GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10603/1
Permit Holder:	Port Hedland Green Steel Pty Ltd
Duration of Permit:	From 1 November 2024 to 1 November 2029

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of geotechnical investigations to inform the design of accommodation facilities

2. Land on which clearing is to be done

Lot 506 on Deposited Plan 408840, Lot 401 on Deposited Plan 40375,
Lot 331 on Deposited Plan 73085, Lot 2519 on Deposited Plan 180565,
Road reserve (11430644), Road reserve (11432655), Road reserve (11432654)

3. Clearing authorised

The permit holder must not clear more than five hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Directional clearing

The permit holder must:

(a) conduct clearing authorised under this permit from one direction to the other towards adjacent *native vegetation*; and

(b) allow a reasonable time for fauna present within the areas being cleared to move into adjacent *native vegetation* ahead of the clearing activity.

5. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 1 November 2029.

PART II – MANAGEMENT CONDITIONS

6. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of *native vegetation*;
(b) minimise the amount of *native vegetation* to be cleared; and
(c) reduce the impact of clearing on any environmental value.

7. Weed management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
(b) ensure that no known *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

PART III - RECORD KEEPING AND REPORTING

8. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 6; and (f) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 7.

9. Reporting

The permit holder must provide to the *CEO* the records required under condition 8 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weed/s	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

B. Walker.

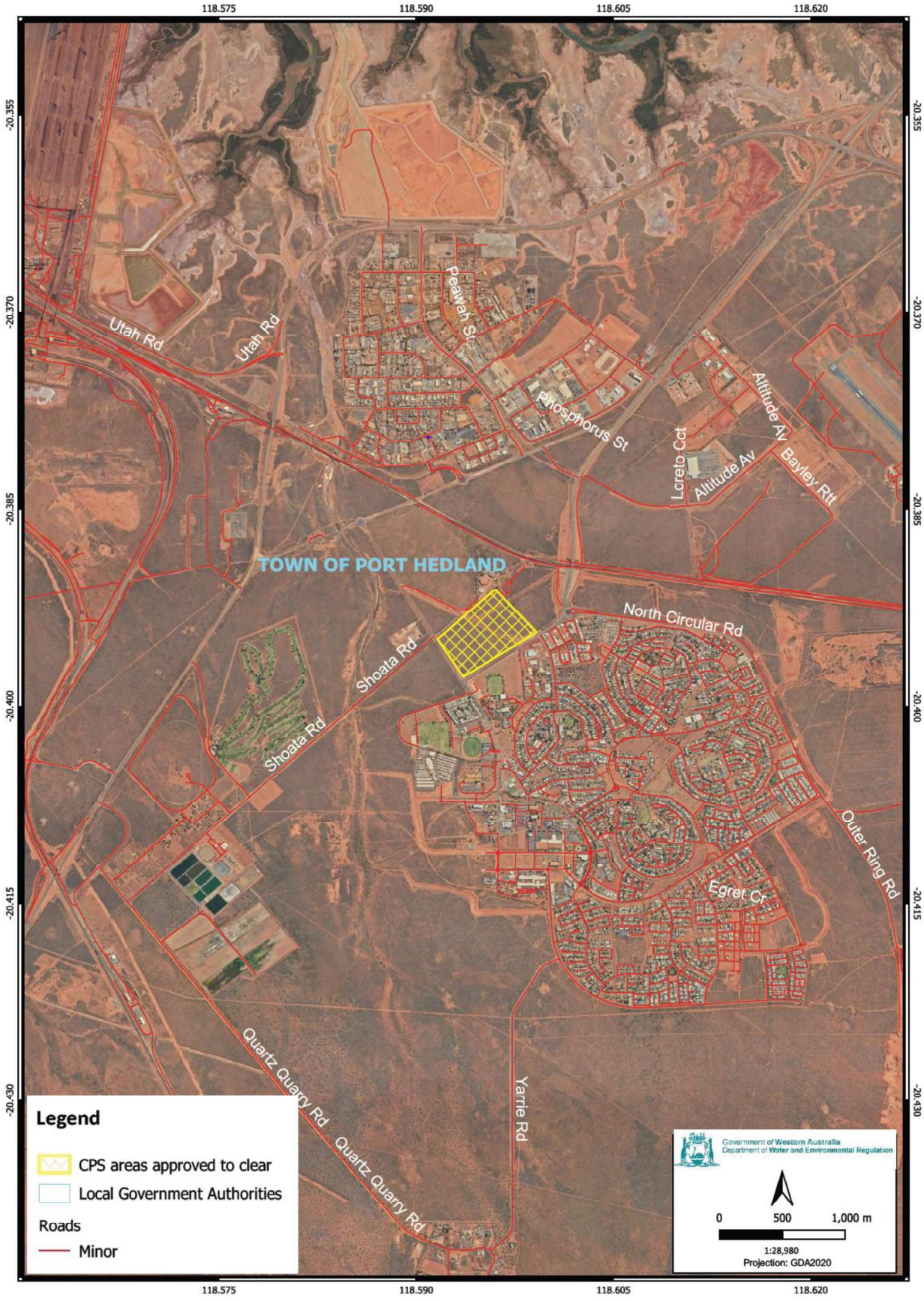
Belinda Walker
EXECUTIVE DIRECTOR
GREEN ENERGY

Officer delegated under Section 20
of the Environmental Protection Act 1986

8 October 2024

Schedule 1

The boundary of the areas authorised to be cleared is shown in the map below (Figure 1).



Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10603/1
Permit type:	Purpose permit
Applicant name:	Port Hedland Green Steel Pty Ltd
Application received:	30 April 2024
Application area:	5 hectares of native vegetation
Purpose of clearing:	Geotechnical Investigations
Method of clearing:	Mechanical removal
Property:	Lot 506 on Deposited Plan 408840, Lot 401 on Deposited Plan 40375 Lot 331 on Deposited Plan 73085, Lot 2519 on Deposited Plan 180565 Road reserve (11430644), Road reserve (11432655), Road reserve (11432654)
Location (LGA area/s):	Town of Port Hedland
Localities (suburb/s):	South Hedland

1.2. Description of clearing activities

The vegetation proposed to be cleared is 5 hectares of native vegetation within a 28.2 hectare boundary for the purpose of geotechnical investigations to inform the design of accommodation facilities (see Figure 1, Section 1.5).

The geotechnical work involves the following:

- Clearing of drill pads (typically 20 meters by 20 meters) to allow the drilling of boreholes with a geotechnical site investigation drilling rig;
- Clearing to allow the excavation of test pits across the site to depths of up to 3 meters;
- Clearing to allow pile testing (typically 10 meters by 10 meters); and
- Clearing for access tracks associated with site activities.

Upon completion of the proposed geotechnical surveys, the applicant intends to conduct further investigations and clearing, if the Permit Area is found feasible for the construction of accommodation facilities. Additional clearing at that stage will be applied for under a separate permit).

1.3. Decision on application

Decision:	Granted
Decision date:	9 October 2024
Decision area:	5 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received. No submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), the findings of a flora and vegetation survey (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3.3). The Delegated Officer also took into consideration that the purpose for the application is to conduct geotechnical surveys, and the clearing footprint will be limited to five hectares.

The assessment identified that the proposed clearing would result in:

- potential impacts to conservation significant fauna if present during clearing activities;
- potential impacts from the introduction and spread of weeds and dieback into adjacent vegetation, which may impact on the quality of the adjacent vegetation and its habitat values; and
- potential impacts to conservation significant flora if present during clearing activities,

After consideration of the available information, as well as the applicant's reports and minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to lead to any long-term adverse impacts on the environmental values of the local area and can be minimised and managed to lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds; and
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.

