Native Vegetation Clearance

Hindmarsh Valley – Stage 1B and 1C

Data Report

Clearance under the *Native Vegetation Regulations 2017*

23/02/2024

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

Native Vegetation Clearance Hindmarsh Valley – Stage 1B and 1C Data Report

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Prepared by EBS Ecology for SA Holdco Pty Ltd

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Cover photograph: Tree 212 - *Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) in the Project Area.

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Glossary and abbreviations

BDBSA	Biological Database of South Australia (maintained by DEW)
DA	Development Application
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
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*
f.	forma
ha	Hectare(s)
IBRA	Interim Biogeographical Regionalisation of Australia
km	Kilometre(s)
LSA Act	*Landscape South Australia Act 2019*
MPN	Master Planned Neighbourhood
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
PDI Act	*Planning, Development and Infrastructure Act 2016*
PIRSA	Department of Primary Industries and Regions
PMST	Protected Matters Search Tool (under the EPBC Act; maintained by DCCEEW)
Project	a residential subdivision project in Hindmarsh Valley
Project Area	The area proposed for the residential subdivision at Lot 31 and 32, Victor Harbor Road, Hindmarsh Valley
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)
WAA	Water affecting activity

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1. Applicant Information

Details of the native vegetation clearance application are summarised in Table 1, with a summary of the proposed clearance provided in Table 2.

Table 1. Application details.

Applicant:	SA Property Holdco Pty Ltd ATF SA Holdco Property Trust		
Key contact:	E: T:		
Landowner:	*If the applicant is not the landowner, written permission must be provided*		
Site Address:	Lot 31 and 32, Victor Harbor Road, Hindmarsh Valley, SA 5211		
Local Government Area:	City of Victor Harbor	**Hundred:**	Goolwa
Title ID:	CT/6216/950 CT/6216/951	**Parcel ID**	D118328 A31 D118328 A32

Table 2. Summary of the proposed clearance.

Purpose of clearance:	Clearance is required for the construction of a residential subdivision.
Native Vegetation Regulation:	Regulation 12, Schedule 1; clause 35, Residential subdivision
Description of the vegetation under application:	• 22 scattered trees including one four State Rare *E. fasciculosa* (Pink Gum). • 0.07 ha of regenerating Regenerating *Allocasuarina verticillata and Acacia pycnantha over Disphyma crassifolium* in poor condition (along Welch Road under planted trees).
Total proposed clearance – area (ha) and/or number of trees:	0.07 ha of regenerating bushland. 22 scattered trees are proposed to be cleared.
Level of clearance:	Level 4
Overlay (Planning and Design Code):	Native Vegetation Overlay, Water Resources Overlay
Map of proposed clearance area:	See Figure 6, page 51.
Mitigation Hierarchy:	**Avoidance** Some native scattered trees in the Project Area have been retained within open space reserves, particularly clusters of large trees and on the flood plain along the Hindmarsh River in the west of the Project Area. The proponent aims to retain where possible, all native scattered tree with a unit biodiversity score (UBS) greater than 6. **Minimisation** For the development to be economically viable, not all native scattered trees can be retained. Some locations in the Project Area have significant topography changes, meaning that due to ground level changes, the retention of some trees is not possible. The proponent has engaged an

	arborist to advise on the retention of trees. This advice will be based on but not limited to considerations including tree assessment, alternative management such as pruning/trimming, tree protection zones, building setbacks and envelopes, infrastructure and road layouts and designs, topography including cut/fill batters and retaining walls. Additionally, to minimise impact associated with the clearance, the proponent will develop and implement a Construction Environmental Management Plan that includes procedures for tree clearing that minimises impact to fauna and any surrounding habitat. Where practicable, hollow-bearing trees and trees with a Total Biodiversity Score greater than or equal to 6.00 will be retained. This includes the trees shown on the map in Figure 17 which will be included as a part of a reserve in Stage 1B. To minimise the risk of accidental clearance, indirect impacts and impact to fauna, construction contractors will implement a Vegetation Management Plan. This plan will be approved by the proponent and, at a minimum, include the management measures listed in Table 33. **Rehabilitation** Revegetation using native species is intended to be undertaken, primarily in open space reserves. Additionally, native street trees will be planted throughout the development and along the edges of Victor Harbor Road, Welch Road and Strawberry Hill Road. It is proposed that 70 to 80% of the species used in revegetation in the Project Area will be native species that are provenant to the area.
SEB Offset proposal	Payment of **$33,071.98**, which includes a **$1,724.13** administration fee into the Native Vegetation fund.

2. Purpose of clearance

2.1. Description

Native vegetation clearance is required for the construction of a residential subdivision at Lot 31 and 32, Victor Harbor Road, Hindmarsh Valley (the Project). The Project involves seven stages, with Stage 1 split into four sub-stages. Each Stage involves the clearance of native vegetation.

EBS Ecology (EBS) were engaged by Kingsley Andrew on behalf of SA Holdco Pty Ltd to undertake a native vegetation data report to support a Development Application (DA) for the Project This clearance application relates only to the residential subdivision and associated works within for Stage 1B and 1C.

The Project Area is across two land parcels (Table 3) and is depicted in Figure 1.

Table 3. Parcel and land information present in the Project Area.

Parcel ID:	Title/Volume/Folio
D118328 A32	CT/6216/951
D118328 A31	CT/6216/950

2.2. Background

Two terms are used to describe the location of the Project:

- Project Area – the area where native vegetation clearance is proposed (i.e. the footprint of the Project) across all stages of the Project.
- Search Area – a 5 kilometre (km) buffer surrounding the Project Area and used for the desktop component of this clearance data report.

Current and surrounding land use

The Project Area is located approximately 3 kilometers (km) northeast of the town of Victor Harbor and 66 km south of the Adelaide central business district. The Project Area was previously used for cropping land and consists of a mixture of remnant native scattered trees and planted trees over an understorey consisting of primarily introduced flora species. The nearest National Parks and Wildlife Reserve, Mount Billy Conservation Park is located approximately 6.6 km northwest of the Project Area. The Hindmarsh River runs through the western end of the Project Area providing suitable habitat for fauna species. Currently the land is unused and is bordered to the west and east by cropping pasture and to the north and south by residential areas.

Administrative boundaries

The Project Area occurs within the City of Victor Harbor Council Area, Hills and Fleurieu Landscape Management Region, Goolwa Hundred and Hindmarsh County (DEW 2023a).

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 located in the Kanmantoo IBRA Bioregion, Fleurieu IBRA Subregion and Inman Valley IBRA Association.

Approximately 12 percent (%) (45,372 hectares (ha)) of the Fleurieu IBRA Subregion and approximately 11% (4,117 ha) of the Inman Valley IBRA Environmental Association is mapped as remnant vegetation. Of this, 24% (10,865 ha) and 28% (1,150 ha) is formerly conserved and protected, respectively.

2.3. General location map

The Project Area and Search Area are indicated on the map in Figure 1.

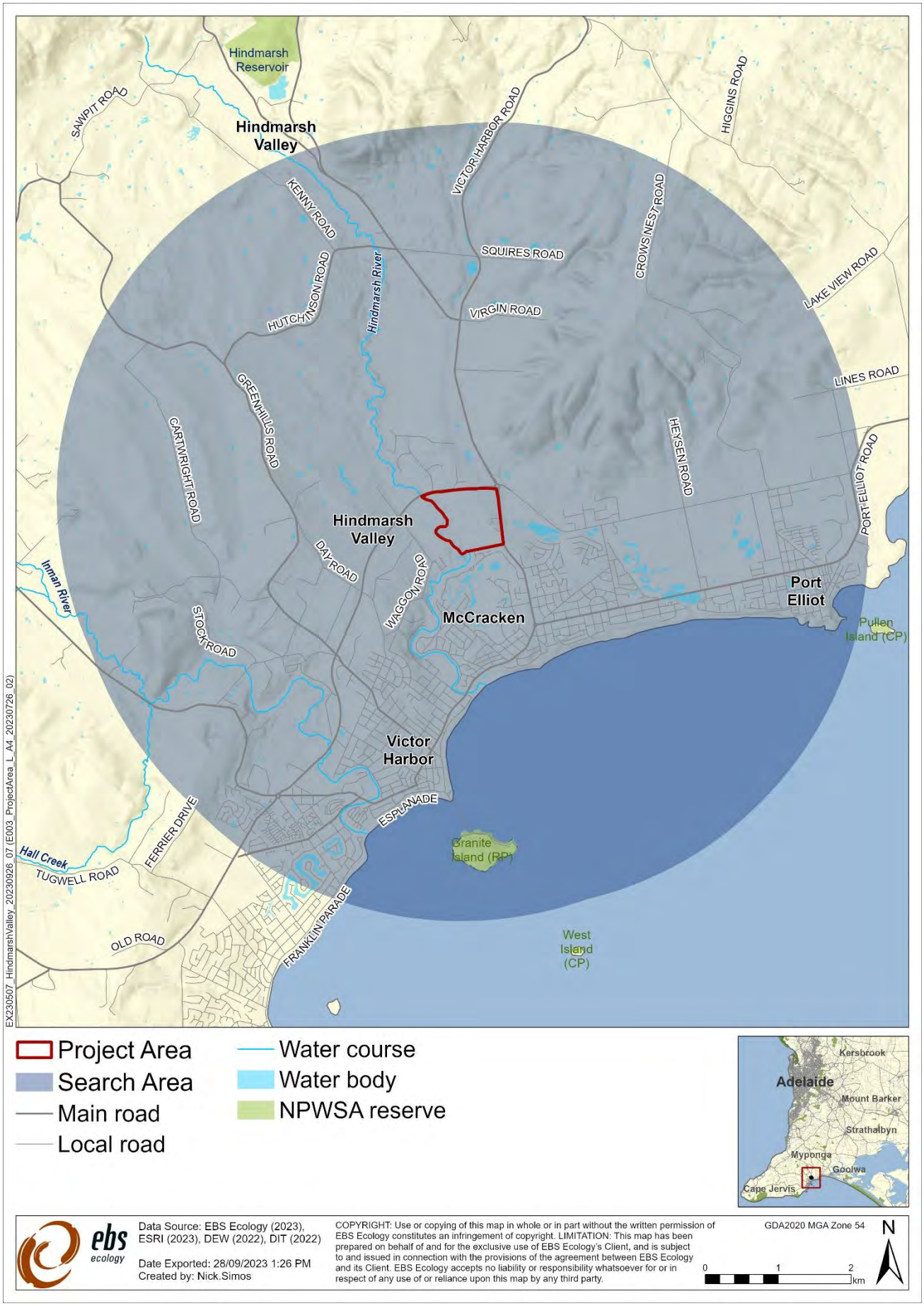

Figure 1. Location of the Project Area at Lot 31 and 32, Victor Harbor Road, Hindmarsh Valley.

2.4. Details of the proposal

The proposed major land division involves the creation of a number of allotments, reserves and roads in a total of seven stages, with Stage 1 split into 4 substages (Table 4). The layout of the proposed land division as of 12 September 2023 is provided in Table 4 and Figure 2.

Across the entire Project Area over all stages, a total of 55.04 ha will be developed as residential lots, with 13.18 ha proposed to be designated as reserves or open space (19.3%).

In Stage 1B and 1C a total of 97 allotments are proposed, with a large linear reserve planned for the southwest corner of Stage 1B (Figure 2). Reserves will make up 10.01 % or 1.109 ha of the area in these stages. Access roads will be constructed to a width of no more than 25 metres (m).

Table 4. Details of the Project.

Development Stage	Number of Lots	Road Length (m)	Development area (ha)	Reserve area (ha)	Total Area (ha)
Stage 1A	272	2780	11.85	0.65	12.5
Stage 1B and Stage 1C	97	1,515	9.966	1.109	11.075
All future stages	Unknown	Unknown	33.224	11.42	44.644
Total	**Unknown**	**Unknown**	**55.04**	**13.18**	**68.22**

Areas that are blank are yet to be confirmed.

Figure 2. Proposed Site Plan and Staging (Supplied to EBS by SA Holdco Pty Ltd on 8 February 2024.

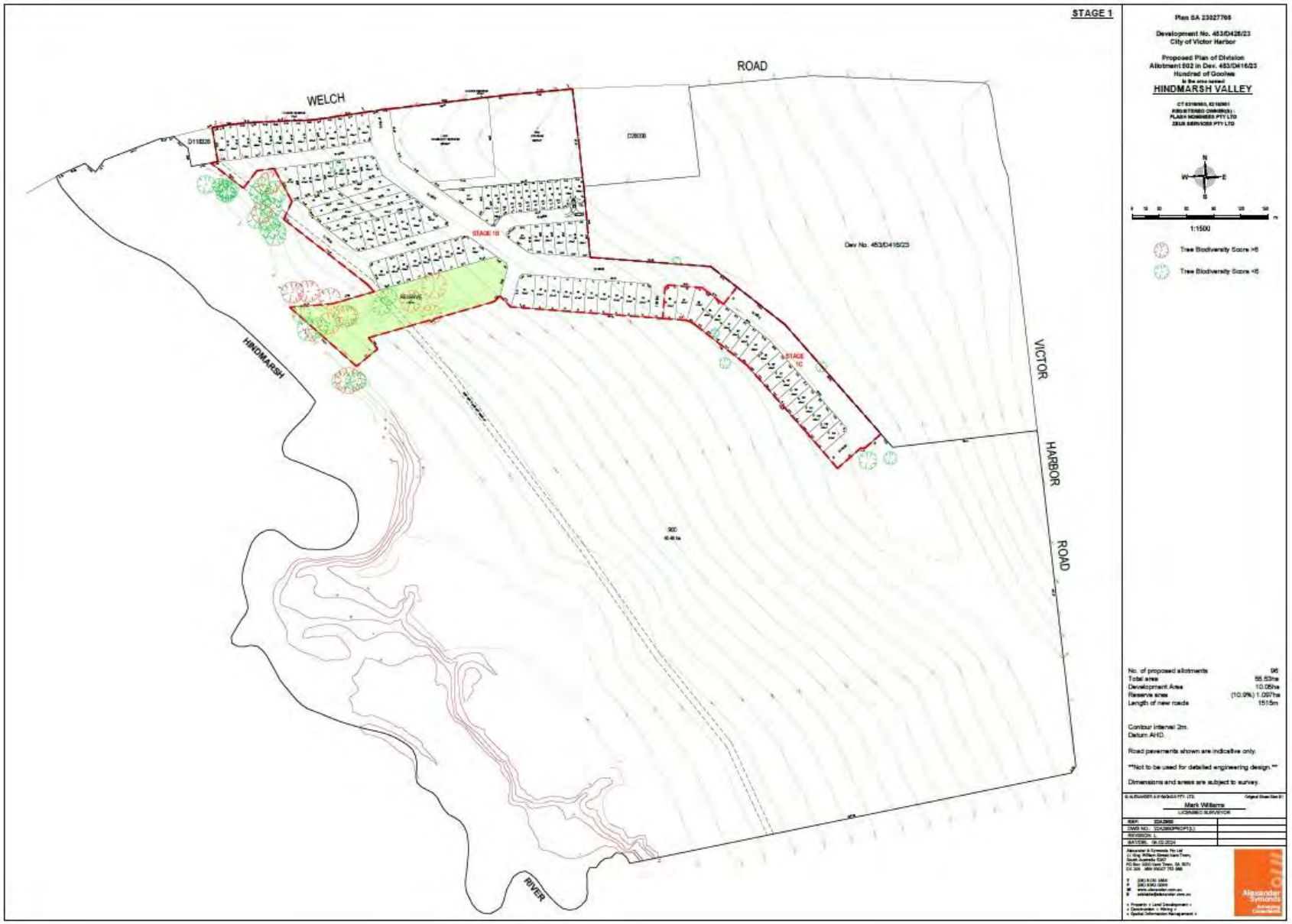

Figure 3. Proposed Site Plan for Stage 1B and 1C (Revision L - supplied to EBS by SA Holdco Pty Ltd, February 2024).

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

Approvals or applications under the follow legislation are required:

- ***Native Vegetation Act 1991*** **(NV Act)** – this data report is supplied to fulfil requirements under the NV Act.
- ***Planning, Development and Infrastructure Act 2016*** **(PDI Act)** – Approval is required for this Project. A Development Application (DA) is in progress - DA 23027766.
- ***Environment Protection and Biodiversity Conservation Act 1999*** **(EPBC Act)** – No Matters of National Environmental Significance (MNES) will be significantly impacted as a result of the Project. Referral and approval under the EPBC Act is unlikely to be required.
- ***National Parks and Wildlife Act 1972*** **(NPW Act)** – EBS has the required flora collection permit (K25613-23).
- ***Landscape South Australia Act 2019*** **(LSA Act)** – A water affecting activity (WAA) permit may be required for the proposed Project. Environmental management plans should consider the impact of erosion / runoff into the Hindmarsh River. Several Declared Weeds were observed in the Project Area. All land managers have a duty to manage environmental and Declared Weeds on their property. A permit to transport Declared Weeds on a public road may be required for the proposed Project (i.e. for contaminated topsoil which may be removed from site).
- ***Aboriginal Heritage Act 1988*** – Approval will be required if any sites, objects or remains are uncovered during the works.

2.6. Native Vegetation Regulation

This clearance application should be assessed under the following Native Vegetation Regulation:

Regulation 12(35)—Residential subdivision

(1) Clearance of vegetation in connection with the division of land for use for residential purposes (including clearance for the construction of roads and other infrastructure), provided that—

(a) any development authorisation for the division of the land and for the use of the land for residential purposes required by or under *the Planning, Development and Infrastructure Act 2016* has been obtained; and

(b) the Native Vegetation Council has been given written notification of the full extent of the clearance expected to occur in connection with the division of the land.

(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 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 [native vegetation] regulations; or a condition in respect of clearance permitted under the revoked [native vegetation] regulations.

2.7. Development Application information (if applicable)

DA information that is relevant to this native vegetation clearance application is listed in Table 5 below. A DA is being submitted for each Stage. In the case of Stage 1, three separate DAs are being submitted. One for Stage 1A, one for Stage 1B and 1C and one for Stage 1D. This data report covers off on Stage 1B and 1C and will be submitted with the DA.

Table 5. Zones and overlays that exist within the Project Area.

Zone and Subzone	Overlays
Master Planned Neighbourhood - MPN	Affordable Housing
	Hazards (Flooding)
	Hazards (Bushfire – Medium Risk)
	Hazards (Flooding – General)
	Hazards (Flooding – Evidence Required)
	Major Urban Transport Routes
	Native Vegetation
	Prescribed Water Resources Area
	Traffic Generating Development
	Water Resources

3. Method

3.1. Flora assessment

An initial flora assessment was undertaken by NVC Accredited Consultant J. Skewes and N. Piscioneri on the 15 and 16 June 2023 with an additional flora assessment undertaken on 5 October 2023. Both assessments were conducted in accordance with the Scattered Tree Assessment Method (STAM) (NVC, 2020). A further assessment was undertaken along Welch Road by NVC Accredited Consultant A. Carpenter on 13 February 2024 using the Bushland Assessment Method to capture regenerating understorey species under planted vegetation along the road side (NVC, 2020).

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 2020).

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).

3.1.2. Bushland Assessment Method

The BAM is derived from the Nature Conservation Society of South Australia's Bushland Condition Monitoring methodology (Croft et al. 2008). The BAM is used to assess areas of native vegetation requiring clearance and calculate the SEB requirements.

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

The Conservation Significance Scores were calculated from direct observations of flora and direct and historical observations of fauna species of conservation significance. All fauna identified as known to occur in the PMST report, and fauna with BDBSA records since 1995 and with a spatial reliability of less than 1 kilometre (km). A search area of a 5 km radius around the Project Area was used.

Threatened species recorded inside the 5 km search area were included in the BAM scoresheets. Species determined as unlikely to occur within the Project Area will be removed by the Native Vegetation Branch if the finding is supported. Marine and wetland species which require deep waterbodies were omitted from the scoresheets given the clearance impacts terrestrial habitats only.

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.

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

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

3.2.1. Protected Matters Search Tool report

An updated PMST report was generated on 20/02/2024 to identify nationally threatened flora and fauna, migratory fauna and TECs under the EPBC Act relevant to the Project Area (DCCEEW 2024). 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.

Those species that are listed in Appendix 4 of the *Scattered Tree Assessment Manual* (Native Vegetation Council, 2023b) as scattered tree using wildlife have been entered in the STAM scoresheet.

3.2.2. BDBSA data extract

A data extract from the Biological Database of South Australia (BDBSA) was obtained from DEW to identify flora and fauna species that have been recorded within 5 km of the Project Area (data extracted 31/05/2023; DEW 2023b). 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 DEWs 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.

Those species that are listed in Appendix 4 of the *Scattered Tree Assessment Manual* (Native Vegetation Council, 2023b) as scattered tree using wildlife have been entered in the STAM scoresheet.

3.2.3. Provisional List of Threatened Ecosystems

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

3.2.4. Field survey

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

One 20 minute, point count bird survey was conducted adjacent the Hindmarsh River in the Project Area on 15 June 2023 at a time when there was a particular abundance of bird activity. This was undertaken in order to establish if any new species were present in the Project Area that had not been previously recorded.

