Native Vegetation Clearance

Buckland Park Intake Pipeline

Data Report

Clearance under the *Native Vegetation Regulations 2017*

16 March 2022

Prepared by H. Merigot – EBS Ecology (NVC Accredited Consultant)

Native Vegetation Clearance Buckland Park Intake Pipeline Data Report

16 March 2022

Version 3

Prepared by for Walker Buckland Park Developments Pty Ltd

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Cover photograph: Samphire and mangrove vegetation within the Project Area.

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Glossary and abbreviations

BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia (maintained by DEW)
BDC	Buckland Dry Creek
DAWE	Department of Agriculture, Water and the Environment (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*
ha	Hectare(s)
IBRA	Interim Biogeographical Regionalisation of Australia
km	Kilometre(s)
NatureMaps	Initiative of DEW that provides a common access point to maps and geographic information about South Australia's natural resources in an interactive online mapping format
NPW Act	*National Parks and Wildlife Act 1972*
NV Act	*Native Vegetation Act 1991*
NVC	Native Vegetation Council
PMST	Protected Matters Search Tool (under the EPBC Act; maintained by DAWE)
Project	Buckland Park Pipeline
Project Area	Area of proposed pipeline from the intersection of Beagle Hole Road and Park Road to west of Legoe Road
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
TEC	Threatened Ecological Community
var.	Variety (a taxonomic rank below that of species and subspecies, but above that of form)

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1. Application information

Table 1. Application details.

Applicant:	Walker Buckland Park Developments Pty Ltd		
Key contact:	Patrick Mitchell E: patrick.mitchell@walkercorp.com.au M: 0420 472 293		
Landowner:	Lot 624 (CR 5757 / 317) - Crown Land (Melanie Carson – A/GM Crown Land Branch, DEW – 0438 050 333) Legoe Road reserve – City of Playford (Derek Langman – Senior Manager – Development Services – 0438 859 867 – Dlangman@playford.sa.gov.au)		
Site Address:	Lot 624 (CR 5757 / 317) Buckland Park, Hundred of Port Adelaide Legoe Road, Buckland Park, Hundred of Port Adelaide		
Local Government Area:	City of Playford	**Hundred:**	Port Adelaide
Title ID:	Lot 624 (CR 5757 / 317); and Legoe Road reserve	**Parcel ID**	Lot 624 (CR 5757 / 317); and Legoe Road reserve

Table 2. Summary of the proposed clearance.

Purpose of clearance:	Clearance is required for the construction of an intake pipeline that transports saline water to the Riverlea housing development located at Riverlea Park (the Project). The pipeline Project aims to transport saline water from Chapman Creek, Buckland Park as part of the revised stormwater and floodwater mitigation strategy. This clearance application relates only to the intake pipeline from Chapman Creek to the corner of Legoe Road and Beagle Hole Road.
Native Vegetation Regulation:	Regulation 12, Schedule 1; clause 35, Residential Subdivision
Description of the vegetation under application:	6 scattered trees and 1.25 ha of native vegetation. The scattered trees are all of one species; *Eucalyptus camaldulensis ssp. Camaldulensis*.
Total proposed clearance – area (ha) and/or number of trees:	6 scattered trees and 1.25 ha of native vegetation are proposed to be cleared.
Level of clearance:	Level 4
Overlay (Planning and Design Code):	Native Vegetation Overlay and State Significant Overlay

Map of proposed clearance area:	
Mitigation Hierarchy:	***Avoidance –*** Several options to extract water from other areas within the vicinity of the proposed Project Area were considered. Walker Buckland Park Developments Pty Ltd has previously explored the potential to source seawater from the existing Buckland Dry Creek (BDC) intake, but mutually beneficial commercial arrangements did not eventuate. The land and adjacent salt lake are owned and managed by several different stakeholders whereby a commercial arrangement would not be palatable for the Walker Buckland Park Developments Pty Ltd. Furthermore, avoidance of the existing prescribed watercourse area is essential and as such the current site is proposed outside of this area. Surrounding areas were also considered for sea water extraction by Walker Buckland Park Developments Pty Ltd. The nearby Thompson Creek roughly two kilometres southwest of the chosen location was considered but deemed unsuitable. This route would be considerably longer, more expensive and result in significantly more vegetation disturbance. Further, the proximity of this site to the Bolivar outfall would lead to a lower quality of intake sea water and leave infrastructure at greater exposure to and risk of damage due to significant storm events. The current site presently sits within the Adelaide Dolphin Sanctuary defined area. If the intake facility was to be located further downstream of Chapman Creek to the southwest, other areas of significance could be impacted including the Adelaide International Bird Sanctuary National Park. Other potential site locations further north were also considered but dismissed due to the substantial impact on native vegetation and other environmentally significant areas. The chosen site minimises and or has the most negligible impact on current BDC operations adhering to the client's current licensing agreement. Walker Buckland Park Developments Pty Ltd have a temporary licence whereby it is required that any activities must not interfere with the operations of BDC. As such, the selected

	site balances the requirement to avoid BDC operations whilst gaining access to a supply of reliable, quality seawater. Additionally, public access at the chosen site is minimal decreasing the potential for vandalism and does not impact the public visual amenity. ***Minimization –*** To minimise clearance, where possible, the pipeline is to follow existing land use activities and tracks via the most direct and shortest route making the most of existing levy banks and the already disturbed environment. The chosen site at Chapman Creek is subject to tidal influences from the St Vincent Gulf constantly flushing and replenishing the source of sea water at the intake. This provides good water quality and bathymetry mapping undertaken by the client indicate the chosen intake area has a suitable water column and depth for reliable extraction. The pipeline at the intake will enter at 90 degrees to further minimise impacts at Chapman Creek. ***Rehabilitation or restoration -*** The Project Area is unlikely to be rehabilitated or restored due to access and maintenance constraints.
SEB Offset proposal	Payment of **$76,314.50** which includes an admin fee of **$3,978.72** (including GST).

2. Purpose of clearance

2.1. Description

EBS Ecology (EBS) was engaged by Walker Buckland Park Developments Pty Ltd (Walker) to undertake a native vegetation assessment for vegetation clearance relating to the construction of an intake pipeline to transport saline water for the revised stormwater and floodwater mitigation strategy for the Riverlea housing development located at Riverlea Park (the Project).

The pipeline Project aims to transport saline water from Chapman Creek, Buckland Park, to Riverlea Park as part of the revised stormwater and floodwater mitigation strategy. This clearance application relates only to the intake pipeline from Chapman Creek to the corner of Legoe Road and Beagle Hole Road.

Objectives

The objectives of the native vegetation assessment were to:

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

2.2. Background

Current and surrounding land use

The vegetation within the Project Area and surrounds consists of floodplains with *Eucalyptus camaldulensis* trees and lignin understorey, samphire vegetation and mangroves. The surrounding area also contains salt water lakes for the mining of salt to the south.

Administrative boundaries

The Project Area occurs within the Playford City Council area, the Green Adelaide Landscapes Region, the Port Adelaide Hundred and the Adelaide County.

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 Eyre Yorke Block IBRA Bioregion, the St Vincent IBRA Subregion and the Mallala and Parham IBRA Environmental Associations.

Approximately 8% (87,402 ha) of the St Vincent IBRA Subregion, Approximately 3% (5874 ha) of the Mallala IBRA Environmental Association and approximately 44% (16432 ha) of the Parham IBRA Environmental Association is mapped as remnant vegetation. Of this, 5% (4,732 ha), 2% (5874 ha) and 7% (1,076 ha) is formerly conserved and protected, respectively.

2.3. General location map

Figure 1. Location of the Buckland Park Project Area.

2.4. Details of the proposal

The Project Area is located roughly 2 km southeast of Port Gawler. The proposed clearance area for the pipeline includes the removal of 6 scattered trees and 1.25 ha of native vegetation. Walker Buckland Park Developments Pty Ltd are planning to construct an intake pipeline to transport saline water to the stormwater runoff area for the Riverlea Estate housing development located at Buckland Park. The proposed development designs for The Project Area can be seen in Figure 2 and Appendix 1. The proposed pipeline consists of two pipes 700 millimetres (mm) in diameter and will be placed underground along the entirety of the Project Area.

Figure 2. Proposed design plans for the Riverlea pipeline (supplied by applicant 7/03/2022).

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

Native Vegetation Act 1991 **(NV Act)** – no previous approvals associated with the Project.

Environment Protection and Biodiversity Conservation Act 1999 **(EPBC Act)** – EPBC approval is not required for this Project.

Planning, Development and Infrastructure Act 2016 **(DPI Act) –** Development approval is required for this Project.

National Parks and Wildlife Act 1972 **(NPW Act) –** EBS has the required flora collection permit (Permit number: K25613-20).

Landscape South Australia Act 1991 – A Water Affecting Permit would usually be required for the work associated with this Project. However, as the Project is seeking development approval a Water Affecting Permit is not required. A permit to transport declared weeds on a public road may be required for this Project.

Aboriginal Heritage Act 1988 – Approval will be required if any sites, objects or remains are uncovered during the works.

2.6. Native Vegetation Regulation

This Project is considered to be permitted under the following regulation:

Regulation 12, Schedule 1; clause 34 – Infrastructure

Infrastructure refers to —

(a) the infrastructure, equipment, structures, works and other facilities used in or in connection with the supply of water or electricity, gas or other forms of energy, the provision of telecommunications, or the drainage, removal or treatment of waste water or sewage; or

(b) roads and their supporting structures or works; or

(c) ports, wharfs, jetties, railways, trams and busways

2.7. Development Application information

The client is currently in the processing of applying for development approval and has made a submission to the Department for Infrastructure and Transport (DIT) seeking State agency support to lodge a Crown development application following Section 131 of the *Planning, Development and Infrastructure Act 2016*. Once that submission is approved, a Crown development application will be made.

