



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10678/1
Permit Holder:	APA Pilbara Holdings Pty Ltd
Duration of Permit:	From 04 November 2025 to 04 November 2030

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 the construction of a high voltage electrical transmission line

2. Land on which clearing is to be done

Lot 273 on Deposited Plan 219540, Boodarie
 Lot 3005 on Deposited Plan 415083, Boodarie
 Lot 1506 on Deposited Plan 423425, Boodarie
 Lot 325 on Deposited Plan 220768, Boodarie
 Lot 1507 on Deposited Plan 423425, Boodarie
 Lot 1505 on Deposited Plan 423425, Boodarie
 Lot 255 on Deposited Plan 192056, Boodarie
 Lot 158 on Deposited Plan 407151, Boodarie
 Lot 391 on Deposited Plan 76777, Boodarie
 Lot 155 on Deposited Plan 407151, Boodarie
 Lot 224 on Deposited Plan 238074, Boodarie
 Lot 332 on Deposited Plan 217385, Boodarie
 Great Northern Highway Road Reserve (PIN 11734364), Boodarie
 Great Northern Highway Road Reserve (PIN 11734365), Boodarie
 Great Northern Highway Road Reserve (PIN 11734366), Boodarie
 Great Northern Highway Road Reserve (PIN 11734367), Boodarie
 Great Northern Highway Road Reserve (PIN 11734368), Boodarie
 Lot 206 on Deposited Plan 220377, Mundabullangana
 Lot 326 on Deposited Plan 217380, Mundabullangana
 Lot 375 on Deposited Plan 219335, Mundabullangana
 Lot 223 on Deposited Plan 238074, Mundabullangana
 Lot 208 on Deposited Plan 238219, Indee
 Lot 328 on Deposited Plan 217382, Indee

Lot 330 on Deposited Plan 217383, Indee
 Lot 331 on Deposited Plan 217384, Indee
 Lot 332 on Deposited Plan 217385, Indee

3. Clearing authorised

The permit holder must not clear more than 150 hectares (ha) of *native vegetation* within the cross-hatched yellow area in Figure 1 of Schedule 1.

4. Application

This permit allows the permit holder to authorise persons, including employees, contractors and agents of the permit holder, to clear native vegetation for the purposes of this permit subject to compliance with the conditions of this permit and approval from the permit holder.

5. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 04 November 2028.

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.

8. Fauna management

The permit holder must:

- (a) not clear more than 3.6 ha of vegetation within the Major Drainage Habitat within the area crosshatched red in Figure 2 of Schedule 1;
- (b) not clear more than 136.5 ha of vegetation within the Sandplain Habitat type identified by *Biologic Environmental Survey (2024b)*, *Phoenix Environmental Science (2022b)* and *Western Wildlife (2023)*;

- (c) restrict clearing activities to day-light hours to avoid the possibility of injury to fauna;
- (d) conduct clearing activities in a slow, progressive manner in one direction towards adjacent native vegetation to allow fauna to move into adjacent native vegetation ahead of the clearing activity;
- (e) implement speed limits to reduce the potential of vehicle strikes of conservation significant fauna;
- (f) minimise areas of loose soil and soil piles within and immediately adjacent to the application area to discourage bilbies (*Macrotis lagotis*) from constructing new burrows.

9. Fauna management (geotechnical investigation) – backfilling

The permit holder must:

- (a) backfill all test pits on the day of drilling/excavating with excavated material; or
- (b) fence all test pits on the day of drilling/excavating with fine mesh to prevent fauna access; or
- (c) cover all test pits on the day of drilling/excavating with a cover which prevents entry to the pits by fauna species; and
- (d) cover all bore holes at the end of each day and backfill upon completion.

10. Fauna management – pre-clearance survey

- (a) Within (7) days prior to undertaking any clearing authorised under this permit, the permit holder shall engage a *fauna specialist* to undertake clearance surveys within the area cross-hatched yellow on Figure 1 of Schedule 1 for the following fauna species:
 - (i) Greater Bilby (*Macrotis lagotis*);
 - (ii) Brush-tailed Mulgara (*Dasycercus blythi*); and
 including the identification and inspection of burrows, and determination of whether burrows are being utilised.
- (b) Where evidence of recent burrow use is identified under condition 10(a) of this permit, the permit holder shall:
 - (i) engage a *fauna specialist* to flag the location of the burrow(s) showing signs of recent use;
 - (ii) not clear within five (5) metres of the flagged burrow(s);
 - (iii) engage a *fauna specialist* to monitor with cameras the flagged burrow/s for a maximum of five days, or until such time that the fauna species identified under condition 10(a) have been observed to independently move on from the burrow/s; and
 - (iv) prior to clearing, engage a *fauna specialist* to re-inspect any flagged burrow/s for the presence of the fauna species identified under condition 10(a).
- (c) If species identified under condition 10(a) of this permit are utilising any flagged burrow(s) under condition 10(b) and cannot be avoided in accordance with condition 6 of this permit, the permit holder shall:

- (i) engage a *fauna specialist* to remove and relocate the individual(s) to an area of suitable habitat.
 - (ii) any removal and relocation of Greater Bilby under condition 10(c) (i) of this Permit must be conducted in accordance with a section 40 authorisation under the *Biodiversity Conservation Act 2016*.
- (d) Where active burrows for species identified under condition 10(a) of this permit are identified and/or species identified under condition 10(a) of this permit are relocated in accordance with condition 10(c), the permit holder shall include the following in a report submitted to the *CEO* within two (2) months of undertaking any clearing authorised under this Permit:
- (i) the location of any active burrows identified using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) the gender of each individual captured under condition 10(c) of this Permit;
 - (iii) the dates, times, vegetation types and weather conditions at each location where species listed under condition 10(a) of this permit are captured from and relocated to under condition 10(c)(ii) of this Permit;
 - (iv) the name of the *fauna specialist* that relocated fauna under condition 10(c) of this permit; and
 - (v) a copy of the fauna licenses authorising the relocation of fauna under condition 10(c)(i) of this Permit.

