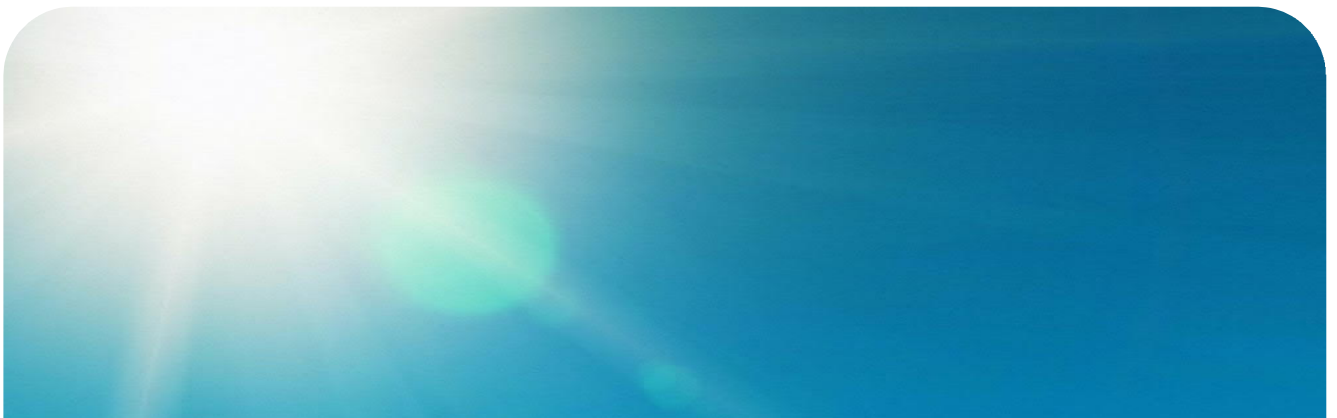


Appendix 5.2 – Supplementary Ecology Report Part 2



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Supplement to the EIS – Ecological Assessment

Australia – Asia PowerLink
SUN CABLE



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TABLE OF CONTENTS

1	INTRODUCTION	1
2	BASELINE STUDIES METHODOLOGY	2
2.1	Existing environment.....	2
2.2	Significant vegetation.....	5
2.3	Threatened species.....	6
2.4	Migratory species.....	7
3	DARWIN CONVERTER SITE ELECTRODE	8
3.1	Existing environment.....	10
3.1.1	Surface water.....	10
3.1.2	Weeds.....	10
3.1.3	Fire.....	11
3.2	Land survey and assessment.....	13
3.2.1	Land units.....	13
3.2.2	Significant vegetation.....	17
3.3	Threatened species.....	20
3.3.1	Desktop likelihood of occurrence.....	20
3.3.2	Field assessment.....	22
3.3.3	Revised likelihood of occurrence.....	22
4	OHTL PREFERRED ROUTE AT ADELAIDE RIVER	24
4.1	Existing environment.....	24
4.1.1	Land resources.....	24
4.1.2	Natural land features.....	25
4.1.3	Surface water.....	25
4.1.4	Weeds.....	26
4.1.5	Fire.....	26
4.1.6	Significant vegetation.....	26
4.2	Threatened species.....	31
5	OHTL PREFERRED ROUTE AT KATHERINE	36
5.1	Existing environment.....	36
5.1.1	Land resources.....	37
5.1.2	Surface water.....	37
5.1.3	Natural land features.....	37
5.1.4	Weeds.....	39
5.1.5	Fire.....	39
5.1.6	Significant vegetation.....	39
5.2	Threatened species.....	41
6	POWELL CREEK ELECTRODE & ANCILLARY INFRASTRUCTURE	43
6.1	Existing environment.....	43
6.1.1	Land resources.....	44
6.1.2	Surface water.....	44
6.1.3	Weeds.....	45

6.1.4	Fire	45
6.2	Vegetation	50
6.3	Threatened species	54
6.3.1	Likelihood of occurrence	54
6.3.2	Field assessment	56
7	REFERENCES	61

Tables

Table 1-1.	Level of assessment for each Project area	1
Table 2-1.	Baseline data used to inform desktop characterisation of the existing environment	2
Table 2-2.	Data used to inform desktop baseline characterisation of significant vegetation	5
Table 2-3.	Ratings for the desktop threatened species 'likelihood of occurrence' determination	7
Table 3-1.	Summary of environmental values relevant to the Darwin Converter Site Electrode Area.....	10
Table 3-2.	List of weeds observed along the HVDC electrode line corridor.....	11
Table 3-3.	Summary of the land units relevant to the Darwin Converter Site Electrode and HVDC Electrode Line Corridor	13
Table 3-4.	Summary of desktop threatened species 'likelihood of occurrence' evaluation.....	21
Table 4-1.	Summary of environmental values relevant to the OHTL preferred route at Adelaide River.....	24
Table 4-2.	Summary of the land systems relevant to the OHTL preferred route at Adelaide River.....	25
Table 4-3.	Number of watercourses crossed by the OHTL preferred route at Adelaide River	26
Table 4-4.	Area of Gouldian Finch habitat intersected by the OHTL Corridor	32
Table 4-5.	Threatened species 'likelihood of occurrence' assessment for OHTL preferred route at Adelaide River.....	33
Table 5-1.	Summary of environmental values relevant to the OHTL preferred route at Katherine.....	36
Table 5-2.	Table of land systems relevant to the OHTL preferred route at Katherine	37
Table 5-3.	Threatened species 'likelihood of occurrence' assessment for OHTL preferred route at Katherine	42
Table 6-1.	Summary of environmental values relevant to the Powell Creek Project area	44
Table 6-2.	Table of land systems of Powell Creek Station.....	46
Table 6-3.	Existing land types that are intersected by the Ancillary Infrastructure (dataset STHLT_250).....	47
Table 6-4.	Vegetation community observations for the Ancillary Infrastructure	51
Table 6-5.	Summary of threatened species likelihood of occurrence assessment for Ancillary Infrastructure	55

Figures

Figure 2-1.	Map of bioregions relevant to the AAPowerLink project	4
Figure 3-1.	Map of the Darwin Converter Site Electrode and HVDC Electrode Line Corridor	9
Figure 3-2.	Photographs showing Gamba Grass and Annual Mission Grass infestations along the HVDC Electrode Line Corridor	11
Figure 3-3.	Map of fire frequency in the Gunn Point area	12
Figure 3-4.	Photograph of land unit 8a1 observed intersecting the HVDC Electrode Line Corridor	15
Figure 3-5.	Photograph of land unit 2b1 observed intersecting the HVDC Electrode Line Corridor	15
Figure 3-6.	Photograph of land unit 8b observed intersecting the HVDC Electrode Line Corridor.....	16
Figure 3-7.	Photograph of land unit 8a observed intersecting the HVDC Electrode Line Corridor.....	16
Figure 3-8.	Photographs of land unit 4c observed supporting a riparian channel (Leaders Creek).....	17
Figure 3-9.	Map of land units and significant vegetation relevant to the Gunn Point Project area	19
Figure 3-10.	Map of threatened flora high-likelihood habitat and records relevant to the Gunn Point Project area.....	23
Figure 4-1.	Map of the proposed OHTL preferred route at Adelaide River and relevant land systems.....	28

Figure 4-2. Map of NVIS vegetation groups relevant to the Adelaide River Project area	29
Figure 4-3. Map of the fire history within the Adelaide River region.....	30
Figure 4-4. Map of threatened flora records and modelling relevant to the Adelaide River Project area	35
Figure 5-1. Map of land systems relevant to the Katherine Project area	38
Figure 5-2. Aerial imagery showing rocky outcrops in the northern section of the OHTL preferred route at Katherine	39
Figure 5-3. Map of ecological values relevant to the OHTL preferred route at Katherine.....	40
Figure 6-1. Map of AAPowerLink infrastructure at Powell Creek Station.....	48
Figure 6-2. Map of land systems and land types of Powell Creek Station	49
Figure 6-3. Aerial photograph of the Electrode site	50
Figure 6-4. Photographs of sandplain habitat within the Electrode site	51
Figure 6-5. Photos of vegetation at Ancillary Infrastructure components.....	54
Figure 6-6. Map of Central Pebble-mound Mouse observations.....	58
Figure 6-7. Aerial photographs showing pebble mounds	59
Figure 6-8. Photograph of active burrow entrance	60
Figure 6-9. Photograph of pebble mound	60

Appendices

Appendix A	Gunn Point Land Unit Verification Points
Appendix B	Gunn Point PMST report
Appendix C	OHTL preferred route at Adelaide River PMST report
Appendix D	OHTL preferred route at Katherine PMST report
Appendix E	Powell Creek PMST report

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1 INTRODUCTION

The Proponent intends to develop AAPowerLink ('the Project') to generate, store, transmit and deliver renewable energy. The Project has multiple terrestrial components located within the NT. The electricity produced at the Solar Precinct on Powell Creek Station will be exported via an Overhead Transmission Line (OHTL) to Murrumujuk (near Darwin) and then on to Singapore via a Subsea Cable System.

In April 2022, Sun Cable submitted the Draft EIS for the Project. Since then, there have been new infrastructure components added to the Project footprint that have not been subject to any ecological assessment. These Project areas are:

- An OHTL preferred route at Adelaide River
- An OHTL preferred route at Katherine
- Preferred site option for the HVDC Electrode Line Corridor and DCS Electrode
- Preferred site option for the HVDC Electrode Line Corridor and Powell Creek Electrode
- Refined siting at the Solar Precinct for Ancillary Infrastructure.

Potential impacts and risks to terrestrial ecosystem aspects related to these Project refinements are assessed in Chapter 5 of the Supplement to the EIS (SEIS). The purpose of this technical appendix report to Chapter 5 is to present baseline information related to the presence of terrestrial ecosystem values in the footprint of these refinements (see Chapter 2 of the SEIS for more Project description). This baseline report is based on desktop resources, field surveys and local knowledge, and presents the results of any general and/or targeted field surveys (Table 1-1). For Project areas in which targeted threatened species surveys were undertaken in some of the Project areas; the results are summarised (where relevant) in this report, and presented in detail in the *Supplement to the EIS – Threatened Species Surveys report* which is an appendix to the SEIS.

For each Project footprint, this report:

- 1) Characterises the baseline environment
- 2) Uses the baseline setting as a basis to undertake a threatened species 'likelihood of occurrence' assessment
- 3) Identifies areas that have a high likelihood of supporting threatened species and/or significant vegetation types
- 4) Summarises the results of targeted threatened species surveys.

The report concludes that there are potential and known ecological values within the extent / footprint of all of the above Project components.

Table 1-1. Level of assessment for each Project area

Project area	Desktop assessment	Threatened species habitat survey	Threatened species presence / absence survey
Darwin Converter Site Electrode / HVDC Electrode Line Corridor	✓	✓	✓ <i>Stylidium ensatum</i>
OHTL Preferred Route at Adelaide River	✓	-	-
OHTL Preferred Route at Katherine	✓	-	-
Powell Creek Electrode and Ancillary Infrastructure	✓	✓ Gouldian Finch, Grey Falcon	✓ Greater Bilby, Yellow-spotted Monitor

2 BASELINE STUDIES METHODOLOGY

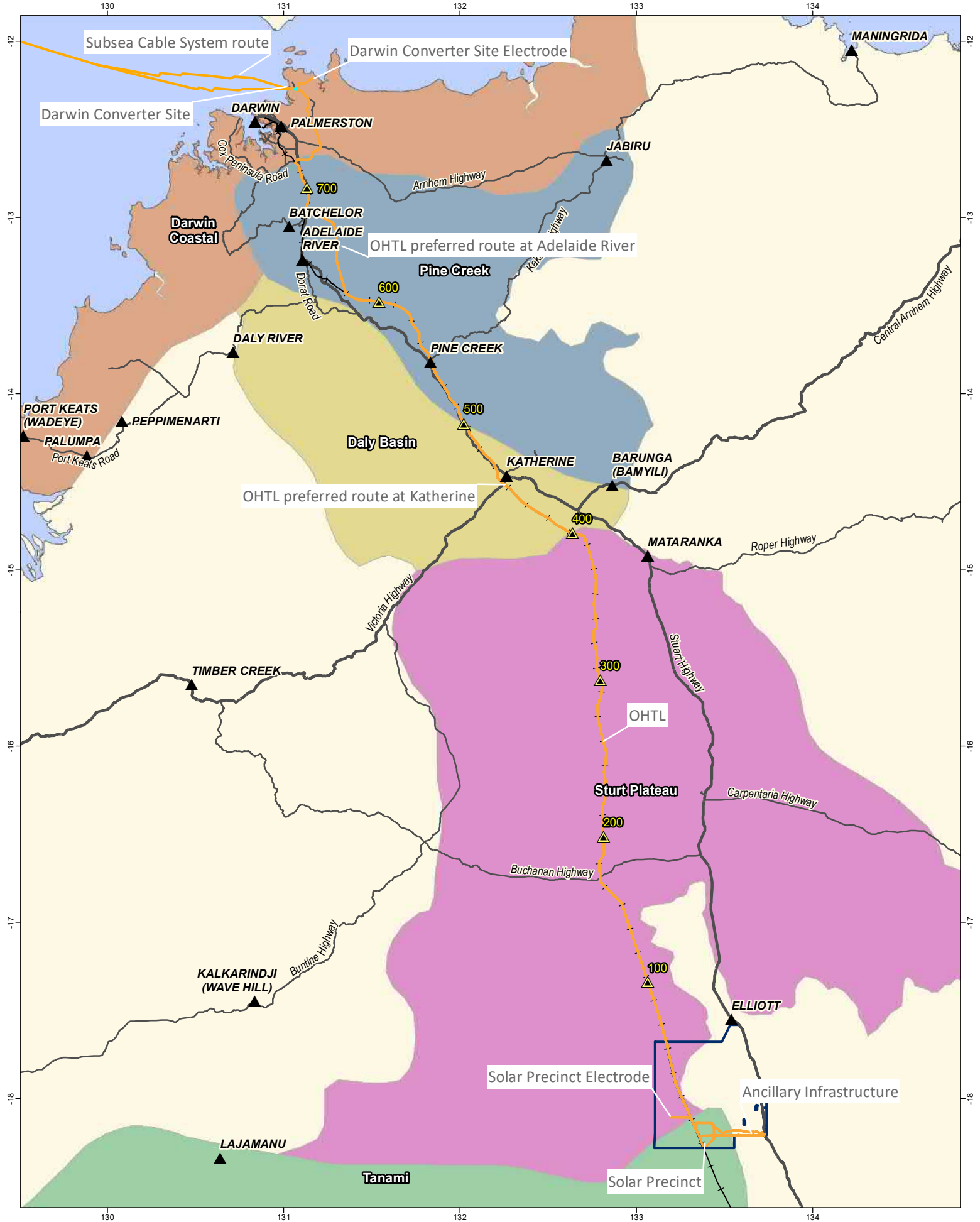
2.1 Existing environment

This report is categorised by the geographic location of the four Project refinement areas: Gunn Point, Adelaide River, Katherine and Powell Creek Station. Location-specific information is detailed within the Existing Environment section of each Project area to identify ecological values such as significant vegetation, and threatened species habitat. Table 2-1 provides background information on the datasets used to characterise the baseline setting and provide contextual information on the ecology of each Project area. Where particular contextual information is not present or applicable to a particular Project area, it is not discussed.

Table 2-1. Baseline data used to inform desktop characterisation of the existing environment

Data	Description
Land use	Land use within each location was determined using NT Government datasets (e.g. NR Maps, cadastre, mineral leases), local knowledge and aerial imagery. Land use and tenure can provide an indication of the condition of ecological values likely to be present within the Project footprint, whether there has been any previous disturbance and what threatening processes may be present.
Bioregions	Bioregions are relatively large land areas characterised by broad, landscape-scale natural features and environmental processes that influence the functions of entire ecosystems. They capture the large-scale geophysical patterns across Australia. These patterns in the landscape are linked to fauna and flora assemblages and processes at the ecosystem scale, thus providing a useful means for simplifying and reporting on more complex patterns of biodiversity (NSW 2003). NT bioregions are described in Baker et al. (2005). Figure 2-1 shows which bioregions are relevant to the Project refinement footprint.
Land resources	Land systems are a broad-scale dataset, defined as ‘an area or group of areas throughout which there is a recurring pattern of topography, soils and vegetation’ (Christian and Stewart 1968). Land systems are mapped and available across the entire NT. Within each land system, finer scale mapping and descriptions maybe available as land unit or land type mapping. A land unit is ‘a reasonably homogenous part of a land surface, distinct from surrounding terrain with consistent properties in landform, soil and vegetation’ (Jessop & King 1997). As such, each land unit has a characteristic pattern on aerial imagery. In relation to this report, land system mapping is available for each footprint. Land unit mapping is only available for the Darwin Converter Site Electrode, described by Fogarty et al. (1984) and Easey et al. (2017).
Vegetation	The National Vegetation Information System (NVIS) is a Commonwealth-managed vegetation mapping dataset at a broad, national scale. Where available, finer-scale or location-specific vegetation data has been used to describe the landscape; however, for most of the NT, only NVIS data are available. Vegetation community mapping is used to inform the likelihood of occurrence of threatened ecological communities, significant vegetation, and threatened flora and fauna. The NVIS Version 6.0 datasets were used for analysis in this report (DCCEE 2020).
Natural land features	The <i>Land Clearing Guidelines</i> (DENR 2021) require assessment of impact on significant natural land features due to their value for regional biodiversity. Natural land features include outcrops, sinkholes, caves, overhangs, ranges, craters, or sites of geological or geomorphologic significance. These features are identified in various NT Government datasets which have been reviewed for their presence within each area. If features were identified, aerial imagery may have been used to assess the presence of a natural land feature.
Surface hydrology	Surface water, springs and groundwater-dependent ecosystems were determined using Bureau of Meteorology (BOM 2014) datasets, NT Government datasets, Geoscience Australia datasets and aerial imagery. Water feature datasets provide information on

Data	Description
	significant vegetation types, areas of congregation of fauna and areas of high ecological value.
Sites of Conservation Significance	The NT Government has identified a number of Sites of Conservation Significance (SOCS) – the most important sites for biodiversity conservation for the NT. These are described in Harrison et al. (2009).
Sites of Botanical Significance	The NT Government has identified a number of Sites of Botanical Significance (SOBS) for the southern region of the NT – these areas are considered as important for plant conservation generally, and specifically for conserving significant plant taxa (White et al. 2000).
Directory of Important Wetlands	The Directory of Important Wetlands identifies nationally-important wetlands, and provides a knowledge base on the social, cultural and ecological values they provide. Wetlands considered nationally important were evaluated against the six criteria of eligibility agreed to by the ANZECC Wetlands Network and included in the Directory if they meet at least one criterion. Melaleuca forests and wetlands have been mapped in the NT by Brocklehurst and Lynch (2001), which have since been incorporated into the NVIS dataset.
Weeds	<p>Some species of introduced flora are declared to be ‘weeds’ under the NT <i>Weeds Management Act</i> because of the environmental and/or economic harm they can cause. The remaining introduced flora species are referred to as ‘<i>environmental weeds</i>’. The Commonwealth Government has also categorised some species as <i>Weeds of National Significance</i> (WONS) or as threatening processes under the <i>EPBC Act</i>.</p> <p>The NT is divided into four Weed Management Regions, each of which is governed by a long-term strategic plan. These plans focus on weeds that are most important to the region.</p> <p>Weed records were provided by the Weeds Management Branch within 100 km of the OHTL Corridor as described in the Draft EIS. This dataset was reviewed for each area to identify weed infestations of declared or regionally important species. Information on known weed infestations informs field surveys and the development of weed management strategies for the Project. In this report, weed information has also been used to provide insight into habitat quality and disturbance history of vegetation communities within each Project area.</p>
Fire	<p>The northern savannas constitute the most fire-prone landscapes in Australia (Russell-Smith & Whitehead 2015), and regular fires have always been a natural part of the environment in the Top End. However, frequent fires can result in fewer flora species and reduced structural complexity in the Top End and in the arid zone (McKay 2017), both of which can also significantly diminish the habitat quality for fauna and facilitate weed invasion.</p> <p>Regional fire history and fire scar mapping has been obtained from the Northern Australia and Rangelands Fire Information dataset (this provides fire frequency, time since last burn; and late season fire scars).</p>



▲ Kilometre Point (KP)	Bioregions
▲ Towns	Darwin Coastal
—+— Railway	Pine Creek
▭ Powell Creek Station	Daly Basin
▭ AAPowerLink infrastructure	Sturt Plateau
	Tanami

Figure 2-1. Map of bioregions relevant to the AAPowerLink project

Project: **Australia-Asia PowerLink**

Reference: M-Files ID 200232

Date: 18/11/2022 Revision: 2

Scale: 1:3,000,000 Datum: GDA2020

Coordinate System: GDA2020 A4

SUN CABLE AUSTRALIA-ASIA
PowerLink

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2.2 Significant vegetation

In the NT, sensitive vegetation types are considered significant under the *Land Clearing Guidelines* (DENR 2021) due to their unique and/or inherently high biodiversity values. Those that are relevant to this assessment are presented in Table 2-2. The EPBC Act also recognises threats to significant vegetation types per the listing of threatened ecological communities – of which there is only one in the NT, the Arnhem Plateau Sandstone Shrubland Complex. However, this community does not occur within any of the Project footprint areas (zone of impact) or indirect zone of influence. Again, where particular contextual information is not present or applicable to a particular Project area, it is scoped out and not discussed as there is no potential for interaction with the Project area.

Table 2-2. Data used to inform desktop baseline characterisation of significant vegetation

Data	Description
Riparian vegetation	Riparian vegetation is 'a distinct forest community occurring on the banks of rivers or streams that directly influences the adjacent water body' (DENR 2018a). When in good condition, riparian vegetation is considered a sensitive vegetation type as it supports a unique selection of habitat features that are relied upon by a range of flora and fauna species. Riparian vegetation provides refuge habitat and habitat corridors; improves water quality by filtering terrestrial run-off; stabilises banks and reduces erosion; and supports terrestrial and aquatic habitats by maintaining natural light, temperature and oxygen levels within waterways (DENR 2018a). Datasets to determine the presence of riparian vegetation used in this report include Major Drainage, Minor Drainage and Streams datasets (BOM 2014) and NT Stream Order and Drainage Bodies datasets from the NT Government.
Rainforest	Various types of rainforest, vine forest and vine thicket occur in the NT over a broad range of landforms throughout the region of summer (i.e. monsoonal) rainfall – essentially north of 18°S (Russell-Smith 1991). Although only covering 0.2 % of the NT, these vegetation types contain 13 % of flora species, making them highly diverse and significant vegetation communities. There are two broad types of rainforest and vine forest – <i>wet</i> which are spring-fed, and <i>dry</i> which rely on rainfall. The total rainforest estate in the NT is divided into 15,000 patches (ranging between 1 ha and 4,000 ha, with a median size of 3.6 ha) that are scattered within a vast expanse of mostly Eucalypt-dominated savannah (DENR 2018b). The NT Government rainforest dataset was used to determine areas of rainforest relevant to Project area.
Mangroves	Mangroves occur in the NT along sheltered coastlines, growing in tidal areas frequently inundated by salt water, and are associated with estuaries, sheltered embayments and tidal rivers. This vegetation type contains many unique and highly specialised animals and plants, including many species restricted to these environments (DENR 2018c). Mangrove habitats provide spawning and nursery areas for many marine species and protect the coastline from erosion during storm surges and cyclones (DENR 2018c). Mangrove communities cover an estimated 1,120 km ² of coast and river systems on the mainland and islands of the NT (Wightman 2006). The NT Government 1:10,000 Darwin Harbour mangrove dataset (Brocklehurst et al. 2016) was used to determine areas of mangroves relevant to each Project area.
Large hollow-bearing trees	While all tree hollows provide valuable habitat for fauna, in the NT, a <i>Eucalypt</i> forest that has either five or more <i>Eucalypt</i> stems growing greater than 50 cm in diameter at breast height (dbh) per hectare, and/or 30 or more <i>Eucalypt</i> stems greater than 40 cm dbh per ha is considered to be of high value for biodiversity (DENR 2018d). Hollow-bearing trees occur in a wide range of vegetation; however, they are more likely to occur within older, Eucalyptus forests and woodlands, with a lower fire frequency. To determine the potential for vegetation within the Project area to contain hollow-bearing trees, and therefore a higher likelihood to support hollow-dwelling fauna, multiple datasets were interrogated

Data	Description
	<p>and analysed. Datasets included NVIS datasets, remnant vegetation layers, fire frequency and fire scars, cadastre, land tenure and land use, aerial imagery and surface hydrology. Vegetation mapping of the Top End Project areas identified communities likely to contain large hollow-bearing trees – Eucalyptus forest and woodlands, riparian and rainforest areas. While the presence of these vegetation communities indicates the potential for large hollow-bearing trees, it is not possible to determine their locations, densities or size from desktop assessments – ground-truthing is required to determine the extent and presence of large hollow-bearing trees within each Project area.</p>
Wetlands	<p>The <i>Land Clearing Guidelines</i> (DEPWS 2021) considers the following landscape features as (but not exclusive to) wetlands – swamps, lakes, claypans, billabongs, close depressions, salt lakes, springs and mangroves. Riparian areas may also be considered as wetlands; however, they are covered (and managed for) separately. Wetlands support distinct vegetation communities that rely on either permanent or seasonal surface water supply (Brock 1993). These areas often support a shallow water-table. Wetlands are considered a sensitive vegetation type as they provide essential habitat for a diverse range of flora and fauna – including endemic, threatened and migratory species – and can be easily impacted upon by poor land management and planning (Duguid et al. 2005). Land system mapping, NVIS data and aerial imagery are used in this report to identify wetland areas within each Project area.</p>
Groundwater-dependant ecosystems	<p>Groundwater-dependent ecosystems (GDE's) refer to 'natural ecosystems that require access to groundwater to meet all or some of their water requirements on a permanent or intermittent basis, so as to maintain their communities of plants and animals, ecosystem processes and ecosystem services' (Richardson et al. 2011).</p> <p>GDE's include landscape features typically referred to as wetlands or riparian areas/vegetation – aquatic GDE; however, they may also include ecosystems dominated by native plant species that require groundwater resources for survival (often limited to aquifers <20 m below ground level) – terrestrial GDE.</p> <p>The Atlas of Groundwater Dependent Ecosystems (DEPWS 2019) was used to identify potential GDEs within or in close proximity to each Project area. The Atlas classes mapped GDE's based on the degree of certainty that it is, indeed, a GDE (i.e. high, medium, low, unknown). As Project activities are not accessing groundwater resources, impacts to groundwater are limited to those associated with land clearing through the removal of vegetation and changes to water quality. Where GDE's are identified by other values – riparian or rainforest vegetation – the other values are mapped and the GDE excluded.</p>

2.3 Threatened species

This section outlines the procedure to determine 'likelihood of occurrence' for threatened species that may be present in each Project area. Baseline results are discussed in the relevant section for each Project area

The purpose of the 'likelihood of occurrence' determination is to identify species that have the potential to occur within the Project refinement areas and which may need to be included within the Project's impact / risk assessment, or to identify those that can be reasonably excluded from further consideration because they are unlikely to occur within a location.