1.5. Site map

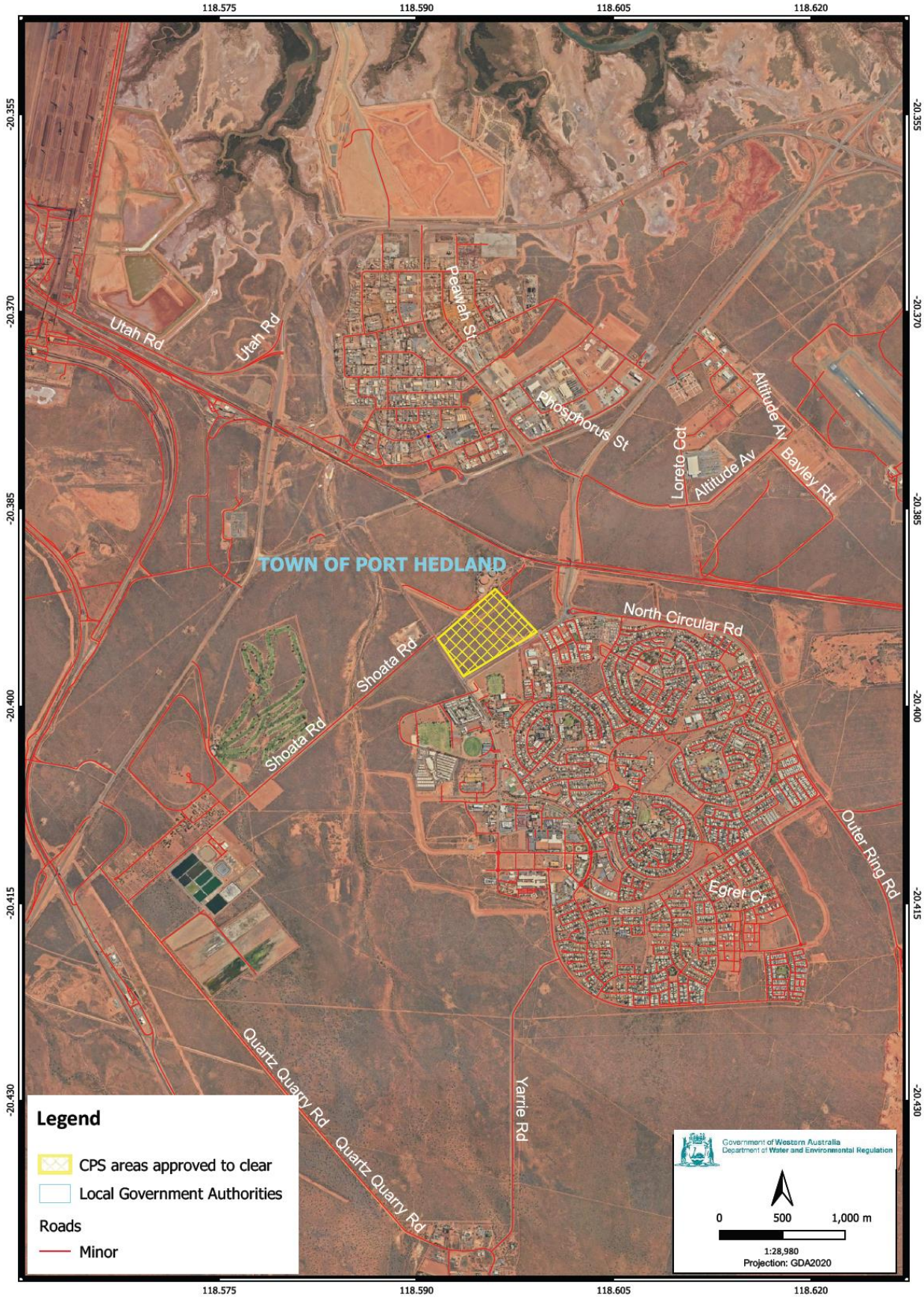


Figure 1 Map of the application area

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Land Administration Act 1997 (WA)*
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Native Title At 1993 (Cth)*

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant has submitted information on avoidance and mitigation in their Project summary, which includes the commitments below (Preston Consulting, 2024):

Minimisation

The applicant commits to minimise impacts of clearing to native vegetation:

- Limiting the total extent of vegetation clearing to five hectares.
- Identifying the clearing areas using GPS coordinates.
- Minimising clearing to the Permit area and only if required.
- Inspection of all vehicles, equipment and personnel and cleaning of these as required.

Avoidance

The applicant states that they seek to avoid impacts on potential Aboriginal heritage sites:

- Avoidance Heritage surveys will be undertaken at the pre-clearance stage to avoid any Aboriginal Heritage sites.
- During the clearing process monitors will be used in accordance with the applicant's ground disturbance procedure.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values, subject to conditions.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix B) identified that the impacts of the proposed clearing present a risk to biological values (fauna and flora). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (Fauna) - Clearing Principle (b)

Assessment

A two day basic fauna survey was conducted within the application area in the summer of 2024 by Phoenix Environmental (Phoenix Environmental 2024b). The results from this fauna survey and their desktop assessment, the interpretation of vegetation types, and available databases were used to assess likelihood of occurrence for conservation significant fauna (See A.4 for fauna analysis table) (GIS Database). Based on these factors and our desktop assessment of the local area (50 kilometre radius), the application area is likely to provide suitable habitat for the following species:

- *Macrotis lagotis* (Greater Bilby) (VU)
- *Falco hypoleucos* (Grey Falcon) (VU)
- *Apus pacificus* (Fork-tailed Swift) (MI)
- *Dasycercus blythi* (Brush-tailed Mulgara) (P4)

Two other conservation significant species that were recorded which may occur within the application area are the Peregrine Falcon (*Falco peregrinus,* OS) and the Barn Swallow (*Hirundo rustica*, MI).

Brush-tailed Mulgara

The brush-tailed mulgara is a nocturnal, burrowing marsupial which has been found in low *Triodia* scrubland and sparsely vegetated stony areas (Thompson and Thompson, 2014). The hummock grassland, sandplain, and drainage line habitat within the application area are considered to comprise suitable habitat for this species. Considering nearby (less than two kilometres) records for the species exist, it is likely that the species makes use of the area as an infrequent visitor for foraging and dispersal (Phoenix Environmental, 2024b; GIS Database). Although evidence of the species was not recorded during the fauna survey, 276 records exist for brush-tailed mulgara in the broader local area (GIS Database). Given the distance to nearby records and the fact that the application area contains suitable habitat for this species, the brush-tailed mulgara may utilise the application area as part of their foraging habitat.

Greater Bilby

The Bilby inhabits a range of habitats, including Eucalyptus and Acacia woodlands and Acacia shrubland over hummock and tussock grasslands (DCCEEW, 2023). The hummock grassland, drainage line, and sandplain habitat within the application area are considered to comprise suitable habitat for this species (Phoenix Environmental, 2024b). According to the bilby recovery plan (DCCEEW, 2023), bilbies have large foraging ranges, can disperse up to five kilometres between burrows on consecutive days and construct a new burrow every two and a half weeks on average. It is not likely that the application area comprises critical habitat for the species since it has been subject to human disturbance and is adjacent to cleared land and infrastructure (GIS Database). Although no evidence of Bilbies was recorded within the application area, the bilby may still utilise the application area for foraging and dispersal, based on suitable habitat and historic records of the species nearby. The lack of secondary evidence for the species would indicate that the area has not been visited by the species recently and therefore the proposed cleaning is not likely to have a significant impact on the species.

Grey Falcon, Peregrine Falcon

The Grey Falcon's habitat consists of open woodlands, tussock grasslands, and Acacia shrublands. The species primarily makes use of habitat of tree-lined watercourses, which may be used for roosting and nesting (TSSC, 2020). Within the local area, eight records exist for the species, with the closest being less than six kilometres from the application area (GIS Database). Both the fauna survey and desktop assessments did not record any evidence of the species within the application area (Phoenix Environmental, 2024b, GIS Database). Although it could be that the species might use the area for foraging, considering no taller trees associated with watercourses exist nearby, the application probably does not provide preferable foraging habitat (GIS Database). It is therefore not likely that clearing within the application area will have a significant impact on the species.

The Peregrine Falcon is a widespread species occurring in woodlands, grasslands and coastal cliffs, usually in proximity to watercourses/bodies (Marchant & Higgins, 1993). This species prefers to use granite outcrops and coastal cliffs as nesting habitat but can breed in tree hollows and other bird nests as well (Palmer, 2002). Like the Grey Falcon, the use of the habitat present in the application area would only be transient in nature, and since only four records within the local area exist for this species (current as of 2012) (GIS Database), it is unlikely that the species is reliant on the vegetation within the application area.

Fork-tailed Swift, Barn Swallow

Both the Fork-tailed Swift and Barn Swallow were not recorded during the basic fauna survey (Phoenix Environmental, 2024b). Since these are wide-ranging migrant species that feed aerially, they are not limited by terrestrial habitat type (DOE, 2015). Four records exist for the Fork-tailed Swift (last record in 2022) with the closest being within 10 kilometres of the application area (GIS Database). For the Barn Swallow, 25 records exist within the local area with the closest being less than three kilometres from the application area (GIS Database). Both species are considered possible visitors of the area but are not likely to be affected by the proposed clearing.

Conclusion

Given the above, the application area provides some suitable habitat for conservation significant fauna. The extent of impact to these species habitat resulting from the proposed clearing is not likely to be significant. The use of a fauna spotter and undertaking slow, progressive clearing towards adjacent native vegetation will minimise impacts to any fauna present at the time of clearing.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.
- Engage a fauna spotter for the duration of clearing activities.
- Avoidance and minimisation to reduce the impacts and extent of clearing.

3.2.2. Biological values (Flora) - Clearing Principle (a)

Assessment

Based on the findings of the desktop assessment by Phoenix Environmental (2024a) no conservation significant flora have previously been recorded in the Permit Area. According to available databases a total of 15 conservation significant flora species have been recorded within the local area (50 kilometre radius) (GIS Database). Of the conservation significant flora species recorded in the local area, the application area is likely to provide suitable and potentially significant habitat for the following species:

- *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (Priority 3)
- *Euploca mutica* (Priority 3)
- *Rothia indica* subsp. *Australis* (Priority 3)
- *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (Priority 1)

Abutilon sp. Pritzelianum (S. van Leeuwen 5095) is a shrub that grows approximately one to two metres in height. It is in found, among other regions, in the Pilbara region in Port Hedland. It produces yellow flowers from April to July and is commonly found in sand and flood plains in orange, brown sandy loam soils (WA Herbarium, 1998-). It has been recorded 35 times within the local area (50 kilometre radius), with the closest record being less than 13 kilometres from the application area (GIS Database).