3.2.5. Likelihood of occurrence

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

The assessment was based on recency or records, habitat preferences and the results of the field survey, with criteria for the likelihood of occurrence described in Table 6.

Table 6. Criteria for the likelihood of occurrence of threatened species within the Project Area.

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

3.3. Limitations

3.3.1. Desktop assessment

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

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

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

3.3.2. Spatial data limitations

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

Datum: Geocentric Datum of Australia 2020 (GDA2020).

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

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

4. Assessment outcomes

4.1. Vegetation assessment

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

Below is a general description of the whole development Project Area that was surveyed and is not limited to Stage 1B+1C.

The Project Area was previously used for cropping and vegetation consists of large, remnant native scattered trees and planted trees over an understorey consisting of primarily introduced flora species. The understorey in the Project Area was largely dominated by *Avena barbata* (Bearded Oat), *Cenchrus clandestinus* (Kikuyu), *Cynodon dactylon* var. *dactylon* (Couch), *Ehrharta* spp. (Veldt Grass) and *Vulpia* sp. (Fescue). Several Declared Weed species under the LSA Act were identified in the Project Area including:

- *Asparagus asparagoides* f. *asparagoides* (Bridal creeper);
- *Chrysanthemoides monilifera* ssp. *monilifera* (Boneseed);
- *Coprosma repens* (New Zealand Mirror-bush);
- *Eragrostis curvula* (African Love-grass);
- *Lycium ferocissimum* (African Boxthorn);
- *Olea europaea* ssp. *europaea* (Olive);
- *Rosa canina* (Dog Rose);
- *Rosa rubiginosa* (Sweet Briar);
- *Rubus fruticosus aggregate* (Blackberry); and
- *Solanum linnaeanum* (Apple Of Sodom).

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

A total of 79 flora species were observed in the Project Area, which included 18 native and 61 introduced species. Flora recorded during the field survey is provided in Appendix 1.

A total of 232 scattered trees were recorded during the field survey which included:

- 2 *Acacia longifolia* ssp. *sophorae* (Coastal Wattle),

- 5 *Acacia pycnantha* (Golden Wattle),
- 22 *Allocasuarina verticillata* (Drooping Sheoak),
- 119 *Eucalyptus camaldulensis* var. *camaldulensis* (River Red Gum)
- 76 State Rare *Eucalyptus fasciculosa* (Pink Gum) and
- 8 *Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum)

Tree condition varied from poor to excellent health. Many of the scattered trees contained hollows which can provide suitable habitat for fauna species in the Project Area. A map of all the scattered trees in the Project Area is provided in Appendix 2. Trees are sorted according to the unit biodiversity score (UBS), where the proponent intends to retain trees with a UBS of six or more.

Two flora species listed under the NPW Act as Rare, *Acacia iteaphylla* (Flinders Ranges Wattle) and *Eucalyptus fasciculosa* (Pink Gum) were recorded in the Project Area. *A. iteaphylla* was likely to have been planted with no regeneration of the species present and is therefore not covered under the NV Act. *E. fasciculosa* (Pink Gum) was present in large numbers making up 76 of the 232 scattered trees surveyed.

A total of 38 fauna species (including 33 birds and five mammals, four of which are introduced) were recorded in the Project Area. Fauna recorded during the field survey is provided in Appendix 3.

Three fauna species listed as threatened under the NPW Act were recorded in the Project Area:

- *Falcunculus frontatus frontatus* (Eastern Shriketit) (NPW Act: Rare);
- *Rattus lutreolus* (Swamp Rat) (NPW Act: Rare); and
- *Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) (NPW Act: Vulnerable).

Two Eastern Shriketit (one male and one female) were observed during the 20 minute bird survey adjacent the Hindmarsh River in the west of the Project Area. This species was utilising upper and mid storey species including *Eucalyptus* spp. and non-native shrubs. Tunnels and diggings characteristic of both *Rattus fuscipes* (Bush Rat) and the State listed Rare, Swamp Rat were observed across large areas of the Project Area adjacent the Hindmarsh River and surrounding existing dwellings in the east of the Project Area. Approximately, 41 Yellow-tailed Black Cockatoo were observed perching, foraging and flying over the Project Area both in the morning and in the evening during the field survey.

No flora or fauna species listed as threatened under the EPBC Act were recorded in the Project Area.

The Hindmarsh River runs through the western end of the Project Area, providing habitat for flora and fauna species. Water was observed flowing down the river during the field survey.

4.1.2. Details of the vegetation associations proposed to be impacted

Vegetation Associations impacted by the Project are described in

Table **7** below. Details of scattered trees under application are provided in Table 8 to Table 29.

The extent of the vegetation association and the location of scattered trees are indicated on the map in Section 0 on page 51.

Table 7. Summary of VA1.

Vegetation Association	**A1 Regenerating *Allocasuarina verticillata* and *Acacia pycnantha* over *Disphyma crassifolium***

Figure 4. BAM A1 facing west.

Figure 5. Example photograph of regenerating understorey of *Allocasuarina verticillata, Disphyma crassifolium* (Round-leaf Pigface) and *Rytidosperma* sp. (Wallaby Grass).

General description	Sections of Welch Road were entirely planted or exotic but a section contained regenerating native species. Planted trees and shrubs had stakes visible and were in a line.

	Over storey		Mid storey		Under storey
	None – Planted overstorey of endemic species and WA Eucalypts present.		Regenerating *Allocasuarina verticillata* and *Acacia pycnantha*		*Disphyma crassifolium* *Rytidosperma* sp.
Threatened species or community	The regenerating understorey is unlikely to provide habitat for threatened species in its current state, however if left to mature, would provide a food source for species such as Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area in 2023).				
Landscape context score	1.11	**Vegetation Condition Score**	3.58	**Conservation significance score**	1.10
Unit biodiversity Score	4.37	**Area (ha)**	0.07	**Total biodiversity Score**	0.31

4.1.3. Details of the scattered trees proposed to be impacted

A total of five scattered trees are proposed to be impacted within Stage 1B and 1C of the Project Area, which includes four State Rare *E. fasciculosa* (Pink Gum) and one *E. leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) from poor to good health (Table 8 to Table 12). Three of the State Rare *E. fasciculosa* contained hollows which may provide suitable habitat for fauna, including threatened fauna.

Further information on scattered trees is provided in the Scattered Tree Assessment scoresheet (Attachment 2). Scattered tree using fauna species in the Project Area are provided in Appendix 4.

Table 8. Summary of Tree 6.

Tree ID – Tree 6	
Tree spp. – *Eucalyptus fasciculosa* (Pink Gum)	Looking west, easting: 285128, northing: 6066484
Number of trees – 1	
Height (m) – 6.0	
Hollows – 6 small, 2 medium	
Diameter (cm) – 73	
Canopy dieback (%) – 60	
Total Biodiversity Score – 3.36	

Regenerating from base of trunk, several hollows present in dead limbs. Will provide perching, foraging, roosting and breeding habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 9. Summary of Tree 7.

Tree ID – Tree 7 **Tree spp. – *Eucalyptus fasciculosa* (Pink Gum)** **Number of trees – 1** **Height (m) – 4.0** **Hollows – 1 large** **Diameter (cm) – 52.5** **Canopy dieback (%) – 70** **Total Biodiversity Score – 1.21**	 Looking west, easting: 285105, northing: 6066534
Regenerating from large dead stem. Large hollow present in old stem which may provide breeding habitat for threatened fauna including: • Black Falcon (*Falco subniger*) (NPW Act: Rare); • Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered); • Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare); • Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable); • Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and • Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).	

Table 10. Summary of Tree 12.

Tree ID – Tree 12	 Looking west, easting: 275043.6, northing: 6161582.5
Tree spp. – *Eucalyptus fasciculosa* (Pink Gum)	
Number of trees – 1	
Height (m) – 5.5	
Hollows – 1 small	
Diameter (cm) – 35.5	
Canopy dieback (%) – 15	
Total Biodiversity Score – 2.04	

In good health and may provide perching, foraging, roosting and breeding habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 11. Summary of Tree 13.

Tree ID – Tree 13 **Tree spp. – *Eucalyptus fasciculosa* (Pink Gum)** **Number of trees – 1** **Height (m) – 5.5** **Hollows – 0** **Diameter (cm) – 34.5** **Canopy dieback (%) – 30** **Total Biodiversity Score – 1.14**	 Looking southwest, easting: 285251, northing: 6066413

In reasonable health and may provide perching, foraging and roosting habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 12. Summary of Tree 212.

Tree ID – Tree 212	 Looking south, easting: 284707, northing: 6066667
Tree spp. – *Eucalyptus leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum)	
Number of trees – 1	
Height (m) – 16.0	
Hollows – 2 small	
Diameter (cm) – 122.5	
Canopy dieback (%) – 25	
Total Biodiversity Score – 5.91	

Large, mature tree in middle of paddock, some dieback but can provide perching, foraging, roosting and breeding habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 13. Summary of Tree 129.

Tree ID – Tree 129	
Tree spp. – *Allocasuarina verticillata*	
Number of trees – 1	
Height (m) – 6.0	
Hollows – 0	
Diameter (cm) – 6.0	
Canopy dieback (%) – 0	
Total Biodiversity Score – 0.50	
Tall, young regenerating sapling. Healthy, but Unlikely to provide habitat for any threatened species.	

Table 14. Summary of Tree 130.

Tree ID – Tree 130	
Tree spp. – *Allocasuarina verticillata*	
Number of trees – 1	
Height (m) – 12.0	
Hollows – 0	
Diameter (cm) – 42	
Canopy dieback (%) – 50	
Total Biodiversity Score – 2.54	

Mature tree surrounded by introduced olive trees. In poor health, but may provide some perching, foraging, roosting and breeding habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 15. Summary of Tree 131

Tree ID – Tree 131 **Tree spp. – *Allocasuarina verticillata*** **Number of trees – 1** **Height (m) – 9.0** **Hollows – 0** **Diameter (cm) – 26** **Canopy dieback (%) – 20** **Total Biodiversity Score – 1.95**	
Mature, healthy tree. May provide perching, foraging, roosting and breeding habitat for threatened fauna including: • Black Falcon (*Falco subniger*) (NPW Act: Rare); • Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered); • Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare); • Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable); • Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and • Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).	

Table 16. Summary of Tree 132.

Tree ID – Tree 132 **Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*** **Number of trees – 1** **Height (m) – 13** **Hollows – 0** **Diameter (cm) – 44.5** **Canopy dieback (%) – 0** **Total Biodiversity Score – 0.43**	
Young tree of moderate height and in good health. May provide perching, foraging, roosting and breeding habitat for threatened fauna including: • Black Falcon (*Falco subniger*) (NPW Act: Rare); • Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered); • Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare); • Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable); • Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and • Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).	

Table 17. Summary of Tree 133.

Tree ID – Tree 133 **Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*** **Number of trees – 1** **Height (m) – 12.0** **Hollows – 0** **Diameter (cm) – 29** **Canopy dieback (%) – 5** **Total Biodiversity Score – 1.04**	
Mature tree, some dieback but can provide perching, foraging, roosting and breeding habitat for threatened fauna including: • Black Falcon (*Falco subniger*) (NPW Act: Rare); • Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered); • Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare); • Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable); • Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and • Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).	

Table 18. Summary of Tree 134.

Tree ID – Tree 134 **Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*** **Number of trees – 1** **Height (m) – 5.0** **Hollows – 0** **Diameter (cm) – 15.5** **Canopy dieback (%) – 10** **Total Biodiversity Score – 0.31**	

Young tree growing beneath larger individuals of the same species. May provide perching, foraging, roosting and breeding habitat for threatened fauna including those listed below, but unlikely to have important habitat value due to its small size.

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 19. Summary of Tree 135.

Tree ID – Tree 135 **Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*** **Number of trees – 1** **Height (m) – 4.0** **Hollows – 0** **Diameter (cm) – 9.0** **Canopy dieback (%) – 0** **Total Biodiversity Score – 0.26**	
Young tree growing beneath larger individuals of the same species. May provide perching, foraging, roosting and breeding habitat for threatened fauna including those listed below, but unlikely to have important habitat value due to its small size. • Black Falcon (*Falco subniger*) (NPW Act: Rare); • Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered); • Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare); • Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable); • Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and • Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).	

Table 20.Summary of Tree 136.

Tree ID – Tree 136 **Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*** **Number of trees – 1** **Height (m) – 9.0** **Hollows – 0** **Diameter (cm) – 27.5** **Canopy dieback (%) – 15** **Total Biodiversity Score – 0.52**	

Mature tree, some dieback but can provide perching, foraging, roosting and breeding habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 21. Summary of Tree 137.

Tree ID – Tree 137 **Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*** **Number of trees – 1** **Height (m) – 12.0** **Hollows – 0** **Diameter (cm) – 39.0** **Canopy dieback (%) – 0** **Total Biodiversity Score – 1.35**	

Large, mature tree in middle of paddock, some dieback but can provide perching, foraging, roosting and breeding habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 22. Summary of Tree 138.

Tree ID – Tree 138 **Tree spp. – *Allocasuarina verticillata*** **Number of trees – 2** **Height (m) – 7.0** **Hollows – 0** **Diameter (cm) – 15.0** **Canopy dieback (%) – 5** **Total Biodiversity Score – 2.03**	
Two mature trees of similar size and age. Some dieback but may provide perching and foraging habitat for threatened fauna including: • Black Falcon (*Falco subniger*) (NPW Act: Rare); • Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered); • Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare); • Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable); • Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and • Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).	

Table 23. Summary of Tree 139.

Tree ID – Tree 139 **Tree spp. – *Allocasuarina verticillata*** **Number of trees – 1** **Height (m) – 6.0** **Hollows – 0** **Diameter (cm) – 16.0** **Canopy dieback (%) – 0** **Total Biodiversity Score – 0.63**	
Tall, young regenerating sapling. Healthy, but Unlikely to provide habitat for any threatened species.	

Table 24. Summary of Tree 151.

Tree ID – Tree 151	
Tree spp. – *Allocasuarina verticillata*	
Number of trees – 1	
Height (m) – 9.0	
Hollows – 0	
Diameter (cm) – 49.5	
Canopy dieback (%) – 15	
Total Biodiversity Score – 3.60	

Large, mature. Some dieback but may provide perching, foraging and roosting habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 25. Summary of Tree 154.

Tree ID – Tree 154 **Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*** **Number of trees – 1** **Height (m) – 17.0** **Hollows – 0** **Diameter (cm) – 88.5** **Canopy dieback (%) – 5** **Total Biodiversity Score – 4.15**	

Large, mature tree in middle of paddock, some dieback but can provide perching, foraging and roosting habitat for threatened fauna including:

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered);
- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Table 26. Summary of Tree 155.

Tree ID – Tree 155 **Tree spp. – *Allocasuarina verticillata*** **Number of trees – 1** **Height (m) – 5.0** **Hollows – 0** **Diameter (cm) – 18.0** **Canopy dieback (%) – 0** **Total Biodiversity Score – 0.58**	
Tall, young regenerating sapling. Healthy, but Unlikely to provide habitat for any threatened species.	

Table 27. Summary of Tree 156.

Tree ID – Tree 156 **Tree spp. – *Allocasuarina verticillata*** **Number of trees – 1** **Height (m) – 6.0** **Hollows – 0** **Diameter (cm) – 16.0** **Canopy dieback (%) – 0** **Total Biodiversity Score – 0.63**	
Tall, young regenerating sapling. Healthy, but Unlikely to provide habitat for any threatened species.	

Table 28. Summary of Tree 157.

Tree ID – Tree 157 **Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*** **Number of trees – 1** **Height (m) – 9.0** **Hollows – 0** **Diameter (cm) – 13.5** **Canopy dieback (%) – 0** **Total Biodiversity Score – 0.42**	
Tall, young regenerating sapling. Healthy, but Unlikely to provide habitat for any threatened species.	

Table 29. Summary of Tree 173.

Tree ID – Tree 173	
Tree spp. – *Eucalyptus camaldulensis* ssp. *camaldulensis*	
Number of trees – 7	
Height (m) – 0.6	
Hollows – 0	
Diameter (cm) – 1	
Canopy dieback (%) – 0	
Total Biodiversity Score – 1.07	
Seven small seedlings. Unlikely to be important fauna habitat.	

4.1.4. Site map showing areas of proposed impact

A map of the proposed impact in Stage 1B and 1C is provided in Figure 6. The map does not show patches or scattered trees that were surveyed but are not impacted.

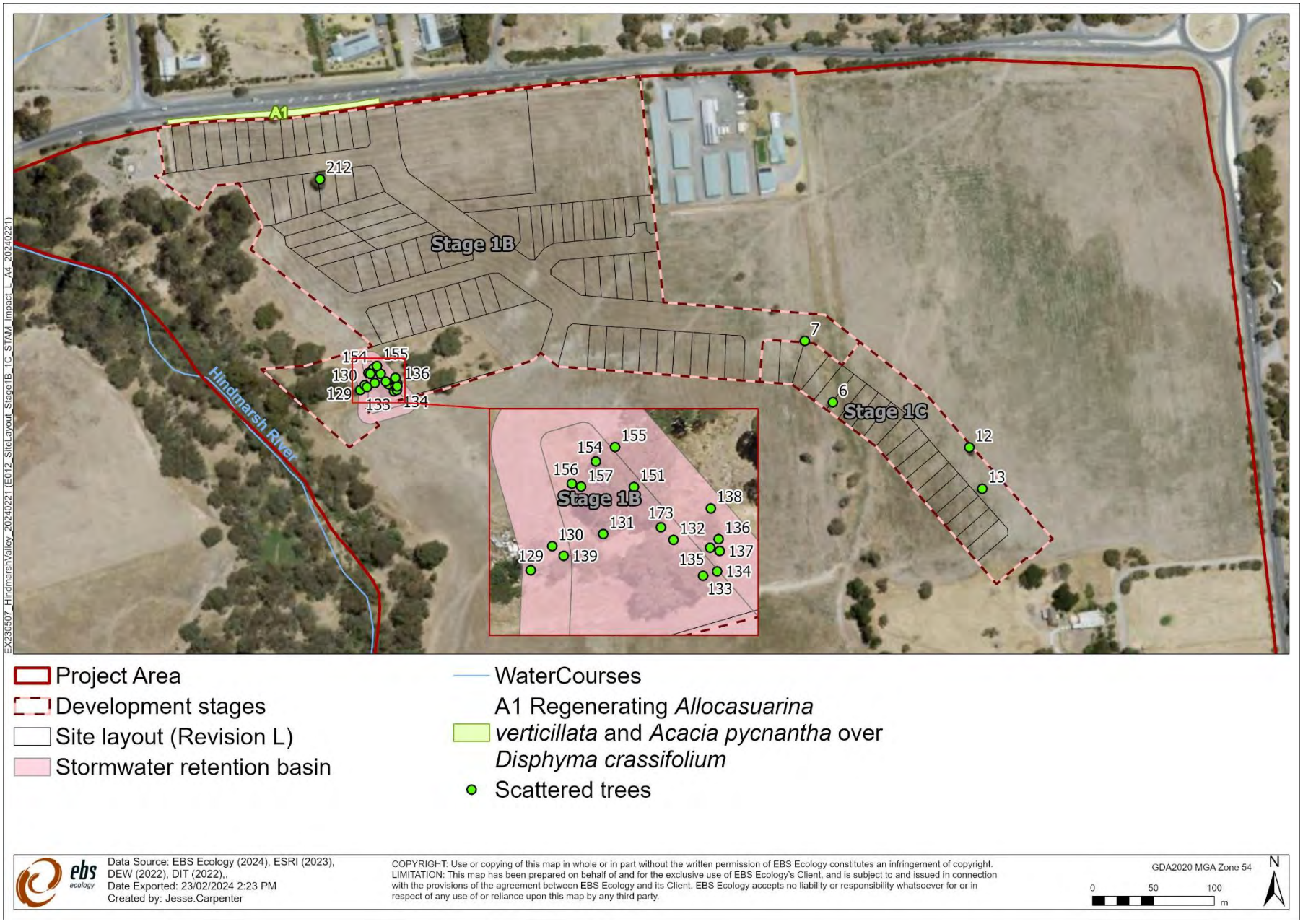

Figure 6. Location of the proposed impacted scattered trees and regenerating native vegetation (A1) in Stage 1B and Stage 1C of the Project Area.

4.1.5. Photo log

The following photos are provided to give a general idea of the vegetation and landscape in the Project Area (Figure 7 to Figure 16 inclusive).

Figure 7. Past cropping land dominated by introduced flora species in the Project Area.

Figure 8. State listed Vulnerable, *Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) observed in the Project Area.

Figure 9. Evidence of State Rare *Rattus lutreolus* (Swamp Rat).

Figure 10. Revegetation using native species provenant to the area in the north-west corner of the Project Area.

Figure 11. Declared Weed *Lycium ferocissimum* (African Boxthorn) was widespread in the Project Area.

Figure 12. Declared Weed *Chrysanthemoides monilifera* ssp. *monilifera* (Boneseed) was widespread in the Project Area.

Figure 13. Planted *Pinus radiata* (Radiata Pine) adjacent existing dwellings in the east of the Project Area.