Note: This process is not a risk assessment as it does not take into account Project activities and their potential impacts.

Categories

The International Union for the Conservation of Nature nominates a set of criteria used to identify species at risk of extinction. These criteria are used to define categories of risk which are used by the NT Government

to determine which threatened species are listed under the TPWC Act, and by the Commonwealth Government to determine which threatened species warrant listing under the EPBC Act.

This report focusses on species that are listed as Vulnerable, Endangered or Critically Endangered under either Act. The EPBC Act also protects important habitat for, and significant occurrences of, migratory species which are discussed separately in this report.

Procedure

The following general procedure was used to determine which threatened species have the potential to occur within each Project refinement area:

- Collate species records from the latest version of the NT Atlas (DEPWS 2019a) within a specified distance from each Project footprint – distances are listed for each Project area. Bioregional species datasets are used as the basis for threatened species assessments, as a broad-scale approach, to ensure that all relevant species are properly interrogated.
- EPBC Protected Matters Search Tool (PMST) was used to generate a report using a relevant buffer for each Project area (20 km for the Top End where there are more threatened species records, 100 km for Powell Creek Solar Precinct and Ancillary Infrastructure). The PMST is an online enquiry tool managed by the Commonwealth Department of the Environment and Energy which interrogates a range of existing flora and fauna data, as well as predictive modelling to speculate on the presence of species within a search area.
- For each threatened species, the likelihood of it occurring in the Project area was then assessed based on desktop information that relates to habitat requirements, distribution, number and dates of proximate records (obtained from NT Atlas), and the ecological information described for each search area. Likelihood ratings are defined in Table 2-3.

Following the desktop assessment, some habitat and species were the subject of targeted field surveys – details are provided for each Project area, and a revised likelihood of occurrence was completed based on actual field survey results.

Table 2-3. Ratings for the desktop threatened species ‘likelihood of occurrence’ determination

Rating	Definition
HIGH	It is expected that this species occurs within the Project area because there is core habitat and recent (post-2000) proximate records or knowledge that the species occurs in the local area. Requires field validation to confirm presence.
MODERATE	Species is likely to occur within the Project area because there is suitable habitat; however, there is evidence that lowers its likelihood of occurrence (known range contraction of the species in the region, no recent records within or close to the area, substantial loss of habitat within the area since previous records, species is naturally-rare or occurs at a low density etc.). Requires field validation to confirm presence.
LOW	Species may occur, as a vagrant, within the Project area; and/or only marginally-suitable habitat is expected. Targeted field validation not considered necessary.
NONE	There is strong evidence that this species will not occur within the Project area (i.e. there is no suitable habitat and/or the species is considered to be regionally-extinct). Field validation not considered necessary.

2.4 Migratory species

Australia is a signatory to three bilateral migratory bird agreements with Japan, China and the Republic of Korea. These agreements provide a basis for cooperation on activities for the conservation of migratory birds

that move between each country. Species listed on the annexes to these agreements are a Matter of National Environmental Significance (MNES) under the EPBC Act as listed migratory species.

The PMST report and the EIS Terms of Reference identified fauna species listed as Migratory under the EPBC Act that may be present within the Project area and that should be assessed. When assessing if a project will significantly impact upon a migratory species, the key considerations under the *EPBC Significant Impact Guidelines 1.1* (DOE 2013) are whether an important habitat for a migratory species or an ecologically-significant proportion of a population of a migratory species is involved.

The migratory species relevant to the Project areas have very different habitats and ecologies. However, they are all similar in that the Project footprint neither represents important habitat for them, nor are ecologically-significant proportions of populations likely to be present due to the narrow linear nature of the corridor. All the species likely occur – seasonally – across the footprint in numbers commensurate with the region. Habitat for these species is likely widespread in the region, including within the footprint. As such, migratory species are not discussed, unless specific, restricted habitat occurs within the Project area.

3 DARWIN CONVERTER SITE ELECTRODE

This section details the Darwin Converter Site Electrode, access track and HVDC Electrode Line Corridor located to the north-east of the Darwin Converter Site – Figure 3-1. Both the Darwin Converter Site Electrode and HVDC Electrode Line Corridor are on Crown Land within NT Portion 2626. The HVDC Electrode Line Corridor follows the existing Fly and Leaders Creek Roads from the Gunn Point Road intersection to the Darwin Converter Site Electrode – Figure 3-1.

As discussed in the Draft EIS, in 2018-19 DENR undertook an extensive land unit, vegetation and biodiversity survey within the Gunn Point area. Those surveys covered both the Darwin Converter Site Electrode and HVDC Electrode Line Corridor, with fauna survey sites nearby.

The desktop review identified environmental values and constraints within both areas of Project components – Table 2-3. A project-specific field survey was undertaken in July 2022 to ground-truth land units, confirm the presence/extent of sensitive vegetation communities, identify potential habitat for threatened species and record any weed occurrences. Results are summarised below, and the detailed results can be found in the *Supplement to the EIS – Threatened Species Surveys report* which is an appendix to the SEIS.

131.05

131.10

131.15

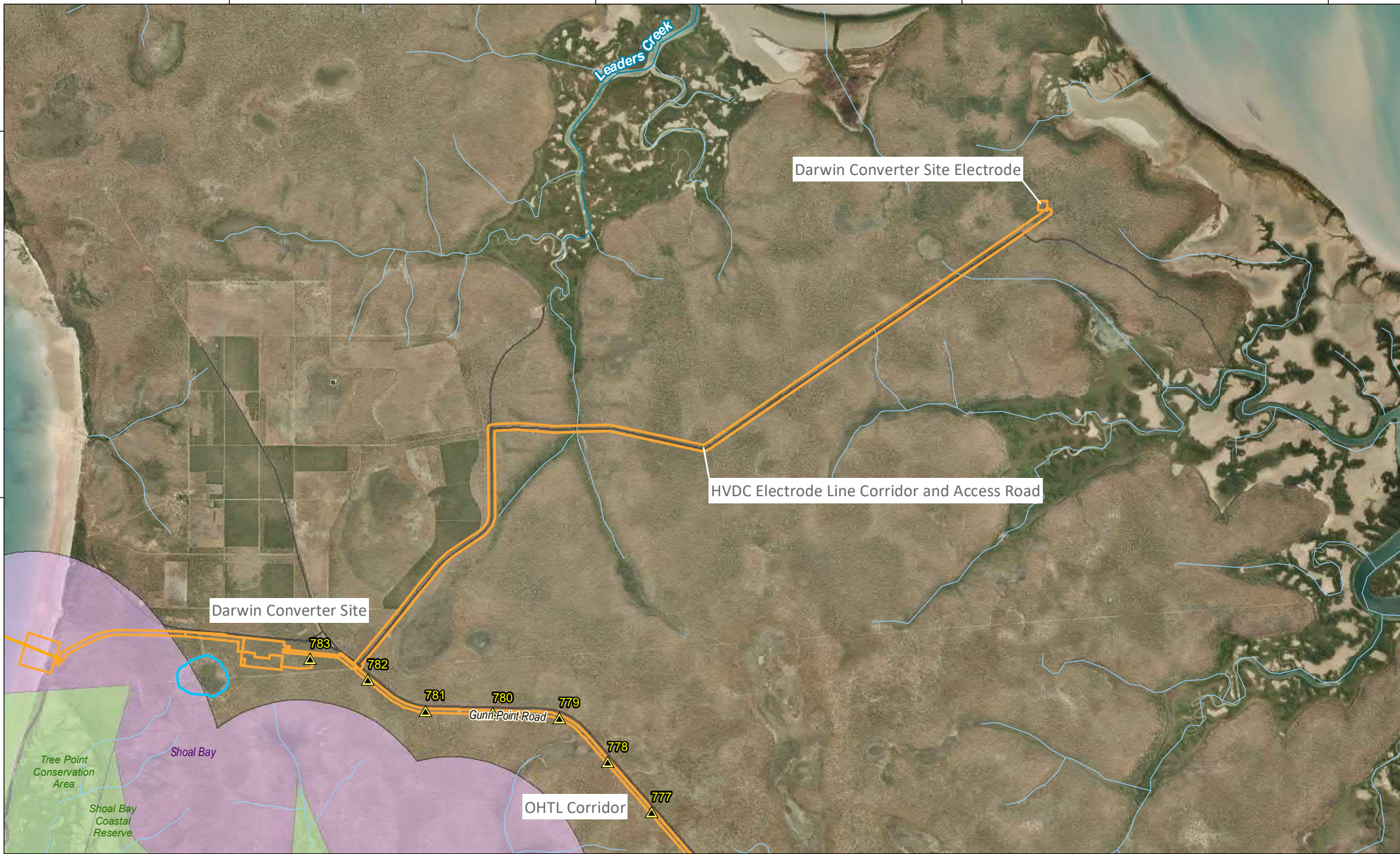
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-12.25



131.05

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- Kilometre Point (KP)
- AAPowerLink footprint
- Roads
- Parks and Reserves
- Streams
- Sites of Conservation Significance
- Minor Drainage
- Seasonal swamp

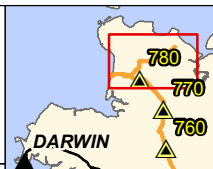


Figure 3-1. Map of the Darwin Converter Site Electrode and HVDC Electrode Line Corridor

Project: Australia-Asia PowerLink		Reference: M-Files ID 198726		Revision: 2
Coordinate System: GDA2020		Date: 18/11/2022		
0 3 Kilometres		Scale: 1:75,000	A4	
SUN CABLE AUSTRALIA-ASIA				PowerLink
<small>Source: Sun Cable, EcOz, NTG (NR Maps)</small>				

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3.1 Existing environment

The Darwin Converter Site Electrode and HVDC Electrode Line Corridor occur in the Darwin Coastal bioregion which is characterised by gently undulating plains on laterised sandstones and siltstones, with extensive and diverse floodplain associated with the lower reaches of the many large river systems. The dominant inland vegetation type is tall open forest dominated by *Eucalyptus tetrodonta* and *Eucalyptus miniata*. Within the bioregion and Gunn Point area there are also substantial areas of mangroves, rainforest, and other riparian vegetation fringing the rivers.

A desktop review of the Darwin Converter Site Electrode and HVDC Electrode Line Corridor found environmental values and constraints in both areas. Values identified in the desktop review are detailed in this section and summarised in Table 3-1.

Table 3-1. Summary of environmental values relevant to the Darwin Converter Site Electrode Area

Value	Darwin Converter Site Electrode	HVDC Electrode Line Corridor
Parks and reserves	-	-
SOCS / SOBS	-	-
Watercourses	-	✓
Springs	-	-
Riparian vegetation	-	✓
Rainforest	-	✓
Mangroves	-	-
Wetlands	-	-
Large hollow-bearing trees	✓	✓
Threatened flora records	-	-
Threatened flora modelled habitat	-	✓
Threatened fauna records	-	✓
Threatened fauna habitat	✓	✓
Migratory species	-	-

3.1.1 Surface water

The Project area is within the Leaders Creek and Fly Creek catchments, both draining north to the ocean. The HVDC Electrode Line Corridor crosses the second order Leaders Creek and the first order drainages of Fly Creek – Figure 3-1. At the time of the field visit in July 2022, all creeks had flowing water, indicating the drainages may retain water throughout the dry season.

3.1.2 Weeds

Field observations confirmed the presence of four declared weed species – Gamba Grass, Mission Grass, Hyptis and Sida – and four species of environmental weeds; see Table 3-2. The majority of occurrences were along roads, in drainage diversions and high-traffic campsite areas along Leaders Creek.

Small, isolated populations of some declared and environmental weeds were observed along the road access and on drainage diversions adjacent to the HVDC Electrode Line Corridor. One very weedy site was observed near the Leaders Creek riparian channel containing larger infestations of Perennial Mission Grass, Hyptis, Spinyhead Sida, Annual Mission Grass, Calopo Vine and Gambia Pea up to 100 m in diameter – see Figure 3-2. The site is a high traffic area, and several well-used campsite locations were observed near the creek.

Table 3-2. List of weeds observed along the HVDC electrode line corridor

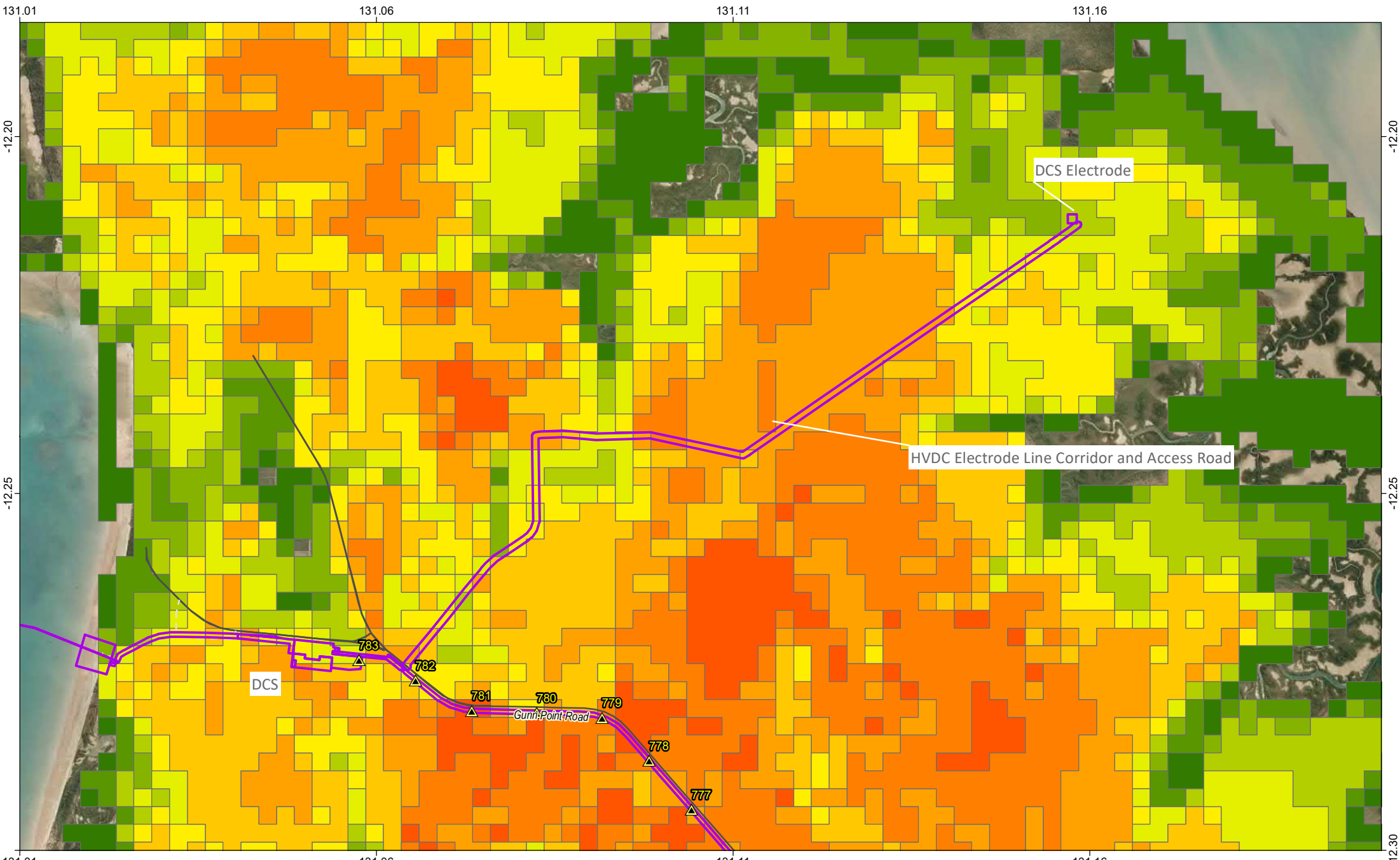
Species	Common name	Declaration	No. of sites observed at
<i>Andropogon gayanus</i>	Gamba Grass	Class B, WONS	7
<i>Cenchrus polystachyus</i>	Perennial Mission Grass	Class B	4
<i>Mesosphaerum suaveolens</i>	Hyptis	Class B	2
<i>Sida acuta</i>	Spinyhead Sida	Class B	2
<i>Cenchrus pedicellatus</i>	Annual Mission Grass	Not Declared	5
<i>Calopogonium mucunoides</i>	Calopo	Not Declared	2
<i>Stylosanthes</i> sp.	Stylo	Not Declared	3
<i>Mitracarpus hirtus</i>	Berrimah Weed	Not Declared	1
<i>Crotalaria gorensis</i>	Gambia Pea	Not Declared	5



Figure 3-2. Photographs showing Gamba Grass and Annual Mission Grass infestations along the HVDC Electrode Line Corridor

3.1.3 Fire

NAFI mapping shows the vegetation along the HVDC Electrode Line Corridor has burnt between 5 to 8 years in the last decade, with isolated areas with a lower frequency – Figure 3-3. The Darwin Converter Site Electrode is shown to have burnt late every year it has burnt (3 or 4 times in the past 10 years). During the field survey; however, the Darwin Converter Site Electrode appeared to be long unburnt due to the composition of species which indicate a transition towards monsoon vine forest. In contrast, large portions of the HVDC Electrode Line Corridor had recently – within four weeks – been burnt.



Kilometre Point (KP)	NAFI Fire Scars	5
AASPowerLink footprint	Years burnt 2012 - 2021	6
Roads	1	7
	2	8
	3	9
	4	10

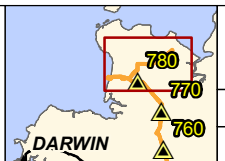


Figure 3-3. Map of fire frequency in the Gunn Point area

Project: Australia-Asia PowerLink	Reference: M-Files ID 198726	Revision: 2
Coordinate System: GDA2020	Date: 18/11/2022	
0 2.5 Kilometres	Scale: 1:75,000	

Source: Sun Cable, EcOz, NTG (NR Maps)
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3.2 Land survey and assessment

A field survey was undertaken in July 2022 by botanist Anna Lemon and ecologist Sarah Ryan. The purpose of the survey was to ascertain the veracity of land units, identify significant vegetation and potential threatened species habitat.

3.2.1 Land units

A field survey was undertaken to confirm the accuracy of mapped land units from both the Greater Darwin Region (Fogarty et al. 1984) and Gunn Point (Easey et al. 2020) studies at a scale of 1:25,000. Surveyors visited sites within each of the ten land units – see Figure 3-9 and Appendix A – where they compared mapped and observed landforms, dominant species in the upper stratum, and soil types. The areas within the HVDC Electrode Line Corridor conformed to the mapped land units, with some minor boundary changes. At the Darwin Converter Electrode, it was observed to be characterised by ‘monsoonal’ species, which were not described within existing land units.

The field survey identified 12 land units that intersect the Darwin Converter Site Electrode and HVDC Electrode Line Corridor – see Table 3-3. The dominant land units present were plains with Eucalypt woodlands (8a and 8b land units) and side slopes with Eucalypt open woodland (land unit 2b1) (Figure 3-4 to Figure 3-7). One riparian channel was observed within land unit 4c which was flowing during at the time of survey (Figure 3-8). Drainage systems were also present as a minor component. One land unit identified as ‘monsoonal’ at the Darwin Converter Site Electrode contained large *Eucalyptus tetrodonta*, *Alstonia actinophylla* and *Corymbia polycarpa* trees in the upper stratum, with a moderately dense mid-stratum of mixed monsoon species including *Choriceras tricornis*, *Miliusa brahei* and *Acacia auriculiformis*. Soils appeared to be a mix of hydrosol and kandosol and were non-gravelly. The ‘transitional’ land unit immediately adjacent to this showed signs of transition from the more dominant Eucalypt woodlands observed along the HVDC Electrode Line Corridor, with the continuation of *Choriceras tricornis* as a dominant species in the mid-stratum.

Table 3-3. Summary of the land units relevant to the Darwin Converter Site Electrode and HVDC Electrode Line Corridor

Land unit	Landform class	Landform description	Soil	Vegetation
2b1	Rises	Side slopes	Brown kandosols	Open woodland to woodland of <i>Eucalyptus miniata</i> , <i>Eucalyptus tetrodonta</i> , <i>Corymbia foelscheana</i> and <i>Eucalyptus tectifera</i> over <i>Sorghum</i> species.
3b	Plains	Flat to gently undulating upland surfaces	Brown kandosols	Woodland of <i>Eucalyptus miniata</i> and <i>Eucalyptus tetrodonta</i> over <i>Sorghum</i> species.
3c		Gently undulating upland surface	Brown Kandosols	Woodland of <i>E. miniata</i> , <i>E. tetrodonta</i> over <i>Sorghum</i> spp.
4c		Gentle lower slopes	Kandosolic Redoxic Hydrosols	Open forest of <i>Eucalyptus</i> spp. over mixed grasses; wet season water table present.
8a*		Gently undulating upland plains; local relief <2m; slopes 1-2%	Very deep; non-gravelly; red; massive gradational earths	Mid woodland to open woodland of <i>Eucalyptus tetrodonta</i> , +/- <i>Eucalyptus miniata</i> over <i>Heteropogon triticeus</i> mid tussock grassland.
8a1*		Gently undulating upland plains; local relief <2m; slopes 1-2%	Moderate to very deep; gravelly; red; massive earths	Mid woodland of <i>Eucalyptus tetrodonta</i> and <i>Eucalyptus miniata</i> over <i>Heteropogon triticeus</i> mid tussock grassland.

Land unit	Landform class	Landform description	Soil	Vegetation
8a2*		Gently undulating upland plains; local relief <2m; slopes 1-2%	Moderate to very deep; gravelly; red and brown; massive earths	Open woodland of <i>Eucalyptus tetradonta</i> , <i>Corymbia bleeseri</i> and <i>Eucalyptus miniata</i> over <i>Sorghum intrans</i> and <i>Heteropogon triticeus</i> mid tussock grassland.
8b*		Gently undulating lowland plains fringing lower sloping broad drainage floors; local relief <2 m; slopes 1-3%	Moderate to very deep; gravelly; red and brown; massive earths	<i>Eucalyptus tetradonta</i> , <i>Eucalyptus miniata</i> +/- <i>Corymbia bleeseri</i> , <i>Corymbia polysciada</i> mid woodland over <i>Sorghum intrans</i> , <i>Heteropogon contortus</i> , <i>Heteropogon triticeus</i> mid tussock grassland.
Monsoonal **		Gentle lower slopes	Brown kandosols	Woodland of <i>Eucalyptus tetradonta</i> and <i>Alstonia actinophylla</i> with scattered <i>Corymbia polycarpa</i> , over dense mid-storey with rainforest species (<i>Miliusa brahei</i> , <i>Choriceras tricorne</i> , <i>Acacia auriculiformis</i>) dominant. Ground layer with little to no plant cover, leaf litter present.
Transitional **		Gently undulating upland surface	Brown kandosols, some gravels	Open woodland of <i>Eucalyptus tetradonta</i> with occasional <i>Eucalyptus miniata</i> . Dense shrubland of <i>Choriceras tricorne</i> gradually becoming more open.
6b	Drainage Systems	Broad lowland plains	Tenosolic Redoxic Hydrosols	Tall shrubland to low open woodland of <i>Grevillea</i> spp., <i>Melaleuca</i> spp., <i>Lophostemon lactifluus</i> over annual <i>Sorghum</i> sp., <i>Heteropogon triticeus</i> grassland.
10b*		Gently sloping broad drainage floors; including open spillway depressions	Shallow to deep; gravelly; red and brown; structured soils	Low or low open woodland of <i>Melaleuca viridiflora</i> , <i>Melaleuca nervosa</i> , <i>Grevillea pteridifolia</i> +/- <i>Lophostemon lactifluus</i> , <i>Asteromyrtus symphyocarpa</i> over <i>Sorghum intrans</i> and <i>Eriachne burkittii</i> mid tussock grassland.