Euploca mutica is a herb that grows approximately 0.3 metres in height. It is found in the Pilbara region in East Pilbara, Karratha, and Port Hedland. It produces white flowers from May to November and is commonly found in sand and flood plains in orange, brown sandy loam soils (WA Herbarium, 1998-). It has been recorded 35 times within the local area (50 kilometre radius), with the closest record being less than six kilometres from the application area (GIS Database).

Rothia indica subsp. *australis* is a prostrate annual herb that grows approximately 0.3 metres in height. It occurs in Dampierland, Great Sandy Desert, Victoria Bonaparte, and in the Pilbara including Port Hedland. It produces yellow flowers from April to August and occurs in sandy soils on both hilly terrain and flats (WA Herbarium, 1998-). It has been recorded five times within the local area (50 kilometre radius), with the closest record being less than 12 kilometres from the application area (GIS Database).

Tephrosia rosea var. Port Hedland (A.S. George 1114) is an erect shrub which grows up to 0.75 meters in height. It is in found in the Great Sandy Desert and the Pilbara, including in Port Hedland. It produces deep pink flowers in March, July, and from August to October and is commonly found in coastal dunes and sandplains (WA Herbarium, 1998-). It has been recorded 24 times within the region (50 kilometre radius), with the closest record being less than 2 kilometres from the application area (GIS Database).

Although there are no known records for the above species within the application area, it is possible that these species could occur within the area as they either commonly grow in Acacia shrubland over hummock grasslands or Sandplain. Given the lack of records and the small scale of the clearing for geotechnical investigations, it is unlikely that the proposed will significantly impact these species at the population level.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on conservation significant flora and biodiversity can be managed by undertaking avoiding and minimising disturbance to native vegetation and by taking steps to minimise the risk of the introduction and spread of weeds.

Conditions

To address potential impacts, the following management measures will be required as conditions on the clearing permit:

- Take hygiene steps to minimise the risk of the introduction and spread of weeds to adjacent vegetation.
- Avoidance and minimisation to reduce the impacts and extent of clearing.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Licence issued under Part V Division 3 of the EP Act.
- Licence to abstract water under the *Rights in Water and Irrigation Act 1914*.
- A Programme of Works under the *Mining Act 1978.*

The application was advertised on the Department's website for 21 days and no submissions were received.

Aboriginal sites of significance have been mapped in the local area but not within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is located in the Pilbara Bioregion, in the locality of Port Hedland. Spatial data indicates the local area (50 kilometre radius) retains approximately 95.34 per cent of its original native vegetation cover.
Ecological linkage	There are no mapped ecological linkages within the application area and the combined local area (50 kilometre radius). The application area is unlikely to provide any specific linkage values, noting the extent of the surrounding native vegetation.
Conservation areas	The nearest conservation areas to the application area are Mungaroona Range Nature Reserve which is located approximately 110 kilometres to the southwest of the application area and Eighty Mile Beach which is located approximately 100 kilometers from the application area.
Vegetation description	The flora and vegetation surveys of Phoenix Environmental (2024a) indicate that the vegetation within the proposed clearing area consists of one vegetation type: • Sandplain (B): Open *Acacia colei* var. *colei* shrublands over low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands mosaic - (25.9 hectares).

Characteristic	Details
	Remaining area within the application area were recorded as 'cleared sandplain' (2.3 hectares).
Vegetation condition	The flora and vegetation surveys of Phoenix Environmental (2024a) indicate that the existing vegetation within the proposed clearing area is in either very good or completely degraded (Keighery, 1994) condition (25.9 hectares in Very Good condition and 2.3 hectares in Completely Degraded condition). The full Keighery (1994) condition rating scale is provided in Appendix C.
Climate and landform	The annual average temperatures for the application area range from 24.1°C to 40.8°C, with a mean annual temperature of 33.4°C. The average annual rainfall received over the application area is 316.8 millimetres (BoM, 2024). The application area is situated at an elevation of approximately between 20 to 80 meters above sea level.
Soil description	The soil within the application area is mapped as: • 281Ua (Uaroo System) - Broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs.
Land degradation risk	No land degradation risks were identified through the desktop research component. The application area does not lie within an area with high risk of land and/or soil degradation.
Waterbodies	The desktop assessment and aerial imagery indicated that no wetlands or watercourses either lie within or transect the area proposed to be cleared.
Hydrogeography	The application area is located within the Pilbara Surface Water Area and Pilbara Groundwater Area as proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act). The groundwater salinity level is mapped as 1,000-3,000 milligrams per litre.
Flora	No significant flora was recorded in the application area during the flora and vegetation survey of Phoenix Environmental (2024a). Within the local area, the desktop assessment identified 140 records of priority flora across 15 species. No threatened flora species were recorded within the local area (50 kilometres). Of the conservation significant flora species recorded in the local area, the application area is likely to provide suitable and potentially significant habitat for four species (See Section 3.2.2). Priority species recorded within the local area with the potential of occurring within the application area are further considered in Appendix A.3.
Ecological communities	There are no Threatened or Priority ecological communities or buffers are mapped within the application area. The closest community, the Eighty Mile System Priority Ecological Community (P3), is recorded approximately 35 kilometres northeast of the application area.
Fauna	The desktop assessment identified 70 conservation significant fauna in the local area. No conservation significant fauna was recorded within the application area during the fauna survey by Phoenix Environmental in January/February of 2024. Based on the survey and the desktop assessment, four conservation significant species were considered 'likely to occur' within the application area and two species as 'may occur'. Of these, the closest records to the application area are the Brush-tailed Mulgara (*Dasycercus blythi*) and the Bilby (*Macrotis lagotis*).

A.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Pilbara	17,808,657.04	17,731,764.88	99.57	1,801,714.98	10.2
Vegetation complex					
Beard vegetation association 647	195,859.95	191,710.92	97.88	-	-
Local area					
50 kilometre radius	502,318.21	478,920.82	95.34	-	-

*Government of Western Australia (2019)

A.3. Flora analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	Priority 3	Y	Y	Y	<13	35	N/A
Bonamia oblongifolia	Priority 3	Y	N	N	>40	unknown	N/A
Bulbostylis burbidgeae	Priority 4	N	Y	Y	<4	5	N/A
Eragrostis crateriformis	Priority 3	N	Y	Y	<10	12	N/A
Euploca mutica	Priority 3	Y	Y	Y	<6	35	N/A
Gomphrena leptophylla	Priority 3	N	Y	Y	<12	1	N/A
Gomphrena pusilla	Priority 2	N	N	N	<10	5	N/A
Gymnanthera cunninghamii	Priority 3	N	Y	Y	<3	7	N/A
Phyllanthus sp. 'Port Hedland Solar Farm'	Indeterminate	N	N	N	<5	unknown	N/A
Ptilotus mollis	Priority 4	N	N	Y	<30	1	N/A
Rothia indica subsp. *australis*	Priority 3	Y	N	Y	<12	5	N/A
Tephrosia rosea var. Port Hedland (A.S. George 1114)	Priority 1	Y	Y	Y	<2	24	N/A
Triodia chichesterensis	Priority 3	N	N	Y	<35	6	N/A
Euphorbia clementii	Priority 3	N	N	N	>40	2	N/A

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
(*Falco hypoleucos*) Grey Falcon	VU	Y	N	<6	8	Y
(*Apus pacificus*) Fork-tailed Swift	MI	N	N	<9	5	Y
(*Dasycercus blythi*) Brush-tailed Mulgara	P4	Y	Y	<2	276	Y
(*Macrotis lagotis*) Greater Bilby	VU	Y	Y	<3	49	Y
(*Falco peregrinus*) Peregrine Falcon	OS	Y	N	<3	3	Y
(*Hirundo rustica*) Barn Swallow	MI	Y	Y	<3	19	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.5. Ecological community analysis table

Community name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Eighty Mile System	P3	N	N	N	34.9	1	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.6. Land degradation risk table

Risk categories	***281Ua***
Wind erosion	10% of the map unit has a high to extreme hazard
Water erosion	0% of the map unit has a very high to extreme hazard
Salinity	0% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	0% of the map unit has a high susceptibility
Flood risk	0% of the map unit has a moderate to high hazard
Water logging	0% of the map unit has a moderate to very high to risk
Phosphorus export risk	0% of the map unit has a high to extreme hazard

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared does not contain any significant flora and does not contain any habitat that is of critical importance to the conservation significant fauna recorded in the area.	Not at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: Potential fauna habitat for conservation significant species was recorded in the application area but was not found to be critical habitat to any of the conservation significant species occurring in the local area. These species include Greater Bilby and Brush-tailed Mulgara. The other species with a high likelihood of using the area are the Grey Falcon, Peregrine Falcon, Fork tailed Swift and the Barn Swallow. The application area does not provide any critical habitat for the avian species, apart from potential foraging habitat. The proposed clearing is not likely to significantly impact any conservation significant fauna that might occur in the broader local area.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The area proposed to be cleared potentially contains habitat for flora species listed under the BC Act. The flora and vegetation desktop assessment did not document any Threatened or Priority species within the application area. Although conservation significant species may occur within the application area, the proposed clearing is unlikely to significantly impact the population of these species in the broader local area.	Not likely to be at variance	Yes *Refer to Section 3.2.2, above.*
Principle (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."* Assessment: The area proposed to be cleared does not contain species that can indicate a threatened ecological community. The vegetation present within the application area is not representative of any nearby TEC and the proposed clearing is therefore not likely to impact any ecological communities in the local area.	Not at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (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."* Assessment: The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area. A large part of the application area consists of remnant native vegetation; however, the applicant has stated that only 5 hectares (17%) of the application area will be cleared.	Not likely to be at variance	No
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."* Assessment: Given no conservation areas occur within the local area (50 kilometre radius), the proposed clearing will not have an impact on the environmental values of nearby conservation areas.	Not at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given no water courses or wetlands are recorded within or nearby the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.	Not at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are not susceptible to land degradation risks. Considering the small scale of the clearing, the proposed clearing is not likely to have an appreciable impact on land degradation.	Not at variance	No
Principle (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."* Assessment: Given no water courses or wetlands are recorded within or nearby the application area, the proposed clearing is unlikely to impact surface or ground water quality. There exists an artificial drainage line that intersects with the application area, but no works are planned to occur within a drainage line neither will the clearing intersect the water table.	Not at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: : The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.	Not at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