Figure 14. Water present in the Hindmarsh River during the field survey in early Winter 2023.

Figure 15. Large hollow present in one of many *Eucalyptus fasciculosa* (Pink Gum) in the Project Area.

Figure 16. Large hollow present in the trunk of one of many *Eucalyptus fasciculosa* (Pink Gum) in the Project Area.

4.2. Threatened species assessment

4.2.1. Matters of National Environmental Significance

A PMST search identified several Matters of National Environmental Significance (MNES) relevant to the Project Area including (Table 30):

- One Wetland of International Importance, The Coorong, and Lakes Alexandrina and Albert Wetlands
- 67 threatened species (including 18 flora and 49 fauna species);
- 44 migratory species.

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

Table 30. Summary of the EPBC Act Protected Matters Search Tool results (5 km buffer).

MNES under EPBC Act	Identified within the Search Area
World Heritage Properties	None
National Heritage Properties	None
Wetlands of International Importance	1
Great Barrier Reef Marine Park	None
Commonwealth Marine Areas	None
Listed Threatened Ecological Communities	None
Listed Threatened Species	72 (18 flora and 54 fauna)
Listed Migratory Species	44

4.2.2. Wetlands of International Importance

A PMST search identified that The Coorong, and Lakes Alexandrina and Albert Wetlands is within 10 km of the Project Area. This Wetland of International Importance does not occur within the Project Area itself and will not be impacted.

4.2.3. Threatened flora

Of the 18 nationally listed threatened flora species identified in the PMST, 11 were listed as 'known' or 'likely' to occur within 5 km of the Project Area. Based on known distributions, records, and suitability of habitat, no species have been assessed as potentially occurring within the Project Area.

A BDBSA data extract from DEW found an additional 24 State flora listed species with records within 5 km of the Project Area since 1995. Based on known distributions, records, and suitability of habitat, two flora species have been assessed as known to occur within the Project Area (Table 31):

- *Acacia iteaphylla* (Flinders Ranges Wattle) (NPW Act: Rare and one individual and no regeneration observed in the east of the Project Area around existing dwellings); and
- *Eucalyptus fasciculosa* (Pink Gum) (NPW Act: Rare and observed in large numbers in the Project Area as scattered trees).

Additionally, based on known distributions, records, and suitability of habitat, eight flora species have been assessed as possible to occur within the Project Area (Table 31):

- *Amphibromus macrorhinus* (Long-nosed Swamp Wallaby-grass) (NPW Act: Rare);
- *Austrostipa gibbosa* (Swollen Spear-grass) (NPW Act: Rare);
- *Austrostipa tenuifolia* (NPW Act: Rare);
- *Caladenia vulgaris* (Plain Caladenia) (NPW Act: Rare);
- *Potamogeton ochreatus* (Blunt Pondweed) (NPW Act: Rare);
- *Rumex dumosus* (Wiry Dock) (NPW Act: Rare);
- *Rytidosperma laeve* (Smooth Wallaby-grass) (NPW Act: Rare); and
- *Zannichellia palustris* (NPW Act: Rare).

BDBSA flora records located within 5 km of the Project Area are provided in Appendix 5.

A detailed likelihood assessment of threatened flora species information including distribution and preferred habitat information for the Project Area is provided in Appendix 6.

Table 31. Threatened flora identified by the PMST and/or BDBSA search in the Project Area (DCCEEW 2023a; DEW 2023b) (green shading = known / highly likely or likely to occur, orange shading = possible to occur).

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Likelihood of use for habitat – Comments
Acacia iteaphylla	Flinders Ranges Wattle		R	2	2006	**Known –** specimen identified in Project Area; however, it is likely to have been planted and is therefore not covered under the NV Act.
Amphibromus macrorhinus	Long-nosed Swamp Wallaby-grass		R	2	2022	**Possible**– Very recent record and some temporarily damp areas adjacent to the Hindmarsh River are present, however this species was not detected within the Project Area during the field survey.
Austrostipa gibbosa	Swollen Spear-grass		R	2	2010	**Possible** – Recent record and some suitable habitat in the Project Area. *Austrostipa* spp. observed in Project Area but did not contain identifiable features (i.e., seeds) during field survey.
Austrostipa tenuifolia			R	2	2004	**Possible** – Recent records and some suitable habitat in the Project Area. *Austrostipa* spp. observed in Project Area but did not contain identifiable features (i.e., seeds) during field survey.
Caladenia vulgaris	Plain Caladenia		R	2	1996	**Possible** – some suitable habitat present adjacent the Hindmarsh River, although no recent records. Would not have been visible at the time of field survey.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Likelihood of use for habitat – Comments
Eucalyptus fasciculosa	Pink Gum		R	2	2006	**Known** – Present in high numbers in the Project Area as scattered trees.
Potamogeton ochreatus	Blunt Pondweed		R	2	2019	**Possible** – Recent records and some suitable habitat adjacent and in the Hindmarsh River in the Project Area.
Rumex dumosus	Wiry Dock		R	2	2020	**Possible** – Recent record and some suitable habitat in the Project Area.
Rytidosperma laeve	Smooth Wallaby-grass		R	2	1996	**Possible** – No recent records but other *Rytidosperma* spp. present in the Project Area and some suitable habitat.
Zannichellia palustris			R	2	2019	**Possible** – Recent records and some suitable habitat (the Hindmarsh River) in the Project Area but not observed during the field survey.

Conservation status:

Aus: Australia (EPBC Act). SA: South Australia (NPW Act). Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare.

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

Source of Information:

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

2: BDBSA (DEW 2023b) – 5 km buffer applied to Project Area;

4.2.4. Threatened fauna

Of the 72 nationally listed threatened fauna identified in the PMST search, 36 were listed as 'known' or 'likely' to occur within 5 km of the Project Area. Fauna species that are exclusively marine have been excluded (see Section 4.2.1). This includes 18 species of turtles, sharks, seals, whales, albatross and petrels. Based on known distribution, records, and suitability of habitat, one nationally listed fauna was assessed as likely to occur within the Project Area (Table 32):

- Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare).

Additionally, based on known distributions, records, and suitability of habitat, two fauna species were assessed as possibly occurring within the Project Area:

- Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: Endangered); and
- Latham's Snipe (*Gallinago hardwickii*) (EPBC Act: Vulnerable); NPW Act: Rare).

A BDBSA data extract from DEW found an additional 37 State listed fauna species with records within 5 km of the Project Area since 1995. Based on known distributions, records, and suitability of habitat, 13 fauna species are considered known, highly likely or likely to occur within the Project Area (Table 32):

- Black Falcon (*Falco subniger*) (NPW Act: Rare);
- Black-chinned Honeyeater (*Melithreptus gularis gularis*) (NPW Act: Vulnerable);
- Eastern Shriketit (*Falcunculus frontatus frontatus*) (NPW Act: Rare and observed in the Project Area);
- Elegant Parrot (*Neophema elegans elegans*) (NPW Act: Rare);
- Glossy Ibis (*Plegadis falcinellus*) (NPW Act: Rare);
- Heath Goanna (*Varanus rosenbergi*) (NPW Act: Vulnerable);
- Jacky Winter (*Microeca fascinans fascinans*) (NPW Act: Rare);
- Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable);
- Little Lorikeet (*Parvipsitta pusilla*) (NPW Act: Endangered);
- Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare);
- Restless Flycatcher (*Myiagra inquieta*) (NPW Act: Rare);
- Swamp Rat (*Rattus lutreolus*) (NPW Act: Rare and signs of this species were noted in the Project Area);
- Yellow-bellied Water Skink (*Eulamprus heatwolei*) (NPW Act: Vulnerable); and
- Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area).

Additionally, based on known distributions, records, and suitability of habitat, 11 State listed fauna species are assessed as possible to occur within the Project Area:

- Australasian Darter (*Anhinga novaehollandiae novaehollandiae*) (NPW Act: Rare);
- Brown Quail (*Coturnix ypsilophora australis*) (NPW Act: Vulnerable);
- Cape Barren Goose (*Cereopsis novaehollandiae novaehollandiae*) (NPW Act: Rare);
- Common Brushtail Possum (*Trichosurus vulpecula*) (NPW Act: Rare);
- Eastern Cattle Egret (*Bubulcus ibis coromandus*) (NPW Act: Rare);
- Flame Robin (*Petroica phoenicea*) (NPW Act: Vulnerable);
- Lewin's Rail (*Lewin pectoralis pectoralis*) (NPW Act: Vulnerable);
- Little Egret (*Egretta garzetta nigripes*) (NPW Act: Rare);
- Spotless Crake (*Zapornia tabuensis*) (NPW Act: Rare).
- White-bellied Sea Eagle (*Haliaeetus leucogaster*) (NPW Act: Endangered); and
- White-winged Chough (*Corcorax melanorhamphos*) (NPW Act: Rare).

BDBSA fauna records located within 5 km of the Project Area are provided in Appendix 7.

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

Table 32. Threatened fauna identified by the PMST and/or BDBSA search in the Project Area (DCCEEW 2023a; DEW 2023b) (green shading = known / highly likely or likely to occur, orange shading = possible to occur).

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Scattered tree using species	Likelihood of use for habitat – Comments
AVES (BIRDS)							
Anhinga novaehollandiae novaehollandiae	Australasian Darter		R	2	2020	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area (Hindmarsh River), may possibly occur as flyover only.
Bubulcus ibis coromandus	Eastern Cattle Egret		R	2	2011	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area.
Cereopsis novaehollandiae novaehollandiae	Cape Barren Goose		R	2	2018	**N/A**	**Possible** – Recent records and some suitable foraging habitat in open pastures.
Corcorax melanorhamphos	White-winged Chough		R	2	2007	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area although it is not preferred.
Coturnix ypsilophora australis	Brown Quail		V	2	2020	**N/A**	**Possible** – Recent records despite no suitable habitat (dense grasslands) in the Project Area.
Egretta garzetta nigripes	Little Egret		R	2	2014	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area, may occur as flyover only.
Falco peregrinus macropus	Peregrine Falcon		R	2	2018	**P, H, N, w/r**	**Likely** – Recent records and suitable habitat is present in the Project Area. Other raptor species were recorded during the field survey.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Scattered tree using species	Likelihood of use for habitat – Comments
Falco subniger	Black Falcon		R	2	2014	**P, N, s**	**Likely** – Recent records and some suitable foraging and nesting habitat in the Project Area.
Falcunculus frontatus frontatus	Eastern Shriketit		R	2	2020	**F, w**	**Known** – This species was observed adjacent the Hindmarsh River during the field survey.
Gallinago hardwickii	Latham's Snipe	VU Mi (W)	R	1, 2	Known / 2009	**N/A**	**Possible** – Recent records and suitable habitat in the Project Area adjacent the Hindmarsh River, although it is heavily degraded and not preferred.
Haliaeetus leucogaster	White-bellied Sea Eagle		E	2	2020	**N/A**	**Possible** – Recent records although no suitable coastal habitat in the Project Area. Likely to occur as flyover only.
Hieraaetus morphnoides	Little Eagle		V	2	2019	**P, w**	**Likely** – Recent records and suitable habitat in the Project Area for perching. Most likely to occur as flyover.
Lewin pectoralis pectoralis	Lewin's Rail		V	2	2019	**N/A**	**Possible** – Recent records and suitable habitat in the Project Area adjacent the Hindmarsh River, although it is heavily degraded and not preferred.
Melithreptus gularis gularis	Black-chinned Honeyeater		V	2	2022	**P, F, w**	**Highly Likely** – Very recent and nearby records as well as some suitable habitat in the Project Area including for perching and foraging.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Scattered tree using species	Likelihood of use for habitat – Comments
Microeca fascinans fascinans	Jacky Winter		R	2	2007	**P, w**	**Likely** – Recent records and some suitable perching and open foraging habitat in the Project Area.
Myiagra inquieta	Restless Flycatcher		R	2	2015	**N/A**	**Likely** – Recent records and some suitable open woodland and farmland habitat in the Project Area.
Neophema elegans elegans	Elegant Parrot		R	2	2018	**P, H, w**	**Likely** – Recent records and some suitable habitat in the Project Area.
Pandion haliaetus cristatus	Eastern Osprey	Mi (W)	E	1, 2	Known / 2004	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area. Likely to occur as flyover only.
Parvipsitta pusilla	Little Lorikeet		E	2	2015	**P, H, F, w/s**	**Likely** – Recent records and suitable habitat in the Project Area for perching, feeding, and nesting (hollows).
Petroica phoenicea	Flame Robin		V	2	2000	**N/A**	**Possible** – Records over 20 years old, though some suitable habitat occurs in the Project Area.
Plegadis falcinellus	Glossy Ibis		R	2	2011	**N/A**	**Likely**– Recent records and some suitable habitat meadow foraging areas adjacent freshwater river in the Project Area.
Zanda funerea whiteae	Yellow-tailed Black Cockatoo		V	2	2020	**P, H, w**	**Known** – Several individuals were observed flying over and utilising scattered trees in and adjacent to the Project Area.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Scattered tree using species	Likelihood of use for habitat – Comments
Zapornia tabuensis	Spotless Crake		R	2	2020	**N/A**	**Possible** – Very recent records and some suitable habitat adjacent the Hindmarsh River in the Project Area.
MAMMALIA (MAMMALS)							
Pteropus poliocephalus	Grey-headed Flying-fox	VU	R	2	2019	**F, s**	**Highly Likely** – Recent records and suitable foraging habitat (*Eucalyptus* spp.) are present in high numbers in the Project Area. The Project Area is not within 20km of nearest camp and is therefore not considered critical habitat for this species.
Rattus lutreolus	Swamp Rat		R	2	2017	**N/A**	**Known** – Tunnels were present in many areas adjacent the Hindmarsh River in the Project Area.
Trichosurus vulpecula	Common Brushtail Possum		R	2	2000	**H, F, w**	**Possible** –Records over 20 years old, however, suitable habitat (hollow-bearing trees, food resources) occurs in the Project Area.
REPTILIA (REPTILES)							
Eulamprus heatwolei	Yellow-bellied Water Skink		V	2	2019	**N/A**	**Likely** – Recent records and some suitable habitat adjacent the Hindmarsh River is present in the Project Area.
Varanus rosenbergi	Heath Goanna		V	2	2014	**N/A**	**Likely** – Recent records and some suitable habitat (including termite mounds) are present in the Project Area.

Conservation status:

Aus: Australia (EPBC Act). SA: South Australia (NPW Act). Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. Mi: listed as migratory under the EPBC Act. Mi (W): listed as a Migratory Wetland species under the EPBC Act.

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

Scattered tree using species:

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.

Source of Information:

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

2: BDBSA (DEW 2023b) – 5 km buffer applied to Project Area;

4.3. Cumulative impacts

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

Direct impacts of the proposal include the complete removal of native vegetation comprising of five scattered trees, which includes four State Rare *E. fasciculosa* (Pink Gum) and one *E. leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) from poor to good health.

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

The cumulative impacts that are likely to result from the Project include the following:

- Clearance directly required for building envelopes.
- Clearance required for residential access.
- Clearance required for construction access.
- Roadside clearance associated with increased traffic.
- Clearance required for safety (including trees deemed unsafe but which may provide good habitat).
- Subsequent clearance that will be permitted or required (e.g., 10 m around a building, and CFS clearance requirements such as 20 m around a dwelling). For residential subdivisions where allotments are less than 2000m^2, it is assumed that the whole of the site will be cleared of vegetation.
- Clearance required for new fences along the perimeter of the lots and for maintenance of fences.
- 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).
- Any clearance required for connection to services, including power, water, telecommunications, storm water, gas or sewer.
- Cumulative development in the surrounding Victor Harbour region.

Furthermore, this report only presents the scattered trees proposed to be impacted in Stage 1B and 1C of the Project. The cumulative impact of all scattered trees proposed to be impacted by the Project should be noted. A map of all the native scattered trees in the Project Area is provided in Appendix 2.

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 NPW Act.

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

Some native scattered trees in the Project Area have been retained within open space reserves, particularly clusters of large trees and on the flood plain along the Hindmarsh River in the west of the Project Area. This aims to provide a north-south biodiversity corridor along the Hindmarsh River with east-west links across the Project Area. The proponent aims to retain where possible, all native scattered tree with a UBS greater than 6 (based on advice from the native vegetation branch – see Attachment 3).

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).

In order for the development to be economically viable, not all native scattered trees can be retained. Some locations in the Project Area have significant topography changes, meaning that due to ground level changes, the retention of some trees is not possible. The proponent has engaged an arborist to advise on the retention of trees. This advice will be based on but not limited to considerations including tree assessment, alternative management such as pruning/trimming, tree protection zones, building setbacks and envelopes, infrastructure and road layouts and designs, topography including cut/fill batters and retaining walls. Additionally, to minimise impact associated with the clearance, the proponent will develop and implement a Construction Environmental Management Plan that includes procedures for tree clearing that minimises impact to fauna and any surrounding habitat.

Where practicable, hollow-bearing trees and trees with a Total Biodiversity Score greater than or equal to 6.00 will be retained. This includes the trees shown on the map in Figure 17 which will be included as a part of a reserve in Stage 1B.

Some trees require clearance for the construction of a storm water retention basin. This basin cannot be located elsewhere for the following reasons:

- Stage 1B has a natural depression located within the reserve. This presents the ideal location for the basin considering the natural levels fall towards this existing depression, as a result a number of trees of lower biodiversity rating are likely to be removed.
- Other locations were considered, however due to the steep nature of the site were found to be unreasonable and hydraulically not possible, ie closer to the Hindmarsh River and further East of the reserve.
- The trees of higher biodiversity rating were considered also. An assumed TPZ was produced to help offset any earthworks as far as possible from those trees to reduce any impact.

To minimise the risk of accidental clearance, indirect impacts and impact to fauna, construction contractors will implement a Vegetation Management Plan. This plan will be approved by the proponent and, at a minimum, include the management measures listed in Table 33.

Table 33. Measures to minimise direct and indirect impacts associated with the clearance.

Management Plan	Management Strategy	Responsibility
Vegetation Management Plan	All construction personnel will be inducted to be made aware of the Vegetation Management Plan and its content.	Construction contractor
	Vegetation clearance areas will be clearly defined and marked.	
	No clearing, parking, laydown, stockpiles or other disturbance of native vegetation outside of the defined clearance area.	
	Trigger points and stop work procedures will be developed and implemented in the event of unplanned and unauthorised vegetation clearance.	
	Vegetation clearance procedures will be clearly defined and approved by the proponent.	
	Clearance and construction activities to occur during daylight hours only.	
	Limit entry/exit points to the construction footprint to the minimum number possible.	
	All fill materials required for construction (e.g., sand, soil, gravel) will be sourced from certified weed and phytophthora free sites.	
	Restrict all vehicle and machinery traffic to designated roads and access tracks that are approved by the proponent.	
	Restrict the movement of weed material to the vegetation clearance area, including by developing and implementing machinery wash-down protocols.	

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.

Revegetation using native species is intended to be undertaken, primarily in open space reserves. Additionally, native street trees will be planted throughout the development and along the edges of Victor Harbor Road, Welch Road (where it is not impacted) and Strawberry Hill Road. It is proposed that 70 to 80% of the species used in revegetation in the Project Area will be native species that are provenant to the area.

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

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

The applicant will offset any clearance with a payment into the Native Vegetation Fund.

