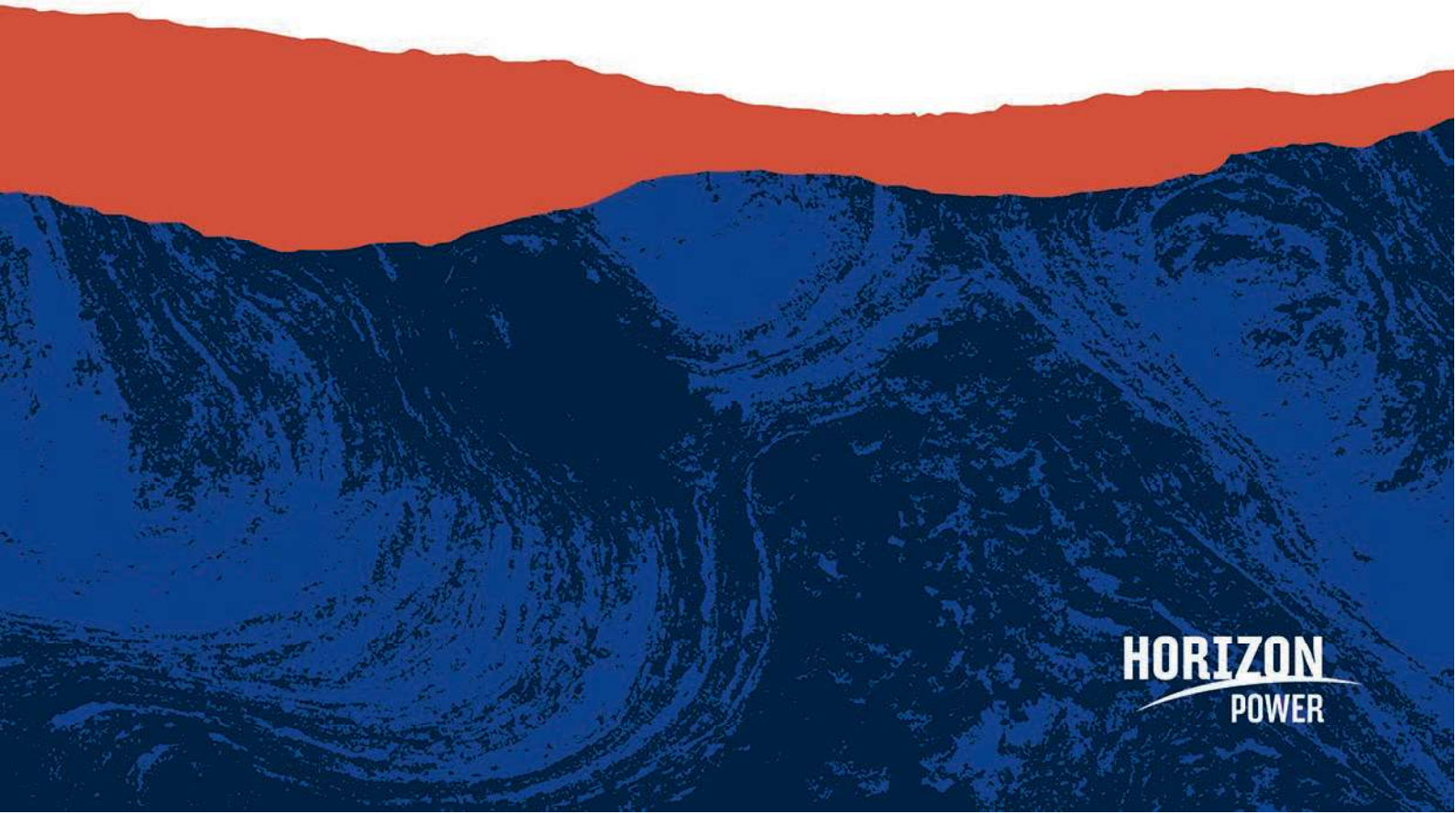
Roy Hill Stockpile 3 Connection - Native Vegetation Clearing Permit CPS 10511/1

Supporting Document

February 2024



Contents

1 Introduction

1.1 Project Context

Regional Power Corporation, trading as Horizon Power, is a Western Australian (WA) Government Trading Enterprise (GTE) and the state's regional and remote energy provider. Horizon Power operates under the *Electricity Corporations Act 2005* and is governed by a Board of Directors accountable to the Minister for Energy.

A customer has requested a 27-megawatt load for the Roy Hill Stockpile Project (the Project), located in Port Headland, Western Australia (WA) (Figure 1). Similar to the existing supplies at the Port, Horizon Power proposes to supply the new load from the Hedland Distribution Terminal yard via the Southwest Creek substation, with a combination of overhead, underground and trenched transmission lines at 33kV and 66Kv. The Project will require the clearing of native vegetation.

The Development Envelope (DE) is approximately 100.75 ha and is located adjacent to existing infrastructure and operations (Figure 1). As outlined in Section 3.1, the Project will require the clearing of no more than 4.55 ha within the 100.75 ha DE and a Native Vegetation Clearing Permit (NVCP) will be required from DWER.

1.2 Scope and Purpose

This document has been prepared to support a NVCP application form for the Project. Specifically, this document provides further detail regarding the proposed activities and related clearing (including application of the mitigation hierarchy), and ecological surveys undertaken within and near to the clearing footprint.

An assessment of the 10 Clearing Principles as outlined in '*A guide to the assessment of applications to clear native vegetation*' (DER, 2014) has also been undertaken and is presented Section 8.

A Construction Environment Management Plan (CEMP) has also been prepared in support of the NVCP Application and is provided in Attachment B.

2 Description of the Activity

2.1 Project Location

The DE is located in the Town of Port Hedland, approximately 1.5 km from the coast and adjacent to the existing Roy Hill Port operations. The DE runs from the customer's Switch Room at Roy Hill Port in the north, following Utah Road southwest via Horizon Power's South West Creek Substation and ending at Hedland Terminal (Figure 1). Surrounding land uses include general industry, urban development and rural lots. The DE is located on Unallocated Crown Land, Reserve land, Leasehold land, Freehold land and overlaps Utah Road (Figure 1). Horizon Power is utilising access powers under the *Energy Operators (Powers) Act* 1979 for construction of the line.

Land details for the relevant land parcels have been provided in the NVCP Application Form and are summarised below (Table 1).

Table 1 Site location and land uses

Site locations	Shire	Neighbouring Land Uses
Reserve 29082 - Lot 372 on DP35620, LR3118/755	Town of Port Hedland	Industry and roads
LOT 1199 on Deposited Plan 70562		
LOT 1301 on Deposited Plan 70562		
LOT 47 on Deposited Plan 404952		
Reserve 29082 - Lot 600 on DP407880, LR3173/502		
Reserve 37373 - Lot 5275 on DP184651, LR3008/299		
Reserve 37373 - Lot 5549 on DP216397, LR3006/155		

Reserve 50528 - Lot 61 on DP404952, LR3174/804		
Unallocated Crown Land - Lot 55 on DP404949, LR3172/736		
Unallocated Crown Land - Lot 58 on DP404949, LR3172/737		
Unallocated Crown Land - Lot 60 on DP404952, LR3174/803		
Unallocated Crown Land - Lot 155 on DP404948, LR3172/732		
Unallocated Crown Land - Lot 311 on DP194620, LR3116/230		
Unallocated Crown Land - Lot 371 on DP37227, LR3131/835		
Unallocated Crown Land - Lot 1497 on DP404497, LR3165/638		
Leasehold - Lot 321 on DP74344, LR3164/492		
Leasehold - Lot 322 on DP74344, LR3164/493		
Leasehold - Lot 323 on DP74344, LR3164/494		
Leasehold - Lot 555 on DP60836, LR3156/351		
Road - Lot 48 on DP404952, LR3174/802		

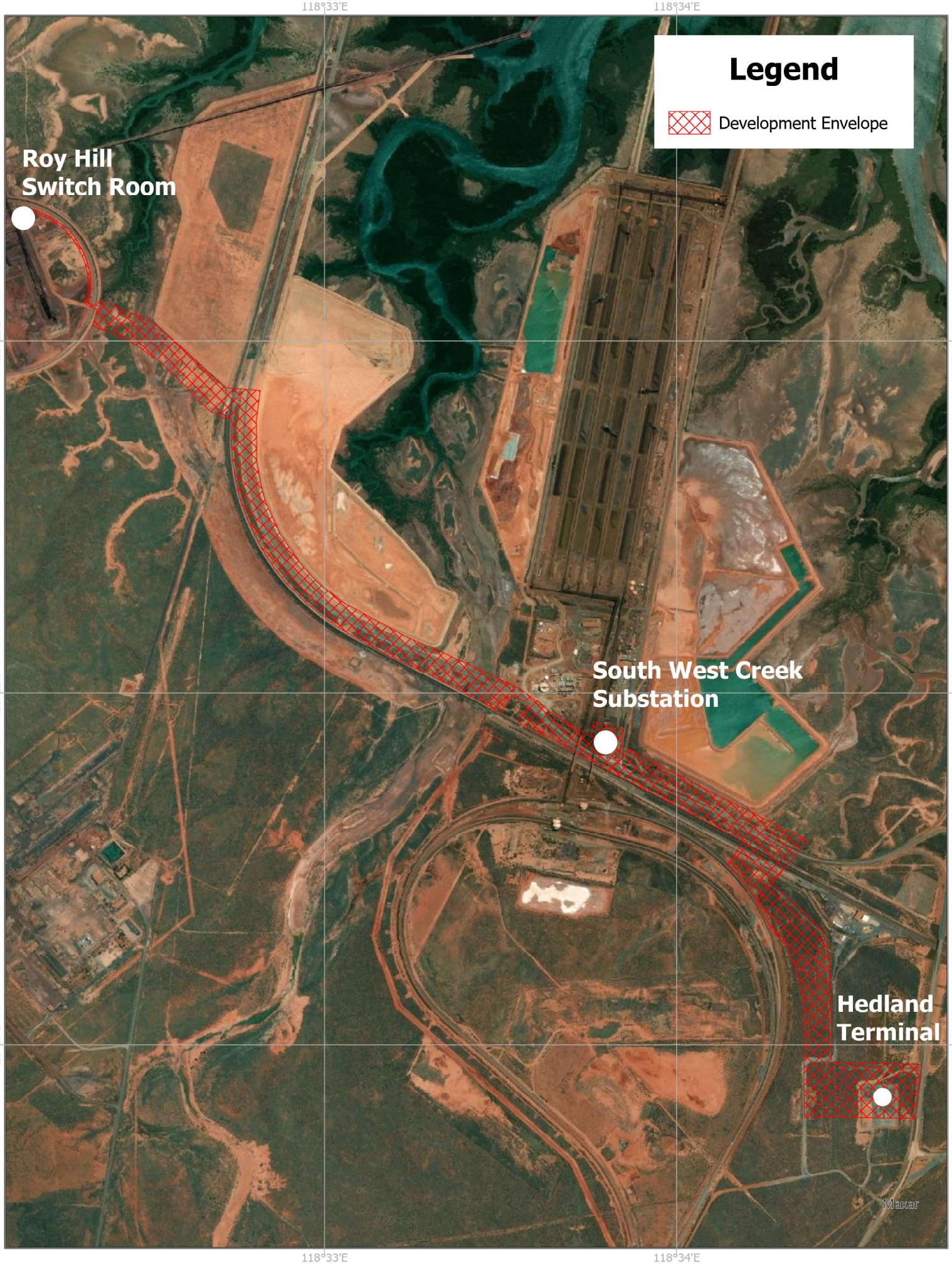


Figure 1 | Development Envelope

N

0 0.25 0.5 1 Kilometers

Scale: 1:25,000

⚠ For reference only

Last updated on 6/02/2024 by H188085

HORIZON POWER

2.2 Activity Overview and Timelines

Horizon Power proposes to supply the new load from the Hedland Distribution Terminal yard via the Southwest Creek substation, with a combination of overhead, underground and trenched 33kV and 66Kv transmission lines. The majority of the project will be underground trenched, with an approximately 1 km section of overhead powerline constructed from the South West Creek substation parallel to Utah Road before crossing underground at Utah Road and continuing south via trenching.