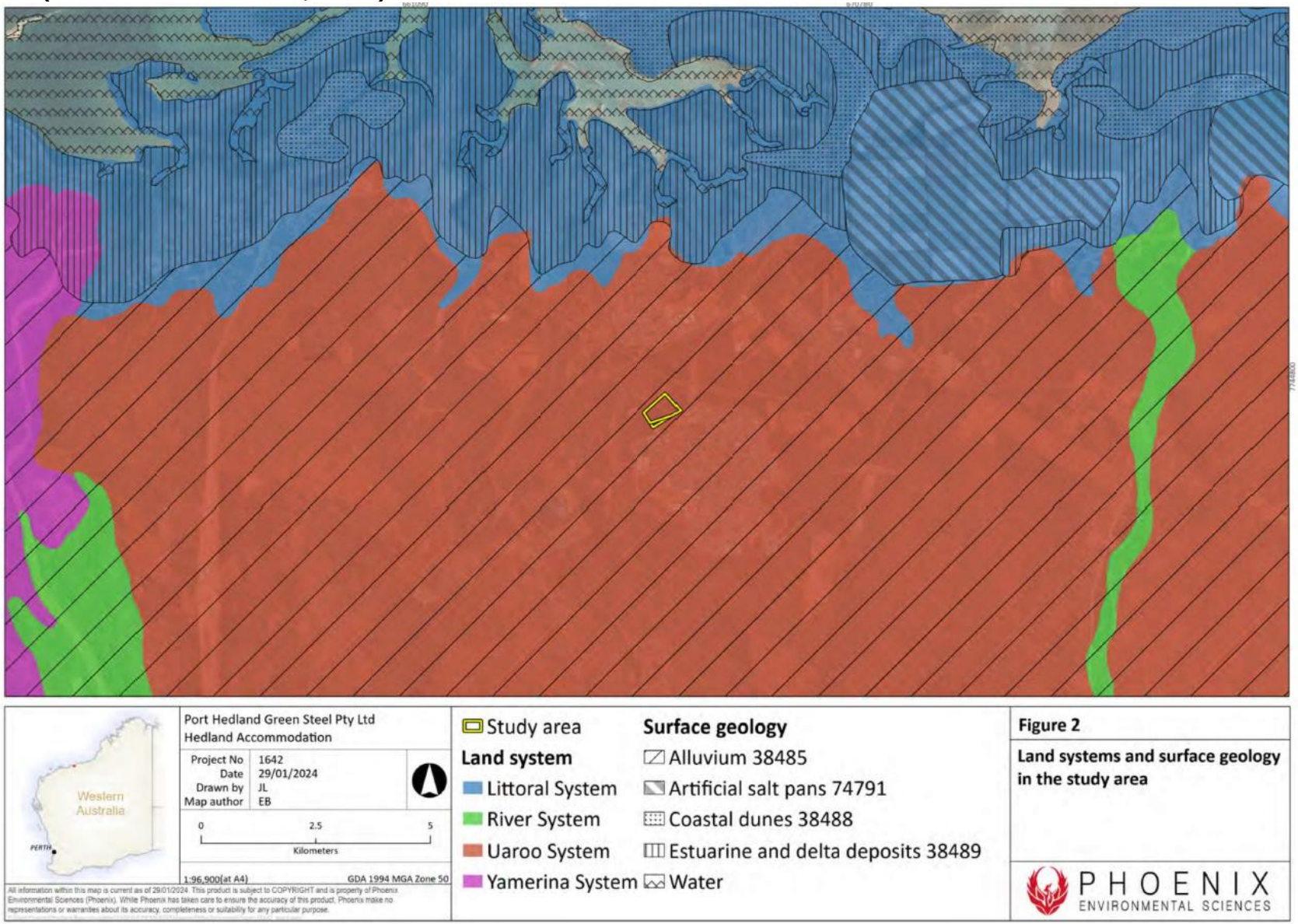
Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.

Condition	Description
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact, and the area is completely or almost completely without native species. These areas are often described as ‘parkland cleared’ with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Biological survey information excerpts / photographs of the vegetation / DWER site inspection report

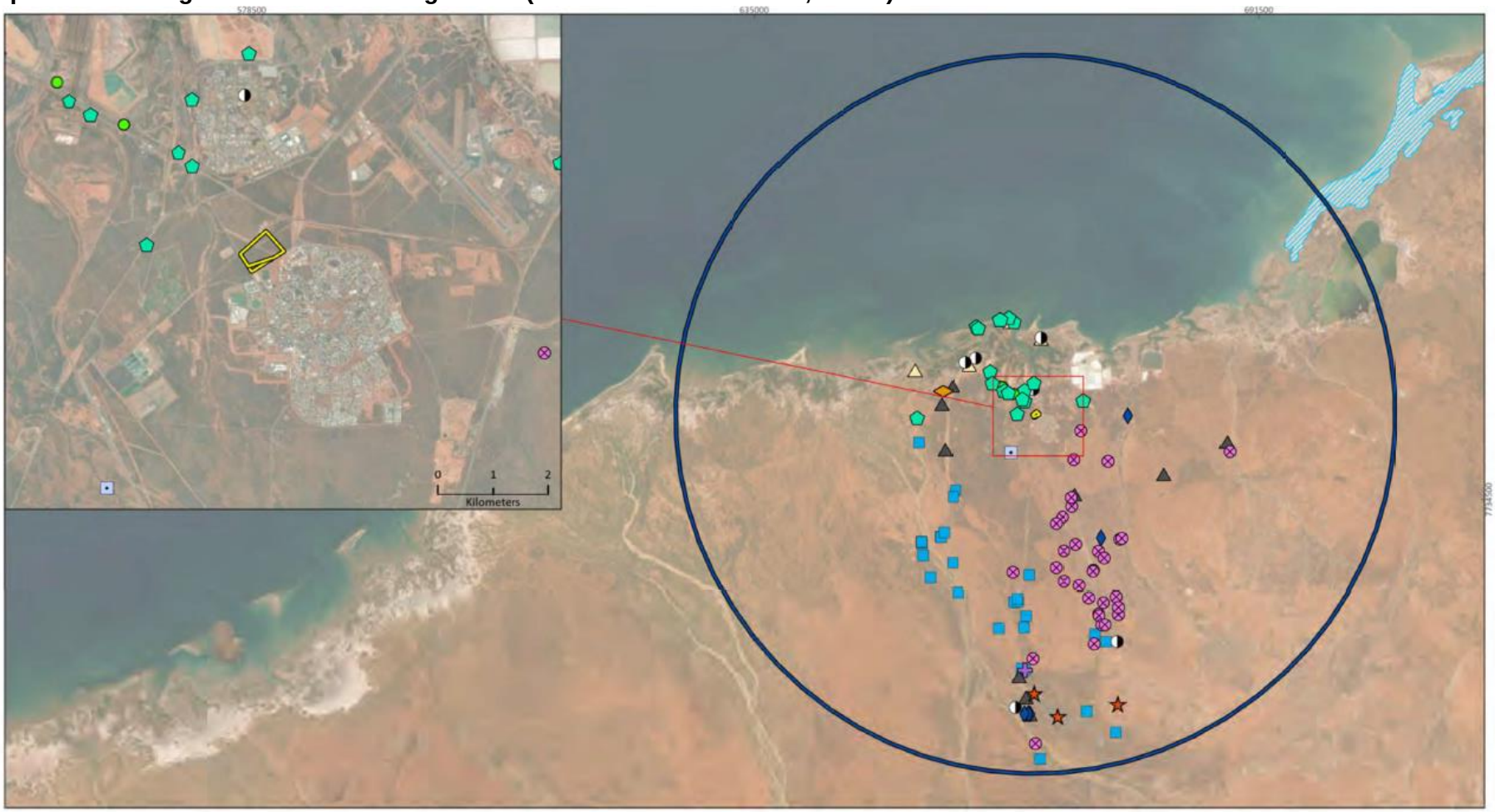
Land Systems (Phoenix Environmental, 2024a)



Vegetation Associations (Phoenix Environmental, 2024a)



Desktop records of significant flora and vegetation (Phoenix Environmental, 2024a)



Desktop records of significant flora and vegetation (Phoenix Environmental, 2024a)

