

Native Vegetation Clearance

South Australian Government Renewable Hydrogen Power Station, Electrolysers and Storage Facility

Native Vegetation Clearance Data Report

Clearance under the *Native Vegetation Regulations 2017*

26 March 2024

Prepared by Emma Eichler and Bryony Unwin for the Office of Hydrogen Power South Australia



South Australian Government Renewable Hydrogen Power Station, Electrolysers and Storage Facility

Native Vegetation Clearance Data Report

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Rev A	21 March 2024	For internal review	EE, BU	PA	PA, AS (Jacobs)	RT
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Acronyms, Initialisations and Glossary

Acronym / Initialisation	Description
ALA	Atlas of Living Australia
ARU	Autonomous Recording Units
BAM	Bushland Assessment Methodology
BCM	Bushland Condition Monitoring (benchmarked communities in South Australia's agricultural zone)
BDAC	Barngarla Determination Aboriginal Corporation
BDBSA	Biological Database of South Australia
BS	Bird Survey
CP	Conservation Park
CSS	Conservation Significance score
DA	Development Application under the <i>Planning, Development and Infrastructure Act 2016</i>
DCCEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEW	Department for Environment and Water
DEWHA	Department of the Environment, Water, Heritage and the Arts
DoD	Department of Defence
EN	Endangered under EPBC Act
EP	Eyre Peninsula
EPBC / EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
GPS	Global Positioning System
Ha / ha	Hectares
HA	Heritage Agreement
HJP	Hydrogen Jobs Plan
IBRA	Interim Biogeographic Regionalisation for Australia
km	Kilometre(s)
LCS	Landscape Context Score
MNES	Matters of National Environmental Significance
MW	Megawatts
Mwe	Megawatt electric
NP&W / NP&W Act	<i>National Parks and Wildlife Act 1972</i>
NV Act	<i>Native Vegetation Act 1991</i>

Acronym / Initialisation	Description
NVC	Native Vegetation Council
NW	Northern Water
NWS	Northern Water Supply
OHPSA	Office of Hydrogen Power South Australia
PDI / PDI Act	<i>Planning, Development and Infrastructure Act 2016</i>
PMST	Protected Matters Search Tool
The HJP Impact Area	The area of land that will be impacted during construction to accommodate all elements of the Project (refer to Figure 1)
The HJP Project Area	This is a broader area than the Impact Area and includes all areas surveyed for the Project (refer to Figure 1)
The HJP Project	The Hydrogen Jobs Plan Project / action
SA	South Australia
SEB	Significant Environmental Benefit
SPRAT	Species Profile and Threats Database
TBS	Total Biodiversity Score
TEC	Threatened ecological community/ies
UBS	Unit Biodiversity Score
VCS	Vegetation Condition Score
WoNS	Weeds of National Significance

1. Application information

Application Details

Applicant:	Office of Hydrogen Power South Australia (OHPSA), on behalf of the Minister for Energy and Mining		
Key contact:	<div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div> <div style="background-color: black; width: 150px; height: 15px; margin-bottom: 5px;"></div> <div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div> OHPSA.Enquiries@sa.gov.au		
Landowner:	Crown Land (Minister for Environment and Water) including Whyalla Conservation Park (CP) and Crown Land (Department of Defence).		
Site Address:	Located 0.7 km north of Whyalla near the Lincoln Highway, predominantly west of the highway but with some infrastructure (including the substation) located to the east of the highway. Includes some impacts in the Whyalla Conservation Park (CP)		
Local Government Area:	Whyalla City Council	Hundred:	Cultana Randell
Title ID:	CT 6144/358 CT 6045/133 CT 5852/367 CR 6253/73 CL 6253/233 CR 6252/999 CT 5983/544 N/A	Parcel ID	D79748 A 1000 F7887 A1 D56203 A1 H560300 S14 D93251 A67 D125055 Q1 H560300 S35 Lincoln Highway Road reserve

Summary of proposed clearance

Item	Description
Purpose of clearance	<p>Clearance of native vegetation is required to construct a world-leading hydrogen power station, electrolyser and storage facility near Whyalla, South Australia. The proposed action is known as the Hydrogen Jobs Plan (HJP) (the HJP Project).</p> <p>The Project includes the following components:</p> <ul style="list-style-type: none"> - Primary hydrogen facility, including the electrolysis plant, power generation plant and ancillary infrastructure. - Hydrogen storage. - Southern infrastructure, including intersection upgrades, road infrastructure, service connections for water and wastewater / sewer pipelines. - Northern infrastructure, including the high voltage transmission line and substation.
Native Vegetation Regulation	<i>Regulation 12(34) – Infrastructure of the Native Vegetation Regulations 2017.</i>
Description of the vegetation under application	<p>The total impact area includes 89.436 hectares (ha) including proposed clearance of 87.461 ha of native vegetation of which 12.200 ha is expected to be temporary clearance subject to rehabilitation. Vegetation clearance includes the following broad communities each including several Bushland Assessment Methodology (BAM) vegetation associations (sites):</p> <ul style="list-style-type: none"> • Total 19.517 ha of low open woodlands of <i>Western Myall with a Chenopod shrub understorey</i> (BAM 52, 62, 81, 106, 123).

Item	Description
	<ul style="list-style-type: none"> • Total 8.934 ha of low open woodlands with <i>Western Myall and Black Oak over Chenopod shrub understorey</i> (BAM 7, 32, 61). • Total 59.010 ha of <i>Chenopod open shrublands +/- emergent trees</i> (BAM 31, 51, 54, 55, 103, 124). <p>The vegetation near the existing pipeline track and the southern parts of the Lincoln Highway is in poor-to-moderate condition, whilst the remainder of vegetation under application is in good-to-excellent condition; however, it occasionally degrades near existing tracks and infrastructure.</p>
Total proposed clearance – area (ha) and number of trees	<p>Proposed clearance includes 87.461 ha of native vegetation, of which 12.2 ha is expected to constitute temporary clearance and be rehabilitated following construction for stringing tracks, stringing pads, pole structure pads (which are wider than the final pole footing) and buffers for machinery mobilisation around infrastructure and structures. There are no discounts being applied for at this time for rehabilitated areas.</p>
Level of clearance	<p>Level 4</p>
Overlay (Planning and Design Code)	<p>The State Significant Native Vegetation Overlay applies to:</p> <ul style="list-style-type: none"> • Areas within the Whyalla CP • Adjacent prescribed 50 m buffer to the CP • In areas within the central southern, and southwestern portions of parcel CT 6144/358 (as the lies applies to the HJP Project), and • In the northwest portion of parcel CT 6045/133. <p>The State Significant Native Vegetation Overlay also applies to a 50 m buffer around the existing Heritage Agreement 1588 and the existing SEB 2007_2001, but the HJP Impact Area does not extend into these areas.</p> <p>The native vegetation overlay applies to the remainder of the HJP Project Area in the southern and northern areas.</p>
<p>A map of proposed clearance area is provided in Figure 1.</p>	



LEGEND

- Major Roads
- Railways
- HJP Impact Area
- HJP Project Area
- Cadastre
- Defence Land
- Existing Heritage Agreement 1588 (not related to the current proposal)
- Existing SEB Area 2007_2001 (not related to the current proposal)
- IBRA Associations
- IBRA Sub-regions
- Landscape Management Regions
- Water Bodies



Data Sources: SA Gov (2024), JB5G (2024); Imagery Sources: ESRI Online Imagery Services
 \\AUSYD09V501\GISProj\SA_15443900_NWS_EIS\Geospatial\Apps\ArcPro\Figures\EIS\15443900_NWS_EIS_Figures_HJPraps | Date: 3/26/2024

Figure 1. Map showing Project Area in black and proposed Impact Area in white

Item	Description
Mitigation hierarchy	<p>Avoidance and mitigation:</p> <p>A range of avoidance and mitigation approaches have been and continue to be considered by OHPSA, including the following:</p> <ul style="list-style-type: none"> • Consideration of multiple sites and multiple potential options within the current proposed general area to avoid and minimise impact to high-value ecological features (such as higher quality vegetation and habitat for threatened species) whilst balancing engineering and design feasibility, expense, consultation with stakeholders and connection with other projects. • Avoiding clearance by positioning infrastructure and laydown areas in existing clear areas and utilising existing tracks wherever feasible. • Minimising impact by positioning infrastructure close to existing infrastructure, especially in areas where vegetation is often more degraded. This approach also reduces the extent of landscape scale infrastructure footprints. • OHPSA worked with the Traditional Owners of the region, the Barnjarla Determination Aboriginal Corporation (BDAC), and the Whyalla City Council to secure options over the multiple sites considered. <p>Additional to infrastructure positioning to minimise impact, other mitigation has or will include:</p> <ul style="list-style-type: none"> • Detailed mapping to avoid vegetation communities with tall <i>Maireana pyramidata</i> (Black Bluebush), which often provides "Preferred" habitat for nationally threatened Western Grasswren (<i>Amytornis textilis myall</i>) (Table 3). • Detailed planning to minimise impact in more heavily wooded areas during planning phases and proposed micrositing of some infrastructure (e.g. transmission line poles and tracks) to avoid the clearance of trees where feasible, particularly of larger 'old growth' specimens. • Flagging (or similar) to delineate vegetation earmarked for clearance and vegetation not to be cleared, including additional identification of very high value patches. • Signage and education regarding Western Grasswren identification and high value habitat to assist in minimisation of disturbance and impact during construction. • Rolling vegetation where feasible in areas of temporary clearance. • Weed control and hygiene during planning, construction and maintenance. <p>Rehabilitation:</p> <p>Approximately 12.2 ha of the overall 89.4 ha impact area is proposed to comprise temporary clearance for the transmission line stringing tracks, stringing pads, pole structure pads and buffers around infrastructure and structures for machinery during construction. It is proposed these areas will be rehabilitated following construction via spreading topsoil and vegetation back over the cleared area, weed control and allowing natural regeneration to occur. While intervention such as revegetation is considered unlikely to be appropriate, it may be considered should the proposed rehabilitation be unsuccessful. No SEB discounts are being applied for at this time for site rehabilitation.</p> <p>Offset (Significant Environmental Benefit (SEB)):</p> <p>Options for on-ground offsets are currently being explored by OHPSA, including ongoing negotiations around securing appropriate parcels of land.</p>

Item	Description
SEB Offset proposal	<p>On-ground offsets (SEB) are currently being explored. Full details of the SEB offset proposal will be provided in the complete Native Vegetation Data Report which will be formally submitted for assessment when available.</p> <p>Clearance for the impact site equates to 6,344.66 points of gain required to be achieved by an on-ground SEB. If a payment into the fund were elected, the required amount would be \$572,539.79, including an administration fee of \$29,848.05.</p>

2. Purpose of clearance

2.1 Description

The clearance of native vegetation is required to construct a world-leading hydrogen power station, electrolyser and storage facility near Whyalla, South Australia, ready for operation in early 2026. The proposed project is known as the Hydrogen Jobs Plan (HJP) (the HJP Project) and has received \$593 million from the South Australian Government. The Office of Hydrogen Power South Australia (OHPSA) has been established to oversee the design and delivery of the HJP Project, including the continued operation of the hydrogen power station. The proposed HJP Impact Area includes 89.436 ha including 87.461 ha of native vegetation clearance of which approximately 12.200 ha is expected to be temporary (following rehabilitation).

The HJP aims to support South Australia's transition toward its target of 100% net renewable energy by 2030 (JBS&G 2023) and will comprise the following details:

- The 250 Mwe electrolysers will utilise South Australia's excess renewable energy generated from large-scale solar and wind resources.
- The 200 MW hydrogen power station will deliver dispatchable power generation into the energy grid and provide 'firming services' that will assist in balancing the renewable load, meaning South Australia moves closer to a fully renewable energy system. Firming is a process of using dispatchable power generation to balance the electricity production from an intermittent power source, such as wind or solar, for a guaranteed period of time. Historically, this has been achieved with coal or gas fired power stations.
- The hydrogen produced will be stored to fuel the power station and for hydrogen offtake to be made available for local industry to support the decarbonisation of their operations.

2.2 Background and landscape context

2.2.1 Background

Jacobs was engaged to undertake terrestrial ecological assessments for the Hydrogen Jobs Plan (HJP) Project across various site options during 2022, 2023, and 2024. These assessments also included other nearby projects, such as the Port Bonython Hydrogen Export Hub and the Northern Water (NW) Project.

During early surveys, the HJP Project Area was assessed in conjunction with assessments undertaken for the Northern Water Project for Infrastructure South Australia. 11 more recent surveys in late 2023 and early 2024 were undertaken specifically for OHPSA who are currently managing the Project (and constitute the current proponent). The majority of surveys have occurred across a broader area referred to as the HJP Project Area (approximately 2025 ha) with results presented in the South Australian Government Renewable Hydrogen Power Station, Electrolysers and Storage Facility Site 1 and Transmission Line Ecology Baseline Assessment Report (Jacobs and JBS&G 2023a).

The clearance proposal in its current form represents the expected impact at the time of application for the HJP Project (the HJP Impact Area) and includes 87.461 ha, of which approximately 12.200 ha is expected to comprise temporary clearance. The final current impact area includes a main hydrogen facility located just south of the Whyalla Conservation Park (CP), adjacent the Lincoln Highway, with water and transport infrastructure running south adjacent the highway and a transmission line running north through the Whyalla CP (adjacent an existing track) into Department of Defence (DoD) land and across the Lincoln Highway to a substation (Figure 4). The broader surveys have been key drivers of impact mitigation on high value vegetation and habitat for nationally threatened species balanced with project feasibility. Infrastructure has been positioned in degraded areas and near existing infrastructure where feasible and the resulting impact is considered to represent what might be the minimum impact for the project to be feasible.

Other related and nearby projects are in various stages of planning and are expected to form future applications for the clearance of native vegetation in the vicinity of the Project Area. However, there are not expected to be further applications directly linked to the current application for the HJP Project by OHPSA.

2.2.2 Landscape setting

The HJP Impact Area (outside of the Whyalla CP) occurs within land mapped and described as being used for 'Production from Relatively Natural Environments – Grazing native vegetation' (NatureMaps 2023). Land use within the portion of the transmission line that occurs within the Whyalla CP is defined as 'Conservation and Natural Environments'. East of the Lincoln Highway, in the area broadly surveyed but not included in the current HJP Project Area, land use is a combination of 'Production from Relatively Natural Environments – Grazing native vegetation' and 'Conservation and Natural Environments'.

Two large water tanks are located on a stony calcrete rise in the south of the HJP Project Area. These tanks were in an area of interest with multiple Western Grasswren observed, inland tall shrubland and open woodland vegetation and a network of trails being used by local community (observed during the survey). These tanks are at times used as a reference point in this report and referred to as the "Whyalla water tanks". Southeast of the HJP Impact Area is an area of intensive industry including manufacturing and industrial production.

Land in the proposed transmission line footprint north of the Whyalla CP is also combined Tregolana Pastoral Lease used for grazing in addition to being part of the Department of Defence (DoD) Cultana training area. To the west of Tregolana is the Roopena and Myola/Iron Baron Pastoral Leases. To the west of the HJP Project Area is Heritage Agreement 1588 which is also an SEB under the NV Act (SEB 2007_2001) which both extend to just west of the Whyalla water tanks.

The HJP Project Area occurs across a single IBRA Region, Gawler (GAW); and a single IBRA Sub-region (Myall Plains) (IBRA Version 7). It occurs just north of the junction of three IBRA Associations (Version 6) including Red Rock to the west, Tregolana to the east and Whyalla to the south. This unusual junction of three IBRA Associations (and therefore three distinct landforms) has resulted in the HJP Project Area supporting a diverse range of landforms and floristic communities. However, the vast majority of the HJP Impact Area occurs within the Tregolana IBRA Association which is less variable and dominated by flat plains of chenopod shrublands and woodlands of *Acacia papyrocarpa* (Western Myall) and *Casuarina pauper* (Black Oak) over chenopod shrublands.

A general landscape context map is provided in Figure 3, whilst the general infrastructure layout is provided in Figure 4.

2.2.3 General Location Map

The HJP Project Area is located approximately 0.7 km north of Whyalla, South Australia in the Eyre Peninsula Landscape Management Region (EP LMR). A location map is provided in Figure 2, whilst the HJP Project Area and HJP Impact Area are illustrated in Figure 3.

2.3 Details of the proposal

The HJP Project components can be grouped within three main elements as follows (adapted from the EPBC referral (JBS&G, 2023) but with additional location detail and updated to current proposal):

1. Primary facility including the hydrogen production plant, purification, storage and hydrogen-fuelled power station (proposed to be located just south of the Whyalla CP).
2. Northern infrastructure including a high voltage transmission line proposed to run along the western side of the Lincoln Highway and new Cultana East substation before tying into the adjacent transmission lines within the Cultana Training Area. Southern infrastructure, including the service connections for water and wastewater / sewer pipelines (proposed to extend south from the primary facility south to the Whyalla water tanks then southeast utilising existing tracks as feasible).
3. Southern infrastructure includes service connections for water and wastewater / sewer pipelines and intersection upgrades.

The three elements are described in more detail below (adapted from the EPBC referral (JBS&G 2023)):

1. The primary hydrogen facility components include:
 - A hydrogen production plant, consisting of a 250MW electrolyser system, is proposed just south of the Whyalla CP. It will produce hydrogen from demineralised water using renewable energy from the grid. The electrolyser system will include all equipment required for hydrogen production, such as electrolyser stacks, gas-liquid separation vessels and heat exchangers. The preferred electrolyser technology for the indicative design is alkaline, which requires supplementary equipment including

tanks and pumps. The alkaline chemical is not consumed by the process and does not require regular replacement.

- A hydrogen-fuelled power station consisting of turbine generators with a 200 MWt power generation capacity. Produced hydrogen will be transferred from the hydrogen storage system into the turbine generators to produce electricity. Exhaust gas from electricity production will be directed to the atmosphere. This will include uncombusted constituents of air (mainly nitrogen, oxygen, and argon) and blended gas combustion products (water vapour, potentially with normal hydrocarbon products if natural gas is used during start-up).
- The on-site storage system will have a capacity of up to 100 tonnes of hydrogen to provide fuel for the power station and potentially other industrial uses. OHPSA is considering two options for hydrogen storage; an on-site pipeline system and an offsite storage system, the latter is subject to a separate approvals process and is not included as part of this application.

2. Northern infrastructure – substations and electricity transmission infrastructure:

The HJP Project will require an electrical connection to the grid. It will utilise electricity from the grid for its operational activities and inject hydrogen-produced electricity back into the grid. It is proposed that a transmission line will run through the Whyalla CP adjacent an existing track close to the Lincoln Highway and connect to an existing transmission line approximately 600 m north of the Cultana substation. The transmission line has been positioned near an existing access track to minimise disturbance to vegetation. It is expected that clearance will include a six-metre-wide corridor where it is not intersecting the existing track itself. The transmission will then extend west across the Lincoln Highway and connect to a new substation. Clearance associated with stringing pads and infrastructure is proposed to be temporary and subject to rehabilitation (but no discounts are being applied for). The transmission line will extend across the Lincoln Highway and attach to a new substation.

3. Southern infrastructure – potable water connection and intersection / road upgrades:

A water pipeline will run south largely along an existing track and connect the HJP Project infrastructure to the SA Water network at the southern end of the Primary Facility Area. Water will be used to produce hydrogen and for operational activities. It is expected the bulk of water to the plant will be supplied to a number of process water tanks, with downstream pumps to distribute potable water to the various plant users. The offtake for firefighting water supply, if required, will be upstream of all other plant water users. A wastewater pipeline will run along the edge of Lincoln Highway and provide a connection to GFG's Liberty Steelworks to allow reuse of wastewater under GFG's licence conditions. A representative layout of the infrastructure proposal is provided in Figure 4.

Intersections and roads will be upgraded / widened to accommodate heavy machinery and improve access to the facility.

2.4 Approvals required or obtained

Approvals required for the Project are expected to include:

- *Native Vegetation Act 1991 (Native Vegetation Regulations 2017, Regulation 12(34) – Infrastructure)*
- *Planning, Development and Infrastructure Act 2016 (Development, Sections 3 and 131)*
- *Environment Protection and Biodiversity Conservation Act 1999 (impacts to Vulnerable EPBC Act listed Western Grasswren and Vulnerable EPBC Act listed Southern Whiteface). A referral for the HJP Project was submitted to the Commonwealth Government in late 2023 (JBS&G 2023).*
- Licensing under the *South Australian Environment Protection Act 1993* will be required, and relevant Environment Protection Policies will apply, including the Environment Protection (Air Quality) Policy 2016, Environment Protection (Commercial and Industrial Noise) Policy 2023 and the Environment Protection (Water Quality) Policy 2015.
- The facility may require licensing as a Major Hazard Facility under the Work Health and Safety Act 2012.

The Project will require alignment with obligations under the *National Parks and Wildlife Act 1972* (NPW Act) and the *Landscape South Australia Act 2019* (LSA Act) including the management of native fauna and weeds Declared under the LSA Act (including Weeds of National Significance).

2.5 Native Vegetation Regulation

It is expected that vegetation clearance for the Project will be applicable under Schedule 1, Part 3, Division 5, *Regulation 12(34) – Infrastructure* of the *Native Vegetation Regulations 2017*. The proponent must comply with the following additional requirements (requirement 1 being applicable to the current proposal):

1. Clearance incidental to the construction or expansion of a building or infrastructure where it is deemed the clearance is in the public interest; and/or
2. Clearance is required in connection with the provision of infrastructure or services to a building or place provided that consent under the Development Act 1993 has been obtained; and/or
3. Clearance is undertaken in accordance with a Native Vegetation Council (NVC)- approved Standard Operating Procedure.

Clearance under *Regulation 12(34)* requires establishment of a SEB to offset removal of the native vegetation. Investigations into appropriate on-ground SEB areas are currently progressing.

2.6 Development Application information (if applicable)

A Development Application (DA) is required for the HJP Project. A Development Application including application number will be provided upon lodgement of the application. Table 1 below summarises the Zones and Sub Zones applicable to the HJP Project area.

Table 1. HJP Project Area Zone and Sub Zones.

Project component	Zone	Sub Zone
Site 1	Strategic Employment	N/A
Transmission line envelope	Conservation	N/A
	Rural / Commonwealth Facilities	N/A
	Rural / Commonwealth Facilities	Significant Industry
	Strategic Employment	Significant Industry
	Strategic Employment / Conservation / Rural / Remote Areas	N/A
	Open Space / Regional Areas / Rural	N/A

The State Significant Native Vegetation Overlay applies to:

- Areas within the Whyalla CP
- Adjacent prescribed 50 m buffer to the CP
- In areas within the central southern, and southwestern portions of parcel CT 6144/358 (as the lies applies to the HJP Project), and
- In the northwest portion of parcel CT 6045/133.

The Native Vegetation Overlay applies to the remainder of the HJP Project Area in the southern and northern areas.