* Denotes Easey et al. 2020 land unit mapping, ** Denotes EcOz assessment



Figure 3-4. Photograph of land unit 8a1 observed intersecting the HVDC Electrode Line Corridor



Figure 3-5. Photograph of land unit 2b1 observed intersecting the HVDC Electrode Line Corridor



Figure 3-6. Photograph of land unit 8b observed intersecting the HVDC Electrode Line Corridor



Figure 3-7. Photograph of land unit 8a observed intersecting the HVDC Electrode Line Corridor



Figure 3-8. Photographs of land unit 4c observed supporting a riparian channel (Leaders Creek)

3.2.2 Significant vegetation

Based on desktop analysis and field surveys, the following significant vegetation types occur within the Darwin Converter Site Electrode area – Figure 3-9:

- Riparian vegetation
- Rainforest
- Mangroves
- Large hollow-bearing trees.

Wetlands and swamps occur adjacent to the HVDC Electrode Line Corridor, but do not intersect the proposed footprint.

Riparian vegetation

Desktop analysis indicated the presence of riparian vegetation within the corridor at the intersection of Leaders Creek and possibly the upper drainage lines of Fly Creek. Field surveys confirmed the presence of riparian vegetation at Leaders Creek, but did not detect a discernible vegetation change within other drainage depressions.

Rainforest

Rainforest mapping indicates the presence of wet riparian and spring rainforest along Leaders Creek at the intersection of the HVDC Electrode Line Corridor. This area was ground-truthed during the field survey and while riparian species were detected, monsoon forest species were not present. Within the Darwin Converter Site Electrode, large, established, monsoon species were present and continued into the adjacent transitional land unit.

Mangroves

Desktop resources indicate mangroves occur along the coastline of the Gunn Point Peninsula; however, this vegetation type does not intersect the Darwin Converter Site Electrode or HVDC Electrode Line Corridor. The closest mangroves to the Darwin Converter Site Electrode are approximately 700 m to the north and north-west. The closest mangroves to the HVDC Electrode Line Corridor are those within the Leaders Creek tidal inlet, approximately 700 m to the north along the creek line – Figure 3-9. Mangroves are therefore scoped out of this assessment.

Large hollow-bearing trees

The dominant vegetation communities across Gunn Point peninsula – Eucalypt forests, woodland and riparian vegetation – have high potential for hollow-bearing trees. During the field surveys, large hollow-bearing trees were observed within the Darwin Converter Site Electrode and the HVDC Electrode Line Corridor, in riparian vegetation, and the Eucalypt forests and woodlands land units – Figure 3-9. These could provide roosting and/or breeding habitat for a range of mammals and birds – including such threatened species as Black-footed Tree-rat, Northern Brushtail Possum, Bare-rumped Sheath-tail Bat and Masked Owl.

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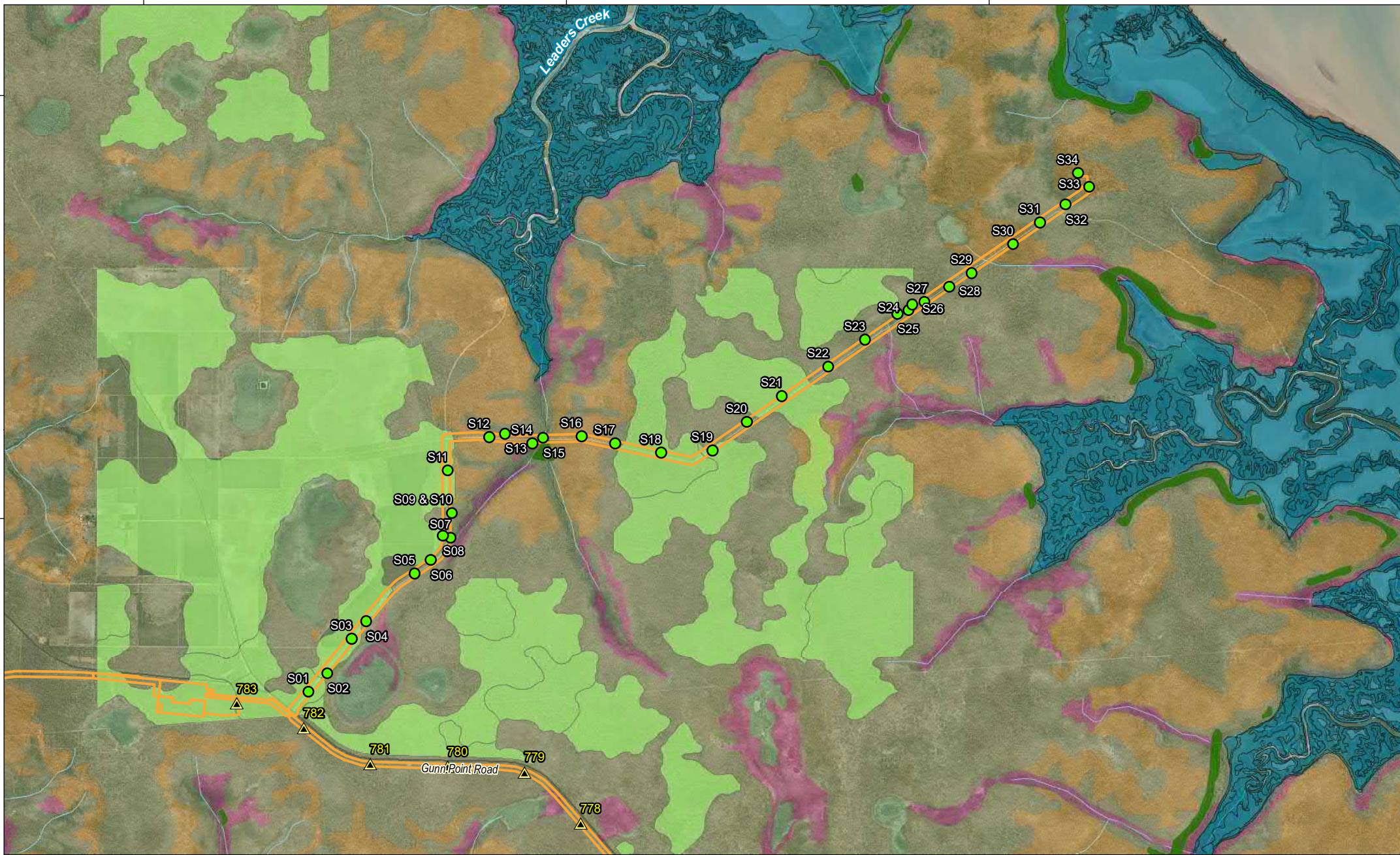
131.15

-12.20

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- Kilometre Point (KP)
- Land unit survey locations
- Streams
- Roads
- AAPowerLink footprint

- Significant Vegetation**
- Large hollow-bearing trees
 - Rainforest
 - Mangroves

- Land units - Greater Darwin**
- Landform**
- Alluvial plains
 - Drainage Systems
 - Marine
 - Plains
 - Rises
 - Swamps

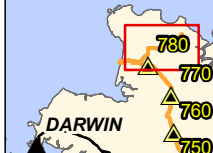


Figure 3-9. Map of land units and significant vegetation relevant to the Gunn Point Project area

Project: **Australia-Asia PowerLink** Reference: M-Files ID 198726 Revision: 2

Coordinate System: GDA2020 Date: 18/11/2022

0 2,5 Kilometres Scale: 1:65,000 A4



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3.3 Threatened species

Threatened species records from the latest version of the NT Atlas were clipped to within 20 km of the Project area. Marine and shorebird species were excluded from the assessment because there is no suitable habitat present. The PMST report is presented in Appendix B.

As detailed in Section 3.1, in 2018-19 Gunn Point peninsula was subject to a broadscale survey for threatened fauna and habitat modelling for threatened flora (with some targeted surveys) – Stokeld et al. (2020). The results of that study – assessed in conjunction with the vegetation communities present within the Project area – give a good indication of which threatened species are likely to be present. Consequently, the desktop analysis incorporates recent records in the 'likelihood of occurrence' determination for the Darwin Converter Site Electrode and HVDC Electrode Line Corridor.

The HVDC Electrode Line Corridor is in a long linear corridor. Due to the linear nature and habitats traversed, the HVDC Electrode Line Corridor potentially impacts a considerable number of different threatened species. However, the physical disturbance footprint of a corridor is, by design, narrow and localised. Therefore, threatened species with general habitat requirements and/or wide ranges are unlikely to be significantly impacted by this part of the development. The species further discussed in this section were identified by applying an extra layer of filtering to only select species that have restricted ranges or localised core habitat requirements. Undertaking this extra step in the likelihood of occurrence evaluation avoids the need to discuss a large number of species that have an inherently low likelihood of being significantly impacted by linear project activities.

Restricted species with a high or moderate likelihood of occurrence were then the subject of targeted field surveys within the Project area. The results of the field survey were used to determine a revised likelihood of occurrence for these species – Section 3.3.3.

3.3.1 Desktop likelihood of occurrence

A total of 17 threatened species were considered in the desktop 'likelihood of occurrence' assessment. The results from the desktop analysis are presented in Table 3-4, and summarised as follows:

- Nine threatened species are known to occur with the Gunn Point peninsula, in habitat found within the Project area. Of these, four have restricted or core habitat requirements:
 - Masked Owls were detected in the Gunn Point area in the DENR study in 2018-2019 through acoustic recording (Stokeld et al. 2020). Masked Owls occur mainly in tall open Eucalypt forests, but also use rainforests and other open vegetation types – including grasslands – and use large tree hollows for breeding. Trees with large or very large hollows are rare in the tropical savanna forests (Woolley et al. 2018), meaning they are a critical resource for dependent species. Trees with large hollow are disproportionately represented in large (>40 cm diameter) Eucalypt trees (Woolley et al. 2018). Large hollow-bearing trees were detected within the Darwin Converter Site Electrode and HVDC Electrode Line Corridor. These could contain breeding or roosting habitat for Masked Owls.
 - As discussed in the Draft EIS, the likelihood modelling for Darwin Cycad undertaken by Stokeld et al. (2020) identified that northern Gunn Point peninsula – near Murrumujuk and Leaders Creek turn-off – contains extensive areas with a high likelihood of supporting high density stands of Darwin Cycad and noted how the results of Astrebla (2017) supported the modelling results. These high-likelihood habitats contain well-developed Eucalypt open forests on well-drained red earths (land units 3a, 8a, 8a1 and 8a2) (Easey et al. 2017).
 - Areas of high-likelihood modelling for *Typhonium praetermissum* occur within the HVDC Electrode Line Corridor – Figure 3-10.

- Areas of high-likelihood modelling for *Stylidium ensatum* occur adjacent, but outside of the HVDC Electrode Line Corridor – Figure 3-10.
- The remaining species have a low or no likelihood of occurring.

Table 3-4. Summary of desktop threatened species 'likelihood of occurrence' evaluation

Likelihood	Species	Class	Status		Justification
			EPBC	TPWC	
HIGH	Fawn Antechinus (<i>Antechinus bellus</i>)	Mammal	VU	EN	Recorded recently on camera trap – DENR
	Black-footed Tree-rat (Kimberley and mainland Northern Territory) (<i>Mesembriomys gouldii gouldii</i>)		EN	EN	
	Northern Brushtail Possum (<i>Trichosurus vulpecula arnhemensis</i>)		VU	-	
	Partridge Pigeon (<i>Geophaps smithii smithii</i>)	Bird	VU	VU	Recorded recently on sound meter – DENR
	Masked Owl (<i>Tyto novaehollandiae kimberli</i>)		VU	VU	
	Mertens' Water Monitor (<i>Varanus mertensi</i>)	Reptile	-	VU	Recorded recently on camera trap – DENR
	Yellow-spotted Monitor (<i>Varanus panoptes</i>)		-	VU	Suitable habitat and recent records
	Darwin Cycad (<i>Cycas armstrongii</i>)	Plant	-	VU	High likelihood modelled habitat of high-density stands
	<i>Stylidium ensatum</i>		EN	EN	High likelihood modelled habitat
	<i>Typhonium praetermissum</i>		-	VU	
MODERATE	No species				
LOW	Pale Field-rat (<i>Rattus tunneyi</i>)	Mammal	-	VU	Suitable habitat yet not detected on DENR survey
	Gouldian Finch (<i>Chloebia gouldiae</i>)	Bird	EN	VU	May occur as a vagrant – preferred breeding habitat not present
	Red Goshawk (<i>Erythrotriorchis radiatus</i>)		VU	VU	Suitable habitat but few records
	Howard River Toadlet (<i>Uperoleia daviesae</i>)	Amphibian	VU	VU	No suitable sandsheet heath habitat present

EN = Endangered; VU = Vulnerable

3.3.2 Field assessment

The desktop assessment identified four high-likelihood species that warranted a more targeted survey approach to confirm likely presence or absence within the Project area to a reasonable level of certainty. Potential impacts to these species are assessed in the SEIS.

Field surveys were conducted by botanist Anna Lemon and ecologist Sarah Ryan in July 2022. For *Stylidium ensatum*, details are found in the *Supplement to the EIS – Threatened Species Surveys report* which is an appendix to the SEIS.

Masked Owl

Large hollow-bearing trees were detected within the Darwin Converter Site Electrode and HVDC Electrode Line Corridor in riparian vegetation and multiple land units – Monsoonal, Transitional, Gunn Point 8a1 and 8a. These could contain breeding or roosting habitat for Masked Owls.

Darwin Cycad

Darwin Cycads were readily observed in suitable habitat throughout the HVDC Electrode Line Corridor. One location was densely populated with cycads; however, assessment of the density against DEPWS criteria was not undertaken. High density stands of Darwin Cycad will be identified during micro-siting and mitigations put in place to minimise disturbances to them (as detailed in the SEIS).

Stylidium ensatum

Stylidium ensatum is known to occur at Gunn Point and a targeted survey was undertaken in areas of high-likelihood modelled habitat adjacent to the HVDC Electrode Line Corridor – see the *Supplement to the EIS – Threatened Species Surveys report* which is an appendix to the SEIS. New records of *Stylidium ensatum* were found in areas modelled as high-likelihood habitat adjacent (60 m) to the HVDC Electrode Line Corridor in wetlands and low-lying areas; however, no records were found within the HVDC Electrode Line Corridor – Figure 3-10.

Typhonium praetermissum

Areas of high-likelihood modelling for *Typhonium praetermissum* occur within the HVDC Electrode Line Corridor – Figure 3-10. Land unit verification confirmed the presence of suitable habitat for *T. praetermissum* consistent with preferred habitat parameters. The field survey was undertaken at a time when *T. praetermissum* individuals were undetectable; however, evaluation of the land units and field observations determined approximately 129 ha of suitable habitat that could support *T. praetermissum* within the HVDC Electrode Line Corridor. This is discussed further in the *Supplement to the EIS – Threatened Species Surveys report* which is an appendix to the SEIS. Further surveys are required to confirm the presence/absence of the species within the AAPowerLink footprint.

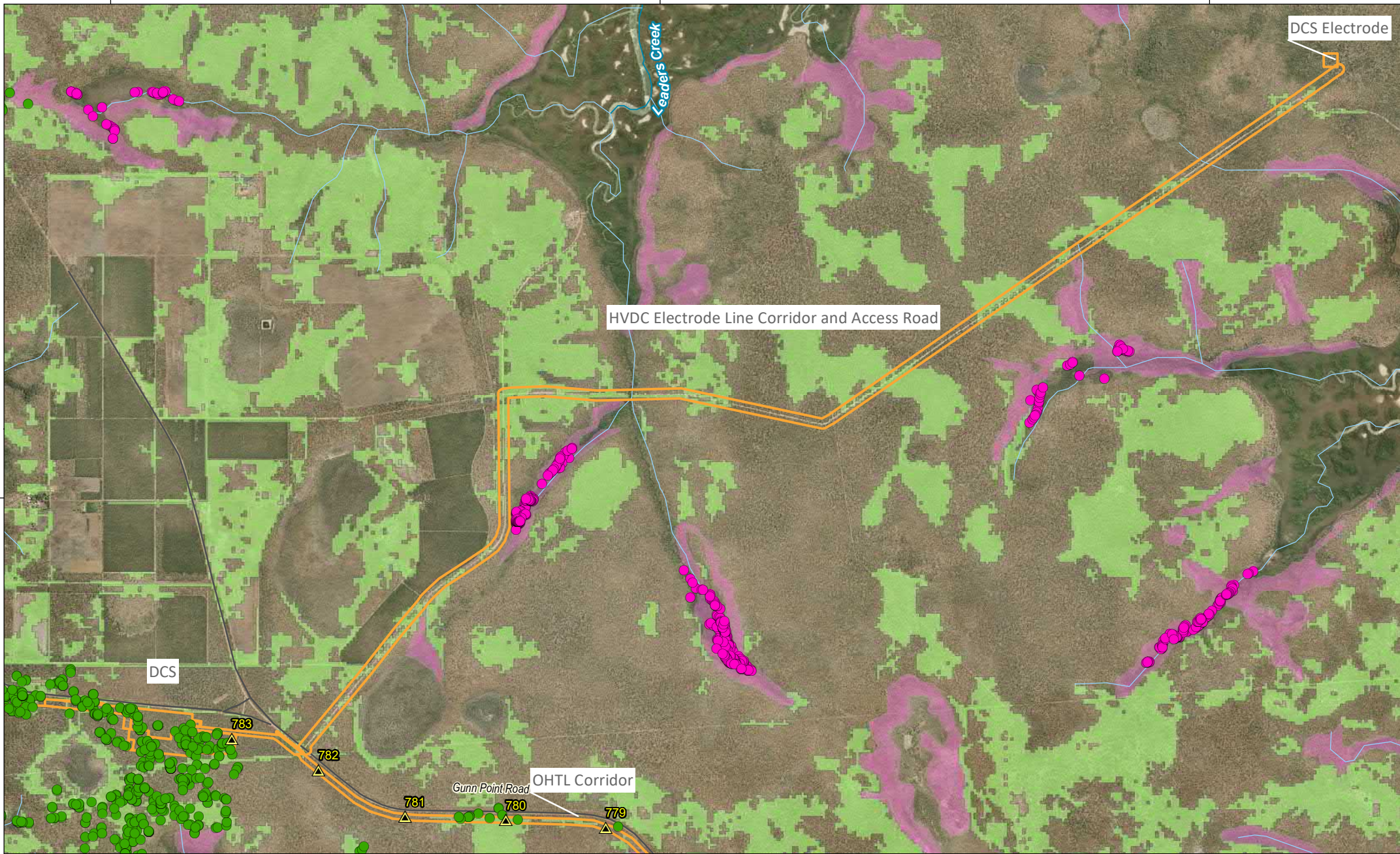
3.3.3 Revised likelihood of occurrence

Based on the findings of the field surveys, the likelihood of occurrence for *Stylidium ensatum* changes from High to Low.

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131.15



-12.25

-12.25

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- ▲ Kilometre Point (KP)
- AAPowerLink footprint
- Streams
- Roads
- *Styliidium ensatum*
- *Typhonium praetermissum*
- *Styliidium ensatum* high likelihood habitat (Source: NTG)
- *Typhonium praetermissum* high likelihood habitat (Source: NTG)

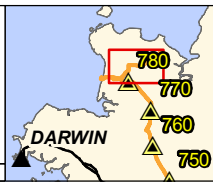


Figure 3-10. Map of threatened flora high-likelihood habitat and records relevant to the Gunn Point Project area

Project: Australia-Asia PowerLink		Reference: M-Files ID 198726		Revision: 2
Coordinate System: GDA2020		Date: 18/11/2022		SUN CABLE AUSTRALIA-ASIA
0 2 Kilometres		Scale: 1:50,000	A4	PowerLink

Source: Sun Cable, EcOz, NTG (NR Maps)
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4 OHTL PREFERRED ROUTE AT ADELAIDE RIVER

This section provides a desktop assessment of the OHTL preferred route at Adelaide River. The preferred route of the OHTL Corridor at Adelaide River begins at approximately KP 620 and extends east of the township predominantly through pastoral and rural land. The OHTL re-enters the railway corridor west of Lake Bennett at approximately KP 690 covering approximately 400 ha in a 30 to 60 m wide corridor – Figure 4-1. The OHTL preferred route at Adelaide River traverses pastoral lease and Crown Land on the east of the Adelaide River, and private land to the west between the Adelaide River and Stuart Highway. Land use is predominantly pastoralism, with some horticulture.

4.1 Existing environment

The OHTL preferred route at Adelaide River is within the Pine Creek Bioregion – Figure 2-1. The Pine Creek bioregion is characterised by uneven terrain of ranges and sandstone mountains. The dominant vegetation is Eucalypt tall open forests, dominated by *Eucalyptus tetradonta* and *Eucalyptus miniata* woodlands, with smaller monsoon rainforest patches, Melaleuca woodlands, riparian vegetation and tussock grasslands (Baker et al 2005).

Desktop assessment of the OHTL preferred route at Adelaide River identified environmental values and constraints likely to occur within the Project area. The values identified are detailed in this section and summarised in Table 4-1. Field surveys have not been conducted for this area, and the assessment has been based on desktop resources and local knowledge only.

Table 4-1. Summary of environmental values relevant to the OHTL preferred route at Adelaide River

Value	OHTL Corridor
Parks and reserves	-
SOCS / SOBS	-
Natural land features	-
Watercourses	✓
Springs	-
Riparian vegetation	✓
Rainforest	✓
Wetlands	✓
Large hollow-bearing trees	✓
Threatened flora records	✓
Threatened flora modelled habitat	✓
Threatened fauna records	-
Threatened fauna habitat	✓

4.1.1 Land resources

A desktop assessment of NVIS Level 3 data (i.e. presenting the dominant species for each vegetation storey) shows that the OHTL preferred route at Adelaide River intersect with eleven native vegetation communities that fall under six broad community categories. Tropical Eucalypt woodlands / grasslands cover the largest area within the OHTL Corridor at 320 ha – Figure 4-2.

Relevant land system mapping was undertaken by Story et al. (1969) and Wood et al. (1985) at a scale of 1:250,000, with land system classifications retained across the two reports (Wood et al. 1985). The OHTL preferred route at Adelaide River intersects six land systems – described in Table 4-2 and mapped in Figure 4-1. The OHTL preferred route at Adelaide River is predominantly within the Adelaide River floodplains.

Table 4-2. Summary of the land systems relevant to the OHTL preferred route at Adelaide River

Land system	Landform	Soil	Vegetation
Sandstone hills			
Baker	Rugged hills and strike ridges with intervening narrow valleys and short lower slopes on folded Burrels Creek greywacke, sandstone and siltstone	Skeletal soils and outcrop with minor sandy red and yellow gradational soils	Mid-high woodland of <i>Corymbia dichromophloia</i> , <i>Eucalyptus miniata</i> , <i>Corymbia bleeseri</i> , <i>Eucalyptus tectifica</i> and <i>Corymbia terminalis</i> over <i>Sorghum species</i> , <i>Themeda triandra</i> and <i>Chrysopogon species</i>
Sandstone plains and rises			
Bend	Undulating low strike ridges and rises on folded Burrels Creek greywacke, sandstone and siltstone	Skeletal soils and shallow gravelly loams	Mid-high woodland of <i>Corymbia latifolia</i> , <i>Corymbia foelscheana</i> , <i>Eucalyptus polysciadia</i> , <i>Eucalyptus tectifica</i> , <i>Erythrophleum chlorostachys</i> over tropical tall grass (<i>Sorghum species</i> , <i>Heteropogon species</i> , <i>Chrysopogon species</i>)
Rumwaggon	Low rounded hills and low gravelly ridges with intervening alluvial flats	Lithosols on rises, yellow podzolics on alluvial areas	Mid-high open woodland of <i>Eucalyptus polysciadia</i> , <i>Corymbia ferruginea</i> , <i>Corymbia foelscheana</i> , <i>Eucalyptus tectifica</i> , <i>Xanthostemon paradoxus</i> over <i>Chrysopogon species</i> , <i>Sorghum species</i> , <i>Eriachne triseta</i>
Alluvial floodplains			
Fabian	Level to gently undulating alluvial floodplains of dominantly silty alluvium	Silty brown and yellow earths and mottled duplex soils	Mid-high grassland of <i>Chrysopogon species</i> , <i>Themada triandra</i> , <i>Cyperus species</i> with minor areas of woodland (<i>Corymbia papuana</i> , <i>Corymbia polycarpa</i> , <i>Pandanus sp.</i> , <i>Melaleuca species</i> , <i>Eucalyptus apodophylla</i>)
Flatwood	Level to gently undulating alluvial floodplains of dominantly silty alluvium	Mottled yellow earths and duplex soils	Mid-high open woodland of <i>Melaleuca viridiflora</i> , <i>Corymbia polycarpa</i> , <i>Melaleuca nervosa</i> , <i>Corymbia latifolia</i> , <i>Corymbia grandifolia</i> over <i>Chrysopogon fallax</i> , <i>Pseudopogonatherum spinescens</i> , <i>Eriachne species</i>
McKinlay	Alluvial floodplains and channels	Siliceous sands, silty brown and yellow earths, yellow podzolics	Mid-high grassland of <i>Chrysopogon species</i> , <i>Themada triandra</i> , <i>Cyperus species</i> with minor areas of woodland (<i>Corymbia papuana</i> , <i>Corymbia polycarpa</i> , <i>Pandanus sp.</i> , <i>Melaleuca species</i> , <i>Eucalyptus apodophylla</i>)

4.1.2 Natural land features

Sinkholes are known to occur within the Adelaide River region; however, none are recorded within the OHTL Corridor – Figure 4-1.