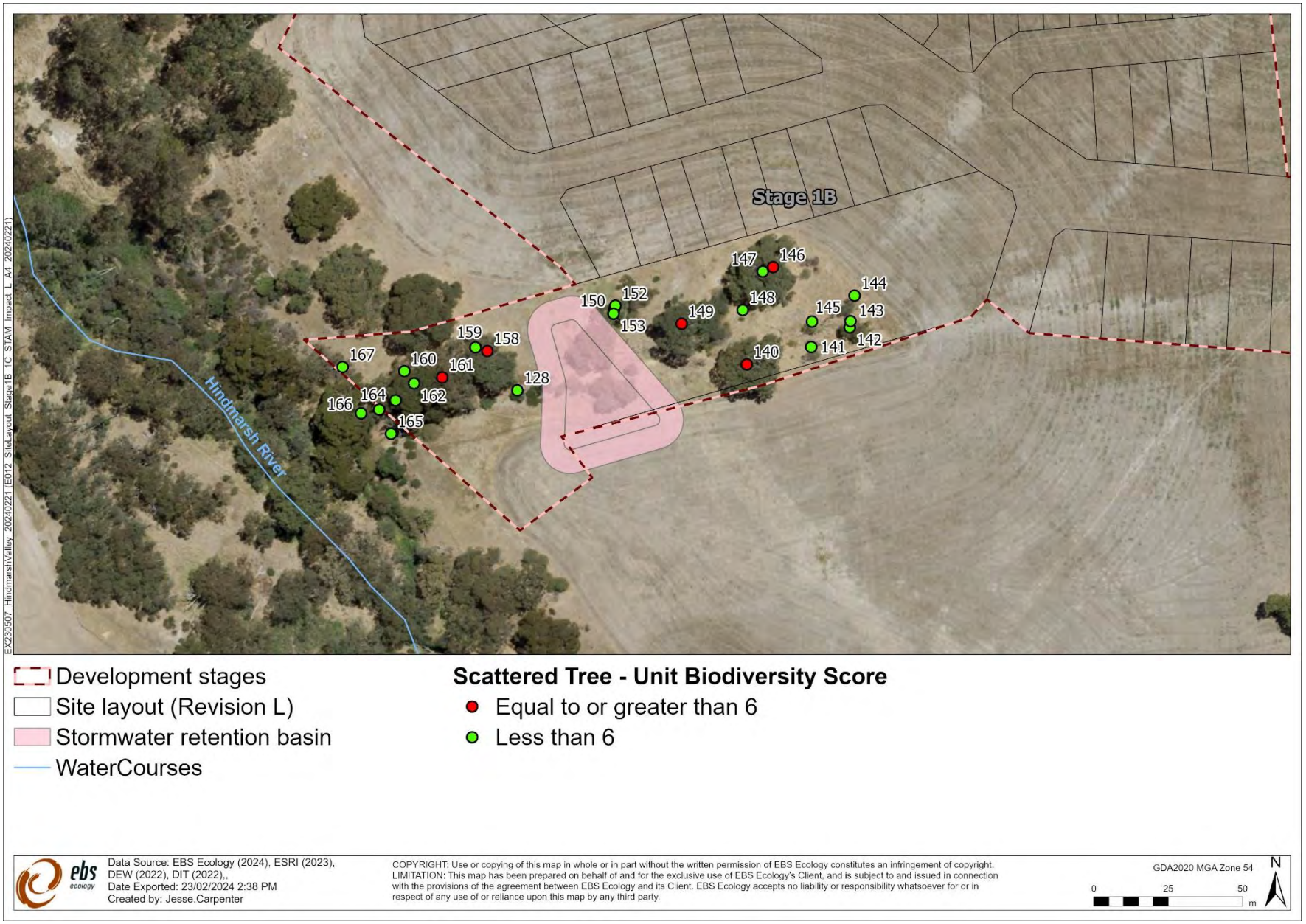

Figure 17. Native vegetation that will be retained within a reserve to minimise clearance. Scattered trees shown on the map are labelled according to their unit biodiversity score.

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 of the Project against the Principles of Clearance is provided in Table 34.

Table 34. 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 The Project Area was previously used for cropping and vegetation consists of large, remnant native scattered trees and planted trees over an understorey consisting of primarily introduced flora species. A total of 87 flora species were observed in the Project Area, which included 19 native and 61 introduced species. Two species listed under the NPW Act as Rare were recorded in the Project Area: • *Acacia iteaphylla* (Flinders Ranges Wattle); and • *Eucalyptus fasciculosa* (Pink Gum). *Acacia iteaphylla* (Flinders Ranges Wattle) was likely to have been planted with no regeneration of the species present and is therefore not covered under the NV Act. *Eucalyptus fasciculosa* (Pink Gum) was present in large numbers as native scattered trees in the Project Area. For Stage 1B and 1C of the Project, a total of five scattered trees are proposed for removal within the Project Area, which includes four State Rare *E. fasciculosa* (Pink Gum) and one *E. leucoxylon* ssp. *leucoxylon* (South Australian Blue Gum) from poor to good in health. Threatened Flora Score – 0.3 (Trees 6, 7, 12 and 13), 0 (All other trees)
	Assessment against the principles At Variance
	Moderating factors that may be considered by the NVC *Amount of clearance related to area of remnant* Some native scattered trees in the Project Area have been retained within open space reserves, particularly clusters of large trees and on the flood plain along the Hindmarsh River in the west

Principle of clearance	Considerations
	of the Project Area. Furthermore, for Stage 1B, a large linear reserve is planned for the southwest corner of this stage, which will retain several trees with a biodiversity score greater than six.
Principle 1(b) – significance as a habitat for wildlife	<u>Relevant information</u> No fauna species listed as threatened under the EPBC Act were recorded in the Project Area. Three fauna species listed as threatened under the NPW Act were recorded in the Project Area: • *Falcunculus frontatus frontatus* (Eastern Shriketit) (NPW Act: Rare); • *Rattus lutreolus* (Swamp Rat) (NPW Act: Rare); and • *Zanda funerea whiteae* (Yellow-tailed Black Cockatoo) (NPW Act: Vulnerable). A total of 15 threatened fauna species were assessed as highly likely or likely to occur in the Project Area: • Black Falcon (*Falco subniger*) (NPW Act: Rare); • Black-chinned Honeyeater (*Melithreptus gularis gularis*) (NPW Act: Vulnerable); • Eastern Shriketit (*Falcunculus frontatus frontatus*) (NPW Act: Rare and observed in the Project Area); • Elegant Parrot (*Neophema elegans elegans*) (NPW Act: Rare); • Glossy Ibis (*Plegadis falcinellus*) (NPW Act: Rare); • Grey-headed Flying-fox (*Pteropus poliocephalus*) (EPBC Act: Vulnerable; NPW Act: Rare). • Heath Goanna (*Varanus rosenbergi*) (NPW Act: Vulnerable); • Jacky Winter (*Microeca fascinans fascinans*) (NPW Act: Rare); • Little Eagle (*Hieraaetus morphnoides*) (NPW Act: Vulnerable); • Little Lorikeet (*Parvipsitta pusilla*) (NPW Act: Endangered); • Peregrine Falcon (*Falco peregrinus macropus*) (NPW Act: Rare); • Restless Flycatcher (*Myiagra inquieta*) (NPW Act: Rare); • Swamp Rat (*Rattus lutreolus*) (NPW Act: Rare and signs of this species were noted in the Project Area); • Yellow-bellied Water Skink (*Eulamprus heatwolei*) (NPW Act: Vulnerable); and • Yellow-tailed Black Cockatoo (*Zanda funerea whiteae*) (NPW Act: Vulnerable and observed in the Project Area). Additionally, a total of 13 threatened fauna species were assessed as possible to occur in the Project Area: • Australasian Darter (*Anhinga novaehollandiae novaehollandiae*) (NPW Act: Rare); • Brown Quail (*Coturnix ypsilophora australis*) (NPW Act: Vulnerable); • Cape Barren Goose (*Cereopsis novaehollandiae novaehollandiae*) (NPW Act: Rare); • Common Brushtail Possum (*Trichosurus vulpecula*) (NPW Act: Rare); • Eastern Cattle Egret (*Bubulcus ibis coromandus*) (NPW Act: Rare); • Eastern Osprey (*Pandion haliaetus cristatus*) (EPBC Act: Migratory (Wetland); NPW Act: E); • Flame Robin (*Petroica phoenicea*) (NPW Act: Vulnerable); • Latham's Snipe (*Gallinago hardwickii*) (EPBC Act: Vulnerable, Migratory (Wetland); NPW Act: Rare). • Lewin's Rail (*Lewin pectoralis pectoralis*) (NPW Act: Vulnerable); • Little Egret (*Egretta garzetta nigripes*) (NPW Act: Rare); • Spotless Crake (*Zapornia tabuensis*) (NPW Act: Rare).

Principle of clearance	Considerations
	• White-bellied Sea Eagle (*Haliaeetus leucogaster*) (NPW Act: Endangered); and • White-winged Chough (*Corcorax melanorhamphos*) (NPW Act: Rare). The understorey in the Project Area primarily consists of introduced flora species but many native scattered trees that do remain contain important habitat features such as hollows. Many scattered trees provide a corridor for movement between native vegetation to the north and west of the Project Area for threatened fauna species. <u>Fauna Habitat Score</u> 1.8 (all trees) <u>Biodiversity Score</u> 0.26 – 5.91 (Total of 35.67)
	<u>Assessment against the principles</u> Seriously at Variance
	<u>Moderating factors that may be considered by the NVC</u> *Impact Significance* Three threatened fauna species were recorded in the Project Area. The Eastern Shriketit (*Falcunculus frontatus* frontatus) was observed adjacent the Hindmarsh River in the west of the Project Area. Tunnels and diggings characteristic of the Swamp Rat were observed across large areas of the Project Area, but were mainly concentrated adjacent the Hindmarsh River in the Project Area. Yellow-tailed Black Cockatoo were observed perching, foraging and flying over the Project Area both in the morning and in the evening during the field survey. The Project Area was previously used for cropping and vegetation consists of large, remnant native scattered trees and planted trees over an understorey consisting of primarily introduced flora species. It is therefore unlikely to represent habitat that is critical to the survival of any threatened fauna species. Given that impacted native scattered trees as a part of Stage 1B and 1C are not essential habitat (see below), it is unlikely to cause a long-term decline in the population of any threatened fauna species. *Non-essential habitat* Given the high level of impact from weeds, fragmentation and historical clearing, the vegetation under application is unlikely to represent essential habitat for any threatened fauna species.
Principle 1(c) – plants of a rare, vulnerable or endangered species	<u>Relevant information</u> Two species listed under the NPW Act as Rare were recorded in the Project Area: • *Acacia iteaphylla* (Flinders Ranges Wattle); and • *Eucalyptus fasciculosa* (Pink Gum).

Principle of clearance	Considerations
	Acacia iteaphylla (Flinders Ranges Wattle) was likely to have been planted with no regeneration of the species present and is therefore not covered under the NV Act. *Eucalyptus fasciculosa* (Pink Gum) was present in large numbers as native scattered trees in the Project Area. No flora species listed as threatened under the EPBC Act were recorded in the Project Area. A total of eight threatened flora species were assessed as possible to occur in the Project Area: • *Amphibromus macrorhinus* (Long-nosed Swamp Wallaby-grass) (NPW Act: Rare); • *Austrostipa gibbosa* (Swollen Spear-grass) (NPW Act: Rare); • *Austrostipa tenuifolia* (NPW Act: Rare); • *Caladenia vulgaris* (Plain Caladenia) (NPW Act: Rare); • *Potamogeton ochreatus* (Blunt Pondweed) (NPW Act: Rare); • *Rumex dumosus* (Wiry Dock) (NPW Act: Rare); • *Rytidosperma laeve* (Smooth Wallaby-grass) (NPW Act: Rare); and • *Zannichellia palustris* (NPW Act: Rare). The Project Area was previously used for cropping and vegetation consists of large, remnant native scattered trees and planted trees over an understorey consisting of primarily introduced flora species. Threatened Flora Score(s) – 0.3 (all trees of species *Eucalyptus fasciculosa* (Pink Gum), 0 (all other trees)
	<u>Assessment against the principles</u> <u>At Variance</u> – All trees of species *Eucalyptus fasciculosa* (Pink Gum) <u>Not at Variance</u> All other trees
	<u>Moderating factors that may be considered by the NVC</u> *Impact significance* A total of 76 State Rare *Eucalyptus fasciculosa* (Pink Gum) were recorded across the Project Area, with four trees (Trees 6, 7, 12 and 13), of this species impacted as a part of Stage 1B and 1C. However, given the location of these four trees, their clearance is unlikely to: • lead to a long-term decrease in the size of a population, or • reduce the area of occupancy of the species, or • fragment an existing population into two or more populations, or • adversely affect habitat critical to the survival of a species, or • modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or • result in invasive species that are harmful to a threatened species becoming established in the threatened species habitat, or

Principle of clearance	Considerations
	• interfere with the recovery of the species. The cumulative impact of future stages as a part of the Project may however impact on trees of this species.
Principle 1(d) – the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered	<u>Relevant information</u> No listed threatened ecological communities (EPBC Act) or State provisionally listed threatened ecological communities were identified within the Project Area. No listed Threatened Ecological Communities were identified by the PMST search. Threatened Community Score – 0
	<u>Assessment against the principles</u> Not at variance
	<u>Moderating factors that may be considered by the NVC</u> N/A
Principle 1(e) – it is significant as a remnant of vegetation in an area which has been extensively cleared	<u>Relevant information</u> Remnancy figures for the IBRA Association and Subregion present in the Project Area is provided below: • Inman Valley IBRA Association remnancy – 11% • Fleurieu IBRA Subregion remnancy – 12% The Fleurieu subregion predominantly consists of undulating to low hilly upland with steeper marginal ranges and hills. Much of the native vegetation in this subregion has been cleared, however some remains in reserves and small isolated inaccessible areas. A number of native scattered trees are present in the Project Area and range from poor to excellent in health. Most trees were of a mature age and number contained hollows which could provide suitable habitat for fauna species. Total Biodiversity Score – 13.97
	<u>Assessment against the principles</u> At Variance
	<u>Moderating factors that may be considered by the NVC</u> *Impact significance* Proposed impacts to five scattered trees as a part of Stage 1B and 1C in the Project Area, which includes four State Rare *E. fasciculosa* (Pink Gum) and one *E. leucoxylon* ssp. *leucoxylon* (South

Principle of clearance	Considerations
	Australian Blue Gum) have been selectively removed in the Inman Valley IBRA Association to facilitate agriculture, development and pastoral grazing. Remnants that do remain in the Project Area are in relatively good condition and represent vegetation that has been largely degraded in the IBRA Association.
Principle 1(f) – it is growing in, or in association with, a wetland environment	Relevant information None of the scattered trees proposed to be impacted as a part of Stage 1B and 1C in the Project Area are located adjacent to and or are associated with a wetland or water source. The Hindmarsh River runs through the western end of the Project Area but scattered trees along this watercourse are not proposed to be impacted.
	Assessment against the principles Not at Variance
	Moderating factors that may be considered by the NVC N/A
Principle 1(g) – it contributes significantly to the amenity of the area in which it is growing or is situated	Relevant information The Project Area is adjacent Victor Harbor Road, one of the main roads to the township of Victor Harbor. Scattered trees and native vegetation in the area enhance the landscape and any proposed removal of scattered trees (particularly those trees that are large or contain a number of hollows) in the Project Area may have an effect on the surrounding landscape and its character. The Project Area may have cultural values given the presence of the Hindmarsh River and many mature, remnant scattered trees, but further investigation is required.
	Moderating factors that may be considered by the NVC In determining if clearance is at variance with the principles, the NVC will have regard to the Local Council's recommendations (if any) 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.

5.1. Risk assessment

The level of risk associated with the application is provided in Table 35. This is based on the Risk Assessment matrix for clearance of native vegetation (Table 36).

Table 35. Summary of the level of risk associated with the application.

Total clearance	No. of trees	22
	Area (ha)	0.07
	Total biodiversity Score	35.67
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b)
Risk assessment outcome		Level 4

Table 36. Risk Assessment matrix for clearance of native vegetation.

	Patches - clearance	**Trees - clearance**	**Escalating matters** Clearance assessment will be raised to the next level if;
Level 1	**0.05ha** or less	**5 trees** or less	The site contains a listed species or contains a threatened community under either the NP&W Act or EPBC Act Or Clearance involves **any** trees with a trunk circumference measured at 1m above the ground of (for multi stemmed trees, measure the largest trunk/stem) of 50cm or more.
Level 2	**>0.05 ha to 0.5ha**	**6 - 20 trees**	Clearance is seriously at variance with Principle of Clearance 1(b), 1(c) or 1(d).
Level 3	Total Biodiversity Score of less than or equal to **250**		Clearance is seriously at variance with Principle of Clearance 1(b), 1(c) or 1(d).
Level 4	Total Biodiversity Score of greater than **250**		

6. Clearance summary

The SEB obligations of the clearance are provided in Table 37 (vegetation associations impacted) and Table 38 (scattered trees proposed to be impacted) and Table 39 (SEB total summary).

Table 37. Summary of vegetation associations impacted.

Block	Site	Species diversity score	Threatened Ecological	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	1	3	1	0	0.1	4.37	0.07	0.31	1			0.32	$266.24	$14.64
						Total	0.07	0.31				0.32	$266.24	$14.64

Table 38. Summary of scattered trees proposed to be impacted.

Tree ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB Payment (including Admin Fee
6	1	1.8	0.3	3.36	1.0	3.53	$3,086.84
7	1	1.8	0.3	1.21	1.0	1.28	$1,116.65
12	1	1.8	0.3	2.04	1.0	2.14	$1,874.24
13	1	1.8	0.3	1.14	1.0	1.20	$1,047.28
212	1	1.8	0	5.91	1.0	6.20	$5,428.17
129	1	1.8	0	0.50	1.0	0.52	$456.79
130	1	1.8	0	2.54	1.0	2.66	$2,331.03
131	1	1.8	0	1.95	1.0	2.05	$1,796.58
132	1	1.8	0	0.43	1.0	0.45	$391.75
133	1	1.8	0	1.04	1.0	1.10	$958.72
134	1	1.8	0	0.31	1.0	0.32	$281.83
135	1	1.8	0	0.26	1.0	0.28	$241.40
136	1	1.8	0	0.52	1.0	0.55	$477.99
137	1	1.8	0	1.35	1.0	1.42	$1,239.02
138	1	1.8	0	1.02	1.0	2.14	$1,869.88
139	1	1.8	0	0.63	1.0	0.66	$581.95
151	1	1.8	0	3.60	1.0	3.78	$3,313.08
154	1	1.8	0	4.15	1.0	4.36	$3,819.27
155	1	1.8	0	0.58	1.0	0.61	$531.25
156	1	1.8	0	0.63	1.0	0.66	$581.95
157	1	1.8	0	0.42	1.0	0.44	$385.29
173	1	1.8	0	0.15	1.0	1.12	$980.12
Total	**5**			**35.67**		**37.46**	**$32,791.10**

Table 39. SEB total summary

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	35.67	37.46	$31,347.85	$1,724.13	$33,071.98

Economies of Scale Factor	0.5
Rainfall (mm)	556

7. Significant Environmental Benefit

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

ACHIEVING AN SEB

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

☐ Establish a new SEB Area on land owned by the proponent.

☐ Use SEB Credit that the proponent has established.

☐ Apply to have SEB Credit assigned from another person or body.

☐ Apply to have an SEB to be delivered by a Third Party.

☒ Pay into the Native Vegetation Fund.

PAYMENT SEB

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

The total SEB offset required for the clearance of five scattered trees and 0.07 ha of vegetation is **$33,071.98**, which includes a **$1,724.13** administration fee.

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9. Appendices

Appendix 1. Flora species recorded during the field survey

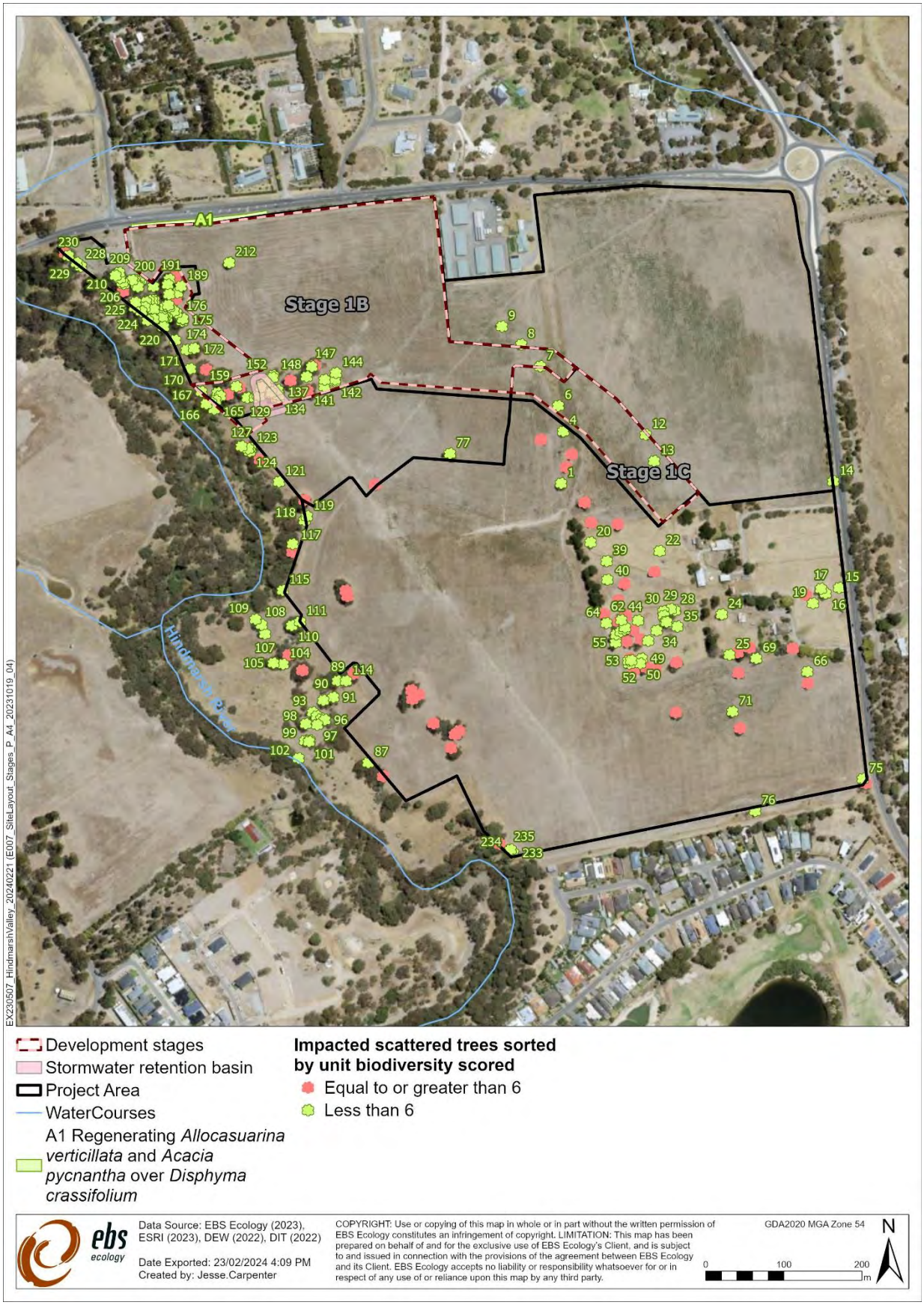
Scientific name	Common name	Aus	SA	Declared
Acacia iteaphylla	Flinders Ranges Wattle		R	
Acacia longifolia ssp. sophorae	Coastal Wattle			
Acacia paradoxa	Kangaroo Thorn			
Acacia pycnantha	Golden Wattle			
*Acacia saligna**	Golden Wreath Wattle			
*Aira sp.**	Hair-grass			
Allocasuarina verticillata	Drooping Sheoak			
Anthosachne scabra	Native Wheat-grass			
*Anthoxanthum odoratum**	Sweet Vernal Grass			
*Arctotheca calendula**	Cape Weed			
*Asparagus asparagoides f. asparagoides**	Bridal creeper			✓
*Avena barbata**	Bearded Oat			
*Bromus sp.**	Brome			
Bursaria spinosa ssp. spinosa	Sweet Bursaria			
*Callistemon sp.**	Bottlebrush			
*Cenchrus clandestinus**	Kikuyu			
*Chenopodium album**	Fat Hen			
*Chloris virgata**	Feather-top Rhodes Grass			
*Chrysanthemoides monilifera ssp. monilifera**	Boneseed			✓
*Conyza bonariensis**	Flax-leaf Fleabane			
*Coprosma repens**	New Zealand Mirror-bush			✓
*Corymbia sp.**	Gum			
*Crassula sp.**	Crassula/Stonecrop			
*Cynodon dactylon var. dactylon**	Couch			
*Cynosurus echinatus**	Rough Dog's-tail Grass			
Cyperus sp.	Flat-sedge			
*Dactylis glomerata**	Cocksfoot			
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface			
Distichlis distichophylla	Emu-grass			
*Ehrharta calycina**	Perennial Veldt Grass			
*Ehrharta longiflora**	Annual Veldt Grass			
*Epilobium sp.**	Willow-herb			
*Eragrostis curvula**	African Love-grass			✓
Eucalyptus camaldulensis	River Red-Gum			