In addition to the transmission lines, infrastructure required for the Project is expected to be as follows:

- South West Creek Substation expansion
- Eight steel poles and pole pads for the overhead transmission line
- Winching sites for the overhead transmission line installation
- A stringing corridor for the overhead transmission line
- Stay wires to provide stability to the poles for the overhead transmission line
- Two Steel H structures or monopole transition structures – these structures would cover a maximum area of 11 m width by 11 m height. These structures serve as overhead to underground transition structures for high voltage cables and one will be required at either end of the overhead transmission line.
- A laydown area
- Jointing bay
- Trenches.

Construction is expected to commence in mid-2025 however is subject to timing of the final investment decision.

2.3 Land Access

As an 'energy operator', Horizon Power has certain rights under Sections 46 and 49 of *the Energy Operators (Powers) Act 1979* which allow it to access and use land for the purpose of constructing, maintaining and operating electricity infrastructure. Horizon Power will utilise these powers for the Project, no Development Approval or other access approvals are required.

The South West Creek Substation is currently leased from the Pilbara Port Authority.

3 Description of Proposed Clearing

3.1 Proposed Clearing Area

Up to 4.55 ha within the DE is required to be cleared for the Project. This area includes both temporary and permanent mechanical clearing, as described in Table 2. The areas shown in Table 2 present the worst-case scenario of the maximum areas to be cleared.

Table 2 Estimated clearing required for the Project.

Clearing type	**Infrastructure requiring clearing**	**Area (ha)**	Comments
Permanent clearing	Pole pads	0.44	
	Trenching	1.65	The trenching in the southern portion of the project will be along an existing Horizon Power access track, however this track is overgrown. The overgrown vegetation is included in the clearing calculations. No more than 1.65 ha is expected to remain permanently cleared for access and maintenance purposes once the project is completed. The remaining 0.55 ha cleared for trenching activities will be allowed to regrow and is listed below as temporary clearing.
	Access track along poles section	0.26	
Total permanent clearing		**2.35 ha**	
Temporary clearing	Stringing	0.44	
	Winch	0.66	
	Joint bay	0.55	
	Trenching – non-permanent clearing	0.55	
Total temporary clearing		**2.2 ha**	
Total area		**4.55 ha**	

3.2 Proposed Clearing Method

Clearing of native vegetation will primarily be undertaken by mechanical methods, for both temporary and permanent clearing.

Some clearing may occur within the DE as incidental clearing through vehicle and machinery movements, particularly during stringing activities, these are taken into account in Table 2.

4 Ecological Survey

To inform the Project, an ecological survey has been undertaken by Phoenix Environmental Sciences (Phoenix). Within the Ecological Survey Area (shown in Figure 2), a targeted vertebrate fauna survey was undertaken on 30 April 2023 and a flora and vegetation survey was undertaken from 21 to 23 June 2023. The survey report has been attached to this document (Attachment A) and is summarised in Table 3. It is noted that the project will connect into the existing Roy Hill facility on the north-west end of the DE, this area is historically cleared and maintained by Roy Hill for their existing land uses, and therefore survey was not undertaken in this location.

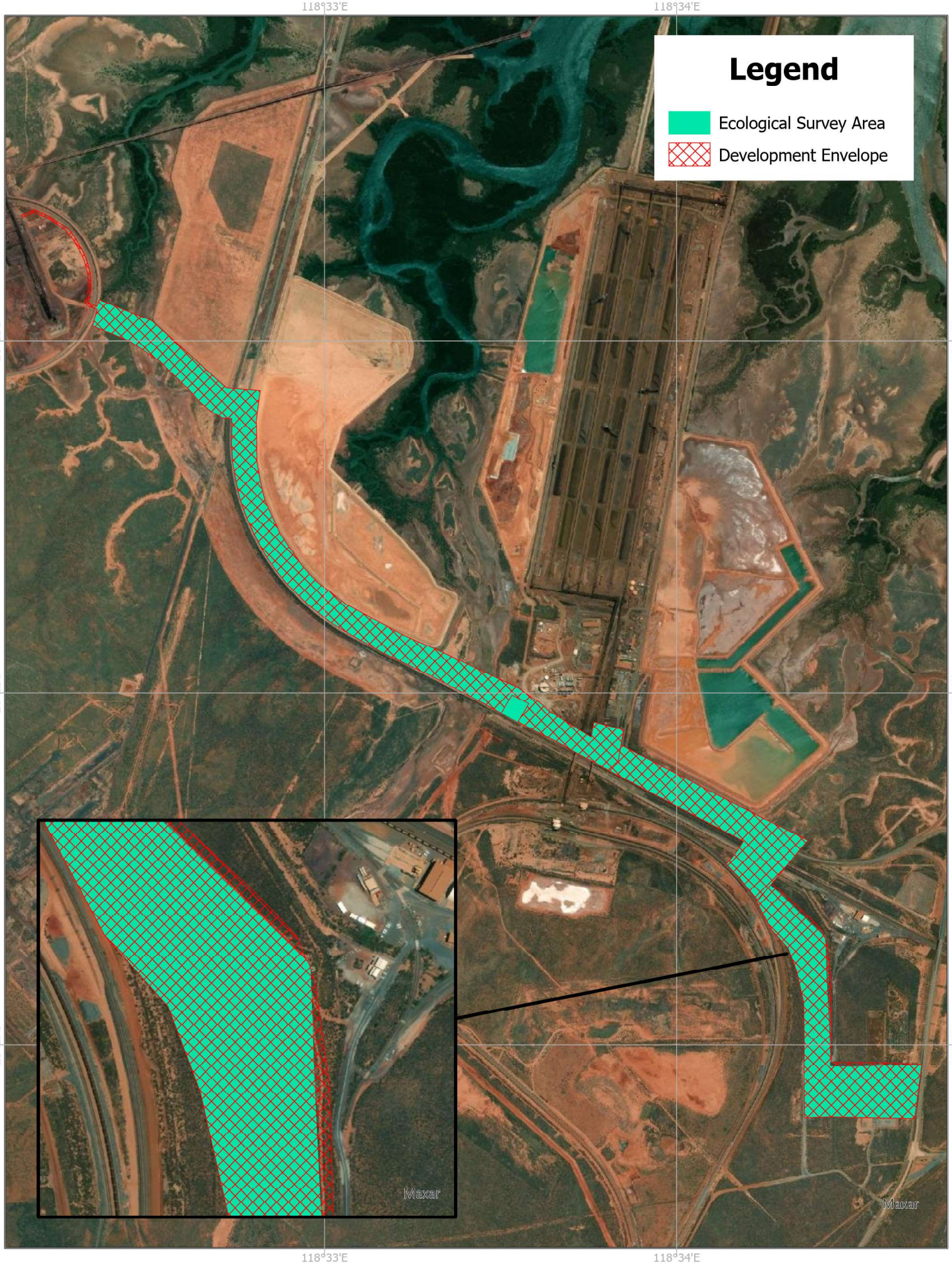


Figure 2 Ecological Survey Area

N

0 0.25 0.5 1 Kilometers

Scale: 1:25,000

⚠ For reference only

Last updated on 6/02/2024 by H188085

HORIZON POWER

Table 3 Summary of ecological surveys relevant to the Survey Area

Survey	Summary of Findings
Targeted and basic vertebrate fauna survey and detailed flora assessment for the Roy Hill Stockpile Project (Phoenix, 2023a) *IBSA Number: IBSA-2023-0422*	**Survey Dates:** Targeted vertebrate fauna survey: 30 April 2023 Flora and vegetation survey: 21 to 23 June 2023 **Survey Area:** Approximately 99 ha and located adjacent to existing Roy Hill Stockpile operations. Covers the majority of the 100.75 ha DE and is shown in Figure 2. **Flora / Vegetation Findings:** – A total of 77 flora taxa representing 24 families and 50 genera were recorded in the Survey Area – No *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Biodiversity Conservation Act 2016* (BC Act) listed flora were recorded within the Survey Area – One Priority (P) flora species listed by the Department of Biodiversity, Conservation and Attractions (DBCA) was recorded during the survey (Figure 3): • *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (P1). A total of 305 *Tephrosia rosea* var. Port Hedland (A.S. George 1114) plants were recorded within 3 populations – Five introduced flora species were recorded during the survey, none of which are a WoNS or Declared Pest Five vegetation types were recorded within the Survey Area (Figure 4): • AmTspp: Variably present low to tall sparse shrubland of *Avicennia marina* subsp. marina, over low sparse to open shrubland of *Tecticornia* spp (9.19 ha) • Ts: Isolated low shrubs of *Cynanchum vimin*ale subsp. australe, *Tecticornia indica* subsp. *leiostachya*, and *Neobassia astrocarpa*, over low hummock grassland of *Triodia secunda* and *T. epactia* (1.61 ha) • NaEm: Low isolated shrubs of *Neobassia astrocarpa*, with variably present *Tecticornia* indica subsp. *leiostachya* and *T.* sp. (sterile2), over low isolated tussock grasses of *Eriachne mucronata*, *Eragrostis falcata*, and **Chloris barbata* (5.65 ha) • Te: Low isolated shrubs of *Acacia stellaticeps*, *Corchorus incanus* subsp. *incanus*, and *Solanum cleistogamum*, over low sparse hummock grassland to hummock grassland of *Triodia epactia* and *T. secunda* variably with invading **Cenchrus ciliaris* (20.76 ha) • AsTe: Low sparse shrubland to shrubland of *Acacia stellaticeps*, *Solanum cleistogamum*, and *Pluchea tetranthera*, over low open hummock grassland to hummock grassland of *Triodia epactia*, *T. schinzii*, and occasionally *T. secunda* (29.14 ha) • The remainder of the Survey Area was cleared and devoid of vegetation (32.55 ha) The vegetation condition in the Survey Area varied from Excellent to Completely Degraded (Figure 5): • Excellent: 20.95 ha • Very Good: 9.61 ha • Good: 6.78 ha • Poor: 9.35 ha