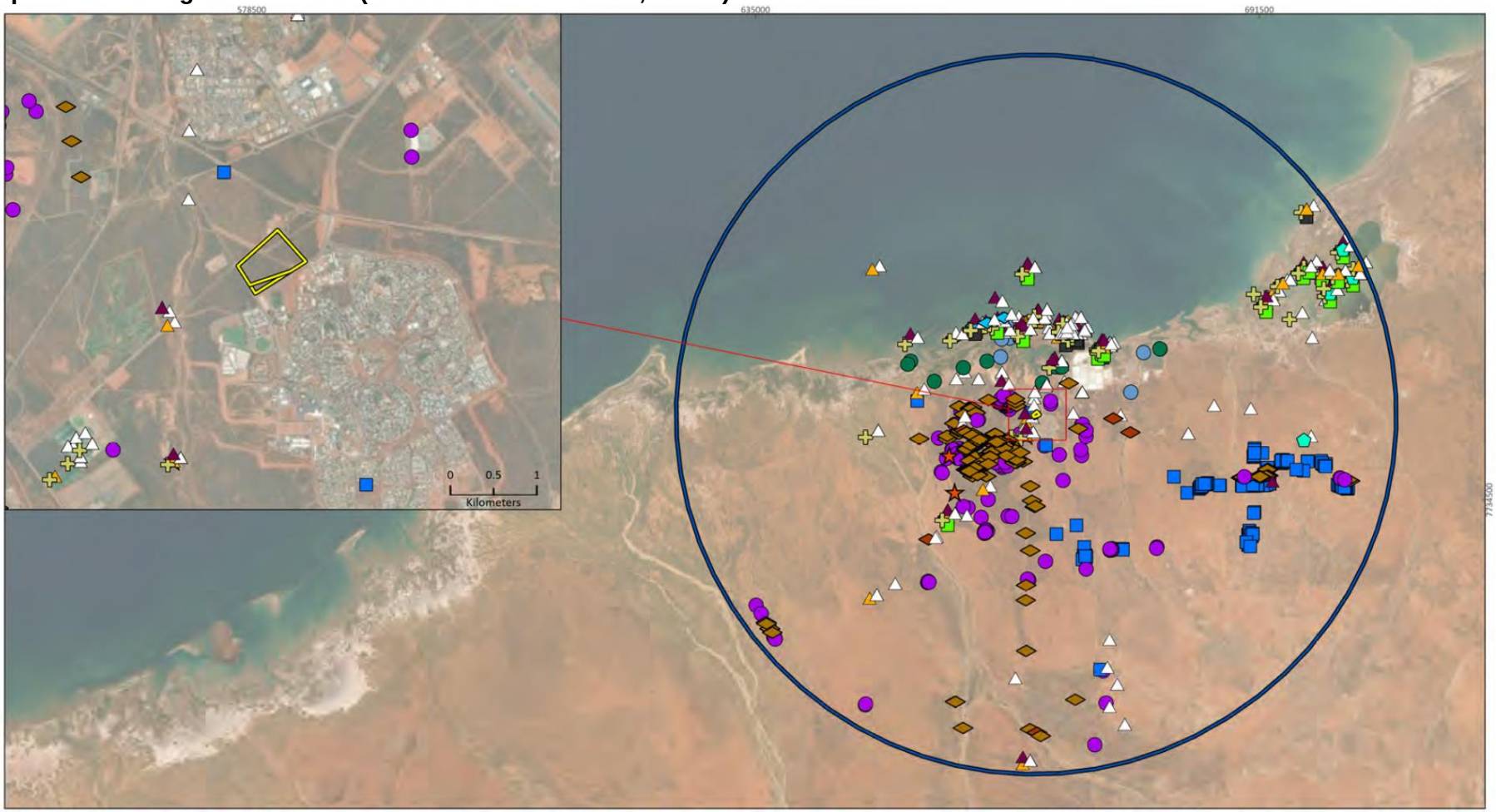
Table 3 Significant flora identified in the desktop review

Species	Status	Proximity to study area (number of records within 40 km)	Habitat	Flowering times	Likelihood of occurrence in study area
Tephrosia rosea var. Port Hedland (A.S. George 1114)	P1 (DBCA)	1.9 km W of study area	Predominantly recorded on coastal dunes but also in red sand plain in *Acacia* shrublands over *Triodia* hummock grasslands. Often found is disturbed area such as road verges.	March, July, August, September, October	Possible, suitable habitat is present.
Gomphrena pusilla	P2 (DBCA)	8.3 km N of study area	Grows in open shrublands of *Acacia bivenosa* over open *Triodia epactia* hummock grassland of over an open tussock of *Cenchrus ciliaris* along limestone ridge tops on brown loam, exposed calcrete rock and calcareous coastal dunes.	March – April, June	Unlikely, as generally closer to the coast and unsuitable habitat.
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	P3 (DBCA)	12.7 km SW of study area	Grows in shrublands of *Acacia* sp. over *Triodia* hummock grasslands on sandy plains and floodplains in red-brown sandy clay-loam soil.	April, July,	Possible, suitable habitat is present.
Bonamia oblongifolia	P3 (DBCA)	>40 km of study area (no geometry)	Grows in *Acacia* shrublands over hummock and tussock grasslands Prefers light reddish-brown sandy clay-loam as found on Pindan plains.	February – June, November	Possible, suitable habitat is present.
Eragrostis crateriformis	P3 (DBCA)	9.8 km SSE of study area	Grows in low open woodlands over sparse *Acacia* shrublands over *Triodia* grasslands on red sandy clay-loam soil associated with drainage lines, floodplains and clay pans.	January – May or July	Unlikely, habitat may not be present.
Euploca mutica	P3 (DBCA)	5.4 km SEE of study area	Grows in *Acacia* shrubland over hummock grassland in sandy loam plains and floodplains.	May - November	Possible, suitable habitat is present.
Gomphrena leptophylla	P3 (DBCA)	11.0 km NWW of study area	Grows in hummock grassland, *with Triodia epactia* and *T. secunda* along drainage lines and floodplains in red sandy loam soils.	March - September	Unlikely, habitat may not be present.
Gymnanthera cunninghamii	P3 (DBCA)	2.5 km N of study area	Grows in *Eucalyptus*, *Melaleuca* and *Acacia* woodlands over mixed grasslands associated with riverbanks, creeks, drainage lines and floodplains.	January - December	Unlikely, habitat may not be present.
Rothia indica subsp. *australis*	P3 (DBCA)	10.7 km E of study area	Grows in shrublands over *Triodia* hummock grasslands in red sandy to loamy soils.	April - August	Possible, suitable habitat is present.

Desktop records of significant flora and vegetation (Phoenix Environmental, 2024a)

Species	Status	Proximity to study area (number of records within 40 km)	Habitat	Flowering times	Likelihood of occurrence in study area
Triodia chichesterensis	P3 (DBCA)	31.2 km S of study area	Seasonally inundated floodplains and cracking claypans with gilgai depressions. Often found growing in highly disturbed areas like road verges and areas cattle graze. Red-brown clay loan with Ironstone pebbles scattered.	April - June	Unlikely, habitat may not be present.
Bulbostylis burbidgeae	P4 (DBCA)	3.3 km NW of study area	Grows in clay-loam soils frequently associated with quartzite on undulating plains and low rises in woodlands and shrublands over *Triodia* hummock grasslands.	March or June - August	Unlikely, habitat may not be present.
Ptilotus mollis	P4 (DBCA)	28.5 km S of study area	Grows in *Triodia* hummock grasslands typically associated with granite boulders, hill tops and outcrops.	May or September	Unlikely, habitat may not be present.
Phyllanthus sp. 'Port Hedland Solar Farm'	Indeterminate	4.9 km SSW of study area	Grows on ironstone outcroppings, hill slopes in skeletal red/brown clay-loam soils.	March	Unlikely, habitat may not be present.

Desktop records of significant fauna (Phoenix Environmental, 2024b)



Desktop records of significant fauna (Phoenix Environmental, 2024b)

