containing hollows).

The mean annual rainfall for the area was collected from NatureMaps Climate overlay. As the Project Area crossed over two rainfall zones the Mean Annual Rainfall was averaged.

Photographs of scattered trees were taken to the best of our ability. The Project Area was located on a steep slope and dense Olive (*Olea europaea*) thickets meant it was not possible to take clear scattered tree photographs in some instances.

3.2. Fauna 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).

3.2.1. PMST report

A Protected Matters Search Tool (PMST) report was generated on 04/08/2022 to identify nationally threatened flora and fauna, migratory fauna and TECs under the EPBC Act relevant to the Project Area (DCCEEW 2022). 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.

3.2.2. BDBSA data extract

A data extract from the Biological Database of South Australia (BDBSA) was obtained from NatureMaps to identify flora and fauna species that have been recorded within 5 km of the Project Area (data extracted 04/08/2022; DEW 2022). The BDBSA is comprised of an integrated collection of species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia and the Australasian Wader Study Group, which meet the Department for Environment and Water's (DEW) 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.

3.2.3. Field survey

All fauna species observed opportunistically, signs of species and potential habitat for fauna was recorded. The value of habitat for the threated fauna species identified in the desktop assessment was also determined when searching each area.

The following data was collected for each observation:

- Species
- Location (waypoint on GPS ± 4 m)
- Number of individuals
- Habitat use (i.e. species of scattered tree or vegetation association)
- Activity (resting, foraging, flying, breeding, etc.).

The suitability of scattered trees and remnant vegetation associations for use by threatened species was assessed as part of the STAM.

3.2.4. Likelihood of occurrence

The criteria for the likelihood of occurrence of threatened species within the Project Area are described in Table 4.

Table 4. 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.

4. Assessment outcomes

4.1. Vegetation assessment

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

The Project Area is located on the foothills of the Mount Lofty Ranges. Some rocks were present at the surface. The Project Area is located approximately 790 meters from Ferguson Conservation Park and approximately 1.4 km from Horsnell Gully Conservation Park.

The western edge of the Project Area contains exotic planted species, consisting mainly of fruit trees. To the east towards the hills there is large infestation of *Olea europaea* (European Olive). Other Declared weeds identified on the site include *Asparagus asparagoides* (Bridal Creeper) and *Chrysanthemoides monilifera* (Boneseed). The Project Area is regularly slashed by the property owners.

The only native vegetation that was present on site was scattered remnant *Eucalyptus microcarpa* (Grey box), *E. leucoxylon ssp. leucoxylon* (Blue Gum) and *Acacia pycnantha* (Golden Wattle) trees. The health of these trees ranged from poor to good, with dieback scores from 0 - 95%. No hollows were identified in any of the trees surveyed, however numerous Koala (*Phascolarctos cinereus*) scats were located throughout the Project Area. Mistletoes occurred in some of the remnant Blue Gums and Grey Box trees.

Regeneration from these remnant species was also present throughout the Project Area. Numerous *Acacia pycnantha* (Golden Wattle). Some native grasses were recorded, including *Austrostipa sp., Rytidosperma sp*. and *Lomandra densiflora* (Pointed Mat-rush). However, this consisted of only scattered individuals, making up less than <5 % of ground cover.

The midstorey and understorey were mainly dominated by exotic species, this includes *Acacia saligna* (Golden Wreath Wattle), *Fumaria capreolata* (White Fumitory), *Gazania sp.* (African Daisies) and *Oxalis pes-caprae* (Soursobs). This resulted in the vegetation being assessed as scattered trees.

4.1.2. Details of the scattered trees proposed to be impacted

The details of each scattered tree impacted by the Proposal are provided in Table 5 to

Table 26.

Table 5. Summary of Tree 1.

Tree ID	1
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	5.0
Hollows	0
Diameter (cm)	12.0
Canopy dieback (%)	0
Total Biodiversity Score	0.29

Description

Young, healthy *Eucalyptus microcarpa* naturally self-seeded from nearby mature trees that are outside the Project Area. The tree has no hollows and is likely to provide only minimal habitat value for threatened species. It may provide perching habitat and seasonal foraging resources.

Table 6. Summary of Tree 2.

Tree ID	2
Tree spp.	*Acacia pycnantha* (Golden Wattle)
Number of trees	1
Height (m)	4.0
Hollows	0
Diameter (cm)	8
Canopy dieback (%)	0
Total Biodiversity Score	0.48

Description

Mature *Acacia pycnantha* originating from natural regeneration. The tree may provide some perching and foraging resources, but otherwise provides minimal habitat value for threatened species.

Table 7. Summary of Tree 3.

Tree ID	3
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	0.2
Hollows	0
Diameter (cm)	0
Canopy dieback (%)	0
Total Biodiversity Score	0.11

Description

Seedling *Eucalyptus microcarpa* derived from natural regeneration. Does not provide any habitat for threatened species.

Table 8. Summary of Tree 4.

Tree ID	4
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	3.2
Hollows	0
Diameter (cm)	15
Canopy dieback (%)	0
Total Biodiversity Score	0.27

Description

Young, healthy *Eucalyptus microcarpa* naturally self-seeded from nearby mature trees that are outside the Project Area. The tree has no hollows and is likely to provide only minimal habitat value for threatened species. It may provide perching habitat and seasonal foraging resources.

Table 9. Summary of Tree 5.

Tree ID	5
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	2.1
Hollows	0
Diameter (cm)	14
Canopy dieback (%)	0
Total Biodiversity Score	0.23

Description

Young, healthy *Eucalyptus microcarpa* naturally self-seeded from nearby mature trees that are outside the Project Area. The tree has no hollows and is likely to provide only minimal habitat value for threatened species. It may provide perching habitat and seasonal foraging resources.

Table 10. Summary of Tree 6.