3. Method

3.1. Flora assessment

The flora assessment was undertaken by NVC Accredited EBS Consultant H. Merigot and Ecologist E. West on 4 November 2021 in accordance with the Bushland Assessment Method (BAM) (NVC, 2020a) and Scattered Tree Assessment Method (STAM) (NVC, 2020b).

3.1.1. Bushland Assessment Method

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

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

The Conservation Significance Scores were calculated from direct observations of flora and direct and historical observations of fauna species of conservation significance. All fauna identified as known to occur in the PMST, and fauna with BDBSA records since 1995 and with a spatial reliability of less than 1 km, within 5 km of the Project Area, were included in the BAM scoresheets. Species determined as unlikely to occur within the Project Area will be removed by the Native Vegetation Branch if the finding is supported. Marine and/or wetland species were omitted from the scoresheets given the Project Area is terrestrial.

3.1.2. Scattered Tree Assessment Method

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

- Individual scattered trees (i.e. canopy does not overlap). The spatial distribution of trees may vary from approaching what would be considered their original distribution (pre-European) through to single isolated trees in the middle of a paddock; or
- Dead trees (when a dead tree is considered native vegetation); or
- Clumps of trees (contiguous overlapping canopies) if the clump is small (approximately <0.1 ha); and
- For both scattered trees and clumps:
    - The ground layer comprises wholly or largely of introduced species;
    - Some scattered colonising native species may be present, but represent <5% of the ground cover; and
    - The area around the trees consists of introduced pasture or crops.

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

The numbers of uncommon and threatened scattered tree using fauna species entered into the Scattered Tree Scoresheet were calculated by cross-referring the BDBSA data extract (see Section 3.2.2) and the lists of scattered tree

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

3.2. Desktop assessment

To determine the potential for any threatened flora and fauna species and Threatened Ecological Communities (TECs) (both Commonwealth and State listed) to occur within the Project Area, a desktop assessment. This was undertaken using a 5 km buffer in database searches: Protected Matters Search Tool (PMST) and Biological Database of South Australia (BDBSA).

3.2.1. PMST report

A Protected Matters Search Tool (PMST) report was generated on 9 December 2021 to identify nationally threatened flora and fauna, migratory fauna and TECs under the EPBC Act relevant to the Project Area (DAWE 2020). Only species and TECs identified in the PMST report that are likely or known to occur within the Search Area were assessed for their likelihood of occurrence within the Project Area.

3.2.2. BDBSA data extract

A data extract from the Biological Database of South Australia (BDBSA) was obtained from 6 December 2021 to identify flora and fauna species that have been recorded within 5 km of the Project Area (DEW 2021). This data has been sourced from the South Australian Department for Environment and Water Biological Database of SA, Recordset number DEWNRBDBSA211207-1. The BDBSA is comprised of an integrated collection of species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia and the Australasian Wader Study Group, which meet the Department for Environment and Water's (DEW) standards for data quality, integrity and maintenance. Only species with records since 1995 and a spatial reliability of less than 1 km were assessed for their likelihood of occurrence.

3.2.3. Likelihood of occurrence

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

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

Likelihood	Criteria
Highly Likely/Known	Recorded in the last 10 years, the species does not have highly specific niche requirements, the habitat is present and falls within the known range of the species distribution or; The species was recorded as part of field surveys.
Likely	Recorded within the previous 20 years, the area falls within the known distribution of the species and the area provides habitat or feeding resources for the species.
Possible	Recorded within the previous 20 years, the area falls inside the known distribution of the species, but the area provides limited habitat or feeding resources for the species. Recorded within 20 -40 years, survey effort is considered adequate, habitat and feeding resources present, and species of similar habitat needs have been recorded in the area.

Unlikely	Recorded within the previous 20 years, but the area provides no habitat or feeding resources for the species, including perching, roosting or nesting opportunities, corridor for movement or shelter. Recorded within 20 -40 years; however, suitable habitat does not occur, and species of similar habitat requirements have not been recorded in the area. No records despite adequate survey effort.

3.3. Fauna Assessment

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

3.4. Limitations

The ecological assessment was made of the extent of the Project Area as known at the time of writing this report. No allowance has been made for any future changes in design that might increase or change the area of the impact footprint. The findings and conclusions expressed by EBS are based solely upon information in existence at the time of the assessment.

Threatened species records include only those that were returned based on the database searches at the time of the assessment and may include records that have not been adequately verified or may not include all species that could occur in the Project Area. Furthermore, limitations exist with the PMST and BDBSA data collection methods and so the type of presence that can be determined from the data is indicated in general terms. Consider the following limitations:

- BDBSA only includes verified flora and fauna records submitted to Department for Environment and Water (DEW) or partner organisation, and it is recognised that knowledge is often poorly captured, and the presence of species may not be adequately represented by database records.
- Records were filtered to a spatial reliability of less than 1 km and records since 1995, however spatial reliability of BDBSA data ranges from 0-5 to over 100 km, and therefore additional species may occur, but have been discounted due to unreliable data collection.
- DEW gives no warranty that the data is accurate or fit for any particular purpose of the user or any other person to whom the user discloses the information.

Fauna records were limited to opportunistic observations at the time of the survey, and may not have been undertaken within the optimal survey time for species of interest (i.e. dawn / dusk for birds). Therefore, species additional to those recorded during the field survey are likely to occur within the Project Area, and the likelihood of occurrence of species identified in the desktop assessment is based on vegetation and habitat features assessed in the vegetation assessment.

4. Assessment outcomes

4.1. Vegetation assessment

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

The vegetation at the location of the proposed intake infrastructure consists of samphire and mangroves on the edge of Chapman Creek. This area contains minimal weed species with the majority of the introduced plants occurring along the track adjacent to the salt lakes. The vegetation present along the eastern end of the proposed pipeline locations consists of lignum (*Duma florulenta*) and emergent *Eucalyptus camaldulensis* over an introduced grass understorey. Surrounding the pipeline to the east there are dead or poor health *Eucalyptus camaldulensis* (River Red Gum) trees on the plains. In some areas to the east, there was a high presence of *Lycium ferocissimum* (African Boxthorn). Flora observed during the field survey are listed in Appendix 2.

Fifteen fauna species were observed within the Project Area during the field survey. Fauna observed during the field survey are listed in Appendix 3. Details of the vegetation associations/scattered trees proposed to be impacted

4.1.2. Vegetation associations

Four native vegetation associations (VA) were mapped as a result of the field survey conducted at the site. The summary of the Vegetation Associations is presented in Table 4 to Table 7.

- **Vegetation Association A1**: *Tecticornia sp.* shrubland over *Disphyma crassifolium ssp. Clavellatum*
- **Vegetation Association A2**: Mangroves (*Avicennia marina ssp. marina*)
- **Vegetation Association A3**: *Duma florulenta* Shrubland over *Tecticornia sp.* With emergent *Eucalyptus camaldulensis ssp. camaldulensis*
- **Vegetation Association A4**: *Duma florulenta* Shrubland over *Tecticornia sp.* riparian system

Table 4. Summary of VA A1.

<table>
<tr><td>Vegetation Association</td><td colspan="5">Vegetation Association A1: Tecticornia sp. shrubland over Disphyma crassifolium ssp. clavellatum</td></tr>
<tr><td colspan="6">  </td></tr>
<tr><td>General description</td><td colspan="5">Vegetation association dominated by Tecticornia sp. with some weed intrusions along the existing track.</td></tr>
<tr><td>Threatened species or community</td><td colspan="5">EPBC Act
- Acanthiza iredalei rosinae (Slender-billed Thornbill) (Com: VU; SA: V)

NPW Act
- Egretta garzetta nigripes (Little Egret) (SA: R) (Observed adjacent to Project Area)
- Falco peregrinus macropus (Peregrine Falcon) (SA: R)
- Haliaeetus leucogaster (White-bellied Sea Eagle) (SA: E)
- Hieraaetus morphnoides (Little Eagle) (SA: V)
- Neophema elegans elegans (Elegant Parrot) (SA: R)
- Pandion haliaetus cristatus (Eastern Osprey) (SA: E)

This vegetation association is where the Subtropical and Temperate Coastal Saltmarsh TEC occurs (Com: VU).

Additionally, thirty-two threatened fauna species which included migratory and wetland birds were assessed as possible to occur in the Project Area due to the presence of floodplains, mudflats, samphire vegetation and mangroves within and surrounding the Project Area.</td></tr>
<tr><td>Landscape context score</td><td>1.19</td><td>Vegetation Condition Score</td><td>54.18</td><td>Conservation significance score</td><td>1.45</td></tr>
<tr><td>Unit biodiversity Score</td><td>93.49</td><td>Area (ha)</td><td>0.42</td><td>Total biodiversity Score</td><td>39.52</td></tr>
</table>

Table 5. Summary of VA A2.

<table>
<tr><td>Vegetation Association</td><td colspan="5">Vegetation Association A2: Mangroves (Avicennia marina ssp. marina)</td></tr>
<tr><td colspan="6">  </td></tr>
<tr><td>General description</td><td colspan="5">Vegetation association consists entirely of Avicennia marina ssp. marina with no weeds present</td></tr>
<tr><td>Threatened species or community</td><td colspan="5">EPBC Act
- Acanthiza iredalei rosinae (Slender-billed Thornbill) (Com: VU; SA: V)

NPW Act
- Egretta garzetta nigripes (Little Egret) (SA: R) (Observed adjacent to Project Area)
- Falco peregrinus macropus (Peregrine Falcon) (SA: R)
- Haliaeetus leucogaster (White-bellied Sea Eagle) (SA: E)
- Hieraaetus morphnoides (Little Eagle) (SA: V)
- Neophema elegans elegans (Elegant Parrot) (SA: R)
- Pandion haliaetus cristatus (Eastern Osprey) (SA: E)

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<tr><td>Landscape context score</td><td>1.19</td><td>Vegetation Condition Score</td><td>64.00</td><td>Conservation significance score</td><td>1.10</td></tr>
<tr><td>Unit biodiversity Score</td><td>83.78</td><td>Area (ha)</td><td>0.14</td><td>Total biodiversity Score</td><td>11.42</td></tr>
</table>

Table 6. Summary of VA A3.