Species[1]	Status	Proximity to study area	Habitat
Reptiles (2)			
Ctenotus angusticeps Airlie Island Ctenotus	P3 (DBCA list)	3.3 km N	Associated with samphire shrublands and saltmarshes (Maryan *et al.* 2013). Has been reported using crab holes for avoiding humans and for shelter at night.
Liasis olivaceus subsp. *barroni* Pilbara Olive Python	VU (EPBC & BC Acts)	34.9 km S	Commonly found in rocky areas in association with watercourses and pools and often associated with areas of permanent pooling water near rocky habitats, such as gullies, gorges and rocky ranges or boulder sites. It has also been recorded in riparian vegetation along major rivers (Barker & Barker 1994; Pearson 2003).
Non-migratory birds (6)			
Erythrotriorchis radiatus Red Goshawk	VU (EPBC & BC Acts)	Projected distribution	Occurs in tropical and temperate climates in coastal and sub-coastal forested lands of northern Australia. Inhabits coastal and sub-coastal tall open forests and woodlands, tropical savannahs traversed by wooded or forested rivers, and the edges of rainforests. Appears to favour areas with permanent water which are high productivity and contain nesting trees (DCCEEW 2023).
Falco hypoleucos Grey Falcon	VU (EPBC & BC Acts)	5.6 km WSW	The Grey Falcon is a widespread but rare species inhabiting much of the hot, semi-arid and arid interior of Australia. Occurs in a wide variety of arid habitats including open woodlands and open *Acacia* shrubland, hummock and tussock grasslands and low shrublands, particularly where crossed by tree-lined water courses (Schoenjahn *et al.* 2019; Threatened Species Scientific Committee 2020).
Falco peregrinus Peregrine Falcon	OS (BC Act)	2.2 km SSW	Preferred habitat includes cliffs and wooded watercourses. Nesting occurs mainly on cliff ledges, granite outcrops, quarries and in trees with old raven or Wedge-tailed Eagle nests (Johnstone & Storr 1998).
Pezoporus occidentalis Night Parrot	EN; CR (EPBC Act; BC Act)	Projected distribution	Appears to favour areas of dense vegetation comprising old-growth (often > 50 years unburnt) spinifex (*Triodia* spp.), especially hummocks that are ring-forming for roosting and nesting. Such areas must also be associated with foraging habitat containing various native grasses and herbs in addition to spinifex, and these areas may or may not contain shrubs or low trees. Suitability of habitat is thought to depend on particular stages of regeneration after fire (DCCEEW 2024b).
Rostratula australis Australian Painted Snipe	EN (EPBC & BC Acts)	Projected distribution	Generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (DCCEEW 2024b).
Sternula nereis subsp. *nereis* Fairy Tern	VU (EPBC & BC Acts)	10.7 km NNW	In WA, the species is present along the entire coastline, with rare records from the far north (Kimberley) and off the Nullarbor Plain. It nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation (DCCEEW 2023).
Migratory birds (54)			
Actitis hypoleucos Common Sandpiper	Mig. (EPBC & BC Acts)	2.4 km SW	Found across a wide range of wetlands: small ponds, large inlets and mudflats where they forage on the shore usually close to the vegetation (DCCEEW 2023). Prefers rocky creeks, channels, dams, and mangrove-lined inlets (Geering *et al.* 2007).

Desktop records of significant fauna (Phoenix Environmental, 2024b)

Species[1]	Status	Proximity to study area	Habitat
Anous stolidus Common Noddy	Mig. (EPBC & BC Acts)	Projected distribution	Occurs mainly in the ocean off the Queensland coast, but also off the north-west and central WA coast (DCCEEW 2024b). During the breeding season, it occurs on or near islands, on rocky islets and stacks with precipitous cliffs, or on shoals or cays of coral or sand (DCCEEW 2024b).
Apus pacificus Fork-tailed Swift	Mig. (EPBC & BC Acts)	8.4 km W	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 2024b).
Arenaria interpres Ruddy Turnstone	VU/Mig.; Mig (EPBC Act; BC Act)	2.2 km SSW	Usually found in coastal regions containing exposed rocks. They are also found in tidal pools and beaches, as well as clay ridges and occasionally in estuaries, harbours and lagoons. They have been recorded on sewage ponds and on mudflats (DCCEEW 2024b).
Calidris acuminata Sharp-tailed Sandpiper	VU/Mig.; Mig. (EPBC Act; BC Act)	2.4 km SW	Muddy edges of shallow fresh or brackish vegetated wetlands, including lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland (DCCEEW 2024b).
Calidris alba Sanderling	Mig. (EPBC & BC Acts)	8.3 km N	Found utilising coastal environments open to sea swell, sandbars, spits and shingle banks. They also occur on wave-washed rock outcrops. Less frequently found in estuaries and inlet harbours and near-coastal inland wetlands (DCCEEW 2024b).
Calidris canutus Red Knot	VU/Mig.; EN (EPBC Act; BC Act)	3.3 km SW	Typically occupy intertidal mudflats, sandflats and sheltered coasts. They are also known to occupy beaches, lagoons, harbours and sandy beaches. Have also been recorded occupying saline terrestrial wetlands and sewage ponds and are rarely found in freshwater swamps (DCCEEW 2024b).
Calidris falcinellus Broad-billed Sandpiper	Mig. (EPBC & BC Acts)	8.3 km N	Found in sheltered coastal environments, mudflats and favours estuarine habitats. Occasionally found occupying saltmarshes, freshwater lagoons, saltworks and sewage farms. They have also been known to occupy creeks, swamps and lakes near the coast, favouring those with mudflats and exposed sands with receding tides (DCCEEW 2024b).
Calidris ferruginea Curlew Sandpiper	CR/Mig.; CR (EPBC Act; BC Act)	2.4 km SW	Occurs on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons. They are known to favour non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. Also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bores/drains, usually with bare edges of mud or sand (DCCEEW 2024b).
Calidris melanotos Pectoral Sandpiper	Mig. (EPBC & BC Acts)	4.5 km ENE	Shallow fresh to saline wetlands such as coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands (DCCEEW 2024b).
Calidris pugnax Ruff	Mig. (EPBC & BC Acts)	14.8 km SW	Typically occupies saline and brackish wetlands with mudflats. They have been found in a range of wetlands including lakes, swamps, tidal rivers, and floodlands. There are some records of them occupying sheltered coastal areas such as harbours, estuaries and wetlands surrounded by dense vegetation (DCCEEW 2024b).
Calidris ruficollis Red-necked Stint	Mig. (EPBC & BC Acts)	2.4 km SW	Mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores (DCCEEW 2024b).

Desktop records of significant fauna (Phoenix Environmental, 2024b)

Species[1]	Status	Proximity to study area	Habitat
Calidris subminuta Long-toed Stint	Mig. (EPBC & BC Acts)	2.6 km SW	Occupy a variety of wetlands, favouring shallow, freshwater and brackish wetlands including river floodplains, sewage ponds, swamps and lagoons (DCCEEW 2024b).
Calidris tenuirostris Great Knot	VU/Mig.; CR (EPBC Act; BC Act)	8.3 km N	Occupy sheltered coastal habitats, mudflats and sandflats such as inlets, bays, harbours, estuaries and lagoons. They are known to occupy reefs and rock platforms as well as shorelines and mangroves. There are also records in swamps near the coast, saltlakes and non-tidal lagoons (DCCEEW 2024b).
Calonectris leucomelas Streaked Shearwater	Mig. (EPBC & BC Acts)	Projected distribution	The species occurs over pelagic and inshore waters. In northern Australia, the streaked shearwater is usually found in offshore waters more than 18 km from the mainland coast (Marchant & Higgins 1990).
Charadrius leschenaultii Greater Sand Plover	VU/Mig.; VU (EPBC Act; BC Act)	8.3 km N	Utilises coastal and estuarine environments. They typically occupy sheltered sandy or muddy beaches as well as intertidal sandbanks, mudflats, reefs and rock platforms. There are occasional records from saltworks, saltlakes and marginal saltmarshes and brackish swamps (DCCEEW 2024b).
Charadrius mongolus Lesser Sand Plover	EN/Mig.; EN (EPBC Act; BC Act)	8.3 km N	Found in coastal littoral and estuarine environments, it inhabits intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops (DCCEEW 2024b).
Charadrius veredus Oriental Plover	Mig. (EPBC & BC Acts)	8.3 km N	Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats, sandbanks, on sandy/rocky ocean beaches, nearby reefs, or in near-coastal grasslands. They then disperse further inland, where they occur in sparsely vegetated plains or recently burnt open areas (DCCEEW 2024d).
Chlidonias leucopterus White-winged Black Tern	Mig. (EPBC & BC Acts)	2.1 km NNW	Typically occurs in wetland environments such as brackish, saline and coastal areas. They are also known to occupy sheltered areas such as estuaries, harbours and lagoons, particularly those with sandflats and mudflats (DCCEEW 2024b).
Cuculus optatus Oriental Cuckoo	Mig. (EPBC & BC Acts)	Projected distribution	This species has an extremely large range that includes parts of Europe, Asia and northern Australia (IUCN 2019).. Typically occurs on margins of tropical forest habitats. Occurs as a rare non-breeding visitor to mangrove habitat on the Pilbara coast (Johnstone *et al.* 2013).
Fregata ariel Lesser Frigatebird	Mig. (EPBC & BC Acts)	8.3 km N	Usually pelagic and often found far from land, but is also found over shelf waters, in inshore areas, and inland over continental coastlines (Marchant & Higgins 1990).
Gallinago stenura Pin-tailed Snipe	Mig. (EPBC & BC Acts)	2.5 km N	Occurs at edges of freshwater swamps and ponds and is also found on more open wetlands such as claypans. They have also been recorded in sewage ponds and less often in intertidal wetlands (DCCEEW 2024b).
Gelochelidon nilotica Gull-billed Tern	Mig. (EPBC & BC Acts)	1.1 km SW	Occur in freshwater swamps, salt lakes, beaches, mudflats and sewage farms, and are rarely found over the ocean (DCCEEW 2024b).
Glareola maldivarum Oriental Pratincole	Mig. (EPBC & BC Acts)	1.1 km SW	In Australia, this species inhabits open plains, floodplains and grasslands, often with extensive bare areas (DCCEEW 2024b).
Hirundo rustica Barn Swallow	Mig. (EPBC & BC Acts)	2.9 km SW	Occurs in open country in coastal lowlands, an uncommon visitor to Australia (DCCEEW 2024b).
Hydroprogne caspia Caspian Tern	Mig. (EPBC & BC Acts)	1.6 km NW	Found in sheltered coastal habitats and near-coastal terrestrial wetlands (DCCEEW 2024).