Scientific name	Common name	Aus	SA	Declared
Eucalyptus fasciculosa	Pink Gum		R	
Eucalyptus leucoxylon ssp. leucoxylon	South Australian Blue Gum			
*Eucalyptus petiolaris**	Eyre Peninsula Blue Gum			
Eucalyptus sp.				
*Foeniculum vulgare**	Fennel			
*Fumaria capreolata**	White-flower Fumitory			
*Gomphocarpus fruticosus**	Narrow-leaf Cotton-bush			
*Hypochaeris radicata**	Rough Cat's Ear			
Juncus subsecundus	Finger Rush			
*Kickxia elatine ssp.**	Sharp-leaf Toadflax			
*Lagurus ovatus**	Hare's Tail Grass			
*Lavandula dentata var. candicans**	French Lavender			
*Lepidium africanum**	Common Peppercress			
*Lolium perenne**	Perennial Ryegrass			
*Lycium ferocissimum**	African Boxthorn			✓
*Malva arborea**	Tree Mallow			
*Malva parviflora**	Small-flower Marshmallow			
*Medicago polymorpha**	Burr-medic			
*Melaleuca sp.**	Tea-tree			
Muehlenbeckia sp.	Lignum			
*Olea europaea ssp. europaea**	Olive			✓
Oxalis perennans	Native Sorrel			
*Oxalis pes-caprae**	Soursob			
*Oxalis purpurea**	One-o'clock			
*Panicum capillare var. brevifolium**	Witch-grass			
*Paspalum dilatatum**	Paspalum			
*Phalaris aquatica**	Phalaris			
Phragmites australis	Common Reed			
*Pinus radiata**	Radiata Pine			
*Plantago coronopus ssp.**	Bucks-horn Plantain			
*Plantago lanceolata var.**	Ribwort			
*Poa annua**	Winter Grass			
*Polygonum aviculare**	Wireweed			
*Pseudognaphalium luteoalbum**	Jersey Cudweed			
*Rosa canina**	Dog Rose			✓
*Rosa rubiginosa**	Sweet Briar			✓
*Rubus fruticosus aggregate**	Blackberry			✓
*Rumex acetosella**	Sorrel			
*Rumex crispus**	Curled Dock			
Rytidosperma sp.	Wallaby-grass			
*Scabiosa atropurpurea**	Pincushion			

Scientific name	Common name	Aus	SA	Declared
*Senecio pterophorus**	African Daisy			
*Sisymbrium sp.**	Wild Mustard			
*Solanum linnaeanum**	Apple Of Sodom			✓
*Solanum nigrum**	Black Nightshade			
*Solidago canadensis**	Golden Rod			
*Sonchus oleraceus**	Common Sow-thistle			
*Sporobolus africanus**	Rat-tail Grass			
*Tropaeolum majus**	Nasturtium			
*Vicia sativa ssp.**	Common Vetch			
*Vulpia sp.**	Fescue			
*Watsonia sp.**	Watsonia			
Xanthorrhoea semiplana ssp. semiplana	Yacca			

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. Declared: A Declared weed species under the LSA Act.
***Denotes an introduced species**

Appendix 2. Native scattered trees and vegetation patches recorded in the Project Area



Appendix 3. Fauna species recorded during the field survey

Scientific name	Common name	Aus	SA	Observed During 20 min Bird Survey	Comment
AVES	**Birds**				
Acanthiza chrysorrhoa	Yellow-rumped Thornbill				6+
Anthochaera carunculata	Red Wattlebird				4
Aquila audax audax	Wedge-tailed Eagle				1 Flying overheard circling
Chalcites basalis	Horsfield's Bronze Cuckoo				1
Chroicocephalus novaehollandiae	Silver gull				14+
Coracina novaehollandiae	Black-faced Cuckooshrike				2
Corvus coronoides	Australian Raven				2
Elanus axillaris	Black-shouldered Kite				1 Flying overheard circling
Eolophus roseicapilla	Galah				10
Falco cenchroides cenchroides	Nankeen Kestrel				1
Falcunculus frontatus frontatus	Eastern Shriketit		R	✓	2, male and female
Gavicalis virescens	Singing Honeyeater				1+
Glossopsitta concinna	Musk Lorikeet				2
Gymnorhina tibicen	Australian Magpie				10+
Malurus cyaneus leggei	Superb Fairywren			✓	Many present
Manorina melanocephala	Noisy Miner				4+
Microcarbo melanoleucos melanoleucos	Little Pied Cormorant				1 Flying over Project Area
Neochmia temporalis temporalis	Red-browed Finch			✓	5+
Pachycephala rufiventris rufiventris	Rufous Whistler				1
Pardalotus punctatus	Spotted Pardalote			✓	2+
Pardalotus striatus	Striated Pardalote				10+, an abundance of calls

Scientific name	Common name	Aus	SA	Observed During 20 min Bird Survey	Comment
Parvipsitta porphyrocephala	Purple-crowned Lorikeet				Several observed flying over Welch Road in 2024
*Passer domesticus domesticus**	House Sparrow				100+
Phylidonyris novaehollandiae	New Holland Honeyeater			✓	16+
Platycercus elegans	Crimson Rosella			✓	2+
Psephotus haematonotus	Red-rumped Parrot				2, male and female
Ptilotula penicillata	White-plumed Honeyeater			✓	8+
Rhipidura albiscapa	Grey Fantail			✓	5+
Rhipidura leucophrys leucophrys	Willie Wagtail				4
*Sturnus vulgaris vulgaris**	Common Starling				13
Threskiornis molucca molucca	Australian White Ibis				2 flying over Project Area
Trichoglossus moluccanus moluccanus	Rainbow Lorikeet				3+
Zanda funerea whiteae	Yellow-tailed Black Cockatoo		V		41+, used trees in Project Area and adjacent, flying over morning and evening
Zosterops lateralis	Silvereye			✓	10+
MAMMALIA	**Mammals**				
Macropus fuliginosus	Western Grey Kangaroo				21+
*Vulpes vulpes**	Fox (Red Fox)				scat and 1 individual observed
*Oryctolagus cuniculus**	European Rabbit				Diggings widespread in Project Area
Rattus fuscipes	Bush Rat				Diggings widespread adjacent Hindmarsh River
Rattus lutreolus	Swamp Rat		R		Diggings widespread adjacent Hindmarsh River

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.

***Denotes an introduced species**

Appendix 4. Scattered tree using fauna species in the Project Area

Scientific name	Common name	EPBC Act	NPW Act	MLR	Resource use	Habitat / status
AVES	**Birds**					
Ninox boobook	Australian Boobook			NT	P, H	w
Falco subniger	Black Falcon		R	RA	P, N	s
Melithreptus gularis gularis	Black-chinned Honeyeater		V	CR	P, F	w
Melithreptus brevirostris pallidiceps	Brown-headed Honeyeater			NT	P, F	w
Falcunculus frontatus frontatus	Crested Shriketit		R	RA	F	w
Neophema elegans elegans	Elegant Parrot		R	VU	P, H	w
Chalcites basalis	Horsefield's Bronze Cuckoo			NT	P	s
Hieraaetus morphnoides	Little Eagle		V	EN	P	w
Falco peregrinus macropus	Peregrine Falcon		R	RA	P, H, N	w/r
Parvipsitta porphyrocephala	Purple-crowned Lorikeet			NT	P, H, F	w/s
Psephotus haematonotus haematonotus	Red-rumped Parrot			NT	P, H	w/s
Pachycephala rufiventris rufiventris	Rufous Whistler			NT	P, F	w/s
Todiramphus sanctus sanctus	Sacred Kingfisher			NT	P. H	w
Petroica boodang boodang	Scarlet Robin		R	VU	P	w
Zosterops lateralis pinarochrous	Silvereye			NT	P, F	w/s
Pardalotus punctatus	Spotted Pardalote			NT	P, F	w
Petrochelidon nigricans	Tree Martin			NT	P, H	w/s
Melithreptus lunatus	White-naped Honeyeater			NT	P, F	w
Rhipidura leucophrys leucophrys	Willie Wagtail			NT	P, N, F	w/r
Acanthiza nana	Yellow Thornbill			NT	P, F	w
Acanthiza chrysorrhoa	Yellow-rumped Thornbill			NT	P, N	w/r
Zanda funerea whiteae	Yellow-tailed Black Cockatoo		V	VU	P, H	w
MAMMALIA	**Mammals**					
Trichosurus vulpecula	Common Brushtail Possum		R	LC	H, N, F	w/r

Scientific name	Common name	EPBC Act	NPW Act	MLR	Resource use	Habitat / status
Pteropus poliocephalus	Grey-headed Flying-fox	VU	R	RA	P, F	r

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

NPW Act: CE = Critically endangered, E = Endangered, V = Vulnerable, R = Rare

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

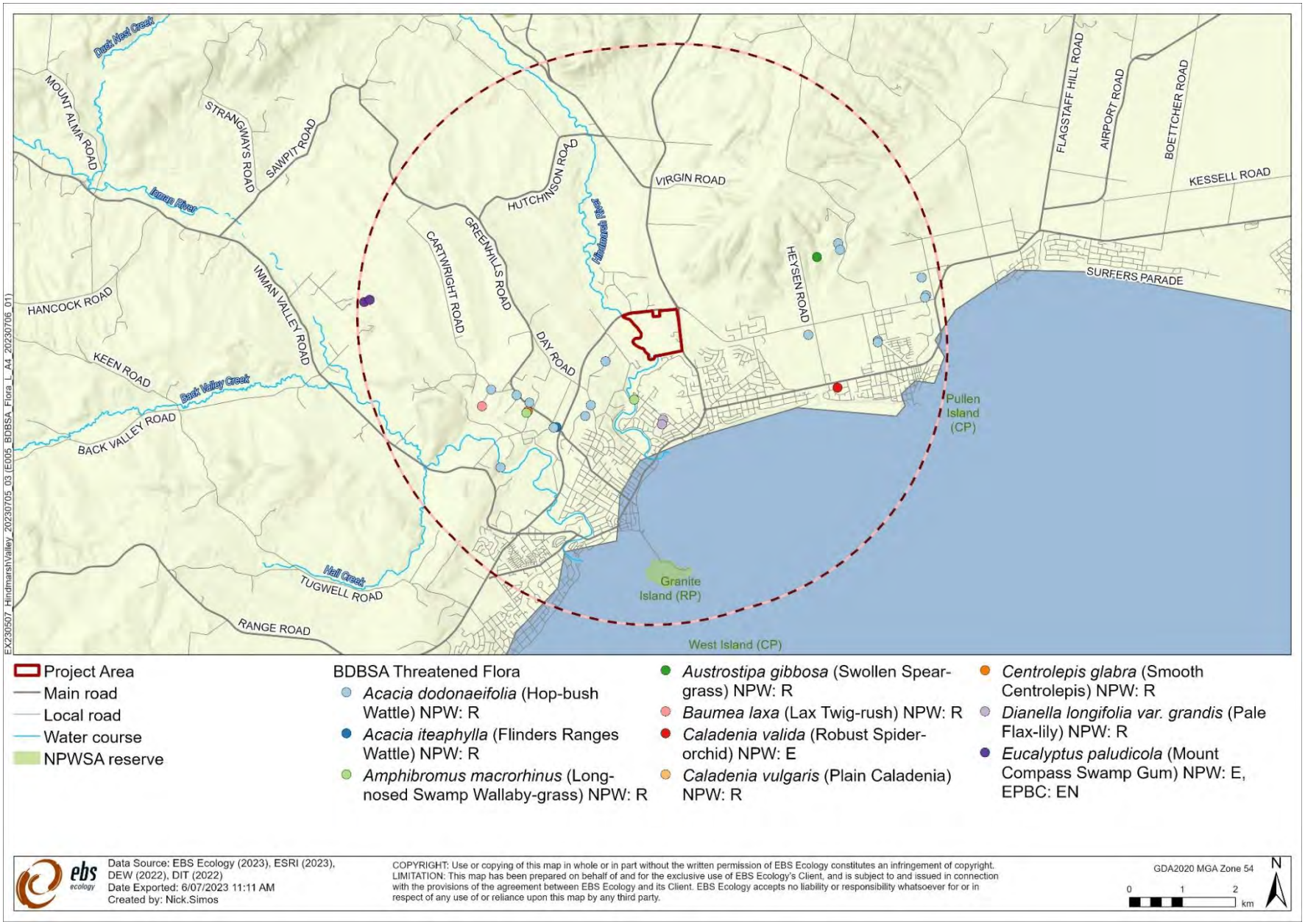
Resource use: P = perching/roosting, N = nesting, H = using hollow for nesting/roosting, F = feeding

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.

Sources: BSBSA records within 5 km of the Project Area (DEW 2023b), Scattered Tree Assessment Manual (NVC 2020).

Appendix 5. BDBSA flora records within 5 km of the Project Area

See following pages.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STRANGWAYS ROAD
SAWPIT ROAD
Inman River
HUTCHINSON ROAD
VIRGIN ROAD
FLAGSTAFF HILL ROAD
AIRPORT ROAD
BOETTCHER ROAD
KESSELL ROAD
CARTWRIGHT ROAD
GREENHILLS ROAD
Hindmarsh River
HEYSEN ROAD
SURFERS PARADE
HANCOCK ROAD
INMAN VALLEY ROAD
DAY ROAD
KEEN ROAD
Back Valley Creek
BACK VALLEY ROAD
Pullen Island (CP)
Hall Creek
TUGWELL ROAD
Granite Island (RP)
RANGE ROAD
West Island (CP)
EX230507_HindmarshValley_20230705_03 (E005_BDBSA_Flora_L_A4_20230706_01)
Project Area
Main road
Local road
Water course
NPWSA reserve
BDBSA Threatened Flora
Acacia dodonaeifolia (Hop-bush Wattle) NPW: R
Acacia iteaphylla (Flinders Ranges Wattle) NPW: R
Amphibromus macrorhinus (Long-nosed Swamp Wallaby-grass) NPW: R
Austrostipa gibbosa (Swollen Spear-grass) NPW: R
Baumea laxa (Lax Twig-rush) NPW: R
Caladenia valida (Robust Spider-orchid) NPW: E
Caladenia vulgaris (Plain Caladenia) NPW: R
Centrolepis glabra (Smooth Centrolepis) NPW: R
Dianella longifolia var. grandis (Pale Flax-lily) NPW: R
Eucalyptus paludicola (Mount Compass Swamp Gum) NPW: E, EPBC: EN
ebs ecology
Data Source: EBS Ecology (2023), ESRI (2023), DEW (2022), DIT (2022)
Date Exported: 6/07/2023 11:11 AM
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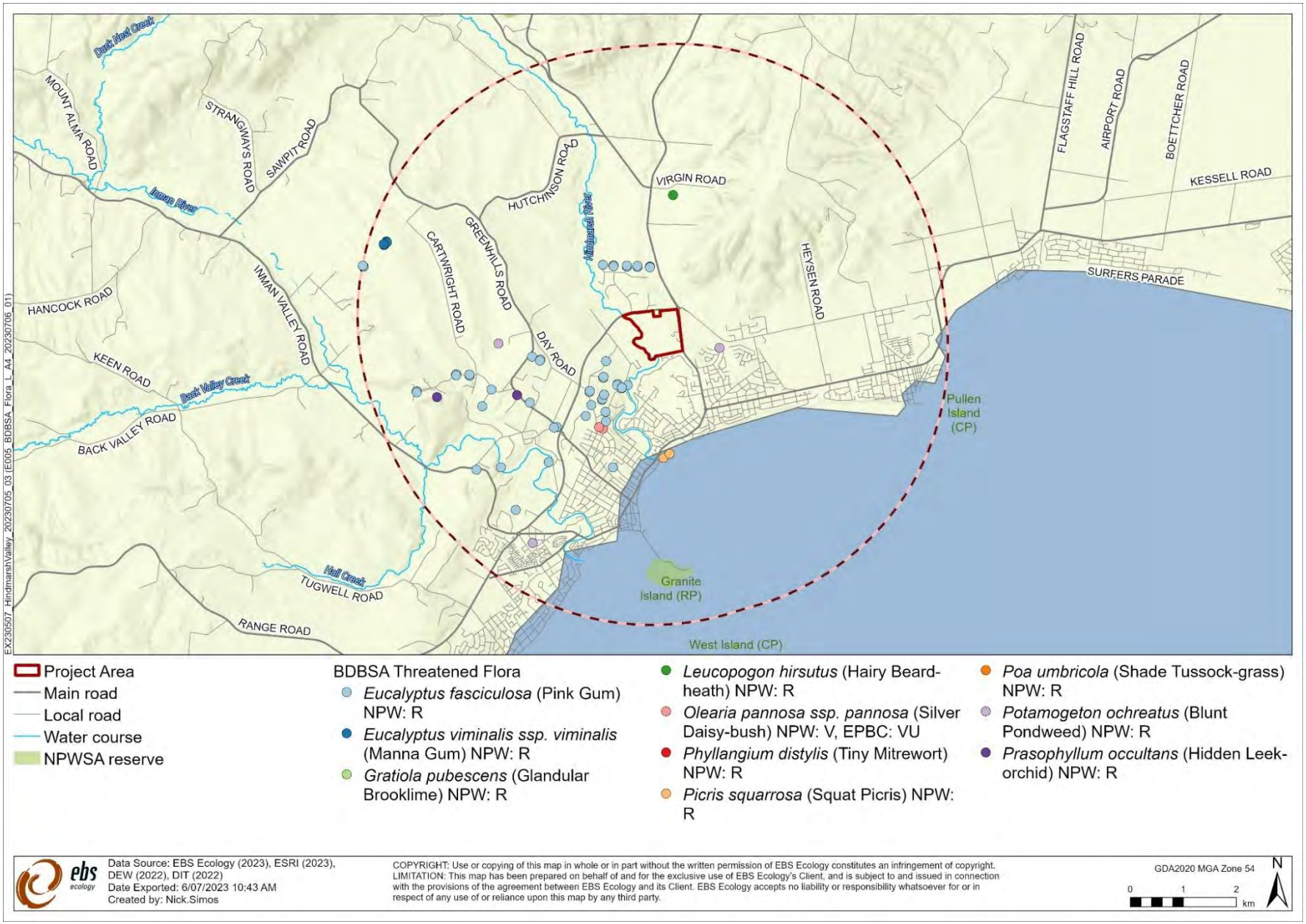
GDA2020 MGA Zone 54
0 1 2 km
N