4.1.3 Surface water

The OHTL preferred route at Adelaide River is within the Adelaide River catchment and intersects major water courses – Adelaide River and Howley Creek – as they drain north; see Table 4-3 and Figure 4-1. The OHTL preferred route at Adelaide River has 20 water crossings and is within the eastern Adelaide River floodplains. Some watercourses in the area only flow after heavy rainfall events – although they may maintain some

permanent spring-fed waterholes; others retain water year-round. Springs are known to occur within the region however, none are intersected by the OHTL Corridor

Table 4-3. Number of watercourses crossed by the OHTL preferred route at Adelaide River

Stream Order	Watercourses
1 – Drainage lines	12 Coomalie Creek Howley Creek Otto Creek
2 – Intermittent streams	4 Howley Creek Otto Creek
4 – Creek	2 Coomalie Creek Howley Creek
5 – River	2 Adelaide River Howley Creek

4.1.4 Weeds

Weed records were clipped to 1 km of the OHTL preferred route at Adelaide River and assessed. There are eight species of weeds from 202 individual records. Most records are along the Adelaide River and its tributaries, around Lake Bennett and on the Stuart Highway. The absence of available weed data in other parts of the region could be due to lack of survey effort within Mount Kepler and Bridge Creek Stations. Weed species recorded included three listed as EPBC threatening processes, 3 WONS, 5 declared species and 6 species listed for Priority Control in the *Darwin Regional Weeds Strategy 2021-2026*. The most frequent records were of Gamba Grass (*Andropogon gayanus*), followed by Mimosa (*Mimosa pigra*), Olive Hymenachne (*Hymenachne amplexicaulis*) and Mission Grass (*Cenchrus spp.*).

4.1.5 Fire

Review of available NAFI data shows that in the past 10 years, fire frequency and extent has been variable across the Adelaide River region. The area from Ringwood Road bordered by Stuart Highway to the south and west, and Howell Creek in the east has a very low – 0 to 3 years – fire frequency. In contrast, areas north of Ringwood Road, east of Howell Creek and south of the Stuart Highway have a very high fire frequency (7 to 10 years) – Figure 4-3. Of the areas that are burnt frequently, most are early dry season burns. The absence of fire in certain areas is attributed to heavy grazing of cattle and buffalo within pastoral stations and private land holdings.

4.1.6 Significant vegetation

Based on desktop analysis, the following significant vegetation types occur, or could occur, within the OHTL preferred route at Adelaide River:

- Riparian vegetation
- Rainforest
- Wetlands
- Large hollow-bearing trees (as discussed in Section 2.2).

Riparian vegetation

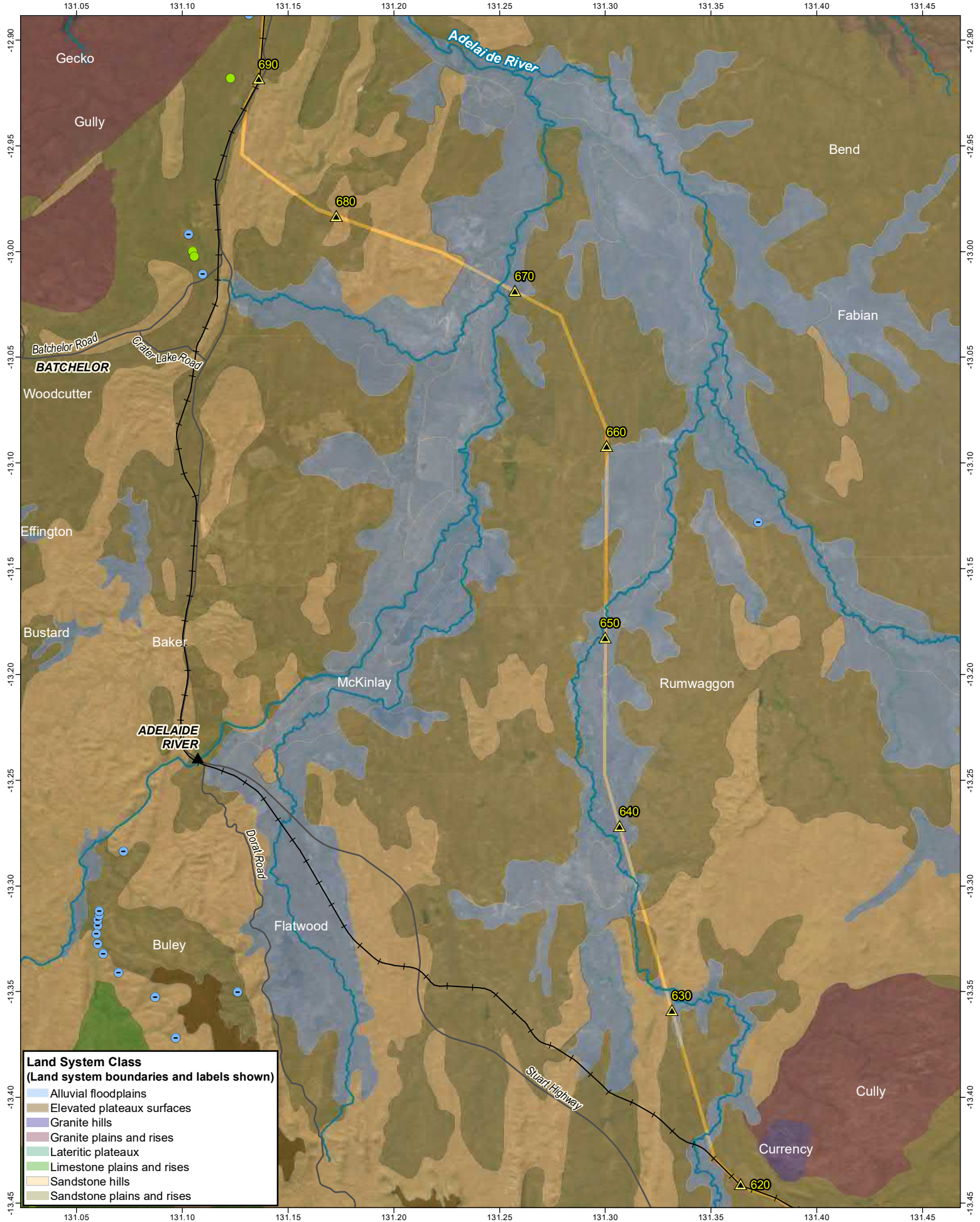
Riparian vegetation occurs along the watercourses crossed by the OHTL preferred route at Adelaide River. Adelaide River and Howley Creek are permanent watercourses with extensive areas of riparian vegetation.

Rainforest

Wet rainforest occurs within riparian areas. Adjacent to the Adelaide River, there are two patches of spring fed rainforests – 5 and 13 ha in size. The quality of these areas is unable to be determined from desktop assessment. Verification of presence and quality of rainforest is required as aerial imagery indicated areas of disturbance where rainforest may no longer occur – i.e. pastoral land use - Figure 4-2.

Wetlands

The Adelaide River supports a large network of floodplains and wetlands crossed by the OHTL preferred route at Adelaide River – Figure 4-1.



- Kilometre Point (KP) AAPowerLink footprint
- Towns
- Railway
- Roads
- Major Drainage
- Bores
- Springs
- Sinkholes

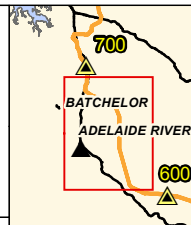
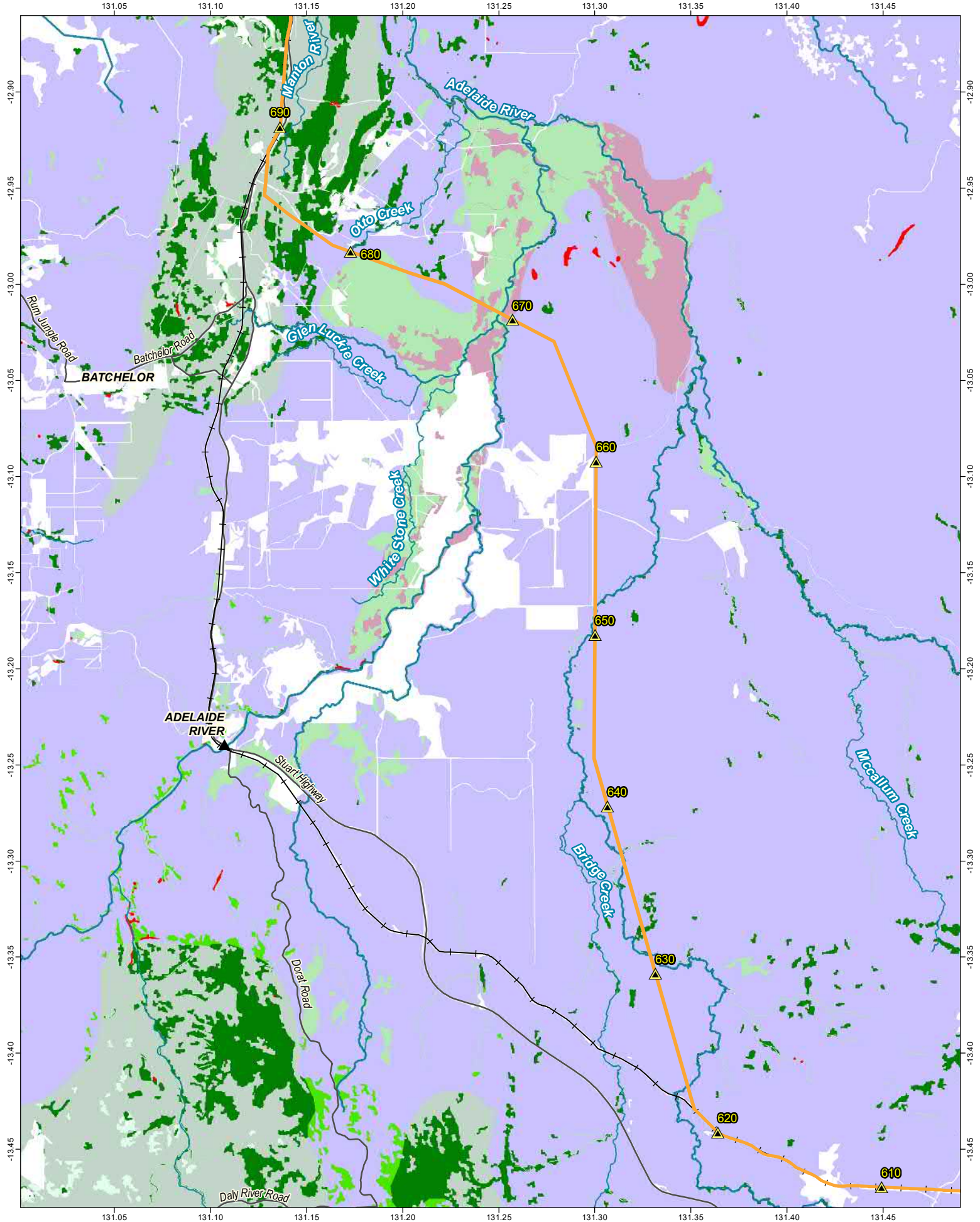


Figure 4-1. Map of the proposed OHTL preferred route at Adelaide River and relevant land systems

Project: Australia-Asia PowerLink		Reference: M-Files ID 217502	
0 2 4 6 Kilometres		Date: 18/11/2022	Revision: 2
Scale: 1:250,000		SUN CABLE AUSTRALIA-ASIA	
Coordinate System: GDA2020		A4	PowerLink

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- Kilometre Point (KP)
- Towns
- Railway
- Roads
- Major Drainage
- AAPowerLink footprint
- Rainforests and Vine Thickets
- Eucalypt Open Forests
- Eucalypt Low Open Forests
- Eucalypt Woodlands
- Melaleuca Forests and Woodlands
- Tropical Eucalypt Woodlands/Grasslands
- Eucalypt Open Woodlands
- Cleared, non-native vegetation, buildings

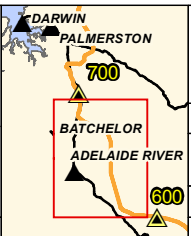


Figure 4-2. Map of NVIS vegetation groups relevant to the Adelaide River Project area

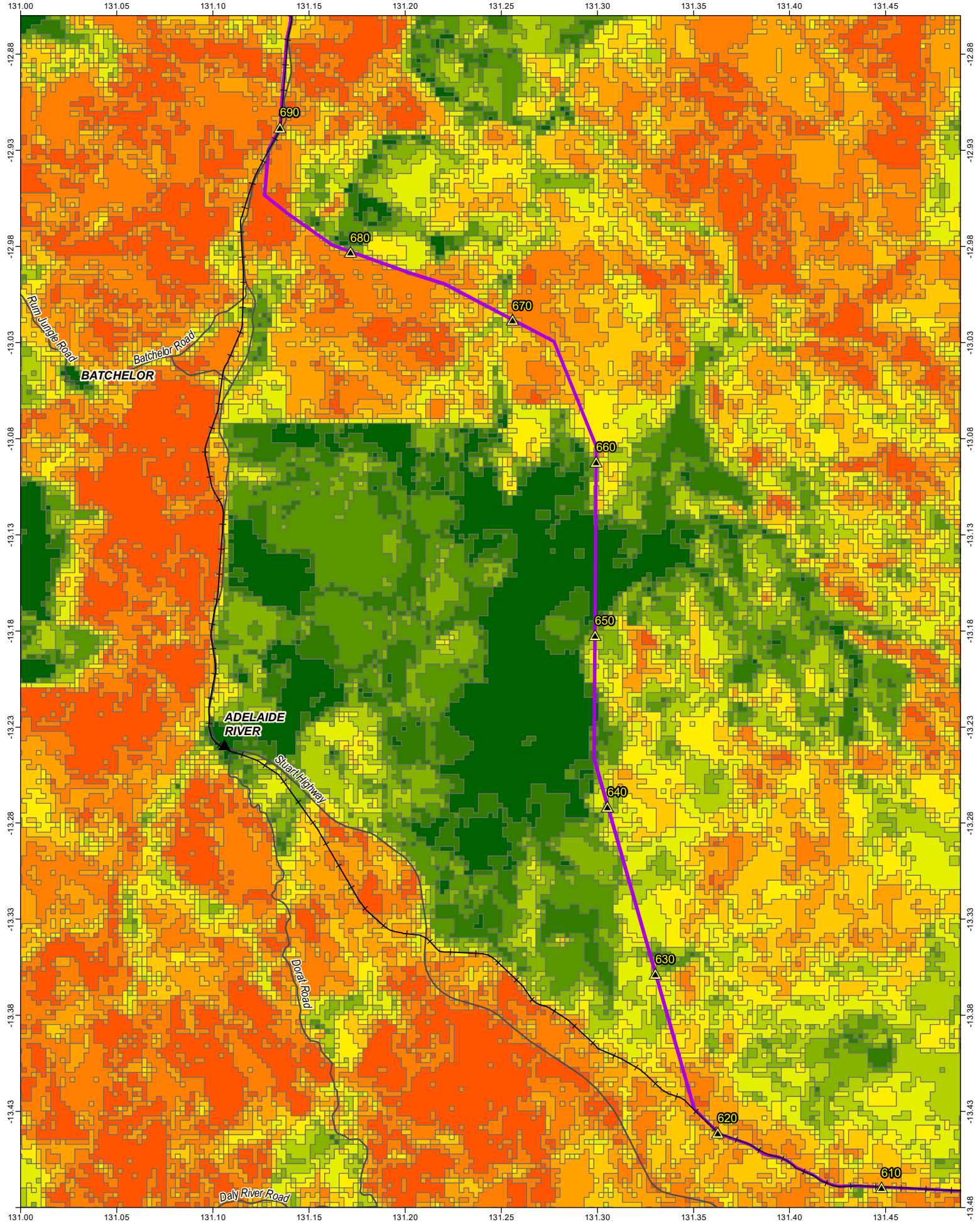
Project: **Australia-Asia PowerLink**

	Reference: M-Files ID 217502 Date: 17/11/2022 Revision: 2
Scale: 1:275,000 Coordinate System: GDA2020	

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Source: Sun Cable, EcOz, NTG (NR Maps)

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▲ Kilometre Point (KP)	NAFI Fire Scars	4
▲ Towns	Years burnt 2012 - 2021	5
+ Railway	0	6
— Roads	1	7
— AAPowerLink footprint	2	8
	3	9
		10



Figure 4-3. Map of fire history within the Adelaide River region

Project: **Australia-Asia PowerLink**

Reference: M-Files ID 217502

Date: 17/11/2022 Revision: 2

Scale: 1:275,000

Coordinate System: GDA2020

0 5 10 Kilometres

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4.2 Threatened species

No targeted threatened species surveys have been undertaken within this Project area. The procedure for assessment of threatened species described in Section 2.3 was used to determine which threatened species have the potential to occur in the Project area with the following search parameters. Threatened species records from the latest version of the NT Atlas were clipped to within 20 km of the OHTL preferred route at Adelaide River. The PMST report is presented in Appendix C.

The OHTL preferred route at Adelaide River will be in the form of a long, linear corridor. Due to its length, the OHTL preferred route at Adelaide River potentially impacts a considerable number of different threatened species. As above, the physical disturbance footprint of a corridor is, by design, narrow and localised. Therefore, threatened species with general habitat requirements and/or wide ranges are unlikely to be significantly impacted by this part of the development. The species further discussed in this section were identified by applying an extra layer of filtering to only select species that have restricted ranges or localised core habitat requirements. Undertaking this extra step in the likelihood of occurrence assessment avoids the need to discuss a large number of species that have an inherently low likelihood of being significantly impacted upon by linear project activities.

A total of 72 species were considered in the desktop 'likelihood of occurrence' assessment. Table 4-5 presents the threatened species considered to have a moderate or high likelihood of being present in the OHTL preferred route at Adelaide River, and then assesses whether they have restricted ranges or localised core habitat requirements. Those that do will be subject to a significant impact assessment in the SEIS, and so are further discussed.

The results are summarised as follows:

- Nine species were assessed as having a high likelihood of occurrence within the OHTL preferred route at Adelaide River. Of these, three species – Red Goshawk, *Helicteres macrothrix* and *Stylidium ensatum* – have restricted or core habitat requirements.
- Thirteen species were assessed to have a moderate likelihood of occurrence within the OHTL preferred route at Adelaide River. Of these, three species – Ghost Bat, Gouldian Finch and *Goodenia quadrifida* – have restricted or core habitat requirements.

Potential impacts to the six restricted-range species discussed below are assessed in the SEIS.

Ghost Bat (Macroderma gigas)

The Ghost Bat is the largest species of micro-chiropteran bat in Australia (those bats that use echo-location) and one of the largest in the world. The species' current range in northern Australia ranges from relatively arid conditions in the Pilbara region of Western Australia to humid rainforests of northern Queensland. Ghost Bats roost in shallow sandstone caves along cliff lines, under bolder piles, in deep limestone caves and in abandoned mines. The species forages in a broad range of habitats – including arid spinifex hillsides, black soil grasslands, monsoon forest, open savannah woodland, tall open forest, deciduous vine forest and tropical rainforest (Churchill 2008). Ghost Bats can move between a number of caves seasonally or as dictated by weather conditions, and requires a range of cave sites. Their distribution is likely influenced by the availability of suitable caves and mines for permanent roost sites (DEPWS 2021b). Permanent roost sites are known to occur in the Pine Creek region.

The Adelaide River region contains similar natural landscape features as Pine Creek, including a history of mining. There are known roost sites to the south of Adelaide River township (outside of the OHTL preferred route at Adelaide River), and given the mining history of the region, there may be suitable disused mine caves and crevices within the area that could be roosting/breeding sites for the species.

Due to the availability of suitable foraging habitat and the proximate location of a known roost site, it is highly likely for Ghost Bats to occur within the OHTL preferred route at Adelaide River.

Gouldian Finch (Chloebia gouldiae)

There are numerous records of the Gouldian Finch within the Adelaide River region; however, none within the OHTL preferred route at Adelaide River. Due to the proximity of the records and the habit of the Gouldian finches to move between habitats seasonally, it is highly likely Gouldian Finches could occur within the OHTL preferred route at Adelaide River.

Using the NVIS dataset, an analysis was undertaken of the available foraging and roosting habitat within the Project area using suitable and preferred species. Suitable breeding trees – Snappy gums (*Eucalyptus tintinnans*) – are present within Eucalypt low open forests and tropical Eucalypt woodland / grasslands, and preferred foraging grass species – *Sorghum intrans*, *Chrysopogon fallax* and *Heteropogon triticeus* are present within Eucalypt open forests, Melaleuca forests and woodlands, tropical Eucalypt woodland / grasslands and other open woodlands. The OHTL preferred route at Adelaide River intersects large areas of foraging habitat for Gouldian Finches; however, it does not contain breeding habitat – Table 4-4.

Table 4-4. Area of Gouldian Finch habitat intersected by the OHTL Corridor

Location	Foraging habitat (ha) (% within 20 km)	Breeding habitat (ha) (% within 20 km)	Total (ha) (% within 20 km)
OHTL preferred route at Adelaide River	387.6 (0.112%)	0 (0%)	387.6 (0.105%)
Within 20 km	346,955	20,467	367,422

Red Goshawk (Erythrotriorchis radiatus)

The presence of riparian vegetation, forest and woodlands habitats, and recent breeding records from within Litchfield National Park, indicate there is a high likelihood that the OHTL preferred route at Adelaide River is within the Red Goshawk home ranges.

Goodenia quadrifida

Goodenia quadrifida is an endemic flora species that has been recorded at three sites in the NT. It is restricted to floodplains and grows on cracking clay soils on plains. The classification of *Goodenia quadrifida* as Vulnerable under the EPBC act is due to data deficiency on the species, including habitat and distribution. The closest record to the OHTL preferred route at Adelaide River is in the Marrakai Crossing area on the Adelaide River – Figure 4-4. This occurrence is approximately 8 km downstream from the OHTL crossing of the Adelaide River and the species could occur on Adelaide River floodplains.

Helicteres macrothrix

The NT Government has mapped the extent of occurrence of *Helicteres macrothrix* based on known recorded locations (DEPWS 2016). Potential habitat for the species has been modelled from historical land resource information that includes existing land unit, vegetation and geological mapping. High-likelihood of occurrence and potential habitat modelling intersects OHTL preferred route at Adelaide River – Figure 4-4. While there has been little survey effort for this species in the south of its projected distribution, *Helicteres* records are less than 3 km from the OHTL preferred route at Adelaide River. The presence of high-likelihood modelling, proximity of records and lack of survey effort south of the known occurrences indicate a high-likelihood of occurrence of *Helicteres macrothrix* within the OHTL preferred route at Adelaide River.

Stylidium ensatum

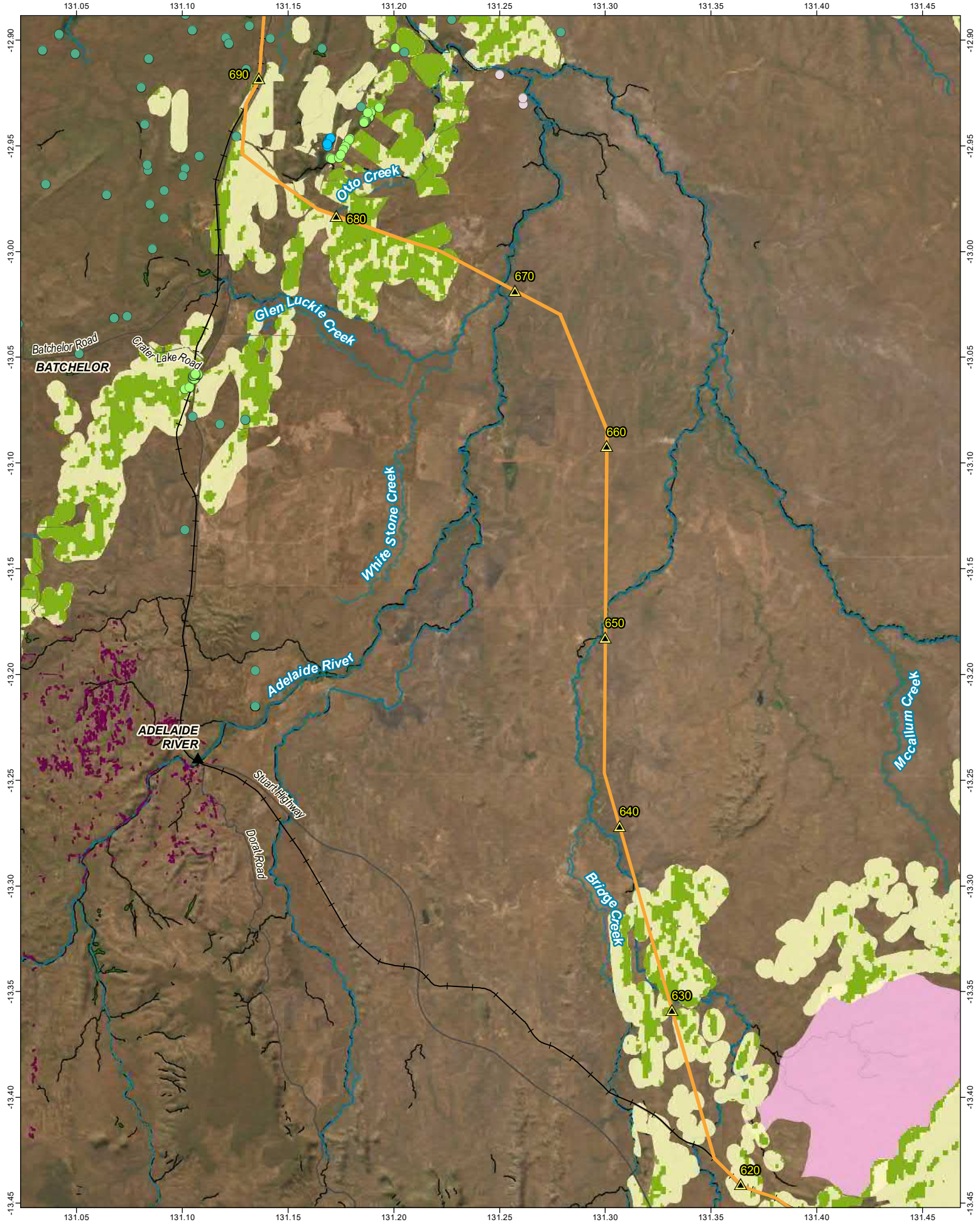
The Adelaide River region and the OHTL preferred route at Adelaide River are within the extent of occurrence (EOO) for *Stylidium ensatum* indicating a high likelihood of occurrence (DEPWS 2016). In addition to the EOO, the NT Government has modelling of high, moderate, and low likelihood habitat occurs within the OHTL preferred route at Adelaide River – Figure 4-4. There is a reasonable potential that *Stylidium ensatum* occurs within the corridor, and the lack of records likely reflects an absence of survey effort in the area.