Desktop records of significant fauna (Phoenix Environmental, 2024b)

Species[1]	Status	Proximity to study area	Habitat
Limnodromus semipalmatus Asian Dowitcher	VU/Mig.; Mig. (EPBC Act; BC Act)	8.3 km N	Inhabits sheltered coastal habitats including tidal creeks, coastal lagoons and estuaries. There are many records utilising mudflats and sandflats. They are also known to occupy ponds, saltworks and sewage farms (DCCEEW 2024b).
Limosa lapponica Bar-tailed Godwit	Mig. (EPBC & BC Acts)	2.2 km SSW	Occupies a variety of aquatic habitats such as intertidal sandflats, banks, mudflats, estuaries coastal lagoons and harbours. They have also been found in saltmarshes and brackish coastal wetlands (DCCEEW 2024b).
Limosa lapponica subsp. *menzbieri* Bar-tailed Godwit (northern Siberian)	EN; CR (EPBC Act; BC Act)	9.9 km NNE	Occupies a variety of aquatic habitats such as intertidal sandflats, banks, mudflats, estuaries coastal lagoons and harbours. They have also been found in saltmarshes and brackish coastal wetlands (DCCEEW 2024b).
Limosa limosa Black-tailed Godwit	EN/Mig.; Mig. (EPBC Act; BC Act)	3.3 km SW	Typically found in coastal environments with sheltered bays, estuaries and lagoons. Habitat use is dictated by the tides. They are also found in shallow and sparsely vegetated near-coastal wetlands (DCCEEW 2024b).
Macronectes giganteus Southern Giant Petrel	EN/Mig.; Mig. (EPBC Act; BC Act)	Projected distribution	Pelagic. Breeds on 6 subantarctic and Antarctic islands in Australian territory (DCCEEW 2024b).
Motacilla cinerea Grey Wagtail	Mig. (EPBC & BC Acts)	Projected distribution	Vagrant visitor to Australia that inhabits fast-flowing streams and rivers (IUCN 2019).
Motacilla flava Yellow Wagtail	Mig. (EPBC & BC Acts)	8.3 km N	Uncommon but regular visitor to Pilbara; primarily inhabits a range of damp or wet habitats with low vegetation including damp meadows, marshes, waterside pastures, and sewage farms (IUCN 2019; Johnstone *et al.* 2013).
Numenius madagascariensis Eastern Curlew	CR/Mig.; CR (EPBC Act; BC Act)	2.2 km SSW	Occurs mainly on intertidal mudflats, on exposed seagrass beds or mudflats (Geering *et al.* 2007). Also utilises sand spits of estuaries, mangroves, lake shores and ocean beaches.
Numenius minutus Little Curlew	Mig. (EPBC & BC Acts)	2.1 km NNW	Most often found feeding in grassland and sedgeland with scattered, shallow freshwater pools or areas seasonally inundated. Will also use open woodlands with a grassy or burnt understorey, dry saltmarshes, coastal swamps, mudflats or sandflats of estuaries or beaches on sheltered coasts. Mown lawns, gardens, recreational areas, ovals, racecourses and verges of roads and airstrips are also used (Higgins & Davies 1996).
Numenius phaeopus Whimbrel	Mig. (EPBC & BC Acts)	2.2 km SSW	Usually forage on intertidal mudflats and sheltered coastal areas. They have also been found in other waterbodies including harbours, lagoons, estuaries, rivers and mangroves. Occasionally found in sandy and rocky beaches or intertidal areas (DCCEEW 2024b).
Oceanites oceanicus Wilson's Storm Petrel	Mig. (EPBC & BC Acts)	10.1 km N	Only occurs at sea, mainly found in tropical and subtropical waters (DCCEEW 2024b).

Desktop records of significant fauna (Phoenix Environmental, 2024b)

Species[1]	Status	Proximity to study area	Habitat
Onychoprion anaethetus Bridled Tern	Mig. (EPBC & BC Acts)	12.3 km NW	Occupies subtropical and tropical sea environments including islands, coral cays with adequate vegetation, and continental islands but are rarely recorded on inshore continental waters. They have been reported breeding on mainland WA (DCCEEW 2024b).
Pandion haliaetus Osprey	Mig. (EPBC & BC Acts)	1.6 km NW	Occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Occur in a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes (DCCEEW 2024b).
Phaethon lepturus White-tailed Tropicbird	Mig. (EPBC & BC Acts)	Projected distribution	Occupies marine habitats in tropical waters with sea-surface temperatures of more than 22°C. Breeds on islands and atolls, where it nests in a variety of habitats including on bare sandy ground, in closed-canopy rainforest, on rocky cliffs and in quarries (DCCEEW 2024b).
Phaethon rubricauda westralis Indian Ocean Red-tailed Tropicbird	EN/Mig.; Mig. (EPBC Act; BC Act); P4 DBCA list	Projected distribution	A pelagic bird that breeds on offshore islands (DCCEEW 2024b).
Phalaropus lobatus Red-necked Phalarope	Mig. (EPBC Act; BC Act)	29.8 km E	Records indicate their preference for occurring at sea during non-breeding periods. They have been recorded in inland coastal areas, highly saline water bodies including lakes, swamps and wetlands in Australia (DCCEEW 2024b).
Plegadis falcinellus Glossy Ibis	Mig. (EPBC & BC Acts)	3.3 km SW	Predominantly inhabits terrestrial wetlands, foraging in shallow water over soft substrate or on grassy or muddy verges of wetlands providing a variety of water depths. Inland, freshwater wetlands are preferred, especially permanent or ephemeral waterbodies on floodplains and shallow swamps with abundant aquatic flora (Johnstone 2013; Marchant & Higgins 1990).
Pluvialis fulva Pacific Golden Plover	Mig. (EPBC & BC Acts)	8.3 km N	Typically inhabits coastal environments and occasionally can be found in wetlands, mudflats and sandflats in sheltered areas. They have been found on islands, sand and coral cays, terrestrial environments, usually near waterbodies, and paddock areas (DCCEEW 2024b).
Pluvialis squatarola Grey Plover	VU/Mig.; Mig. (EPBC Act; BC Act)	2.2 km SSW	Occurs on intertidal mudflats, saltmarshes, sandflats and beaches of oceanic coastlines, bays and estuaries. During migration it may also be found inland on lakes, pools or grasslands (del Hoyo *et al.* 2014; IUCN 2019).
Sterna hirundo Common Tern	Mig. (EPBC & BC Acts)	4.6 km ENE	Occurs in marine, coastal and pelagic environments and are usually observed in coastal waters in beaches, platforms and sheltered areas including harbours and estuaries (DCCEEW 2024b).
Sternula albifrons Little Tern	Mig. (EPBC & BC Acts)	4.6 km ENE	In Australia, they inhabit sheltered coastal environments, including lagoons, estuaries, river mouths and deltas, lakes, bays, harbours and inlets (DCCEEW 2024b).
Sula leucogaster Brown Booby	Mig. (EPBC & BC Acts)	15.8 km N	Uses both marine and terrestrial habitat but tends to stay close to breeding sites such as tropical islands, continental islands, sand cays and atolls for breeding. Has been recorded in coastal waters, harbours and estuaries and near offshore islands but seldom flying over land (DCCEEW 2024b).

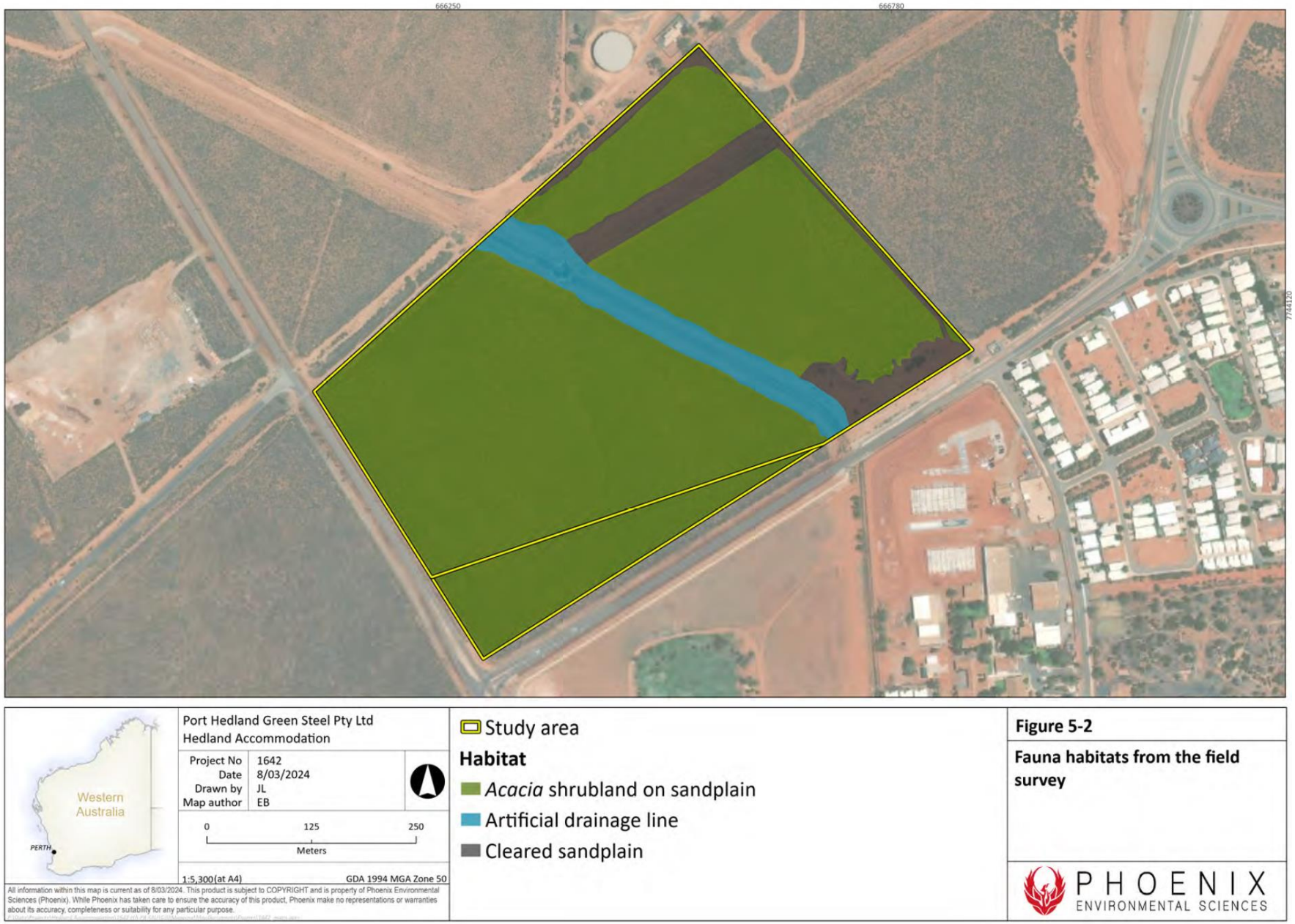
Desktop records of significant fauna (Phoenix Environmental, 2024b)