Project Area
Main road
Local road
Water course
NPWSA reserve
BDBSA Threatened Flora
Eucalyptus fasciculosa (Pink Gum) NPW: R
Eucalyptus viminalis ssp. viminalis (Manna Gum) NPW: R
Gratiola pubescens (Glandular Brooklime) NPW: R
Leucopogon hirsutus (Hairy Beard-heath) NPW: R
Olearia pannosa ssp. pannosa (Silver Daisy-bush) NPW: V, EPBC: VU
Phyllangium distylis (Tiny Mitrewort) NPW: R
Picris squarrosa (Squat Picris) NPW: R
Poa umbricola (Shade Tussock-grass) NPW: R
Potamogeton ochreatus (Blunt Pondweed) NPW: R
Prasophyllum occultans (Hidden Leek-orchid) NPW: R
Data Source: EBS Ecology (2023), ESRI (2023), DEW (2022), DIT (2022)
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GDA2020 MGA Zone 54
0 1 2 km
N
EX230507_HindmarshValley_20230705_03 (E005_BDBSA_Flora_L_A4_20230706_01)
Duck Nest Creek
MOUNT ALMA ROAD
STRANGWAYS ROAD
SAMPIT ROAD
Inman River
HUTCHINSON ROAD
Hindmarsh River
VIRGIN ROAD
FLAGSTAFF HILL ROAD
AIRPORT ROAD
BOETTCHER ROAD
KESSELL ROAD
CARTWRIGHT ROAD
GREENHILLS ROAD
HEYSEN ROAD
SURFERS PARADE
HANCOCK ROAD
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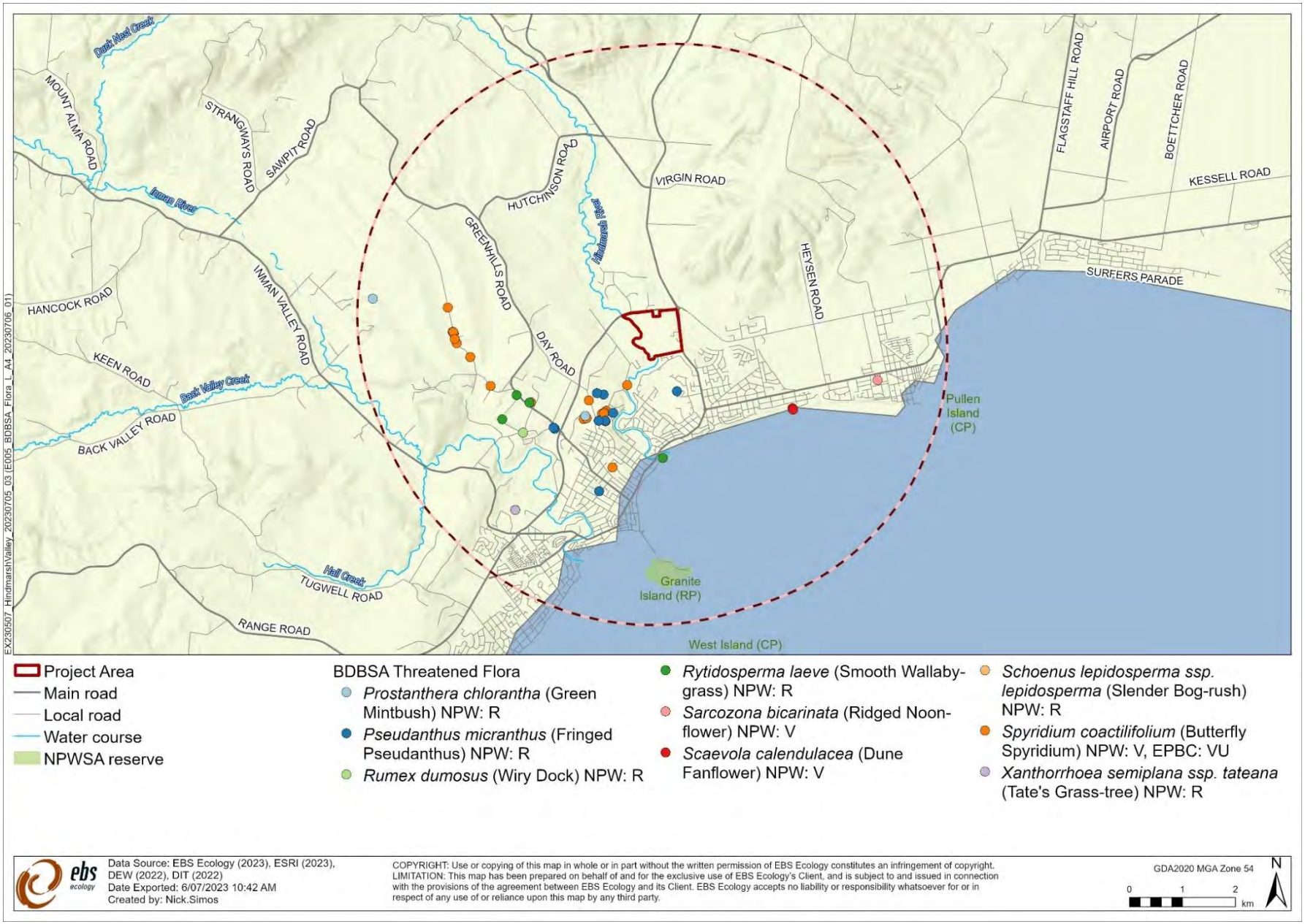
DAY ROAD
KEEN ROAD
Back Valley Creek
BACK VALLEY ROAD
Pullen Island (CP)
Hall Creek
TUGWELL ROAD
Granite Island (RP)
RANGE ROAD
West Island (CP)


Project Area
Main road
Local road
Water course
NPWSA reserve
BDBSA Threatened Flora
Prostanthera chlorantha (Green Mintbush) NPW: R
Pseudanthus micranthus (Fringed Pseudanthus) NPW: R
Rumex dumosus (Wiry Dock) NPW: R
Rytidosperma laeve (Smooth Wallaby-grass) NPW: R
Sarcozona bicarinata (Ridged Noon-flower) NPW: V
Scaevola calendulacea (Dune Fanflower) NPW: V
Schoenus lepidosperma ssp. lepidosperma (Slender Bog-rush) NPW: R
Spyridium coactilifolium (Butterfly Spyridium) NPW: V, EPBC: VU
Xanthorrhoea semiplana ssp. tateana (Tate's Grass-tree) NPW: R
Data Source: EBS Ecology (2023), ESRI (2023), DEW (2022), DIT (2022)
Date Exported: 6/07/2023 10:42 AM
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GDA2020 MGA Zone 54
0 1 2 km
N
EX230507_HindmarshValley_20230705_03_E005_BDBSA_Flora_L_A4_20230706_01)
Dust Nest Creek
MOUNT ALMA ROAD
STRANGWAYS ROAD
SAWPIT ROAD
Imoop River
HUTCHINSON ROAD
VIRGIN ROAD
Hindmarsh River
GREENHILLS ROAD
DAY ROAD
HEYSEN ROAD
FLAGSTAFF HILL ROAD
AIRPORT ROAD
BOETTCHER ROAD
KESSELL ROAD
SURFERS PARADE
HANCOCK ROAD
INMAN VALLEY ROAD
KEEN ROAD
Back Valley Creek
BACK VALLEY ROAD
Hall Creek
TUGWELL ROAD
RANGE ROAD
Pullen Island (CP)
Granite Island (RP)
West Island (CP)

Appendix 6. Assessment of likelihood of national (EPBC Act) and State (NPW Act) listed threatened flora identified by the PMST (DCCEEW 2023a) and BDBSA (DEW 2023b) to occur in the Project Area (green shading = known / highly likely or likely to occur, orange shading = possible to occur).

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Acacia dodonaeifolia	Hop-bush Wattle		R	2	2006	Endemic to SA and found mainly on southern Eyre Peninsula and southern Mt Lofty Ranges. Grows in woodland and open forest vegetation in hard acidic, yellow duplex, red shallow porous loamy, sandy alkaline yellow duplex soils (SSCC 2018).	**Unlikely** – Some suitable habitat within the Project Area, but not observed during the field survey despite adequate search effort.
Acacia iteaphylla	Flinders Ranges Wattle		R	2	2006	Naturally occurs in the Flinders Ranges, across to the Gawler Ranges, and on the Eyre Peninsula. Naturalised beyond its native range in some parts of south-eastern and southern SA (SSCC 2018).	**Known –** specimen identified in Project Area; however, it is likely to have been planted and is therefore not covered under the NV Act.
Amphibromus macrorhinus	Long-nosed Swamp Wallaby-grass		R	2	2022	Found in permanent or temporarily damp areas on clay, sand or sandy loams on Eyre Peninsula, Mount Lofty Ranges and the lower Southeast (SSCC 2018).	**Possible**– Very recent record and some temporarily damp areas adjacent to the Hindmarsh River are

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
							present, however this species was not detected within the Project Area during the field survey.
Atriplex australasica			R	2	1996	Found mostly in the southern Mount Lofty Ranges and Murray regions, with scattered records on York Peninsula, Kangaroo Island and South-east, growing in blackish soil near the coast (SSCC 2018).	**Unlikely** – No recent records and the Project Area is not adjacent coastal habitat.
Austrostipa gibbosa	Swollen Spear-grass		R	2	2010	Occurs in the southern Flinders Ranges, Mount Lofty Ranges and the South-east in SA growing on rich loamy soil along creeks and seasonally wet areas in woodland and grassland (SSCC 2018).	**Possible** – Recent record and some suitable habitat in the Project Area. *Austrostipa* spp. observed in Project Area but did not contain identifiable features (i.e., seeds) during field survey.
Austrostipa tenuifolia			R	2	2004	Found on the EP, MLR, MU and the upper SE, growing sandy soils in grassland or grassy woodland associated with *Callitris* sp. or *Allocasuarina* sp. (SSCC 2018).	**Possible** – Recent record and some suitable habitat in the Project Area. *Austrostipa* spp. observed in Project Area but did not contain identifiable

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
							features (i.e., seeds) during field survey.
Baumea laxa	Lax Twig-rush		R	2	1996	Occurs in wet sandy areas and seasonally damp areas in heathlands and heathy swamps (Royal Botanic Gardens Victoria 2020).	**Unlikely** – No recent records despite some suitable habitat adjacent the Hindmarsh River.
Caladenia tensa	Greencomb Spider-orchid	EN		1	Likely	Aeolian sand deposits in *Callitris, E. leucoxylon* Woodland and *Melaleuca uncinata* mallee in Murray-Darling Depression bioregion. Winter active geophyte, with long narrow leaf emerging, followed by 1-2 flowers (TSSC 2016a).	**Unlikely** – No recent records and there is no suitable habitat in the Project Area.
Caladenia vulgaris	Plain Caladenia		R	2	1996	Occurs in damp, heathy forest and woodland, often along creeks and around swamp margins wherever the soil stays moist into the late spring (Bates 2007).	**Possible** – some suitable habitat present adjacent the Hindmarsh River, although no recent records. Would not have been visible at the time of field survey.
Centrolepis glabra	Smooth Centrolepis		R	2	1996	Generally found in mud around temporary freshwater pools and stream margins. Nearest records associated with the Waitpinga cliffs on the edge of ephemeral swamp and in shallow water with *Callistemon rugulosus*, *Myriophyllum integrifolium* and *Elatine gratioloides* (Wilson and Bignall 2009).	**Unlikely** – No suitable habitat in the Project Area and nearest recent records 15 km away.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Correa calycina	Hindmarsh Correa	VU	V	1	Likely	Found on Kangaroo Island and on the Fleurieu Peninsula on river banks in the upper watershed and ranges of the Hindmarsh and Inman River Catchments, as well as Carrickalinga Creek (DEWHA 2008a).	**Unlikely**– Some suitable habitat adjacent the Hindmarsh River although no recent records and not observed during the field survey despite adequate search effort.
Dianella longifolia var. *grandis*	Pale Flax-lily		R	2	2007	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 (Wilson and Bignall 2009).	**Unlikely** – Some suitable habitat in the Project Area and recent records but not observed during the field survey despite adequate search effort.
Eucalyptus fasciculosa	Pink Gum		R	2	2006	Grows on moist, well-drained alluvial soils near watercourses but also grows on drier sites at higher altitudes. Tolerates snow and some flooding (Nicolle, 2013).	**Known** – Present in high numbers in the Project Area as scattered trees.
Eucalyptus paludicola	Mount Compass Swamp Gum	EN	E	1, 2	Likely / 2012	Occurs on Kangaroo Island and on the Fleurieu peninsula and is associated with seasonally swampy areas, depressions and broad gullies, or occasionally on hillsides near permanent creeks where the soil is waterlogged over winter (DEWHA 2008b).	**Unlikely** – Recent records, although not observed during the field survey despite adequate search effort.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Eucalyptus viminalis ssp. *viminalis*	Manna Gum		R	2	2001	Generally recorded as growing in mallee scrubland but has also been found growing in coastal heathlands, sclerophyll forests and woodlands. It is also found in heathy openings in wet sclerophyll forest and in a swamp at Mt Compass (Nicolle, 2013).	**Unlikely** – Recent records, although not observed during the field survey despite adequate search effort.
Glycine latrobeana	Clover Glycine	VU	V	1	Likely	Inhabits native grasslands, dry sclerophyll forests, woodlands and low open woodlands, typically with a grassy ground layer, and growing on undulating plains. Prefers gentle south-west facing ridge slopes and lower south facing river valley slopes (Carter and Sutter 2010).	**Unlikely** – No recent records and there is no suitable habitat in the Project Area.
Gratiola pubescens	Glandular Brooklime		R	2	1996	Occurs in permanently or seasonally damp or swampy ground and in shallow pools, in heavily shaded sites and open sites (Royal Botanic Gardens Victoria 2020).	**Unlikely** – No recent records despite some suitable habitat adjacent the Hindmarsh River.
Olearia pannosa ssp. *pannosa*	Silver Daisy-bush	VU	V	1, 2	Known / 2009	Endemic to SA, scattered throughout agricultural areas. Occurring in sandy flat areas and in hilly rocky areas in woodland or mallee, including overlapping with Peppermint Box Grassy Woodland of SA (DOE 2013).	**Unlikely** – Despite recent records, there is no suitable habitat in the Project Area.
Picris squarrosa	Squat Picris		R	2	1997	Occurs primarily along the lower Murray River and its tributaries, but also on coastal sand-dunes or in	**Unlikely** – No recent records or suitable

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
						alluvial soils on riverbanks (Royal Botanic Gardens Victoria 2020).	habitat in the Project Area.
Potamogeton ochreatus	Blunt Pondweed		R	2	2019	Occurs in still to strongly flowing fresh water, in agricultural dams, swamps, creeks and rivers, on muddy to gravelly substrates (Royal Botanic Gardens 2020).	**Possible** – Recent records and some suitable habitat adjacent and in the Hindmarsh River in the Project Area.
Prasophyllum pallidum	Pale Leek-orchid	VU	R	1	Likely	Pale Leek-orchid is known singly or in groups in better soils of woodland and grassy open forest. Recorded in woodlands and forests dominated by *Eucalyptus leucoxylon, E. goniocalyx, E. fasciculosa, E. microcarpa, Callitris gracilis/Eucalyptus fasciculosa*, and *Allocasuarina verticillata* (Bates 2009).	**Unlikely** – No recent records and suitable habitat that is present in the Project Area is heavily degraded.
Prostanthera chlorantha	Green Mintbush		R	2	2012	Forms small populations of a few scattered plants, on sandy and loamy soils. Commonly associated with *Banksia*, *Daviesia* and *Leptospermum* shrubland (Prescott 1994).	**Unlikely** – Despite recent records, there is no suitable habitat in the Project Area.
Pterostylis bryophila	Hindmarsh Valley Greenhood	CE	E	1	Likely	Found in only two locations on the Fleurieu Peninsula, in Mount Billy Conservation Park and the adjacent Hindmarsh Reservoir Reserve, and at Talisker Conservation Park. Occurs in grassy woodlands dominated by *Eucalyptus leucoxylon* (Blue Gum) and *Eucalyptus fasciculosa* (Pink Gum).	**Unlikely** – Only known from two populations on the Fleurieu Peninsula and the Project Area is heavily degraded.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
						It is found in moist, shady, mossy areas with fertile loamy soils, usually with a southerly aspect (DEWHA 2008c).	
Rumex dumosus	Wiry Dock		R	2	2020	Widespread from Roma in southern QLD through inland NSW and Victoria to Tasmania and west to the EP of SA and SW WA. In grasslands and disturbed grassy areas predominantly on clayey soils (PlantNET 2023).	**Possible** – Recent record and some suitable habitat in the Project Area.
Rytidosperma laeve	Smooth Wallaby-grass		R	2	1996	Ecologically variable, from alpine moorland to open grassland or light woodland, often in seasonally damp habitats (Sharp and Simon 2002).	**Possible** – No recent records but other *Rytidosperma* spp. present in the Project Area and some suitable habitat.
Sarcozona bicarinata	Ridged Noon-flower		V	2	2004	Very few scattered collections from Eyre Peninsula, Yorke Peninsula and Fleurieu Peninsula. Often found in sandy or seasonally wet areas (SSCC 2018).	**Unlikely** – Despite recent records there us not suitable sandy habitat in the Project Area.
Scaevola calendulacea	Dune Fanflower		V	2	2010	Only known from a few plants near Chiton Rocks adjacent to Victor Harbor. Found in sand and dunes often forming low hummocks (SSCC 2018).	**Unlikely** – Despite recent records, very localised and there is no suitable habitat in the Project Area.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Schoenus laevigatus			R	2	1996	Primarily found in In heaths or low woodlands, on sandy soils and sometimes seasonally damp areas (Royal Botanic Gardens Victoria 2020).	**Unlikely** – No recent records despite some suitable habitat adjacent the Hindmarsh River.
Schoenus lepidosperma ssp. *lepidosperma*	Slender Bog-rush		R	2	1996	Usually found on damp and seasonally wet, sandy soils, in heath or woodland (Royal Botanic Gardens Victoria 2020).	**Unlikely** – No recent records despite some suitable habitat adjacent the Hindmarsh River.
Senecio macrocarpus	Large-fruit Fireweed	VU	V	1	Likely	Occurs in very small populations in Messent Conservation Park, Gum Lagoon Conservation Park and on private property on the Yorke Peninsula, Flinders and Mount Lofty Ranges. Found in shallow depressions on loamy sand with numerous sedge and herb species often in areas that are seasonally damp (Sinclair 2010).	**Unlikely** – No recent records or suitable habitat in the Project Area.
Spyridium coactilifolium	Butterfly Spyridium	VU	V	1, 2	Known / 2015	Most frequently occurs on the tops of rocky sea cliffs, but may also be found further inland on gentle to moderately steep, SE-SW facing slopes on ridges. Near the Waitpinga/Victor Harbor area, this species is found on white sand over *Eucalyptus baxteri* with *E. cosmophylla* (Wilson and Bignall 2009).	**Unlikely** – Despite recent records there is no suitable habitat in the Project Area and this species was not observed during the field survey.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Thelymitra matthewsii	Spiral Sun-orchid	VU	E	1	Likely	Favours open forests and woodlands in well-drained sand and clay loams. It is a post-disturbance coloniser that is usually found in open areas around old quarries and gravel pits, on road verges, disused tracks and animal trails. In SA, it is known from three fairly old collections from KI and in SW of Keith. It has recently been found to occur south of Meningie, and on western KI. Open ground layer is common (Duncan 2010).	**Unlikely** – No recent records or suitable habitat in the Project Area.
Veronica derwentiana ssp. *homalodonta*	Mount Lofty Speedwell	CE	E	1	Likely	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*) (TSSC 2009).	**Unlikely** – No recent records or suitable habitat in the Project Area.
Xanthorrhoea semiplana ssp. *tateana*	Tate's Grass-tree		R	2	1998	Endemic to South Australia and found on the southern Eyre Peninsula, York Peninsula, Kangaroo Island and the southern Mount Lofty Ranges; growing on sandy soil (SSCC 2018).	**Unlikely** – No recent records despite some suitable habitat and other *Xanthorrhoea* spp. in the Project Area. Not observed during the field survey.
Zannichellia palustris			R	2	2019	A submerged aquatic plant that grows in fresh or slightly saline stationary or slowly flowing water (PlantNET 2023).	**Possible** – Recent records and some suitable habitat (the

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
							Hindmarsh River) in the Project Area but not observed during the field survey.

Conservation status:

Aus: Australia (EPBC Act). SA: South Australia (NPW Act). Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare.