Survey	Summary of Findings
	• Degraded: 19.66 ha • Completely Degraded: 32.54 ha – No ecological communities listed under the EPBC Act or BC Act were recorded within the Survey Area – Riparian vegetation was not recorded within the Survey Area. **Fauna / Fauna Habitat Findings:** – A total of 20 terrestrial vertebrate species representing 17 families and 19 genera were recorded in the Survey Area Two fauna habitats were recorded within the Survey Area (Figure 6): • Sandplain: Mixed *Acacia* dominant low shrubs over spinifex hummock grassland on predominantly sandy soils with some clay present. Some sections almost entirely degraded as they are reduced to small strips in-between railway and road (63.74 ha) • Intertidal mudflat: Intertidal zone forming a channel under road and rail infrastructure. Adjacent terrestrial habitats heavily disturbed and not suitable to support native fauna assemblages (2.62 ha) • Cleared: Infrastructure and access tracks (32.55 ha) – The following conservation significant species were recorded in the Survey Area (Figure 3): • Bilby (*Macrotis lagotis*) - Vulnerable (EPBC Act and BC Act) • Whimbrel (*Numenius phaeopus*) – Migratory (EPBC Act and BC Act) • Grey-tailed Tattler (*Tringa brevipes*) - Migratory (EPBC Act and BC Act) and Priority 4 – The following conservation significant fauna species were assessed as likely to occur within the Survey Area: • Grey Falcon (*Falco hypoleucos*) – Vulnerable (BC Act) • Fork-tailed Swift (*Apus pacificus*) - Migratory (EPBC Act and BC Act) • Osprey (*Pandion cristatus*) - Migratory (EPBC Act and BC Act) • Brush-tailed Mulgara (*Dasycercus blythi*) – Priority 4.

As shown in Figure 2, there are two locations within the DE that have not been surveyed. A description of these unsurveyed areas is provided in Table 4 and they will be referred to herein as 'Unsurveyed Area North' and 'Unsurveyed Area South'.

Table 4 Description of unsurveyed areas within DE

Unsurveyed Area	Location	Description
Unsurveyed Area North	Approximately 1.1 ha leading to Roy Hill's Switch Room in the northern part of the DE.	This area is contained with Roy Hill's operational area and is within previously cleared land.
Unsurveyed Area South	Sections of the southern part of the DE surrounding Hedland Terminal.	Amendments to project design have resulted in two areas of the DE being outside but directly adjacent to the Survey Area. Based on aerial imagery, these unsurveyed areas are consistent with the survey results immediately adjacent to these locations.

5 Existing Environment

The existing environment is summarised in Table 5.

Table 5 Existing environment

<table>
<tr><th>Environmental value</th><th>Assessment</th></tr>
<tr><td>Vegetation associations, types and condition</td><td>
The DE is located within Pre-European Vegetation Associations 127 and 647. More than 94% of Vegetation Association 127 remains with 12.3% in DBCA managed lands. More than 97% of Vegetation Association 647 remains with no vegetation in DBCA managed lands.
<table>
<tr><th>Vegetation association</th><th>Scale</th><th>Pre-European extent (ha)</th><th>Current extent (ha)</th><th>% Remaining</th><th>% of current extent in all DBCA managed land (proportion of current extent)</th></tr>
<tr><td rowspan="4">127</td><td>State: WA</td><td>737,724.05</td><td>697,871.38</td><td>94.6</td><td>12.3</td></tr>
<tr><td>IBRA Bioregion: Pilbara</td><td>177,749.75</td><td>159,595.04</td><td>89.8</td><td>2.32</td></tr>
<tr><td>IBRA Subregion: Roebourne</td><td>177,178.87</td><td>159024.16</td><td>89.75</td><td>2.33</td></tr>
<tr><td>LGA: Town of Port Hedland</td><td>67,213.79</td><td>55,276.38</td><td>82.24</td><td>0.08</td></tr>
<tr><td rowspan="4">647</td><td>State: WA</td><td>195,860.89</td><td>191,711.41</td><td>97.88</td><td>0</td></tr>
<tr><td>IBRA Bioregion: Pilbara</td><td>195,859.95</td><td>191,710.92</td><td>97.9</td><td>0</td></tr>
<tr><td>IBRA Subregion: Roebourne</td><td>188,901.32</td><td>184,774.7</td><td>97.82</td><td>0</td></tr>
<tr><td>LGA: Town of Port Hedland</td><td>180,908.49</td><td>176759.02</td><td>97.71</td><td>0</td></tr>
</table>
Five vegetation types were recorded within the Survey Area (Phoenix, 2023a):
– AmTspp: Variably present low to tall sparse shrubland of *Avicennia marina* subsp. marina, over low sparse to open shrubland of *Tecticornia* spp (9.19 ha)
– Ts: Isolated low shrubs of *Cynanchum vimin*ale subsp. australe, *Tecticornia indica* subsp. *leiostachya*, and *Neobassia astrocarpa*, over low hummock grassland of *Triodia secunda* and *T. epactia* (1.61 ha)
– NaEm: Low isolated shrubs of *Neobassia astrocarpa*, with variably present *Tecticornia* indica subsp. *leiostachya* and *T.* sp. (sterile2), over low isolated tussock grasses of *Eriachne mucronata*, *Eragrostis falcata*, and **Chloris barbata* (5.65 ha)
</td></tr>
</table>

	– Te: Low isolated shrubs of *Acacia stellaticeps*, *Corchorus incanus* subsp. *incanus*, and *Solanum cleistogamum*, over low sparse hummock grassland to hummock grassland of *Triodia epactia* and *T. secunda* variably with invading **Cenchrus ciliaris* (20.76 ha) – AsTe: Low sparse shrubland to shrubland of *Acacia stellaticeps*, *Solanum cleistogamum*, and *Pluchea tetranthera*, over low open hummock grassland to hummock grassland of *Triodia epactia*, *T. schinzii*, and occasionally *T. secunda* (29.14 ha). The remainder of the Survey Area was cleared and devoid of vegetation (32.55 ha). Unsurveyed Area North is expected to also be cleared and devoid of vegetation and the vegetation types in Unsurveyed Area South are expected to be consistent with the survey results immediately adjacent (AsTe or devoid of vegetation). The vegetation types are shown in Figure 4. Phoenix (2023a) identified the vegetation condition in the Survey Area varied from Excellent to Completely Degraded as follows: – Excellent: 20.95 ha – Very Good: 9.61 ha – Good: 6.78 ha – Poor: 9.35 ha – Degraded: 19.66 ha – Completely Degraded. 32.54 ha. Unsurveyed Area North is expected to be Completely Degraded and the vegetation condition in Unsurveyed Area South are expected to be consistent with the survey results immediately adjacent (Excellent, Very Good or Completely Degraded). The vegetation condition in the Survey Area is shown in Figure 5. The pre-European Vegetation Association 647 (hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex) was dominant in the DE. The vegetation types, AsTe, Te and Ts represent *Triodia* grasslands with or without a low shrub layer of *Acacia stellaticeps*. The vegetation in the DE is considered representative of Vegetation Association 647 which covers over 190,000 ha with over 97% pre-European extent remaining and is classed as Least Concern (Phoenix, 2023a). The AmTssp Vegetation type is representative of Vegetation Association 127 that covers over 697,000 ha with over 94% pre-European extent remaining and is classed as Least Concern (Phoenix, 2023a). The NaEm vegetation type was recorded in degraded areas where almost all native vegetation had previously been cleared with isolated plants remaining and subsequently was not considered to have conservation significance (Phoenix, 2023a). The Te vegetation type may be considered locally significant, providing a role as a refuge for *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (Phoenix, 2023a).
Fauna habitat	Phoenix (2023a) recorded two fauna habitats within the Survey Area: – Sandplain: Mixed *Acacia* dominant low shrubs over spinifex hummock grassland on predominantly sandy soils with some clay present. Some sections are almost entirely degraded as they are reduced to small strips in-between railway and road (63.74 ha) – Intertidal mudflat: Intertidal zone forming a channel under road and rail infrastructure. Adjacent terrestrial habitats heavily disturbed and not suitable to support native fauna assemblages (2.62 ha). Most of the habitat showed evidence of disturbance from multiple sources and 32.55 ha of the DE is cleared. Additionally, Unsurveyed Area North is expected to be cleared and the fauna habitat Unsurveyed Area South is expected to be consistent with the survey results immediately adjacent (cleared or sandplains). The fauna habitat is shown in Figure 6.
Significant fauna	The Bilby (*Macrotis lagotis*) is listed as Vulnerable under the EPBC Act and the BC Act. Evidence of the Bilby was detected at several sites in the form of recent scats, tracks, and diggings within the Survey Area (Phoenix, 2023a; Figure 3). Scats of multiple sizes were documented at one site, meaning it is likely there were at least two individuals present within the DE. Several scats were considered fresh as they were moist and odorous. The Sandplains habitat type represents suitable habitat for the species and whilst there are several records of Bilby within the DE it is unlikely that these individuals are restricted to the DE. Two migratory shorebird species were documented in the intertidal mudflats fauna habitat that covers a small section of the South West Creek; the Whimbrel (*Numenius phaeopus*) and the Grey-tailed Tattler (*Tringa brevipes*) (Phoenix, 2023a; Figure 3). The Whimbrel is listed as Migratory under the EPBC Act and the BC Act. The Grey-tailed Tattler is a Priority 4 species and is also listed as Migratory under the EPBC Act and the BC Act. The intertidal mudflats fauna habitat does not meet the criteria for 'important habitat' for a migratory species as defined by DoE (2013). Given the extent of this fauna habitat type within the region it is unlikely that the DE provides critical and restricted habitat for these species (Phoenix, 2023a).