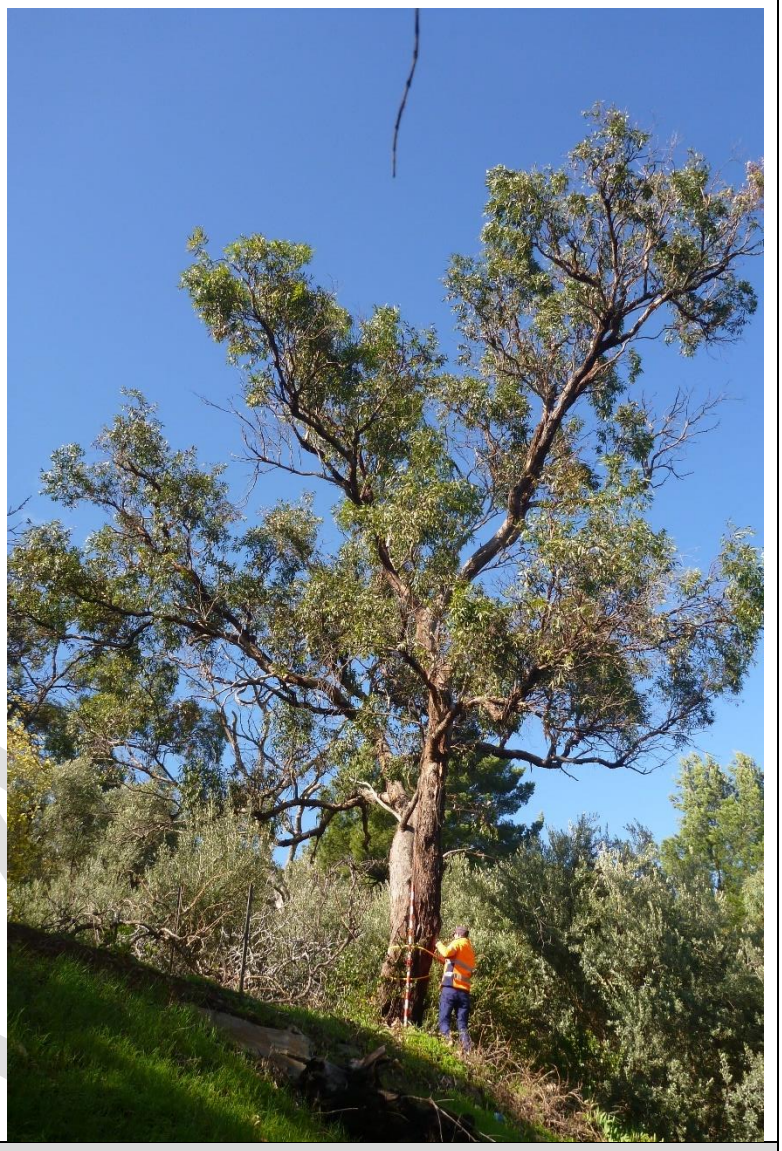
Tree ID	6
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	2.5
Hollows	0
Diameter (cm)	5
Canopy dieback (%)	0
Total Biodiversity Score	0.18

Description

Young, healthy *Eucalyptus microcarpa* naturally self-seeded from nearby mature trees that are outside the Project Area. The tree has no hollows and is likely to provide only minimal habitat value for threatened species. It may provide perching habitat and seasonal foraging resources.

Table 11. Summary of Tree 7.

Tree ID	7
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	9
Hollows	0
Diameter (cm)	60
Canopy dieback (%)	15
Total Biodiversity Score	1.35



Description

Remnant Eucalyptus microcarpa and one of the largest scattered trees in the Project Area. The tree has no hollows, but is more likely to provide foraging and perching habitat resources for threatened species such as Yellow-tailed Black Cockatoo, Yellow-footed Antechinus and Grey-headed Flying Fox.

Table 12. Summary of Tree 8.

Tree ID	8
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	8
Hollows	0
Diameter (cm)	27
Canopy dieback (%)	2
Total Biodiversity Score	0.56

Description

Younger remnant *Eucalyptus microcarpa.* Although one of the taller scattered trees in the Project Area, it has a relatively small trunk diameter and is probably not an old tree. The tree has no hollows but is more likely to provide foraging and perching habitat resources for threatened species such as Yellow-tailed Black Cockatoo, Yellow-footed Antechinus and Grey-headed Flying Fox.

Table 13. Summary of Tree 9.

Tree ID	9
Tree spp.	*Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum)
Number of trees	1
Height (m)	8.5
Hollows	0
Diameter (cm)	30
Canopy dieback (%)	0
Total Biodiversity Score	0.56

Description

Younger remnant *Eucalyptus leucoxylon* ssp*. leucoxylon.* Although one of the taller scattered trees in the Project Area, it has a relatively small trunk diameter and is probably not an old tree. The tree has no hollows but is more likely to provide foraging and perching habitat resources for threatened species such as Yellow-tailed Black Cockatoo, Yellow-footed Antechinus and Grey-headed Flying Fox.

Table 14. Summary of Tree 10.

Tree ID	10	
Tree spp.	*Eucalyptus microcarpa* (Grey Box)	
Number of trees	1	
Height (m)	6	
Hollows	0	
Diameter (cm)	17	
Canopy dieback (%)	95	
Total Biodiversity Score	0.13	

Description

Remnant *Eucalyptus microcarpa* in poor health (nearly dead), not hollow-bearing and providing no fauna habitat value.

Table 15. Summary of Tree 11.

Tree ID	11	
Tree spp.	*Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum)	
Number of trees	1	
Height (m)	5	
Hollows	0	
Diameter (cm)	16.5	
Canopy dieback (%)	80	
Total Biodiversity Score	0.11	
Description Remnant *Eucalyptus leucoxylon* ssp. *leucoxylon* in poor health (nearly dead), not hollow-bearing and providing no fauna habitat value		

Table 16. Summary of Tree 12.

Tree ID	12
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	9.5
Hollows	0
Diameter (cm)	66.5
Canopy dieback (%)	8
Total Biodiversity Score	2.09

Description

Remnant *Eucalyptus microcarpa.* This is the largest scattered tree in the Project Area. The tree has no hollows but is more likely to provide foraging and perching habitat resources for threatened species such as Yellow-tailed Black Cockatoo, Yellow-footed Antechinus and Grey-headed Flying Fox.

Table 17. Summary of Tree 13.

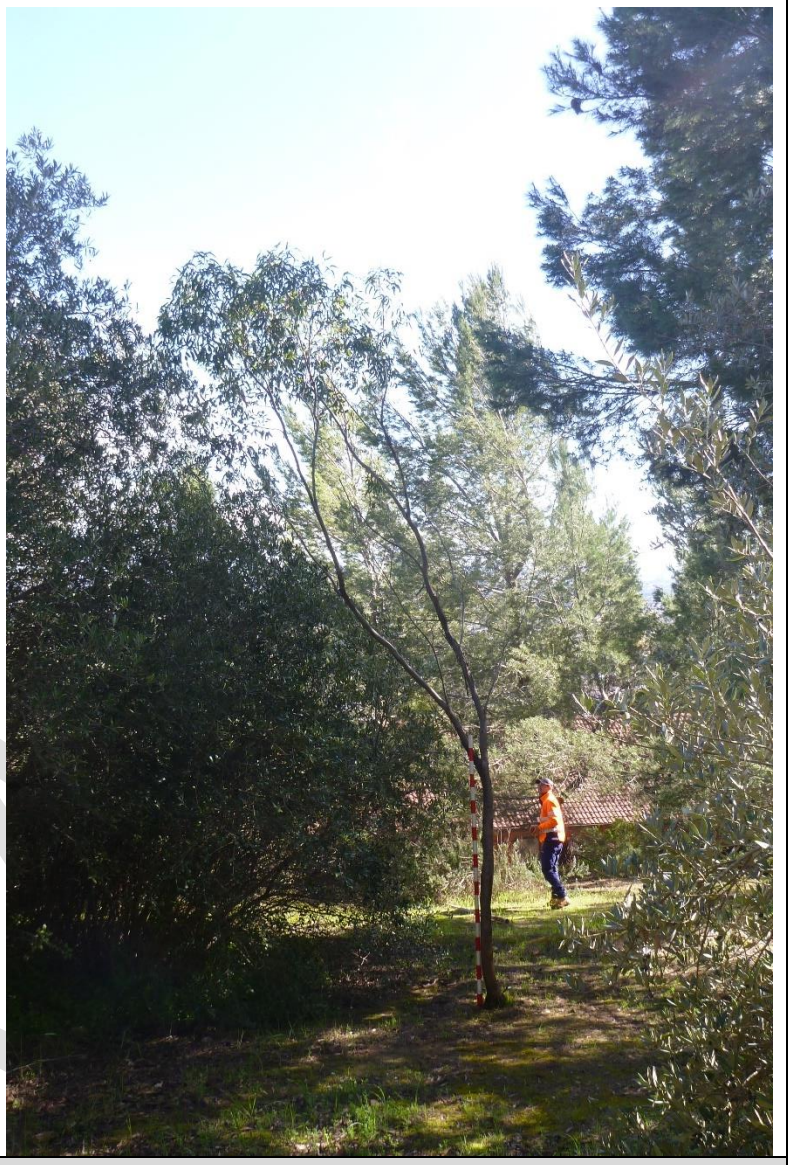
Tree ID	13	
Tree spp.	*Acacia pycnantha* (Golden Wattle)	
Number of trees	1	
Height (m)	0.2	
Hollows	0	
Diameter (cm)	0	
Canopy dieback (%)	0	
Total Biodiversity Score	0.13	