Table 4-5. Threatened species 'likelihood of occurrence' assessment for OHTL preferred route at Adelaide River

Likelihood	Species	Class	Status		Habitat type	Habitat restrictions
			EPBC	TPWC		
HIGH	Black-footed Tree-rat (Kimberley and mainland Northern Territory subspecies) (<i>Mesembriomys gouldii gouldii</i>)		EN	EN	Woodlands and open forests	-
	Pale Field-rat (<i>Rattus tunneyi</i>)		-	VU	Dense vegetation along creeks	-
	Northern Brushtail Possum (<i>Trichosurus vulpecula arnhemensis</i>)		VU	NT	Variety of habitats, including coastal beaches, floodplains, grasslands, and woodlands	-
	Red Goshawk (<i>Erythrotriorchis radiatus</i>)	Bird	VU	VU	Tall forests and woodlands, riparian areas	Within 1 km of water
	Partridge Pigeon (eastern subspecies) (<i>Geophaps smithii smithii</i>)		VU	VU	Open forests and woodlands	-
	Mertens' Water Monitor (<i>Varanus mertensi</i>)	Reptile	-	VU	Edges of watercourses, swamps and lagoons	Restricted to watercourses
	Darwin Cycad (<i>Cycas armstrongii</i>)	Plant	-	VU	Woodland and forests	-
	<i>Helicteres macrothrix</i>		EN	EN	Eucalypt woodland	Endemic to the NT from three known locations
	<i>Stylidium ensatum</i>		EN	EN	Poorly-drained grassy flats, Melaleuca woodlands	Restricted to swamp fringes
MODERATE	Ghost Bat (<i>Macroderma gigas</i>)	Mammal	VU	NT	Woodlands	Permanent roost sites
	Fawn Antechinus (<i>Antechinus bellus</i>)		VU	EN	Woodland and open forests	-
	Northern Quoll (<i>Dasyurus hallucatus</i>)		EN	CR	Wide range of habitats, now restricted to rocky upland areas	
	Nabarlek (Top End subspecies) (<i>Petrogale concinna canescens</i>)		EN	EN	Rocky areas	-
	Bare-rumped Sheath-tailed Bat (<i>Saccolaimus saccolaimus nudicluniatus</i>)		VU	NT	Eucalypt forests and woodlands, <i>Pandanus</i> fringing woodlands	-
	Gouldian Finch (<i>Chloebia gouldiae</i>)		EN	VU	Wooded hills and lowland drainages	Restricted nesting habitat
	Crested Shrike-tit (northern subspecies) (<i>Falcunculus frontatus whitei</i>)		VU	NT	Eucalyptus and melaleuca woodlands	-
	Masked Owl (northern mainland subspecies) (<i>Tyto novaehollandiae kimberli</i>)		VU	VU	Eucalypt forests and woodlands	Large hollow-bearing trees

Likelihood	Species	Class	Status		Habitat type	Habitat restrictions
			EPBC	TPWC		
	Plains Death Adder (<i>Acanthopis hawkei</i>)	Reptile	VU	VU	Cracking soil floodplains	-
	Mitchell's Water Monitor (<i>Varanus mitchelli</i>)		-	VU	Riparian areas	Riparian areas
	Yellow-spotted Monitor (<i>Varanus panoptes</i>)		-	VU	Beaches, floodplains, grasslands and woodlands	-
	Northern River Shark (<i>Glyphis garricki</i>)	Fish	EN	EN	Rivers and estuaries	-
	<i>Goodenia quadrifida</i>	Plant	VU	-	Floodplains	Known in the floodplains of the Upper Adelaide River

CR = Critically Endangered; EN = Endangered; VU = Vulnerable, NT = Near Threatened



	Threatened flora records	<i>Styidium ensatum</i>
	Modelled habitat	

Source: Sun Cable, EcoZ, NTG (NR Maps)

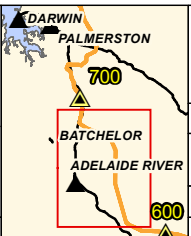


Figure 4-4. Map of threatened flora records and modelling relevant to the Adelaide River Project area

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Date: 18/11/2022 Revision: 2

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Coordinate System: GDA2020

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5 OHTL PREFERRED ROUTE AT KATHERINE

The preferred route of the OHTL Corridor at Katherine is generally adjacent to the existing railway corridor (see Figure 5-1). The preferred route deviation begins at approximately KP 450 to facilitate crossing the Victoria Highway before navigating through several parcels of land and crossing the Katherine River. Once on the northern side of the Katherine River, the preferred route is generally aligned with the railway corridor to minimise any potential impacts. The OHTL Corridor re-enters the railway corridor at approximately KP 467. Land use in these areas appears to be industrial – quarry – or agricultural – irrigated pasture and pastoral land. Field surveys have not been conducted for this area, and the assessment has been based on desktop resources and local knowledge.

5.1 Existing environment

The OHTL preferred route at Katherine is within the Daly Basin bioregion which is characterised by gently undulating plains and scattered low plateau remnants, with loamy and sandy red earths on sandstones, siltstones and limestones – Figure 2-1. The dominant vegetation is *Eucalyptus tetradonta* and *Eucalyptus miniata* open forest with perennial and annual grassy understories. This is verified by NVIS vegetation mapping which shows intersection with two native vegetation communities – Tropical Eucalypt Woodlands/Grasslands and Eucalypt Open Forests – and cleared, non-native vegetation areas.

Desktop assessment of the OHTL preferred route at Katherine identified ecological values and constraints likely to occur within the Project area. Values identified in the desktop assessment are detailed in this section and summarised in Table 5-1. Field surveys have not been conducted for this area, and the assessment has been based on desktop resources and local knowledge.

Table 5-1. Summary of environmental values relevant to the OHTL preferred route at Katherine

Value	OHTL preferred route at Katherine
Parks and reserves	-
SOCS / SOBS	-
Natural land features	✓
Watercourses	✓
Springs	-
Riparian vegetation	✓
Rainforest	✓
Wetlands	-
Large hollow-bearing trees	✓
Threatened Ecological Communities	-
Threatened fauna records	✓
Threatened fauna habitat	✓

5.1.1 Land resources

Land unit mapping is not available for the OHTL preferred route at Katherine. Land systems within the OHTL preferred route at Katherine are described at 1:250,000 by Speck et al. (1965). Land systems intersected by the OHTL preferred route at Katherine are shown in Figure 5-1 and summarised in Table 5-1. The OHTL preferred route at Katherine is within the limestone plains and rises surrounding the Katherine River alluvial flood plains.

Table 5-2. Table of land systems relevant to the OHTL preferred route at Katherine

Land system	Landform	Soil	Vegetation
Limestone plains and rises			
Budbudjong	Undulating limestone terrain, scattered outcrop hills up to 40 ft high with intervening lower slopes and very shallow depressions.	Loamy red earths mixed with outcrop.	Savanna woodland and grassland. Tropical tall grass country.
Kimbyan	Mainly stony plains and moderately extensive soil-covered plains. Erosional plains with outcrop in the lower parts, and less extensive soil-covered plains in the upper sectors with little outcrop; scattered water sinks and shallow depressions; sparse to moderately dense pattern of rectangular or branching drainage, unchanneled in the upper sector; relief mainly less than 10 ft.	Loamy red earths with limestone outcrops.	Mixed open forest, savanna woodland. Tropical tall grass country.
Tagoman	Undulating terrain, sandy crests and gentle upper slopes with extensive lower slopes forming gently undulating terrain with scattered shallow depressions and relief up to 10 ft.	Shallow soils. Loamy red earths mixed with outcrop.	Savanna woodland. Tropical tall grass country.

5.1.2 Surface water

The OHTL preferred route at Katherine crosses an unnamed level two stream, south of the Katherine River between KP 454 and 455 – Figure 5-3.

5.1.3 Natural land features

Sinkholes

Sinkholes are common within the Katherine region and the OHTL preferred route at Katherine intersects one known sinkhole between KP 461 and 462 – Figure 5-3.

Rocky outcrops

The northern section of the OHTL preferred route at Katherine intersect an area of rocky outcrops from KP 462 to 464 – Figure 5-3. The values within these areas are unable to be determined through desktop analysis; however, they could provide habitat for species with preference for this landscape feature – e.g. Northern Quolls, possums, rock wallabies or bats.



<ul style="list-style-type: none"> Kilometre Point (KP) Towns Railway Roads AAPowerLink footprint 	<p>Land System Class (Land system boundaries and labels shown)</p> <ul style="list-style-type: none"> Alluvial floodplains Basalt plains and rises Lateritic plains Limestone plains and rises Rugged quartz sandstone plateaux and hills Sandstone plains and rises Cleared, non-native vegetation, buildings
<p>Source: Sun Cable, EcOz, NTG (NR Maps)</p>	

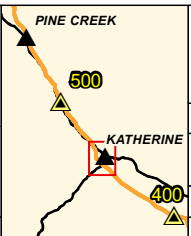


Figure 5-1. Map of land systems relevant to the Katherine Project area

Project: Australia-Asia PowerLink		Reference: M-Files ID 217502	
		Date: 18/11/2022	Revision: 2
Scale: 1:80,000		Coordinate System: GDA2020	
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Figure 5-2. Aerial imagery showing rocky outcrops in the northern section of the OHTL preferred route at Katherine

5.1.4 Weeds

Weed records within 1 km of the OHTL preferred route at Katherine were analysed and found 31 species from 987 individual records. Of these species there are 4 WONS, 18 declared species and 14 species listed for priority control in the *Katherine Regional Weeds Strategy 2021-2026*. The most frequent records are Neem (*Azadirachta indica*), followed by Chinese Apple (*Ziziphus mauritiana*).

5.1.5 Fire

In the past 10 years, most areas within the OHTL preferred route at Katherine had a low fire frequency – 0 to 3 years burnt – with the areas that did burn predominantly in the early dry season. This timing and small area affected by fire is likely due to the proximity to the Katherine township, and the pastoral and agricultural land uses within the area.

5.1.6 Significant vegetation

The following significant vegetation types occur within the OHTL preferred route at Katherine – Figure 5-3:

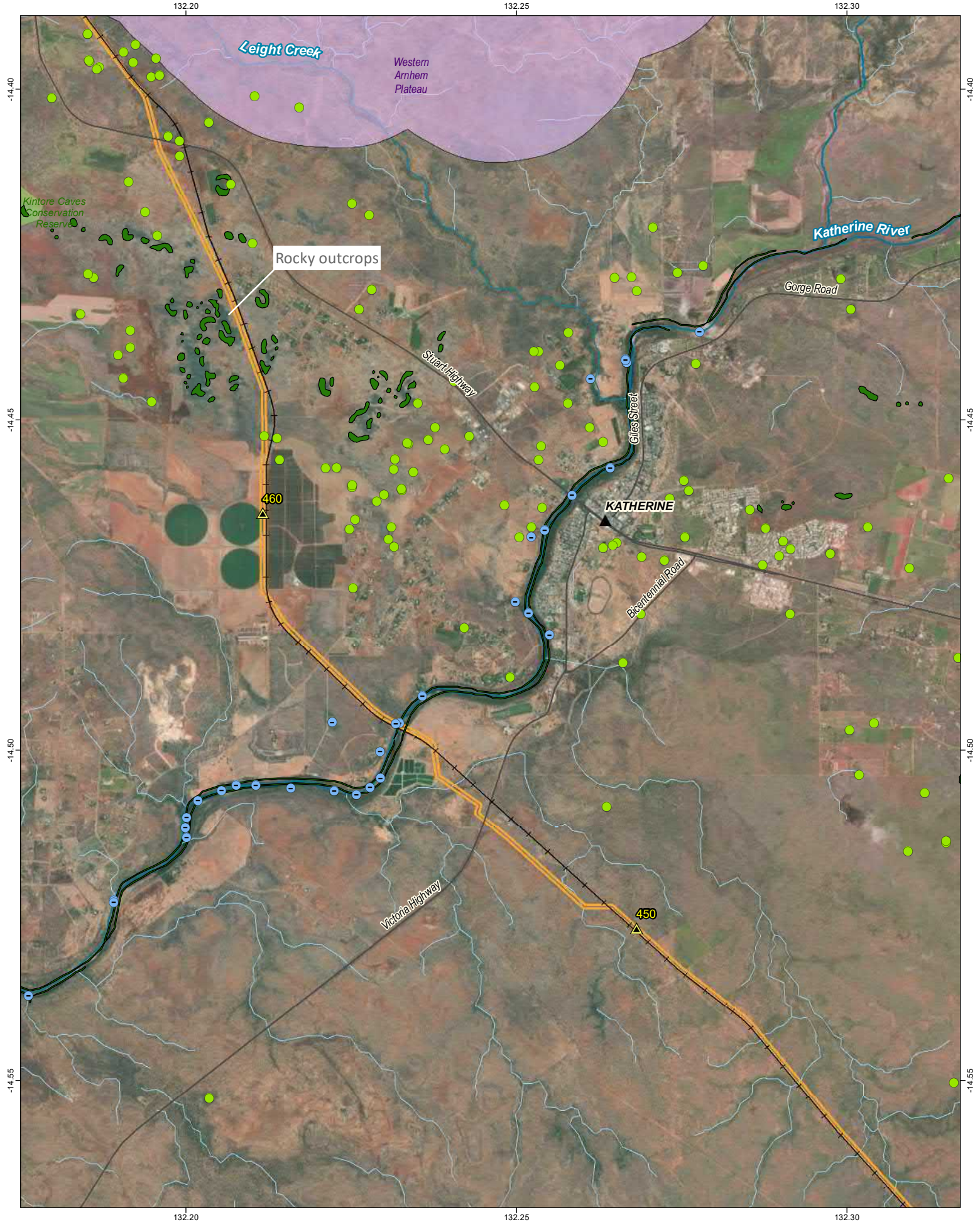
- Riparian vegetation
- Large hollow-bearing trees (as discussed in Section 2.2)
- Rainforest.

Riparian vegetation

As described in Section 5.1.2, the OHTL preferred route at Katherine intersects with a watercourse which aerial imagery suggests supports riparian vegetation. The extent of riparian vegetation usually increases with stream order (i.e. large rivers will support a wider corridor of riparian vegetation than a lower order ephemeral creek). The major rivers have thick fringes, indicating the most riparian vegetation.

Rainforest

The OHTL preferred route at Katherine runs through an area with numerous patches of dry rainforest, located to the north of Katherine between KP 462 and 465 – Figure 5-3. Desktop assessment indicates the presence of these patches; however, field verification is required to determine the extent and quality of these areas.



- ▲ Kilometre Point (KP)
 - ▲ Towns
 - Sinkhole
 - Springs
 - Railway
 - Roads
 - Major Drainage
 - Minor Drainage
 - Streams
 - AAPowerLink footprint
 - Rainforest
 - Parks and Reserves
 - Sites of Conservation Significance
- Source: Sun Cable, EcoZ, NTG (NR Maps)

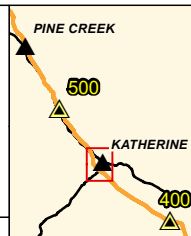


Figure 5-3. Map of ecological values relevant to the OHTL preferred route at Katherine

Project: Australia-Asia PowerLink		Reference: M-Files ID 217502	
0 1 2 Kilometres		Date: 18/11/2022	Revision: 2
Scale: 1:80,000		SUN CABLE AUSTRALIA-ASIA	
Coordinate System: GDA2020		PowerLink	
		A4	

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5.2 Threatened species

No targeted threatened species surveys have been undertaken within this Project area. The procedure for assessment of threatened species described in Section 2.3 was used to determine which threatened species have the potential to occur in the Project area with the following search parameters. Threatened species records from the latest version of the NT Atlas were clipped to within 20 km of the OHTL preferred route at Katherine. The PMST report is presented in Appendix D.

The OHTL preferred route at Katherine will be in the form of a long, linear corridor. Due to the length, the OHTL preferred route at Katherine potentially impacts a number of different threatened species. As already stated, the physical disturbance footprint of a corridor is, by design, narrow and localised. Therefore, threatened species with general habitat requirements and/or wide ranges are unlikely to be significantly impacted by this part of the development. The species further discussed in this section were identified by applying an extra layer of filtering to only select species that have restricted ranges or localised core habitat requirements. Undertaking this extra step in the likelihood of occurrence assessment avoids the need to discuss a large number of species that have an inherently low likelihood of being significantly impacted upon by linear project activities.

Table 5-3 presents all threatened species considered to have a moderate or high likelihood of being present in the OHTL preferred route at Katherine, and then assesses whether they have restricted ranges or localised core habitat requirements. Those that do will be subject to a significant impact assessment in the SEIS, and so are further discussed in this report.

A total of 32 threatened species were considered in the desktop 'likelihood of occurrence' assessment. The results from the desktop assessment are presented in Table 5-3, and summarised as follows:

- Five species were assessed to have a high likelihood of occurrence within the OHTL preferred route at Katherine. None of these have restricted or core habitat requirements.
- Three species with restricted or core habitat requirements were assessed as having a moderate likelihood of occurrence within the OHTL preferred route at Katherine:
 - **Ghost Bat.** The natural features – rocky outcrops and sinkholes – within the OHTL preferred route at Katherine potentially contain suitable roost habitat for the Ghost Bat which could be significant to breeding success of the species.
 - **Red Goshawk.** The presence of riparian vegetation, forest and woodlands habitats traversed by the OHTL preferred route at Katherine, indicate there is a moderate likelihood that this species could occur.
 - **Victoria River Land Snail (*Trachiopsis victoriana*)** which is highly restricted in range to limestone sinkholes within the Katherine region. Rocky outcrops and sinkholes within the OHTL preferred route at Katherine potentially contain suitable habitat for this species.

Potential impacts to these three species are assessed in the SEIS.

Table 5-3. Threatened species 'likelihood of occurrence' assessment for OHTL preferred route at Katherine

Likelihood	Species	Class	Status		Habitat type	Habitat restrictions
			EPBC	TPWC		
HIGH	Black-footed Tree-rat (Kimberley and mainland Northern Territory subspecies) <i>(Mesembriomys gouldii gouldii)</i>		EN	EN	Woodlands and open forests	-
	Northern Brushtail Possum <i>(Trichosurus vulpecula arnhemensis)</i>		VU	NT	Variety of habitats, including coastal beaches, floodplains, grasslands, and woodlands	-
	Partridge Pigeon (eastern subspecies) <i>(Geophaps smithii smithii)</i>		VU	VU	Open forests and woodlands	-
	Yellow-spotted Monitor <i>(Varanus panoptes)</i>		-	VU	Variety of habitats, including coastal beaches, floodplains, grasslands, and woodlands	-
MODERATE	Red Goshawk <i>(Erythrotriorchis radiatus)</i>		VU	VU	Tall forests and woodlands, riparian areas	Nest within 1 km of water
	Ghost Bat <i>(Macroderma gigas)</i>	Mammal	VU	NT	Woodlands	Permanent roost sites (cave and adits)
	Victoria River Land Snail <i>(Trachiopsis victoriana)</i>	Invertebrate	-	VU	Limestone sinkholes	

6 POWELL CREEK ELECTRODE & ANCILLARY INFRASTRUCTURE

The Powell Creek Project area is comprised of the following components:

- The **Solar Precinct Electrode, HVDC Electrode Line Corridor and Access Track** that joins it directly to the OHTL, north of the proposed Solar Precinct – Figure 6-1. These components occur west of the railway corridor, within the south-west boundary of Powell Creek Station. The HVDC Electrode Line Corridor survey area is ~100 m wide and runs west from the OHTL Corridor for 11 km before joining to the electrode, covering approximately 115 ha and including the electrode site access track.
- **Ancillary Infrastructure** areas are scattered across Powell Creek Station between the Solar Precinct and the Stuart Highway. The refined Ancillary Infrastructure footprints external to the Solar Precinct covers approximately 134 ha within Powell Creek Station which is currently managed by Newcastle Waters Station (adjoining station to the north).
- **Solar Precinct Access Roads** (Main Access Road and Gravel Access Road) which have been revised since the Draft EIS submission. This report will discuss any updates since the Draft EIS; information which remains the same as the Draft EIS is not included.

In 2021 surveys were undertaken within Powell Creek Station to inform the Draft EIS. This included the Solar Precinct and Access Roads from the Stuart Highway. Details of these surveys can be found in the *Supplement to the EIS – Threatened Species Surveys report* which is an appendix to the SEIS.

Desktop assessment of the additional components within the Powell Creek Project area identified environmental values and constraints within all components – Table 6-1.

Aerial surveys of the Powell Creek Project area – including buffer areas – were conducted on the 24 and 25 October 2022 by EcOz ecologists/zoologists Tom Ewers-Reilly and Mark Carter. The survey aimed to determine the vegetation communities present and detect the presence of threatened species by targeting areas of suitable habitat and land areas likely to support Greater Bilby (*Macrotis lagotis*), Yellow-spotted Monitor (*Varanus panoptes*), Gouldian Finch (*Chloebia gouldiae*) and the Grey Falcon (*Falco hypoleucos*). Results are summarised below, and the detailed results can be found in *Supplement to the EIS – Threatened Species Surveys report* which is an appendix to the SEIS.

6.1 Existing environment

The Powell Creek Project refinement footprints cover three bioregions (Baker et al. 2005) – Figure 2-1:

- The Tanami bioregion in the west comprises mainly of red sand-plains and low dune fields with underlying rock strata occasionally exposed as hills and ranges. The sandplains are vegetated with mixed shrubland of Acacia, Eucalyptus or Hakea over spinifex hummock grasslands. Alluvial and lacustrine calcareous deposits occur throughout, often associated with palaeo-drainage systems – which often hold high ecological significance. Some Ancillary Infrastructure components are within the Tanami bioregion.
- The Davenport Murchison Ranges bioregion occurs to the east of the Solar Precinct and is crossed by the Solar Precinct Access Roads and components of the Ancillary Infrastructure. This bioregion is characterised by a chain of rocky ranges surrounded by lowland plains. Vegetation is typically comprised of low open Eucalyptus woodland and sparse Acacia shrubland over hummock grassland and low, rugged rocky hills with hummock grasslands and/or low open woodland dominated by Acacia species.

- The Sturt Plateau bioregion contains the Solar Precinct Electrode and HVDC Electrode Line Corridor. This bioregion is comprised of flat to gently undulating plains of Eucalyptus woodlands or tall shrub lands and woodlands of Bullwaddy (*Macropteranthes kekwickii*) and Lancewood (*Acacia shirleyi*). In more open areas perennial grasses dominate. Soils are mainly lateritic, but deep sands occur in the south and cracking clays in the south-east. The vegetation within the electrode and access corridor is comprised of three communities within two major vegetation groupings, Eucalypt open woodlands with hummock grass and hummock grasslands (DCCEEW 2020).

The desktop assessment of the Project area found ecological values and potential constraints associated with the presence of significant vegetation and habitat for threatened species within all components – Table 6-1.

Table 6-1. Summary of environmental values relevant to the Powell Creek Project area

Value	Solar Precinct Electrode	Ancillary Infrastructure	Solar Precinct Access
Parks and reserves	-	-	-
SOCS / SOBS	-	-	-
Important wetlands	-	-	-
Watercourses	-	✓	✓
Springs	-	-	-
Riparian vegetation	-	✓	✓
Wetlands	-	-	-
Threatened fauna records	-	✓	-
Threatened fauna habitat	✓	✓	✓
Migratory species	-	-	-

6.1.1 Land resources

The bioregional data is supported by NVIS vegetation mapping – which shows that the Project area intersects three vegetation communities – *Eucalyptus / Lysiphillum* low open woodlands, *Corymbia / Hakea* low open woodlands and *Triodia* low open hummock grasslands – within the Eucalypt open woodlands major vegetation grouping (DCCEEW 2020).

Land system and land type mapping is available for the Powell Creek region. Land system mapping is available for the Project area at a scale of 1:500,000 (Christian et al. 1954; Stewart et al. 1970; Northcoat 1960-68) and land type mapping is available at a scale of 1:250,000 (Brocklehurst and Trueman 2017) for the eastern components of the Ancillary Infrastructure and the neighbouring Helen Springs Station – Figure 6-2.