	The following conservation significant fauna species were assessed as likely to occur within the DE (Phoenix, 2023a): – Grey Falcon (*Falco hypoleucos*) – Vulnerable (EPBC Act and BC Act) – Fork-tailed Swift (*Apus pacificus*) - Migratory (EPBC Act and BC Act) – Osprey (*Pandion cristatus*) - Migratory (EPBC Act and BC Act) – Brush-tailed Mulgara (*Dasycercus blythi*) – Priority 4.
Significant ecological linkage	The DE is not part of a significant ecological linkage.
Ecological communities	No Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) listed under the EPBC Act or BC Act were recorded in the Survey Area during the Phoenix (2023a) survey. The unsurveyed areas of the DE are expected to be commensurate with these results.
Significant flora	No EPBC Act or BC Act listed flora were recorded within the Survey Area by Phoenix (2023a). One Priority 1 flora species listed by the DBCA was recorded during the Phoenix (2023a) survey: *Tephrosia rosea* var. Port Hedland (A.S. George 1114). A total of 305 *Tephrosia rosea* var. Port Hedland (A.S. George 1114) plants were recorded within 3 populations in the Survey Area (Figure 3). As this species was not recorded in the northern and southern sections of the DE, it is not expected to occur within the unsurveyed areas of the DE. Notably, the populations occurred in disturbed areas in Degraded to Poor condition and a further desktop record outside of the DE was visited during the field survey also occurred in vegetation in Poor condition (Phoenix, 2023a). This species may be a disturbance opportunist.
Wetlands and/or waterways	The DE is within the Pilbara Surface Water area, Proclaimed under the any Rights in Water and Irrigation Act 1914 (RIWI Act). The DE does not overlap any important wetlands or rivers. There are no major drainage lines visible within the DE.
Water resources	The DE is within the Pilbara Groundwater Area and the Ashburton groundwater sub-area. There are no public drinking water source areas within the DE. A search of the Australian Groundwater Explorer (BoM, 2023a) did not show any nearby bores with groundwater depth information. No dewatering is currently proposed for this project.
Conservation Reserves	The DE does not overlap any conservation reserves. The nearest conservation reserves are Mungaroona Range Nature Reserve and Eighty Mile Beach Marine Park, located approximately 115 km south-southwest and 103 km north-west from the DE, respectively.
Environmentally Sensitive Areas	The DE does not overlap any Environmentally Sensitive Areas (ESAs). Two small ESAs (IDs 15126 and 15128) are located approximately 12.1 and 11 km north-northwest and north-northeast of the DE, respectively. A larger ESA is located approximately 17.9 km north-east of the DE, encompassing salt evaporator ponds and the surrounding tidal mudflats.
Land and soil quality	The majority of the DE is comprised of the Uaroo land system in the south and in a small section in the northern half of the DE. The Uaroo System is characterised as broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs (Phoenix, 2023a). The Litorral land system comprises the remainder of the DE and is characterised as bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests (Phoenix, 2023a). Alluvial surface geology covers majority of the DE except for a small section to the north of the DE where estuarine and delta deposits occur (Phoenix, 2023a). A search of the Acid Sulphate Soil (ASS) Risk Map (DWER-048) showed that the northern part of the DE overlaps an area of high to moderate risk of ASS occurring within 3 m of the natural soil surface. Previous ASS survey undertaken in this northern area for previous connections (GHD 2016b; Coffey 2017) identified high clay concentrations and concluded that the risk of ASS was low. A search of the contaminated sites database (DWER-059) showed that the DE does not overlap any contaminated sites. A contaminated sites baseline investigation undertaken at South West Creek Substation (Seversa, 2023) did not identify any contamination risk.

Environmental heritage	No State, National or World Heritage Areas overlap the DE. 'The Port of Port Hedland' is a municipal heritage site that covers most of Port Hedland. Heritage features are related to the port, jetties, entry statement to the town, graves and remains of pearling activities. A search of the Aboriginal Cultural Heritage Inquiry System shows that Heritage site 15904 overlaps the DE. Engagement with the Kariyarra Aboriginal Corporation has commenced and an Aboriginal heritage survey will be conducted once the route has been finalised.

6 Avoidance, Mitigation and Management Measures

6.1 Avoidance

Initial avoidance and minimisation was undertaken during site selection, including placement of the project adjacent to existing infrastructure (road, rail and transmission line) and mainly within already cleared locations and existing access tracks. Application of avoidance measures, including careful project placement, has reduced the clearing footprint of the project by 4 ha.

Specific avoidance measures applied to the project are detailed below:

- The project has been placed on the northern side of the road so as to minimise vegetation clearing that would be required from a southern alignment

Priority flora will be avoided through the application of a 10 m buffer (‘avoidance areas’) as shown in Figure 7.

- The trenching proposed for the southern section of the project will follow the existing Horizon Power access track, so as to reduce clearing of Bilby habitat. Currently the track is overgrown from vegetation regrowing following past clearing of the track. A maximum clearing width of 8m will be applied during the trenching works, only 4m will be maintained for access in the future and therefore the remainder will be permitted to regrow. Less than 1.55 ha of clearing is proposed through this area (1 ha for trenching and 0.55 ha for jointing bay), of which less than 0.5 ha is permanent clearing.
- Laydown will be located at existing horizon power assets to reduce clearing of vegetation.

The Whimbrel and Grey-tailed Tattler are migratory shorebirds that were found in the intertidal mudflat habitat. As shown in Figure 6, the intertidal mudflat habitat within the DE is intersected by a corridor of cleared land. The trenched transmission line will traverse this cleared area and therefore there will be no surplus clearing of the intertidal mudflat habitat for the Project.

6.2 Mitigation and Management

As mentioned in Section 1.2, a CEMP has been developed for the Project which lists the specific mitigation and management measures to be applied during construction of the Project (see Attachment B).

6.2.1 Temporary Clearing

Key management measures detailed in the CEMP for temporary clearing include:

– Where possible, pre-existing access tracks will be used, and vehicles and machinery will exit the DE along the same route used for access
– Degraded, sparsely vegetated and/or previously cleared areas will be preferentially selected for the location of winch, laydown areas and access
– Works will be undertaken systematically to minimise re-run and compaction of access tracks
– Standard weed and hygiene management practices which will be applied to these works
– Clearing of native vegetation will be undertaken in a slow, progressive manner in one direction to allow fauna to move away from the clearing area.

6.2.2 Transmission infrastructure

Key management measures detailed in the CEMP for clearing for transmission infrastructure include:

– No clearing is permitted outside the DE

- Clearing will be minimised where possible through placement of assets and access tracks in existing cleared locations where possible
- The clearing locations are to be demarcated prior to clearing activities
- Clearing areas are to be checked by an Environmental Specialist or Site Supervisor prior to clearing to ensure no more than 4.55 ha of clearing is undertaken for the Project
- A pre-clearing toolbox will be held so all staff are aware of their responsibilities under the permit
- Clearing of native vegetation will be undertaken in a slow, progressive manner in one direction to allow fauna to move away from the clearing area.

6.3 Restoration of Cleared Areas

Restoration of temporarily cleared areas will include management of excavated fill and compaction (where applicable), as follows:

- Topsoil (i.e. the top 10 mm of soil) will be stockpiled separately to other excavated materials within the designated laydown and winch areas
- Stockpiles will be maintained at 1m height or less
- Vegetative material will be removed from cleared locations and stockpiled for respread once clearing is complete
- On completion of works, excavated materials will be placed back into the temporary cleared areas. Topsoil will then be respread over the surface.
- Recontouring and removal of compaction (e.g. ripping or scarification) of soil within the laydown and winch areas will be undertaken.

These restoration measures have been included in the CEMP for the Project.

7 Stakeholder Engagement

Horizon Power has engaged with the Kariyarra, Aboriginal Corporation on 16th August 2023 to discuss the project. Horizon Power has also consulted with other infrastructure owners in the DE to discuss land access and rail crossings for the project.

8 Assessment Against the 10 Clearing Principles

An assessment against the 10 Clearing Principles outlined by DWER (2014) has been undertaken to support the NVCP application for the Project, as presented in Table 6. The assessment found that the proposed clearing of native vegetation for the Project is ‘unlikely to be at variance’ for all principles except principle b) which ‘may be at variance’.

Table 6 Assessment Against the 10 Clearing Principles

Principle	Assessment	Outcome
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	Vegetation condition within the Survey Area varied from Excellent to Completely Degraded (Phoenix 2023a). Unsurveyed Area North is expected to be Completely Degraded and the vegetation condition in Unsurveyed Area South are expected to be consistent with the survey results immediately adjacent (in Excellent, Very Good or Completely Degraded condition). Five vegetation types were recorded within the DE; Triodia grasslands (AsTe; Te; Ts), sparse mangrove samphire shrubland (AmmTspp) and degraded isolated shrubs and grasses (NaEm) (Figure 4). Unsurveyed Area North is expected to be cleared and devoid of vegetation and the vegetation types in Unsurveyed Area South are expected to be consistent with the survey results immediately adjacent (AsTe or devoid of vegetation). The vegetation types were representative of the vegetation associations in the region, with a high proportion of pre-European extent remaining. One vegetation type (Te) may be considered to have local significance as it provides a role as a refuge for the Priority 1 flora *Tephrosia rosea* var. Port Hedland (A.S. George 1114). However, all plants of the Priority flora occurred in vegetation recorded to be in Degraded or Poor condition. *Tephrosia rosea* var. Port Hedland may be a disturbance opportunist as detailed below. Vegetation in the DE has been impacted by multiple disturbances, and the majority of the vegetation has low conservation value. The DBCA database identified one Priority Ecological Community (PEC) within 40 km of the DE; the Eighty Mile Land System ecological community, which is 36.6 km northeast of the DE. This PEC does not overlap the DE and no PECs were recorded in the Survey Area during the Phoenix (2023a) field survey. The unsurveyed areas of the DE are expected to be commensurate with these results. No Threatened Ecological Communities were identified or considered likely to occur. The Phoenix (2023a) desktop review identified 486 flora taxa comprising 66 families and 209 genera within 40 km of the Survey Area. Records of 12 Priority flora species were identified within 40 km of the Survey Area. Of these, two were recorded within the Survey Area in the past; *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (P1) and *Bulbostylis burbidgeae* (P4). *Tephrosia rosea* var. Port Hedland (A.S. George 1114) was recorded within the Survey Area during the Phoenix (2023a) field survey. A total of 305 plants of this species were recorded within 3 populations all within vegetation type Te (Figure 3). Population 1 included two subpopulations and Population 3 included three subpopulations. Notably, the populations occurred in disturbed areas in Degraded to Poor condition and a further desktop record outside of the Survey Area was visited during the field survey also occurred in vegetation in Poor condition. Therefore, the species may be a disturbance opportunist (Phoenix, 2023a). As this species was not recorded in the northern and southern sections of the DE, it is not expected to occur within the unsurveyed areas of the DE. *Tephrosia rosea* var. Port Hedland (A.S. George 1114) occurs in the Pilbara and Great Sandy Desert bioregions (WA Herbarium, 1998). There are 44 records of this species in FloraBase (WA Herbarium, 1998) and habitat descriptions include sand dunes and plains, coastal sand dunes frequently in *Acacia* shrublands over *Triodia* grasslands but also in disturbed areas such as roadsides with large weed infestations. Population sizes for the Florabase records range from one to 300 individuals to comments of locally common and abundant. There are seven records of this species within 1 km of the DE. The transmission line infrastructure has been designed to avoid all individuals of Tephrosia rosea var. Port Hedland (A.S. George 1114) that have been recorded by Phoenix (2023a). A 10 m buffer avoidance area has been placed around the Priority Flora as shown in Figure 7.. Therefore, the Project is not expected to impact this species.	Unlikely to be at variance.