Description

Seedling *Acacia pycnantha* resulting from natural regeneration. Limited fauna habitat value.

Table 18. Summary of Tree 14.

Tree ID	14
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	4.3
Hollows	0
Diameter (cm)	10
Canopy dieback (%)	5
Total Biodiversity Score	0.24



Description

Younger remnant *Eucalyptus microcarpa.* Although one of the taller scattered trees in the Project Area, it has a relatively small trunk diameter and is probably not an old tree. The tree has no hollows but is more likely to provide foraging and perching habitat resources for threatened species such as Yellow-tailed Black Cockatoo, Yellow-footed Antechinus and Grey-headed Flying Fox.

Table 19. Summary of Tree 15.

Tree ID	15
Tree spp.	*Acacia pycnantha* (Golden Wattle)
Number of trees	1
Height (m)	0.5
Hollows	0
Diameter (cm)	0
Canopy dieback (%)	0
Total Biodiversity Score	0.13

Description

Seedling *Acacia pycnantha* resulting from natural regeneration. Limited fauna habitat value.

Table 20. Summary of Tree 16.

Tree ID	16	
Tree spp.	*Acacia pycnantha* (Golden Wattle)	
Number of trees	1	
Height (m)	2.3	
Hollows	0	
Diameter (cm)	2	
Canopy dieback (%)	0	
Total Biodiversity Score	0.26	
Description Seedling *Acacia pycnantha* resulting from natural regeneration. Limited fauna habitat value.		

Table 21. Summary of Tree 17.

Tree ID	17	
Tree spp.	*Eucalyptus microcarpa* (Grey Box)	
Number of trees	1	
Height (m)	4.5	
Hollows	0	
Diameter (cm)	12	
Canopy dieback (%)	85	
Total Biodiversity Score	0.09	

Description

Remnant *Eucalyptus leucoxylon* ssp. *leucoxylon* in poor health (nearly dead), not hollow-bearing and providing no fauna habitat value.

Table 22. Summary of Tree 18.

Tree ID	18
Tree spp.	*Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum)
Number of trees	1
Height (m)	6.5
Hollows	0
Diameter (cm)	21
Canopy dieback (%)	10
Total Biodiversity Score	0.35

Description

Naturally regenerated scattered tree of low height. The tree is in good health, although competition with surrounding woody weeds (Aleppo Pine and European Olive) has caused some die back of shaded branches.

Table 23. Summary of Tree 19.

Tree ID	19
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	8
Hollows	0
Diameter (cm)	39
Canopy dieback (%)	10
Total Biodiversity Score	1.03

Description

Remnant Eucalyptus microcarpa and one of the largest scattered trees in the Project Area. The tree has no hollows, but is more likely to provide foraging and perching habitat resources for threatened species such as Yellow-tailed Black Cockatoo, Yellow-footed Antechinus and Grey-headed Flying Fox.

Table 24. Summary of Tree 20.

Tree ID	20
Tree spp.	*Eucalyptus microcarpa* (Grey Box)
Number of trees	1
Height (m)	2.2
Hollows	0
Diameter (cm)	2
Canopy dieback (%)	0
Total Biodiversity Score	0.16

Description

Sapling *Eucalyptus microcarpa* providing minimal fauna habitat resources.

Table 25. Summary of Tree 21.

Tree ID	21
Tree spp.	*Acacia pycnantha* (Golden Wattle)
Number of trees	1
Height (m)	0.45
Hollows	0
Diameter (cm)	0
Canopy dieback (%)	0
Total Biodiversity Score	0.13

Description

Seedling *Acacia pycnantha* providing minimal fauna habitat resources.

Table 26. Summary of Tree 22.

Tree ID	22	
Tree spp.	*Acacia pycnantha* (Golden Wattle)	
Number of trees	1	
Height (m)	2.3	
Hollows	0	
Diameter (cm)	2	
Canopy dieback (%)	0	
Total Biodiversity Score	0.26	
Description Sapling *Acacia pycnantha* providing minimal fauna habitat resources.		

4.1.3. Site map showing areas of proposed impact

Figure 4. Site map of the Project Area showing the impact footprint of the Proposal and 10 m and 20 m CFS buffers and impacted scattered trees.

4.1.4. Photo log

The photographs in Figure 5, Figure 6, Figure 7 and Figure 8 provide a visual description of the characteristic vegetation in the Project Area.

Figure 5. Fruit tree orchards located on the western side of the Project Area.

Figure 6. Example of the Olive infestation within the Project Area.

Figure 7. Example of *Chrysanthemoides monilifera* (Boneseed) present within the Project Area.

Figure 8. Example of *Asparagus asparagoides* (Bridal Creeper) in the Project Area.

4.2. Threatened species assessment

4.2.1. Threatened Ecological Communities

Two TECs were listed in the PMST report:

- *Peppermint Box (Eucalyptus odorata) Grassy Woodland of South Australia*.
- *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*

Although *Eucalyptus microcarpa* (Grey Box) was present in the Project Area, the understorey and mid storey were too degraded with exotic species to meet the condition thresholds for listing as the TEC. No *Eucalyptus odorata* (Peppermint Box) weas present.

The field survey therefore indicates that neither TEC listed above is present in the Project Area.

4.2.2. Threatened flora

None of the 47 flora species which have been recorded within 5 km are likely or highly likely to occur due to the degraded nature of the Project Area. The Project Area was searched during the scattered tree assessment.

Table 27 provides a summary of the threatened flora species assessment whilst the full assessment is provided in Appendix 1.