The Project area intersects three mapped land systems – Figure 6-2. The Ancillary Infrastructure intersect desert sandplains in the west, alluvial floodplains and black soil associated with Lake Woods within the central part and rocky sandstone hills associated with Ashburton range to the east. The Solar Precinct Electrode occurs within desert sandplains – Redsan – land system.

Six land types have been described and are intersected by various Ancillary Infrastructure components – Table 6-3. Sandstone hills dominate the landscape and contains the most components with a mixed eucalypts low open woodland-shrubland over hummock grasses.

6.1.2 Surface water

The Project area is within the Lake Wood catchment which contains numerous ephemeral watercourses and drainage lines associate with the Ashburton Range – Figure 6-1. Neither the Ancillary Infrastructure nor Solar Precinct Electrode intersect any surface hydrology. No waterholes were identified within, or adjacent to, the

Ancillary Infrastructure on the Ashburton Range. The drainages and small creeks within the Project footprint area may support small episodic pools during the wet season; however, none contained water at the time of survey. Waterholes/springs were observed in the surrounding area (greater than 2 km from areas surveyed).

Changes made to the Solar Precinct Access Roads since the Draft EIS result in the Gravel Access Road now intersecting four additional first order streams and drainage depressions – Figure 6-1. The revised route also passes close (80 m) to one bore – RN036552.

The Project area components do not intersect or fall within a SOCS; however, the Lake Woods SOCS is located approximately 10 km to the north of the Ancillary Infrastructure – Figure 6-1. Lake Woods has international significance due to seasonal presence of large aggregations of waterbirds, and presence of important wetland habitat (BirdLife International 2021, Jaensch and Bellchambers 1997). NT Atlas records indicate that 24 listed migratory species have been recorded in the area. Migratory species were described in the EIS and are not discussed further in this report. While not within the proposed footprint, the Ancillary Infrastructure is upstream of the SOCS and all works within the Ancillary Infrastructure will need to ensure that potential impacts to the SOCS are considered and suitable mitigated.

6.1.3 Weeds

There are only four weed records within 20 km of the Powell Creek Project area and none within the Project footprint – Buffel Grass (*Cenchrus ciliaris*), Rubber Bush (*Calotropis procera*), Caltrop (*Tribulus terrestris*) and Parkinsonia (*Parkinsonia aculeata*). The Project area is within the Alice Springs weed management region which is covered by the *Alice Springs Regional Weeds Strategy 2021 - 2026*. That strategy lists Rubber Bush, Parkinsonia and Buffel Grass as category 2 (for control within the region) and Caltrop as category 4 (to prevent spread). Parkinsonia is a WONS; all species are NT Declared Class B.

Weeds were not detected during the 2022 field survey.

6.1.4 Fire

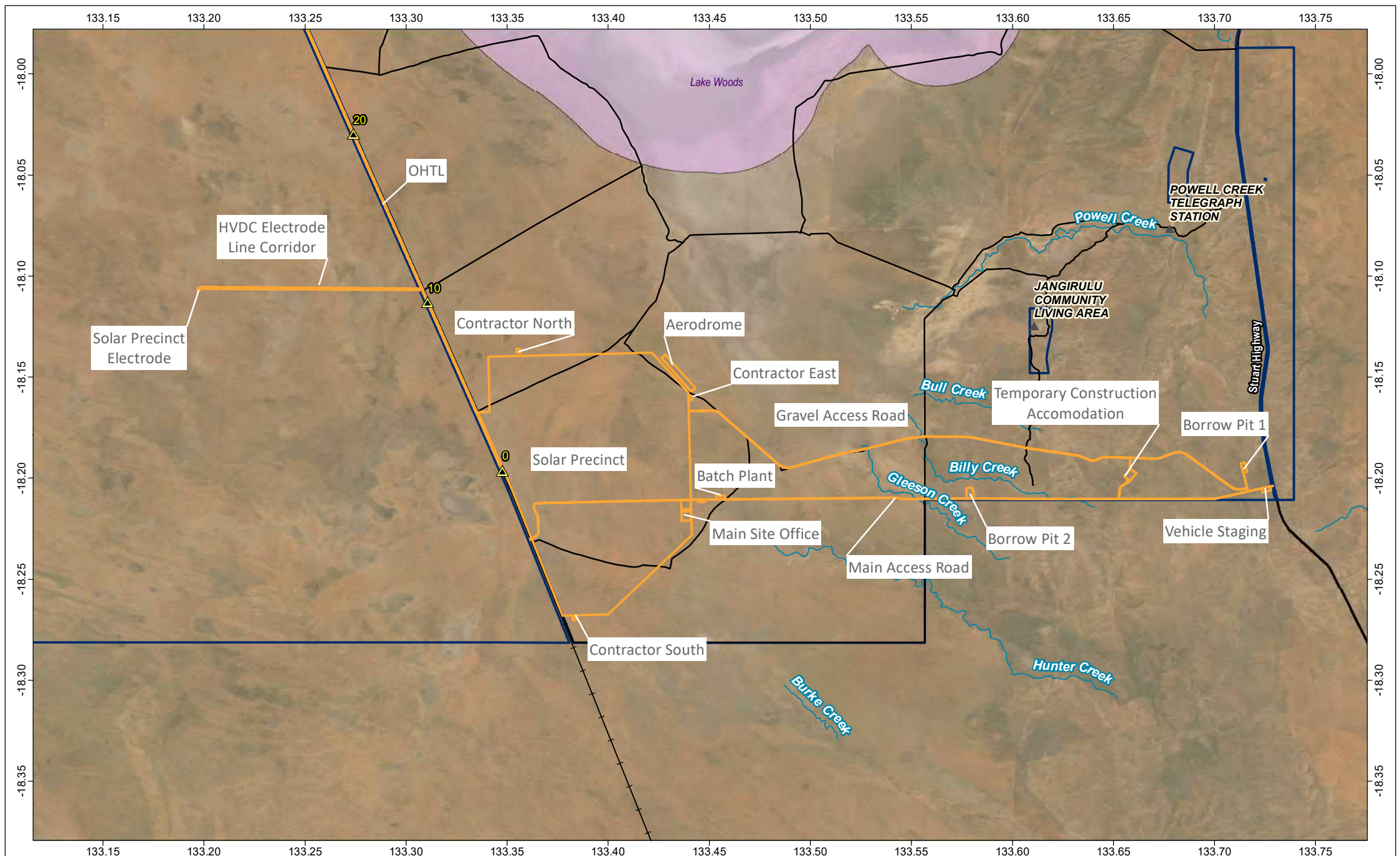
Fire occurrence across the region is infrequent – 3 years in the last 10; however, this frequency is significant for the arid zone. Regional fire scar mapping indicates these fires are large-scale, affecting areas outside the Project area. The fire frequency relevant to the Ancillary Infrastructure – east in the Ashburton Range and west in the Redsan land system – is generally lower – 0 to 2 years – than the frequency in the central alluvial plains – 2 to 3 years.

Table 6-2. Table of land systems of Powell Creek Station

Land system	Landform	Soil	Vegetation	Project area component
Alluvial floodplains				
Gosse	Sandy, seasonally flooded flats and drainages associated with run-off from drainages including Powell Creek, Bull Creek, Gleeson Creek and Hunter Creek.	Sandy, coarse textured alluvia, short seasonal flooding.	Vegetation typically includes a low Eucalypt open woodland of, a mid-open shrubland over tussocks grass with occasional areas dominated by hummock grass.	Aerodrome Alternate Location 1 Borrow Pit 2
Desert sandplains				
Redsan	Gently undulating plain with deep sandy soil that supports open Eucalyptus woodland over tussock grasses	Deep-shallow sand or sandy loam over lateritic or clays	Open Eucalyptus woodland including <i>Eucalyptus polycarpa</i> , <i>E. argillacea</i> , <i>E. setosa</i> , <i>E. pruinosa</i> , <i>E. microtheca</i> , <i>E. ferruginea</i> over spinifex (mainly <i>Triodia pungens</i>) interspersed with areas of tussock grasses (i.e. <i>Aristida spp.</i>). Also supports patches of Lancewood (<i>Acacia shirleyi</i>) and Bulwaddy (<i>Macropteranthes kekwickii</i>)	Aerodrome 2 x Batch Plant 3 x Contractor offices Main Site Office Security / Site Access Electrode site HVDC Electrode Line Corridor and Access Track
Sandstone hills				
Ashburton	Stony plateaux, tablelands and hills on sandstone, and outcrops in	Skeletal soils	<i>Eucalyptus brevifolia</i> or <i>E. dichromophloia</i> (Variable-barked Bloodwood) low open woodland with hummock grassland understory	Temporary Construction Accommodation Borrow Pit 1 Vehicle Staging

Table 6-3. Existing land types that are intersected by the Ancillary Infrastructure (dataset STHLT_250)

Land type	Landform	Soil	Vegetation	Ancillary Infrastructure component
Lateritic plains and rises				
e4	Plains Low flat areas	Tenosols	Mixed species <i>Eucalyptus victrix</i> , <i>Lophostemon grandiflora</i> , <i>Ventilago viminalis</i> mid woodland over tussock grasses	Borrow Pit 2
wo2	Low Rises	Kandosols	<i>Acacia lysiphloia</i> closed shrubland over tussock grasses +/- emergent eucalypts	Borrow Pit 1 Vehicle Staging
Sandstone hills				
as1	Drainage Systems Valley bottoms with stream lines	Kandosols	Mixed species <i>Eucalyptus pruinosus</i> , <i>Ventilago viminalis</i> , <i>Cariss lanceolata</i> low open woodland over tussock grasses	Borrow Pit 2
as3	Plateaux Nearly flat upland areas	Tenosols	Mixed Eucalypt (<i>Eucalyptus leucophloia</i> , <i>Eucalyptus aspera</i>) low open woodland-shrubland over hummock grasses (<i>Triodia pungens</i>)	Temporary Construction Accommodation Borrow Pit 1
as5	Alluvial Plains Valley bottoms with stream lines	Tenosols / Kandosols	<i>Eucalyptus pruinosus</i> low open woodland over <i>Grevillea striata</i> and tussock grasses (<i>Aristida pruinosus</i>).	Vehicle Staging
Sandstone plains and rises				
t3	Sandplains sandy plains, some elements of Te1-2	Tenosols	<i>Triodia pungens</i> and <i>Triodia basedowii</i> open hummock grassland with scattered emergent <i>Eucalyptus leucophloia</i> and/or <i>Acacia</i> species.	Vehicle Staging



Kilometre Point (KP)	Powell Creek Station
Homestead	AAPowerLink footprint
Railway	Sites of Conservation Significance
Minor Drainage	

Source: Sun Cable, EcOz, NTG (NR Maps)

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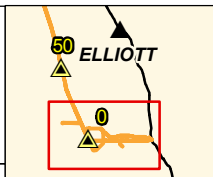
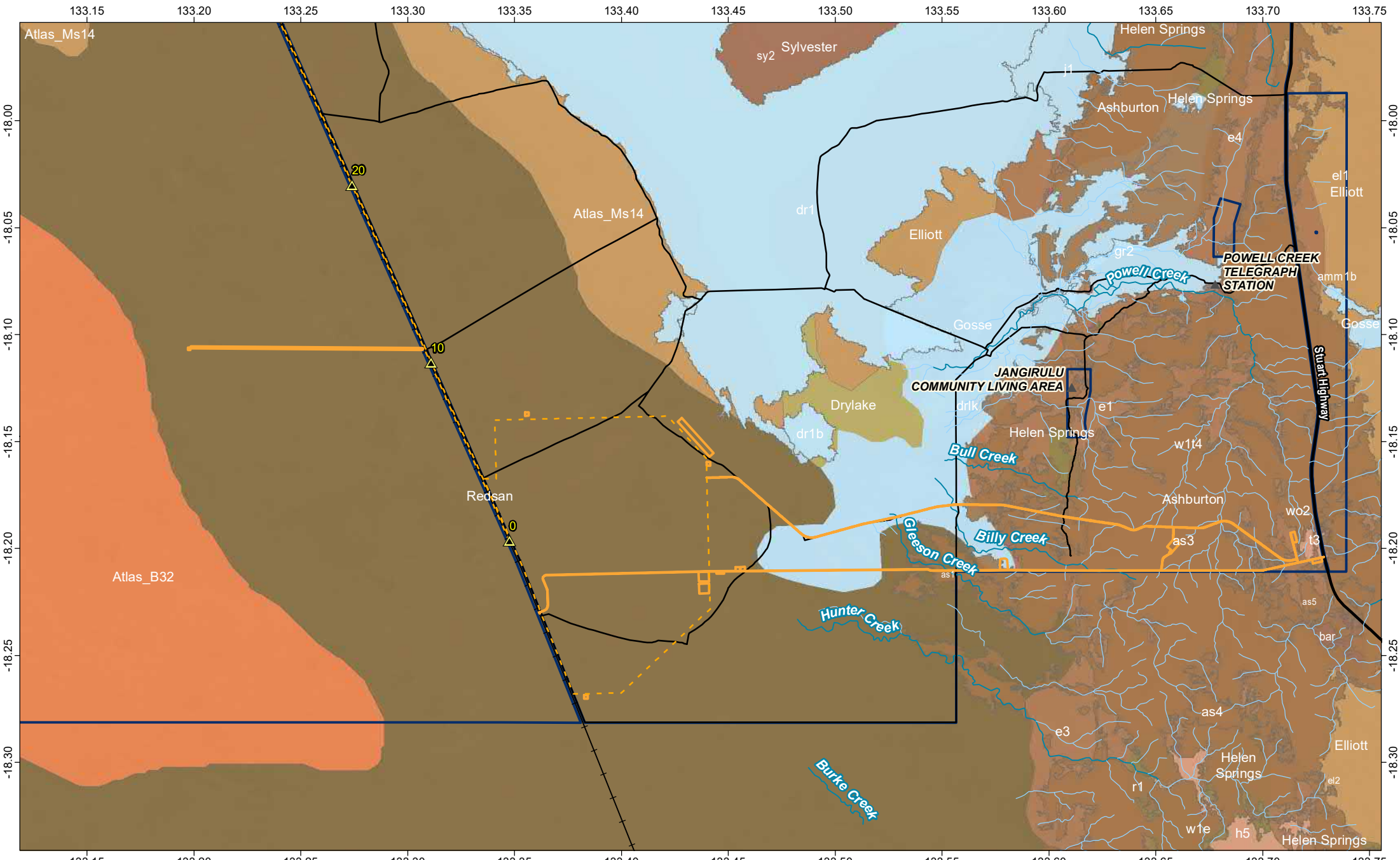


Figure 6-1. Map of AAPowerLink infrastructure at Powell Creek Station

Project: Australia-Asia PowerLink	Reference: M-Files ID 198726	Revision: 2
Coordinate System: GDA2020	Date: 18/11/2022	
		Scale: 1:259,412 A4

SUN CABLE AUSTRALIA-ASIA
PowerLink



Kilometre Point (KP)	AAPowerLink footprint (EIS)	Desert dunefields
Homestead	AAPowerLink footprint	Desert sandplains
Streams	Land System and Land Types (Boundaries and labels shown)	
Railway	Lateritic plains and rises	Sandstone hills
Minor Drainage	Alluvial floodplains	Sandstone plains and rises
	Clay plains	

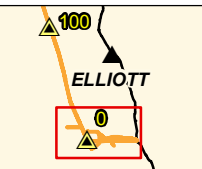


Figure 6-2. Map of land systems and land types of Powell Creek Station

Project: Australia-Asia PowerLink	Reference: M-Files ID 198726	Revision: 2
Coordinate System: GDA2020	Date: 18/11/2022	
0 5 10 Kilometres	Scale: 1:250,306	A4

Source: Sun Cable, EcOz, NTG (NR Maps)
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6.2 Vegetation

Observations of vegetation and landforms relevant to the Powell Creek Project area were made during the targeted field surveys in October 2022. Much of the Access Routes have already been cleared by the station managers. Vegetation within the uncleared area is akin to that presented in the Terrestrial Ecology Report for the Solar Precinct in the EIS.

Solar Precinct Electrode

The Electrode Site occurs on a gently sloping sandplain that supports an open Acacia shrubland over spinifex (photographs provided in Figure 6-3 and Figure 6-4). The dominant shrub species is *Acacia stipuligera* with a patchy occurrence of *A. ancistrocarpa*, *Brachychiton multicaulis*, *Grevillea refracta* and *Melaleuca viridiflora*. Scattered or sparse shrubs include *A. lysiphloia*, *A. sericophylla*, *Petalostigma nummularia*, *Petalostylis cassioides* and *Mirbelia viminalis*. The site also supports fire-impacted trees including *Eucalyptus victrix* and *Corymbia opaca* (currently part of the shrub layer as they have been reduced to mallee form from repeat fire events). The presence of species such as *M. viridiflora* and *E. victrix* indicates that the sandplain becomes periodically wet, or there is an underlying clay layer that retains moisture to support these species.



Figure 6-3. Aerial photograph of the Electrode site

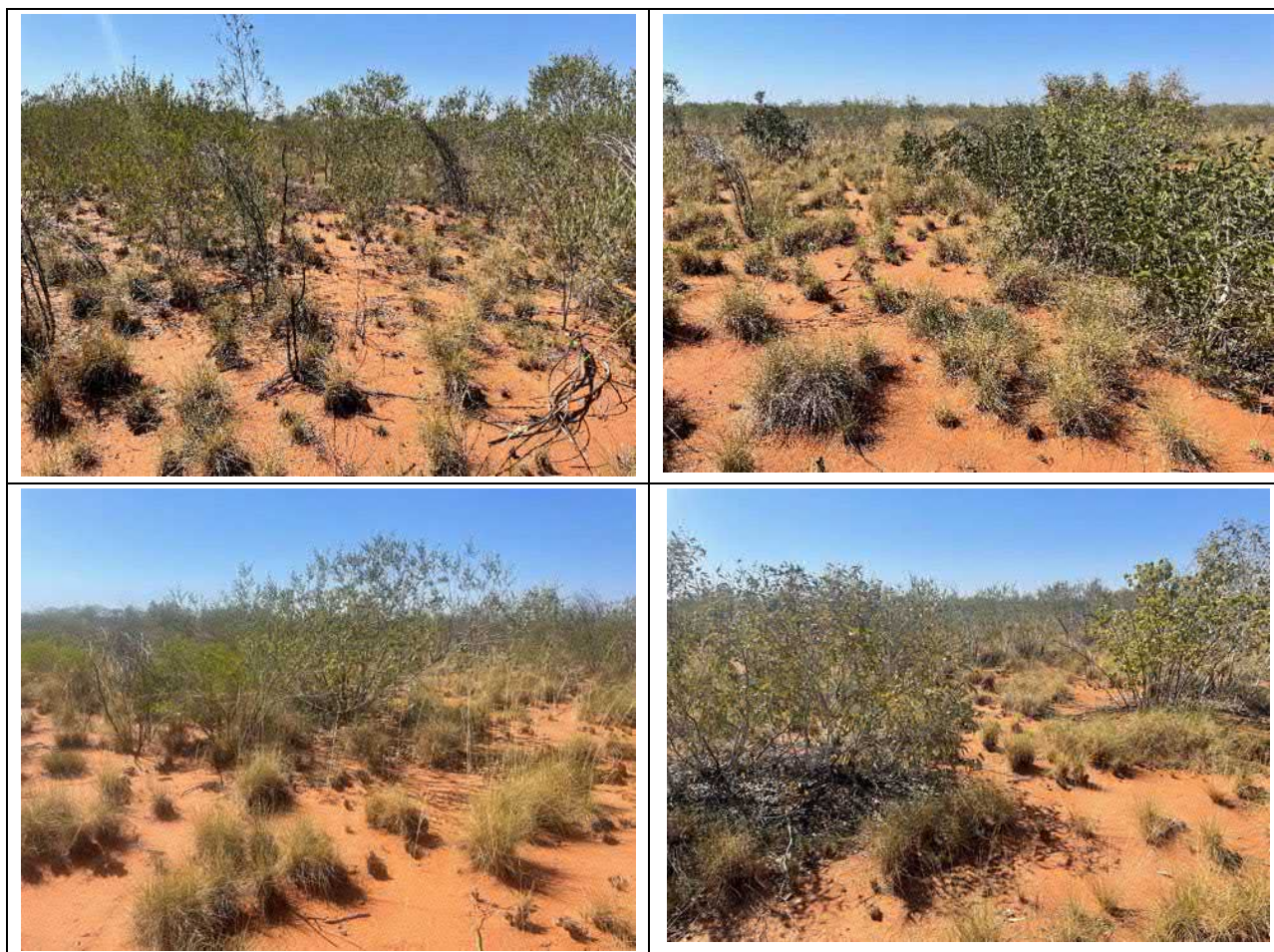


Figure 6-4. Photographs of sandplain habitat within the Electrode site

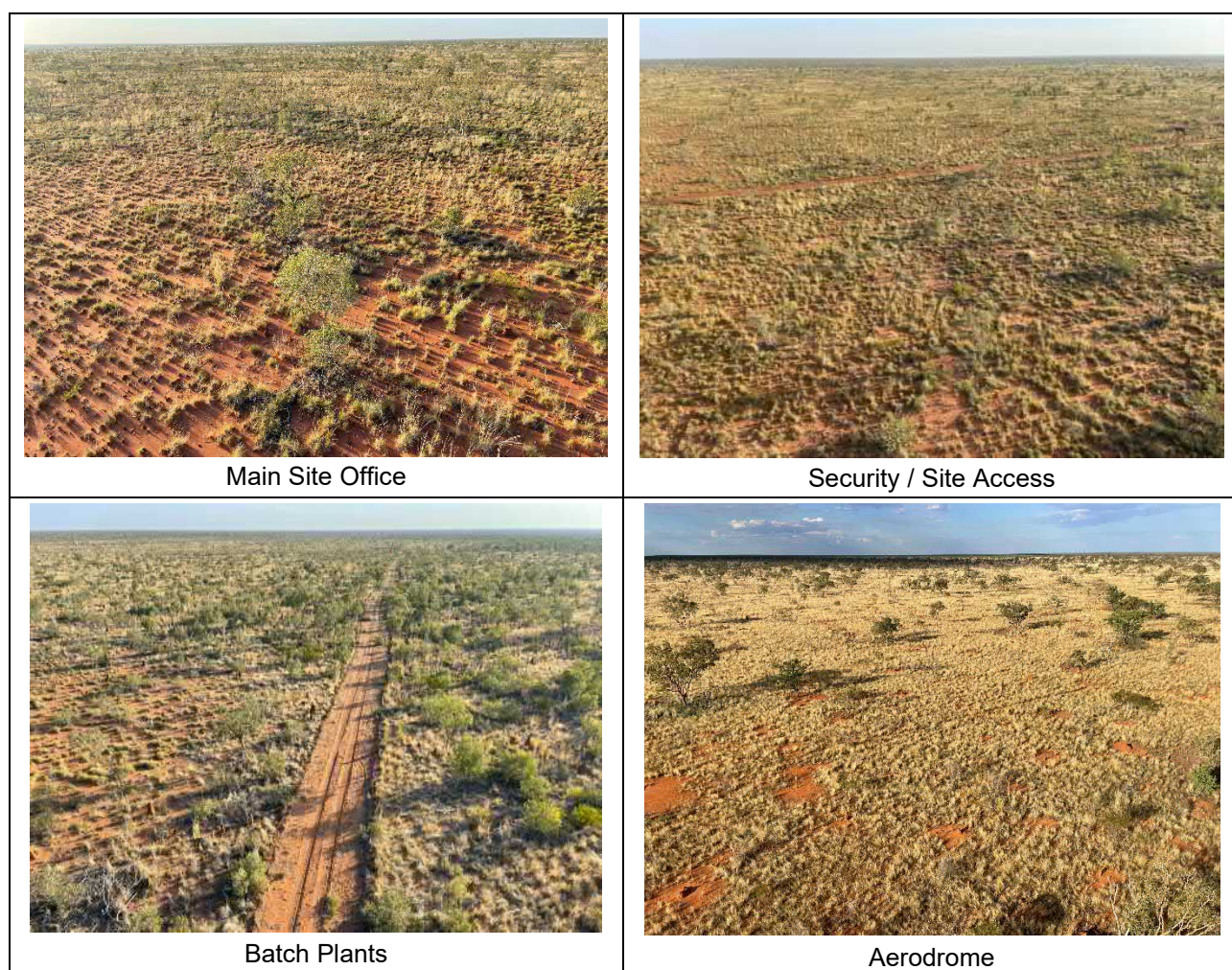
Ancillary Infrastructure

Vegetation community observations for the Ancillary Infrastructure components are presented in Table 6-4, with indicative photographs provided in Figure 6-5.

Table 6-4. Vegetation community observations for the Ancillary Infrastructure

Name	Description
Main site office	Flat sandplain. Sparse <i>Acacia lysiphloia</i> shrubland over spinifex, with scattered trees (<i>Corymbia opaca</i>).
Security / Site Access	Flat sandplain. Sparse <i>Acacia lysiphloia</i> shrubland over spinifex, with scattered trees (<i>Corymbia opaca</i>).
Batch Plant	Flat sandplain. Sparse <i>Acacia lysiphloia</i> shrubland over spinifex, with scattered trees (<i>Corymbia opaca</i>).
Aerodrome	Flat loamy plain, sandplain transition. Tussock grassland within scattered small trees (<i>Bauhinia cunninghamii</i> , <i>Corymbia opaca</i> and <i>C. flavescens</i>) and scattered shrubs (<i>Carissa lanceolata</i> , <i>Acacia lysiphloia</i> , <i>Hakea arborescens</i>). Some sandplain patches with spinifex.
Contractor area (north)	Sandplain. <i>Acacia lysiphloia</i> and <i>Petalostigma nummularia</i> shrubland (patchy) over spinifex, with scattered trees (<i>Corymbia opaca</i> , <i>C. flavescens</i> and <i>Bauhinia cunninghamii</i>).
Contractor area (south)	Sandplain. Open to patchy <i>Acacia lysiphloia</i> shrubland over spinifex, with scattered trees (<i>Corymbia opaca</i>).