Principle	Assessment	Outcome
	No plants of *Bulbostylis burbidgeae* were recorded at or in the vicinity of the desktop records in the study area and it is likely the plants were removed during road construction. Phoenix (2023a)'s likelihood off occurrence assessment determined that *Rothia indica* subsp. *australis* (P3) may possibly occur in the DE. This species is known from 21 records (WA Herbarium 1998) that occur in the Dampierland, Great Sandy Desert, Pilbara and Victoria Bonaparte bioregions. There are few records of population sizes recorded for the species which range from 1 to more than 100 plants. This species was not recorded in the DE during the Phoenix (2023a) field survey. None of the introduced flora taxa identified during the Phoenix (2023a) survey are listed as a Declared Pest under the *Biosecurity and Management Act 2007* or a Weed of National Significance. Two fauna habitat types were identified in the Survey Area by Phoenix (2023a); sandplain and intertidal mudflat (Figure 6). Unsurveyed Area North is expected to be cleared and the fauna habitat Unsurveyed Area South is expected to be consistent with the survey results immediately adjacent (cleared or sandplains). Sandplains dominated the DE comprising everything except the small intertidal mudflat in the middle of the DE. Most of the fauna habitat showed evidence of disturbance from multiple sources (Phoenix, 2023a). The Phoenix (2023a) desktop review identified records of 264 vertebrate taxa within 40 km of the Survey Area. The list comprised 6 frogs, 42 reptiles, 190 birds (including 1 naturalised species) and 21 mammals (including 4 introduced species). Sixty-two significant vertebrate species were identified within 40 km of the Survey Area. A total of 40 significant species were recorded within 5 km of the Survey Area, comprising one reptile, 34 birds and 5 mammals. A total of 20 terrestrial vertebrate species representing 17 families and 19 genera were recorded during the Phoenix (2023a) field surveys, including 19 native species and 1 introduced species. Up to 4.55 ha of native vegetation is proposed to be cleared for the Project, of which 2.2 ha is temporary clearing. Overall, the flora, vegetation and fauna values of the DE are highly represented outside the DE and surrounding vegetation typically has similar or better condition vegetation. The native vegetation within the DE is not considered to comprise high levels of biological diversity compared to the surrounding region, and as such, the proposed clearing is not considered to be at variance with this principle.	
(b) Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous Western Australia.	Two fauna habitat types were identified in the Survey Area by Phoenix (2023a): – Sandplain: Mixed *Acacia* dominant low shrubs over spinifex hummock grassland on predominantly sandy soils with some clay present. Some sections almost entirely degraded as they are reduced to small strips in-between railway and road – Intertidal mudflat: Intertidal zone forming a channel under road and rail infrastructure. Adjacent terrestrial habitats heavily disturbed and not suitable to support native fauna assemblages. Unsurveyed Area North is expected to be cleared and the fauna habitat in Unsurveyed Area South is expected to be consistent with the survey results immediately adjacent (cleared or sandplain). The sandplains dominated the DE, comprising everything except the small intertidal mudflat in the middle of the DE (Figure 6). Most of the fauna habitat showed evidence of disturbance from multiple sources (Phoenix, 2023a). The Phoenix (2023a) desktop review identified records of 264 vertebrate taxa within 40 km of the Survey Area. The list comprised 6 frogs, 42 reptiles, 190 birds (including 1 naturalised species) and 21 mammals (including 4 introduced species). Sixty-two significant vertebrate species were identified within 40 km of the Survey Area. A total of 40 significant species were recorded within 5 km of the Survey Area, comprising one reptile, 34 birds and 5 mammals.	May be at variance

Principle	Assessment	Outcome
	A total of 20 terrestrial vertebrate species representing 17 families and 19 genera were recorded during the Phoenix (2023a) field survey, including 19 native species and 1 introduced species. The following conservation significant fauna species were recorded in the Survey Area by Phoenix (2023a) (Figure 3): – Bilby (*Macrotis lagotis*) - Vulnerable (EPBC Act and BC Act) – Whimbrel (*Numenius phaeopus*) – Migratory (EPBC Act and BC Act) – Grey-tailed Tattler (*Tringa brevipes*) - Migratory (EPBC Act and BC Act) and Priority 4. The following conservation significant fauna species were assessed as likely to occur within the Survey Area (Phoenix, 2023a): – Grey Falcon (*Falco hypoleucos*) – Vulnerable (BC Act) – Fork-tailed Swift (*Apus pacificus*) - Migratory (EPBC Act and BC Act) – Osprey (*Pandion cristatus*) - Migratory (EPBC Act and BC Act) – Brush-tailed Mulgara (*Dasycercus blythi*) – Priority 4. The unsurveyed areas of the DE are expected to be commensurate with these results. The two fauna habitats occurring in the DE support these conservation significant species; however, neither are considered critical to the survival of those taxa given the size of each relative to their extent outside the DE, and the general level of disturbance present (Phoenix, 2023a). The conservation significant species are described below. **Bilby** Current Bilby habitat is varied and includes hummock grassland in plains and alluvial areas, *Triodia* and *Acacia* on sand plains and dune systems, open tussock grassland on uplands and hills, and Mulga woodland/shrubland on ridges and rises. These habitats are normally characterised as being of low relief with light to medium soils that are often sandy, ideal for burrow excavation. Habitat critical to the survival of the Bilby has not been defined and the description given in the 'Recovery Plan for the Greater Bilby (*Macrotis lagotis*)' (DCCEEW, 2023a) includes any area where the species is known or likely to occur. The sandplains habitat within the DE is suitable for the Bilby and is therefore considered habitat critical to the survival of the species. Evidence of the Bilby was detected during the Phoenix (2023a) field survey in the form of recent scats, tracks and diggings at three locations (Figure 3). These were detected in the sandplain habitat in the southern extent of the DE, where the trenched transmission line is planned to be located. No active or inactive burrows were recorded during the Phoenix (2023a) field survey. The presence of recent foraging by Bilby suggests the DE forms part of the range of a currently active, local population. The habitat in which evidence of the Bilby was detected is in Good to Excellent vegetation condition. The remainder of the sandplain habitat in the DE is within small patches of sporadic vegetation, with the majority in Poor to Completely Degraded condition and directly adjacent to existing infrastructure, roads and extensive other disturbance. This suggests that the most suitable sandplain habitat for the Bilby in the DE is the area of Good to Excellent vegetation condition in the southern part of the DE where the trenched transmission line is to be located. Within this area, up to 1.55 ha of clearing is required for the project. Of this, only 0.5 ha will be maintained as cleared vegetation along the existing access track for maintenance of the new and existing infrastructure. The remainder will be restored and allowed to naturally regenerate, as detailed in Section 6.3. The DE is somewhat connected to habitat to the south (notwithstanding the effects of roads etc) that supports Bilby; however, it is surrounded by intensive land uses to the east, west, north and unsuitable coastal habitats to the north (Phoenix, 2023b). Therefore, the DE occurs at the	

Principle	Assessment	Outcome
	northern terminus of available Bilby habitat in the area generally and thus, cannot be considered to comprise or be part of, an ecological linkage for these species, particularly as the northern section of the DE is heavily modified and degraded. Based on aerial imagery and the Soil Landscape Mapping (spatial dataset DPIRD-027, GoWA 2022) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2022) datasets, habitat for the Bilby is widespread within a 10 km radius of the DE. Clearing of up to 4.55 ha of suitable habitat within the DE, represents approximately 0.02% of potential habitat available within 10 km of the DE. The southern area of sandplain habitat in Good to Excellent vegetation condition accounts for 0.004% of potential habitat available within 10 km of the DE. **Whimbrel** Whimbrel habitat is typically intertidal mudflats and sheltered coastal areas. They have also been found in other waterbodies including harbours, lagoons, estuaries, rivers, mangroves and unvegetated mudflats. Occasionally they are found in sandy and rocky beaches, on coral or rocky islets or intertidal areas (DCCEEW 2023b). The intertidal mudflat habitat within the DE is suitable for the Whimbrel and there was a recording of one individual in this habitat during the Phoenix (2023a) survey. As shown in Figure 6, the intertidal mudflat habitat within the DE is intersected by a corridor of cleared land. The trenched transmission line will traverse this cleared area and therefore there will be minimal clearing of intertidal mudflat habitat for the Project. Within 10 km of the DE, there is approximately 11,819.5 ha of bare coastal mudflats according to Soil Landscape Mapping (spatial dataset DPIRD-027, GoWA, 2022). As the habitat is not expected to be impacted by the Project, and the widespread availability of habitat within 10 km of the DE, no significant impact is expected. **Grey-tailed Tattler** The Grey-tailed Tattler occurs on sheltered coasts with reefs and rock platforms or mudflats, and can also be found on reefs or platforms that are exposed at low tide (DCCEEW 2023c). It has been found around shores of rock, shingle, gravel or shells and also on intertidal mudflats in embayment's, estuaries and coastal lagoons, especially fringed with mangroves. The intertidal mudflat habitat within the DE is suitable for the Grey-tailed Tattler and there was a recording of one individual in this habitat during the Phoenix (2023a) survey. As shown in Figure 6, the intertidal mudflat habitat within the DE is intersected by a corridor of cleared land. The trenched transmission line will traverse this cleared area and therefore there will be minimal clearing of the intertidal mudflat habitat for the Project. Within 10 km of the DE, there is approximately 11,819.5 ha of bare coastal mudflats according to Soil Landscape Mapping (spatial dataset DPIRD-027, GoWA, 2022). As the habitat is not expected to be impacted by the Project, and the widespread availability of habitat within 10 km of the DE, no significant impact is expected. **Grey Falcon** The Grey Falcon is an Australian endemic, usually confined to the arid inland. It inhabits *Triodia* grassland, *Acacia* shrubland, and lightly timbered arid woodland especially stony, inland plains, gibber deserts, sandridges, pastoral lands, and timbered watercourses, but seldom in driest deserts (Morcombe, 2004). This species was recorded several times less than 5 km away from the DE and is known to occupy a wide range of habitats. It is likely this species will use the DE for foraging (Phoenix, 2023a). Based on aerial imagery and the Soil Landscape Mapping (spatial dataset DPIRD-027, GoWA 2022) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2022) datasets, habitat for the Grey Falcon is widespread within a 10 km radius of the DE. Clearing of up to 4.55 ha within the	