Table 27. Likelihood of occurrence of threatened flora species identified in the desktop assessment. The data source and threat levels are described in the table footer.

Species (common name)	NPW Act	EPBC Act	Data source	Date of last record	Likelihood of use for habitat
Acacia gunnii (Ploughshare Wattle)	R		3	2022	Possible
Acacia iteaphylla (Flinders Ranges Wattle)	R		3	2021	Possible
Anogramma leptophylla (Annual Fern)	R		3	2015	Unlikely
Anthocercis angustifolia (Narrow-leaf Ray-flower)	R		3	2021	Possible
Austrostipa densiflora (Fox-tail Spear-grass)	R		3	2021	Likely
Austrostipa gibbosa (Swollen Spear-grass)	R		3	2013	Unlikely
Austrostipa multispiculis (Many-flowered Spear-grass)	R		3	2010	Unlikely
Blechnum nudum (Fishbone Water-fern)	R		3	2022	Unlikely
Caladenia leptochila ssp. leptochila (Narrow-lip Spider-orchid)	R		3	2021	Possible
Caladenia pusilla (Pigmy Caladenia)	R		3	2013	Unlikely
Caladenia reticulata (Veined Spider-orchid)	R		3	2000	Possible
Cardamine paucijuga (Annual Bitter-cress)	R		3	2008	Unlikely
Correa glabra var. leucoclada (Rock Correa)	R		3	2021	Possible

Species (common name)	NPW Act	EPBC Act	Data source	Date of last record	Likelihood of use for habitat
Dianella longifolia var. grandis (Pale Flax-lily)	R		3	2017	Possible
Eryngium ovinum (Blue Devil)	V		3	2013	Unlikely
Eryngium vesiculosum (Prostrate Blue Devil)	R		3	2010	Unlikely
Eucalyptus dalrympleana ssp. dalrympleana (Candlebark Gum)	R		3	2021	Unlikely
Eucalyptus fasciculosa (Pink Gum)	R		3	2021	Unlikely
Eucalyptus viminalis ssp. viminalis (Manna Gum)	R		3	2021	Unlikely
Euphrasia collina subsp. osbornii (Osborn's Eyebright)		EN	5		Unlikely
Gleichenia microphylla (Coral Fern)	R		3	2022	Unlikely
Glycine latrobeana (Clover Glycine, Purple Clover)		VU	5		Possible
Hypolepis rugosula (Ruddy Ground-fern)	R		3	2015	Unlikely
Leionema hillebrandii (Mount Lofty Phebalium)	R		3	2022	Possible
Logania saxatilis (Rock Logania)	R		3	2009	Possible
Luzula flaccida (Pale Wood-rush)	V		3	2007	Unlikely
Lythrum salicaria (Purple Loosestrife)	R		3	2016	Unlikely
Machaerina gunnii (Slender Twig-rush)	R*		3	2018	Unlikely
Melaleuca armillaris ssp. akineta (Needle-leaf Honey-myrtle)	R		3	2015	Unlikely
Olearia adenolasia (Musk Daisy-bush)	R		3	2013	Unlikely
Olearia pannosa subsp. pannosa (Silver Daisy-bush)		VU	5		Unlikely
Philotheca angustifolia ssp. angustifolia (Narrow-leaf Wax-flower)	R		3	2021	Unlikely
Poa umbricola (Shade Tussock-grass)	R		3	2008	Possible
Prasophyllum pallidum (Pale Leek-orchid)		VU	5		Unlikely
Prasophyllum pruinosum (Plum Leek-orchid)		EN	5		Unlikely
Pultenaea graveolens (Scented Bush-pea)	R		3	2021	Unlikely
Rumex dumosus (Wiry Dock)	R		3	2015	Unlikely
Rytidosperma tenuius (Short-awn Wallaby-grass)	R		3	2015	Possible
Senecio pinnatifolius var. pinnatifolius	R		3	2015	Unlikely
Sphaerolobium minus (Leafless Globe-pea)	R		3	2021	Unlikely
Spyridium daphnoides (Spoon-leaved Spyridium)	R		3	2021	Unlikely

Species (common name)	NPW Act	EPBC Act	Data source	Date of last record	Likelihood of use for habitat
Thelymitra grandiflora (Great Sun-orchid)	R		3	2018	Possible
Thelymitra ixioides (Spotted Sun-orchid)	E*		3	2013	Unlikely
Thysanotus tenellus (Grassy Fringe-lily)	R		3	2015	Possible
Veronica derwentiana ssp. homalodonta (Mt Lofty Speedwell)	E	CR	3	2019	Unlikely
Xanthosia tasmanica (Southern Xanthosia)	R		3	2015	Unlikely
Xyris operculata (Tall Yellow-eye)	R		3	2008	Unlikely
Source; 1- BDBSA, 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others **NPW Act; E= Endangered, V = Vulnerable, R= Rare** **EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable**					

4.2.3. Threatened fauna

Although no threatened fauna species were recorded in the Project Area, 14 have been recorded within 5 km of the Project Area since 1995. Of these, only four species are considered likely or highly likely to occur, utilising it as a foraging or roosting area. These species are summarised in Table 28 with the full assessment provided in Appendix 1.

During the field survey, a total of 16 fauna species were recorded. All are species that commonly occur in outer Adelaide suburbs. They are listed in Appendix 2.

Table 28. Likelihood of occurrence of threatened fauna species identified in the desktop assessment. The data source and threat levels are described in the table footer.

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record	Likelihood of use for habitat
Antechinus flavipes (Yellow-footed Antechinus)	V		3	2021	Likely
Egernia cunninghami (Cunningham's Skink)	E		3	2022	Unlikely
Falcunculus frontatus frontatus (Eastern Shriketit)	R		3	1999	Possible
Hirundapus caudacutus (White-throated Needletail)		VU	5		Possible
Hylacola pyrrhopygia parkeri (Chestnut-rumped Heathwren (Mount Lofty Ranges))	E	EN	3,5	2021	Unlikely
Isoodon obesulus obesulus (Southern Brown Bandicoot (SA mainland and KI))	V	EN	3,5	2022	Possible
Neophema elegans elegans (Elegant Parrot)	R		3	2019	Possible
Petroica boodang boodang (Scarlet Robin)	R		3	2022	Possible
Pteropus poliocephalus (Grey-headed Flying-fox)	R	VU	3	2020	Likely

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record	Likelihood of use for habitat
Trichosurus vulpecula (Common Brushtail Possum)	R		3	2020	Highly likely
Turnix varius varius (Painted Buttonquail)	R		3	2009	Unlikely
Varanus rosenbergi (Heath Goanna)	V		3	2009	Unlikely
Zanda funerea whiteae (Yellow-tailed Black Cockatoo)	V		N/A		Highly likely
Zoothera lunulata halmaturina (South Australian Bassian Thrush (southern FR, MLR, KI))	V	EN	3,5	2021	Possible

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

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.