Figure 2. Location map showing the landscape surrounding the HJP Project Area in black and the HJP Impact Area in white



Figure 3. Project Area and adjoining landscape context map

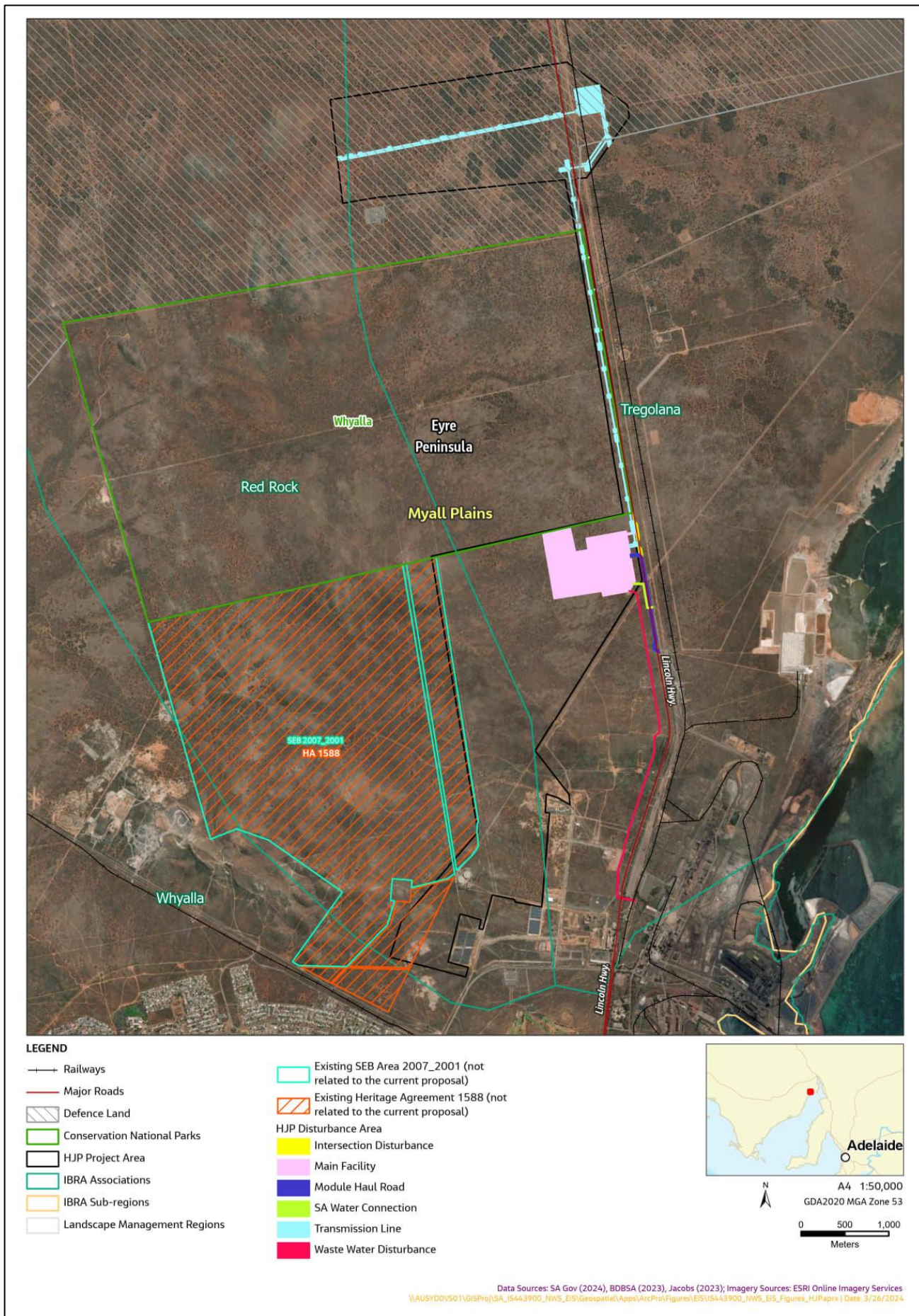


Figure 4. Infrastructure layout and component map

3. Method

3.1 Desktop assessment

The assessment comprised a desktop review and field assessment in accordance with assessment under the NV Act and associated Regulations, using the Bushland Assessment Methodology (BAM) (NVC 2020).

Initial database searches were undertaken in spring 2022 prior to the initial surveys, with follow-up searches undertaken in spring 2023 and summer 2024, following alterations in the expected HJP Impact Area. Combined with regional knowledge, early database survey results were used to highlight specific species to be targeted during field survey (Western Grasswren) and to undertake initial likelihood of occurrence assessment for threatened flora and fauna species (with results presented in the Terrestrial Hydrogen Jobs Project Site 1 Terrestrial Ecology Assessment (Jacobs 2023)).

In March 2023, several species relevant to the Project Area were added as threatened under the EPBC Act, including Diamond Firetail (*Stagonopleura guttata*), Blue-winged Parrot (*Neophema chrysostoma*) and Southern Whiteface (*Aphelocephala leucopsis*). These species were not specifically targeted during Jacobs' surveys but were recorded if observed and included in subsequent likelihood assessments.

The most recent desktop assessment for the Project was undertaken using a 5 km buffer from an area slightly larger than the current HJP Impact Area and included the following resources and search buffers:

- Output from the EPBC Act Protected Matters Search Tool (PMST) (5 km from the impact area as of 1 February 2024) (Appendix 1.1 and 1.2, extracted 7th February 2024 (DCCEEW 2024a)).
- Biological Databases of South Australia (BDBSA) observation records of species (5 km from the impact area as 1 February 2024) (BDBSA Recordset number DEWNRBDBSA240123-2 extracted in February 2024) and superseding the previous output extracted in October 2023 (Recordset: DEWNRBDBSA231024-2) and September 2022 (Record set DEWNRBDBSA220921-1) (DEW 2024b).
- Birdlife records supplied by DEW based on the 5km Study Area (Recordset DEWNRBDBSA240123-2 extracted in February 2024).
- Atlas of Living Australia (ALA) (ALA 2024) records where there is a paucity of information, or where extra justification was required.
- Review of publicly available literature, including the Species Profile and Threats Database (SPRAT), species recovery plans and Threatened Species Scientific Committee notes (DCCEEW 2023 b – e).
- Review of the Department of Environment and Water (DEW) NatureMaps Tool to identify vegetation communities mapped for the area and identify any ecologically significant features that may occur within the HJP Project Area or surrounds (DEW 2024a).
- Liaison with local stakeholders (e.g. DEW) to obtain updated information about the region.

A likelihood of occurrence for species identified in the PMST and BDBSA searches is provided in the Assessment Outcomes. The likelihood of occurrence status (unlikely, possible, likely or known to occur in the Project area) for each of the highlighted species or communities is based on the criteria provided in Table 2 below.

The likelihood assessment outcomes for the HJP Impact Area were sent to the Native Vegetation Branch in DEW on Tuesday 5 March 2024 for review and were approved with minor amendments on Wednesday 13 March 2024. The approved list of species were included in the BAM scoresheets.

Table 2. Species likelihood of occurrence criteria used in this study (adapted from the DEW data report template)

Likelihood Category	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; <ul style="list-style-type: none"> • The species was recorded as part of field surveys.
Likely	<ul style="list-style-type: none"> • 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.

Likelihood Category	Criteria*
Possible	<p>Recorded within the previous 20 years, the area falls inside the known distribution of the species, but the area provide limited habitat or feeding resources for the species.</p> <ul style="list-style-type: none"> 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.

*BDBSA Study Area includes the Project Area and a 5 km buffer

3.2 Field assessment

To date, seven field assessments have been undertaken by Jacobs in relation to the HJP Project (some combined with surveys for other nearby infrastructure projects). In addition, EBS Ecology undertook a targeted fauna survey in 2023 (EBS 2023). The date and high-level description of each Jacobs vegetation survey is described below:

- **Survey 1, spring 2021 (5-7 October):** a vehicular and foot survey by Jacobs' ecologists (including BAM) was undertaken as part of pre-feasibility planning for the Northern Water and HJP Project (Jacobs and GHD in 2021). The survey was undertaken in spring to highlight ecological constraints and provide data for broad mapping of vegetation groups, potential threatened species habitat and potential land management issues (included areas near, but not within the HJP Project Area). The findings of this survey are included in this report where relevant.
- **Survey 2, spring 2022 (5-13 October):** vegetation survey (BAM) and targeted EPBC Act listed species and communities habitat survey (Western Grasswren, Malleefowl), bird surveys, Song Meter deployment – and included areas within and adjacent the HJP Project Area.
- **Survey 3, summer 2022 (5-9 December):** follow-up 'gap fill' vegetation and habitat survey, bird surveys, Song Meter deployment – and included areas within and adjacent the HJP Project Area.
- **Survey 4, summer 2023 (21-22 February):** follow-up 'gap-fill' vegetation and habitat survey. Included areas near, but not within the HJP Project Area.
- **Survey 5, spring 2023 (25-26 September):** detailed vegetation and habitat mapping of target areas within the HJP Project Area to a finer scale focussing on Western Grasswren habitat and tree cover, including consideration of habitat value for Southern Whiteface. Survey also included a broad assessment of the area for the proposed transmission line.
- **Survey 6, spring 2023 (5 November):** brief assessment of the proposed substation location.
- **Survey 7, summer 2024 (5- 7 February):** assessment of the water pipeline infrastructure near the Lincoln Highway (southern Infrastructure) and assessment of the proposed SEB Area.

Each field team included two ecologists, including a minimum of one (sometimes two) experienced NVC accredited consultant to undertake assessment under the NV Act, including vegetation assessment and mapping, general fauna observations and habitat classification.

Figure 5. illustrates the surveyed BAM assessment sample points (100 m x 100 m quadrats), bird survey sites and Song Meter installation locations.

3.2.1 Vegetation Assessment and classification

Vegetation was assessed in line with the BAM to determine vegetation composition and condition across the HJP Project Area to assist in valuing vegetation, driving mitigation and calculating SEB once infrastructure footprints are known. The BAM enables determination of a Unit Biodiversity Score (UBS) per hectare which is then used with other factors to determine the required value of the SEB.

After the series of surveys, the HJP Project Area has been stratified into 27 BAM Sites with almost half of these added during the most recent surveys to assist in more granular mapping to inform mitigation and avoidance processes (e.g. similar communities were separated if they had more variable tree cover or taller Chenopods). Some BAM sites (vegetation associations) have multiple sample points to enable more accurate calculation of UBS. Although 27 BAM were mapped across the site, only 15 BAM fall in the HJP Impact Area.

As the HJP Project was initially assessed concurrent with the Northern Water Project, the numberings systems and groupings have been retained for various efficiency and data storage reasons. Given the very large scale of the Northern Water and HJP Project, BAM Sites have been grouped into broad communities based on broader features

and habitat value. Additionally, Broad Vegetation Communities are further combined into Major Vegetation Groups based on major floristic and landform features, including consideration of the Bushland Condition Monitoring (BCM) manual for Eyre Peninsula South Australia (Milne et al 2008).

Table 5 lists the BAM Sites (vegetation associations), Broad Vegetation Communities and Major Vegetation Groups relevant to the HJP Project Area, whilst BAM impacted are described in more detail with photographs provided. Major Vegetation Groups were stratified based on major floristic features and landform applicable to arid communities including consideration of the Bushland Condition Monitoring (BCM) manual for Eyre Peninsula South Australia (Milne et al 2008).

During the field survey, vegetation mapping was conducted using ESRI Field Maps. The process included one or two one-hectare BAM Sample Point intensive assessments within each BAM Site vegetation association. Additionally, start and end point mapping (rapid assessment) was performed, along with annotation of hard copy aerial photographs. At rapid vegetation/mapping points, vegetation was allocated to an existing BAM site or a new one was established. Photographs were taken and a bird survey may have been undertaken. At BAM Sample Point one-hectare quadrats, the following information /data was collected:

- Detailed vegetation description, including structural features such as woodland, open woodland, low open shrubland.
- Photo(s) and coordinate.
- Flora species (exotic and native) and cover / abundance.
- Consideration of fauna habitat characteristics (e.g. hollows, litter level, presence of preferred vegetation as habitat). (See targeted EPBC listed fauna for further detail).
- Consideration of the presence of the Threatened Ecological Community (TEC) Subtropical and Temperate Coastal Saltmarsh in coastal areas.
- Opportunistic identification of the presence of Commonwealth (EPBC Act) and State (NPW Act) listed flora species and / or suitable habitat through the extent of the surveyed areas.
- Key weeds, areas of disturbance were collected opportunistically throughout the surveyed areas.
- Live data was collected predominantly using ESRI "Field Maps" on phones or iPads, supported with collection of data using handheld Global Positioning System (GPS), cameras and hard copy maps.

Figure 5 illustrates the surveyed BAM assessment sample points (100m x 100m quadrats), bird survey sites and Song Meter installation locations. Other targeted survey sites and results are not indicated on this map.

3.2.2 Fauna survey

Specialised fauna experts undertook targeted fauna survey of the HJP Project Area including bird surveys, ground searches, call play-back and deployment of Song Meters in relevant locations targeting Western Grasswren.

Figure 5 illustrates the surveyed BAM assessment sample points (100 m x 100 m quadrats), bird survey sites and Song Meter installation locations, whilst further detail on targeted fauna assessment is provided below. Other targeted survey sites and results are not indicated on this map.

Targeted threatened fauna surveys

Targeted threatened fauna surveys focused on Western Grasswren (listed as Vulnerable under EPBC Act), which was identified as likely occurring within the HJP Project Area during early desktop assessments.

Southern Whiteface, listed as Vulnerable under the EPBC Act on 31 March 2023 was not specifically targeted within the 2022 targeted fauna surveys due to not being listed under the EPBC Act at the time of survey, but was recorded if observed, and considered in desktop and on ground surveys following its listing. The species was also found to occur by EBS during targeted bird surveys in 2023 (EBS 2023).

Field survey including call playback and habitat mapping

Targeted bird surveys involved one to two surveyors conducting a roaming survey from the chosen location, usually aligning with a BAM assessment sample point or rapid vegetation/mapping point. Surveys were undertaken for a minimum of 20-25 minutes per site for each observer and were formally undertaken at five fauna survey sites within the broader HJP Project Area (BS 16, 17, 18, 26, 67 and 76) (Figure 5).

Call-playback was used to elicit calls from Western Grasswren to assist with detecting their presence; however, all birds detected were recorded.

Opportunistic records were also recorded for evidence of other fauna as relevant, including pest fauna and common fauna.

Targeted surveys involved:

- Broad high-level habitat suitability assessment and mapping aligned with vegetation mapping;
- Opportunistic and targeted surveys (for individuals, signs of presence); and
- Song Meter deployment, for Western Grasswren detection only.

Each of these methods is discussed further below, as well as further assumptions / criteria considered for the different target fauna to date.

Target species habitat criteria - Western Grasswren

Western Grasswren potential habitat suitability is known to vary across the landscape depending on site specific characteristics including shrub density, cover of dominant species; and presence, height and cover of spiny shrubs. Jacobs used a classification system with a sliding scale of desirable habitat features for Western Grasswren to predict the suitability of habitat in the Project Area for Western Grasswren, with criteria defined in Table 3. Habitat suitability was collected at the vegetation polygon level (e.g. patch level) whereby, a single vegetation association may have variable habitat classifications across multiple patches. However, one association usually had one habitat classification.

In addition to habitat classification, other survey methods to detect Western Grasswren included searches in areas of suitable habitat (detection of calls and sightings of birds) early in the morning and afternoon and call playback. EBS Ecology also undertook targeted Western Grasswren surveys in the HJP Project Area (EBS Ecology 2023).

Table 3. Western Grasswren habitat criteria (adapted from Jacobs (2019)).

Habitat Suitability	Criteria	Rationale
Preferred Habitat (highly suitable)	<p>Total shrub cover 0 – 1 m > 30%.</p> <p>Cover of spiny shrub > 0.5 m, or other dense tall chenopod shrubs (0.5 – 1 m) represents a high proportion of the total shrub cover.</p> <p>Dominant shrub species include <i>Maireana pyramidata</i> (Blackbush), <i>Lycium australe</i> (Australian Boxthorn), <i>Rhagodia spinescens</i> (Spiny Saltbush), <i>Atriplex vesicaria</i> (Bladder saltbush).</p> <p>Can occur with <i>Acacia papyrocarpa</i> (Western Myall), Bullock Bush low woodlands (less typical, includes Spiny Fanflower).</p> <p>For likelihood of use also consider BDBSA / Jacobs records within 5 km and habitat connectivity within the landscape.</p>	<p>Mean shrub cover of sites surveyed by Black et al (2009) which had Grasswrens was 30.6%.</p> <p>Sites with Grasswrens recorded historically have a high cover of shrubs to ground level, provided by dense chenopod shrubs and / or spiny shrubs.</p> <p>The majority of sites with Grasswren recorded by Black et al (2009) had dense <i>Maireana pyramidata</i> (Blackbush) and / or <i>Lycium australe</i> (Australian Boxthorn) with <i>Rhagodia spinescens</i> (Spiny Saltbush) or <i>Rhagodia ulicina</i> (Spiny Goosefoot) and <i>Atriplex vesicaria</i> (Bladder saltbush) commonly recorded, and “were generally confined to drainage lines”.</p> <p>Black and Gower (2017) Table 4 – <i>Maireana pyramidata</i> (Blackbush) and <i>Lycium australe</i> (Australian Boxthorn) low shrublands or open <i>Acacia papyrocarpa</i> (Western Myall) and Bullock-bush low woodlands, less commonly Nitre Goosefoot or other shrublands, rarely mallee; Spiny Saltbush common.</p>
Atypical Habitat (also suitable)	<p>Total shrub cover 0 – 1 m > 20%.</p> <p>Cover of spiny shrub > 0.5 m, or other dense tall chenopod shrubs (0.5 – 1 m) represents a high to moderate proportion of the total shrub cover.</p>	<p>Black et al. (2009) recorded Grasswrens at a lesser number of sites, described as “atypical”, which displayed these characteristics.</p> <p>These sites were not in drainage lines and did not contain <i>Maireana pyramidata</i> (Blackbush)</p>

Habitat Suitability	Criteria	Rationale
	<p>Dominant shrub species include <i>Maireana sedifolia</i> (Pearl Bluebush), <i>Scaevola spinescens</i> (Spiny Fanflower), <i>Dodonaea lobulata</i> (Lobed Leaf Hop Bush), <i>Acacia nyssophylla</i> (Pin bush), <i>Atriplex vesicaria</i> (Bladder saltbush) +/- shrubs (e.g. <i>Senna</i> sp.).</p> <p>Can occur with <i>Acacia papyrocarpa</i> (Western Myall), Bullock Bush +/- Sugarwood low woodlands.</p> <p>May include <i>Casuarina pauper</i> (Black Oak) with spiny shrubs present.</p> <p>For likelihood of use also consider BDBSA / Jacobs records within 5-10 km and/or habitat connectivity within the landscape.</p>	<p>and/or <i>Lycium australe</i> (Australian Boxthorn) as dominants (i.e. can occur) but did have a "high cover" of dense spiny shrubs.</p> <p>Jacobs assessment of records versus habitat based on DEW mapping in atypical habitats.</p>
Low Potential (potentially suitable, buffer areas)	<p>Spiny shrubs and/or dense chenopod shrubs present, but at low cover or < 0.5 m tall.</p> <p>Consider BDBSA / Jacobs records not within 20 km and limited to no habitat connectivity within the landscape.</p>	<p>Black et al. (2009) found that habitats in which Grasswren were recorded had a high cover of dense shrubs 0 – 1 m tall.</p>
Not Suitable	<p>Total shrub cover 0-1 m is very low; spiny shrubs are not present or <1% cover.</p> <p>Consider BDBSA / Jacobs records not within 20 km and limited to no habitat connectivity within the landscape.</p>	<p>Lack key shrub cover, species mixes and densities of preferred / atypical habitats.</p>

Song Meter Deployment

Song Meters were deployed to add value and increase data robustness for detection of Western Grasswren (given this species can be elusive) and to enable sufficient hours of data collection. The Song Meters were deployed within areas of suitable Western Grasswren habitat and included five sites for a minimum of 16 continuous hours /day at a site depending on survey logistics, usually at least covering a morning and afternoon session.

Five Autonomous Recording Units (ARUs) of the Song Meter Mini Bat model (Wildlife Acoustics, 2022) were fitted with an acoustic stub microphone to enable recording of vocal bird species in the audible frequency range (Professional Trapping Supplies, 2022). Song Meters were deployed at three sites within the broader HJP Project Area (SM05, SM06 and SM07). An additional two Song Meters were positioned east of the Lincoln Highway within suitable habitat and given mobility of fauna these sites are considered relevant to the Project. A summary of deployment information is provided in Table 4 below and locations of sites where Song Meters were deployed is shown on Figure 5.

ARUs were configured to record in the acoustic mode: for one hour either side of sunset and sunrise. In this configuration, for every 24 hours of deployment, each ARU captured four hours of acoustic recordings. Each ARU was affixed to a tree or other stable object using cable ties. All cable ties were clipped short to avoid the potential for whistling interference in high winds. This model of ARU is synchronised with the GPS reading from the user's smartphone to correctly set sunrise and sunset times. The location of each deployment was also marked using a conventional GPS unit (*iPad*).

Sites were chosen based on habitat suitability for Western Grasswren (see Table 3) and in an open location away from artificial sounds that may interfere with results. Whilst Southern Whiteface were not included as a target species for surveys (as they were not listed under the EPBC Act at the time of surveys). However, the Song Meter method is considered suitable for this species and the data was analysed to detect this species (along with the other bird species recently listed under the EPBC Act). None-the-less, Southern Whiteface was not recorded by the ARUs. If common birds were observed / confirmed during ground surveys, they were not tabulated as acoustic data. All records (acoustic) and ground surveys were tabulated for threatened species.

Acoustic Analysis

ARUs recorded all data to Secure Digital cards. The data was then transferred to a laptop computer and backed-up to internal servers. All recordings were processed using Raven Lite 2 bioacoustics analysis software (K. Lisa Yang Center for Conservation Bioacoustics at the Cornell Lab of Ornithology, 2022).

Analyses for these deployments followed the procedure of analysing all recordings for the presence of any fauna species by first detection using a combination of listening through in real time and high-speed visual spectrogram scanning. All audible taxa were noted in the order in which they appear in recordings. Any unidentified signals were noted and, if they could not be identified by consultation with other ecologists, were documented in analysis notes.

Table 4. Song meter summary details.