<table>
<tr><td>Vegetation Association</td><td colspan="5">Vegetation Association A3 (a & b): Duma florulenta Shrubland over Tecticornia sp. With emergent Eucalyptus camaldulensis ssp. camaldulensis</td></tr>
<tr><td colspan="6">  </td></tr>
<tr><td>General description</td><td colspan="5">Vegetation association consists predominantly of Lignum (Duma florulenta) with emergent Eucalyptus camaldulensis ssp. camaldulensis and an understorey of introduced grass species.</td></tr>
<tr><td>Threatened species or community</td><td colspan="5">EPBC Act
- Acanthiza iredalei rosinae (Slender-billed Thornbill) (Com: VU; SA: V)

NPW Act
- Egretta garzetta nigripes (Little Egret) (SA: R) (Observed adjacent to Project Area)
- Falco peregrinus macropus (Peregrine Falcon) (SA: R)
- Haliaeetus leucogaster (White-bellied Sea Eagle) (SA: E)
- Hieraaetus morphnoides (Little Eagle) (SA: V)
- Neophema elegans elegans (Elegant Parrot) (SA: R)
- Pandion haliaetus cristatus (Eastern Osprey) (SA: E)

Additionally, thirty-two threatened fauna species which included migratory and wetland birds were assessed as possible to occur in the Project Area due to the presence of floodplains, mudflats, samphire vegetation and mangroves within and surrounding the Project Area.</td></tr>
<tr><td>Landscape context score</td><td>a: 1.20
b: 1.19</td><td>Vegetation Condition Score</td><td>a: 59.83
b: 60.78</td><td>Conservation significance score</td><td>a: 1.10
b: 1.10</td></tr>
<tr><td>Unit biodiversity Score</td><td>a: 78.97
b: 79.57</td><td>Area (ha)</td><td>a: 0.194
b: 0.145</td><td>Total biodiversity Score</td><td>a: 15.31
b: 11.53</td></tr>
</table>

Table 7. Summary of VA A4.

<table>
<tr><td>Vegetation Association</td><td colspan="5">Vegetation Association A4: Duma florulenta Shrubland over Tecticornia sp. riparian system</td></tr>
<tr><td colspan="6">  </td></tr>
<tr><td>General description</td><td colspan="5">Vegetation association consists predominantly of Lignum (Duma florulenta) with some introduced species along the channel.</td></tr>
<tr><td>Threatened species or community</td><td colspan="5">EPBC Act
- Acanthiza iredalei rosinae (Slender-billed Thornbill) (Com: VU; SA: V)

NPW Act
- Egretta garzetta nigripes (Little Egret) (SA: R) (Observed adjacent to Project Area)
- Falco peregrinus macropus (Peregrine Falcon) (SA: R)
- Haliaeetus leucogaster (White-bellied Sea Eagle) (SA: E)
- Hieraaetus morphnoides (Little Eagle) (SA: V)
- Neophema elegans elegans (Elegant Parrot) (SA: R)
- Pandion haliaetus cristatus (Eastern Osprey) (SA: E)

Additionally, thirty-two threatened fauna species which included migratory and wetland birds were assessed as possible to occur in the Project Area due to the presence of floodplains, mudflats, samphire vegetation and mangroves within and surrounding the Project Area.</td></tr>
<tr><td>Landscape context score</td><td>1.18</td><td>Vegetation Condition Score</td><td>40.19</td><td>Conservation significance score</td><td>1.10</td></tr>
<tr><td>Unit biodiversity Score</td><td>52.17</td><td>Area (ha)</td><td>0.35</td><td>Total biodiversity Score</td><td>18.49</td></tr>
</table>

4.1.3. Scattered trees

Six individual trees in the Project Area are proposed to be cleared (Table 8 to Table 12). All of these trees are of the species *Eucalyptus camaldulensis ssp. Camaldulensis*.

Table 8. Scattered tree within the Project Area - Tree 1.

Tree ID – Tree 1 **Tree species** – *Eucalyptus camaldulensis ssp. camaldulensis* **Number of trees** – 1 **Height (m)** – 18 **Hollows** – 3 small, 3 medium **Diameter (cm)** – 350 **Canopy dieback (%)** – 50 **Total Biodiversity Score** – 13.08	
This mature tree is in poor health. The following species may use this scattered tree for perching: *Falco peregrinus macropus* (Peregrine Falcon), *Haliaeetus leucogaster* (White-bellied Sea Eagle), *Hieraaetus morphnoides* (Little Eagle), *Pandion haliaetus cristatus* (Eastern Osprey). This tree may provide nesting habitat for *Neophema elegans elegans* (Elegant Parrot).	

Table 9. Scattered tree within the Project Area - Tree 2.

Tree ID – Tree 2 **Tree species** – *Eucalyptus camaldulensis ssp. camaldulensis* **Number of trees** – 1 **Height (m)** – 18 **Hollows** – 0 **Diameter (cm)** – 280 **Canopy dieback (%)** – 90 **Total Biodiversity Score** – 6.86	
This mature tree is in very poor health. The following species may use this scattered tree for perching: *Falco peregrinus macropus* (Peregrine Falcon), *Haliaeetus leucogaster* (White-bellied Sea Eagle), *Hieraaetus morphnoides* (Little Eagle), *Pandion haliaetus cristatus* (Eastern Osprey) (SA: E).	

Table 10. Scattered tree within the Project Area - Tree 3.

Tree ID – Tree 3 **Tree species** – *Eucalyptus camaldulensis ssp. camaldulensis* **Number of trees** – 1 **Height (m)** – 20 **Hollows** – 0 **Diameter (cm)** – 180 **Canopy dieback (%)** – 20 **Total Biodiversity Score** – 20	
This mature tree is in good health. The following species may use this scattered tree for perching: *Falco peregrinus macropus* (Peregrine Falcon), *Haliaeetus leucogaster* (White-bellied Sea Eagle), *Hieraaetus morphnoides* (Little Eagle), *Pandion haliaetus cristatus* (Eastern Osprey) (SA: E).	

Table 11. Scattered tree within the Project Area - Tree 4

Tree ID – Tree 4 **Tree species** – *Eucalyptus camaldulensis ssp. camaldulensis* **Number of trees** – 1 **Height (m)** – 7 **Hollows** – 0 **Diameter (cm)** – 67 **Canopy dieback (%)** – 80 **Total Biodiversity Score** – 0.40	
This mature tree is in very poor health. The following species may use this scattered tree for perching: *Falco peregrinus macropus* (Peregrine Falcon), *Haliaeetus leucogaster* (White-bellied Sea Eagle), *Hieraaetus morphnoides* (Little Eagle), *Pandion haliaetus cristatus* (Eastern Osprey) (SA: E).	

Table 12. Scattered tree within the Project Area - Tree 5 (group of 2).

Tree ID – Tree 5 **Tree species** – *Eucalyptus camaldulensis ssp. camaldulensis* **Number of trees** – 2 **Height (m)** – 10 **Hollows** – 0 **Diameter (cm)** – 66 **Canopy dieback (%)** – 95 **Total Biodiversity Score** – 0.87 (0.41 per tree)	
This mature tree is in very poor health. The following species may use this scattered tree for perching: *Falco peregrinus macropus* (Peregrine Falcon), *Haliaeetus leucogaster* (White-bellied Sea Eagle), *Hieraaetus morphnoides* (Little Eagle), *Pandion haliaetus cristatus* (Eastern Osprey) (SA: E).	

4.1.4. Site maps showing areas of proposed impact

Detailed maps of the proposed vegetation removal within the impact area are provided in Figure 3 to Figure 7.