The cumulative impacts that are likely to result from the application, include the following;

- Clearance directly required for the development such as the associated demolition of the existing dwelling, earthworks, water tanks, swimming pool and pool plant.
- Subsequent clearance that will be permitted or required (e.g. 10 m around a building, 20 m around a dwelling for fire protection).
- Indirect clearance that may occur as a result of the development (e.g. dust generation smoothing vegetation, altered hydrology inundating or drying vegetation, impacting on tree root zones (the application of fill) impacting on tree health).

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

Additional clearance has been avoided in the design and placement of the garage:

- Proposed new residence includes integrated garaging, limiting new driveway. Originally the client requested 4x car garage separated on lower Pepper Tree Lane, this was avoided.

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 clearance of native vegetation has been minimised by the following in the design process:

- Utilised the existing residence building footprint, therefore minimising the site cut/fill.
- Proposed new residence finished floor level matching the existing, therefore no excessive site filling.
- Proposed new residence all at one level only, therefore avoiding split level design.
- Suspended and cantilevered concrete floor slabs utilised to ensure minimal site filling.
- Minimised the design footprint as much as possible, designing house to suit large family residence.
- Trees proposed to be removed only selected due to high bushfire fall risk onto new residence, balance of native vegetation surrounding trees to remain.

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 property owners are very willing to carry out weed removal and native plant revegetation on their property.

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.

It is not suitable to offset the clearance within the property as the property is 1.29 ha (less than the minimum 3 ha required for an offset). A Significant Environmental Benefit (SEB) will therefore be achieved by payment of the required amount into the Native Vegetation Fund.

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

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

Assessment against the Principles of Clearance is shown in Table 29. Where applicable, that is where the clearance is found to be seriously at variance, moderating factors that may be considered by the NVC have been discussed.

Table 29. Assessment against the Principles of Clearance.

Principle of clearance	Considerations
Principle 1(a) – it comprises a high level of diversity of plant species	**Relevant information** Three species of trees make up the 22 trees impacted by the Proposal: • *Eucalyptus microcarpa* (Grey Box) • *Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) • *Acacia pycnantha* (Golden Wattle)
	Assessment against the principles The clearance is not at variance or seriously at variance with Principle 1(a)
	Moderating factors that may be considered by the NVC Not applicable.
Principle 1(b) – significance as a habitat for wildlife	**Relevant information** Although no threatened species were recorded during a field survey of the Project Area, four species were assessed as likely or highly likely to use the impacted scattered trees: • *Antechinus flavipes* (Yellow-footed Antechinus) • *Pteropus poliocephalus* (Grey-headed Flying-fox) • *Trichosurus vulpecula* (Common Brushtail Possum) • *Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) Surrounding vegetation does not support a high diversity of animal species, with all those recorded commonly occurring in the outer suburbs of Adelaide. With the exception of three trees (Tree 7, 12 and 19), all trees are relatively young, mostly below 5 m in height and provide limited habitat value for fauna beyond perching and seasonal foraging resources. Trees

Principle of clearance	Considerations
	beyond the 20 m CFS clearance buffer will be retained, resulting in no impact on any connectivity that the habitat may provide with neighbouring areas of similar habitat. Fauna Habitat Score – 1.8 (all trees) Biodiversity Score – 9.09 (total of all trees)
	Assessment against the principles Seriously at Variance All trees (Fauna Habitat Score ≥1.2)
	Moderating factors that may be considered by the NVC Impact Significance The vegetation impacted consists mainly of small and/or non-hollow bearing trees that contain some minor foraging and perching habitat for threatened species. They provide limited breeding habitat for the four threatened fauna species likely to occur/sometimes use the Project Area. Similar habitat is extensive in the immediate area and greater outer suburbs of Adelaide. It does not represent habitat that is critical to the survival of any threatened species. The clearance is therefore not likely to: • Lead to a long-term decrease in the size of a threatened species' population. • Reduce the area of occupancy of a threatened species. • Fragment an existing population into two or more populations. • Adversely affect habitat critical to the survival of a species. • Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. • Result in invasive species that are harmful to a threatened species becoming established in the threatened species habitat. • Interfere with the recovery of a threatened species. Common Species Only common native fauna species were recorded in the Project Area during the field survey. Due to the nature of the vegetation impacted as described under Impact Significance above, it is unlikely to represent habitat essential for maintaining local populations. Non-essential Habitat Except for three trees (Tree 7, 12 and 19), all trees are relatively young, mostly below 5 m in height and provide limited habitat value for fauna beyond perching and seasonal foraging resources.
Principle 1(c) – plants of a rare, vulnerable or endangered species	**Relevant information** No threatened plant species were recorded during the survey. None of the scattered trees impacted are a threatened species. Threatened Flora Score(s) - 0
	Assessment against the principles The clearance is not at variance or seriously at variance with the Principle.
	Moderating factors that may be considered by the NVC Not applicable.
Principle 1(d) – the vegetation comprises the whole or part of a plant community that is Rare,	**Relevant information** The impacted vegetation is not part of a Threatened Ecological Community.
	Assessment against the principles The clearance is not at variance or seriously at variance with the Principle.

Principle of clearance	Considerations
Vulnerable or endangered	**Moderating factors that may be considered by the NVC** Not applicable.
Principle 1(e) – it is significant as a remnant of vegetation in an area which has been extensively cleared	**Relevant information** IBRA Association Remnancy: 41% IBRA Subregion Remnancy: 15% Total Biodiversity Score – 9.10
	Assessment against the principles The proposed clearance is at variance with the Principle (Total Biodiversity Score of 5 – 500)
	Moderating factors that may be considered by the NVC Not applicable.
Principle 1(f) – it is growing in, or in association with, a wetland environment	**Relevant information** The impacted vegetation is not growing in, or in association with, a wetland.
	Assessment against the principles The clearance is not at variance or seriously at variance with the Principle.
	Moderating factors that may be considered by the NVC Not applicable.
Principle 1(g) – it contributes significantly to the amenity of the area in which it is growing or is situated	**Relevant information** The impacted vegetation is on private property and not accessible to the public. An existing dwelling is present on the site and removal of trees within 20 m of the proposed new dwelling will not increase the visibility of structures on the property. Smaller trees are generally not clearly visible amongst the dominant cover of introduced Olive and Aleppo Pine trees.
	N/A
	Moderating factors that may be considered by the NVC In determining if the clearance is at variance with the principles, the NVC will have regard to the local Council's recommendations in relation to the application.

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 Proposal is a Level 4 clearance, with the risk assessment outcome shown in Table 30.

Table 30. Summary of the level of risk associated with the application.

Total clearance	No. of trees	22
	Area (ha)	0
	Total biodiversity Score	9.10
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b)
Risk assessment outcome		Level 4

5. Clearance summary

The SEB obligation for each of the 22 trees impacted by the Proposal is shown in Table 31, with a Totals Summary table provided as Table 32.

Table 31. Scattered Trees Summary Table.