Principle	Assessment	Outcome
	DE, represents approximately 0.04% of potential habitat available within 10 km of the DE. Of the 4.55 ha to be cleared, 2.2 ha is temporary clearing, no significant impact is expected. **Fork-tailed Swift** The Fork-tailed Swift occurs in a wide range of dry or open habitats, including riparian woodlands, tea-tree swamps, low scrub, heathland, Saltmarsh, grassland and spinifex sandplains, open farmland and inland and coastal sand dunes (DCCEEW, 2023d). This species was recorded just over 5 km away from the DE, and it is known to utilise a wide range of habitats, it is therefore likely to occur in the DE (Phoenix, 2023a). Based on aerial imagery and the Soil Landscape Mapping (spatial dataset DPIRD-027, GoWA 2022) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2022) datasets, habitat for the Fork-tailed Swift is widespread within a 10 km radius of the DE. Clearing of up to 4.55 ha within the DE, represents approximately 0.04% of potential habitat available within 10 km of the DE. Of the 4.55 ha to be cleared, 2.2 ha is temporary clearing. Due to the widespread availability of habitat, no significant impact is expected. **Osprey** The Osprey occurs in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands (DCCEEW, 2023e). They forage in fresh, brackish or saline water and frequent a variety of wetland habitats (Marchant and Higgins, 1993). They exhibit a preference for coastal cliffs and elevated islands in some parts of their range, but may also occur on low sandy, muddy or rocky shores and over coral cays (Marchant and Higgins, 1993). This species has been recorded 397 m east of the DE however, it each individual occupies a large home range along the coast line, and there is very little suitable habitat in the DE (Phoenix, 2023a). Based on aerial imagery and the Soil Landscape Mapping (spatial dataset DPIRD-027, GoWA 2022) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2022) datasets, habitat for the Osprey is widespread within a 10 km radius of the DE. Clearing of up to 4.55 ha within the DE, represents approximately 0.04% of potential habitat available within 10 km of the DE. Of the 4.55 ha to be cleared, 2.2 ha is temporary clearing. Due to the widespread availability of habitat, no significant impact is expected. **Brush-tailed Mulgara** The Brush-tailed Mulgara occurs in spinifex grasslands throughout much of the arid zone, digging their burrows in the flats between low sand dunes (Phoenix, 2023a). The species was not recorded during the Phoenix (2023a) survey, however the sandplains habitat within the DE is suitable for the species and there are records of the species within 50 m of the DE. As described for Bilby habitat above, the sandplain habitat in the southern section of the DE is in Good to Excellent vegetation condition and provides suitable fauna habitat. The remainder of the sandplain habitat in the DE is within small patches of vegetation, with the majority in Poor to Completely Degraded condition and adjacent to extensive existing disturbance. This suggests that the suitable sandplain habitat for the Brush-tailed Mulgara in the DE is the area of Good to Excellent vegetation condition in the southern part of the DE where the trenched transmission line is to be located. Within this area, up to 1.55 ha of clearing is required for the project. Of this, only 0.5 ha will be maintained as cleared vegetation along the existing access track for maintenance of the new and existing infrastructure. The remainder will be restored and allowed to naturally regenerate, as detailed in Section 6.3. Based on aerial imagery and the Soil Landscape Mapping (spatial dataset DPIRD-027, GoWA 2022) and Pre-European Vegetation (spatial dataset DPIRD-006, GoWA 2022) datasets, habitat for the Brush-tailed Mulgara is widespread within a 10 km radius of the DE. Clearing of up to 4.55 ha within the DE, represents approximately 0.02% of potential habitat available within 10 km of the DE. Due to the widespread availability of habitat and the small scale of clearing proposed for the Project, no significant impact is expected. The DE is somewhat connected to habitat to the south (notwithstanding the effects of roads etc) that supports the Brush-tailed Mulgara; however, it is surrounded by intensive land uses to the east, west, north and unsuitable coastal habitats to the north (Phoenix, 2023b).	

Principle	Assessment	Outcome
	Therefore, the DE occurs at the northern terminus of available Brush-tailed Mulgara habitat in the area generally and thus, cannot be considered to comprise or be part of, an ecological linkage for these species, particularly as the northern section of the DE is heavily modified and degraded. Overall, the fauna values of the DE are highly represented on a local and regional scale and the majority of the DE is in extensively disturbed areas. Given the vegetation condition is largely in Poor to Completed Degraded condition, the loss of this vegetation is not considered significant for biodiversity or any specific species (Phoenix, 2023b). However, up to 1.55 ha of Bilby habitat in Good to Excellent condition will be cleared, of which 0.5 ha will be permanent clearing. Due to potential impacts to Bilby habitat, the project may be at variance to Principle b). Given the small scale of permanent clearing proposed, lack of burrows within the project area, and linear nature of the project, the impact to Bilby is not considered to be significant.	
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No Threatened flora were identified in the Survey Area and the likelihood of occurrence assessment (Phoenix, 2023a) identified that no Threatened species are likely to occur in the Survey Area. The unsurveyed areas of the DE are expected to be commensurate with these results. The proposed clearing of native vegetation for the Project is therefore unlikely to be at variance with this principle.	Unlikely to be at variance.
(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.	The DBCA TEC database did not identify any TECs within 40 km of the DE. Additionally, no TEC's were identified within the Survey Area during the Phoenix (2023a) field survey. The unsurveyed areas of the DE are expected to be commensurate with these results. The proposed clearing of native vegetation for the Project is therefore unlikely to be at variance with this principle.	Unlikely to be at variance.
(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	Five vegetation types were recorded within the Survey Area (Phoenix, 2023a; Figure 4): – AmTspp: Variably present low to tall sparse shrubland of *Avicennia marina* subsp. marina, over low sparse to open shrubland of *Tecticornia* spp – Ts: Isolated low shrubs of *Cynanchum viminale* subsp. *australe*, *Tecticornia indica* subsp. *leiostachya*, and *Neobassia astrocarpa*, over low hummock grassland of *Triodia secunda* and *T. epactia* – NaEm: Low isolated shrubs of *Neobassia astrocarpa*, with variably present *Tecticornia indica* subsp. *leiostachya* and *T.* sp. (sterile2), over low isolated tussock grasses of *Eriachne mucronata*, *Eragrostis falcata*, and **Chloris barbata* – Te: Low isolated shrubs of *Acacia stellaticeps*, *Corchorus incanus* subsp. *incanus*, and *Solanum cleistogamum*, over low sparse hummock grassland to hummock grassland of *Triodia epactia* and *T. secunda* variably with invading **Cenchrus ciliaris* – AsTe: Low sparse shrubland to shrubland of *Acacia stellaticeps*, *Solanum cleistogamum*, and *Pluchea tetranthera*, over low open hummock grassland to hummock grassland of *Triodia epactia*, *T. schinzii*, and occasionally *T. secunda* Unsurveyed Area North is expected to be cleared and devoid of vegetation and the vegetation types in Unsurveyed Area South are expected to be consistent with the survey results immediately adjacent (AsTe or devoid of vegetation).	Unlikely to be at variance.

Principle	Assessment	Outcome
	Pre-European vegetation association 647, 'Hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex' overlaps the DE. The vegetation types, AsTe, Te and Ts represent *Triodia grasslands* with or without a low shrub layer of *Acacia stellaticeps*. A review of the distribution of *Acacia translucens* (WA Herbarium, 1998) has determined that the species is predominantly recorded in the Kimberley bioregion and the closest record of the species to the DE is approximately 125 km east of the DE. *Acacia translucens* is closely related to *A. stellaticeps* which are both part of the *A. stigmatophylla* group (Kodela et al., 2001). Subsequently the vegetation recorded in the DE is considered representative of vegetation association 647 which covers over 190,000 ha and the current extent remaining of this vegetation association is greater than 82% of its calculated pre-European extent at all scales (i.e., State, IBRA bioregion, IBRA subregion and Local Government Area (LGA)). The vegetation association is classed as least concern. Vegetation Association 127 is described as tidal mudflats and the current extent remaining of this vegetation association is greater than 97% of its calculated pre-European extent at all scales (i.e., State, IBRA bioregion, IBRA subregion and LGA). The AmTssp vegetation type is representative of this vegetation association, which is classed as least concern. The NaEm vegetation type was recorded in degraded areas where virtually all native vegetation had previously been cleared with isolated plants remaining and subsequently was not considered to have conservation significance. The vegetation values of the DE are highly represented outside the DE and a large proportion of the vegetation in the DE has been impacted by multiple disturbances resulting in vegetation of a low conservation value (Phoenix, 2023a). It is considered that the native vegetation proposed to be cleared for the Project is not significant as a remnant of native vegetation within an area that has been extensively cleared. Additionally, of the 4.55 ha to be cleared, 2.2 ha is temporary clearing. The proposed clearing of native vegetation for the Project is therefore unlikely to be at variance with this principle.	
(f) Native vegetation should not be cleared if it is growing in or in association with a watercourse or wetland.	There are no wetlands, watercourses, rivers or marshes within the DE or immediately adjacent to the DE (Phoenix, 2023a). The tidal mudflat habitat type recorded within the DE is already cleared and therefore no clearing is proposed at this location. The proposed clearing of native vegetation for the Project is therefore not considered to be at variance with this principle.	Unlikely to be at variance.
(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The majority of the DE is comprised of the Uaroo land system in the south and in a small section in the northern half of the DE. The Uaroo System is characterised as broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered *Acacia* shrubs (Phoenix, 2023a). The sandplains and dune fields are considered likely to produce dust during construction, which will be managed through the implementation of a CEMP. The Litorral land system comprises the remainder of the DE and is characterised as bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests (Phoenix, 2023a). Clearing of the Littoral system may have the potential to cause land degradation; however, the majority of the area is described as bare (unvegetated) mudflats (Phoenix 2023a, 2023b). Given the majority of Littoral system is an unvegetated area and the relatively small and linear nature of the proposed clearing, it is not likely that the clearing will cause appreciable land degradation that will affect the present or future use of the land (Phoenix, 2023b). Therefore, it is not likely that the clearing will cause appreciable land degradation that will affect the present or future use of the land (Phoenix, 2023b).	Unlikely to be at variance.

Principle	Assessment	Outcome
	Alluvial surface geology covers majority of the DE except for a small section to the north of the DE where estuarine and delta deposits occur (Phoenix, 2023a). The soil landscape land quality mapping (spatial dataset DPIRD-017, GoWA 2022) indicates that the DE is within the De Grey-Roebourne Lowlands Zone, which is described as alluvial plains and sandplains on alluvial and marine deposits over the northern Pilbara Craton with Red deep sandy duplexes, red loamy earths, red/brown non-cracking clays, cracking clays, red sandy earths and red deep loamy duplexes. The DE also overlaps the Karratha Coast Zone, which is described as coastal mudflats (with sandy plains and some hills) on marine deposits over the Pilbara Craton with tidal soils, calcareous loamy earths, salt lake soils and red/brown non-cracking clays. A search of the ASS Risk Map (DWER-048) showed that the northern part of the DE overlaps an area of high to moderate risk of ASS occurring within 3 m of the natural soil surface.. Previous ASS survey undertaken in this northern area for previous connections (GHD 2016b; Coffey 2017) identified high clay concentrations and concluded that the risk of ASS disturbance was low. A search of the contaminated sites database (DWER-059) showed that the DE does not overlap any contaminated sites. The mapped topographic contours (20 m) indicate the degree of slope is small and not likely to have a large amount of soil or water movement that would cause or exacerbate erosion (Phoenix, 2023b). The Project will incorporate standard construction management measures to reduce the risk of soil erosion and sedimentation as a result of ground disturbance and clearing (Attachment B). The clearing is not expected to cause appreciable land degradation and based on the above, the proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	
(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	The DE does not overlap any conservation reserves. The nearest conservation reserves are Mungaroona Range Nature Reserve and Eighty Mile Beach Marine Park, located approximately 115 km south-southwest and 103 km north-west from the DE, respectively. There are no State, National or World Heritage Areas mapped as overlapping the DE. The DE does not overlap any important wetlands or any RIWI Act Rivers. No off-site impacts are anticipated as a result of the proposed clearing of native vegetation within the DE. It is noted that management measures regarding weeds and disease will be implemented as part of the standard CEMP to ensure that weeds are not spread as a result of clearing activities (Attachment B). The proposed clearing is not expected to impact any conservation areas. Based on the above, the proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	Unlikely to be at variance.
(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	No rivers, wetlands or waterways management areas are present within the DE. The closest significant wetland is Eighty Mile Beach which is listed Wetlands of International Importance (Ramsar Wetlands). This Ramsar Wetland is approximately 130 km northeast of the DE. The DE is within the Pilbara Groundwater Area and the Ashburton groundwater Subarea. The DE also overlaps the Pilbara Surface Water Area which is proclaimed under the RIWI Act. No Public Drinking Water Source areas or major drainage lines are located within the DE. A search of the Australian Groundwater Explorer (BoM, 2023a) did not show any nearby bores with groundwater depth information. A search of the ASS Risk Map (DWER-048) showed that the northern part of the DE overlaps an area of high to moderate risk of ASS occurring within 3 m of the natural soil surface. Previous ASS survey undertaken in this northern area for previous connections (GHD 2016b; Coffey 2017) identified high clay concentrations and concluded that the risk of ASS was low.	Unlikely to be at variance.