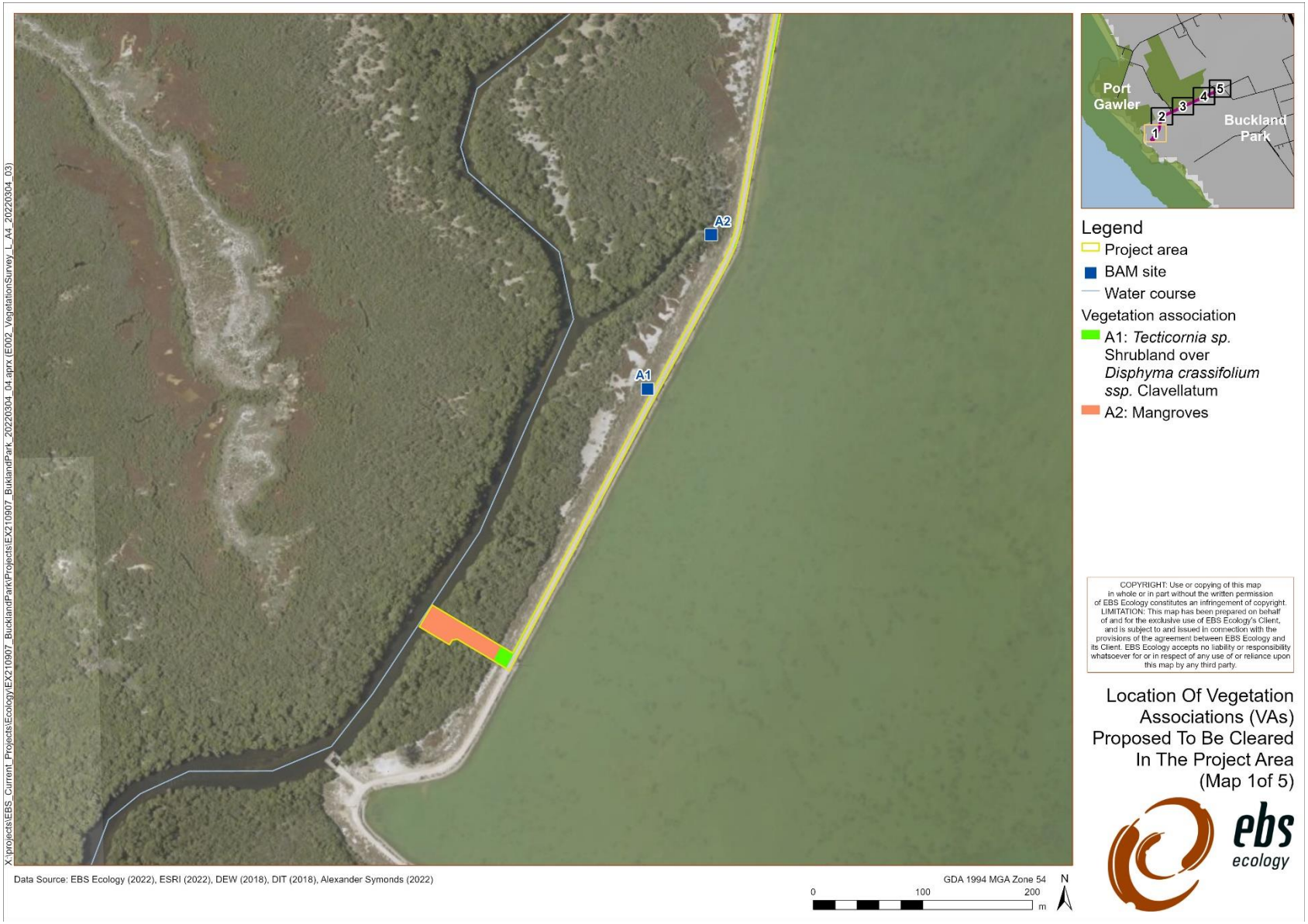

Figure 3. Location of Vegetation associations (VAs) proposed to be cleared in the Project Area (Map 1 of 5)

Figure 4. Location of Vegetation associations (VAs) proposed to be cleared in the Project Area (Map 2 of 5)

Figure 5. Location of Vegetation associations (VAs) proposed to be cleared in the Project Area (Map 3 of 5)

Figure 6. Location of Vegetation associations (VAs) and scattered trees proposed to be cleared in the Project Area (Map 4 of 5)

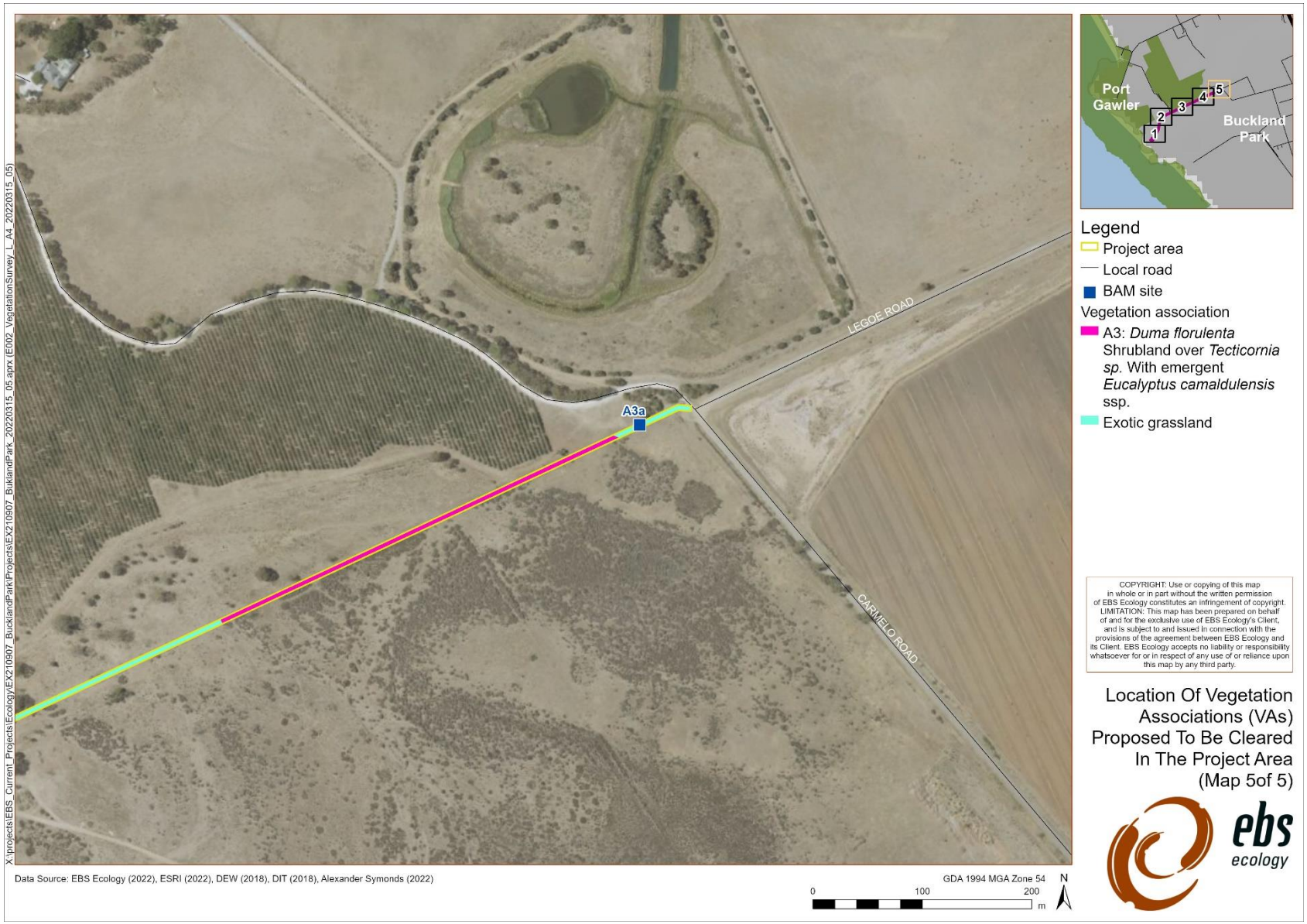

Figure 7. Location of Vegetation associations (VAs) proposed to be cleared in the Project Area (Map 5 of 5)

4.2. Threatened species assessment

4.2.1. Matters of National Environmental Significance

There is one TEC relevant to the Project Area, as it was found to potentially occur within 5 km of the Project Area:

- Subtropical and Temperate Coastal Saltmarsh (Vulnerable).

The subtropical and temperate coastal saltmarsh TEC does occur within the Project Area and can be described as a coastal area that is under regular or intermittent tidal influence. Vegetation in the ecological community consists of mainly salt-tolerant vegetation including grasses, sedges, herbs, rushes and shrubs. In South Australia, areas are generally dominated by *Tecticornia spp.* and *Disphyma spp.* amongst others (DSEWPC 2013).

The TEC is present in vegetation association A1: *Tecticornia sp.* shrubland over *Disphyma crassifolium ssp. Clavellatum*, of which 0.42 ha is proposed for removal. Where possible, clearance within this TEC has been minimised, see section 4.4 Addressing the Mitigation Hierarchy for more information.

4.2.2. Threatened flora

The desktop assessment identified two species listed as threatened under the **EPBC Act** as known or likely to occur within 5 km of the Project Area (Table 13). Of these, none were assessed as potentially occurring in the Project Area.

Three **NPW Act** listed threatened species were identified as possibly occurring within 5 km of the Project Area (Table 13). Of these, none were assessed as potentially occurring in the Project Area.

The likelihood of occurrence assessment for each flora species identified in the desktop search is provided in (Table 13) and the locations of threatened flora species within 5 km of the Project Area are shown in Appendix 4.

4.2.3. Threatened fauna

The desktop assessment identified 43 species listed as threatened under the **EPBC Act** as potentially occurring within 5 km of the Project Area (Table 13). Of these, one was assessed as likely to occur in the Project Area:

- *Acanthiza iredalei rosinae* (Slender-billed Thornbill) (Com: VU; SA: V)

The Slender-billed Thornbill is found along the coast in subpopulations from St Kilda to Ardrossan where it prefers chenopod shrublands dominated by samphire on narrow coastal saline mudflats usually within close proximity to tidal channels or saline lakes (DAWE 2022). This species generally forages in tall, dense samphire but occasionally frequents mangrove stands adjacent to samphire shrublands. Cumulative effects from developments in the southern part of its range have resulted in habitat loss to Slender-billed thornbills (Grady and Brook 2000). Vegetation within and surrounding the Project Area is suitable for this species, particularly the mangrove and samphire communities. Habitat quality and threats decrease with the northern distribution of the species particularly in areas such as The International Bird Sanctuary in Middle Beach. Therefore, it is unlikely that these patches will be considered critical habitat for this species.

Twenty-nine **NPW Act** listed threatened species, that were not listed under the EPBC Act, were identified as potentially occurring within 5 km of the Project Area (Table 13). Of these, six were assessed as potentially occurring within the Project Area:

- *Egretta garzetta nigripes* (Little Egret) (SA: R)
- *Falco peregrinus macropus* (Peregrine Falcon) (SA: R)
- *Haliaeetus leucogaster* (White-bellied Sea Eagle) (SA: E)
- *Hieraaetus morphnoides* (Little Eagle) (SA: V)
- *Neophema elegans elegans* (Elegant Parrot) (SA: R)
- *Pandion haliaetus cristatus* (Eastern Osprey) (SA: E)

One species, *Egretta garzetta nigripes* (Little Egret) was observed in the Project Area.