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB Payment	Admin Fee
1	1	1.8	0	0.29	1	0.31	$302.07	$15.75
2	1	1.8	0	0.48	1	0.50	$491.30	$25.61
3	1	1.8	0	0.11	1	0.12	$115.70	$6.03
4	1	1.8	0	0.27	1	0.28	$277.86	$14.49
5	1	1.8	0	0.23	1	0.25	$240.89	$12.56
6	1	1.8	0	0.18	1	0.19	$185.44	$9.67
7	1	1.8	0	1.35	1	1.41	$1,388.40	$72.38
8	1	1.8	0	0.56	1	0.58	$574.23	$29.94
9	1	1.8	0	0.56	1	0.59	$579.48	$30.21
10	1	1.8	0	0.11	1	0.12	$115.08	$5.98
11	1	1.8	0	0.11	1	0.11	$110.43	$5.76
12	1	1.8	0	2.09	1	2.19	$2,152.54	$112.22
13	1	1.8	0	0.13	1	0.13	$131.27	$6.99
14	1	1.8	0	0.24	1	0.25	$249.91	$13.03
15	1	1.8	0	0.13	1	0.13	$136.21	$6.95
16	1	1.8	0	0.26	1	0.27	$263.99	$13.76
17	1	1.8	0	0.09	1	0.09	$88.61	$4.62
18	1	1.8	0	0.35	1	0.37	$362.32	$18.89
19	1	1.8	0	1.03	1	1.08	$1,063.61	$55.45
20	1	1.8	0	0.16	1	0.16	$160.67	$8.38
21	1	1.8	0	0.13	1	0.14	$133.73	$6.98
22	1	1.8	0	0.26	1	0.27	$263.99	$13.76
Total	**22**			**9.09**		**9.55**	**$8,898.33**	**$489.41**

Table 32. Totals Summary Table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	9.09	9.55	$8,898.33	$489.41	$9,387.74

Economies of Scale Factor	0.5
Rainfall (mm)	696

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. Provide the SEB Credit Ref. No. _____

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

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

☒ Pay into the Native Vegetation Fund.

PAYMENT SEB

Payment amount required (including admin. fee): $9,387.74.

7. References

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8. Appendices

Appendix 1. Flora and fauna threatened species likelihood of occurrence assessment

FLORA						
Species (Common name)	**NPW Act**	**EPBC Act**	**Data source**	**Date of last record**	**Species known habitat preferences**	**Likelihood of use for habitat – Comments**
Acacia gunnii (Ploughshare Wattle)	R		3	2022	Usually on rocky hillsides and amongst rocky outcrops in open forest, associated with Eucalyptus obliqua and Eucalyptus baxteri.	Possible - not observed in Project Area, but suitable habitat and nearby records exist.
Acacia iteaphylla (Flinders Ranges Wattle)	R		3	2021	SA: FR E NL SL SE, but 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. Also naturalised in some parts of NSW, in the coastal and sub-coastal districts of south-western WA and in the central and western parts of Vic. Grows mainly among rocky outcrops on hillsides or along rocky creeks in valleys.	Possible - not observed in Project Area, but suitable habitat and nearby records exist.
Anogramma leptophylla (Annual Fern)	R		3	2015	SA: NW FR EP NL SL KI SE. Common on damp banks amongst grasses or in rocky crevices.	Unlikely - no suitable habitat occurs in Project Area
Anthocercis angustifolia (Narrow-leaf Ray-flower)	R		3	2021	On steep rocky slopes usually above watercourses; rare, at a few sites in the Flinders and Mt Lofty Ranges; sometimes locally abundant following fire. SA: FR, NL, SL.	Possible - suitable habitat within Project Area and nearby records exist. None observed during field assessment.
Austrostipa densiflora (Fox-tail Spear-grass)	R		3	2021	SA: FR EA? Id MU SL KI. Also from Qld, NSW and Vic. Occurs in a range of soils, especially sandy, but also rich soils associated with rocky places, including limestone. Has been recorded from disturbed places in woodlands and grasslands.	Likely - suitable habitat within Project Area and nearby records exist.
Austrostipa gibbosa (Swollen Spear-grass)	R		3	2013	In SA grows in FR, NL, MU, SL and SE regions. Grows in rich loamy soils along creeks and in other seasonally wet places. Also prefers open forests and woodlands or grasslands with Eucalyptus odorata, Acacia pycnantha, Allocasuarina verticillata and *Rytidosperma setaceum*. In the MLR found in foothills in and around Sturt Gorge and Sheppard's Hill RP's.	Unlikely - suitable habitat within Project Area and nearby records exist.

FLORA						
Species (Common name)	**NPW Act**	**EPBC Act**	**Data source**	**Date of last record**	**Species known habitat preferences**	**Likelihood of use for habitat – Comments**
Austrostipa multispiculis (Many-flowered Spear-grass)	R		3	2010	SA: NL MU SL KI. Grows in open grassland with Austrostipa nodosa, A. eremophila and *Rytidosperma setaceum* and Aristida sp.	Unlikely - no suitable habitat within Project Area.
Blechnum nudum (Fishbone Water-fern)	R		3	2022	SA: SL KI. Also in Qld; N.S.W.; Vic.; Tas. Occasional along stream banks in valleys.	Unlikely - no suitable habitat occurs in Project Area
Caladenia leptochila ssp. leptochila (Narrow-lip Spider-orchid)	R		3	2021	SE of South Australia in clay or gravelly soils in shrubby forest in the Mount Lofty Ranges.	Possible - suitable habitat within Project Area and nearby records exist.
Caladenia pusilla (Pigmy Caladenia)	R		3	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. Also from N.S.W.; Vic.; Tas. One record from 2003 in Hallett Cove CP. Coastal shrublands	Unlikely - no suitable habitat occurs in Project Area
Caladenia reticulata (Veined Spider-orchid)	R		3	2000	Occurs singly or in small groups in clay or gravelly soils on forested slopes. S. Aust.: SL, KI. Qld; N.S.W.; Vic.; Tas	Possible - potentially suitable habitat within Project Area and nearby records exist.
Cardamine paucijuga (Annual Bitter-cress)	R		3	2008	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.	Unlikely - no suitable habitat occurs in Project Area
Correa glabra var. leucoclada (Rock Correa)	R		3	2021	Occurs in the SL region of SA. Few recent records from in and around Sturt Gorge RP known from rocky habitats, mostly in open woodlands.	Possible - suitable habitat within Project Area and nearby records exist. Conspicuous species with none observed during field assessment.
Dianella longifolia var. grandis (Pale Flax-lily)	R		3	2017	SA: FR, EP, NL MU SL SE. Records mainly from the ranges. 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.	Possible – Recent records and some suitable habitat is present in the Project Area.
Eryngium ovinum (Blue Devil)	V		3	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.	Unlikely - no suitable habitat occurs in Project Area