Name	Description
Contractor area (east)	Sandplain. Open to patchy <i>Acacia lysiphloia</i> shrubland over a combination of both spinifex and tussock grasses, with scattered trees (<i>Corymbia opaca</i>).
Temporary Construction Accommodation	Undulating lateritic plateau with areas of sandstone outcrop. Open to sparse low Eucalyptus woodland over spinifex. Sparse shrubs.
Vehicle Staging Area	Lateritic plain. Low open woodland (<i>Eucalyptus leucophloia</i>) over spinifex. Patches of Acacia shrubs (<i>A. lysiphloia</i> , <i>A. monticola</i> , <i>A. holosericea</i>). <i>Melaleuca viridiflora</i> shrubs in old gravel pits / scrapes. Small patches of gravel plateau with low shrubland (<i>A. hilliana</i>) over spinifex.
Borrow Pit 1	Gravel (laterite) plateau. Very low shrubland (<i>Acacia hilliana</i>) over spinifex, with sparse to isolated Snappy Gum trees (<i>Eucalyptus leucophloia</i>). Dense patches of <i>Acacia monticola</i> in sandy low points/ /shallow gullies.
Borrow Pit 2	Lateritic plain. Open low woodland (<i>Eucalyptus victrix</i> , <i>Ventilago viminalis</i> , <i>Hakea spp.</i>), patchy shrubland (<i>Acacia lysiphloia</i>) over tussock grass.





Temporary Construction Accommodation



Contractor area (north)



Contractor area (south)



Contractor area (east)



Borrow Pit 1

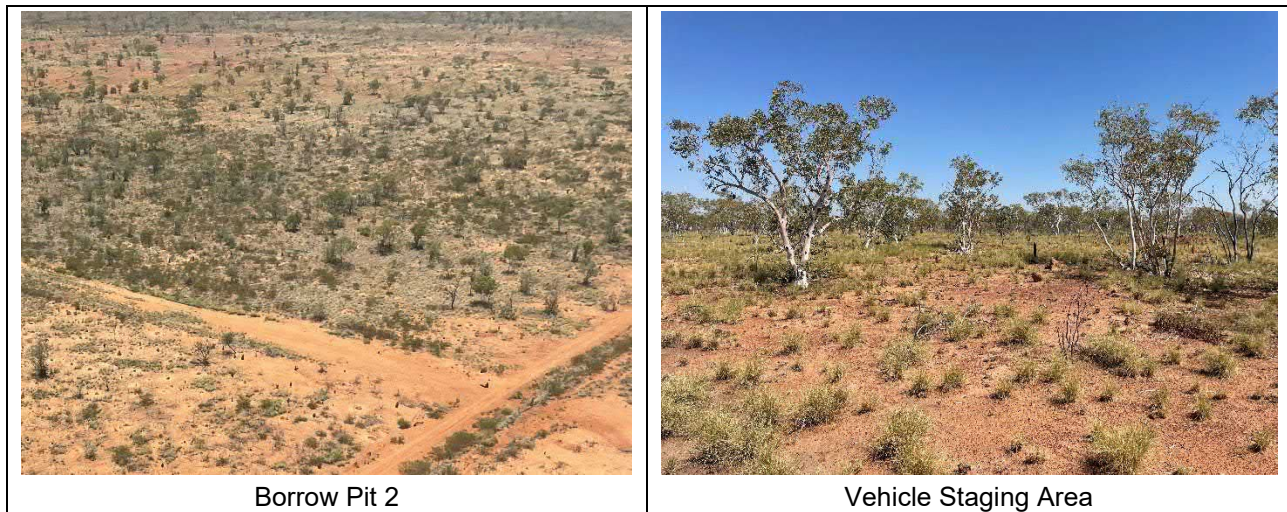


Figure 6-5. Photos of vegetation at Ancillary Infrastructure components

6.3 Threatened species

The procedure for assessment of threatened species described in Section 2.3 was used to determine which threatened species have the potential to occur in the Project area with the following search parameters. Species records from the latest version of the NT Atlas were clipped to the Sturt Plateau, Tanami and Davenport Murchison Ranges bioregions. The PMST report generated using a 100 km buffer from the Project area and is presented in Appendix E.

Table 6-5 presents all threatened species considered to have a moderate or high likelihood of being present in the Powell Creek Project area, and then assesses whether they have restricted ranges or localised core habitat requirements. Those that do will be subject to a significant impact assessment in the SEIS, and so are further discussed in this report.

Restricted species with a high or moderate likelihood of occurrence were then the subject of targeted field surveys within the Project area.

6.3.1 Likelihood of occurrence

A total of 32 threatened species were considered in the 'likelihood of occurrence' assessment. The results from the assessment are presented in Table 6-5, and summarised as follows:

- Four species are assessed as having a high or moderate likelihood of occurring, meaning that the species may occur within the Project area because there is suitable habitat and recent records.
 - Greater Bilby (*Macrotis lagotis*)
 - Grey Falcon (*Falco hypoleucos*)
 - Yellow-spotted Monitor (*Varanus panoptes*)
 - Gouldian Finch (*Chloebia gouldiae*).

Table 6-5. Summary of threatened species likelihood of occurrence assessment for Ancillary Infrastructure

Likelihood	Species	Class	Status		Justification
			EPBC	TPWC	
HIGH	Greater Bilby (<i>Macrotis lagotis</i>)	Mammal	VU	VU	Recent proximate records Suitable habitat present in the Redsand land system
	Grey Falcon (<i>Falco hypoleucos</i>)	Bird	VU	VU	Recent proximate records Suitable nesting habitat present to the east of the Ancillary Infrastructure (i.e. large trees on drainage)
	Yellow-spotted (Floodplain) Monitor (<i>Varanus panoptes</i>)	Reptile	-	VU	Known to occur in the region Suitable habitat present within the Gosse land system (i.e. floodplains and black soil)
MODERATE	Gouldian Finch (<i>Chloebia gouldiae</i>)	Bird	EN	VU	Vagrant to the region; however, a recent (2021) sighting in the region. Suitable habitat present within the eastern Ancillary Infrastructure components.

6.3.2 Field assessment

Aerial surveys of the Powell Creek Project area – including buffer areas – were conducted on 24 and 25 October 2022 by EcOz ecologists/zoologists Tom Ewers-Reilly and Mark Carter. The survey aimed to observe vegetation communities and detected the presence of threatened species by targeting areas of suitable habitat and land areas likely to support threatened species identified in the desktop assessment. Detailed results can be found in the *Supplement to the EIS – Threatened Species Surveys report* which is an appendix to the SEIS. Where suitable vegetation / habitat was identified by air, a ground-based assessment was undertaken to determine the habitat suitability for each targeted species.

Potential impacts to the four threatened species discussed below are assessed in the SEIS.

Greater Bilby

The survey confirmed presence – i.e. active burrows – of Greater Bilby just outside the western edge of the OHTL Corridor (but within the existing railway corridor) and adjacent to the Solar Precinct, and also recorded potential Greater Bilby sign elsewhere along the railway corridor (but outside the OHTL Corridor). The majority of the habitat within the northern electrode site and corridor, and the Ancillary Infrastructure is suitable for Greater Bilby; but that habitat is also widespread in the area (and the surrounding desert sandplains and dune fields in the Tanami Desert to the west) and is not unique to the Project footprint. No known favourable habitats for Greater Bilby – such as laterite rises, palaeo-channels or freshly-burnt areas – were observed.

Grey Falcon

Riparian vegetation along creek lines were inspected for tall trees and raptor nests in tree canopies. The survey did not identify any suspected nests of Grey Falcon within the footprint or surrounds. The main tree species of interest for nest establishment in this region is the River Red Gum (*Eucalyptus camaldulensis*). All drainages / creek lines that support River Red Gum were recorded as potential nesting habitat for Grey Falcon.

Yellow-spotted Monitor

Twelve burrows characteristic of Yellow-spotted Monitors were recorded. The majority were observed close to alluvial areas and ephemeral lakes. Only two were situated away from alluvial-based habitat. None of these sites are within the Project footprint; however, the northernmost site is only 8 m to the east of the OHTL Corridor. The survey did not detect any suspected Yellow-spotted Monitor burrows within the broad sandplains, but because the Yellow-spotted Monitor is mobile, it could occur anywhere within the Project footprint outside of the rocky areas associated with the Ashburton Range.

Gouldian Finch

The field survey confirmed that Snappy Gum (*Eucalyptus leucophloia*) is present within the rocky hills and plateau of the Ashburton Range components of the Project area. Snappy Gum trees were typically present as a low open woodland or scattered to sparse trees, with a spinifex grass (*Triodia* spp.) understorey. Mature Snappy Gum were present in the area (but relatively uncommon), and supported hollows of varying shapes and sizes; but no suitable Gouldian Finch nesting hollows were observed. However, it is noted that extensive ground checks of the entire footprint were not undertaken as part of the survey.

Potential foraging grasses were present in the general area (mostly in the alluvial plain and drainages areas), with the following species encountered – *Triodia* spp. (widespread), *Chrysopogon fallax* (common), *Panicum decompositum* (uncommon), and *Themeda triandra* (uncommon). The presence of these species confirms that suitable foraging areas for Gouldian Finches are present in the area.

The survey indicates that that Snappy Gum trees within, and in the vicinity of, the Project footprint are unlikely to be used for Gouldian Finch for nesting purposes. Some areas may be used as foraging grounds; however, it is assumed that better quality nest sites are located elsewhere within the range system (i.e. closer proximity to waterholes).

Central Pebble Mound Mouse (*Pseudomys johnsonii*)

The Central Pebble Mound Mouse (*Pseudomys johnsonii*) is listed as Near Threatened under the TPWC Act, and is not listed under the EPBC Act. This species was detected during the 2022 survey. These new records are significant given how far they are from most recent records.

The species is found from the Kimberley region, across sub-tropical Northern Territory through to western Queensland. Most records in the region of the Project footprint occur within the Davenport and Murchison Ranges to the south-east of Tennant Creek (see map inset in Figure 6-6), with only an isolated historic record from 1986 within the Ashburton Range (which occurs within the general Project area). The paucity of existing records may be a result of survey effort rather than species' absence.

The species is limited to pebbly / gravelly habitat that occur on laterite plateau, stony ridges, rises slopes and gravelly plains (Ford and Johnson 2007). The Davenport and Murchison Range population (linked to Ashburton Range) is typically dominated by spinifex grassland (*Triodia* spp.) with open low shrubland (*Acacia* spp. and *Grevillea* spp.) and scattered to sparse low Snappy Gum (*Eucalyptus leucophloia*) woodland (Van Dyck and Strahan 2008). They construct permanent rock piles (or cones) around their nesting burrows (Van Dyck 1991), which can cover an area of 10 m² and well-established mounds are estimated to be over 100 years old (Ford and Johnson 2007).

Pebble mounds from this species were incidentally observed during aerial surveys of access tracks and Ancillary Infrastructure proposed to occur on the Ashburton Range within Powell Creek Station – see Figure 6-9. When a suspected mound was observed, a hover check and/or landing was conducted to confirm identification. Where possible, the activity status was assessed by checking the condition of burrow entrances. Mounds were considered active if burrow entrances are present and are fully open with no obstructions; or entrances are well formed and deep but blocked by pebbles of the same size as on the surface of the mound (as per findings from Anstee 1996).

Pebble mounds were observed at 7 sites (sites 17, 78, 103, 104, 105, 106 and 113), and were easily detectable from helicopter survey because they had a different colouration (reddish purple) compared to surrounding gravel plains (see Figure 6-8 and Figure 6-9). Ground checks were conducted at sites 78, 105, 106 and 113 – which found that both active and inactive burrows are present at most sites. All pebble-mound sites had similar habitat characteristics – flat to gently sloping plateau (surface substrate laterite gravel) with a low open shrubland (mainly *Acacia hilliana*) over spinifex (*Triodia* spp.) with scattered *Eucalyptus leucophloia* and *Grevillea wickhamii*.

Mounds were detected within the Borrow Pit 1, Gravel Access Road (at two locations), Main Access Road (at two locations). The species may also be present in the proposed Temporary Construction Accommodation Village situated on the lateritic plateau, and other areas of suitable habitat on the proposed access roads/tracks within the Ashburton Range. It is likely that the species is common with the surrounding range system.

Borrow Pit 1 was surveyed in greater detail to determine approximate mound densities at that site. Results indicated a density of 2 to 6 mounds per hectare. A total of 27 pebble mounds were recorded – including 11 active mounds, 2 potentially-active mounds and 14 inactive (old) mounds. Based on these observations, the gravel plain/plateau to the north of Borrow Pit 1 is expected to also have a similar density of mounds present.

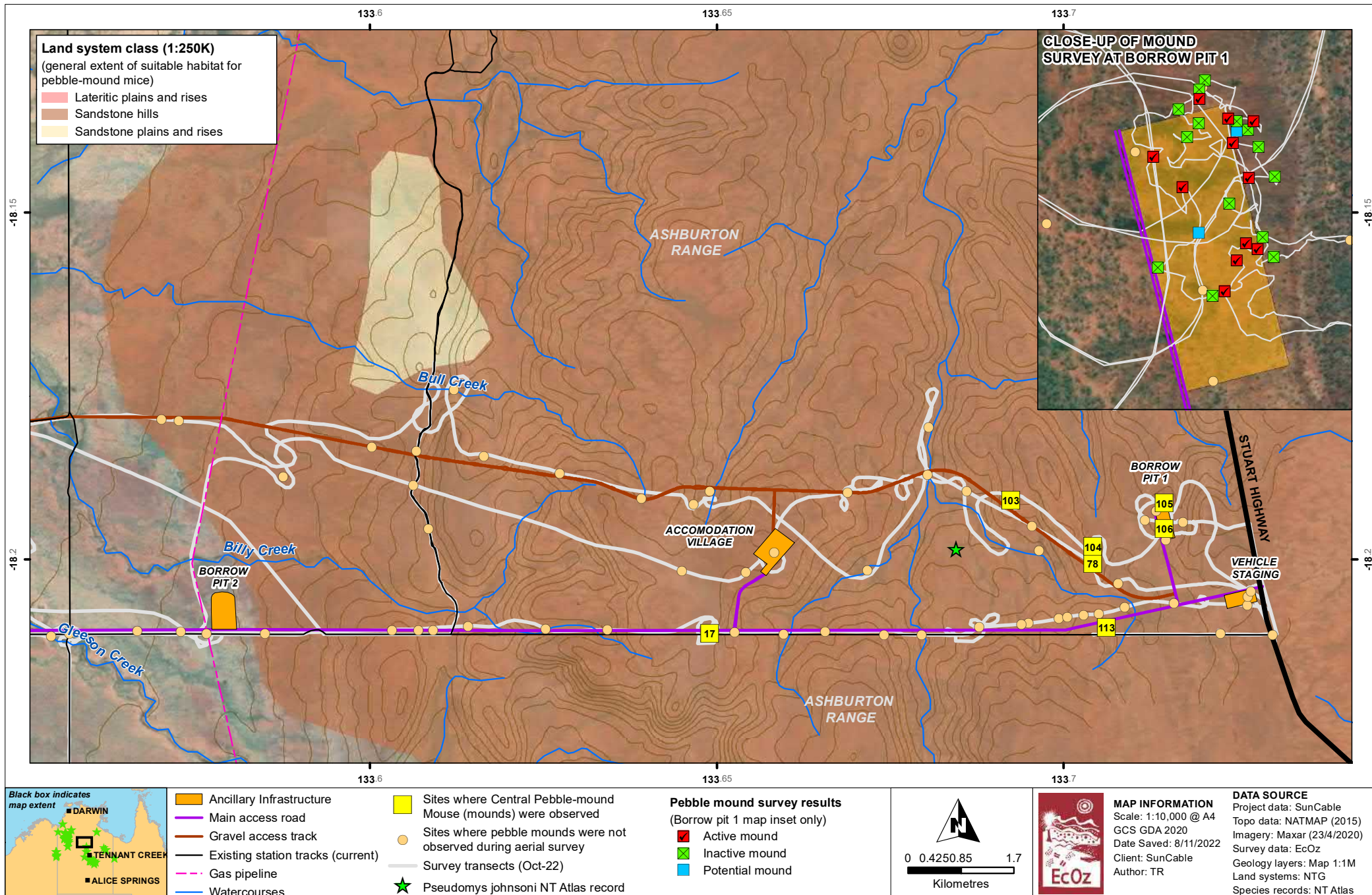


Figure 6-6. Map of Central Pebble-mound Mouse observations



Figure 6-7. Aerial photographs showing pebble mounds



Figure 6-8. Photograph of active burrow entrance

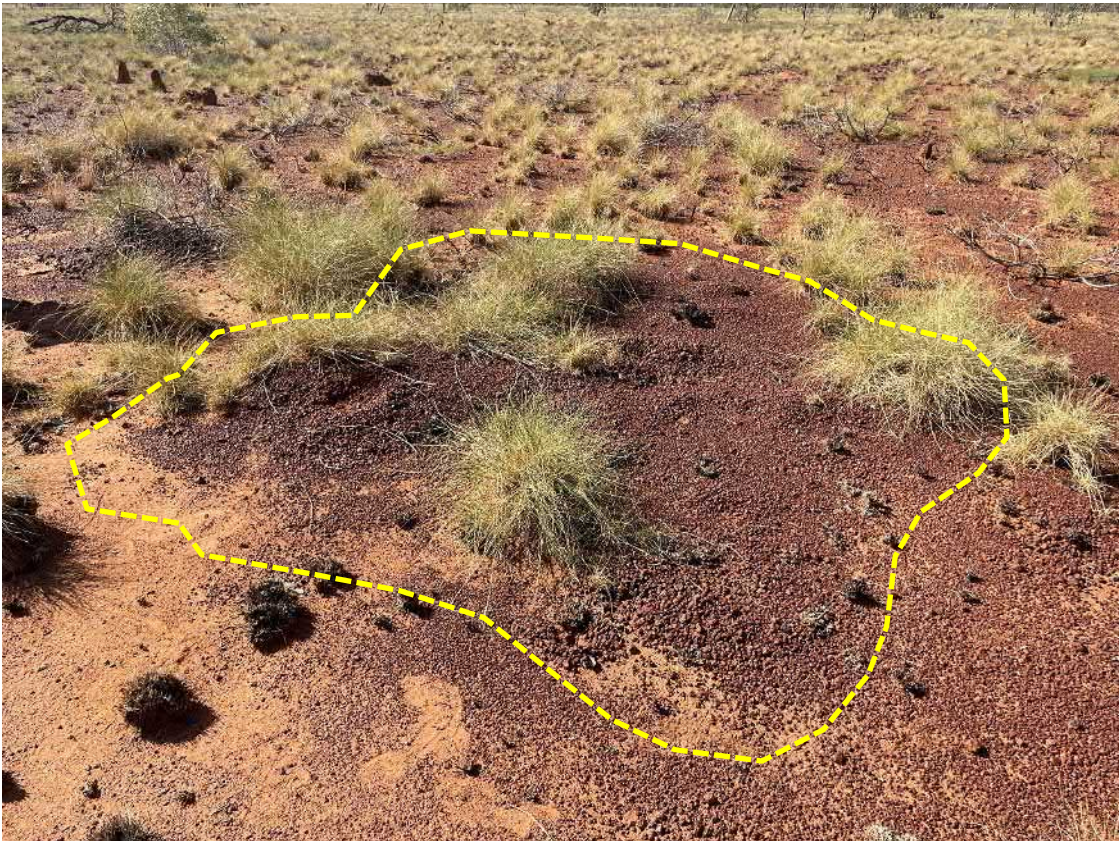


Figure 6-9. Photograph of pebble mound

7 REFERENCES

- Anstee S (1996). Use of External Mound Structures as Indicators of the presence of the the Pebble-mound Mouse, *Pseudomys chapmani*, in Mound Systems. *Wildlife research*, Vol 23, pg. 429-34
- Astrebla Ecological Services (Astrebla) (2017). *Project Sea Dragon Gunn Point Hatchery – Flora Survey Report*. CO2 Australia Ltd. [unpublished].
- Baker, B., Price, O., Woinarski, J., Gold, S., Connors, G., Fisher, A. & Hempel, C. (2005). *Northern Territory Bioregions – Assessment of Key Biodiversity Values and Threat*. Palmerston: Department of Natural Resources, Environment and the Arts, Northern Territory Government.
- BirdLife International (2021) Important Bird Areas factsheet: Lake Woods. [online] Available from: <http://www.birdlife.org> [Accessed 01 Mar 2021]
- Brock J. (1993). *Native Plants of Northern Australia*, CSIRO Publishing.
- Brocklehurst, Peter, and Lynch, D. (2001). *Melaleuca survey of the Top End, Northern Territory : DRAFT Document* . Northern Territory. Department of Natural Resources, Environment, The Arts and Sports. [online] Available at: Available at: <https://hdl.handle.net/10070/594385> [Accessed 19 Sep 2022]
- Brocklehurst P., Edmeades B. and Munns P. (2017). *Mangroves of the Darwin Region: Native Point to Adelaide River, Northern Territory, 1996-2016. Technical Report: 3/2017D*. Department of Environment and Natural Resources, Darwin, NT.
- Brocklehurst, P. and Trueman, M. (2017). *Land Types of the Southern Part of the Northern Territory V3*. Rangelands Division, Department of Environment and Natural Resources.
- Bureau of Meteorology (2014). *Australian Hydrological Geospatial Fabric (Geofabric) V2.1.1. – AHGF Mapped Stream*. Commonwealth of Australia.
- Churchill, S. (2008) *Australian Bats*. 2nd edition. Allen & Unwin, Crows Nest NSW.
- Christian, C. S. and Stewart, G. A. (1968). *Aerial surveys and integrated studies – Methodology of integrated surveys*. In: Toulouse Conference. Toulouse: UNESCO. [online] Available at: <http://unesdoc.unesco.org/images/0006/000674/067440mo.pdf> [Accessed 29 Aug 2022].
- Consolidated Pastoral Company (CPC) (n.d.). Newcastle Waters. [online] Available at: <https://www.pastoral.com/en/content/newcastle-waters> [Accessed 26 Feb 2021].
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2020). *Australia – National Vegetation Information System 2020 – V6.0*. Commonwealth of Australia.
- Department of Environment (2013). *Matters of National Environmental Significance – Significant impact guidelines 1.1 EPBC Act 1999* Canberra: Commonwealth of Australia.
- Department of Environment and Natural Resources (DENR) (2018c). *Sensitive Vegetation in the Northern Territory: Mangrove Forest*. [online] Available at: https://nt.gov.au/_data/assets/pdf_file/0012/204204/sensitive-vegetation-mangrove-forest-english.pdf [Accessed 29 Aug 2022].
- Department of Environment and Natural Resources (DENR) (2018b). *Sensitive Vegetation in the Northern Territory: Monsoon Rainforest*. [online] Available at: https://nt.gov.au/_data/assets/pdf_file/0013/204205/sensitive-vegetation-monsoon-rainforest-english.pdf [Accessed 29 Aug 2022].
- Department of Environment and Natural Resources (DENR) (2018d). *Sensitive Vegetation in the Northern Territory: Old-Growth Forest*. [online] Available at:

https://nt.gov.au/_data/assets/pdf_file/0012/204213/sensitive-vegetation-old-growth-forest-english.pdf [Accessed 29 Aug 2022]

Department of Environment and Natural Resources (DENR) (2018a). *Sensitive Vegetation in the Northern Territory: Riparian Vegetation*. [online] Available at:

https://nt.gov.au/_data/assets/pdf_file/0014/204206/sensitive-vegetation-riparian-english.pdf [Accessed 29 Aug 2022].

Department of Environment and Natural Resources (DENR) (2018e). *Sensitive Vegetation in the Northern Territory: Sandsheet Heath*. https://nt.gov.au/_data/assets/pdf_file/0015/204207/sensitive-vegetation-sandsheet-heath-english.pdf [Accessed August 2022].

Department of Environment, Parks and Water Security (2016). *Mapped Distribution for Threatened Species of the Greater Darwin Region*. Northern Territory Government.

Department of Environment, Parks and Water Security (2019) *GDE Atlas*. Northern Territory Government. [online] Available at: <http://www.bom.gov.au/water/groundwater/gde/map.shtml> [Accessed 22 Sep 2022]

Department of Environmental, Parks and Water Security (2019a) *Fauna Atlas NT*. Northern Territory Government. [online] Available at: <https://nrmaps.nt.gov.au/nrmaps.html>

Department of Environment, Parks and Water Security (DEPWS) (2021). *Land Clearing Guidelines V1.3*. Darwin, Northern Territory.

Department of Environment, Parks and Water Security (2021b). *Threatened Species of the Northern Territory – Ghost Bat *Macroderma gigas**. [online] Available at: https://nt.gov.au/_data/assets/pdf_file/0010/376138/ghost-bat.pdf [Accessed 29 Aug 2022]

Duguid, A., Barnetson, J., Clifford, B., Pavey, C., Albrecht, D., Risler, J. and McNellie, M. (2005). *Wetlands in the arid Northern Territory*, a report to the Australian Government Department of the Environment and Heritage on the inventory and significance of wetlands in the arid NT, Northern Territory Government Department of Natural Resources, Environment and the Arts, Alice Springs.