The Little Egret is mainly found in coastal areas where it prefers tidal mudflats, saltwater or freshwater wetlands and mangroves (Birdlife Australia 2022). This species was recorded during field surveys due to the presence of suitable habitat within and surrounding the Project Area.

Additionally, thirty-two fauna species were assessed as possible to occur in the Project Area due to the presence of floodplains, mudflats, samphire vegetation and mangroves within and surrounding the Project Area. These fauna species along with the Little Egret may use the Project Area and the surrounding salt lakes and water channels occasionally for food, as a resting spot and or whilst utilising the shore nearby. As such it is considered that is it unlikely that these threatened fauna species are to be significantly impacted by the Project.

The likelihood of occurrence assessment for each fauna species identified in the desktop search is provided in (Table 13) and the locations of threatened fauna species within 5 km of the Project Area are shown in Appendix 5.

Table 13. Likelihood of occurrence of threatened species identified in the desktop assessment. The data source and threat levels are described in the table footer.

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
Flora						
Brachyscome paludicola (Swamp Daisy)	R		1	2006	Found primarily along the Murray River and in the SE of SA on inundated clay soils in seasonally wet flats dominated by *Eucalyptus camaldulensis* (SA Seed Conservation Centre 2018).	**Unlikely** – suitable habitat but not observed during survey.
Caladenia tensa (Greencomb Spider-orchid)		EN	2	Likely	Widespread in SA from the west coast, throughout Eyre Peninsula and adjacent pastoral zone, the Flinders Ranges, rare in the Mt Lofty Ranges and more common in the Murray and upper south-east. However, the species does not extend to high rainfall districts and is absent from the Adelaide Hills.	**Unlikely** – no suitable habitat on site.
Maireana decalvans (Black Cotton-bush)	E		1	2019	Occurs in heavy seasonally waterlogged soil in areas of higher rainfall, mainly in the Mount Lofty Ranges (SA Seed Conservation Centre 2018).	**Unlikely** – no suitable habitat and site does not occur in a high rainfall area.
Maireana rohrlachii (Rohrlach's Bluebush)	R		1	1998	Species occurs from few locations on EP, but mainly YP, Mid North, Fleurieu Peninsula, Murraylands and western Victoria. Preferred habitat includes heavy clay and calcareous loam soil often fringing lakes in seasonally wet areas (Royal Botanic Gardens Victoria 2020).	**Unlikely** – no suitable habitat on site.
Tecticornia flabelliformis (Bead Glasswort)		VU	2	Known	Found in lots of sub populations in SA in low lying areas on the margins of salt lakes and coastal salt marshes in association with other *Tecticornia sp.* and	**Unlikely** – suitable habitat but not observed during survey.

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
					salt tolerant vegetation communities (Carter 2010).	
Fauna						
Acanthiza iredalei rosinae (Slender-billed Thornbill)	V	VU	1, 2	2020, Known	Occurs in low, dense saltbush, samphire, salt lakes and mangroves coastally north from Adelaide to Port Augusta (Pizzey and Knight 2007).	**Likely** – recent records and habitat within Project Area is preferred
Actitis hypoleucos (Common Sandpiper)	R	Mi (W)	2, 3	Known, 2012	Varied coastal and interior wetlands: narrow muddy edges of billabongs, river pools, mangroves, among rocks reefs and rocky beaches (Morcombe 2021).	**Possible** – recent records and suitable habitat within Project Area
Anhinga novaehollandiae novaehollandiae (Australasian Darter)	R		1, 3	2005, 2012	Habitat is lakes, rivers, swamps; rarely coastal.	**Unlikely** – recent records but habitat within Project Area is not preferred
Ardea intermedia plumifera (Plumed Egret)	R		3	2006	Frequents freshwater wetlands, pastures, croplands and tidal mudflats and floodplains (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Arenaria interpres interpres (Ruddy Turnstone)	R	Mi (W)	2, 3	Known, 2006	Mainly found in coastal regions, with occasional records of inland populations. Prefers rocky shores or beaches where there are large deposits of rotting seaweed. (DAWE 2022).	**Possible** – recent records but habitat within Project Area is not preferred
Biziura lobata menziesi (Musk Duck)	R		1, 3	2020, 2012	Lakes, reservoirs and wetlands including well-vegetated swamps and fresh and brackish habitats.	**Possible** – recent records and suitable habitat within Project Area
Botaurus poiciloptilus (Australasian Bittern)	E	EN	2, 3	Known, 2002	Freshwater wetlands and rarely in estuaries or tidal wetlands, favouring wetlands dominated by sedges, rushes and reeds growing over a muddy or peaty substrate	**Unlikely** – recent records but habitat within Project Area is not preferred

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
Bubulcus ibis coromandus (Eastern Cattle Egret)	R		3	2007	The Cattle Egret occurs in shallow, open and fresh wetlands including meadows and swamps with low emergent vegetation and abundant aquatic flora (DAWE 2022).	**Unlikely** – recent records but habitat within Project Area is not preferred
Calidris acuminata (Sharp-tailed Sandpiper)		Mi (W)	2	Known	Prefers tidal mudflats, saltmarshes and shallow, fresh or saline inland wetlands (Pizzey and Knight 2007)	**Unlikely** – no recent records but habitat within Project Area is preferred
Calidris alba (Sanderling)	R	Mi (W)	2, 3	Known, 2003	Utilises broad ocean beaches with firm sand. Often near tidal mudflats, river mouths and lagoons. (Pizzey and Knight 2007).	**Unlikely** – recent records but habitat within Project Area is preferred
Calidris canutus (Red Knot)		EN, Mi (W)	1, 2, 3	2020, Known, 2003	Red Knots mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours (DAWE 2022).	**Possible** – recent records and suitable habitat within Project Area
Calidris ferruginea (Curlew Sandpiper)	E	CR, Mi (W)	1, 2, 3	2020, Known, 2010	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).	**Possible** – recent records and suitable habitat within Project Area
Calidris melanotos (Pectoral Sandpiper)	R	Mi (W)	1, 2, 3	2006, Known, 2018	Inhabits shallow fresh waters often associated with low grass and other vegetation. Occasionally seen in salt marshes and tidal areas. (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Calidris pugnax (Ruff)	R		1, 3	2004, 2002	Frequents fresh, brackish and saline wetlands, tidal mudflats and salt fields (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
Calidris ruficollis (Red-necked Stint)		Mi (W)	2	Known	Occurs on tidal mudflats, salt marshes and sandy or shelly beaches and salt fields. (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred
Calidris subminuta (Long-toed Stint)	R	Mi (W)	1, 2, 3	2006, Known, 2008	Likes tussock dominated, reed margins of shallow wetlands, tidelines and tidal mudflats (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Calidris tenuirostris (Great Knot)	E	CE, Mi (W)	2, 3	Known, 2001	Inhabits tidal mudflats, sandy ocean and bay shores. Occasionally in shallow saline and fresh water wetlands. (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Cereopsis novaehollandiae novaehollandiae (Cape Barren Goose)	R		3	2002	Mostly inhabits small, windswept and generally uninhabited offshore islands, but ventures to adjacent mainland farming areas in search of food in summer (BirdLife Australia 2022).	**Unlikely** – recent records but habitat within Project Area is not preferred
Charadrius bicinctus (Double-banded Plover)		Mi (W)	2	Known	Frequents wide beaches, tidal mudflats, salt marshes and sparsely vegetated wetlands and paddocks (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred
Charadrius leschenaultii (Greater Sand Plover)		VU, Mi (W)	2	Likely	Occupies wide, sandy or shelly beaches, tidal mudflats, salt marsh; seldom far inland. (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred
Charadrius mongolus (Lesser Sand Plover)		EN, Mi (W)	2, 3	Known, 2004	Likes tidal mudflats, sand flats and shelly beaches, salt marshes and mangroves (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Charadrius veredus (Oriental Plover)		Mi (W)	2	Known	Inhabits open plains, often far from water, muddy or sandy wastes near tidal mudflats and swamps (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
Cladorhynchus leucocephalus (Banded Stilt)	V		1, 3	2020, 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 2022).	**Possible** – recent records and suitable habitat within Project Area
Coturnix ypsilophora australis (Brown Quail)	V		1, 3	2020, 2003	Prefers dense grasslands, often on the edges of open forests, and bracken (BirdLife Australia 2022).	**Unlikely** – recent records but habitat within Project Area is not preferred
Egretta garzetta nigripes (Little Egret)	R		1, 3, 4	2020, 2017	Found in tidal mudflats, saltmarshes, mangroves and freshwater wetlands (Pizzey and Knight 2007).	**Known** – recorded during field surveys and habitat within Project Area is preferred
Falco hypoleucos (Grey Falcon)	R	VU	2	Likely	This species is mainly found where annual rainfall is less than 500 mm and is essentially confined to the arid and semi-arid zones at all times. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses (Schoenjahn 2018).	**Unlikely** – no recent records and habitat within Project Area is not preferred
Falco peregrinus macropus (Peregrine Falcon)	R		1, 3	2010, 2020	Found everywhere from woodlands to open grasslands and coastal cliffs – though less frequently in desert regions. This species prefers open habitats such as grasslands, tundra and meadows and nests on cliff faces and in crevices (Pizzey and Knight 2007).	**Possible –** Recent records, may occur as fly-over only, some suitable habitat nearby
Falco subniger (Black Falcon)	R		3	2003	Occurs on plains, grasslands, foothills, timbered watercourses and crops (Pizzey and Knight 2007).	**Unlikely** – recent records but habitat within Project Area is not preferred