Song Meter Deployment Number	Date and time of deployment (US date format)	GPS Coordinates	Location in project area	Western Grasswren Habitat Type
SM05	2022-10-07 4:53	53H 740190 6354303	In the funnel shaped area in the north, adjacent the Lincoln Highway.	Atypical
SM06	2022-10-07 4:53	53H 740190 6354303	Within the centre of the project area, but towards eastern border. Edge BAM 22, perimeter with BAM 7	Atypical
SM07	2022-10-07 4:14	53H 739754 6347417	Within the centre of the project area, BAM 22	Atypical
SM08	2022-10-07 4:40	53H 740680 6351455	East of the Lincoln Highway opposite BAM 81	Atypical (requires ground-truth)
SM23	2022-12-08 6:27	53H 740612 6352911	East of the Lincoln Highway north of BAM 32	Atypical

3.3 Assessment limitations

Limitations related to the desktop and field assessments are as follows:

- The likelihood assessment is based on data available at the time of the assessment in addition to the team's professional knowledge and expertise. However, it is possible there are inaccuracies with the available data and/or that species occur that have not been identified. However, most/all species that could occur in the vicinity have been considered.
- Additional bird species were added to the EPBC Act on 31 March 2023, post completion of Jacobs' targeted bird surveys. Additional species were also added in January 2024. Whilst these species would have been detected through Song Meter recordings, bird surveys (if present at those sites) and opportunistically, they were not initially considered as potential target species for surveys and / or habitat mapping.
- Vegetation was surveyed on ground where feasible, but given the very large scale and linear nature of the Project, a range of techniques were applied to vegetation and habitat mapping including on-ground vegetation survey (BAM), rapid point sampling, and factors such as review of DEW vegetation mapping / review of aerial imagery and site knowledge. The main Hydrogen facility area was considered to have relatively high-level ground-survey validation, whilst the transmission line and substation areas were subject to only brief survey of accessible areas in the timeframe, therefore BAM site stratification and habitat mapping is expected to have limitations through this area. Regardless, it is considered that sufficient information was collected to enable calculation of a UBS and broadly quantify habitat suitability for target species).

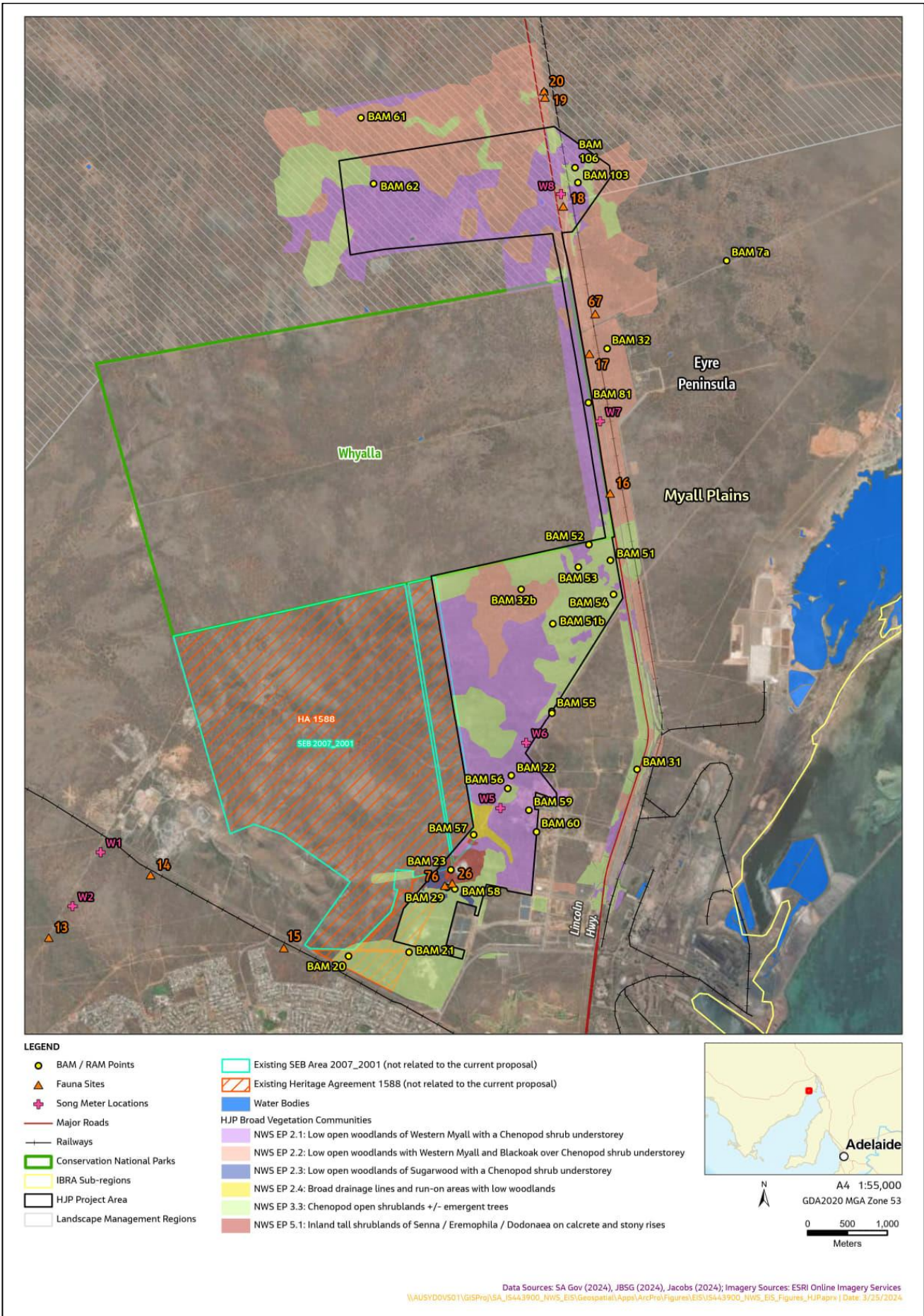


Figure 5. BAM assessment sample points (100m x 100m), Bird Survey sites and Song Meter placement locations.

4. Assessment Outcomes

4.1 Vegetation Assessment

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

Five broad vegetation communities (refer to Figure 5) and 27 BAM Sites (vegetation associations) (refer to Figure 6, Figure 7, Figure 8, Figure 9 and Figure 10) were mapped across the HJP Project Area (Figure 5). Of those, the HJP Project is expected to impact three broad communities and 15 BAM Sites (vegetation associations), including some of the more degraded associations.

Broad vegetation communities and BAM Sites impacted include:

- A total of 19.517 ha of Low open woodlands of *Western Myall* with a *Chenopod shrub understorey* (broad community NWS EP 2.1) (BAM 52, 62, 81, 106 and 123);
- A total of 8.934 ha of Low open woodlands with *Western Myall and Black Oak over Chenopod shrub understorey* (broad community NWS 2.2) (BAM 7, 32, 61); and
- A total of 59.010 ha of *Chenopod open shrublands +/- emergent trees* (broad community 3.3) (BAM 31, 51, 54, 55, 103, 124).

The majority of open woodlands were in good to excellent condition excluding BAM 123 which was more degraded. In addition, woodlands became slightly more degraded near existing infrastructure. The majority of woodlands occur in the location for the proposed substation (BAM 106), in the Whyalla CP (BAM 81) and some areas of the main hydrogen facility (BAM 52, BAM 32). Clearance of woodlands has been avoided / mitigated where possible given the high value of trees, the potential for utilisation by fauna (including Southern Whiteface) and the replacement time for slow growing *Acacia papyrocarpa* (Western Myall).

Chenopod shrublands were in variable condition and attempts have been made to plan infrastructure placement in areas of poorer condition and near tracks where possible. Chenopod shrubland in the best condition was observed in the area for the proposed substation (BAM 103) and in some parts of BAM 51 in the proposed primary hydrogen facility. However, much of the chenopod shrubland in the HJP Impact Area was more degraded than areas of the HJP Project Area further from existing infrastructure. Degradation in the HJP Impact Area (particularly the area for the primary facility) included more widely spaced plants due to historical grazing and local disturbance, lower floristic diversity, decreased structural diversity and increased weed abundance (particularly of Wards Weed (*Carrichtera annua*) and Declared Plant Carrion Flower (*Orbea variegata*)). Furthermore, areas of Preferred Western Grasswren habitat were not observed in the areas proposed for the primary hydrogen facility with vegetation dominated by *Maireana sedifolia* and lacking floristic and structural diversity compared to other areas.

Structural diversity appeared to be a habitat preference for Western Grasswren. The species was most often observed in areas dominated by *Maireana pyramidata* but also with a diversity of mid-storey shrubs such as *Alectryon oleifolius* (Bullock Bush), *Exocarpos aphyllus* (Leafless Cherry), *Geigera linearifolia* (Sheepbush). The species was also observed more often where there were trees including *Myoporum platycarpum* (Sugarwood) and mixed age *Acacia papyrocarpa* and in areas with lower structured species including *Atriplex vesicaria* (Bladder Saltbush) and *Sida petrophila* (Rock Sida) which also likely provide protective cover for Western Grasswren. Following detailed vegetation mapping and targeted threatened species surveys, vegetation with these characteristics have been avoided for the HJP Impact Area.

A number of weeds were observed across the HJP Project Area (see Figure 11). Excluding Wards Weed (*Carrichtera annua*), weeds were not abundant in the HJP Project Area but were more prevalent near existing tracks and infrastructure and generally in the HJP Impact Area, particularly in the area proposed for the primary hydrogen facility and adjacent the Lincoln Highway. Weeds of note include Weeds of National Significance (WoNS): African Boxthorn (*Lycium ferocissimum*) and Prickly Pear (*Opuntia stricta*), which are also Declared Plants under the *LSA Act*. Other Declared Plants observed include Carrion Flower (*Orbea variegata*). Wards Weed was particularly abundant in the area proposed for the main facility and along the track where vegetation was generally more degraded. The general distribution of weeds observed at BAM sites and opportunistically is shown on Figure 11, noting this is not a complete indication of all the weeds that could occur.

Table 5 provides a summary of vegetation communities surveyed in the Project Area and the proposed impacts. Vegetation communities are grouped into Major Groups, Broad Communities and BAM Sites (detailed vegetation associations). More detailed descriptions of the impacted vegetation follows Table 5.

Table 5. Summary of vegetation communities surveyed in the Project Area and the proposed impacts. Vegetation communities are grouped into Major Groups, Broad Communities and detailed vegetation associations (BAM Site) for the HJP Project Area.

*Major Vegetation Group	Broad Vegetation Community Number and Description	BAM Ref	Vegetation Association	IBRA Association	Western Grasswren habitat	**Overall value	Area surveyed (ha)	Area impacted (ha)	UBS (impacted veg only)
Major Group 2 EP Open Woodlands of Western Myall, Black Oak and Sugarwood	NWS EP 2.1 Low open woodlands of Western Myall with a Chenopod shrub understorey (BCM Affinity 9.1)***	BAM 19	<i>Acacia papyrocarpa</i> low open woodland over <i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i> / <i>Maireana sedifolia</i>	Red Rock	Atypical	Moderate to high	0.927	0	NA
		BAM 22	<i>Acacia papyrocarpa</i> low very open woodland over <i>Maireana pyramidata</i> / <i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i>	Red Rock / Tregolana	Preferred	Very high	135.311	0	NA
		BAM 52	<i>Acacia papyrocarpa</i> low woodland over mixed shrubs over <i>Maireana sedifolia</i>	Red Rock / Tregolana	Atypical	Moderate to high	127.511	4.913	61.5
		BAM 59	<i>Scaevola spinescens</i> low open shrubland with emergent <i>Acacia papyrocarpa</i> / <i>Myoporum platycarpum</i> on borrow pit (degraded)	Red Rock / Tregolana	Not suitable	Low	19.773	0	NA
		BAM 60	<i>Acacia papyrocarpa</i> / <i>Myoporum platycarpum</i> low woodland over <i>Atriplex vesicaria</i> and mixed shrubs	Red Rock / Tregolana	Atypical	High	11.828	0	NA
		BAM 61	<i>Acacia papyrocarpa</i> low woodland over <i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i>	Tregolana	Preferred	Very high	9.860	0	NA
		BAM 62	<i>Acacia papyrocarpa</i> low very open woodland over <i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i> +/- <i>Maireana pyramidata</i>	Red Rock / Tregolana	Atypical	High	189.940	2.933	63.11
		BAM 81	<i>Acacia papyrocarpa</i> low woodland over <i>Maireana sedifolia</i> +/- <i>Myoporum platycarpum</i>	Tregolana	Atypical	High	138.277	4.856	70.77
	BAM 123	Degraded <i>Acacia papyrocarpa</i> low very open woodland over mixed chenopods (<i>Maireana pyramidata</i> / <i>Maireana sedifolia</i>) and mixed shrubs in quarry / disturbed area	Tregolana	Atypical	Low	3.083	0.055	50.82	
	NWS EP 2.2 Low open woodlands with Western Myall and Black Oak over Chenopod shrub understorey (BCM Affinity 9.1)	BAM 7	<i>Acacia papyrocarpa</i> / <i>Casuarina pauper</i> low open woodland over chenopods (<i>Maireana sedifolia</i> / <i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i>) +/- <i>Myoporum platycarpum</i>	Tregolana	Atypical with areas of preferred	High	330.254	0.921	61.77
		BAM 32	<i>Acacia papyrocarpa</i> low woodland over chenopods with tall mixed shrubs / <i>Myoporum platycarpum</i> / <i>Casuarina pauper</i>	Tregolana	Atypical with areas of preferred	High	220.336	7.695	58.70
		BAM 106	<i>Acacia papyrocarpa</i> low woodland over <i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i> +/- <i>Casuarina pauper</i>	Tregolana	Preferred	Very High	27.574	6.760	74.48

*Major Vegetation Group	Broad Vegetation Community Number and Description	BAM Ref	Vegetation Association	IBRA Association	Western Grasswren habitat	**Overall value	Area surveyed (ha)	Area impacted (ha)	UBS (impacted veg only)
	NWS EP 2.3								
	Low open woodlands of Sugarwood with a Chenopod shrub understorey (BCM Affinity 9.1)	BAM 29	<i>Myoporum platycarpum</i> low very open woodland over <i>Maireana pyramidata</i>	Red Rock	Preferred	Very high	6.686	0	NA
		BAM 44	<i>Myoporum platycarpum</i> low very open woodland over dense shrubs on stony hill	Red Rock	Low suitable	High	2.208	0	NA
	NWS EP 2.4								
	Broad drainage lines and run-on areas with low woodlands	BAM 57	<i>Acacia papyrocarpa</i> low woodland over <i>Maireana pyramidata</i>	Red Rock	Preferred	Extremely high	13.379	0	NA
Major Group EP 3 Chenopod Shrublands (including drainage lines)	NWS EP 3.3 Chenopod open shrublands +/- emergent trees (BCM Affinity 9.2)	BAM 20	<i>Maireana pyramidata</i> low shrubland over <i>Austrostipa</i> sp. +/- <i>Atriplex vesicaria</i>	Red Rock	Atypical	Moderate	46.069	0	NA
		BAM 21	<i>Maireana sedifolia</i> low open shrubland on calcrete +/- emergent low shrubs / <i>Myoporum platycarpum</i> / <i>Acacia papyrocarpa</i>	Red Rock, Tregolana	Atypical	Low to moderate	102.948	0	NA
		BAM 31	<i>Maireana brevifolia</i> low open shrubland (derived community) +/- <i>Acacia papyrocarpa</i>	Tregolana	Low suitability	Low	7.947	0.022	37.69
		BAM 51	<i>Maireana sedifolia</i> open shrubland +/- isolated <i>Acacia papyrocarpa</i>	Red Rock / Tregolana	Atypical	Moderate	304.677	23.714	68.43
		BAM 53	<i>Maireana sedifolia</i> low shrubland with clusters of <i>Acacia papyrocarpa</i>	Red Rock / Tregolana	Atypical	Moderate	65.490	27.653	66.05
		BAM 54	<i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i> low open shrubland	Tregolana	Atypical	Low	6.175	3.134	50.84
		BAM 55	<i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i> open shrubland +/- <i>Maireana sedifolia</i>	Tregolana	Atypical	Low	16.342	0.692	51.25
		BAM 56	<i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i> shrubland +/- emergent <i>Acacia papyrocarpa</i>	Red Rock	Atypical	Moderate	3.875	0	NA
		BAM 58	<i>Maireana pyramidata</i> / <i>Sida petrophila</i> shrubland with emergent <i>Acacia papyrocarpa</i> / <i>Myoporum platycarpum</i>	Red Rock	Atypical	High	10.602	0	NA
		BAM 103	<i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i> open shrubland +/- <i>Maireana sedifolia</i>	Tregolana	Atypical	Moderate	25.185	3.730	73.57
		BAM 124	<i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i> low open shrubland with isolated <i>Acacia papyrocarpa</i> and planted <i>Eucalyptus</i> and <i>Corymbia</i> spp. near Lincoln Highway	Tregolana	Atypical	Low to moderate	2.695	0.064	66.15

*Major Vegetation Group	Broad Vegetation Community Number and Description	BAM Ref	Vegetation Association	IBRA Association	Western Grasswren habitat	**Overall value	Area surveyed (ha)	Area impacted (ha)	UBS (impacted veg only)
Major Group EP 5 Inland tall shrublands on calcrete	NWS EP 5.1 Inland tall shrublands on calcrete	BAM 23	<i>Melaleuca lanceolata</i> tall shrubland over <i>Triodia</i> sp +/- <i>Maireana pyramidata</i> / <i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i>	Red Rock	Atypical	High	16.474	0	Not included

*Only includes vegetation types that occur in the HJP Project Area

**Qualitative value based on habitat value for EPBC listed species (Western Grasswren, Southern Whiteface) and density of tree cover – understorey dominated by *Maireana pyramidata* provides more valuable habitat value for Western Grasswren, more heavily wooded areas may provide increased habitat value for Southern Whiteface and/or provide increased structural diversity and are expected to take longer to replace (e.g. areas with a high density of *Acacia papyrocarpa* are considered of higher value compared with areas lacking tree cover except where vegetation provides preferred habitat for Western Grasswren).

Qualitative value category descriptions:

Extremely high = Preferred habitat of very high quality (with or without tree cover).

Very High = Preferred habitat (with or without tree cover)

High = Atypical habitat with moderate to high tree cover (e.g. more heavily wooded areas of Atypical habitat). Areas of less than two hectares are not included in this category unless they are adjacent a patch of high value/heavily wooded area. Category also includes unique or very diverse vegetation.

Moderate = Atypical habitat without tree cover in moderate to good condition

Low = degraded and disturbed vegetation of lower value.

***Milne TI, Croft SJ and Pedler JA (2013) Bushland condition monitoring manual: Eyre Peninsula region. Nature Conservation Society of South Australia, Adelaide

4.1.2 Details of the vegetation associations proposed to be impacted

Major Group EP 2 – Open Woodlands of Western Myall, Black Oak and Sugarwood.

Table 6. Broad vegetation community NWS EP 2.1 Low open woodlands of Western Myall with a Chenopod shrub understorey.

Broad community NWS EP 2.1 Low open woodlands of Western Myall with a Chenopod shrub understorey	
BAM 52	<i>Acacia papyrocarpa</i> low woodland over mixed shrubs over <i>Maireana sedifolia</i>
BAM 62	<i>Acacia papyrocarpa</i> low very open woodland over <i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i> +/- <i>Maireana pyramidata</i>
BAM 81	<i>Acacia papyrocarpa</i> low woodland over <i>Maireana sedifolia</i> +/- <i>Myoporum platycarpum</i>
BAM 123	Degraded <i>Acacia papyrocarpa</i> very low woodland over sparse <i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i>



Plate 1. BAM 52 *Acacia papyrocarpa* (Western Myall) low woodland over mixed shrubs over *Maireana sedifolia* (Pearl Bluebush)



Plate 2. BAM 62 *Acacia papyrocarpa* low very open woodland over *Maireana sedifolia* / *Atriplex vesicaria* +/- *Maireana pyramidata*



Plate 3. BAM 81 *Acacia papyrocarpa* low woodland over *Maireana sedifolia* +/- *Myoporum platycarpum*



Plate 4. BAM 123 Degraded *Acacia papyrocarpa* very low woodland over sparse *Maireana pyramidata* / *Atriplex vesicaria*

Broad community NWS EP 2.1

Low open woodlands of Western Myall with a Chenopod shrub understorey

<p>General description</p>	<p>Within the HJP Impact Area, this community occurs predominantly within the Tregolana IBRA Association, with a small area of BAM 61 in the Red Rock IBRA Association, within the Myall Plains IBRA Sub-region. Broad community NWS EP 2.1 occurs across the HJP Project Area including all of the Whyalla CP and the northern transmission line (BAM 62, BAM 81), in smaller patches near the main hydrogen facility and the haul road (BAM 52, 4.9 ha) and a small more degraded area in the south (BAM 123). Condition is variable but overall the community was considered to be in moderate (BAM 123) to good condition (BAM 52, 62, BAM 81) retaining palatable species and with low to moderate grazing pressure but increased weed invasion near infrastructure.</p> <p>The broad community comprises flat to gently undulating plains of Western Myall open woodland over a chenopod shrubland with dominant species including <i>Maireana pyramidata</i> (Black Bluebush), <i>Maireana sedifolia</i> (Pearl Bluebush), <i>Atriplex vesicaria</i> (Bladder saltbush) and less often <i>Rhagodia ulicina</i> (Spiny Goosefoot). Other species include <i>Scaevola spinescens</i> (Spiny Fanflower), <i>Lycium australe</i> (Australian Boxthorn), <i>Lawrencia squamata</i> (Thorny Lawrencia) and emergent tall shrubs <i>Eremophila</i> spp. (Emu-bushes), <i>Geijera linearifolia</i> (Sheepbush) and <i>Senna</i> spp. (Senna's). The community often contains emergent <i>Myoporum platycarpum</i> (Sugarwood). The community has affinity to BCM community 9.1 Open Mallee & Low Open Woodlands with a Chenopod Shrub Understorey.</p>							
<p>Threatened species or community</p>	<p>The community is considered to provide habitat for nationally threatened Western Grasswren in areas of taller chenopod shrubs, particularly <i>Maireana pyramidata</i> (Blackbush) and areas with taller ungrazed spiny shrubs such as <i>Scaevola spinescens</i> (Spiny Fanflower), <i>Rhagodia spinescens</i> (Spiny Saltbush) and <i>Lycium australe</i> (Australian Boxthorn) which occurred in small patches throughout BAM 52 and in BAM 81.</p> <p>Western Grasswren were heard in this community at Bird Site BS 26 near Song Meter site SM07 approximately 1.8km south of the proposed main hydrogen facility. There is also a record (2011) in this community within the broader HJP project area for the nationally Vulnerable Southern Whiteface (BDBSA 2022). State rare Gilbert's Whistler (<i>Pachycephala inornata</i>) was observed in October 2022.</p>							
BAM Site	IBRA Ass	LCS	VCS	CSS	UBS	Area	HA, SEB, CP	TBS
BAM 52	Tregolana	1.05	53.20	1.1	61.50	4.913	No	302.150
BAM 61	Tregolana	1.05	61.43	1.1	70.95	0.318	No	22.562
BAM 62	Red Rock	1.05	54.64	1.1	63.11	0.329	No	20.763
	Tregolana	1.05	54.64	1.1	63.11	2.604	No	164.338
BAM 81	Tregolana	1.06	62.08	1.1	70.77	1.576	No	111.534
BAM 81	Tregolana	1.06	62.08	1.1	70.77	3.280	Whyalla CP	232.126
BAM 123	Tregolana	1.06	44.00	1.1	50.82	0.054	No	2.744

Table 7. Broad vegetation community NWS EP 2.2 Low open woodlands with Western Myall and Black Oak over chenopod shrub understorey.