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

Source of Information:

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

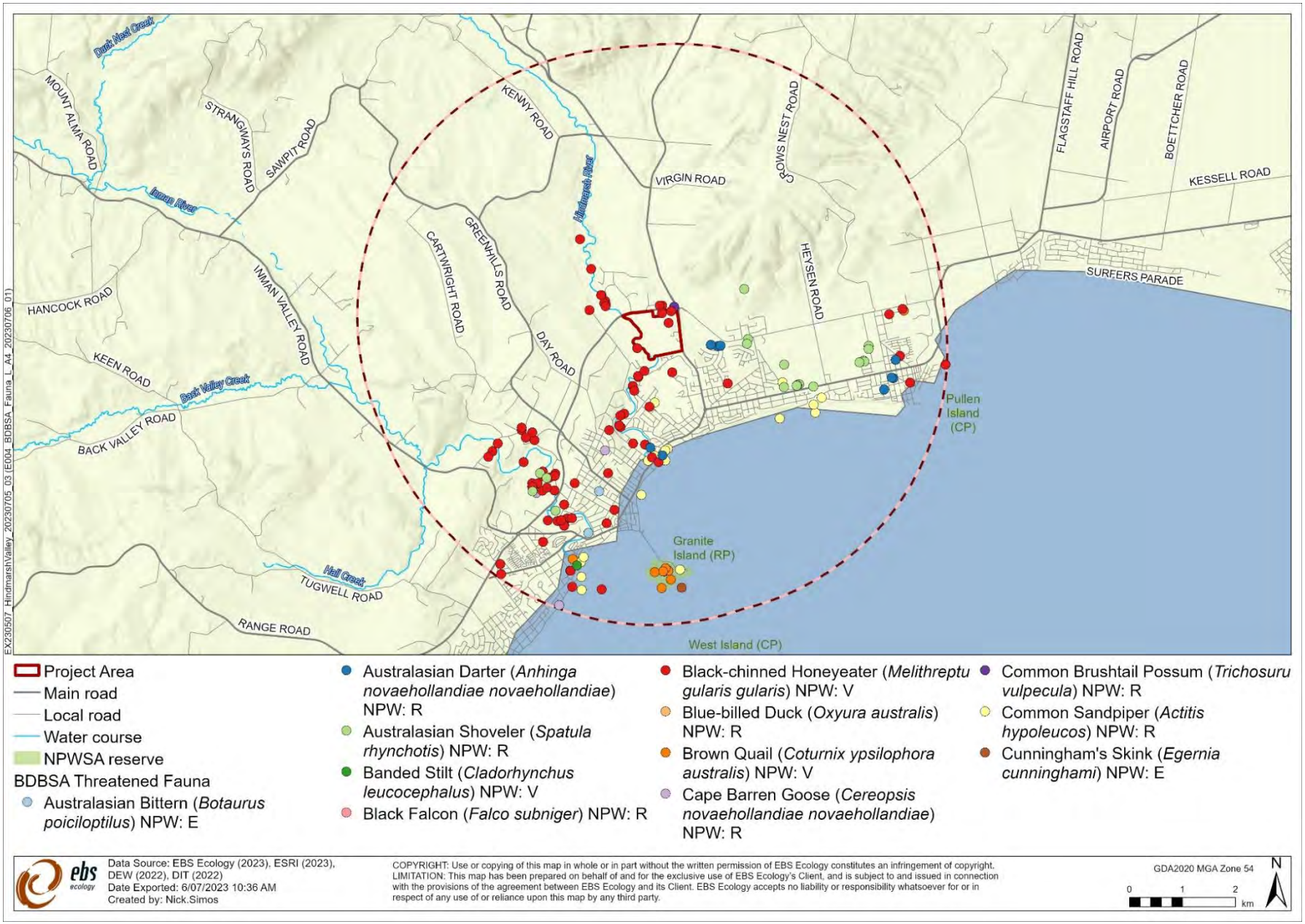
2: BDBSA (DEW 2023b) – 5 km buffer applied to Project Area;

Abbreviations within Distribution and preferred habitat:

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

Appendix 7. BDBSA fauna records within 5 km of the Project Area

See following pages


EX230507_HindmarshValley_20230705_03 (E004_BDBSA_Fauna_L_A4_20230706_01)
Duck Nest Creek
MOUNT ALMA ROAD
STRANGWAYS ROAD
SAWPIT ROAD
KENNY ROAD
Inman River
Hindmarsh River
VIRGIN ROAD
CROWS NEST ROAD
FLAGSTAFF HILL ROAD
AIRPORT ROAD
BOETTCHER ROAD
KESSELL ROAD
CARTWRIGHT ROAD
GREENHILLS ROAD
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KEEN ROAD
Bark Valley Creek
BACK VALLEY ROAD
Pullen Island (CP)
Granite Island (RP)
Hall Creek
TUGWELL ROAD
RANGE ROAD
West Island (CP)
Project Area
Main road
Local road
Water course
NPWSA reserve
BDBSA Threatened Fauna
Australasian Bittern (Botaurus poiciloptilus) NPW: E
Australasian Darter (Anhinga novaehollandiae novaehollandiae) NPW: R
Australasian Shoveler (Spatula rhynchotis) NPW: R
Banded Stilt (Cladorhynchus leucocephalus) NPW: V
Black Falcon (Falco subniger) NPW: R
Black-chinned Honeyeater (Melithreptu gularis gularis) NPW: V
Blue-billed Duck (Oxyura australis) NPW: R
Brown Quail (Coturnix ypsilophora australis) NPW: V
Cape Barren Goose (Cereopsis novaehollandiae novaehollandiae) NPW: R
Common Brushtail Possum (Trichosuru vulpecula) NPW: R
Common Sandpiper (Actitis hypoleucos) NPW: R
Cunningham's Skink (Egernia cunninghami) NPW: E
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GDA2020 MGA Zone 54
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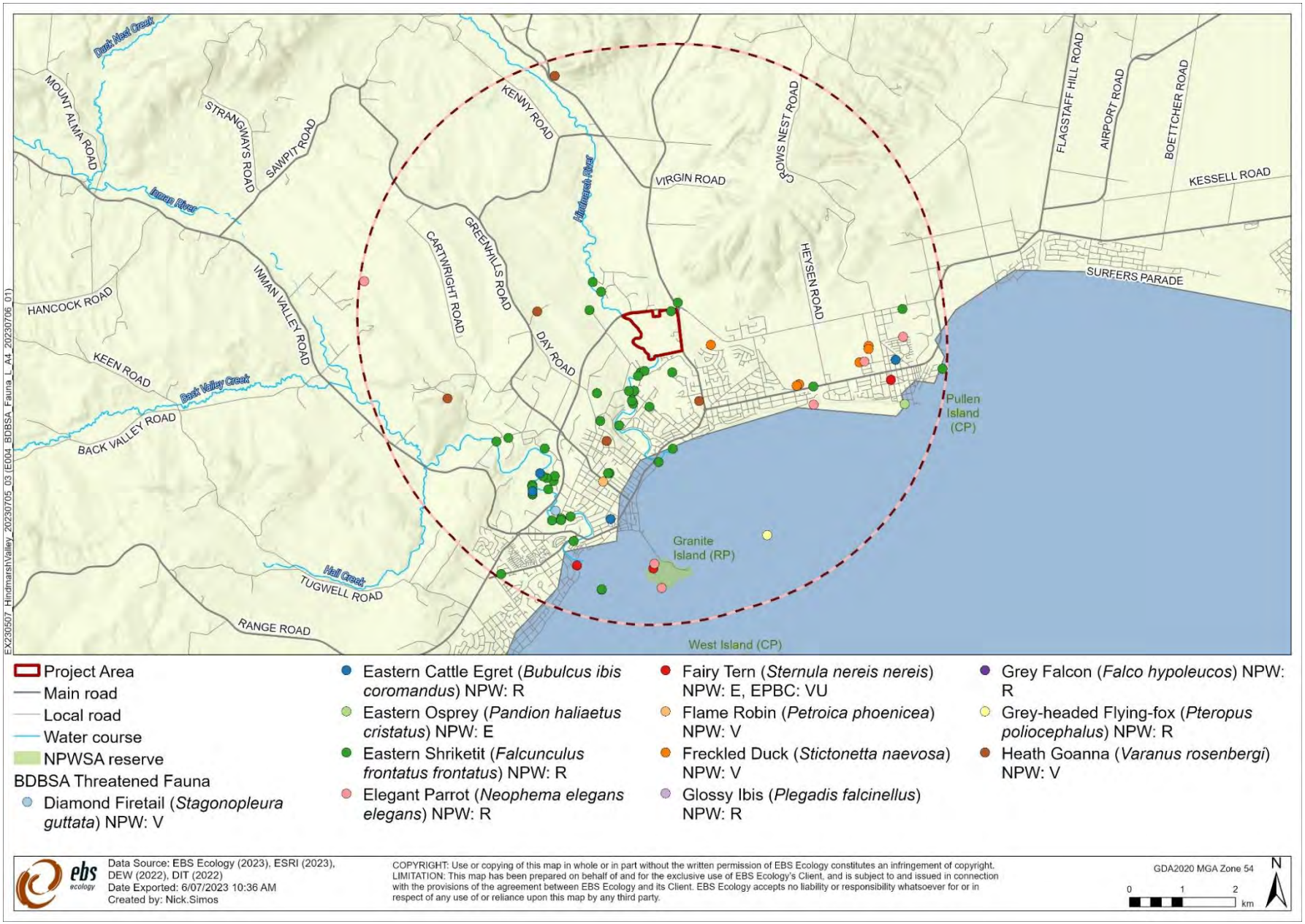
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STRANGWAYS ROAD
SAWPIT ROAD
KENNY ROAD
Hindmarsh River
VIRGIN ROAD
CROWS NEST ROAD
FLAGSTAFF HILL ROAD
AIRPORT ROAD
BOETTCHER ROAD
KESSELL ROAD
Inman River
CARTWRIGHT ROAD
GREENHILLS ROAD
HEYSEN ROAD
SURFERS PARADE
HANCOCK ROAD
INMAN VALLEY ROAD
DAY ROAD
KEEN ROAD
Back Valley Creek
BACK VALLEY ROAD
Pullen Island (CP)
Granite Island (RP)
Hall Creek
TUGWELL ROAD
RANGE ROAD
West Island (CP)
EX230507_HindmarshValley_20230705_03 (E004_BDBSA_Fauna_L_A4_20230706_01)
Project Area
Main road
Local road
Water course
NPWSA reserve
BDBSA Threatened Fauna
Diamond Firetail (Stagonopleura guttata) NPW: V
Eastern Cattle Egret (Bubulcus ibis coromandus) NPW: R
Eastern Osprey (Pandion haliaetus cristatus) NPW: E
Eastern Shriketit (Falcunculus frontatus frontatus) NPW: R
Elegant Parrot (Neophema elegans elegans) NPW: R
Fairy Tern (Sternula nereis nereis) NPW: E, EPBC: VU
Flame Robin (Petroica phoenicea) NPW: V
Freckled Duck (Stictonetta naevosa) NPW: V
Glossy Ibis (Plegadis falcinellus) NPW: R
Grey Falcon (Falco hypoleucos) NPW: R
Grey-headed Flying-fox (Pteropus poliocephalus) NPW: R
Heath Goanna (Varanus rosenbergi) NPW: V
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GDA2020 MGA Zone 54
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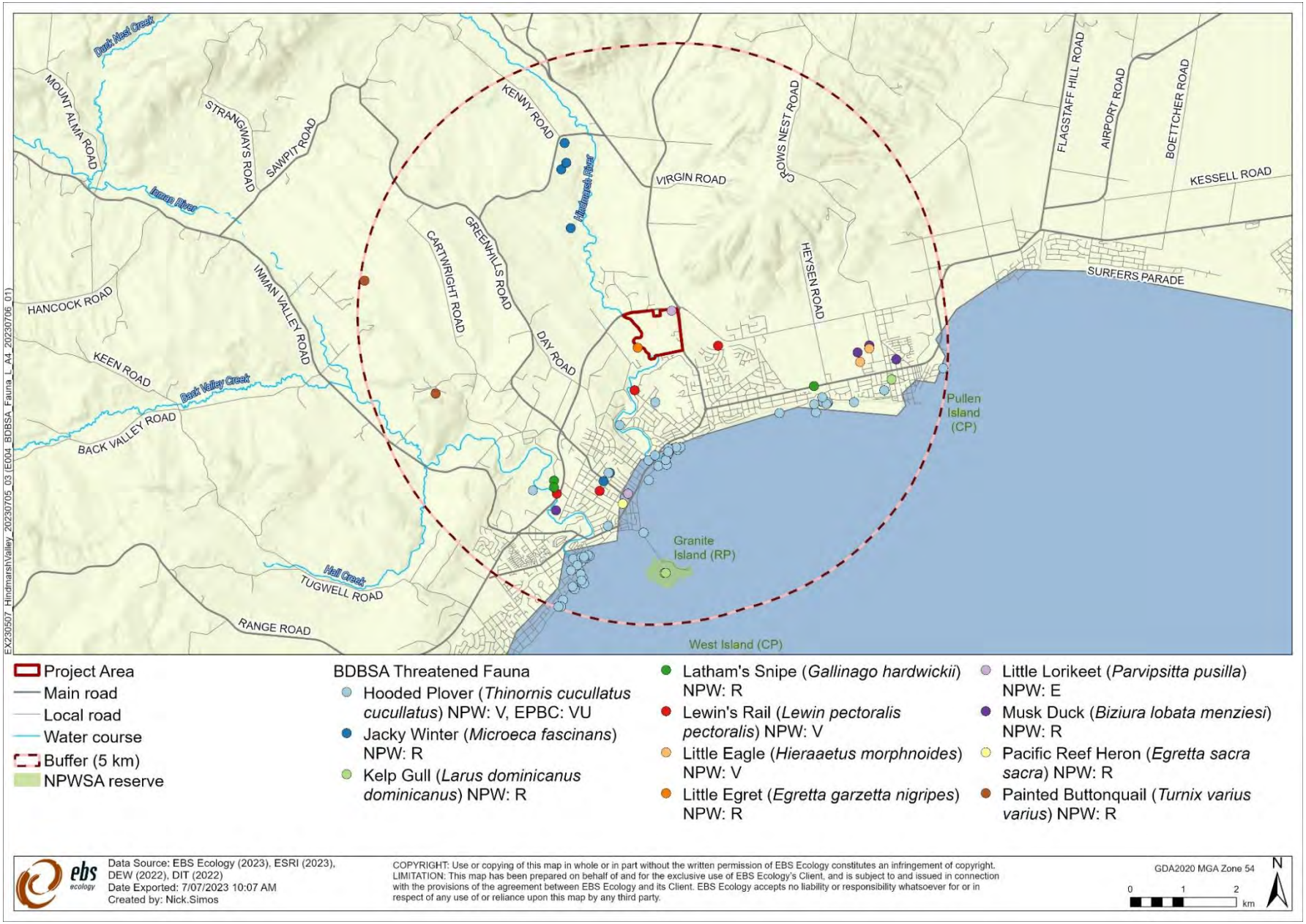
EX230507_HindmarshValley_20230705_03 (E004_BDBSA_Fauna_L_A4_20230706_01)
Duck Nest Creek
MOUNT ALMA ROAD
STRANGWAYS ROAD
SAWPIT ROAD
KENVY ROAD
Hindmarsh River
VIRGIN ROAD
CROWS NEST ROAD
FLAGSTAFF HILL ROAD
AIRPORT ROAD
BOETTCHER ROAD
KESSELL ROAD
Inman River
CARTWRIGHT ROAD
GREENHILLS ROAD
HEYSEN ROAD
SURFERS PARADE
HANCOCK ROAD
INMAN VALLEY ROAD
DAY ROAD
KEEN ROAD
Duck Valley Creek
BACK VALLEY ROAD
Pullen Island (CP)
Granite Island (RP)
Hall Creek
TUGWELL ROAD
RANGE ROAD
West Island (CP)
Project Area
Main road
Local road
Water course
Buffer (5 km)
NPWSA reserve
BDBSA Threatened Fauna
Hooded Plover (Thinornis cucullatus cucullatus) NPW: V, EPBC: VU
Jacky Winter (Microeca fascinans) NPW: R
Kelp Gull (Larus dominicanus dominicanus) NPW: R
Latham's Snipe (Gallinago hardwickii) NPW: R
Lewin's Rail (Lewin pectoralis pectoralis) NPW: V
Little Eagle (Hieraaetus morphnoides) NPW: V
Little Egret (Egretta garzetta nigripes) NPW: R
Little Lorikeet (Parvipsitta pusilla) NPW: E
Musk Duck (Biziura lobata menziesi) NPW: R
Pacific Reef Heron (Egretta sacra sacra) NPW: R
Painted Buttonquail (Turnix varius varius) NPW: R
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Data Source: EBS Ecology (2023), ESRI (2023), DEW (2022), DIT (2022)
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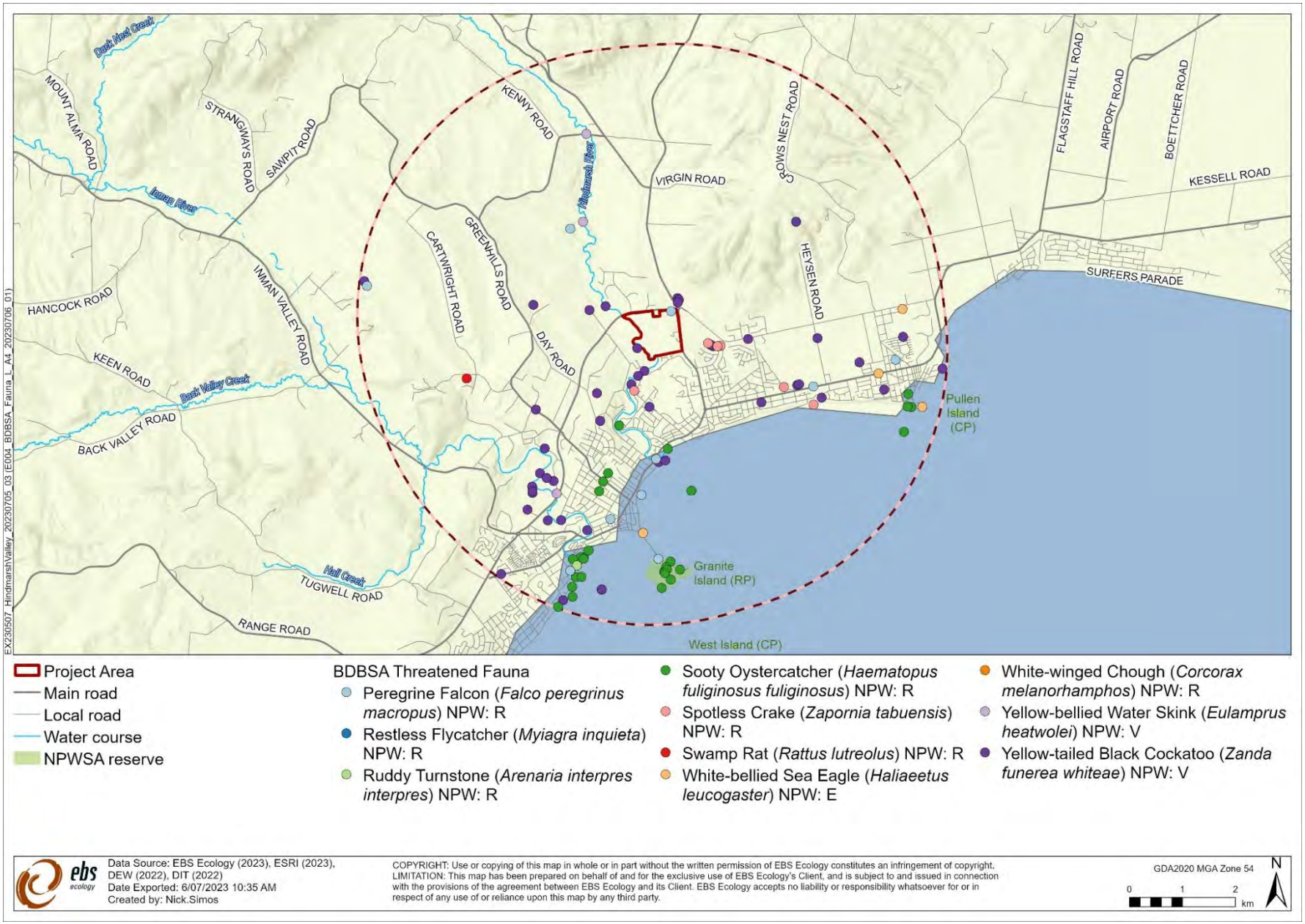
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Duck Nest Creek
MOUNT ALMA ROAD
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KEEN ROAD
Back Valley Creek
BACK VALLEY ROAD
Pullen Island (CP)
Granite Island (RP)
Hall Creek
TUGWELL ROAD
RANGE ROAD
West Island (CP)
Project Area
Main road
Local road
Water course
NPWSA reserve
BDBSA Threatened Fauna
Peregrine Falcon (Falco peregrinus macropus) NPW: R
Restless Flycatcher (Myiagra inquieta) NPW: R
Ruddy Turnstone (Arenaria interpres interpres) NPW: R
Sooty Oystercatcher (Haematopus fuliginosus fuliginosus) NPW: R
Spotless Crake (Zapornia tabuensis) NPW: R
Swamp Rat (Rattus lutreolus) NPW: R
White-bellied Sea Eagle (Haliaeetus leucogaster) NPW: E
White-winged Chough (Corcorax melanorhamphos) NPW: R
Yellow-bellied Water Skink (Eulamprus heatwolei) NPW: V
Yellow-tailed Black Cockatoo (Zanda funerea whiteae) NPW: V
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GDA2020 MGA Zone 54
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Appendix 8. Assessment of likelihood of national (EPBC Act) and State (NPW Act) listed threatened fauna identified by the PMST (DCCEEW 2023a) and BDBSA (DEW 2023b) to occur in the Project Area (exclusively marine species have been omitted) (green shading = known / highly likely or likely to occur, orange shading = possible to occur).