Principle	Assessment	Outcome
	The majority of the water flow would be within the intertidal mudflats within the DE. Given these areas are largely unvegetated, the clearing of vegetation is not likely to significantly impact ground water or surface water quality and flows (Phoenix, 2023b). No significant impacts to quality of surface or underground water are expected in the DE. Given the abundance of vegetation within the surrounding region, with over 82% pre-European vegetation remaining, the proposed clearing is not expected to impact surface or groundwater quality. Therefore, the proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	
(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the intensity of flooding.	The nearest Bureau of Meteorology (BoM) weather station with comprehensive data collection and recent historic climate data is Port Hedland Airport (no. 004032). Median annual rainfall is 310.6 mm with January and February recording the highest monthly median (25.6 and 71.2 mm respectively) (BoM, 2023b). Cyclonic activity is significant with several systems affecting the coast and hinterland annually (Kendrick & Stanley 2001). Rainfall in the DE is generally received during the summer as a result of unpredictable tropical downpours and cyclonic low-pressure systems and the DE is prone to flooding. Given the abundance of vegetation within the surrounding region, with over 82% pre-European vegetation remaining, the proposed clearing is not expected to increase the risk of flooding. Standard management measures for construction will be in place to mitigate against / manage erosion and associated environmental aspects. Therefore, the proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	Unlikely to be at variance.