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
Gallinago hardwickii (Latham's Snipe)	R	Mi (W)	2, 3	Known, 2012	This is a wetland species that occurs on shallow water with tussocks and other green or dead growth (Pizzey and Knight 2007).	**Unlikely** – recent records but habitat within Project Area is not preferred
Gallinago megala (Swinhoe's Snipe)		Mi (W)	2	Likely	Prefers wet grounds dominated by grassland and the edges of reed lined swamps and marshes (Pizzey and Knight 2007).	**Unlikely** – no recent records and habitat within Project Area is not preferred
Gallinago stenura (Pin-tailed Snipe)		Mi (W)	2	Likely	Inhabits boggy edges of vegetated wetlands, ponds, stubbles and grasslands (Pizzey and Knight 2007).	**Unlikely** – no recent records and habitat within Project Area is not preferred
Haematopus fuliginosus fuliginosus (Sooty Oystercatcher)	R		3	2011	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 2007).	**Possible** – recent records and suitable habitat within Project Area
Haematopus longirostris (Pied Oystercatcher)	R		1, 3	2020, 2012	Prefers sandy, shellgrit or pebble beaches, tidal mudflats and coastal islands (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Haliaeetus leucogaster (White-bellied Sea Eagle)	E		1, 3	2020, 2011	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.	**Possible –** Recent records, may occur as fly-over only, some suitable habitat nearby
Hieraaetus morphnoides (Little Eagle)	V		1, 3	2005	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	**Possible -** Recent records and possible habitat within Project Area

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
					forested hills, as in farmland, irrigated land (Morcombe, 2021).	
Lxobrychus dubius (Black-backed Bittern)	E		1	2001	Inhabits reed and sedge choked sections of freshwater swamps, rivers and tussock dominated wetland areas (Pizzey and Knight 2007).	**Unlikely** – recent records but habitat within Project Area is not preferred
Limicola falcinellus (Broad-billed Sandpiper)		Mi (W)	2	Known	Occurs on tidal mudflats, saltmarshes, freshwater wetlands and areas dominated by soft mud (Pizzey and Knight 2007).	**Unlikely** – recent records but habitat within Project Area is not preferred
Limosa lapponica (Bar-tailed Godwit)		Mi (W)	1, 2	2004, Known	Occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Limosa lapponica baueri (Nunivak Bar-tailed Godwit)		VU	2	Known	Found in coastal habitats including large intertidal sandflats, mudflats and estuaries. Has also been recorded in salt lakes and brackish or saline wetlands (DAWE 2022).	**Possible** – no recent records but suitable habitat within Project Area
Limosa limosa melanuroides (Black-tailed Godwit)	R	Mi (W)	1, 2, 3	2006, Known, 2010	Frequents tidal mudflats, estuaries, sand spits and shallow river margins (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Neophema chrysogaster (Orange-bellied Parrot)	E	CR	1	2006	The Orange-bellied Parrot is endemic to south-eastern Australia. Throughout the year Orange-bellied Parrots are found in salt marshes, coastal dunes, pastures, shrub lands, estuaries and islands (DAWE 2022).	**Unlikely** – recent records but habitat within Project Area is not preferred
Neophema chrysostoma (Blue-winged Parrot)	V		3	2012	Occurs in sparse populations in eastern South Australia where it prefers grasslands and grassy woodlands but will inhabit a range of habitats from coastal, sub-coastal	**Unlikely** – recent records but habitat within Project Area is not preferred

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
					and inland areas, right through to semi-arid zones (Birdlife Australia 2022).	
Neophema elegans elegans (Elegant Parrot)	R		1, 3	2014	The Elegant Parrot occurs in eastern parts of South Australia, north to the Flinders Ranges and west to the Eyre Peninsula. It can be found in a wide variety of habitats, including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland (Birdlife Australia 2022).	**Possible** – recent records and some possible habitat within Project Area
Neophema petrophila zietzi (Rock Parrot)	R		1, 3	2017, 2003	Occurs along the coast, adjacent or on rocky islands, sandy beaches often near cliffs and headlands (Pizzey and Knight 2007).	**Unlikely** – recent records but habitat within Project Area is not preferred
Numenius madagascariensis (Eastern Curlew)	E	CR, Mi (W)	1, 2, 3	2020, Known, 2017	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, 2022).	**Possible** – recent records and suitable habitat within Project Area
Numenius minutus (Little Curlew)		Mi (W)	2	Known	Occurs on dry grasslands, floodplains and on the margins of drying swamps, tidal mudflats and salt fields (Pizzey and Knight).	**Unlikely** – no recent records but habitat within Project Area is preferred
Numenius phaeopus variegatus (Whimbrel)	R	Mi (W)	1, 2, 3	2003, Known, 2006	Most commonly found in estuaries, mangroves, tidal mudflats and flooded paddocks or sewage ponds (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Oxyura australis (Blue-billed Duck)	R		3	2012	Prefers large dams and lakes and well-vegetated freshwater swamps (Pizzey and Knight 2007).	**Unlikely** – recent records but habitat within Project Area is not preferred

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
Pachyptila turtur subantarctica (Fairy Prion)		VU	2	Known	Prefers offshore areas and breeds primarily occurs on Macquarie Island and subantarctic islands outside of Australia. (Pizzey and Knight 2007)	**Unlikely** – no recent records and habitat within Project Area is not preferred
Pandion haliaetus cristatus (Eastern Osprey)	E	Mi (W)	2, 3	Known, 1999	Prefers coastal and terrestrial wetlands and require a range of habitats from coastal cliffs, estuaries, mangroves and large lakes for foraging (DAWE 2022).	**Possible –** Recent records, may occur as fly-over only, some suitable habitat nearby
Phalaropus lobatus (Red-necked Phalarope)		Mi (W)	2	Known	Prefers shallow pools, salt fields and tidal mudflats, beaches and salt marshes (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred
Philomachus pugnax (Ruff)		Mi (W)	2	Known	Inhabits fresh, brackish and saline wetlands, tidal mudflats, salt fields and sewage farms (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred
Plegadis falcinellus (Glossy Ibis)	R		3	2012	Generally located on Eyre Peninsula in South Australia. Preferred habitat for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation.	**Possible** – recent records and suitable habitat within Project Area
Pluvialis fulva (Pacific Golden Plover)	R	Mi (W)	1, 2, 3	2003, Known, 2008	Occurs in a variety of habitats from estuaries to mudflats, saltmarshes and on the margins of shallow open inland swamps and paddocks (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
Pluvialis squatarola (Grey Plover)		Mi (W)	2	Known	Frequents mudflats, salt marshes, tidal reefs and estuaries and is rarely found inland (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred
Podiceps cristatus australis (Great Crested Grebe)	R		1, 3	2020, 2012	Found almost exclusively on lakes, larger lagoons and swamps, reservoirs and bays or inlets (Pizzey and Knight 2007).	**Possible** – recent records but habitat within Project Area is not preferred.
Pteropus poliocephalus (Grey-headed Flying-fox)		VU	2	Likely	Grey-headed Flying-foxes forage up to 40 km from their roost at Botanic Park each night. Food plants are typically planted trees, both native and exotic, that provide fruit or a rich source of nectar.	**Unlikely** – no recent records and habitat within Project Area is not preferred
Rostratula australis (Australian Painted Snipe)	E	EN	2, 3	Known, 2000	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, sewage farms and bore drains.	**Possible** – recent records and suitable habitat within Project Area
Spatula rhynchotis (Australasian Shoveler)	R		1, 3	2003, 2019	Prefers fresh and saline lakes and well-vegetated freshwater wetlands. Also occurs in coastal inlets, floodwaters and sewage ponds (Morcombe 2021).	**Possible** – recent records and suitable habitat within Project Area
Stagonopleura guttata (Diamond Firetail)	V		3	2003	Occurs in the AMLR/Eyre Peninsula region of SA where it resides in a wide range of Eucalypt dominated vegetation communities that have a grassy understorey, including woodland, forest and mallee. Only small pockets have been observed near the coast (DAWE 2022).	**Unlikely** – recent records but habitat within Project Area is not preferred

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
Sterna hirundo longipennis (Common Tern)	R		3	2000	Prefers offshore waters, beaches, bays, estuaries and is sometimes found on sandflats and salt fields (Pizzey and Knight 2007).	**Possible** – no recent records and suitable habitat within Project Area
Sternula albifrons sinensis (Little Tern)	E		3	2005	Frequents coastal waters, bays, inlets and saline or brackish lakes and salt fields (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Sternula nereis nereis (Fairy Tern)	E	VU	1, 2, 3	2020, Known, 2010	Occupies coastal beaches, inshore and offshore islands, sheltered inlets, sewage farms, harbours, estuaries and lagoons (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Stictonetta naevosa (Freckled Duck)	V		1, 3	2006, 2012	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, 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.	**Possible** – recent records but habitat within Project Area is not preferred.
Thinornis cucullatus cucullatus (Eastern Hooded Plover)		VU	2	Known	Sandy beaches of ocean estuaries, coastal lakes and inland salt lakes. Nesting on beach above high-tide mark (Morcombe 2021).	**Unlikely** – no recent records and habitat within Project Area is not preferred
Tringa brevipes (Grey-tailed Tattler)	R	Mi (W)	1, 2, 3	2004, Known, 2003	Inhabits estuaries, tidal mudflats, mangroves and shallow river margins both coastal and inland (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Tringa glareola (Wood Sandpiper)	R	Mi (W)	2, 3	Known, 2008	Prefers the muddy margins of wetlands, tidal mudflats and salt marshes (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Tringa nebularia (Common Greenshank)		Mi (W)	2	Known	Found in a wide variety of inland wetlands and sheltered coastal habitats of varying	**Unlikely** – no recent records but habitat