Broad community NWS EP 2.2	
Low open woodlands with Western Myall and Black Oak over chenopod shrub understorey	
BAM 7	<i>Acacia papyrocarpa</i> / <i>Casuarina pauper</i> low open woodland over chenopods (<i>Maireana sedifolia</i> / <i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i>) +/- <i>Myoporum platycarpum</i>
BAM 32	<i>Acacia papyrocarpa</i> low woodland over chenopods with tall mixed shrubs / <i>Myoporum platycarpum</i> / <i>Casuarina pauper</i>
BAM 106	<i>Acacia papyrocarpa</i> low woodland over <i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i> +/- <i>Casuarina pauper</i>



Plate 5. BAM 7a (left) and 7b (right) *Acacia papyrocarpa* / *Casuarina pauper* low open woodland over Chenopods (*Maireana sedifolia* / *Maireana pyramidata* / *Atriplex vesicaria*) +/- *Myoporum platycarpum*



Plate 6. BAM 32. *Acacia papyrocarpa* low woodland over Chenopods with tall mixed shrubs / *Myoporum platycarpum* / *Casuarina pauper*

Broad community NWS EP 2.2

Low open woodlands with Western Myall and Black Oak over chenopod shrub understorey



Plate 7. BAM 106 *Acacia papyrocarpa* low woodland over *Maireana pyramidata* / *Atriplex vesicaria* +/- *Casuarina pauper*

<p>General description</p>	<p>This community is scattered throughout the HJP Impact Area in the Tregolana IBRA Association distributed in smaller patches near the Lincoln Highway with one larger 7.162 ha patch in the main hydrogen facility and one larger patch of 6.760 ha in the substation area. The community was found to be in good condition, although became more degraded near existing infrastructure and tracks.</p> <p>Community 2.2 comprises flat plains with open woodlands of both <i>Acacia papyrocarpa</i> (Western Myall) and <i>Casuarina pauper</i> (Black Oak) varying in their dominance with or without <i>Myoporum platycarpum</i> (Sugarwood). It was found <i>Casuarina pauper</i> (Black Oak) increased in frequency of occurrence north of Whyalla including near Whyalla CP and dominated in smaller patches or as scattered individuals. Roadside areas subject to increased run-off, often supported dense regeneration of <i>Acacia papyrocarpa</i> (Western Myall). The understorey occurring predominantly over chenopod shrublands including <i>Maireana pyramidata</i> (Blackbush), <i>Maireana sedifolia</i> (Pearl Bluebush), <i>Atriplex vesicaria</i> (Bladder saltbush) and less often <i>Rhagodia ulicina</i> (Spiny Goosefoot). Tall shrubs were also occasionally present including <i>Eremophila</i> spp. (Emu-bushes), <i>Geijera linearifolia</i> (Sheepbush) and <i>Senna</i> spp. (Sennas).</p> <p>Community 2.2 is considered to have affinity with BCM community 9.1 Open Mallee & Low Open Woodlands with a Chenopod Shrub Understorey.</p>
<p>Threatened species or community</p>	<p>The community provides habitat for Western Grasswren, but the vast majority is classified as Atypical habitat with Preferred habitat occurring only in smaller roadside patches. Some of BAM 32 and BAM 106 is not ground-truthed and may contain Preferred habitat. The community is also expected to provide habitat for Southern Whiteface and a range of SA threatened species.</p>

BAM Site	IBRA Ass	LCS	VCS	CSS	UBS	Area	HA, SEB, CP, NP	TBS
BAM 7a	Tregolana	1.05	49.55	1.1	57.23			
BAM 7b	Tregolana	1.05	56.08	1.1	64.78			
Average		1.06	52.97	1.1	61.77			
BAM 7	Tregolana	1.05	52.97	1.1	61.77	0.873	No	53.925
BAM 7	Tregolana	1.05	52.97	1.1	61.77	0.048	Whyalla CP	2.965
BAM 32	Tregolana	1.05	50.83	1.1	58.70	7.965	No	451.697
BAM 106	Tregolana	1.06	64.59	1.1	74.48	6.760	No	503.485

Major Group EP 3 – Chenopod Shrublands Including Drainage Lines.

Table 8. Broad vegetation community NWS EP 3.3 Chenopod open shrublands +/- emergent trees.

Broad community NWS EP 3.3 Chenopod open shrublands +/- emergent trees	
BAM 31	<i>Maireana brevifolia</i> low open shrubland (derived community) +/- <i>Acacia papyrocarpa</i>
BAM 51	<i>Maireana sedifolia</i> open shrubland +/- isolated <i>Acacia papyrocarpa</i>
BAM 53	<i>Maireana sedifolia</i> low shrubland with clusters of <i>Acacia papyrocarpa</i>
BAM 54	<i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i> low open shrubland
BAM 55	Degraded <i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i> open shrubland +/- <i>Maireana sedifolia</i> near tracks / roads / infrastructure
BAM 103	<i>Maireana pyramidata</i> / <i>Atriplex vesicaria</i> open shrubland +/- <i>Maireana sedifolia</i>
BAM 124	<i>Maireana sedifolia</i> / <i>Atriplex vesicaria</i> low open shrubland with isolated <i>Acacia papyrocarpa</i> and planted <i>Eucalyptus</i> and <i>Corymbia</i> spp. near Lincoln Highway



Plate 8. BAM 31 *Maireana brevifolia* low open shrubland (derived community) +/- *Acacia papyrocarpa*



Plate 9. BAM 51a *Maireana sedifolia* open shrubland +/- isolated *Acacia papyrocarpa*

Broad community NWS EP 3.3 Chenopod open shrublands +/- emergent trees



Plate 10. BAM 51b *Maireana sedifolia* open shrubland +/- isolated *Acacia papyrocarpa*



Plate 11. BAM 53 *Maireana sedifolia* low shrubland with clusters of *Acacia papyrocarpa*



Plate 12. BAM 54 *Maireana sedifolia* / *Atriplex vesicaria* low open shrubland

Broad community NWS EP 3.3 Chenopod open shrublands +/- emergent trees



Plate 13. BAM 55 *Maireana pyramidata* / *Atriplex vesicaria* open shrubland +/- *Maireana sedifolia*



Plate 14. BAM 103. *Maireana pyramidata* / *Atriplex vesicaria* open shrubland +/- *Maireana sedifolia*



Plate 15. BAM 123. Degraded *Acacia papyrocarpa* very low woodland over sparse *Maireana pyramidata* / *Atriplex vesicaria*

General description

This community occurs entirely within the Tregolana IBRA Association and is the predominant vegetation community in the HJP Impact Area (59.100 ha) occurring throughout the main hydrogen facility area, the southern half of the substation and scattered throughout the southern pipeline. Vegetation ranges from poor to excellent

Broad community NWS EP 3.3 Chenopod open shrublands +/- emergent trees

condition with areas in the far south degraded and of lower value (BAM 31, BAM 31), shrubland in the main facility is variable but more degraded near existing infrastructure with more widely spaced plants and increased weed invasion, particularly of Wards Weed. BAM 51 and 53 near the main hydrogen facility were in moderate to good condition, becoming more degraded closer to existing tracks. BAM 54 and 55 were generally in poor condition with high weed cover and increased disturbance and although some areas contained taller *Maireana pyramidata* they were more often widely spaced and were near infrastructure and more degraded. BAM 106 in the substation area represented chenopod shrubland in good to excellent condition but with predominantly lower chenopods than those in Preferred Western Grasswren habitat.

The community is most often dominated by *Maireana sedifolia* (Pearl Bluebush) and occasionally *Maireana pyramidata* (Blackbush) which vary in their dominance and often form a mosaic with *Maireana pyramidata* (Blackbush) adjacent roadsides which receive increased run-off. *Atriplex vesicaria* (Bladder saltbush) is often co-dominant and *Rhagodia ulicina* (Spiny Goosefoot) was common in places. The community supports scattered emergent shrubs and trees including *Myoporum platycarpum* (Sugarwood), *Geijera linearifolia* (Sheepbush), *Eremophila* and *Senna* spp. (Senna's) in addition to occasional *Acacia papyrocarpa* (Western Myall), *Acacia tetragonophylla* (Dead Finish) and *Acacia oswaldii* (Oswald's Wattle).

The community is considered to align with BCM Community 9.2.

Threatened species or community

Broad community 3.3 provides predominantly Atypical habitat for Western Grasswren and did not represent optimal habitat with either relatively widely spaced and / or lower statured chenopods. The community was generally dominated by *Maireana sedifolia* or where *Maireana pyramidata* did dominate it was in habitat of lower value adjacent the highway. BAM 103 in the area proposed for the substation provided more valuable habitat but it was noted that most chenopods were 0-0.6 metres tall. The community is also expected to provide habitat for Southern Whiteface, Blue-winged Parrot and a range of SA threatened species.

Site	IBRA Ass	LCS	VCS	CSS	UBS	Area	HA, SEB, CP, NP	TBS
BAM 31	Tregolana	1.05	32.63	1.1	37.69	0.022	No	0.822
BAM 51	Tregolana	1.05	59.86	1.1	69.13			
	Tregolana	1.05	58.63	1.1	67.72			
	Average	1.05	59.25	1.1	68.43			
	Tregolana	1.05	59.25	1.1	68.43	23.420	No	1602.514
	Tregolana	1.05	59.25	1.1	68.43	0.294	Whyalla CP	20.117
BAM 53	Tregolana	1.05	58.63	1.1	67.72			
	Tregolana	1.05	55.73	1.1	64.37			
	Average	1.05	57.18	1.1	66.045			
	Tregolana	1.05	57.18	1.1	66.05	27.653	No	1826.342
BAM 54	Tregolana	1.05	44.02	1.1	50.84	3.134	No	159.333
BAM 55	Tregolana	1.05	44.38	1.1	51.25	0.610	No	31.263
BAM 103	Tregolana	1.06	63.69	1.1	73.57	3.730	No	274.416
BAM 124	Tregolana	1.06	57.28	1.1	66.15	0.064	No	4.234

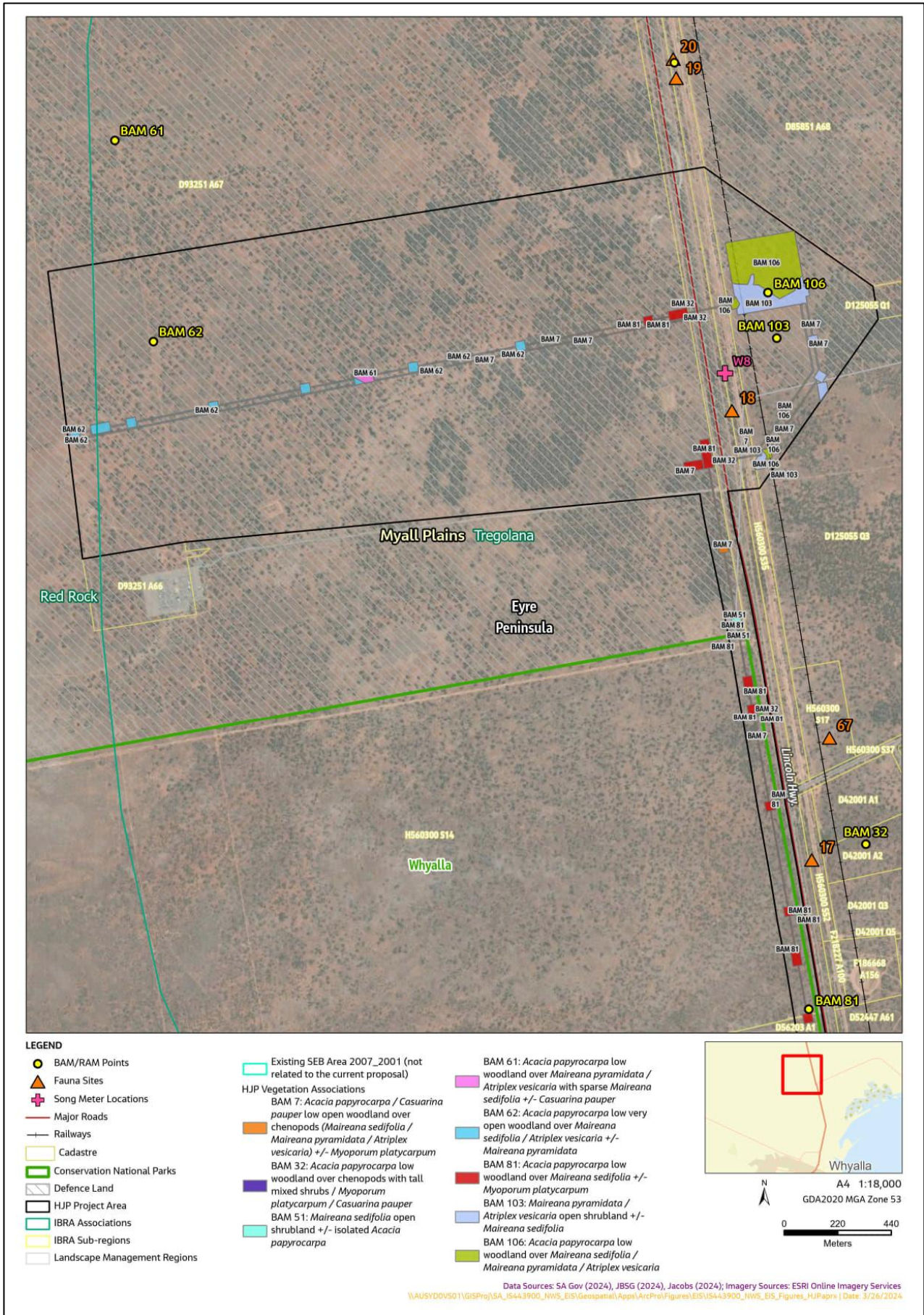


Figure 6. Map indicating BAM Sites (vegetation associations), BAM Sample Points (100m x 100m quadrats) Bird sites and Songmeter locations across the HJP Project Area (map 1 of 5)

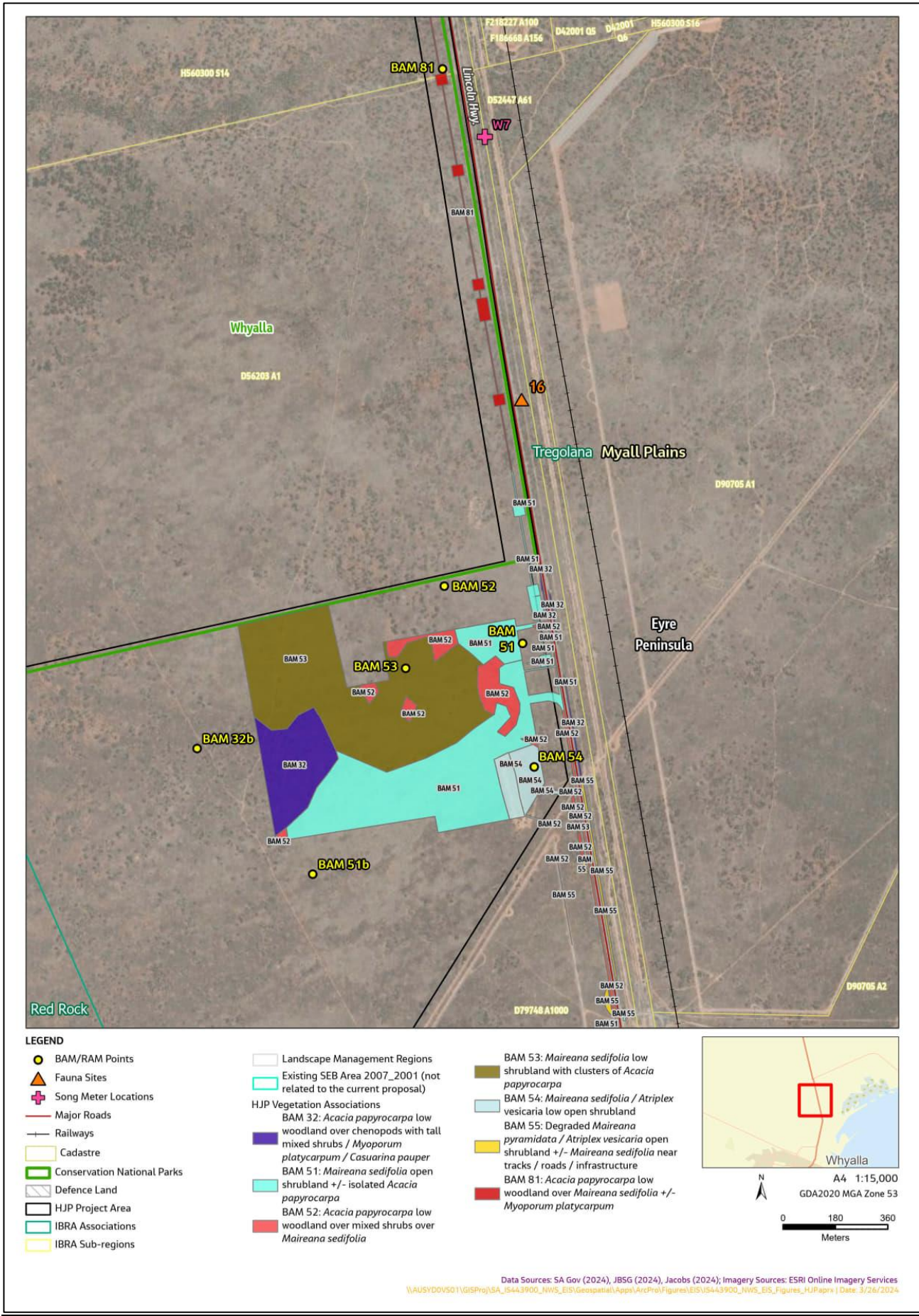


Figure 7. Map indicating BAM Sites (vegetation associations), BAM Sample Points (100m x 100m quadrats) Bird sites and Songmeter locations across the HJP Project Area (map 2 of 5)



Figure 8. Map indicating BAM Sites (vegetation associations), BAM Sample Points (100m x 100m quadrats) Bird sites and Songmeter locations across the HJP Project Area (map 3 of 5)

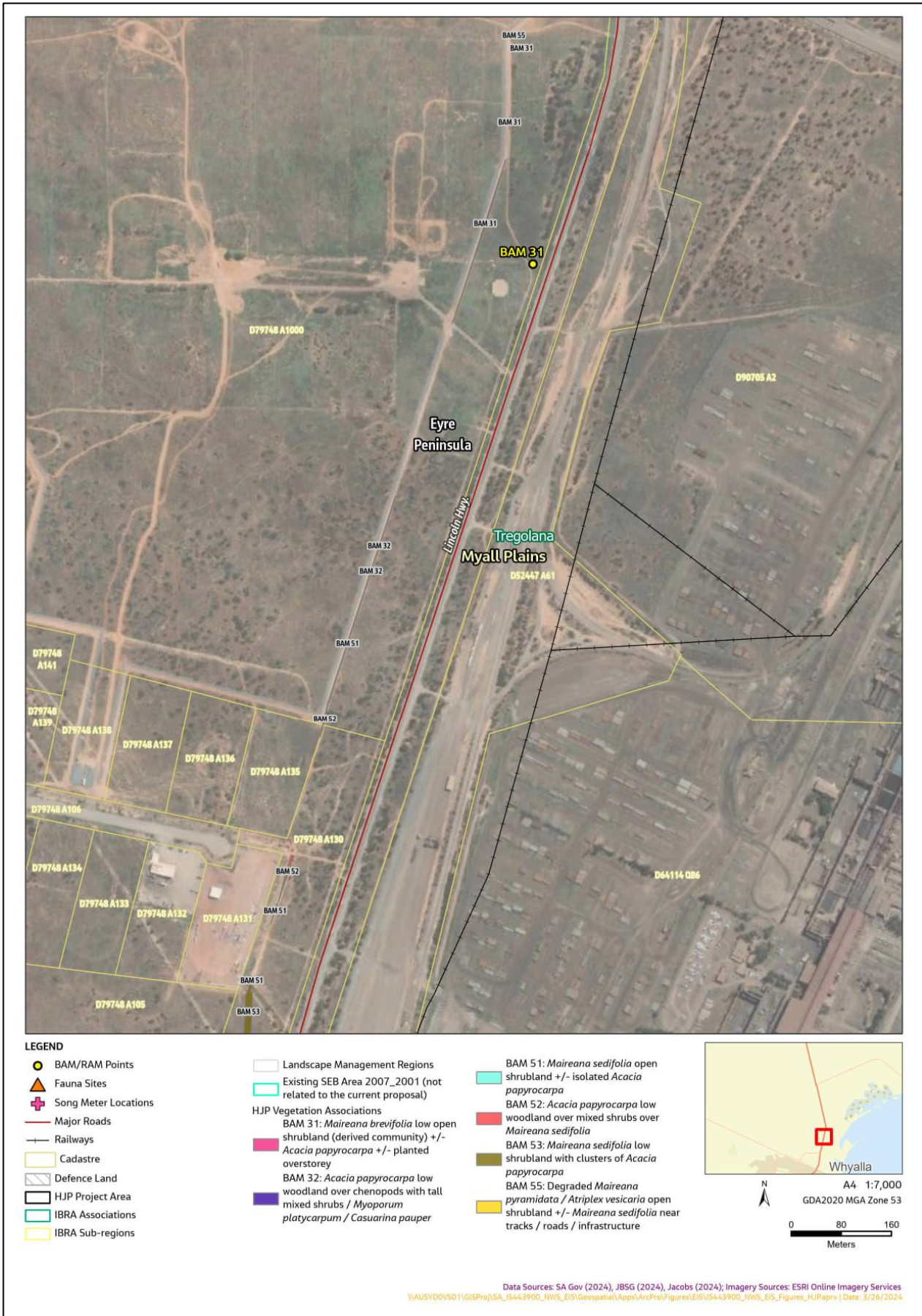


Figure 9. Map indicating BAM Sites (vegetation associations), BAM Sample Points (100m x 100m quadrats) Bird sites and Songmeter locations across the HJP Project Area (map 4 of 5)