Figure 3 Conservation Significant Flora and Fauna

N

0 0.25 0.5 1 Kilometers

Scale: 1:25,000

⚠ For reference only

Last updated on 6/02/2024 by H188085

HORIZON POWER

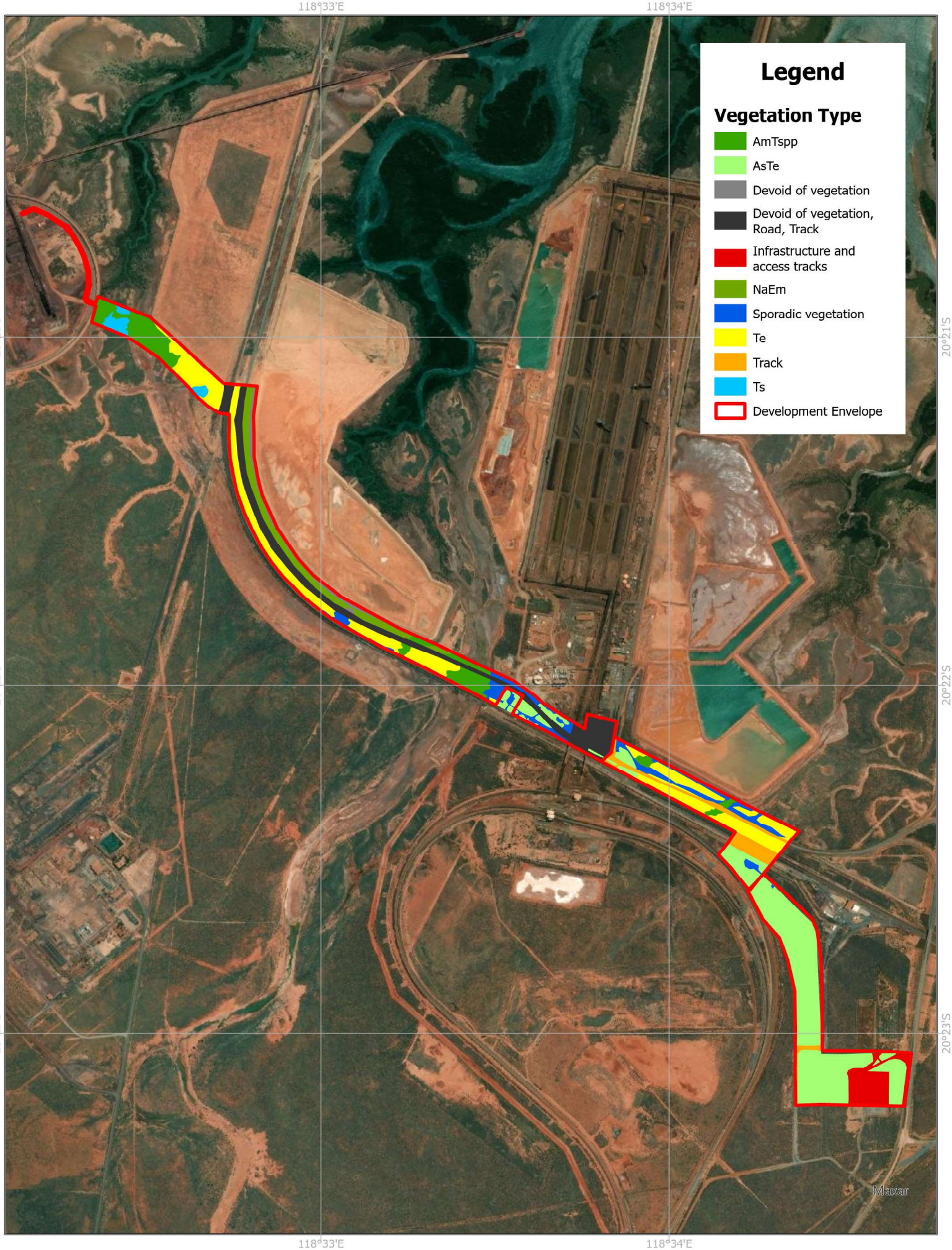


Figure 4 Vegetation Type

N

0 0.25 0.5 1 Kilometers

Scale: 1:25,000

⚠ For reference only

Last updated on 6/02/2024 by H188085

HORIZON POWER

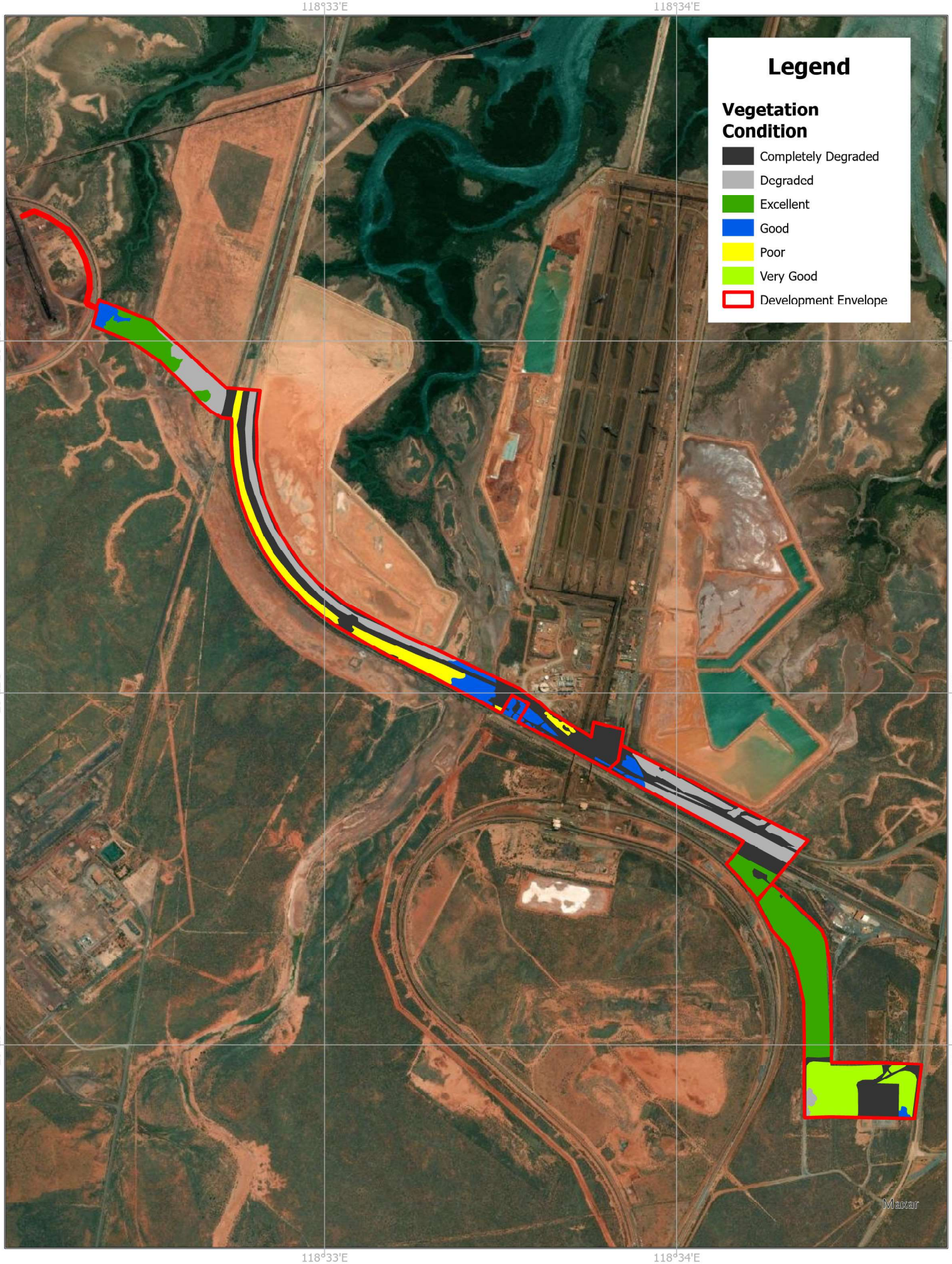


Figure 5 | Vegetation Condition

N

0 0.25 0.5 1 Kilometers

Scale: 1:25,000

⚠ For reference only

Last updated on 6/02/2024 by H188085

HORIZON POWER

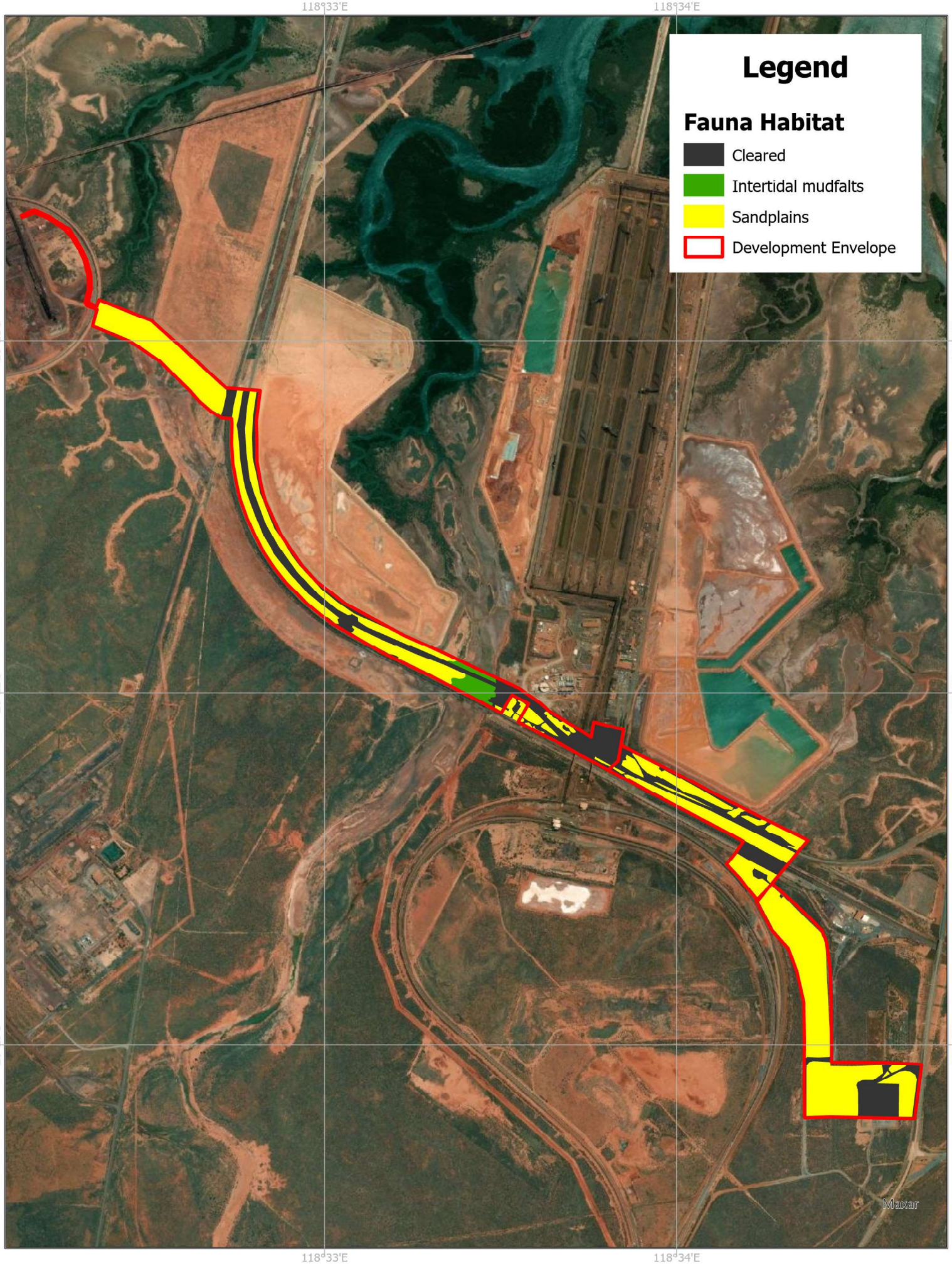


Figure 6 | Fauna Habitat

N

0 0.25 0.5 1 Kilometers

Scale: 1:25,000

⚠ For reference only

Last updated on 6/02/2024 by H188085

HORIZON POWER

Figure 7 | Avoidance Area

N

0 0.25 0.5 1 Kilometers

Scale: 1:25,000

⚠ For reference only

Last updated on 6/02/2024 by H188085

HORIZON POWER

9 Other matters

9.1 Other approvals

In considering a clearing matter under section 51O of the *Environmental Protection Act 1986* (EP Act), the DWER CEO shall have regard to any planning instrument and other relevant matters when making decisions as to clearing permits. 'Other matters' are not defined in the EP Act, and consequently are any matters the CEO considers relevant. Other matters are generally environmental issues not directly within the scope of the clearing principles, but within the object and principles of the Act. Other approvals that may apply to this Project are detailed below. Land access is detailed in Section 2.3.

Other approvals	Assessment
Referral to Environmental Protection Authority	It is considered that all environmental impacts can be managed under Part V of the *Environmental Protection Act 1986* (EP Act) and referral to the EPA is not considered necessary.
Referral to Department of Climate Change, Energy, the Environment and Water (DCCEEW)	*Threatened flora, fauna and ecological communities* 32 Threatened fauna species were identified within 20 km of the DE. Habitat for the Bilby and Grey Falcon is present in the DE. No TECs were recorded in the DE or within 20 km. A Significant Impact 1.1. assessment was undertaken for this project, and concluded that referral to DCCEEW was not required, given the abundance of alternative habitat outside of the DE and the small, linear nature of clearing. Clearing of Good or better quality Bilby habitat has been minimised as far as practicable, and permanent clearing will only account for less than 0.5 ha. No significant impacts are expected to Threatened fauna, and referral to DCCEEW is not considered to be required. *Migratory fauna* 62 Migratory species were recorded within 20 km of the DE. Habitat for the Whimbrel (*Numenius phaeopus*), Grey-tailed Tattler (*Tringa brevipes*), Fork-tailed Swift (*Apus pacificus*) and Osprey (*Pandion cristatus*) was recorded in the DE. These species have a wide-ranging habitat and no significant habitat for Migratory species is likely to be removed. *National and World heritage* No National or World Heritage places overlap the DE or are within 20 km of the DE. Engagement with the Kariyarra Aboriginal Corporation has commenced and an Aboriginal heritage survey will be conducted once the route has been finalised. *Wetlands of international importance* No Ramsar Wetlands overlap the DE or are within 20 km of the DE. A Matters of National Environmental Significance (MNES) assessment has been completed by Phoenix (2023b) concluding that the Project is unlikely to result in a significant impact to MNES.
Works Approval or Licence under EP Act	No works approvals or licences are required for this project.
Groundwater or surface water licence under the *Rights in Water and Irrigation Act 1914*	Horizon Power is permitted to access water under Section 42 and 49 of the *Electricity Operator (Powers) Act 1979*. No approvals under the RIWI Act will be required for the project.
Notice of Intent to Clear system under the *Soil and Land Conservation Act 1945*	Not Applicable.
State and municipal heritage	The 'Port of Port Hedland' Heritage Site overlaps the DE. Heritage features are related to the port, jetties, entry statement to the town, graves and remains of pearling activities. The Project is unlikely to impact the values of this site. The DE does not overlap any State Heritage (spatial dataset DPLH-006).

Other approvals	Assessment
Native title	The DE is within the Kariyarra People Native Title determination. An Indigenous Land Use Agreement (ILUA) is not required for this project.
Aboriginal Sites of Significance under the *Aboriginal Heritage Act 1972*	A search of the Aboriginal Cultural Heritage Inquiry System shows that Heritage site 15904 overlaps the DE. Engagement with the Kariyarra Aboriginal Corporation has commenced and an Aboriginal heritage survey will be conducted once the route has been finalised. Horizon Power's *Aboriginal Cultural Heritage Management Policy* requires site avoidance of Aboriginal heritage sites wherever possible.

10 References

Bureau of Meteorology (BoM), 2023a. Australian Groundwater Explorer. Commonwealth of Australia, Bureau of Meteorology. Available at: http://www.bom.gov.au/water/groundwater/explorer/index.shtml.

BoM, 2023b. Climate statistics for Australian locations. Commonwealth of Australia, Bureau of Meteorology. Available at: http://www.bom.gov.au/climate/data.

Coffey 2017. Alliance Power and Data Pty Ltd Roy Hill Power Supply 33kV Underground Transmission Project, Geotechnical Investigation Report, 20 April 2017

Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2023a. Recovery Plan for the Greater Bilby (*Macrotis lagotis*). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/recovery/greater-bilby-2023

DCCEEW, 2023b. *Numenius phaeopus* — Whimbrel Species Profile and Threats Database. Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=849

DCCEEW, 2023c. *Tringa brevipes* — Grey-tailed Tattler Species Profile and Threats Database. Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=851#:~:text=Western%20Australian%20distribution&text=It%20is%20found%20in%20the,(Higgins%20%26%20Davies%201996).

DCCEEW, 2023d. *Apus pacificus* — Fork-tailed Swift Species Profile and Threats Database. Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678

DCCEEW, 2023e. *Pandion haliaetus* — Osprey Species Profile and Threats Database. Available from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=952

Department of Environment Regulation (DER), 2014. *A guide to the assessment of applications to clear native vegetation. Under Part V Division 2 of the Environmental Protection Act 1986*. Available at: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf

DoE. 2013. Matters of National Environmental Significance. Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999. Australian Government, Department of the Environment, Canberra, ACT.

GHD. 2016a. Roy Hill Port Facility Power Line Port Hedland Ecological Assessment. GHD Pty Ltd, Perth, WA. Unpublished report prepared for Horizon Energy.

GHD. 2016b. Horizon Power C0129-16 Roy Hill Transmission Geotechnical Investigation Factual Report, August 2016.

Government of Western Australia (GoWA), 2022. Data WA. Available at: https://data.wa.gov.au/.

Kendrick, P. & Stanley, F, 2001. Pilbara 4 (PIL4—Roebourne synopsis). In: May, J. E. & McKenzie, N. L. (eds) A biodiversity audit of Western Australia's 53 biogeographical subregions in 2002. Department of Conservation and Land Management, Perth, WA, pp. 581–594.

Marchant, S. and Higgins, P. J. (Eds), 1993. 'Handbook of Australian, New Zealand and Antarctic Birds. Volume 2: Raptors to lapwings (Oxford University Press: Melbourne).

Morcombe, M (2004), Field Guide to Australian Birds. Steve Parish Publishing Archer Field Queensland Australia.

Phoenix Environmental Sciences (Phoenix), 2023a. Targeted and basic vertebrate fauna survey and Detailed flora assessment for the Roy Hill Stockpile Project. Prepared for Horizon Power. September 2023.

Phoenix Environmental Sciences (Phoenix), 2023b. Roy Hill Stockpile 3 Technical Memorandum.

Senversa, 2023. Baseline Contamination Assessment Portion of Lot 61 on DP404952, Utah Road, Port Hedland, WA, Prepared for Horizon Power. August 2023

WA Herbarium. 1998. FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. Available at: http://florabase.dpaw.wa.gov.au/