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record/PMST likelihood	Species known habitat preferences	Likelihood of use for habitat – Comments
					salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass.	within Project Area is preferred
Tringa stagnatilis (Marsh Sandpiper)		Mi (W)	2	Known	Inhabits salt, brackish or fresh water wetlands, sewage ponds, salt fields or tidal mudflats and estuaries (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred
Tringa totanus (Common Redshank)		Mi (W)	2	Known	Likes tidal sandbars and mudflats, mangroves, salt fields and freshwater swamps and lagoons (Pizzey and Knight 2007).	**Unlikely** – no recent records but habitat within Project Area is preferred
Xenus cinereus (Terek Sandpiper)	R	Mi (W)	1, 2, 3	2003, Known, 2010	Occurs on tidal mudflats, estuaries, coastal swamps and salt fields (Pizzey and Knight 2007).	**Possible** – recent records and suitable habitat within Project Area
Zapornia tabuensis (Spotless Crake)	R		3	2001	Mostly found in well vegetated freshwater wetlands with rushes and reeds. Will also frequent muddy areas, reedbeds or wetlands.	**Unlikely** – recent records but habitat within Project Area is not preferred

Source; 1- BDBSA, 2 – Protected matters search tool, 3 – Birdlife, 4 – Observed/recorded in the field,
NP&W Act; E= Endangered, V = Vulnerable, R= Rare
EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable
The BDBSA data has been sourced from the South Australian Department for Environment and Water Biological Database of SA, Record set number DEWNRBDBSA211207-1.

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 (up to 1.25 ha) and 6 native trees.

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

Potential indirect impacts of the proposal include:

- Dust generation during construction, which may impact surrounding vegetation; and
- Noise generation, both during construction and from traffic, which may impact fauna species in the area.
- Changes to flow regimes, which may impact surrounding vegetation.

4.4. Addressing the Mitigation Hierarchy

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

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

Several options to extract water from other areas within the vicinity of the proposed Project Area were considered. Walker Buckland Park Developments Pty Ltd has previously explored the potential to source seawater from the existing Buckland Dry Creek (BDC) intake, but mutually beneficial commercial arrangements did not eventuate. The land and adjacent salt lake are managed by several different stakeholders whereby a commercial arrangement would not be palatable for the Walker Buckland Park Developments Pty Ltd. Furthermore, avoidance of the existing prescribed watercourse area is essential and as such the current site is proposed outside of this area.

Surrounding areas were also considered for sea water extraction by Walker Buckland Park Developments Pty Ltd. The outfall area nearby Thompson Creek roughly two kilometres southwest of the chosen location was considered but deemed unsuitable. This route would be considerably longer, more expensive and result in significantly more vegetation disturbance. Further, the proximity of this site to the Bolivar outfall would lead to a lower quality of intake sea water and leave infrastructure at greater exposure to and risk of damage due to significant storm events. The current site sits within the Adelaide Dolphin Sanctuary defined area. If the intake facility was to be located further downstream of Chapman Creek to the southwest, other areas of significance could be impacted including the Adelaide International Bird Sanctuary National Park. Other potential site locations further north were also considered but dismissed due to the substantial impact on native vegetation and other environmentally significant areas.

The chosen site minimises and or has the most negligible impact on current BDC operations adhering to the client's current licensing agreement. Walker Buckland Park Developments Pty Ltd have a temporary licence whereby it is required that any activities must not interfere with the operations of BDC. As such, the selected site balances the requirement to avoid BDC operations whilst gaining access to a supply of reliable, quality seawater. Additionally, public access at the chosen site is minimal decreasing the potential for vandalism and does not impact the public visual amenity.

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).

To minimise clearance, where possible, the pipeline is to follow existing land use activities and tracks via the most direct and shortest route making the most of existing levy banks and the already disturbed environment. The chosen site at Chapman Creek is subject to tidal influences from the St Vincent Gulf constantly flushing and replenishing the source of sea water at the intake. This provides good water quality, and bathymetry mapping undertaken by the client indicate the chosen intake area has a suitable water column and depth for reliable extraction. The pipeline at the intake will enter at 90 degrees to further minimise impacts at Chapman Creek.

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

The Project Area is unlikely to be rehabilitated or restored, given the necessity for access and maintenance of the intake facility.

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

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

An offset in the form of a payment into the native vegetation fund is the preferred option for Walker Buckland Park Developments Pty Ltd.

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

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

Table 14. Assessment against the Principles of Clearance.

Principle of clearance	Considerations
Principle 1(b) – significance as a habitat for wildlife	Relevant information A total of 19 native bird and 1 reptile species were recorded in the Project Area during the fauna assessment. The State Rare *Egretta garzetta nigripes* (Little Egret) was observed in the Project Area. One EPBC listed threatened species was identified as likely to occur in the Project Area: *Acanthiza iredalei rosinae* (Slender-billed Thornbill) (Com: VU; SA: V). Six NPW listed threatened fauna were assessed as potentially occurring within the Project Area: *Egretta garzetta nigripes* (Little Egret) (SA: R) – known to occur on site *Falco peregrinus macropus* (Peregrine Falcon) (SA: R) *Haliaeetus leucogaster* (White-bellied Sea Eagle) (SA: E)

	Hieraaetus morphnoides (Little Eagle) (SA: V) *Neophema elegans elegans* (Elegant Parrot) (SA: R) *Pandion haliaetus cristatus* (Eastern Osprey) (SA: E) Thirty-two threatened fauna species were also assessed as possibly occurring within the Project Area as they had recorded observations since 1995 within 5 km of the Project Area and there is suitable habitat present. Scattered trees: Fauna Habitat Score – 1.8 (all 6 scattered trees) Biodiversity Score – 0.16 – 13.08 Vegetation Associations Threatened Fauna score: 0.1 Unit Biodiversity score: 93.49 (A1), 83.78 (A2), 78.97 (A3a), 79.57 (A3b) and 52.17 (A4)
	<u>Assessment against the principles</u> <u>Seriously at Variance</u> All 6 scattered trees, A1, A2, A3, A3 and A4
	<u>Moderating factors that may be considered by the NVC</u> *Impact significance*: The removal of 6 scattered trees and 1.25 ha of mangrove, samphire and lignum vegetation is considered unlikely to impact habitat critical to the survival of threatened fauna species. The mangroves provide suitable habitat for the Slender-billed Thornbill, of which a 15 m strip will be cleared for the construction of water intake infrastructure. This gap in mangrove vegetation is considered to be relatively small and therefore it is deemed unlikely that clearance will fragment the population. The location of the water intake has been placed at a water depth that is unlikely to impact on the depth of the watercourse, therefore the extent or quality of habitat for threatened migratory and wetland birds is unlikely to be adversely affected by the proposed Project. One scattered tree (Tree 1) contains hollows which may provide nesting habitat for Elegant Parrots but given the health of the tree (and trees in the area) and lack of understorey, this area is unlikely to constitute critical habitat for this species. Additionally, the pipeline is being placed underground therefore it is unlikely to fragment populations of less mobile fauna species. *Non-essential habitat*: The scattered trees within the Project Area are generally in poor health without hollows (with the exception of tree number 1). Although these scattered trees may provide perching/foraging habitat, this is unlikely to be considered critical habitat for threatened fauna species. Small, linear segments of non-pristine lignum vegetation is considered sub-optimum habitat and impacts of clearance of this VA on local fauna populations are considered to be negligible.
Principle 1(c) – plants of a rare, vulnerable or endangered species	<u>Relevant information</u> No threatened flora species under the EPBC Act or NPW Act were observed within the Project Area. <u>Threatened Flora Score: 0</u>
	<u>Assessment against the principles</u> <u>Not at Variance</u>

	Moderating factors that may be considered by the NVC N/A
Principle 1(d) – the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered	Relevant information One threatened ecological community listed under the EPBC Act as vulnerable is present within the clearance area: Subtropical and Temperate Coastal Saltmarsh (Com: VU) Threatened Community Score: 1.35
	Assessment against the principles Seriously at Variance A1
	Moderating factors that may be considered by the NVC The TEC is present in vegetation association A1, of which 0.42 ha is proposed for removal. Where possible, clearance within this TEC has been minimised, see section 4.4 Addressing the Mitigation Hierarchy for more information. The pipeline is being placed underground with a 5-10 m linear clearance area through the TEC, which is required for construction. Existing soil will be replaced once the pipe is constructed, as such, this reduces the chances of invasive species becoming established within the community and this will allow the area to naturally regenerate. Given the linear clearance, the surrounds and the location of the clearance at the edge of a large patch of the vegetation community, this impact is unlikely to fragment an occurrence of this community or adversely affect habitat critical to the survival of the plant community.
Principle 1(f) – it is growing in, or in association with, a wetland environment	Relevant information All vegetation associations and scattered trees within the Project Area and surrounds consist of floodplains with *Eucalyptus camaldulensis* trees and lignin understorey, samphire vegetation and mangroves.
	Assessment against the principles Seriously at Variance All scattered trees, A1, A2, A3 and A4.
	Moderating factors that may be considered by the NVC The location of the water intake has been placed at a water depth that is unlikely to impact on the depth of the watercourse and can be replenished by tidal flows. Therefore the hydrological regime of the wetland is unlikely to be adversely affected. Additionally, this intake location is unlikely to adversely affect native species dependent on this wetland. Water is being extracted from the wetland (and replenished by tidal flows), therefore there should be no change in salinity, pollutants or nutrients of the wetland at the intake location. The pipeline will be buried within the path of existing tributaries that occur with the samphire vegetation. Landforms may be reinstated post construction where possible, however the pipeline may modify the hydrological regime of a section of the wetland.