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
AVES (BIRDS)								
Actitis hypoleucos	Common Sandpiper	Mi (W)	R	1, 2	Known / 2020	Varied coastal and interior wetlands: narrow muddy edges of billabongs, river pools, mangroves, among rocks reefs and rocky beaches (Morcombe 2021).	**N/A**	**Unlikely** – Despite recent records, no coastal habitat is present in the Project Area.
Anhinga novaehollandiae novaehollandiae	Australasian Darter		R	2	2020	Prefers lakes, rivers, swamps, reservoirs and tidal inlets; rarely coastal (Pizzey and Knight 2021).	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area (Hindmarsh River), may possibly occur as flyover only.
Aphelocephala leucopsis	Southern Whiteface	VU		1	Known	Occurs in open woodland and shrubland habitat with an understorey of grasses and / or low shrubs. Suitable habitat is usually dominated by *Acacia* spp. or *Eucalyptus* spp. on ranges, foothills, lowlands and plains (DCCEEW 2023b).	**P, H, w**	**Unlikely** – No recent records and suitable habitat in the Project Area is heavily degraded.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
Apus pacificus	Fork-tailed Swift	Mi (Ma)		1	Likely	Widespread but almost exclusively aerial. Mostly occur over inland plains and dry or open habitats (Morcombe 2021).	**N/A**	**Unlikely** – No recent records or suitable habitat in the Project Area. Flyover only.
Arenaria interpres interpres	Ruddy Turnstone	VU	R	2	2001	Mainly found in coastal regions, with occasional records of inland populations. Prefers rocky shores or beaches where there are large deposits of rotting seaweed (Birds in Backyards 2023).	**N/A**	**Unlikely** – Despite recent records, no coastal habitat is present in the Project Area.
Biziura lobata menziesi	Musk Duck		R	2	2022	Lakes, reservoirs and wetlands including well-vegetated swamps and fresh and brackish habitats (Pizzey and Knight 2021).	**N/A**	**Unlikely** – Despite recent records, no deep water suitable for this species is present in the Project Area.
Botaurus poiciloptilus	Australasian Bittern	EN	E	1	Known	Freshwater wetlands and rarely in estuaries or tidal wetlands, favouring wetlands dominated by sedges, rushes and reeds growing over a muddy or peaty substrate (TSSC 2019).	**N/A**	**Unlikely** – No recent records or suitable habitat in the form of dense sedges or rushes in the Project Area.
Bubulcus ibis coromandus	Eastern Cattle Egret		R	2	2011	The Cattle Egret occurs in shallow, open and fresh wetlands including meadows and swamps with low emergent vegetation and abundant aquatic flora. They are often found in open paddocks,	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
						pastures, croplands and drains (Pizzey and Knight 2021).		
Calidris acuminata	Sharp-tailed Sandpiper	VU Mi (W)		1	Likely	Prefers tidal mudflats, saltmarshes and shallow, fresh or saline inland wetlands (Pizzey and Knight 2021)	**N/A**	**Unlikely** – No recent records or coastal habitat is present in the Project Area.
Calidris canutus	Red Knot	VU Mi (W)	E	1	Likely	Red Knots mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours (TSSC 2016b).	**N/A**	**Unlikely** – No recent records or coastal habitat is present in the Project Area.
Calidris ferruginea	Curlew Sandpiper	CE Mi (W)	E	1	Likely	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons. They occur in both fresh and brackish waters (DOE 2015).	**N/A**	**Unlikely** – No recent records or coastal habitat is present in the Project Area.
Calidris melanotos	Pectoral Sandpiper	Mi (W)	R	1	Likely	Inhabits shallow fresh waters often associated with low grass and other vegetation. Occasionally seen in salt marshes and tidal areas. (Pizzey and Knight 2021).	**N/A**	**Unlikely** – No recent records or coastal habitat is present in the Project Area.
Cereopsis novaehollandiae novaehollandiae	Cape Barren Goose		R	2	2018	Mostly inhabits small, windswept and generally uninhabited offshore islands, but ventures to adjacent mainland farming areas in search of food in summer (Birdlife Australia 2023).	**N/A**	**Possible** – Recent records and some suitable foraging habitat in open pastures.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
Cladorhynchus leucocephalus	Banded Stilt		V	2	2018	Endemic to Australia, mainly in the south and inland. Found mainly in saline and hypersaline (very salty) waters of the inland and coast, typically large, open and shallow (Birds in Backyards 2023).	**N/A**	**Unlikely** – Recent records, though no preferred shallow saline wetland habitat in Project Area, and not a scattered tree using species. May occur as flyover only.
Corcorax melanorhamphos	White-winged Chough		R	2	2007	Prefers drier forests, woodlands of *Eucalyptus* sp., crops and pastures (Pizzey and Knight 2021).	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area although it is not preferred.
Coturnix ypsilophora australis	Brown Quail		V	2	2020	Prefers dense grasslands, often on the edges of open forests, and bracken (Birdlife Australia 2023).	**N/A**	**Possible** – Recent records despite no suitable habitat (dense grasslands) in the Project Area.
Egretta garzetta nigripes	Little Egret		R	2	2014	Found in tidal mudflats, saltmarshes, mangroves and freshwater wetlands (Pizzey and Knight 2021).	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area, may occur as flyover only.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
Egretta sacra sacra	Pacific Reef Heron		R	2	2016	Prefers beaches, rocky shores, tidal rivers and inlets, mangroves, and exposed coral reefs (Pizzey and Knight 2021).	**N/A**	**Unlikely** – Recent records but no suitable coastal habitat is present in the Project Area.
Falco hypoleucos	Grey Falcon	VU	R	1, 2	Known / 2006	This species is mainly found where annual rainfall is less than 500 mm and is essentially confined to the arid and semi-arid zones at all times. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses (Schoenjahn 2018).	**N/A**	**Unlikely** – Despite recent records and some suitable habitat in the Project Area, this species is a vagrant to the area and is unlikely to occur.
Falco peregrinus macropus	Peregrine Falcon		R	2	2018	Found everywhere from woodlands to open grasslands and coastal cliffs – though less frequently in desert regions. This species prefers open habitats such as grasslands, tundra and meadows and nests on cliff faces and in crevices (Pizzey and Knight 2021).	**P, H, N, w/r**	**Likely** – Recent records and suitable habitat is present in the Project Area. Other raptor species were recorded during the field survey.
Falco subniger	Black Falcon		R	2	2014	Occurs on plains, grasslands, foothills, timbered watercourses and crops (Pizzey and Knight 2021).	**P, N, s**	**Likely** – Recent records and some suitable foraging and nesting habitat in the Project Area.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
Falcunculus frontatus frontatus	Eastern Shriketit		R	2	2020	Eucalyptus woodlands and forest, within a wide range of woodland/forest communities. Prefers dense grasslands, often on the edges of open forests, and bracken (Birdlife Australia 2023).	**F, w**	**Known** – This species was observed adjacent the Hindmarsh River during the field survey.
Gallinago hardwickii	Latham's Snipe	VU Mi (W)	R	1, 2	Known / 2009	This is a wetland species that occurs on shallow water with tussocks and other green or dead growth (Pizzey and Knight 2021).	**N/A**	**Possible** – Recent records and suitable habitat in the Project Area adjacent the Hindmarsh River, although it is heavily degraded and not preferred.
Haematopus fuliginosus fuliginosus	Sooty Oystercatcher		R	2	2020	The Sooty Oystercatcher is strictly coastal, usually within 50 m of the ocean. It prefers rocky shores, but will be seen on coral reefs or sandy beaches near mudflats. (Pizzey and Knight 2021).	**N/A**	**Unlikely** – Recent records but no suitable coastal habitat is present in the Project Area.
Haliaeetus leucogaster	White-bellied Sea Eagle		E	2	2020	Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands (Marchant and Higgins 1993).	**N/A**	**Possible** – Recent records although no suitable coastal habitat in the Project Area. Likely to occur as flyover only.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
Hieraaetus morphnoides	Little Eagle		V	2	2019	Widespread over diverse habitats; forest, woodland, open scrub, tree-lined watercourses of interior Australia such as the Murray River. Prefers areas where open country intermixes with wooded or forested hills, as in farmland, irrigated land (Morcombe, 2021).	**P, w**	**Likely** – Recent records and suitable habitat in the Project Area for perching. Most likely to occur as flyover.
Hylacola pyrrhopygia parkeri	Chestnut-rumped Heathwren	EN	E	1	Likely	Inhabits heaths of coastal, mountain and hinterland areas, dense undergrowth of forests and woodlands. Found in South-eastern Australia. In SA occurs in the SE, Adelaide Mount Lofty Ranges and Northern Yorke districts (Wilson and Bignall 2009).	**N/A**	**Unlikely** – No recent records or suitable habitat (dense undergrowth) in the Project Area.
Larus dominicanus dominicanus	Kelp Gull		R	2	2012	Often found on the coast, bays, on beaches or on reefs or islands, seldom inland unless flying through (Pizzey and Knight 2021).	**N/A**	**Unlikely** – Recent records in nearby coastal area, though no suitable habitat occurs in Project Area. May occur as a flyover only.
Lewin pectoralis pectoralis	Lewin's Rail		V	2	2019	Swamp woodlands; ruches, reeds, rank grass in swamps, creeks paddocks; wet heaths, tree ferns; samphire in saltmarsh (Pizzey and Knight 2021).	**N/A**	**Possible** – Recent records and suitable habitat in the Project Area adjacent the Hindmarsh River,

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
								although it is heavily degraded and not preferred.
Limosa lapponica baueri	Bar-tailed Godwit	EN Mi (W)	R	1	Known	Found in coastal habitats including large intertidal sandflats, mudflats and estuaries. Has also been recorded in salt lakes and brackish or saline wetlands (Marchant and Higgins 1993).	**N/A**	**Unlikely** – No recent records or coastal habitat is present in the Project Area.
Melanodryas cucullata cucullata	South-eastern Hooded Robin	EN	R	1	Likely	Prefers dry eucalypt and acacia woodlands and shrublands with an open understorey, some grassy areas and a complex ground layer. They avoid woodlands with tall trees or dense tree cover but sometimes occur in tall, dense heaths with scattered open areas. Sub-populations in SA are recorded from the Barossa, Monarto, Onkaparinga River, Ashbourne, Port Willunga areas as well as isolated records from elsewhere in the hills and Fleurieu. Requires large remnants (>50 ha) with open areas, young eucalypts or shrubs for nesting and numerous perches for foraging (DCCEEW 2023c).	**N/A**	**Unlikely** – No recent records and suitable habitat in the Project Area is heavily degraded.
Melithreptus gularis gularis	Black-chinned Honeyeater		V	2	2022	The Black-chinned Honeyeater is found in the upper levels of open eucalypt forests	**P, F, w**	**Highly Likely** – Very recent and nearby

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
						and woodlands dominated by box and ironbark eucalypts. It is often found along waterways and is occasionally seen in gardens and street trees (Birdlife Australia 2023).		records as well as some suitable habitat in the Project Area including for perching and foraging.
Microeca fascinans fascinans	Jacky Winter		R	2	2007	Widely distributed throughout mainland Australia. Prefer open woodland (Eucalypt and mallee) with an open shrub layer and bare ground. Often seen in farmland and parks (Morcombe, 2021).	**P, w**	**Likely** – Recent records and some suitable perching and open foraging habitat in the Project Area.
Myiagra inquieta	Restless Flycatcher		R	2	2015	Found throughout northern and eastern mainland Australia, as well as in south-western Australia. The Restless Flycatcher is found in open forests and woodlands and is frequently seen in farmland (Birdlife Australia 2023).	**N/A**	**Likely** – Recent records and some suitable open woodland and farmland habitat in the Project Area.
Neophema chrysostoma	Blue-winged Parrot	VU	V	1	Known	Blue-winged parrots inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones (DCCEEW 2023d).	**P, H, w**	**Unlikely** – No recent records and suitable habitat in the Project Area is heavily degraded.
Neophema elegans elegans	Elegant Parrot		R	2	2018	Wide variety of habitats, including grasslands, shrublands, mallee, woodlands	**P, H, w**	**Likely** – Recent records and some suitable

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
						and thickets, bluebush plains, heathlands, saltmarsh and farmland (Pizzey and Knight 2021).		habitat in the Project Area.
Numenius madagascariensis	Eastern Curlew	CE Mi (W)	E	1	Known	Coastal shorebird most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. (Birdlife Australia, 2023).	**N/A**	**Unlikely** – No recent records or coastal habitat is present in the Project Area.
Oxyura australis	Blue-billed Duck		R	2	2020	Prefers large dams and lakes and well-vegetated freshwater swamps (Pizzey and Knight 2021).	**N/A**	**Unlikely** – Despite recent records, no deep water suitable for this species is present in the Project Area.
Pachyptila turtur subantarctica	Fairy Prion	VU		1	Known	Prefers offshore areas and breeds primarily occurs on Macquarie Island and subantarctic islands outside of Australia. (Pizzey and Knight 2021).	**N/A**	**Unlikely** – No recent records or suitable habitat is present in the Project Area.
Pandion haliaetus cristatus	Eastern Osprey	Mi (W)	E	1, 2	Known / 2004	Prefers coastal and terrestrial wetlands and require a range of habitats from coastal cliffs, estuaries, mangroves and large lakes for foraging (DAWE 2020a).	**N/A**	**Possible** – Recent records and some suitable habitat in the Project Area. Likely to occur as flyover only.
Parvipsitta pusilla	Little Lorikeet		E	2	2015	Found in forests, woodlands and large trees in open country. Sometimes found	**P, H, F, w/s**	**Likely** – Recent records and suitable habitat in

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
						along timbered watercourses and in urban areas where it prefers large street trees (Pizzey and Knight 2021).		the Project Area for perching, feeding, and nesting (hollows).
Petroica phoenicea	Flame Robin		V	2	2000	Endemic to south-eastern Australia, and ranges from near the Queensland border to southeast South Australia and also in Tasmania. Breeds in eucalypt forests and woodlands, with access to open areas, such as subalpine woodland, recently burnt forest, recently logged forest and pine plantations (OEH 2023).	**N/A**	**Possible** – Records over 20 years old, though some suitable habitat occurs in the Project Area.
Plegadis falcinellus	Glossy Ibis		R	2	2011	Generally located on Eyre Peninsula in South Australia. Preferred habitat for foraging and breeding are freshwater marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation (Marchant and Higgins 1990).	**N/A**	**Likely**– Recent records and some suitable habitat meadow foraging areas adjacent freshwater river in the Project Area.
Rostratula australis	Australian Painted Snipe	EN	E	1	Likely	Generally, inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops,	**N/A**	**Unlikely** – No recent records despite some suitable habitat in the Project Area.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
						sewage farms and bore drains (DCCEEW 2022).		
Spatula rhynchotis	Australasian Shoveler		R	2	2020	Prefers fresh and saline lakes and well-vegetated freshwater wetlands. Also occurs in coastal inlets, floodwaters and sewage ponds (Morcombe 2021).	**N/A**	**Unlikely** – Despite recent records, no deep water suitable for this species is present in the Project Area.
Stagonopleura guttata	Diamond Firetail	VU	V	1	Known	Endemic to Australia, occurring mainly on the inland slopes of the Great Dividing Range and in the AMLR/Eyre Peninsula region of SA. Reside in a wide range of Eucalypt dominated vegetation communities that have a grassy understorey, including woodland, forest and mallee. Most occur on the inland slopes of the Great Dividing Ranges, with only small pockets near the coast (DCCEEW 2023e).	**P, N, w**	**Unlikely** – No recent records despite some suitable habitat in the Project Area.
Sternula nereis nereis	Australian Fairy Tern	VU	E	1, 2	Known / 2003	Occupies coastal beaches, inshore and offshore islands, sheltered inlets, sewage farms, harbours, estuaries and lagoons (DAWE 2020b).	**N/A**	**Unlikely** – Despite recent records, there is no suitable coastal habitat in the Project Area.
Stictonetta naevosa	Freckled Duck		V	2	2020	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi,	**N/A**	**Unlikely** – Despite recent records, no deep

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
						Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds (Birds in Backyards 2023).		water suitable for this species is present in the Project Area.
Thalasseus bergii	Greater Crested Tern	Mi (W)		1	Known	Prefers coastal areas, offshore waters, beaches, bays, tidal rivers and salt swamps (Pizzey and Knight 2021).	**N/A**	**Unlikely** – No recent records or suitable habitat is present in the Project Area.
Thinornis cucullatus cucullatus	Eastern Hooded Plover	VU	V	1, 2	Known / 2020	Sandy beaches of ocean estuaries, coastal lakes and inland salt lakes. Nesting on beach above high-tide mark (Morcombe 2021).	**N/A**	**Unlikely** – Despite recent records, there is no suitable coastal or sandy habitat present in the Project Area.
Tringa nebularia	Common Greenshank	EN Mi (W)		1	Likely	Found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass (Pizzey and Knight 2021).	**N/A**	**Unlikely** – No recent records or suitable habitat is present in the Project Area.

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
Turnix varius varius	Painted Buttonquail		R	2	2012	Temperate and eastern tropical forests and woodlands form the habitats of this species. They appear to prefer closed canopies with some understory and deep leaf litter on the ground (Birds in Backyards 2023).	**N/A**	**Unlikely** – Despite recent records, suitable habitat in the Project Area is heavily degraded and lacking an intact native understorey.
Zanda funerea whiteae	Yellow-tailed Black Cockatoo		V	2	2020	Eucalyptus forests and woodlands. Plantations of Eucalyptus and introduced *Pinus* sp. (Pizzey and Knight 2021).	**P, H, w**	**Known** – Several individuals were observed flying over and utilising scattered trees in and adjacent to the Project Area.
Zapornia tabuensis	Spotless Crake		R	2	2020	Mostly found in well vegetated freshwater wetlands with rushes and reeds. Will also frequent muddy areas, reedbeds or wetlands (Wilson and Bignall 2009).	**N/A**	**Possible** – Very recent records and some suitable habitat adjacent the Hindmarsh River in the Project Area.
MAMMALIA (MAMMALS)								
Pteropus poliocephalus	Grey-headed Flying-fox	VU	R	2	2019	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	**F, s**	**Highly Likely** – Recent records and suitable foraging habitat (*Eucalyptus* spp.) are

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
						fruit or a rich source of nectar (DAWE 2021).		present in high numbers in the Project Area. The Project Area is not within 20km of nearest camp and is therefore not considered critical habitat for this species.
Rattus lutreolus	Swamp Rat		R	2	2017	Found in thick vegetation along watercourses and in swamps. Also found in coastal heath, dune scrub grasslands and sedgelands where they form tunnels through vegetation to facilitate movement (Fox and Monamy 2007).	**N/A**	**Known** – Tunnels were present in many areas adjacent the Hindmarsh River in the Project Area.
Trichosurus vulpecula	Common Brushtail Possum		R	2	2000	Utilises various woodland habitats and suburban environs. Feeds on flowers, fruit, buds and leaves of native vegetation. Requires hollows (within dead or alive tree) or on ground for daytime nesting (Strahan & van Dyck 2008).	**H, F, w**	**Possible** –Records over 20 years old, however, suitable habitat (hollow-bearing trees, food resources) occurs in the Project Area.
REPTILIA (REPTILES)								
Egernia cunninghami	Cunningham's Skink		E	2	2011	Occurs in forests and rock outcrops where they bask on top of outcrops and will scurry between rock ledges to shelter (Cogger 2014).	**N/A**	**Unlikely** – Despite recent records, there is minimal rocky outcrops and other suitable

Scientific Name	Common Name	EPBC Act	NPW Act	Data source	PMST likelihood/ Year of last record	Species known habitat preferences	Scattered tree using species	Likelihood of use for habitat – Comments
								habitat in the Project Area.
Eulamprus heatwolei	Yellow-bellied Water Skink		V	2	2019	Prefers wet and dry forests, bogs and open woodlands and heathlands. Also found near creeks, rivers and swamp margins (Sumner 2016).	**N/A**	**Likely** – Recent records and some suitable habitat adjacent the Hindmarsh River is present in the Project Area.
Varanus rosenbergi	Heath Goanna		V	2	2014	Habitat across southern Australia includes coastal heaths, humid woodlands, and wet and dry sclerophyll forests. Forms nests in termite mounds and require large areas of intact habitat (Cogger 2014).	**N/A**	**Likely** – Recent records and some suitable habitat (including termite mounds) are present in the Project Area.

Conservation status:

Aus: Australia (EPBC Act). SA: South Australia (NPW Act). Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. Mi: listed as migratory under the EPBC Act. Mi (W): listed as a Migratory Wetland species under the EPBC Act. Mi (Ma): listed as a Migratory Marine species under the EPBC Act.

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

Scattered tree using species:

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.

Source of Information:

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

2: BDBSA (DEW 2023b) – 5 km buffer applied to Project Area;

Abbreviations within Distribution and preferred habitat:

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

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