EcOz Environmental Consultants (2022). *Terrestrial ecological assessment – Solar Precinct*. [unpublished].

EcOz Environmental Consultants (2022). *Terrestrial Ecology – OHTL and Murrumujuk Facilities Australia-Asis PowerLink Project*. [unpublished]

Easey, D., Brocklehurst, P. and Emberg J. (2017). *Soil and Land Suitability Assessment for Irrigated Agriculture in the Gunn Point Area. Agricultural Land Suitability Series, Technical Report 7/2017D*, Darwin, NT: Department of Environment and Natural Resources.

Easey, D, Lynch, B and Edmeades, B. (2020). *Mapping the Future Project - Gunn Point. Soil and Land Resources of the Gunn Point area, Northern Territory. Technical Report 7/2020*. Darwin, NT: Department of Environment and Natural Resources.

Fogarty, P., Lynch, B. and Wood, B. (1984). *The Land Resources of the Elizabeth, Darwin and Blackmore Rivers*. Winnellie, NT: Land Conservation Unit, Conservation Commission of the Northern Territory

Ford F, and Johnson C (2007). Eroding adobes and vanished bridges: historical biogeography of the substrate specialist pebble-mound mice (*Pseudomys*). *Journal of Biogeography* vol. 34, pg. 514-523; Blackwell Publishing Ltd.

Harrison, L., McGuire, L., Ward, S. Fisher, A., Pavey, C., Fegan, M. and Lynch, B. (2009). *An inventory of sites of international and national significance for biodiversity values in the Northern Territory*. Department of Natural Resources, Environment, the Arts and Sport, Darwin, NT.

- Jaensch, R.P. and Bellchambers, K. (1997). *Waterbird conservation values of ephemeral wetlands of the Barkly Tableland, Northern Territory*. Unpublished report to Australian Heritage Commission and Parks and Wildlife Commission of the Northern Territory.
- Jessop P.J. and King, D. (1997). *The Land Resources of New Crown Station*, NTG Technical Report No. TM96/18.
- McKay, L. (2017). *A Guide to the Wildlife and Protected Areas of the Top End*, The Environment Centre NT, Darwin.
- NSW National Parks and Wildlife Service (NSW) (2003). *The Bioregions of New South Wales: their biodiversity, conservation and history*. NSW National Parks and Wildlife Service, Hurstville.
- Richardson S, Irvine E., Froend R., Boon P., Barber S., Bonneville B. (2011) *Australian groundwater-dependent ecosystem toolbox part 1: assessment framework. Waterlines report*. National Water Commission. Canberra
- Russell-Smith. J. (1991). Classification, species richness, and environmental relations of monsoon rainforest vegetation in the Northern Territory, Australia. *Journal of Vegetation Science*, 2, pp. 259–78.
- Russell-Smith, J. and Whitehead, P.J. (2015). Reimagining fire management if fire-prone northern Australia. In Murphy, B.P., Edwards, A.C., Meyer, M. and Russell-Smith, J. (eds), *Carbon Accounting and Savanna Fire Management*, CSIRO, Clayton South, Victoria.
- Stewart GA, Perry RA, Paterson SJ, Traves DM, Slatyer RO, Dunn PR, Jones PJ and Sleeman JR. (1970). *Lands of the Ord-Victoria Area, Western Australia and Northern Territory. Land Research Series No. 28*. Prepared by CSIRO.
- Stokeld, D., Leiper, I., Cuff, N., Cowie, I., Lewis, D. and Einoder, L. (2020). *Mapping the Future project - Gunn Point Biodiversity Assessment of the Gunn Point Area. Technical Report 4/2020*. Darwin, NT: Department of Environment and Natural Resources, Northern Territory Government.
- Story, R., Williams, M.A.J., Hooper, A.D.L., O’Ferrall, R.E. and McAlpine, J.R. (1969). *Lands of the Adelaide-Alligator Area, Northern Territory*. Land Research Series No. 25, CSIRO.
- Ward, S., Woinarski, J., Griffiths, T., McKay, L. (2012). *Threatened Species of the Northern Territory – Yellow-Spotted Monitor, Northern Sand Goanna, Floodplain Monitor Varanus panoptes*. https://nt.gov.au/_data/assets/pdf_file/0006/206466/floodplain-monitor.pdf [Accessed 20 Sep 2022].
- White, M., Albrecht, D., Duguid, A., Latz, P., and Hamilton, M. (2000). *Plant species and sites of botanical significance in the southern bioregions of the Northern Territory; Volume 2: significant sites*. A report to the Australian Heritage Commission from the Arid Lands Environment Centre. Alice Springs, Northern Territory of Australia.
- Wightman, G. (2006). *Mangroves of the Northern Territory, Australia Identification and Traditional Use*. Northern Territory Botanical Bulletin No. 31. Department of Natural Resources, Environment and The Arts and Greening Australia NT, Darwin.
- Wood, B.G., Fogarty, P.J. and Day, K.J. (1985). *The Land Systems of the Darwin Region. Technical report Number 24*. Northern Territory Government.
- Woolley, L. A., Murphy, B.P., Radford, I. J., Westaway, J., & Woinarski, J.C.Z (2018). Cyclones, fire, and termites: The drivers of tree hollow abundance in northern Australia’s mesic tropical savanna. *Forest Ecology and Management*, 419-420, DOI: <https://doi.org/10.1016/j.foreco.2018.03.034>

APPENDIX A GUNN POINT LAND UNIT VERIFICATION POINTS

Site number	Longitude	Latitude	Mapped land unit	Verified land unit
01	131.0695290	-12.27055900	GUNNP 8a	GUNNP 8a
02	131.0717370	-12.26837600	GUNNP 8b	GUNNP 8a1
03	131.0746200	-12.26427100	GUNNP 8a1	GUNNP 8a1
04	131.0763280	-12.26220900	GUNNP 8b	GUNNP 8a1
05	131.0820910	-12.25657100	GUNNP 8b	GUNNP 8b
06	131.0839690	-12.25497600	GUNNP 8a1	GUNNP 8b
07	131.0863321	-12.25236831	GUNNP 10b	GUNNP 10b
08	131.0854059	-12.25211264	GUNNP 8a1	GUNNP 8b
09 and 10	131.0865000	-12.24941751	GUNNP 10b	GUNNP 8b
11	131.0859809	-12.24436805	GUNNP 8a1	GUNNP 8a1
12	131.0908873	-12.24041794	GTRDW 2b1	GTRDW 2b1
13	131.0927859	-12.24002664	GTRDW 4c	GTRDW 2b1
14	131.0959605	-12.24118290	GTRDW 6b	GTRDW 6b
15	131.0972672	-12.24050275	GTRDW 4c	GTRDW 4c
16	131.1018029	-12.24031261	GTRDW 2b1	GTRDW 2b1
17	131.1058038	-12.24118954	GUNNP 8b	GTRDW 2b1
18	131.1112255	-12.24227964	GUNNP 8a	GUNNP 8a
19	131.1172866	-12.24198989	GUNNP 8a1	GUNNP 8a1
20	131.1213877	-12.23862615	GUNNP 8a2	GUNNP 8a2
21	131.1255413	-12.23556588	GUNNP 8a1	GUNNP 8a1
22	131.1310360	-12.23209365	GUNNP 8a2	GUNNP 8a2
23	131.1353900	-12.22887715	GUNNP 8b	GUNNP 8b
24	131.1405210	-12.22543938	GUNNP 8a2	GUNNP 8a2
25	131.1391945	-12.22585525	GUNNP 10b	GUNNP 10b
26	131.1409636	-12.22474227	GUNNP 8b	GUNNP 8a2
27	131.1424030	-12.2244370	GTRDW 3c	GTRDW 3c
28	131.1453149	-12.22268095	GTRDW 3b	GTRDW 3b
29	131.1479958	-12.22102773	GTRDW 3c	GTRDW 3c
30	131.1528768	-12.21762259	GTRDW 2b1	GTRDW 3b
31	131.1560496	-12.21503591	GTRDW 3b	GTRDW 3b
32	131.1590618	-12.21292451	GTRDW 3c	Transitional
33	131.1618749	-12.21083059	GTRDW 2b1	Monsoonal
34	131.1605641	-12.20920469	GTRDW 2b1	Monsoonal

APPENDIX B GUNN POINT PMST REPORT



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: 18-Nov-2022

[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:	None
Listed Threatened Species:	44
Listed Migratory Species:	71

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:	12
Commonwealth Heritage Places:	None
Listed Marine Species:	110
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

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

State and Territory Reserves:	6
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	12
Key Ecological Features (Marine):	None
Biologically Important Areas:	1
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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

BIRD

[Calidris canutus](#)

Red Knot, Knot [855]

Endangered

Species or species habitat known to occur within area

[Calidris ferruginea](#)

Curlew Sandpiper [856]

Critically Endangered

Species or species habitat known to occur within area

[Calidris tenuirostris](#)

Great Knot [862]

Critically Endangered

Roosting known to occur within area

[Charadrius leschenaultii](#)

Greater Sand Plover, Large Sand Plover [877]

Vulnerable

Species or species habitat known to occur within area

[Charadrius mongolus](#)

Lesser Sand Plover, Mongolian Plover [879]

Endangered

Roosting known to occur within area

[Epthianura crocea tunneyi](#)

Alligator Rivers Yellow Chat, Yellow Chat (Alligator Rivers) [67089]

Endangered

Species or species habitat likely to occur within area

[Erythrotriorchis radiatus](#)

Red Goshawk [942]

Vulnerable

Species or species habitat known to occur within area

[Erythrura gouldiae](#)

Gouldian Finch [413]

Endangered

Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Geophaps smithii smithii Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
FROG		
Uperoleia daviesae Howard River Toadlet, Davies's Toadlet [85375]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
Antechinus bellus Fawn Antechinus [344]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat known to occur within area
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat may occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat likely to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheath-tail Bat [66889]	Vulnerable	Species or species habitat known to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat known to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Stylidium ensatum a triggerplant [86366]	Endangered	Species or species habitat known to occur within area
Typhonium taylori a herb [65904]	Endangered	Species or species habitat likely to occur within area
Xylopia monosperma a shrub [82030]	Endangered	Species or species habitat may occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Breeding known to occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species [[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Migratory Terrestrial Species

Scientific Name	Threatened Category	Presence Text
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat known to occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius dubius Little Ringed Plover [896]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting known to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Limnodromus semipalmatus Asian Dowitcher [843]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa incana Wandering Tattler [831]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa stagnatilis		
Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]		Roosting known to occur within area

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
Defence	
Defence - DARWIN - AP10 RADAR SITE - LEE POINT [70021]	NT
Defence - DARWIN - AP3 RECEIVING STATION - LEE POINT [70044]	NT
Defence - LEANYER BOMBING RANGE [70023]	NT
Defence - LEANYER BOMBING RANGE [70024]	NT
Defence - LEANYER BOMBING RANGE [70022]	NT
Defence - ROBERTSON BARRACKS (Waler Barracks) [70030]	NT
Defence - SHOAL BAY RECEIVING STATION [70038]	NT
Defence - SHOAL BAY RECEIVING STATION [70036]	NT
Defence - SHOAL BAY RECEIVING STATION [70037]	NT
Defence - Defence Housing Authority	
Commonwealth Land - Director of Property Services Defence Estate [70855]	NT
Commonwealth Land - Director of Property Services Defence Estate [71000]	NT
Unknown	
Commonwealth Land - [70859]	NT

Listed Marine Species [\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius dubius Little Ringed Plover [896]		Roosting known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting known to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Roosting known to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
Limnodromus semipalmatus Asian Dowitcher [843]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area
Stiltia isabella Australian Pratincole [818]		Roosting known to occur within area overfly marine area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area overfly marine area
Tringa incana as Heteroscelus incanus Wandering Tattler [831]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus Reef-top Pipefish [66201]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus spirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribbioned Pipehorse, Ribbioned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Reptile		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Chitulia inornata as Hydrophis inornatus Plain Seasnake [87379]		Species or species habitat may occur within area
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli Small-headed Seasnake [75601]		Species or species habitat may occur within area
Lapemis curtus as Lapemis hardwickii Spine-bellied Seasnake [83554]		Species or species habitat may occur within area
Leioselasma coggeri as Hydrophis coggeri Black-headed Sea Snake, Slender-necked Seasnake [87373]		Species or species habitat may occur within area
Leioselasma pacifica as Hydrophis pacificus Large-headed Seasnake, Pacific Seasnake [87378]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Parahydrophis mertoni Northern Mangrove Seasnake [1090]		Species or species habitat may occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area
Orcaella heinsohni as Orcaella brevirostris Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

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

Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

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

Protected Area Name	Reserve Type	State
Casuarina	Coastal Reserve	NT
Djukbinj	National Park	NT
Holmes Jungle	Nature Park	NT
Howard Springs	Nature Park	NT
Howard Springs	Hunting Reserve	NT
Melacca Swamp	Conservation Area	NT

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

Wetland Name	State
Adelaide River Floodplain System	NT
Shoal Bay - Micket Creek	NT

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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Clarence Strait Offshore Tidal Energy Project	2008/4660	Controlled Action	Assessment Approach
Darwin to Moomba Gas Pipeline	2001/213	Controlled Action	Completed
Glyde Point and Middle Arm Peninsula Infrastructure Support	2001/334	Controlled Action	Completed
Glyde Point Industrial Estate	2001/336	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Glyde Point Industrial Estate and Associated Infrastructure	2004/1506	Controlled Action	Completed
Howard Springs Sand Extraction Expansion, NT	2016/7699	Controlled Action	Completed
Lee Point Master-planned urban development, Darwin, NT	2015/7591	Controlled Action	Post-Approval
Muirhead Subdivision	2010/5525	Controlled Action	Post-Approval
Operation of 17 Tiger Helicopters at Robertson Barracks	2004/1459	Controlled Action	Post-Approval
Residential subdivision of Lot 9793 (formerly Lots 9774 and 9779) Lee Point Road	2005/2108	Controlled Action	Post-Approval
Tropical Tidal Testing Centre, Clarence Strait, 50km NE Darwin	2014/7299	Controlled Action	Guidelines Issued

Not controlled action

Project Sea Dragon Stage 1 Hatchery - Gunn Point, NT	2017/8092	Not Controlled Action	Completed
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Biologically Important Areas

Scientific Name	Behaviour	Presence
Marine Turtles		
Natator depressus		
Flatback Turtle [59257]	Interesting	Likely to occur

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](#)
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- Natural history museums of Australia
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- [-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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APPENDIX C OHTL PREFERRED ROUTE AT ADELAIDE RIVER PMST REPORT



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: 15-Aug-2022

[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:	None
Listed Threatened Species:	41
Listed Migratory Species:	34

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

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 <http://www.environment.gov.au/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:	4
Commonwealth Heritage Places:	1
Listed Marine Species:	32
Whales and Other Cetaceans:	2
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:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	15
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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

BIRD

[Calidris ferruginea](#)

Curlew Sandpiper [856]

Critically Endangered

Species or species habitat may occur within area

[Charadrius leschenaultii](#)

Greater Sand Plover, Large Sand Plover [877]

Vulnerable

Species or species habitat known to occur within area

[Epthianura crocea tunneyi](#)

Alligator Rivers Yellow Chat, Yellow Chat (Alligator Rivers) [67089]

Endangered

Species or species habitat likely to occur within area

[Erythrotriorchis radiatus](#)

Red Goshawk [942]

Vulnerable

Species or species habitat known to occur within area

[Erythrura gouldiae](#)

Gouldian Finch [413]

Endangered

Species or species habitat known to occur within area

[Falco hypoleucos](#)

Grey Falcon [929]

Vulnerable

Species or species habitat likely to occur within area

[Falcunculus frontatus whitei](#)

Crested Shrike-tit (northern), Northern Shrike-tit [26013]

Vulnerable

Species or species habitat likely to occur within area

[Geophaps smithii smithii](#)

Partridge Pigeon (eastern) [64441]

Vulnerable

Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat known to occur within area
FROG		
Uperoleia daviesae Howard River Toadlet, Davies's Toadlet [85375]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
Antechinus bellus Fawn Antechinus [344]	Vulnerable	Species or species habitat known to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Hipposideros inornatus Arnhem Leaf-nosed Bat [86675]	Endangered	Species or species habitat may occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Breeding known to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat known to occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat known to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheath-tail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat known to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		
Acacia praetermissa a shrub [14840]	Vulnerable	Species or species habitat likely to occur within area
Goodenia quadrifida [56035]	Vulnerable	Species or species habitat known to occur within area
Helicteres macrothrix [86586]	Endangered	Species or species habitat known to occur within area
Stylidium ensatum a triggerplant [86366]	Endangered	Species or species habitat known to occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

SHARK

Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species

[[Resource Information](#)]

Scientific Name	Threatened Category	Presence Text
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Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding likely to occur within area
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area

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
Communications, Information Technology and the Arts - National Transmission Agency Commonwealth Land - National Transmission Agency [71049]	NT

Defence

Defence - DARWIN RIVER GRAVEL QUARRY [70026]	NT
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Unknown

Commonwealth Land - [70255]	NT
Commonwealth Land - [71003]	NT

Commonwealth Heritage Places [\[Resource Information \]](#)

Name	State	Status
Historic Adelaide River War Cemetery	NT	Listed place

Listed Marine Species [\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text
Bird Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Breeding likely to occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area

Reptile

Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Whales and Other Cetaceans

[[Resource Information](#)]

Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area

Extra Information

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

Protected Area Name	Reserve Type	State
Litchfield	National Park	NT
Manton Dam Recreation Area	Other Conservation Area	NT

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

Wetland Name	State
Adelaide River Floodplain System	NT
Mount Bunday Training Area - Mary River Floodplain	NT

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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
275 km gas pipeline from Wadeye to existing Darwin gas pipeline	2006/2930	Controlled Action	Post-Approval
Australia-ASEAN Power Link	2020/8818	Controlled Action	Proposed Decision
Browns Oxide Project, New Tailings Storage Facility(2)	2007/3558	Controlled Action	Completed
Browns Oxide Project Extension	2007/3242	Controlled Action	Completed
Compass Resources NL/Mining/Rum Jungle/NT/Copper, cobalt and nickel mine - Browns Oxide Project	2005/2011	Controlled Action	Post-Approval
Darwin to Moomba Gas Pipeline	2001/213	Controlled Action	Completed
Development of Area 55 Oxide Project	2010/5324	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Polymetallic Project-lead, copper, nickel, cobalt and silver	2001/535	Controlled Action	Completed
Rehabilitation of former Rum Jungle mine site, near Batchelor, NT	2016/7730	Controlled Action	Assessment Approach
Not controlled action			
Cosmo Project - Chinese South Extended & Mottrams gold mines	2007/3493	Not Controlled Action	Completed
Field trials for cultivation of microalga (Botryococcus braunii) to produce hydr	2007/3277	Not Controlled Action	Completed
Hayes Creek Mining Project, 50km north of Adelaide River, NT	2019/8396	Not Controlled Action	Completed
Magnesium Metal Mining	2001/225	Not Controlled Action	Completed
Princess Louise and North Point Gold Mines, Burnside Project Area	2006/3189	Not Controlled Action	Completed
Referral decision			
Yarram Iron Ore Project, near Batchelor, NT	2018/8209	Referral Decision	Referral Publication

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

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- 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](#)
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- [-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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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: 15-Aug-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

APPENDIX E POWELL CREEK PMST REPORT



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: 29-Aug-2022

[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:	None
Listed Threatened Species:	13
Listed Migratory Species:	13

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

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 <http://www.environment.gov.au/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:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
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:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	1

Details

Matters of National Environmental Significance

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

BIRD

[Calidris ferruginea](#)

Curlew Sandpiper [856]

Critically Endangered

Species or species habitat likely to occur within area

[Erythrotriorchis radiatus](#)

Red Goshawk [942]

Vulnerable

Species or species habitat may occur within area

[Erythrura gouldiae](#)

Gouldian Finch [413]

Endangered

Species or species habitat known to occur within area

[Falco hypoleucos](#)

Grey Falcon [929]

Vulnerable

Species or species habitat known to occur within area

[Grantiella picta](#)

Painted Honeyeater [470]

Vulnerable

Species or species habitat known to occur within area

[Pezoporus occidentalis](#)

Night Parrot [59350]

Endangered

Species or species habitat may occur within area

[Polytelis alexandrae](#)

Princess Parrot, Alexandra's Parrot [758]

Vulnerable

Species or species habitat may occur within area

[Rostratula australis](#)

Australian Painted Snipe [77037]

Endangered

Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat known to occur within area
Listed Migratory Species [Resource Information]		
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

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
Unknown	
Commonwealth Land - [70922]	NT

Listed Marine Species [\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area

Extra Information

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

Protected Area Name	Reserve Type	State
Lake Woods	Conservation Covenant	NT
Longreach Waterhole Protected Area	Conservation Covenant	NT

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

Wetland Name	State
Lake Woods	NT

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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Australia-ASEAN Power Link	2020/8818	Controlled Action	Proposed Decision

Not controlled action

Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Manganese ore mining	2003/1251	Not Controlled Action	Completed

Geological and Bioregional Assessments

Name	State	Website
Beetaloo GBA region	NT	GBA website

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](#)
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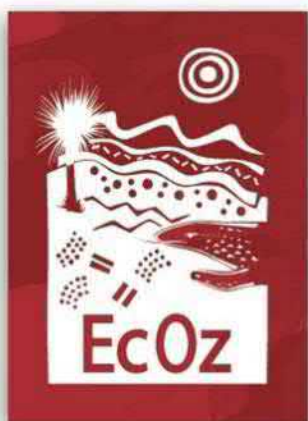
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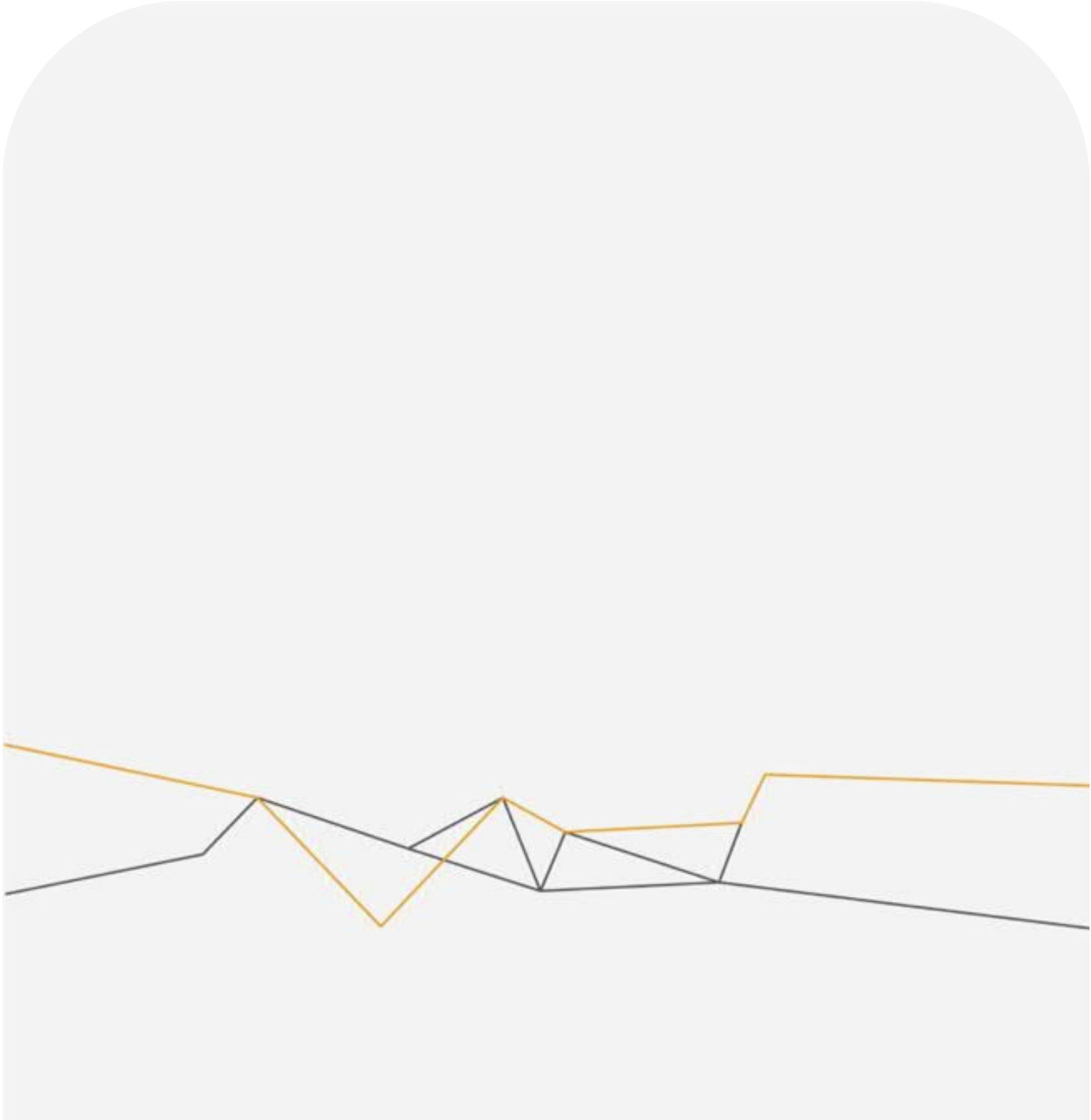
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