FLORA						
Species (Common name)	**NPW Act**	**EPBC Act**	**Data source**	**Date of last record**	**Species known habitat preferences**	**Likelihood of use for habitat – Comments**
Eryngium vesiculosum (Prostrate Blue Devil)	R		3	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.	Unlikely - no suitable habitat occurs in Project Area
Eucalyptus dalrympleana ssp. dalrympleana (Candlebark Gum)	R		3	2021	SA: SL. Common in the cooler areas of the Great Dividing Range in NSW to the Dalesford are in Vic as well as Tas. IN SA, the species is mainly restricted to the Onkaparinga River catchment from Gumeracha to Parawa, but most common in Lobethal to Mylor area. Grows in deep well-watered, but well-drained soils and commonly associated with Eucalyptus obliqua.	Unlikely - no suitable habitat occurs in Project Area
Eucalyptus fasciculosa (Pink Gum)	R		3	2021	Restricted to almost entirely SA. With small range in western Vic. SA: MU SL KI SE. Often in poorer sandy soils, in woodland or as an emergent in low shrublands. Commonly associated with E. baxteri, E. cosmophylla, E. diversifolia, E. leptophylla and E. leucoxylon.	Unlikely - no suitable habitat occurs in Project Area
Eucalyptus viminalis ssp. viminalis (Manna Gum)	R		3	2021	SA: FR SL, SE. Grows on moist, well-drained alluvial soils near watercourses but also grows on drier sites at higher altitudes. Tolerates snow and some flooding. Drought tolerance depends on provenance.	Unlikely - no suitable habitat occurs in Project Area
Euphrasia collina subsp. osbornii (Osborn's Eyebright)		EN	5		Known to inhabit mallee scrubland, and less commonly in coastal heathlands, sclerophyll forests and woodlands	Unlikely - no suitable habitat occurs in Project Area
Gleichenia microphylla (Coral Fern)	R		3	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.	Unlikely - no suitable habitat occurs in Project Area
Glycine latrobeana (Clover Glycine, Purple Clover)		VU	5		Found in native grasslands, dry sclerophyll forests, woodlands and low open woodlands with a grassy ground layer.	Possible - no recent records. Habitat may be suitable within the Project Area.
Hypolepis rugosula (Ruddy Ground-fern)	R		3	2015	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.	Unlikely - no suitable habitat occurs in Project Area

FLORA						
Species (Common name)	**NPW Act**	**EPBC Act**	**Data source**	**Date of last record**	**Species known habitat preferences**	**Likelihood of use for habitat – Comments**
Leionema hillebrandii (Mount Lofty Phebalium)	R		3	2022	Occurs in the SL region of SA	Possible - suitable habitat within Project Area and nearby records exist.
Logania saxatilis (Rock Logania)	R		3	2009	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	Possible - no recent records. Habitat may be suitable within the Project Area.
Luzula flaccida (Pale Wood-rush)	V		3	2007	SA: SL SE. Grows most frequently in damp situations.	Unlikely - no suitable habitat occurs in Project Area
Lythrum salicaria (Purple Loosestrife)	R		3	2016	Grows in wet places. SA: FR MU SL SE. Also from Qld; N.S.W.; Vic.; Tas.	Unlikely - no suitable habitat occurs in Project Area
Machaerina gunnii (Slender Twig-rush)	R*		3	2018	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in wet heathlands and swampy woodlands.	Unlikely - no suitable habitat occurs in Project Area
Melaleuca armillaris ssp. akineta (Needle-leaf Honey-myrtle)	R		3	2015	Found primarily in the Gawler Ranges of South Australia, where it grows on ridges and granite outcrops.	Unlikely – No very recent records and this species is generally confined to the Gawler Ranges in SA.
Olearia adenolasia (Musk Daisy-bush)	R		3	2013	Found only on the Eyre Peninsula.	Unlikely - no suitable habitat occurs in Project Area
Olearia pannosa subsp. pannosa (Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush)		VU	5		Occurs in sandy, flat areas and in hilly, rocky areas in woodland or mallee.	Unlikely – No recent records. Habitat may be suitable but this conspicuous plant was not detected during the field survey.
Philotheca angustifolia ssp. angustifolia (Narrow-leaf Wax-flower)	R		3	2021	Occurs in the FR, EP, NL, MU, YP, SL, KI & SE regions of SA On the EP, associated with the Cleve Hills and the Koppio Hills Woodland environments.	Unlikely - no suitable habitat occurs in Project Area
Poa umbricola (Shade Tussock-grass)	R		3	2008	SA: SL. Associated with woodland communities.	Possible - suitable habitat within Project Area and nearby records exist.

FLORA						
Species (Common name)	**NPW Act**	**EPBC Act**	**Data source**	**Date of last record**	**Species known habitat preferences**	**Likelihood of use for habitat – Comments**
Prasophyllum pallidum (Pale Leek-orchid)		VU	5		More fertile soils of woodland and well-grassed open forests	Unlikely - no suitable habitat occurs in Project Area
Prasophyllum pruinosum (Plum Leek-orchid)		EN	5		A range of open woodland habitats; usually with an overstorey of Pink Gum (Eucalyptus fasciculosa), South Australian Blue Gum (E. leucoxylon), Acacia leucoxylon and Callitris gracilis.	Unlikely - no suitable habitat occurs in Project Area
Pultenaea graveolens (Scented Bush-pea)	R		3	2021	Dry sclerophyll forest usually on sandstone	Unlikely - no suitable habitat occurs in Project Area
Rumex dumosus (Wiry Dock)	R		3	2015	SA: FR EA EP NL MU SL SE. Grows in damp areas associated with mallee	Unlikely - no suitable habitat occurs in Project Area
Rytidosperma tenuius (Short-awn Wallaby-grass)	R		3	2015	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,	Possible - recent records, but habitat mostly unsuitable
Senecio pinnatifolius var. pinnatifolius	R		3	2015	Commonly found in moist gullies where they are locally widespread. Predominantly occurs in areas of moderate to high rainfall.	Unlikely - no suitable habitat occurs in Project Area
Sphaerolobium minus (Leafless Globe-pea)	R		3	2021	SA: EP MU SL KI SE. Widespread in heathlands, but prefers swamps.	Unlikely - no suitable habitat occurs in Project Area
Spyridium daphnoides (Spoon-leaved Spyridium)	R		3	2021	SA: EP SL KI SE. Scattered across southern Australia with sub-population located in central Australia. Associated with clayey sands dominated by Melaleuca uncinata (Broombush) Tall Shrubland with emergent mallee species. Grows mainly in scrub land.	Unlikely - no suitable habitat occurs in Project Area
Thelymitra grandiflora (Great Sun-orchid)	R		3	2018	Known to grow in forest and in scrubland, often in rocky places.	Possible – suitable habitat, and has been recorded nearby recently.