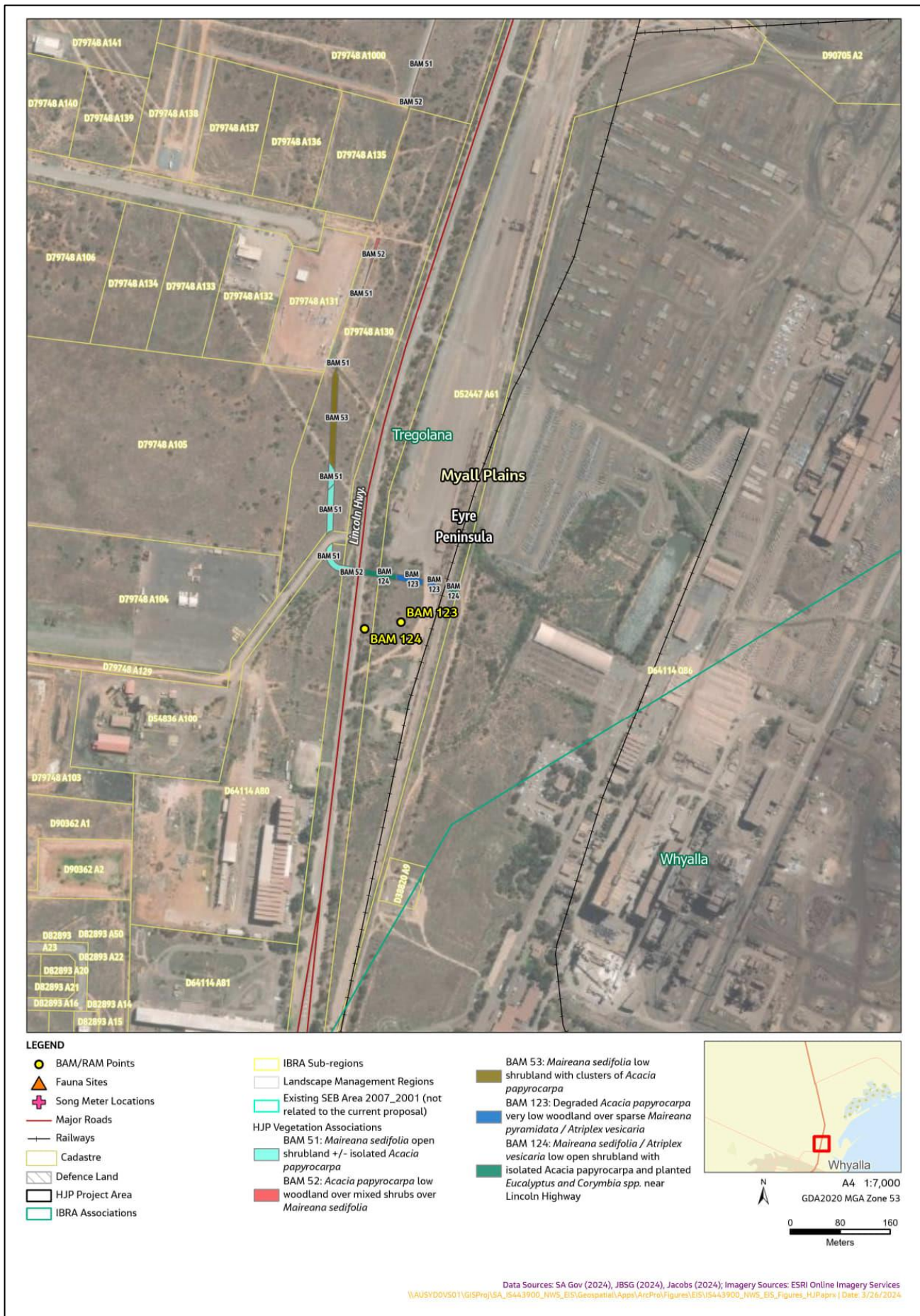


Figure 10. Map indicating BAM Sites (vegetation associations), BAM Sample Points (100m x 100m quadrats) Bird sites and Songmeter locations across the HJP Project Area (map 5 of 5)

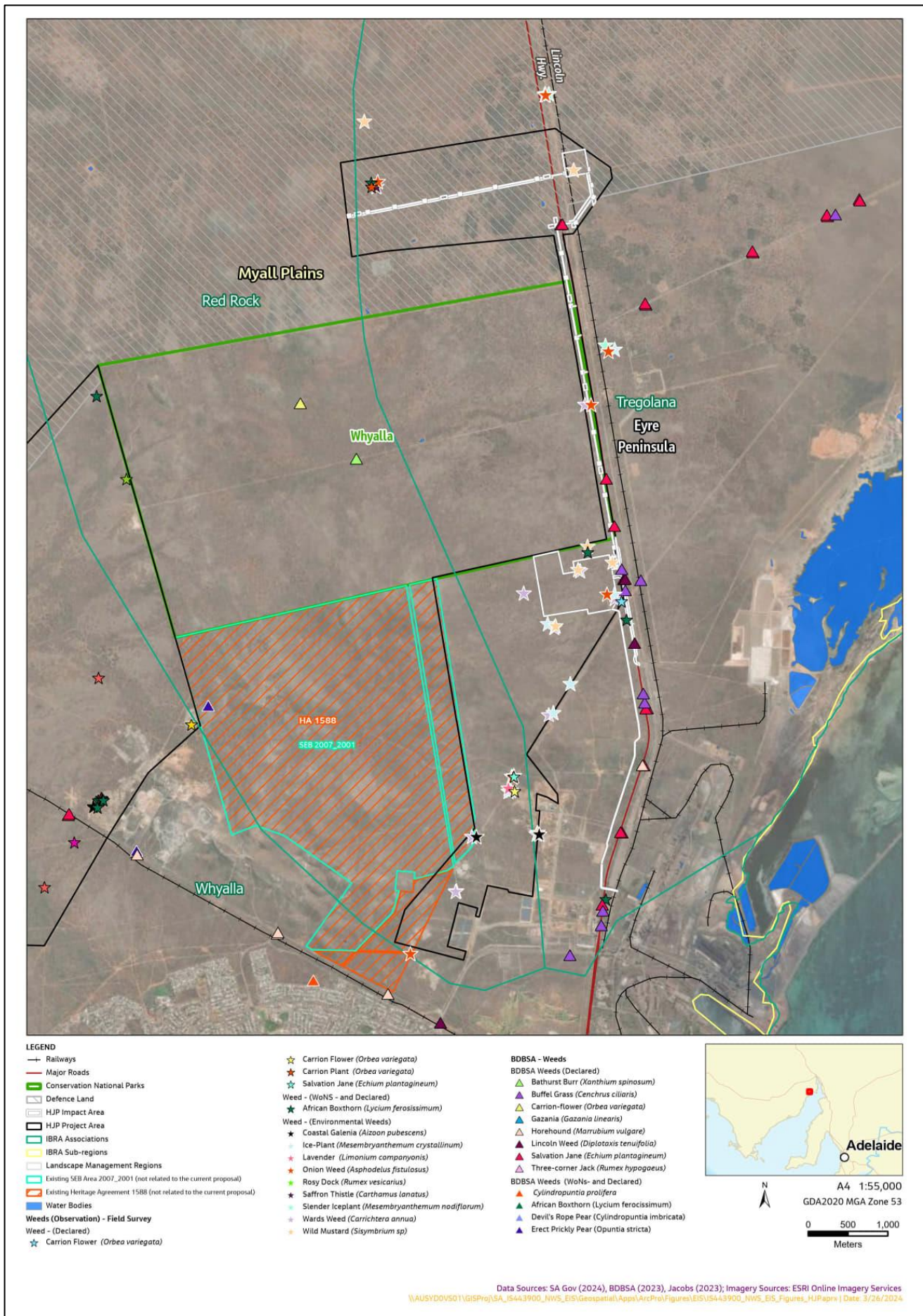


Figure 11. Weed distribution of across the broader HJP Project Area including weeds observed during the survey and BDBSA records (does not include all weeds that occur but provides an overview of more noxious species).

4.2 Threatened Species assessment

4.2.1 Matters of National Significance

The EPBC PMST report, extracted January 2024 (which included recently listed species), highlighted nationally threatened ecological communities, and threatened floral and faunal species with potential to occur within the Project Area and surrounding 5 km search area (Study Area). A summary of the PMST output is provided below, along with a likelihood of occurrence assessment based on a review of historic records and habitat present within the site.

Threatened Ecological Communities (TECs)

The EPBC PMST highlighted a single TEC as likely to occur within the Project Area, Subtropical and Temperate Coastal Saltmarsh (VU) (Table 2). The Subtropical and Temperate Coastal Saltmarsh community is dominated by salt-tolerant vegetation including grasses, herbs, sedges, rushes and shrubs generally less than 0.5 m in height (DSEWPC, 2013).

The community occurs within a narrow margin of the Australian coastline, in areas under regular or intermittent tidal influence or in areas that have groundwater connectivity to tidal water bodies. It is noted that areas that are 'stranded' are not considered to form part of the ecological community (refer page 17 of Conservation Advice DSEWPC, 2013). The HJP Project Area is away from the coast and therefore this TEC is not relevant to the site.

The samphire / mangrove areas associated with coastal saltmarsh would provide habitat for shorebirds (buffers to core tidal areas), but it is not anticipated that the Project would impact these areas given the level of separation.

Table 9. Threatened Ecological Communities listed in the PMST

Community Name	EPBC Rating	Likelihood assessment	Justification
Subtropical and Temperate Coastal Saltmarsh	VU	Unlikely	PMST suggests community likely to occur in Project Area. Closest areas of Coastal Saltmarsh occur >2.5 km from the Project Area (E/NE and SE along the coast). The Project Area is separated from these saltmarsh areas by conservation land, Whyalla township, the Lincoln Highway, and areas used for industry and recreation/culture.

EPBC listed Threatened and Migratory species assessment

The PMST highlighted three threatened EPBC listed floral species as potentially occurring within the Study Area based on a 5 km query. There are no recent and reliable records within the Study Area for any of these species and, based on habitat preferences, known records and the species were not detected during extensive surveys in the HJP Project Area. As such, all three highlighted floral species are considered unlikely to occur within the HJP Impact Area nor the HJP Project Area. The EPBC PMST output and BDBSA data results, along with the likelihood assessment are included in Table 2 2.

The PMST also highlighted 62 threatened and migratory faunal species as potentially occurring within the Study Area. Of these, 27 are oceanic or marine species that are excluded and not considered further (14 birds (albatross, petrels, prions or shearwater), six mammals (whales, dolphin, or sea-lion), three turtles, two fish, and two sharks)). The remaining 35 species, including 33 birds, one mammal and one reptile, were considered further via a likelihood assessment.

There are previous recent and reliable records for 14 of the EPBC listed threatened bird species within 5 km, including two records of Southern Whiteface (*Aphelocephala leucopsis*) (VU) within the Project Area. There are no historical records for Western Grasswren (*Amytornis textilis myall*) (VU) in the HJP Project Area, but there are multiple records within the adjacent Whyalla Conservation Park and the species was observed multiple times during the HJP surveys, but not within the HJP Impact Area.

Other species with records within 5 km include coastal and wetland species such as Sharp-tailed Sandpiper (*Calidris acuminata*) (VU, MW), Red-necked Stint (*Calidris ruficollis*) (MW), Eastern Curlew (*Numenius madagascariensis*) (CE, MW), Osprey (*Pandion haliaetus*) (E, MW) and Australian Fairy Tern (*Sternula nereis*) (VU), all of which were observed within the Whyalla Wetlands, Whyalla Marina or False Bay. Five observations of the migratory Fork-tailed Swift (*Apus pacificus*) (MW) were also identified 4km south of the Project Area in Whyalla Playford.

Following the likelihood assessment it is considered that two Nationally threatened bird species, Southern Whiteface and Western Grasswren, are known to occur within the Project Area. Forty-six records of Western Grasswren are present within 5 km and habitat throughout the Project Area is considered suitable, particularly areas with taller chenopod shrubs. Furthermore, the species has been observed multiple times in the HJP Project Area including during targeted surveys undertaken by Jacobs (Jacobs 2023) and EBS (EBS 2023). Two records of Southern Whiteface have been recorded in the Project Area and multiple records are present nearby in Whyalla CP. The species is also known to have been observed during surveys of the HJP Project Area during surveys by EBS (EBS 2023).

Three bird species are considered as possible occurrences in the Project Area; Fork-tailed Swift (*A. pacificus*) (MW) as a possible overfly species, Grey Falcon (*Falco hypoleucos*) (R) and Blue-winged Parrot (*Neophema chrysostoma*) (V).

All other remaining bird species included in the assessment are considered unlikely to occur due to a lack of suitable habitat and/or a lack of records near the HJP Project Area. However, some species may fly over the site occasionally.

There are no records of any EPBC listed terrestrial mammals or reptiles within the 5km study area.

Species included in the BAM datasheets include Western Grasswren, Southern Whiteface, Blue-winged Parrot and Grey Falcon as approved by the NVB in DEW on 13 March 2024.

The full likelihood assessment for EPBC listed species (approved by DEW on 13 March 2024) is provided in Table 10, whilst the PMST output is provided in Appendix 1.1 (PDF format) and Appendix 1.2 (Excel format). The location of threatened species records within 5km of the Project Area from the BDBSA and from Jacobs' surveys are shown in Figure 12.

Table 10. Likelihood of occurrence for use of habitat in the HJP Impact Area by EPBC Act listed threatened and migratory species highlighted by the PMST as potentially occurring in the 5km Study Area

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
Birds							
<i>Actitis hypoleucos</i>	Common Sandpiper	R	MW	1, 5	2021 (poor spatial reliability)	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>A migratory shorebird that occurs in a variety of habitats, including a wide range of coastal and inland wetlands with varying levels of salinity. It is mostly found around muddy margins or rocky shores and rarely on intertidal mudflats. The species also occurs on steep sided sewage ponds, dams, muddy habitats, and mangrove-lined inlets.</p> <p>Has a widespread distribution across Australia, in late July to March (Simpson and Day 2019).</p> <p>BDBSA: 5 records (2013-2021) including 1 with poor spatial reliability (1-5 km), nearest being 2.4 km east at Whyalla Wetlands.</p> <p>Birdlife: 13 records (2000-2019) within 5 km of the broader HJP Project Area including 5 with unknown spatial reliability.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Amytornis textilis myall</i>	Western Grasswren	V	VU	1, 4, 5	2019	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Prefers low shrublands, chiefly comprising Blackbush (<i>Maireana pyramidata</i>) and Australian boxthorn (<i>Lycium australe</i>), or open woodlands, mostly comprising Western Myall (<i>Acacia papyrocarpa</i>) and / or Bullock Bush (Black et al., 2009, Black and Gower 2017). Preferred habitats are on drainage lines, low rocky hills and semi-arid woodlands with preferred vegetation, rarely mallee, commonly with spiny saltbush species (Black and Gower 2017).</p> <p>BDBSA: 32 records (2006 – 2019) (plus 4 older records) including a number >2 km from the Project Area in Whyalla Conservation Park and 1 record with poor spatial reliability.</p> <p>Birdlife: 26 records (1999-2019) within 5 km of the broader HJP Project Area including 11 with unknown spatial reliability.</p>	<p>Known</p> <p>Many recent records in close proximity to the broader HJP Project Area and observed during surveys for HJP Project. The majority of habitat throughout the Project Area is considered suitable. Areas with taller chenopod shrubs (<i>M. pyramidata</i>) are particularly suitable. Infrastructure has been largely placed outside of Preferred and high quality habitat.</p> <p>Included in BAM sheets</p>
<i>Anarhynchus leschenaultii</i>	Greater Sand Plover, Large Sand Plover	R ssp. <i>lesche naultii</i>	VU, MW	5	None	<p>PMST highlighted that the species or species habitat is likely to occur within the broader HJP Project Area.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						<p>Early migratory bird that visits Australia (Aug-March) and remains in Aus for first austral winter. Occurs in tidal flats and roosts on beaches at high tide (Menkhorst et al. 2017).</p> <p>Occurs in a range of natural environments along and close to the coast, and artificial environments such as ponds in saltworks (DCCEEW 2023b).</p> <p>No previous BDBSA records within 5 km of the broader HJP Project Area.</p>	
<i>Aphelocephala leucopsis</i>	Southern Whiteface	VU	VU	1, 4, 5	2021	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Occurs across most of mainland Australia south of the tropics in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by Acacia or eucalypts on ranges, foothills and lowlands, and plains (Higgins & Peter 2002, cited in DCCEEW 2023b). Prefer habitat with low tree densities and an herbaceous understorey litter cover which provides essential foraging habitat. Living and dead trees with hollows and crevices are used for roosting and nesting (DCCEEW 2023b).</p> <p>BDBSA: 15 records (1993-2021), including 1 within the Project Area and a number adjacent and 1 with poor spatial reliability (1-5 km).</p> <p>Birdlife: 24 records (1999-2020) within 5 km of the broader HJP Project Area including 15 with unknown spatial reliability and 1 with poor spatial reliability (1-5 km).</p>	<p>Known</p> <p>Recent records within the broader HJP Project Area, including as part of targeted surveys for HJP Project. Woodland and shrubland habitat throughout the Project Area is considered suitable. Infrastructure has been positioned away from areas of optimal habitat as feasible.</p> <p>Included in BAM sheets</p>
<i>Apus pacificus</i>	Fork-tailed Swift	-	MW	1, 5	2018	<p>PMST highlighted that the species or species habitat is likely to occur within the broader HJP Project Area.</p> <p>This species is highly mobile, almost entirely aerial, and rarely recorded on the ground.</p> <p>The species has a widespread distribution across Australia, in summer (ALA 2024).</p> <p>BDBSA: 2 records (1996-2018), nearest approximately 4.1 km S in Whyalla Playford.</p> <p>Birdlife: 4 records (2010-2018) within 5 km the Project Area including 1 record with unknown spatial reliability.</p>	<p>Possible (Over-fly)</p> <p>Widely distributed and possible as an overfly species.</p>
<i>Arenaria interpres</i>	Ruddy Turnstone	R ssp. <i>interpres</i>	VU, MW	1, 5	1981 (poor spatial reliability)	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Breeds in Siberia and Alaska. When in Australia prefers rocky coastlines, coral and sand islands, less common on intertidal mudflats (Geering et al. 2008).</p> <p>BDBSA: 1 historical record with poor spatial reliability (1-10 km).</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	-	VU, MW	1, 5	2019	<p>PMST highlighted that the species or species is known to occur within the Project Area.</p> <p>This migratory shorebird occurs in coastal and inland areas but prefers non-tidal fresh or brackish wetlands, damp grasslands, will also utilise dams, artificial habitats with water / mud edge and coastal populations will use tidal flats (Geering et al. 2008, Simpson and Day 2019, Mehkhorst et al. 2017). Breeds in Siberia, migrates to New Guinea and Australia (summer). This species has a widespread distribution across Australia when present (ALA 2024). BDBSA: 9 records (2000-2019), nearest approximately 4.2 km south of the broader HJP Project Area in Whyalla Playford and east in False Bay plus 3 historical records.</p> <p>Birdlife: 14 records (2005-2019) within 5 km of the Project Area including 2 with unknown spatial reliability.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Calidris alba</i>	Sanderling	R ssp. <i>alba</i>	MW	5	None	<p>PMST highlighted that the species or species is likely to occur within the broader HJP Project Area.</p> <p>Migrant from the high Arctic usually prefers ocean beaches and occasionally intertidal mudflats.</p> <p>No previous BDBSA records within 5 km of the Project Area.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Calidris canutus</i>	Red Knot, Knot	E	VU, MW	5	None	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Migratory bird, which does not breed in Australia (breeds in Siberia). When in Australia (Sept/Oct – March/April) occurs on extensive intertidal mud flats and rarely ventures inland (Geering et al. 2008).</p> <p>No previous BDBSA records within 5 km of the broader HJP Project Area.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE, MW	1, 5	2019	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>This migratory shorebird prefers coastal or inland mudflats but will also visit artificial dams and inland water habitats, freshwater and brackish wetlands (Simpson & Day 2010, Menkhorst et al. 2017).</p> <p>A common summer migrant widespread across Australia, in spring and summer, but does not breed in Australia (Geering et al. 2008, ALA 2024). Juveniles remain in Aus for first Austral Winter (2 years old) (Menkhorst et al. 2017).</p> <p>It is most common in the far southeast and northwest of Australia.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						<p>BDBSA: 3 records (2000-2019) including 1 with poor spatial reliability (1-10 km), nearest approximately 2.5 km southeast of the Project Area in False Bay plus 3 historical records.</p> <p>Birdlife: 3 records (2005-2006) within 5 km of the Project Area including 1 with unknown spatial reliability.</p>	
<i>Calidris melanotos</i>	Pectoral Sandpiper	R	MW	5	None	<p>PMST highlighted that the species or species is known to occur within the broader HJP Project Area.</p> <p>This migratory shorebird occurs in freshwater or brackish wetlands, grassy or lightly vegetated coastal and inland swamps (Geering et al. 2008).</p> <p>Is widespread across southeast Australia (ALA 2024). Usually occurs solitarily or in small flocks, range does not include inland South Australia (Geering et al. 2008; Menkhorst et al. 2017).</p> <p>No previous BDBSA records within 5 km of the broader HJP Project Area.</p>	<p>Unlikely</p> <p>Range does not include inland South Australia and no suitable habitat present within or directly adjacent to the broader HJP Project Area.</p>
<i>Calidris pugnax</i>	Ruff (Reeve)	-	MW	5	None	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Migrants occur in variety of open moist habitats, grasslands and agricultural lands but freshwater wetland habitats are preferred in Australia (Menkhorst et al. 2017).</p> <p>BDBSA: 2 historical records within 5 km of the broader HJP Project Area.</p>	<p>Unlikely</p> <p>No recent records within 5km of the broader HJP Project Area.</p>
<i>Calidris ruficollis</i>	Red-necked Stint	-	MW	1, 5	2019	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Migrant from artic tundra, in Aus August to Nov.</p> <p>Primarily occurs on tidal flats, but also uses open beaches (with wrack); will occur in a range of sparsely vegetated brackish and freshwater inland with muddy / sandy areas for foraging.</p> <p>BDBSA: 4 records (2000-2019) including 2 with poor spatial reliability (1-10 km), nearest approximately 2.5 km SE of the Project Area in False Bay, plus 4 historical records.</p> <p>Birdlife: 10 records (1999-2019) including 4 with unknown spatial reliability.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Calidris tenuirostris</i>	Great Knot	E	VU, MW	5	None	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Migratory bird that does not breed in Australia. Prefers sheltered coastal habitats, with large intertidal mudflats or sandflats, including natural environments along and close to the coast, and artificial environments such as ponds in saltworks (Geering et al. 2008; DCCEE 2023b).</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						No previous BDBSA records within 5 km of the broader HJP Project Area.	
<i>Charadrius veredus</i>	Oriental Plover, Oriental Dotterel	-	MW	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area. This species occurs in both coastal habitats (e.g. estuarine mudflats and sandbanks, sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands) and flat, open, semi-arid or arid grasslands (DCCEEW 2023a). Has a widespread distribution throughout Australia (ALA 2024). No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Falco hypoleucos</i>	Grey Falcon	R	VU	1, 5	2011 (unknown spatial reliability)	PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area. A rare pale falcon. Preferred habitat includes open plains and treed watercourses in arid inland areas. When not actively hunting roosts in shady trees or communications towers (Menkhorst et al. 2017). The species has a widespread, but sparse distribution across Australia (ALA 2024). No previous BDBSA records within 5 km of the broader HJP Project Area. Birdlife: 1 record (2011) with unknown spatial reliability.	Possible No preferred 'tree -lined' watercourses present in the broader HJP Project Area, but given it is a raptor may occasionally utilise open (chenopod) areas for hunting. Included in BAM sheets
<i>Gallinago hardwickii</i>	Latham's Snipe, Japanese Snipe	R	VU, MW	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area. Breeds in Japan migrates to SE Australia and occasionally Qld. Prefers tussock grass and low dense sedges surrounding freshwater wetland, including marshes and flooded grassland. In dense cover by day, forage dawn dusk or at night. (Menkhorst et al. 2017). The species has a widespread distribution throughout eastern Australia (ALA 2024). No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Gallinago stenura</i>	Pin-tailed Snipe	-	MW	5	None	PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area. Uncommon, elusive migratory species, that does not breed in Australia (Geering et al. 2008). Occur in freshwater wetlands of coastal plains of northern Western Australia and Northern Territory (Menkhorst et al. 2017, Davies et al. 2022). Study area is outside of known range. No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
<i>Leipoa ocellata</i>	Malleefowl	V	VU	1, 5	1999 (poor spatial reliability)	PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area. Terrestrial ground-dwelling species which makes large conspicuous nesting mounds. Preferred habitat is semi-arid to arid shrublands and low woodlands (especially those dominated by mallee and/or Acacias). Sandy soils and abundance leaf litter are required for breeding. BDBSA: 1 record (1999) with poor spatial reliability (1-10 km).	Unlikely No suitable mallee habitat within or directly adjacent to the broader HJP Project Area.
<i>Limosa lapponica</i>	Bar-tailed Godwit	-	MW	1, 5	2004	PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area. Large wader recorded in coastal areas of all Australian states (DCCEEW 2023a). Mainly found in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It has been sighted in coastal sewage farms and saltworks, salt lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. It is rarely found on inland wetlands or in areas of short grass (Marchant & Higgins 1993). BDBSA: 1 historical record with poor spatial reliability (1-10 km). Birdlife: 1 record located 4.9 km S of the Project Area within Whyalla Playford.	Unlikely No recent records in close proximity and no suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Limosa lapponica baueri</i>	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit	R	EN	5	None	PMST highlighted that the species may occur within the broader HJP Project Area. The sub-species occurs in intertidal sandflats and mudflats and forages at the edge of water in soft mud. Rarely far from the coast, restricted to large intertidal sites (Geering et al. 2008). No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Motacilla cinerea</i>	Grey Wagtail	-	MT	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area. Known range is considered to be northern coastal Australia. This uncommon migratory wagtail (DOE 2015a) favours fast-flowing streams and rivers often in forested areas, in addition to lowland watercourses (BOTW 2024). Occasionally occurs in waterfalls, fast flowing rocky waterways of Nth Australia (Kimberly, WA, TopEnd, NT, Wet Tropics). No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Motacilla flava</i>	Yellow Wagtail	-	MT	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area. Has undergone taxonomic revision, this race is now <i>M. tschutschensis</i> .	Unlikely