Species[1]	Status	Proximity to study area	Habitat
Thalasseus bergii Crested Tern	Mig. (EPBC & BC Acts)	2.2 km SSW	Found in coastal areas including low lying rocky, sandy and coral islands. They are often found on open shores and less commonly found in tidal creeks and inland waterbodies (Atlas of Living Australia 2023).
Tringa brevipes Grey-tailed Tattler	Mig. (EPBC and BC Acts); P4 (DBCA list)	1.0 km WSW	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 2024b).
Tringa glareola Wood Sandpiper	Mig. (EPBC & BC Acts)	982 m NW	Uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes (DCCEEW 2024b).
Tringa nebularia Common Greenshank	EN/Mig.; Mig. (EPBC Act; BC Act)	2.2 km SSW	Mostly occurs on the coast but sometimes inland; uses permanent and ephemeral terrestrial wetlands, including rivers and creeks (DCCEEW 2024b).
Tringa stagnatilis Marsh Sandpiper	Mig. (EPBC & BC Acts)	8.3 km N	Inhabits coastal and inland wetlands, estuarine and mangrove mudflats, beaches, swamps, lakes and several other types of wetlands (Morcombe 2004).
Xenus cinereus Terek Sandpiper	VU/Mig; Mig. (EPBC Act; BC Act)	1.0 km WSW	Inhabits coastal mudflats, sheltered estuaries and lagoons. In Australia, it has a primarily coastal distribution, with occasional records inland (Morcombe 2004).
Mammals (8)			
Dasycercus blythi Brush-tailed Mulgara	P4 (DBCA list)	1.7 km NE	Occurs in spinifex grasslands throughout much of the arid zone, digging their burrows in the flats between low sand dunes (Johnson 2008).
Dasyurus hallucatus Northern Quoll	EN (EPBC & BC Acts)	987 m NW	Found in a variety of habitats including rocky areas, eucalypt woodlands, rainforests, shrubland, sandy areas, grasslands and desert. Rocky areas provide important denning habitat, while they forage in nearby grasslands and creek lines (DCCEEW 2024c).
Lagostrophus fasciatus fasciatus Banded Hare-wallaby (mainland)	VU (EPBC & BC Acts)	4.8 km NE	Extinct on the mainland – last confirmed sighting on the mainland was in 1906, prior to the species becoming extinct on the mainland. Natural (wild) populations are restricted to Bernier and Dorre Islands in Shark Bay, WA (Morris & Robinson 2008).
Macroderma gigas Ghost Bat	VU (EPBC & BC Acts)	23.8 km ESE	Present in a variety of habitats from the Pilbara to tropical savannah woodlands and rainforests further north and east. Prefers to roost in caves beneath bluffs of low, rounded hills composed of Marra Mamba geology, and granite rock piles in the Pilbara and sandstone elsewhere, as well as adits (abandoned mines) (TSSC 2016) (Armstrong *et al.* 2021).

Desktop records of significant fauna (Phoenix Environmental, 2024b)

Species[1]	Status	Proximity to study area	Habitat
Macrotis lagotis Greater Bilby	VU (EPBC & BC Acts)	2.1 km WNW	Bilby prefers hummock grassland in plains and alluvial areas, open tussock grassland on uplands and hills, mulga woodland/shrubland on ridges and rises (DCCEEW 2023), loamy or sandy soils associated with palaeodrainage lines and perched drainage lines, dune fields and sandplains; recently burnt habitat (1-3 years) is used frequently (DBCA 2018).
Ozimops cobourgianus North Western Free-tailed Bat	P1 (DBCA list)	7.3 km NW	Primarily found in mangroves, and adjacent creek lines and grasslands (Reardon 2014).
Pseudomys chapmani Western Pebble-mound Mouse	P4 (DBCA list)	24.0 km ESE	Found in areas of rocky, hummock grassland with little or no soil and an overstorey of *Acacia* (Burbidge 2016). Mounds are located on the gentle slopes of rocky ranges covered in rocky mulch, hard spinifex and sparse trees and shrubs (*Eucalyptus, Senna, Acacia* and *Ptilotus*). They are also often found near *Acacia*-dominated drainage lines.
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat	VU (EPBC & BC Acts)	23.6 km ESE	Normally restricted to caves and mine adits (horizontal shafts) with stable, warm and humid microclimates (Van Dyck & Strahan 2008), but temporary roosts such as crevices and tree hollows may be used in warm and humid conditions, allowing greater dispersal during the wet season.

Fauna habitat (Phoenix Environmental, 2024b)



Fauna habitat descriptions (Phoenix Environmental, 2024b)

Habitat type	Site/s	Description	Extent in study area ha (%)	Representative photograph
Acacia shrubland on sandplain	HA001, HA003, HA004	Open *Acacia* shrubland over spinifex hummock grassland over herbs. Occasional *Eucalyptus* trees. Orange, sandy sandplain substrate.	24 ha (85.0)	
Cleared sandplain	-	Orange sandy substrate that has been heavily influenced by human disturbances. Occasional scattered low shrubs.	2.3 ha (8.0)	
Artificial drainage line	HA002	An artificial drainage line surrounded by degraded remnant vegetation. Occasional *Eucalyptus* trees over small grasses and weeds atop an orange sandy substrate.	1.9 ha (7.0)	

Appendix E. Sources of information

E.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

E.2. References

Department of Climate Change, Energy, the Environment and Water (2023) Recovery Plan for the Greater Bilby (Macrotis lagotis), Department of Climate Change, Energy, the Environment and Water, Canberra. CC BY 4.0

Department of Environment Regulation (DER) (2013). *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.

Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.

Department of the Environment (DOE) (2015).Draft referral guideline for 14 birds listed as migratory species under the EPBC Act, Commonwealth of Australia 2015

Environmental Protection Authority (EPA) (2016). *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf.

Environmental Protection Authority (EPA) (2016). *Technical Guidance – Terrestrial Fauna Surveys.* Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf.

Government of Western Australia. (2019) *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019.* WA Department of Biodiversity, Conservation and Attractions. https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Marchant, S. and Higgins, P. J. (Eds) (1990). 'Handbook of Australian New Zealand and Antarctic Birds. Vol. 1. Ratites to Ducks, Part A: Ratites to Petrels'. (Oxford University Press: Melbourne.)

Palmer, G.C. (2002). Foraging behaviour of a Peregrine Falcon'Falco peregrinus'. Australian Field Ornithology, 19(8), pp.248-250.

Phoenix Environmental (2024a). Interim memo summarising flora desktop review findings, Lots 331 and 506, received 5 June 2024 (DWER Ref: DWERDT959288).

Phoenix Environmental (2024b). Basic Fauna Survey for the Port Hedland Green Steel Project, Lots 331 and 506, received 5 June 2024 (DWER Ref: DWERDT959285).

Preston Consulting (2024). Port Hedland Green Steel Project, Accommodation Investigations, Native Vegetation Clearing Permit Referral, Supporting Information, received 5 June 2024 (DWER Ref: DWERDT959285).

Thompson, G.G. and Thompson, S.A. (2014). Detecting burrows and trapping for mulgaras (Dasycercus cristicauda and D. blythi) can be difficult. Australian Mammalogy, 36(1), pp.116-120.

Threatened Species Scientific Committee (2020). Conservation Advice Falco hypoleucos Grey Falcon. Threatened Species Scientific Committee, Canberra, ACT. Available at: http://www.environment.gov.au/biodiversity/threatened/species/pubs/929-conservationadvice-09072020.pdf

Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. https://florabase.dpaw.wa.gov.au/ (Accessed 20 July 2024).