FLORA						
Species (Common name)	**NPW Act**	**EPBC Act**	**Data source**	**Date of last record**	**Species known habitat preferences**	**Likelihood of use for habitat – Comments**
Thelymitra ixioides (Spotted Sun-orchid)	E*		3	2013	Found in the southern Mount Lofty Ranges and the lower South-east in South Australia, growing in woodland or swampy ground.	Unlikely - no suitable habitat occurs in Project Area
Thysanotus tenellus (Grassy Fringe-lily)	R		3	2015	Perennial Fringed lily species located in SA where it prefers Eucalyptus woodlands, Lomandra effusa Open Sedgelands, Dodonaea lobulata shrublands and Bluebush shrublands.	Possible – Some suitable habitat within the Project Area.
Veronica derwentiana ssp. homalodonta (Mt Lofty Speedwell)	E	CR	3	2019	Occurs in moist areas, gullies, creeklines and high rainfall areas. Largely occurs in Eucalyptus obliqua Forests with or without additional overstorey species (such as Eucalyptus fasciculosa, Eucalyptus viminalis ssp. cygnetensis & Eucalyptus leucoxylon).	Unlikely - no suitable habitat occurs in Project Area
Xanthosia tasmanica (Southern Xanthosia)	R		3	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.	Unlikely - no suitable habitat occurs in Project Area
Xyris operculata (Tall Yellow-eye)	R		3	2008	Found on Kangaroo Island, southern Mount Lofty Ranges and the lower South-east in South Australia, growing in wet heathlands and swampy areas.	Unlikely - no suitable habitat occurs in Project Area
Source; 1- BDBSA, 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others NPW Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable						

FAUNA						
Species (common name)	**NPW Act**	**EPBC Act**	**Data source**	**Date of last record**	**Species known habitat preferences**	**Likelihood of use for habitat – Comments**
Antechinus flavipes (Yellow-footed Antechinus)	V		3	2021	Dry sclerophyll forests	Likely – the vegetation in the Project area is a dry sclerophyll woodland.
Egernia cunninghami (Cunningham's Skink)	E		3	2022	Forests and woodlands with rock outcrops	Unlikely – there were no rock outcrops in close vicinity to the Project area.
Falcunculus frontatus frontatus (Eastern Shriketit)	R		3	1999	Eucalypt forests and woodlands, forested gullies and along rivers in drier areas	Possible – the vegetation in the Project area is a eucalypt woodland.
Hirundapus caudacutus (White-throated Needletail)		VU	5		High open air spaces above almost any habitat, including oceans; at times gathers over ranges and headlands	Possible – Fly-over only.
Hylacola pyrrhopygia parkeri (Chestnut-rumped Heathwren (Mount Lofty Ranges))	E	EN	3,5	2021	Occurs in dense heathland and undergrowth in Eucalyptus forests and woodlands, and is most commonly found in rocky areas	Unlikely – lack of dense heathland/ undergrowth in Project Area.
Isoodon obesulus obesulus (Southern Brown Bandicoot (SA mainland and KI))	V	EN	3,5	2022	A wide variety of habitats, including rainforests to woodlands and heath	Possible – recent nearby records however habitat in the Project area lacks dense understorey.
Neophema elegans elegans (Elegant Parrot)	R		3	2019	A wide variety of habitats, including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland	Possible – habitat in Project area suitable for this species.
Petroica boodang boodang (Scarlet Robin)	R		3	2022	Dry eucalypt forests and woodlands	Possible - the vegetation in the Project area is a dry eucalypt woodland.
Pteropus poliocephalus (Grey-headed Flying-fox)	R	VU	3	2020	Only a single Grey-headed Flying-fox camp occurs in Adelaide, on the River Torrens in the central business district. Foraging habitat includes flowering and fruiting trees and shrubs, including exotic species, anywhere within 20 – 50 km of this camp.	Likely – this species may feed upon flowering eucalypts in the Project area.

FAUNA						
Species (common name)	**NPW Act**	**EPBC Act**	**Data source**	**Date of last record**	**Species known habitat preferences**	**Likelihood of use for habitat – Comments**
Trichosurus vulpecula (Common Brushtail Possum)	R		3	2020	Anywhere where trees with suitable hollows occur, including open forests and woodlands but also urban areas and cities	Highly likely – there were no suitable hollows in the Project area, however the Project Area is likely to provide foraging habitat.
Turnix varius varius (Painted Buttonquail)	R		3	2009	Temperate and eastern tropical forests and woodlands, preferring closed canopies with some understory and deep leaf litter on the ground	Unlikely – Project area has a shallow layer of leaf litter.
Varanus rosenbergi (Heath Goanna)	V		3	2009	Heath, wet and dry forest and temperate woodlands usually with sandy soils and termite mounds present	Unlikely – soil not sandy and no termite mounds observed in the Project area.
Zanda funerea whiteae (Yellow-tailed Black Cockatoo)	V		Known		The Yellow-tailed Black-Cockatoo occurs in a variety of habitat types, including eucalypt woodland, heathlands, subalpine areas, pine plantations and occasionally in urban areas. The Yellow-tailed Black-Cockatoo is found up to 2000m throughout south-eastern Australia, from Eyre Peninsula to south and central eastern Queensland.	Highly likely – there were no suitable hollows in the Project area, however the Project Area is likely to provide foraging habitat.
Zoothera lunulata halmaturina (South Australian Bassian Thrush (southern FR, MLR, KI))	V	EN	3,5	2021	Damp, densely forested areas and gullies, usually with a thick canopy overhead and leaf litter below	Possible – Dense vegetation may be suitable.
Source; 1- BDBSA, 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others NPW Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable						

Appendix 2. Fauna Species recorded during the field survey.

Scientific name	Common name	NPW Act	EPBC Act	MLR	Resource use	Habitat / status
AVES	**Birds**					
Gymnorhina tibicen	Australian Magpie			LC	P, N	r
Lichenostomus penicillatus	White-plumed Honeyeater			NT	P, N, F	w/r
Rhipidura leucophrys	Willie Wagtail			NT	P, F, N	w/r
Zosterops lateralis	Silvereye			NT	P, F	w/s
Cacatua galerita	Sulphur-crested Cockatoo			LC	P, H	w/r
Malurus cyaneus	Superb Fairy-wren			-	-	-
Corvus coronoides	Australian Raven			-	-	-
Smicrornis brevirostris	Weebill			LC	P, F	w
Phaps chalcoptera	Common Bronzewing			-	-	-
Anthochaera carunculata	Red Wattlebird			LC	P, F	w/r
Eolophus roseicapilla	Pink Galah			LC	P, H	w/r
Strepera versicolor	Grey Currawong			-	-	-
Colluricincla harmonica	Grey Shrikethrush			LC	F	w
MAMMALIA	**Mammals**					
Phascolarctos cinereus	Koala			R	F, N	r
Tachyglossus aculeatus	Short-beaked Echidna			-	-	-
Macropus fuliginosus	Western Grey Kangaroo			-	-	-

NPW Act: E = Endangered, V = Vulnerable, R = Rare

EPBC Act: Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable

MLR: LC = Least Concern (Common), NT = Near Threatened (Uncommon), RA = Rare, VU = Vulnerable, EN = Endangered, CR = Critically Endangered

Resource use: P = perching/roosting, N = nesting, H = using hollow for nesting/roosting, F = feeding

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.

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