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						<p>Uncommon migratory wagtail. Occurs in a variety of damp or wet habitats including marshes and bogs. Forages in damp grassland or on bare ground at the edge of rivers, lakes and other wetlands (BOTW 2024).</p> <p>This species has a widespread distribution around the northern coast of Australia, in spring to Autumn (Menkhorst et al. 2017, ALA 2024).</p> <p>No previous BDBSA records within 5 km of the broader HJP Project Area.</p>	No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Neophema chrysostoma</i>	Blue-winged Parrot	V	VU	5	None	<p>PMST highlighted that the species or species habitat is likely to occur within the broader HJP Project Area.</p> <p>Blue-winged parrots breed on mainland Australia south of the Great Dividing Range in southern Victoria, and sometimes in the far southeast of South Australia, and the northwestern, central and eastern parts of Tasmania. During the non-breeding period, from autumn to early spring, birds are recorded from northern Victoria, eastern South Australia, southwestern Queensland and western New South Wales (Higgins 1999 cited in DCCEE 2023d).</p> <p>Occurs in a range of habitats from coastal, subcoastal and inland areas, through to semi-arid zones. Favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones (Higgins 1999). The species can also be seen in altered environments such as airfields, golf-courses and paddocks. The project area occurs within the species occasional range.</p> <p>No previous BDBSA records within 5 km of the broader HJP Project Area.</p>	<p>Possible</p> <p>There is no preferred habitat within the project area. However, open chenopod areas may be suitable, during periods of inland migration.</p> <p>Included in BAM sheets</p>
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	E	CE, MW	1, 5	2006	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Migratory wader / large shorebird. Breeds in NE Asia, Siberia and is a spring migrant to Australia where it is found in all states. Within Australia, has a primarily coastal distribution, with very few inland records. Its preferred habitat is coastal lakes, inlets, bays and estuaries where it occupies intertidal mudflats, particularly exposed seagrass beds (Menkhorst et al. 2017, Geering et al. 2008).</p> <p>BDBSA: 1 record (2000) with poor spatial reliability (1-10 km) and 1 historical record.</p> <p>Birdlife: 2 records (2000-2006) including 1 located 4.7 km south of the broader HJP Project Area within Swandel Park and 1 with unknown spatial reliability.</p>	<p>Unlikely</p> <p>No recent records in close proximity and no suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Pandion haliaetus</i>	Osprey	Essp. cristatus	MW	1, 5	2016	<p>PMST highlighted that the species or species habitat is known to occur within the Study Area.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						Coastal Raptor, feeds on fish. Breeding along coastal South Australia, occurs in small and fragmented locations, including Kangaroo Island (Dennis 2007). Occur on the west coast and southern tip of Eyre Peninsula. BDBSA: 1 record (2016) over 5 km south of the broader HJP Project Area in Whyalla. Birdlife: 1 record (2015) within 5 km of the broader HJP Project Area.	
<i>Pedionomus torquatus</i>	Plains-wanderer	E	CE	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area. Plains-wanderers inhabit sparse grasslands with c.50% bare ground, with most vegetation less than 5 cm in height and some widely spaced plants up to 30 cm high (Garnett et al., 2011). The main threat to plains-wanderers is cultivation of native grassland which, even if left to recover, remains unsuitable for decades (Garnett et al., 2011). Cultivation has all but eliminated the species from southern South Australia and Victoria and is increasing across the NSW Riverina (Garnett et al., 2011). The species is incredibly rare with few observations in SA and only three on the EP, two from the 1980, the nearest being 153.3 km to the southwest (1982) and the most recent at Venus Bay in 2002. No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely Given the lack of suitable habitat and the rarity of the species, it is considered unlikely to occur.
<i>Rostratula australis</i>	Australian Painted Snipe	E	EN	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area. This elusive bird occurs in freshwater wetland habitats with dense reeds and rushes/ well vegetated margins (Simpson and Day 2019, Menkhorst et al. 2017). Has a widespread distribution across eastern and northern Australia (ALA 2024). No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Stagonopleura guttata</i>	Diamond Firetail	V	VU	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area. Diamond firetails occur on the southeast mainland of Australia from southeast Queensland to Eyre Peninsula, South Australia, and about 300 km inland from the sea (Higgins et al. 2007, cited in DCCEEW 2023e). Occur in eucalypt, Acacia or Casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees (Higgins et al. 2007). They prefer areas with relatively low tree density, few large logs, and little litter cover but high grass cover (DCCEEW 2023e). No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely Although some habitat may be suitable it is deemed unlikely the species would occur as no recent records are present within 5km of the broader HJP Project Area.

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
<i>Sternula nereis nereis</i>	Australian Fairy Tern	E	VU	1, 5	2019	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Occurs along coasts and estuaries, and breeds on sandy beaches or pits (Simpson & Day 2003). Along the coast, this sub-species generally nests on sandy beaches and banks above the high tide line and below vegetation. Will roost on jetty structures.</p> <p>The sub-species' distribution extends along the coasts of South Australia, Tasmania, and central Western Australia (ALA 2024).</p> <p>BDBSA: 1 record (2019) over 5 km S of the Project Area in Whyalla.</p> <p>Birdlife: 3 records (2006-2011) including 2 records with unknown spatial reliability.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Thinornis cucullatus cucullatus</i>	Eastern Hooded Plover, Eastern Hooded Plover	V	VU	5	None	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>This sub-species mainly occurs on wide beaches backed by dunes, in creeks or inlet entrances. The sub-species is known to occur on many South Australian beaches, including some with human activity presence.</p> <p>No previous BDBSA records within 5 km of the Project Area.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Tringa nebularia</i>	Common Greenshank, Greenshank	-	EN, MW	1, 5	2020	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Migratory shorebird occurs in intertidal mudflats, fresh and saltwater wetlands along the coast or inland (Geering et al. 2008). Also occupies artificial habitats. Has a widespread distribution throughout Australia, in summer (Geering et al. 2008, ALA 2024).</p> <p>In Australia from Aug (northern areas) to Oct / Nov (Menkhorst 2017), does not breed in Aus.</p> <p>BDBSA: 5 records (2000-2019) (plus 5 historical records), nearest 3.5 km S adjacent to Bradford Street Reserve, Whyalla Playford, including 2 records with poor spatial reliability.</p> <p>Birdlife: 33 records (1998-2020) including 16 records with unknown spatial reliability.</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>
<i>Tringa stagnatilis</i>	Marsh Sandpiper, Little Greenshank	-	MW	5	2020	<p>PMST highlighted that the species or species habitat is known to occur within the broader HJP Project Area.</p> <p>Migrant breeds in N Hemisphere, Arrives in Australia in Sep / Nov (Menkhorst et al. 2007). Range includes eastern and northern half of Australia, limited to coastal areas within the study area (Menkhorst et al. 2017, Davies et al. 2022).</p>	<p>Unlikely</p> <p>No suitable habitat within or directly adjacent to the broader HJP Project Area.</p>

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						Prefer shallow fresh or brackish inland wetlands, rivers, water meadows, sewage farms, drains, lagoons and swamps. Also on tidal flats (Menkhorst et al 2017). BDBSA: 1 record (2000) with poor spatial reliability (1-10 km). Birdlife: 2 records (2005-2017) 4.3 km S of the Project Area in Whyalla Wetlands.	
Mammals							
<i>Sminthopsis psammophila</i>	Sandhill Dunnart	V	EN	5	None	PMST highlighted that the species or species habitat is likely to occur within the broader HJP Project Area. Occurs in spinifex hummock (<i>Triodia</i> species) grasslands between 8 to 20 years post fire (Churchill 2001). Given the history of vegetation clearance, habitat on Eyre Peninsula is likely to be more limited. Distribution is restricted predominantly to the Great Victoria Desert and Eyre Peninsula (Churchill 2001). No previous BDBSA records within 5km of the broader HJP Project Area.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
Reptiles							
<i>Aprasia pseudopulchella</i>	Flinders Ranges Worm-lizard	-	VU	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area. The Flinders Ranges Worm-lizard is a very small, worm-like, burrowing lizard with no obvious external ear opening (Cogger 2000). It burrows freely in loose sand and soil, under rocks and litter. Occurs in open woodland, native tussock grassland, riparian habitats and rocky isolates. Prefers stony soils, or clay soils with a stony surface, and has been found sheltering beneath stones and rotting stumps. This species has a highly restricted distribution to the Mount Lofty Ranges, Mid North and Flinders Ranges in South Australia (ALA 2024). Known from Flinders Ranges of SA, extending south to the western slopes and northern and central Mount Lofty Ranges. Also found in northern suburbs of Adelaide and Mount Remarkable National Park. Is known to occur within the Adelaide and Mount Lofty Ranges and the South Australian Arid Lands Natural Resource Management Region (DCCEE 2023a). No previous BDBSA records within 5 km of the broader HJP Project Area.	Unlikely The broader HJP Project Area occurs outside of the known range for the species and contains no preferred habitat.
Flora							
<i>Frankenia plicata</i>	-	V	EN	5	None	PMST highlighted that the species or species habitat may occur within the broader HJP Project Area.	Unlikely

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						<p>Small shrub known from a limited number of scattered records from a variety of environments in run-on areas across the arid zone of SA (DEWHA 2008a, ALA 2024).</p> <p>The SA Herbarium has undertaken review of lodged specimens that were mis-identified given the difficulty in separating this species from the common <i>F. serpyllifolia</i>. The SA Flora database and MNES distributions will be updated to reflect this.</p> <p>No previous BDBSA records within 5 km of the broader HJP Project Area.</p>	No records within 5km of the broader HJP Project Area.
<i>Pterostylis xerophila</i>	Desert Greenhood	V	VU	5	None	<p>PMST highlighted that the species or species habitat may occur within the broader HJP Project Area.</p> <p>Distribution is restricted to isolated populations across the Mediterranean zone from Eyre Peninsula (SA) to western Victoria (ALA 2024, Hutchinson et al. 2005). It is difficult to detect as tubers remain dormant below ground until years with favourable rainfall and growing season only lasts a few months.</p> <p>Has been located within areas mapped as <i>Eucalyptus incrassata</i> mid mallee woodland (BDBSA 2022, NatureMaps 2024). However, it is more typically associated with <i>Melaleuca uncinata</i> (Broombush) tall shrubland over <i>Babingtonia behrii</i> +/- <i>Calytrix involucreta</i> low shrubs over <i>Triodia irritans</i> +/- <i>Hibbertia</i> sp, typically associated with granite outcropping.</p> <p>No previous BDBSA records within 5 km of the broader HJP Project Area.</p>	<p>Unlikely</p> <p>No previous records or suitable habitat within or directly adjacent to the broader HJP Project Area</p>
<i>Swainsona pyrophila</i>	Yellow Swainson-pea	R	VU	5	None	<p>PMST highlighted that the species or species habitat may occur within the broader HJP Project Area.</p> <p>Grows in mallee scrub on sandy or loamy soil. Has been recorded within <i>Eucalyptus brachycalyx</i> mallee woodland on plains and on areas mapped as <i>E. incrassata</i> mallee woodland. Occurs across a wide variety of habitats and is known to respond favourably to disturbance (such as soil disturbance, fire). Only occurs for several years after disturbance.</p> <p>No previous BDBSA records within 5 km of the broader HJP Project Area.</p>	<p>Unlikely</p> <p>No previous records or suitable habitat within or directly adjacent to the broader HJP Project Area</p>

Source; 1- BDBSA (including BirdLife), 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others

NP&W Act; E= Endangered, V = Vulnerable, R= Rare

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

BDBSA Recordset number DEWNRBDBSA240123-2. Only recent (since 1995) and reliable (<1km) records included.

4.2.2 Matters of State Significance

NPW Act listed species assessment

Three state listed threatened floral species have been recorded within 5 km of the Project Area; *Acacia pendula* (Weeping Myall) (V), *Orobanche cernua* var. *australiana* (Australian Broomrape) (R) and *Santalum spicatum* (Sandalwood) (V) (Table 11). No previous records were located within the HJP Project Area for any threatened floral species. However, records were identified within 1 km of the Project Area in Whyalla CP for *Santalum spicatum*. As such, the species is considered as possibly occurring in the broader Project Area but unlikely to occur in the impact area. *Acacia pendula* and *Orobanche cernua* var. *australiana* are considered unlikely to occur.

Excluding those considered threatened or migratory under the EPBC Act (and discussed in previous sections), there are previous records within 5 km of the Project Area for 29 bird species listed under the NPW Act (Table 11).

Slender-billed Thornbill (*Acanthiza iredalei iredalei*) (R) has records within 1 km of the Project Area in nearby Whyalla Conservation Park and chenopod shrubland habitat throughout the HJP Project Area is considered suitable to support the species. The species is therefore considered likely to occur.

Low numbers of nearby records were identified for Australian Bustard (*Ardeotis australis*) (V), Peregrine Falcon (*Falco peregrinus macropus*) (R), Restless Flycatcher (*Myiagra inquieta*) (R) and Gilbert's Whistler (*Pachycephala inornate*) (R) and potentially suitable habitat is present within the HJP Project Area. As such the species are all considered as possible to occur.

All other remaining bird species included in the assessment are considered unlikely to occur due to a lack of suitable habitat and/or a lack of records near the HJP Project Area. However, some species may fly over the site occasionally.

No records of state listed mammals or reptiles were identified within 5 km of the Project Area.

NPW Act listed species included in the BAM datasheets include Slender-billed Thornbill, Australian Bustard, Peregrine Falcon, Restless Flycatcher and Gilberts Whistler as approved by the NVB in DEW on 13 March 2024.

The full likelihood assessment for NPW Act listed species (approved by DEW on 13 March 2024) is provided in Table 11, whilst those also EPBC listed are considered in Table 10. The location of threatened species records within 5km of the Project Area from the BDBSA and from Jacobs' surveys are shown in Figure 12.

Table 11. Likelihood of occurrence for use of habitat in the HJP Impact Area by NPW Act listed threatened and migratory species highlighted in the BDBSA search as having been recorded.

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
Birds							
<i>Acanthiza iredalei iredalei</i>	Slender-billed Thornbill (Western)	R	-	1	2021	The Slender-billed Thornbill (western) occurs in arid and semi-arid regions of southern Western Australia and southwestern South Australia. The species usually occurs in chenopod shrublands that are dominated by samphires or Maireana and Atriplex associations (Baxter & Paton 1998; Hall 1974; Matthew 1994; Recher & Davis 2000). It occasionally occurs in Acacia shrublands and mangroves adjacent to more preferred habitat (Hall 1974; Recher & Davis 2000). BDBSA: 5 records (2016-2011), include 1 record within the broader HJP Project Area. Birdlife: 18 records (2003-2019) including 9 with unknown spatial reliability or poor spatial reliability (1-5 km).	Likely Recent records within the Project Area. Chenopod shrubland habitat throughout the broader HJP Project Area is considered suitable. Included in BAM sheets
<i>Ardea intermedia plumifera</i>	Plumed Egret	R	-	1	2001	Species associated with water bodies and is distributed along Australian coastline (eBird 2024). BDBSA: 1 record located 4.7 km S of the Project Area within Whyalla Wetlands.	Unlikely No previous records or suitable habitat within or directly adjacent to the broader HJP Project Area
<i>Ardeotis australis</i>	Australian Bustard	V	-	1	2005	Species is nomadic and is found on dry plains, grasslands and in open woodland (BirdLife 2024). Species distribution is widespread throughout Australia (ALA 2024). BDBSA: 2 records (2003-2005) including 1 with poor spatial reliability (1-10 km).	Possible Suitable open woodland habitat within the broader HJP Project Area and recent record nearby.
<i>Anhinga novaehollandiae novaehollandiae</i>	Australasian Darter	R	-	1		Species inhabits wetlands and sheltered coastal waters mainly in the tropics and subtropics. Preferred habitat includes smooth, open waters for feeding, with tree trunks, branches, stumps or posts fringing the water for resting and drying wings. Usually seen inland around permanent or temporary water bodies but may be seen in calm seas near the shore. Nesting occurs in trees standing in water (BirdLife 2024). BDBSA: 1 record located >5 km from the broader HJP Project Area at Whyalla Marina.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Arenaria interpres interpres</i>	Ruddy Turnstone	R	-	1	1981	Breeds in Siberia and Alaska. When in Australia prefers rocky coastlines, coral and sand islands, less common on intertidal mudflats, also occurs on beaches (Geering et al. 2008, Davies et al. 2022). Range includes entire coastline of Australia except Great Australian Bight (Davies et al. 2022). BDBSA: 1 historical record within 5 km of the broader HJP Project Area.	Unlikely No recent records and no suitable habitat within or directly adjacent to the broader HJP Project Area.

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
<i>Biziura lobata menziesi</i>	Musk Duck	R	-	1	2019	Species is endemic to Australia. Inhabits deep freshwater lagoons with dense reed beds (Australian Museum 2024). BDBSA: 3 records (2016-2019), nearest located 2.3 km E of the Project Area within False Bay. Birdlife: 15 records (2000-2018) including 8 with unknown or poor (1–5 km) spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Bubulcus ibis coromandus</i>	Eastern Cattle Egret	R	-	1	2019	Subspecies distribution extends along the coastline of eastern Australia but is concentrated along the SA coastline (ALA 2024). BDBSA: 2 records (2016-2019), nearest located 2.3 km E of the Project Area within False Bay. Birdlife: 1 record (2006) with unknown spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Charadrius mongolus mongolus</i>	Lesser Sand Plover	E	-	1	1973	Migrant from Siberia, within Australia, it is widespread in coastal regions, and has been recorded in all states but mainly occurs in northern and eastern Australia (DCCEEW 2023a). In Australia, inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. It also sometime occurs in short saltmarsh or among mangroves (Menkhorst et al. 2017, Davies et al. 2022). BDBSA: 1 historical record within 5 km of the broader HJP Project Area.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Cladorhynchus leucocephalus</i>	Banded Stilt	V	-	1	2019	Species is endemic to Australia, mainly in the south and inland. Habitat includes saline and hypersaline waters of the inland and coast, which are typically large, open, and shallow (Australian Museum 2024). BDBSA: 5 records (2015-2019) including 1 with poor spatial reliability (1-10 km), nearest located 2.5 km E of Project Area within False Bay, plus 4 historical records. Birdlife: 3 records (2006-2018) including 1 with unknown spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Egretta garzetta nigripes</i>	Little Egret	R	-	1	2020	Habitats frequented include the margins of shallow lakes, rivers, streams and pools, open swamps and marshes, flooded meadows, rafts of floating water hyacinth <i>Eichornia</i> spp. on African lakes (Kushlan and Hancock 2005), floodplains, lagoons, irrigation canals, aquaculture ponds (Kushlan and Hancock 2005), saltpans and rice fields (which are especially important in areas with few remaining natural wetland habitats) (Hancock and Kushlan 1984, Kushlan and Hancock 2005). The species also occupies dry fields, inland savannas and cattle pastures (del Hoyo et al. 1992) and some populations are almost entirely coastal,	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						inhabiting rocky or sandy shores, reefs, estuaries, mudflats, saltmarshes, mangroves and tidal creeks (del Hoyo et al. 1992) (Birdlife 2024). BDBSA: 8 records (2015-2019), nearest located 2.4 km E of the Project Area within False Bay. Birdlife: 22 records (2000-2020) including 14 with unknown or poor (1-5 km) spatial reliability.	
<i>Egretta sacra sacra</i>	Pacific Reef Heron	R	-	1	2000 (unknown spatial reliability)	The Pacific reef heron is widely distributed across southern Asia and Oceania. In Australia, Pacific reef herons inhabits most of the coastline, and offshore islands including the Torres Strait Islands. Birdlife: 1 record (2000) with unknown spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Falco peregrinus Macropus</i>	Peregrine Falcon	R	-	1	2019	The Peregrine Falcon is found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites, and prefers coastal and inland cliffs or open woodlands near water, and may even be found nesting on high city buildings (Australian Museum 2024). The sub-species' distribution is widespread across southern Australia (ALA 2024). BDBSA: 3 records (2015-2019), located over 4 km E and S of the Project Area in False Bay and Whyalla. Birdlife: 1 record (2011) with unknown spatial reliability.	Possible Species found in most habitats; however, recent records are limited. Included in BAM sheets
<i>Haematopus fuliginosus fuliginosus</i>	Sooty Oystercatcher	R	-	1	2018	The subspecies distribution is widespread along the Australian coastline, and in particular, the SA and Tas coastlines (ALA 2024). BDBSA: 3 records (2000-2018), nearest 5.9 km S of the Project Area at Whyalla Jetty. Birdlife: 12 records (1999-2013), nearest 4.4 km E of the Project Area in Whyalla, including 5 records with unknown spatial reliability.	Unlikely Species prefers coastal habitat not found in broader HJP Project Area.
<i>Haematopus longirostris</i>	Pied Oystercatcher	R	-	1	2018	The Australian Pied Oystercatcher inhabits mudflats, sandbanks, sandy ocean beaches, and less often along rocky or shingle coasts (Birdlife 2024). The species distribution is widespread along the Australian coastline (ALA 2024). BDBSA: 1 record (2018) >5km from the Project Area along Whyalla coastline plus 4 historical records. Birdlife: 5 records (1999-2009) including 2 records with unknown spatial reliability.	Unlikely Species prefers coastal habitat not found in broader HJP Project Area.
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle	E	-	1	2018	The White-bellied Sea-Eagle is distributed along the coastline (including offshore islands) of mainland Australia and Tasmania. It also extends inland along some of the larger waterways, especially in eastern Australia. The inland limits of the species are most restricted in south-central and	Unlikely