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

4.6. Risk assessment

The level of risk associated with the application

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

Total clearance	No. of trees	6
	Area (ha)	1.25
	Total biodiversity Score	136.38
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b) and 1(d)
Risk assessment outcome		Level 4

5. Clearance summary

Clearance Area(s) Summary table

Block	Site	Species diversity score	Threatened Ecological community Score	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	30	1.35	0	0.1	93.49	0.42	39.52	1			41.49	22,696.40	1,248.30
A	2	SNB*	1.00	0	0.1	83.78	0.14	11.42	1			12.00	6,545.45	360.00
A	3a	26	1.00	0	0.1	78.97	0.19	26.76	1			16.08	8,859.30	487.26
A	3b	26	1.00	0	0.1	79.57	0.14	11.53	1			12.11	6,640.76	365.24
A	4	14	1.00	0	0.1	52.17	0.35	18.49	1			19.41	10,619.25	584.06
						Total	**1.25**	**107.72**				**101.09**	**$55,361.16**	**$3,044.86**

*SNB: Score Not Benchmarked

Scattered trees Summary table

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB Payment	Admin Fee
1	1	1.8	0	13.08	1	13.73	$7,906.35	$414.21
2	1	1.8	0	6.86	1	7.20	$4,145.82	$217.24
3	1	1.8	0	7.49	1	7.87	$4,530.40	$237.19
4	1	1.8	0	0.40	1	0.43	$244.78	$12.67
5	2	1.8	0	0.83	1	0.87	$501.64	$52.57
Total	**6**			**28.66**		**30.96**	**$16,974.62**	**$933.86**

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	136.38	132.05	$72,335.78	$3,978.72	$76,314.50

Economies of Scale Factor	0.5
Rainfall (mm)	410

6. Significant Environmental Benefit

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

ACHIEVING AN SEB

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

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

☐ Use SEB Credit that the proponent has established.

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

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

☒ Pay into the Native Vegetation Fund.

PAYMENT SEB

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 6 scattered trees and 1.25 ha of native vegetation is **$76,314.50**, which includes a **$3,978.72** administration fee.

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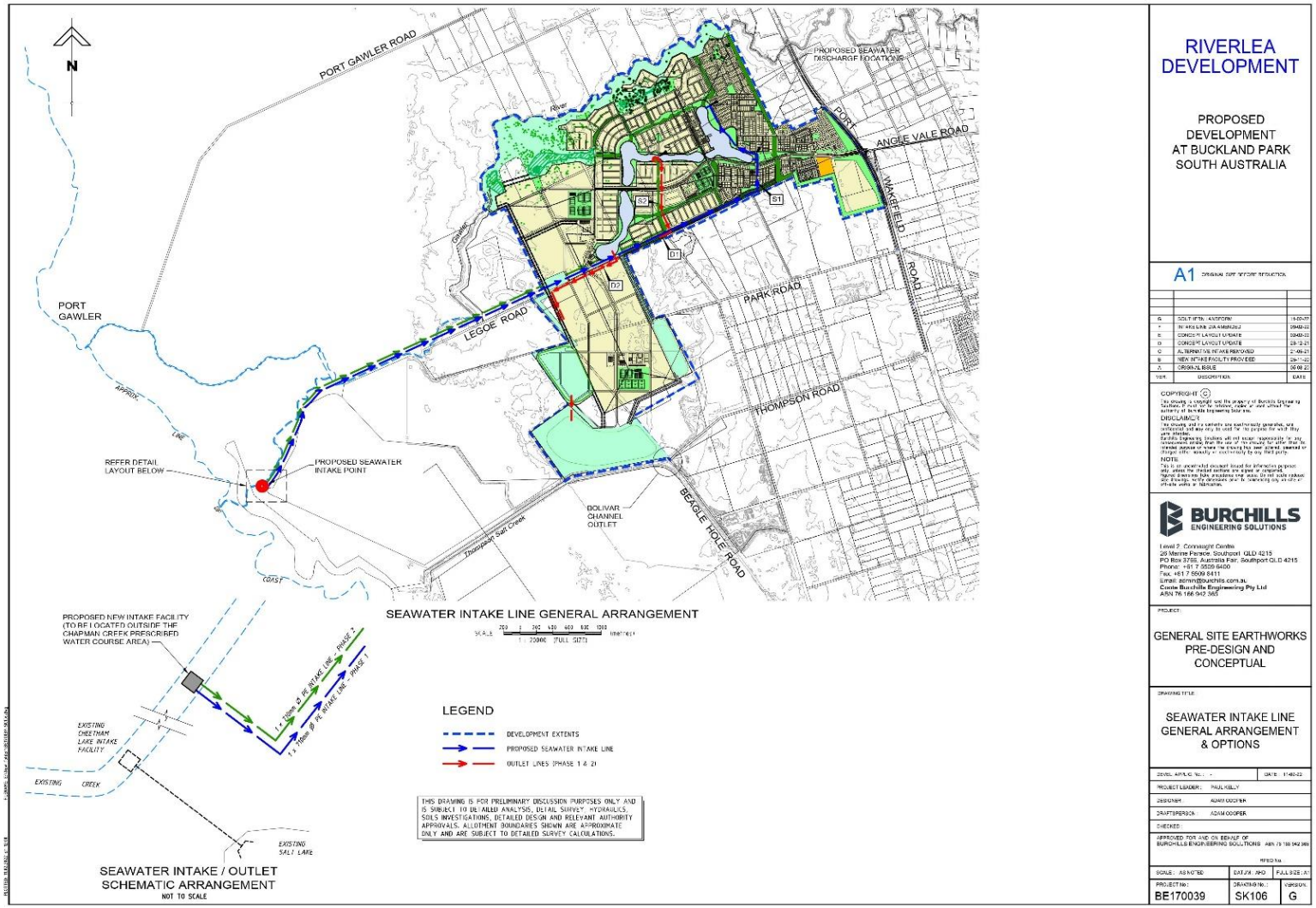
8. Appendices

Appendix 1. Development Plans (provided to EBS on 11/02/2022 by Walker Buckland Park Developments Pty Ltd)



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

Species name	Common name
*Aizoon pubescens**	Coastal Galenia
Atriplex paludosa ssp. cordata	Marsh Saltbush
*Avena barbata**	Bearded Oat
Avicennia marina ssp. marina	Grey Mangrove
*Brassica sp.**	
*Bromus diandrus**	Great Brome
Cyperus gymnocaulos	Spiny Flat-sedge
Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface
Duma florulenta	Lignum
Einadia nutans ssp.	Climbing Saltbush
Enchylaena tomentosa var.	Ruby Saltbush
Eucalyptus camaldulensis ssp. camaldulensis	River Red Gum
*Foeniculum vulgare**	Fennel
Frankenia pauciflora var. gunnii	Southern Sea-heath
Heliotropium europaeum	Common Heliotrope
*Hordeum vulgare**	Barley
*Limonium sp.**	Sea-lavender
*Lolium perenne**	Perennial Ryegrass
*Lycium ferocissimum**	African Boxthorn
Maireana brevifolia	Short-leaf Bluebush
*Mesembryanthemum crystallinum**	Common Iceplant
*Mesembryanthemum nodiflorum**	Slender Iceplant
Nitraria billardierei	Nitre-bush
*Olea europaea ssp.**	Olive
*Oncosiphon suffruticosum**	Calomba Daisy
*Opuntia sp.**	
*Oxalis pes-caprae**	Soursob
*Phalaris aquatica**	Phalaris
Phragmites australis	Common Reed
*Piptatherum miliaceum**	Rice Millet
*Rapistrum rugosum ssp. rugosum**	Turnip Weed
Rhagodia candolleana ssp.	Sea-berry Saltbush
Rytidosperma sp.	Wallaby-grass
Salicornia blackiana	Thick-head Samphire
Salicornia quinqueflora ssp. quinqueflora	Beaded Samphire
*Sonchus oleraceus**	Common Sow-thistle
Tecticornia indica ssp. bidens	Brown-head Samphire
Tecticornia sp.	Samphire
*Trifolium sp.**	Clover
Wilsonia humilis	Silky Wilsonia

*introduced species.

Appendix 3. List of fauna species observed in the Project Area.

Species name	**Common name**
Anas gracilis	Grey Teal
Chlidonias hybrida	Whiskered Tern
Chroicocephalus novaehollandiae	Silver Gull
Colluricincla harmonica	Grey Shrikethrush
Corvus mellori	Little Raven
Egretta garzetta	Little Egret
Egretta novaehollandiae	White-faced Heron
Eolophus roseicapilla	Galah
Gavicalis virescens	Singing Honeyeater
Grallina cyanoleuca	Magpielark
Gymnorhina tibicen	Australian Magpie
Hirundo neoxena	Welcome Swallow
Malurus cyaneus	Superb Fairywren
Malurus leucopterus	White-winged Fairywren
Manorina melanocephala	Noisy Miner
Microcarbo melanoleucos melanoleucos	Little Pied Cormorant
Ocyphaps lophotes	Crested Pigeon
Pelecanus conspicillatus	Australian Pelican
Phalacrocorax carbo	Great Cormorant
Platalea regia	Royal Spoonbill
Rhipidura leucophrys	Willie Wagtail
Tachybaptus novaehollandiae	Australasian Grebe
Tadorna tadornoides	Australian Shelduck
Tiliqua rugosa	Sleepy Lizard
Tribonyx ventralis	Black-tailed Nativehen
*Turdus merula**	Common Blackbird
Vanellus miles	Masked Lapwing
Zosterops lateralis	Silvereye

*introduced species.

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

Appendix 5. BDBSA locations of threatened fauna within 5 km of the Project Area.

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