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						southwestern Australia, where it is confined to a narrow band along the coast (Barrett et al. 2003; Bilney & Emison 1983; Blakers et al. 1984; Marchant & Higgins 1993). The White-bellied Sea-Eagle is found in coastal habitats (especially those close to the seashore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. BDBSA: 1 record (2018) >5km from the Project Area along Whyalla coastline plus 4 historical records. Birdlife: 3 records (2000-2018) including 2 with unknown spatial reliability.	Species prefers coastal habitat not found in broader HJP Project Area.
<i>Hylacola cauta cauta</i>	Shy Heathwren	R	-	1	2021	Species inhabits dense mallee, coastal thickets, and whitlocki sandplains (Simpson and Day 2019). BDBSA: 3 records (2021) including 1 within the Project Area and 2 adjacent within Whyalla Conservation Park.	Unlikely Although there is a recent record within the Project Area, the broader HJP Project Area does not contain suitable habitat for the species.
<i>Hylacola pyrrhopygia pedleri</i>	Chestnut-rumped Heathwren	V	-	1	2021	Species inhabits heath and dense undergrowth (Simpson and Day 2019). BDBSA: 3 records (2021) including 1 within the broader HJP Project Area and 2 adjacent within Whyalla Conservation Park.	Unlikely Recent record within Project Area but no suitable habitat in the broader HJP project Area.
<i>Myiagra inquieta</i>	Restless Flycatcher	R	-	1	2015	Species distribution is widespread throughout Australia, excluding central and northwest WA (ALA 2024). BDBSA: 1 record 3.9 km W of the broader HJP Project Area within Whyalla Conservation Park.	Possible Species widespread within Australia and recent record in close proximity. Included in BAM sheets
<i>Neophema elegans elegans</i>	Elegant Parrot	R	-	1	2012 (unknown spatial reliability)	Species distribution extends from south west WA and Eyre Peninsula, Flinders Ranges, Gammon Ranges and down to Vic (Atlas of Living Australia 2023). Birdlife: 1 record (2012) with unknown spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Neophema petrophila zietzi</i>	Rock Parrot	R	-	1	2011 (unknown spatial reliability)	Subspecies is restricted to coastlines and offshore rocky islands, found in windswept coastal dunes, mangroves, saline swamps and rocky islets. Is rarely found more than a few hundred meters from the sea and is mainly sedentary (BirdLife 2023). Birdlife: 1 record (2011) with unknown spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
<i>Numenius phaeopus variegatus</i>	Whimbrel	R	-	1	1973	The Whimbrel is a regular migrant to Australia and New Zealand, with a primarily coastal distribution. There are also scattered inland records of Whimbrels in all regions. It is found in all states but is more common in the north. The Whimbrel is often found on the intertidal mudflats of sheltered coasts. It is also found in harbours, lagoons, estuaries and river deltas, often those with mangroves, but also open, unvegetated mudflats. BDBSA: 1 historical record within 5 km of the broader HJP Project Area.	Unlikely No recent records and no suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Pachycephala inornate</i>	Gilbert's Whistler	R	-	1	2020	Gilbert's Whistler is sparsely distributed over much of arid and semi-arid zone of inland southern Australia. Preferred habitats include a dense shrub layer, and it has been widely recorded in mallee shrublands, but also box-ironbark, Cypress Pine and Belah, and River Red Gum forests along the Murray, Edwards and Wakool Rivers (OEH 2023). BDBSA: 1 record (2018) with poor spatial reliability (1-5 km). Birdlife: 1 record located 2 km W of the Project Area within Whyalla Conservation Park.	Possible Recent record in close proximity to the broader HJP Project Area and possible suitable habitat present however, species is sparsely distributed. Included in BAM sheets
<i>Plegadis falcinellus</i>	Glossy Ibis	R	-	1	2017	Within Australia, the Glossy Ibis is generally located east of the Kimberley in Western Australia and Eyre Peninsula in South Australia (Beehler et al. 1986; Coates & Bishop 1997; Marchant & Higgins 1990). The Glossy Ibis' preferred habitats for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, floodplains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation. The species is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons (del Hoyo et al. 1992; Hancock et al. 1992; Marchant & Higgins 1990). BDBSA: 1 record 4.7 km S of the Project Area within Whyalla Wetlands. Birdlife: 1 record (2013) with unknown spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Podiceps cristatus australis</i>	Great Crested Grebe	R	-	1	2019	Species is distributed across western and eastern mainland Australia and Tasmania. Habitat includes deep freshwater ponds and open wetlands, as well as coastal saltwater areas (ALA 2024). BDBSA: 2 records (2016-2019) located 2.5 km and 4.1 km east of the broader HJP Project Area within False Bay.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Spatula rhynchotis</i>	Australasian Shoveler	R	-	1	2006	Species inhabits shallow wetlands with abundant emergent vegetation, and on ephemeral lakes and inland wetlands. Occurs on freshwater, brackish and saline waters including inshore waters and estuaries (Birds SA 2024).	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						Birdlife: 1 record located 4.8 km south of the broader HJP Project Area adjacent to Whyalla Wetlands.	
<i>Sterna hirundo longipennis</i>	Common Tern	R	-	1	2010 (unknown spatial reliability)	In southern Australia, other than the southeast, the species is only rarely recorded in southwestern Victoria and southeastern South Australia (though recorded increasingly frequently in the latter in recent decades). Common Terns forage in marine environments, often close to the shore, including sheltered embayments and in the surf-zone, but also well out to sea. They also forage in near-coastal terrestrial wetlands, including estuaries, rivers and swamps (Cramp 1985; Gochfeld & Burger 1996; Higgins & Davies 1996; Hitchcock 1965; Milledge 1977; Nisbet 2002; Serventy et al. 1971). Birdlife: 2 records (2000-2010) including 1 record with unknown spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Stictonetta naevosa</i>	Freckled Duck	V	-	1	2018	Species is found mostly in south east and south west of Australia, occurring as a vagrant elsewhere. Preferred habitat includes permanent freshwater swamps and creeks with heavy cumbungi, lignum or tea-tree. Utilises permanent waters such as lakes, reservoirs, farm dams and sewerage ponds in drier times (BirdLife Australia 2024). BDBSA: 4 records (2003-2017), nearest located 4.3 km S of the Project Area at Whyalla Wetlands. Birdlife: 10 records (2003-2018) including 1 record with unknown spatial reliability.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Tringa glareola</i>	Wood Sandpiper	R	-	1	2019	In South Australia most records occur east of the line from south Eyre Peninsula through Old Nilpinna to Purnu Bore, with most occurring south of 33° S on the Yorke Peninsula, Adelaide Plains, Murray Mallee and southeast regions. The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. The species uses artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains (Higgins & Davies 1996). BDBSA: 3 records (2018-2019), nearest located 4.3 km S of the Project Area at Whyalla Wetlands.	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.
<i>Zapornia tabuensis</i>	Spotless Crane	R	-	1	2019	Species has a mostly coastal distribution across southeast Australia and coastal WA, Tas and many numerous islands. Is a winter visitor to northeast NT and QLD. Occurs inland irregularly in good seasons. Habitat consists of well vegetated freshwater wetlands with rushes, reeds and cumbungi, as well as muddy areas, reedbeds or wetlands (DEH 2008a).	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area.

Species	Common Name	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat - Comments
						BDBSA: 3 records (1999-2019) located 4.3 km S of the Project Area at Whyalla Wetlands with the exception of 1 record at False Bay. Birdlife: 2 records (2006-2014) within 5 km of the broader HJP Project Area.	
Flora							
<i>Acacia pendula</i>	Weeping Myall	V	-	1	2018	Grows on major river floodplains in heavy clay soils, sometimes dominant in woodland and open woodland. Species is distributed west of the Great Divide from Emerald in central Queensland through to NSW to the Vic border, with isolated occurrences in the Little Desert area, western Vic and far eastern SA (ALA 2024). BDBSA: 1 record located approximately 3.7 km S within University of South Australia campus.	Unlikely Recent records within 5 km of the broader HJP Project Area but frequently planted species considered unlikely to occur in the HJP Impact Area. Distinctive species was not observed.
<i>Orobanche cernua</i> var. <i>australiana</i>	Australian Broomrape	R	-	1	2016	Scattered distribution across eastern half of SA, also found in NSW, Vic, and Tas. Grows in sand dunes and sandy creek beds and is parasitic on native Senecio species (SASCC 2018). BDBSA: 5 records (1995-2016) located > 5km from the broader HJP Project Area on Whyalla foreshore and including 2 records with poor spatial reliability (1–10 km).	Unlikely No suitable habitat within or directly adjacent to the broader HJP Project Area and considered unlikely to occur.
<i>Santalum spicatum</i>	Sandalwood	V	-	1	2020	The species is widely distributed from WA through the semi-arid zone to the Gammon Ranges in SA (ALA 2024). BDBSA: 3 records (1998-2020) located within 1 km of the Project Area at Whyalla Conservation Park and including 1 record with poor spatial reliability (1–10 km).	Unlikely in impact area Remote possibility of occurrence in broader surveyed area. Recent records in close proximity to the HJP Project Area but the species was not observed despite multiple surveys. Species considered unlikely to occur in the HJP Impact Area.
<p>Source; 1- BDBSA (including BirdLife), 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others NP&W Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable BDBSA Recordset number DEWNRBDBSA240123-2. Only recent (since 1995) and reliable (<1km) records included unless considered otherwise appropriate to include</p>							

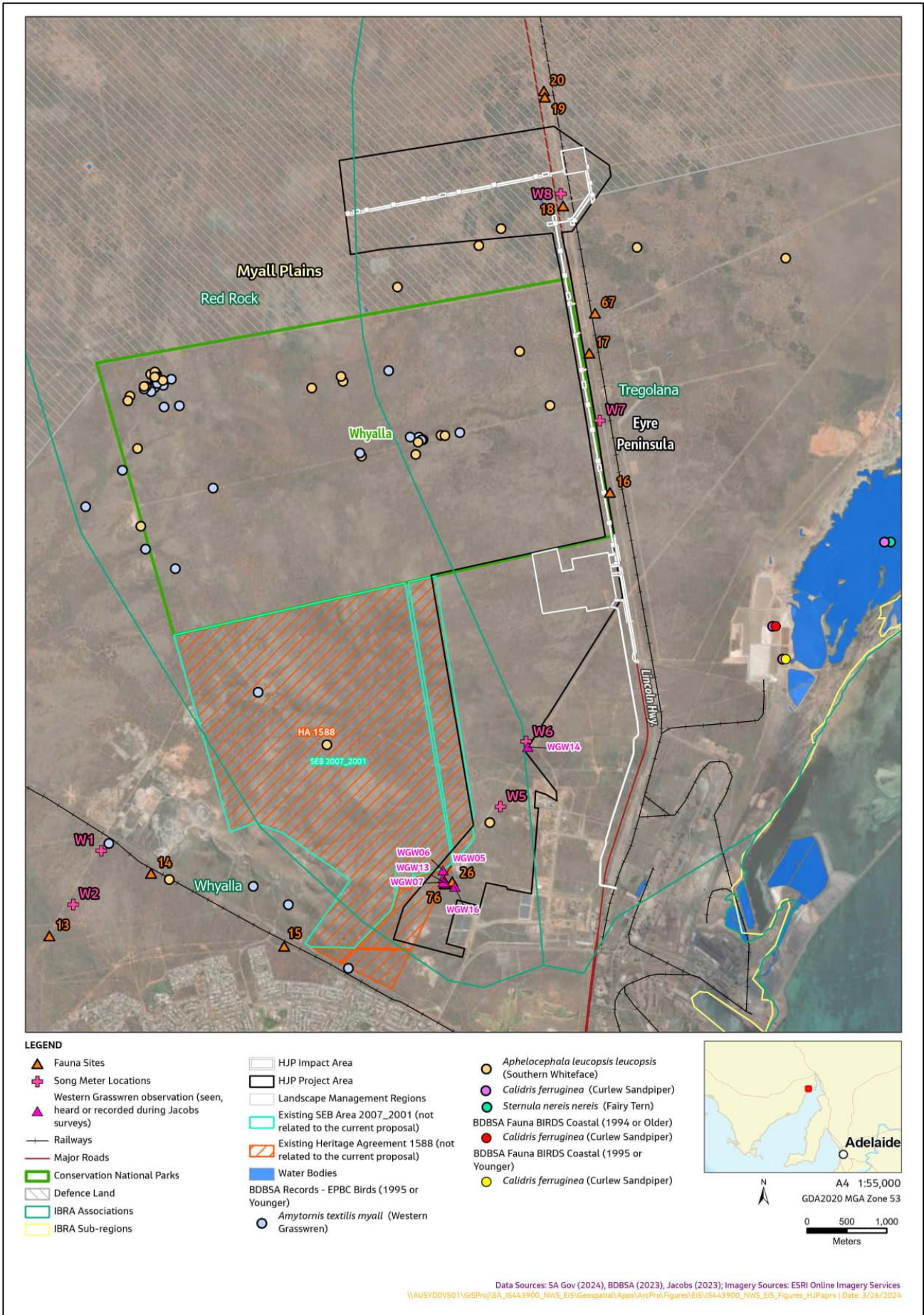


Figure 12. Western Grasswren observed or heard during Jacobs surveys and records of threatened species based on the BDBSA output.

4.3 Cumulative impact

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

The proposed HJP Impact Area includes 89.436 ha including 87.461 ha of native vegetation clearance of which approximately 12.2 ha is expected to be temporary (following rehabilitation). Direct clearance is expected to involve clearance of vegetation and flattening of the ground using excavation equipment followed by construction of infrastructure including the main hydrogen facility, the substation, permanent tracks and water pipeline infrastructure. It is understood the relatively small pipeline will be buried under the Lincoln Highway and connected to adjacent water infrastructure, whilst the connection north to the main storage facility will be above ground and positioned largely on an existing track. For the new transmission line, permanent clearance is expected to be restricted to 15 m x 15 m pole footings with access via an existing track to the east, whilst the construction footprint is expected to comprise 40 m x 40 m for the pole structure pads, two stringing pads (3.302 ha) and the stringing track (3.310 ha) which will be rehabilitated following clearance via spreading vegetation back over cleared areas and allowed to naturally regenerate. The total permanent clearance for the transmission line is 2.298 ha. Temporary clearance is also expected around permanent infrastructure for the primary facility and sub-station with surrounding areas requiring increased clearance for machine access but subject to rehabilitation following construction (but o discounts being applied for).

Other clearance includes 0.490 ha for intersection disturbance, 63.251 ha for the main hydrogen facility, 2.158 ha for the module haul road, 0.456 ha for the SA Water connection, 2.197 ha for waste water disturbance and 8.695 ha for the substation.

It is expected that the current proposed footprint includes all direct impact expected, but if the impact extends outside of the applied for area, the NVB will be advised, and the SEB updated accordingly.

There is a risk of weed spread during construction and operation phases that will be managed through appropriate weed hygiene controls. Noxious weeds were recorded opportunistically during the survey and will be included in construction management plans as priority weeds for control and spread mitigation (including Prickly Pear, African Boxthorn and Carrion Flower). More widespread weeds such as Wards Weed are difficult to control and tend to regenerate rapidly following disturbance. However, efforts will be made to avoid weed spread into adjacent areas / weed free areas.

There is the potential for altered hydrology, erosion and sedimentation during rain and wind events during the construction phase which could potentially impact surrounding vegetation, but the risk is considered low following mitigation such as dust suppression and appropriate drainage management. There are no meaningful changes in hydrology expected due to the construction which is located on flat plains with no identified drainage lines.

It is considered possible that fauna may move away from construction areas during works but given their mobility and the vast expanses of adjacent (often better) quality habitat, the risk to fauna species is considered low. Western Grasswren are known to occur adjacent noise and disturbance areas. There is some risk that fauna may be present in vegetation that is being cleared. A suitably qualified expert will be on-site to rescue any injured or startled wildlife requiring assistance and an attempt will be made to flush out fauna prior to clearance. It is also anticipated that a Construction Environmental Management Plan will be developed for the project including measures to reduce impacts to fauna during initial disturbance.

There is not expected to be any clearance required for fire protection, nor regulations that will become applicable that allow the clearance of additional vegetation. Any buildings within the facility will already have the ten metres around them clear therefore additional vegetation is not at risk from *Regulation 8 (1) – Vegetation within 10m of a building* of the Native Vegetation Regulations.

It is expected there may be additional clearance near the HJP Impact Area for other Projects such as Northern Water, Hydrogen Hub and other infrastructure projects related and unrelated to the HJP Project, but the current proposal presents the expected HJP impact at the time of this application and any variation is expected to be minor.

4.4 Mitigation Hierarchy

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

A range of avoidance and mitigation approaches have been and continue to be considered by OHPSA including the following:

- Consideration of multiple sites and multiple potential options within the current proposed general area balancing avoidance and minimisation to the impact of ecological values with feasibility of engineering and design, expense and connection with other projects and stakeholders.
- Over the period April to June 2022, the South Australian government investigated multiple potential sites for the electrolyser, power generation and storage components of the Project. An expert panel consisting of more than 30 government, industry and community organisations was formed to advise on the site selection process. Following investigation of potential land parcels, largely located within a 15 km radius to the northeast of the city, three sites were identified with potential to support the Project. OHPSA worked with the Traditional Owners of the region, BDAC, and the Whyalla City Council to secure options over those sites. Furthermore, Traditional Owners via the BDAC have been engaged via multiple platforms, including community meetings in early and mid-2023.
- Following initial survey of the HJP Project Area as part of the Northern Water Project, the HJP Project Area was more intensively surveyed in the areas most likely to be developed to further refine vegetation and habitat value, thus identifying areas of higher and lower value to guide infrastructure placement whilst aiming to reduce impact to vegetation in better condition, more heavily wooded vegetation and vegetation considered of higher habitat value, particularly focused on mitigation of disturbance to habitat of nationally threatened Western Grasswren (*Amytornis textilis myall*) which have very specific habitat requirements and nationally threatened Southern Whiteface (*Aphelocephala leucopsis*) which have broader habitat requirements but prefer areas with increased tree cover.
- Where possible, infrastructure has been positioned in more degraded areas adjacent the existing pipeline and predominantly just south of the Whyalla CP where vegetation was more open and weed dominated. Where it was essential to position infrastructure in higher value vegetation, it is predominantly linear in nature (pipelines and transmission lines) and has been carefully planned to align with existing tracks or disturbance areas as feasible noting that some clearance of high value vegetation and habitat will be required for the Project.
- The transmission line alignment, whilst located within the boundary of the Whyalla Conservation Park, has been selected as a result of the opportunity to utilise an existing cleared access track at the periphery of the park impacted by edge-effects, avoiding the need for additional clearance of remnant vegetation for a new access track that would be required for other alignments within and external to the park.
- Using existing tracks, disturbance corridors and cleared areas wherever practicable. This includes positioning of lay-down areas in cleared locations devoid of native vegetation.
- Avoiding clearance of individual old growth trees such as *Acacia papyrocarpa* (Western Myall) and *Casuarina pauper* (Black Oak) will be avoided through micrositing of tower placements along the transmission line alignment.
- Detailed mapping to avoid vegetation communities with tall *Maireana pyramidata* (Black Bluebush). Overall, the resulting HJP Impact Area contains very few areas of tall *Maireana pyramidata* (Preferred Western Grasswren habitat) due to ongoing mitigation strategies. Some smaller patches of *Maireana pyramidata* and *Lycium australe* may occur within larger patches of other vegetation communities but overall, the species ideal habitat has been avoided. However, it is noted that the species is likely to utilise other vegetation under application. Further micrositing to avoid very high quality habitat is not expected but may occur.

b) **Minimisation – 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).**

Additional mitigation strategies for the Project includes the following measures to minimise impacts:

- Project location deliberately chosen to minimise the clearance of highly suitable habitat for the EPBC Act listed Western Grasswren and Southern Whiteface, with infrastructure being preferentially sited on lower quality native vegetation providing moderate habitat for these species.
- Where feasible, infrastructure has been positioned in vegetation of lower quality including low open shrublands dominated by *Maireana sedifolia* with a high abundance of Wards Weed compared with high quality *Maireana pyramidata* chenopod shrubland and more heavily wooded areas. This positioning was not incidental but deliberate with multiple surveys informing areas of lower value.
- Using low impact methods, such as rolling, for temporary clearance areas, where practicable.
- Structures (poles or towers) will be micro-sited as far as reasonably practicable to minimise impacts on native vegetation and threatened species habitat including minimisation of clearing trees and impact roots, particularly for mature specimens.
- Flagging (or similar) to delineate vegetation earmarked for clearance and vegetation not to be cleared, including additional identification of very high value patches.
- Including awareness of ecological values in induction training for contractors working on the site. Signage and education regarding Western Grasswren identification and high value habitat to assist in minimisation of impact during construction.
- Managing dust during construction through standard suppression methods such as watering of roads and exposed areas.
- Whilst the vegetation present at the site is not highly susceptible to bushfire the risk of construction and operation of the HJP causing bushfires will be minimised through:
 - Developing policies and procedures to appropriately manage bushfire risk to visitors, staff and contractors, including site induction, bushfire response, actions on forecast high fire danger days, reported bushfire emergencies, visitor management and site closure.
 - Ensuring all contractors carry basic firefighting equipment (including fire extinguisher) along with communications devices in all vehicles during construction activities.
 - Siting buildings and facilities within the project area to achieve suitable clearance from vegetation for fire mitigation purposes.
 - Installing dedicated static firefighting water supplies at appropriate locations across the project area
 - Building fire prevention and protection measures into the facility design.
- All lighting will be designed to Australian Standards (AS/NZS 1158 & AS/NZS1680) and applicable laws and regulations, consistent with the *National Light Pollution Guidelines for Wildlife*. Lighting will be shielded and directional and designed where possible to minimise the impact to any surrounding sensitive receptors and wildlife. Major operations and maintenance will generally be conducted during daylight hours and so lighting will typically be designed for vehicle and personnel access as well as security.
- Noise impacts will be controlled in accordance with the limits of the relevant regulations including SA *Environment Protection Act 1993* and *Planning, Development Infrastructure Act 2016*. Noise mitigation measures under consideration include:
 - Selecting low noise equipment, where practicable.
 - Constructing enclosures around high noise equipment, where practicable.
 - Placing noise attenuators on the turbine exhausts stacks.
- Implementing a weed, pest and disease management plan which will include:
 - Implementing weed hygiene practices during construction including vehicle checks and washdowns as required on vehicles or plant entering the construction site.
 - Ensuring construction compounds are kept neat and tidy at all times to prevent pest animals from inhabiting the area, and food waste is placed in enclosed / covered bins to prevent access by pest animals.

- Implementing weed surveillance and control programs targeting Weeds of National Significance and Declared Weed species (WoNS) (if weeds identified) in accordance with the Weed Control Handbook for declared plants in South Australia.
- Ensuring all fill materials (e.g. sand, aggregate) imported to site are sourced from weed and pathogen free sites.
- Management measures to prevent introduction or spread of invasive species and predators that could be a threat to Western Grasswren or its habitat.
- To further reduce impacts to threatened fauna other mitigations strategies may include:
 - The presence of, or access to, trained fauna handlers during construction to assist with removal of, and relocation of, any trapped (and/or injured) fauna displaced during habitat clearance.
 - Preparation of a Construction Environmental Management Plan with specific reference to threatened species that are known to occur in the HJP Project Area.
 - Providing an on-ground offset as a Significant Environmental Benefit to meet South Australian government requirements (noting that investigations for on-ground offset options are continuing).

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.*

It is proposed that of the total impact footprint (89.435 ha) including 87.461 ha requiring clearance of native vegetation that 12.2 ha will comprise temporary clearance for the transmission line stringing pads and stringing tracks, much of which is located in the high value Whyalla CP. Temporarily cleared areas will have vegetation spread back over them, weed management and be allowed to naturally regenerate, or potentially be subject to intervention such as revegetation if deemed appropriate.

Rehabilitation will include reinstating topsoil and vegetative material and facilitating natural regeneration, or through more active methods. Stockpiling topsoil and vegetative material for use in revegetation will occur during construction. Within the hydrogen storage and southern infrastructure area, this will be limited to shallow rooted vegetation that will not disrupt the fill material surrounding the buried infrastructure.

Although rehabilitation will occur in some areas, there are no discounts being applied for at this time.

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.

On-ground offset opportunities are currently being considered for the HJP Project.

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

The current application represents a data report associated with a Development Application therefore all Principles of Clearance are addressed in line with NVB requirements.

Table 12. Assessment against the Principles of Clearance

Principle of clearance	Considerations																																																																				
<p>Principle 1a - it comprises a high level of diversity of plant species</p>	<p><u>Relevant information</u> The number of plant species recorded (native and introduced) for each vegetation association.</p> <table border="1" data-bbox="319 430 1468 1012"> <thead> <tr> <th>BAM Number</th> <th>Number of species</th> <th>Species diversity score</th> <th>Rating</th> </tr> </thead> <tbody> <tr><td>BAM 7</td><td>19</td><td>24</td><td>Seriously at Variance</td></tr> <tr><td>BAM 31</td><td>7</td><td>12</td><td>At Variance</td></tr> <tr><td>BAM 32</td><td>17</td><td>24</td><td>Seriously at Variance</td></tr> <tr><td>BAM 51</td><td>21</td><td>30</td><td>Seriously at Variance</td></tr> <tr><td>BAM 52</td><td>20</td><td>28</td><td>Seriously at Variance</td></tr> <tr><td>BAM 53</td><td>17</td><td>28</td><td>Seriously at Variance</td></tr> <tr><td>BAM 54</td><td>8</td><td>14</td><td>At Variance</td></tr> <tr><td>BAM 55</td><td>11</td><td>20</td><td>At Variance</td></tr> <tr><td>BAM 62</td><td>23</td><td>30</td><td>Seriously at Variance</td></tr> <tr><td>BAM 81</td><td>18</td><td>26</td><td>Seriously at Variance</td></tr> <tr><td>BAM 103</td><td>17</td><td>28</td><td>Seriously at Variance</td></tr> <tr><td>BAM 106</td><td>20</td><td>28</td><td>Seriously at Variance</td></tr> <tr><td>BAM 123</td><td>15</td><td>24</td><td>Seriously at Variance</td></tr> <tr><td>BAM 124</td><td>12</td><td>22</td><td>Seriously at Variance</td></tr> </tbody> </table> <table border="1" data-bbox="319 1052 893 1214"> <thead> <tr> <th>Native plant species diversity score</th> <th>Remnant area</th> </tr> </thead> <tbody> <tr><td><10</td><td>Not at variance</td></tr> <tr><td>10 - 20</td><td>At variance</td></tr> <tr><td>>20</td><td>Seriously at variance</td></tr> </tbody> </table> <p><u>Assessment against the principles</u> Seriously at Variance Clearance of vegetation in BAM sites 7, 32, 51, 52, 53, 62, 81, 103, 106, 123, and 124 is considered Seriously at Variance to Principal 1(a). At Variance – Clearance of vegetation in BAM sites 31, 54, and 55 is considered at Variance to Principal 1(a). <u>Moderating factors that may be considered by the NVC</u> Although most vegetation communities have a high species diversity for that type of community, much of the vegetation under application is more degraded than other vegetation in the broader Project Area following mitigation efforts. These communities are often dominated by just a few species and few specimens of other species.</p>	BAM Number	Number of species	Species diversity score	Rating	BAM 7	19	24	Seriously at Variance	BAM 31	7	12	At Variance	BAM 32	17	24	Seriously at Variance	BAM 51	21	30	Seriously at Variance	BAM 52	20	28	Seriously at Variance	BAM 53	17	28	Seriously at Variance	BAM 54	8	14	At Variance	BAM 55	11	20	At Variance	BAM 62	23	30	Seriously at Variance	BAM 81	18	26	Seriously at Variance	BAM 103	17	28	Seriously at Variance	BAM 106	20	28	Seriously at Variance	BAM 123	15	24	Seriously at Variance	BAM 124	12	22	Seriously at Variance	Native plant species diversity score	Remnant area	<10	Not at variance	10 - 20	At variance	>20	Seriously at variance
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<p>Principle 1b - significance as a habitat for wildlife</p>	<p><u>Relevant information</u> Species that may utilise habitat in the HJP Impact Area include: EPBC listed Western Grasswren, Southern Whiteface, Blue-winged Parrot and Grey Falcon. NPW Act listed Slender-billed Thornbill, Australian Bustard, Peregrine Falcon, Restless Flycatcher and Gilberts Whistler</p>																																																																				

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	<p><u>Assessment against the principles</u> Seriously at Variance All BAM sites (vegetation associations) in the HJP Impact Area have a score of 0.1 and therefore clearance is considered Seriously at Variance to Principal 1(b) for all sites. At Variance None</p>																																																															
	<p><u>Moderating factors that may be considered by the NVC</u> Significant efforts have been made to avoid and minimise impact on high quality habitat for Western Grasswren resulting in the habitat under application expected to be of lower value for the species (although is acknowledged as being suitable). In addition, during ongoing planning works the site was stratified such that more heavily wooded areas were highlighted as being of higher value given the additional habitat opportunities they provide and the length of time they take to grow. Additional micro-siting is expected during construction to avoid the clearance of trees and any smaller pockets of high value Western Grasswren habitat for more flexible project components such as transmission line poles (e.g. patches of <i>Maireana pyramidata</i> / <i>Lycium australe</i> within plains of <i>Maireana sedifolia</i>).</p>																																																															
<p>Principle 1c - plants of a rare, vulnerable or endangered species</p>	<p><u>Relevant information</u> There were no threatened species observed during the survey and all sites had a threatened flora score of "0"</p>																																																															
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	<p><u>Moderating factors that may be considered by the NVC</u> Not applicable</p>																																																															
<p>Principle 1d - the vegetation comprises the whole or</p>	<p><u>Relevant information</u> There are no plant communities listed under the EPBC Act or based on the Provisional list of threatened ecosystems for South Australia (DEH, in Progress) that occur in the HJP impact Area or the broader HJP Project Area. Threatened Community Score – all BAM sites score 1</p>																																																															

Principle of clearance	Considerations
part of a plant community that is Rare, Vulnerable or endangered:	<p><u>Assessment against the principles</u> Seriously at Variance None</p> <p>At Variance None</p> <p><u>Moderating factors that may be considered by the NVC</u> Not applicable</p>
Principle 1e - it is significant as a remnant of vegetation in an area which has been extensively cleared.	<p><u>Relevant information</u> The entire HJP Impact Area falls within the Myall IBRA Sub-region which has 97% of native vegetation remaining. The majority of the Impact Area falls within the Tregolana IBRA Association which has 96% of vegetation remaining. A small area of the HJP Impact Area falls within the Red Rock IBRA Association which is described as having 100% of vegetation remaining.</p> <p>The IBRA Sub-region and Associations in the HJP Impact Area have very high remnancy figures given the location in low rainfall arid areas. Rainfall in the area is not suitable for the majority of crops therefore land in such areas is often utilised for grazing and although potentially degraded is considered as native vegetation. Vegetation in the HJP Project Area does not appear to have been recently grazed. The adjacent Whyalla IBRA Association also has a high remnancy value (95%) despite increased clearance for residential and industrial purposes within it. It is likely the majority of native vegetation in the IBRA will be retained in the long term although some additional impact is expected around Whyalla for related projects.</p> <p>Total Biodiversity Score – 5787.327</p> <p><u>Assessment against the principles</u> Seriously at Variance None</p> <p>At Variance Although the IBRA have very high remnancy values, clearance of all BAM sites are considered At Variance to principal 1(e) due to the high Total Biodiversity Score (any project with a TBS above 500 is considered At Variance or Seriously at Variance).</p> <p><u>Moderating factors that may be considered by the NVC</u> The Project has a high TBS but there has been a focus to locate infrastructure in more degraded areas wherever possible. The vegetation communities in the Project Area are widespread arid communities in a low rainfall area which are often relatively intact and as a consequence score highly using the BAM methodology.</p>
Principle 1f - it is growing in, or in association with, a wetland environment.	<p><u>Relevant information</u> There are no wetlands within the HJP Project Area</p> <p><u>Assessment against the principles</u> Seriously at Variance Clearance of vegetation is not Seriously at Variance to principal 1f for any BAM site.</p> <p>At Variance Clearance of vegetation is not At Variance to principal 1f for any BAM site.</p> <p><u>Moderating factors that may be considered by the NVC</u></p>
Principle 1g - it contributes significantly to	<p><u>Relevant information</u> The vegetation under application is considered to have a high amenity and community value being located adjacent a major highway (Lincoln Highway) near a coastal town (Whyalla) and in an area visibly accessed by community for recreation such as dog walking and running. The HJP</p>

Principle of clearance	Considerations
<p><i>the amenity of the area in which it is growing or is situated.</i></p>	<p>Impact Area also includes a transmission line in the Whyalla CP. It is expected that infrastructure will have a negative visual impact on the immediate surrounds at eye level (substation and main facility) and in the air (transmission lines). The water connection in the south also extends right in front of the Whyalla Township sign. As well as visual disturbance, the main facility may create noise in an area of recreation.</p>
	<p>N/A</p>
	<p><u>Moderating factors that may be considered by the NVC</u></p> <p>The HJP Impact Area was selected following a range of mitigation approaches including consultation with the Barngarla First Nation people and selection of the site with consideration of three alternatives. It is understood a number of other stakeholders have also been engaged throughout the planning process.</p> <p>Although the project is expected to impact the amenity of the area, it is expected to mostly impact the view from the Lincoln Highway along which vehicles are driven at 110 km per hour and would be less likely to notice the new infrastructure. The overhead transmission lines will impact visual amenity more prominently from the highway, but it is noted there are already existing transmission lines in the north of the Impact Area (but not in Whyalla CP). In addition, the proposed Project includes screening vegetation along the highway to further reduce impacts on visual amenity.</p> <p>The Transmission line in Whyalla CP will impact visual amenity for visitors to the park but it has been positioned as close to the Lincoln Highway as possible and does not extend deeper into the park or near the rocky outcrop in the north west which is known to be frequently visited by tourists. In addition, cleared vegetation at ground level will be rehabilitated in this area.</p> <p>During surveys, it appeared local community were predominantly utilising an area near the Whyalla water tanks approximately 3.6 km from the main hydrogen facility where there is a network of tracks, a stony rise with unique tall shrublands and attractive views. It is expected some people drive along the track near where the main facility is proposed to be but provided access is retained to the broader site, the overall impact to amenity values is considered to be relatively low.</p>

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

Determine the level of risk associated with the application

Total clearance	No. of trees	0
	Area (ha)	87.461 ha
	Total biodiversity Score	5787.327
Seriously at variance with principle 1(b), 1(c) or 1(d)	Clearance of vegetation under application is considered Seriously at Variance to principal 1(b) given its potential habitat for nationally threatened species Western Grasswren and Southern Whiteface, in addition to other listed species. However, infrastructure has been positioned in more degraded areas of lesser habitat value as much as feasible.	
Risk assessment outcome	Level 4	

5. Clearance summary

The SEB calculation was undertaken in a standalone spreadsheet as the HJP Project Area contains multiple IBRA Associations. Loadings were applied for impact of 4.054 ha within the Whyalla CP. Much of the land impacted in the Whyalla CP constitutes temporary clearance and will be rehabilitated post construction (noting that no discounts are being applied for at this time). The spreadsheet has been provided as Appendix 2 with some attributes provided in Table 15 as per the required template. A summary of the total scores and offset requirement is provided in Table 13, whilst Table 14 indicates the economies of scale and rainfall applied to the calculation. The rainfall factor was calculated at 2 km intervals from north to south then averaged.

Table 13. Total SEB summary

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	5787.377	6344.66	\$542,691.74	\$29,848.05	\$572,539.79

Table 14. Economies of scale and rainfall factor used for the HJP Impact Area.

Economies of Scale Factor	0.11
Rainfall (mm)	260.5

Table 15. HJP Impact Area summary of vegetation scores and offset calculations.

Block	Site	*IBRA Association	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	Total Payment
A	BAM 7	Tr	25.33	1	0	0.1	61.77	0.873	53.925	1	0	0	56.621	\$4,843.13	\$266.37	\$5,109.50
A	BAM 7	Tr	25.33	1	0	0.1	61.77	0.048	2.965	1	1	0	6.226	\$532.58	\$29.29	\$561.87
A	BAM 31	Tr	12.00	1	0	0.1	37.69	0.022	0.822	1	0	0	0.863	\$73.79	\$4.06	\$77.85
A	BAM 32	Tr	24.00	1	0	0.1	58.70	7.695	451.697	1	0	0	474.281	\$40,567.74	\$2,231.23	\$42,798.96
A	BAM 51	Tr	30.00	1	0	0.1	68.43	23.420	1602.514	1	0	0	1682.639	\$143,924.84	\$7,915.87	\$151,840.70
A	BAM 51	Tr	30.00	1	0	0.1	68.43	0.294	20.117	1	1	0	42.246	\$3,613.48	\$198.74	\$3,812.23
A	BAM 52	Tr	28.00	1	0	0.1	61.50	4.913	302.150	1	0	0	317.257	\$27,136.63	\$1,492.51	\$28,629.15
A	BAM 53	Tr	28.00	1	0	0.1	66.05	27.653	1826.342	1	0	0	1917.660	\$164,027.34	\$9,021.50	\$173,048.85
A	BAM 54	Tr	14.00	1	0	0.1	50.84	3.134	159.333	1	0	0	167.299	\$14,309.97	\$787.05	\$15,097.01
A	BAM 55	Tr	20.00	1	0	0.1	51.25	0.610	31.263	1	0	0	32.826	\$2,807.75	\$154.43	\$2,962.17
A	BAM 61	Tr	30.00	1	0	0.1	70.95	0.318	22.562	1	0	0	23.690	\$2,026.35	\$111.45	\$2,137.79
A	BAM 62	Tr	30.00	1	0	0.1	63.11	2.604	164.338	1	0	0	172.555	\$14,759.55	\$811.78	\$15,571.33
A	BAM 62	RR	30.00	1	0	0.1	63.11	0.329	20.763	1	0	0	21.801	\$1,864.78	\$102.56	\$1,967.35
A	BAM 81	Tr	26.00	1	0	0.1	70.77	1.576	111.534	1	0	0	117.110	\$10,017.04	\$550.94	\$10,567.98
A	BAM 81	Tr	26.00	1	0	0.1	70.77	3.280	232.126	1	1	0	487.464	\$41,695.30	\$2,293.24	\$43,988.54
A	BAM 103	Tr	28.00	1	0	0.1	73.57	3.730	274.416	1	0	0	288.137	\$24,645.84	\$1,355.52	\$26,001.36
A	BAM 106	Tr	28.00	1	0	0.1	74.48	6.760	503.485	1	0	0	528.659	\$45,218.94	\$2,487.04	\$47,705.99
A	BAM 123	Tr	24.00	1	0	0.1	50.82	0.054	2.744	1	0	0	2.881	\$246.47	\$13.56	\$260.02
A	BAM 124	Tr	12.00	1	0	0.1	66015	0.064	4.234	1	0	0	4.445	\$380.23	\$20.91	\$401.14
Total								0	8787.327				6344.66	\$542,691.74	\$29,848.05	\$572,539.79

*Tr = Tregolana IBRA Association, RR = Red Rock IBRA Association

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.

For the Hydrogen Jobs Plan Project, options for an on-ground SEB are currently being investigated to offset the required 6344.66 points resulting from clearance of vegetation under application. OHPSA will continue to liaise with the Native Vegetation branch about options, and details will be formalised in the final Native Vegetation Data Report which will be submitted for clearance approval.

ACHIEVING AN SEB

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

- Establish a new SEB Area on land owned by the proponent.
- Use SEB Credit that the proponent has established. Provide the SEB Credit Ref. No. _____
- Apply to have SEB Credit assigned from another person or body. The [application form](#) needs to be submitted with this Data Report.
- Apply to have an SEB to be delivered by a Third Party. The [application form](#) needs to be submitted with this Data Report.
- Pay into the Native Vegetation Fund.

7. References

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8. Appendices

Appendix 1.1 PMST Search HJP Impact Area – PDF

Appendix 1.2 PMST search HJP Impact Area – Excel

Appendix 2. BAM sheets – HJP Impact Area

Appendix 3. HJP Impact Summary spreadsheet

Note: Appendix 1.2, Appendix 2 and Appendix 3 has not been provided as part of the Development Application submission. These documents will be provided with lodgement of the native vegetation clearance application, to be lodged by OHPSA at a later date



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 07-Feb-2024

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	46
Listed Migratory Species:	45

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	7
Commonwealth Heritage Places:	None
Listed Marine Species:	80
Whales and Other Cetaceans:	8
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	10
Key Ecological Features (Marine):	None
Biologically Important Areas:	2
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[\[Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In feature area

Listed Threatened Species

[\[Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Amytornis textilis myall			
Western Grasswren (Gawler Ranges) [64454]	Vulnerable	Species or species habitat known to occur within area	In feature area
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
MAMMAL			
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only
Sminthopsis psammophila Sandhill Dunnart [291]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Frankenia plicata [4225]	Endangered	Species or species habitat may occur within area	In feature area
Pterostylis xerophila Desert Greenhood [7997]	Vulnerable	Species or species habitat may occur within area	In feature area
Swainsona pyrophila Yellow Swainson-pea [56344]	Vulnerable	Species or species habitat may occur within area	In feature area

REPTILE

Aprasia pseudopulchella Flinders Ranges Worm-lizard [1666]	Vulnerable	Species or species habitat may occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only

SHARK

Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
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Listed Migratory Species

[[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Species or species habitat known to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands

[[Resource Information](#)]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - AIRTC WHYALLA [40170]	SA	In buffer area only
Defence - WHYALLA TRAINING DEPOT [40171]	SA	In buffer area only
Defence - WHYALLA TRAINING DEPOT [40172]	SA	In buffer area only
Transport and Regional Services - Australian National Railways Commission		
Commonwealth Land - Australian National Railways Commission [41425]	SA	In buffer area only
Commonwealth Land - Australian National Railways Commission [40934]	SA	In feature area
Commonwealth Land - Australian National Railways Commission [41565]	SA	In feature area
Unknown		
Commonwealth Land - [40927]	SA	In buffer area only

Listed Marine Species

[[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardena carneipes as Puffinus carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardena grisea as Puffinus griseus			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Gallinago stenura Pin-tailed Snipe [841]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Sterna striata White-fronted Tern [799]		Migration route may occur within area	In feature area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Fish			
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area	In buffer area only
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area	In buffer area only
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area	In buffer area only
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area	In buffer area only
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area	In buffer area only
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In buffer area only
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area	In buffer area only
Vanacampus poecilolaemus Longsnout Pipefish, Australian Longsnout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area	In buffer area only
Vanacampus vercoi Verco's Pipefish [66286]		Species or species habitat may occur within area	In buffer area only
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In buffer area only
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area	In buffer area only
Reptile			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only

Whales and Other Cetaceans

[[Resource Information](#)]

Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Protected Area Name	Reserve Type	State	Buffer Status
Unnamed (No.HA1588)	Heritage Agreement	SA	In feature area
Upper Spencer Gulf	Marine Park	SA	In buffer area only
Whyalla	Conservation Park	SA	In feature area

Nationally Important Wetlands [\[Resource Information \]](#)

Wetland Name	State	Buffer Status
Upper Spencer Gulf	SA	In buffer area only

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Cultana Solar Farm project	2023/09658		Referral Decision	In feature area

Controlled action

Arafura Whyalla Rare Earths Complex	2011/5877	Controlled Action	Completed	In feature area
Expansion of the Cultana Training Area	2010/5316	Controlled Action	Post-Approval	In feature area
Expansion of the Olympic Dam copper, uranium, gold and silver mine, processing plant and associated	2005/2270	Controlled Action	Post-Approval	In feature area
Pig Iron Smelter	2001/473	Controlled Action	Completed	In feature area
Pig Iron Smelter (Cultana)	2001/466	Controlled Action	Completed	In feature area
Port Bonython Bulk Commodities Export Facility, SA	2012/6336	Controlled Action	Final PD	In feature area

Not controlled action

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Project Magnet	2004/1724	Not Controlled Action	Completed	In feature area
Whyalla Solar Farm Project, SA	2017/7910	Not Controlled Action	Completed	In feature area

Biologically Important Areas

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardena tenuirostris Short-tailed Shearwater [82652]	Foraging (in high numbers)	Likely to occur	In buffer area only
Sternula nereis Fairy Tern [82949]	Foraging	Known to occur	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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