11. Priority flora management – demarcation

- (a) The permit holder must ensure that:
 - (i) the boundaries of the area to be cleared are identified and demarcated using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) *recorded priority flora* are identified within the *clearing* boundary using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (b) When undertaking any clearing authorised under this permit, the permit holder must not cause or allow the *clearing* of more than the *recorded priority flora* within the clearing boundary.

12. Revegetation and rehabilitation (temporary works)

The permit holder must:

- (a) retain the vegetative material and topsoil removed by clearing authorised under this permit and stockpile the vegetative material and topsoil in an area that has already been cleared;
- (b) as soon as is practicable, and no later than 12 months following clearing authorised under this permit, *revegetate* and *rehabilitate* the areas that are no longer required for the construction (temporary works) activities by:

- (i) re-shaping the surface of the land so that it is consistent with the surrounding five metres land;
 - (ii) ripping the ground on the contour to remove soil compaction;
 - (iii) laying the vegetative material and topsoil retained under condition 13(a) on the cleared areas; and undertake weed control activities on an ‘as needed’ basis to reduce weed cover within the cleared areas to no greater than the weed cover within the adjacent *native vegetation*;
- (c) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 12(b) of this permit:
- (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
 - (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 12(c)(i) of this Permit will not result in similar species composition, structure and density to that of pre-referral clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding native vegetation* that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.

13. Land and watercourse management

The permit holder must:

- (a) commence the works required for the purpose specified under Condition 1 within 12 weeks of any authorised clearing
- (b) where a watercourse or drainage line is to be impacted by clearing, ensure that surface flow is maintained or is reinstated downstream into existing natural drainage lines.

PART III - RECORD KEEPING AND REPORTING

14. 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;

No.	Relevant matter	Specifications
		(f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with condition 7; and (g) watercourse management actions taken in accordance with condition 14.
2.	In relation to fauna management pursuant to condition 8 and 9	(a) Action taken in accordance with condition 8 and 9
3.	In relation to fauna management pursuant to condition 10	(b) results of the pre-clearance surveys undertaken in accordance with condition 10 of this permit; and (c) a copy of the <i>fauna specialist's</i> report.
4.	In relation to flora management pursuant to condition 11	(a) actions taken to avoid impacts to flora in accordance with condition 11 of this permit; and (b) a copy of the environmental specialist's report.
5.	In relation to revegetation and rehabilitation of areas pursuant to condition 12 of this permit:	(a) the location of any areas revegetated and rehabilitated, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees; (b) a description of the revegetation and rehabilitation activities undertaken; (c) the date that the area was revegetated and rehabilitated; (d) the size of the area revegetated and rehabilitated (in hectares); and (e) any weed control activities undertaken within the area revegetated and rehabilitated

15. Reporting

The permit holder must provide the *CEO* the records required under condition 14 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table 2 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 <i>Environmental</i>

Term	Definition
	<i>Protection Act 1986.</i>
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 <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist and who holds a valid flora licence issued under the <i>Biodiversity Conservation Act 2016</i> .
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the CEO as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the <i>Biodiversity Conservation Act 2016</i> .
fill	means material used to increase the ground level, or to fill a depression
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared
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.
suitable habitat	means habitat known to support the conservation significant fauna including Greater Bilby (<i>Macrotis lagotis</i>) and Brush tailed Mulgara (<i>Dasymercus blythi</i>) within the known current distribution of the species
rehabilitate/ed/ion	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate/ed/ion	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area
recorded	means individuals of those <i>priority flora</i> species found within the area cross-hatched yellow in Figure 1 of Schedule 1 during the following surveys: (a) <i>Port Hedland Transmission Line Flora and Vegetation Survey, CPS 10678/1</i> , Biologic Environmental Survey (2024a) received 8 August 2024 (DWER Reference: DWERDT1001571) (b) <i>Hemi Gold Deposit Baseline Flora and Vegetation Assessment Mallina Gold Project</i> . Unpublished report prepared for De Grey

Term	Definition
	Mining Ltd Umwelt (Australia) Pty Ltd (2023) received 8 August 2024 (DWER Reference: DWERDT1166288) (c) <i>Single season Detailed flora and vegetation survey for Port Hedland Transmission Project.</i> Phoenix Environmental Sciences (2025) received 19 August 2025 (DWER Reference: DWERDT1194406)
temporary works	means access tracks, spoil areas, side tracks, site offices, storage areas, laydown areas, extraction sites, camps, project surveys, pre-construction activities, and similar works associated with a project activity that are temporary in nature
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; 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



Ben Gates
A/MANAGER
GREEN ENERGY

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

13 October 2025

References:

- *Baseline flora and vegetation survey for Port Hedland Solar Farm Project* (Phoenix Environmental Sciences Pty Ltd, 2022a)
- *Baseline Flora and Vegetation Assessment.* Hemi Gold Project, (Umwelt Australia Pty Ltd, 2023)
- *Port Hedland Transmission Line Flora and Vegetation Survey,* (Biologic Environmental Survey, 2024a)
- *Single season Detailed flora and vegetation survey for Port Hedland Transmission Project.* Phoenix Environmental Sciences (2025)
- *Detailed Terrestrial Fauna and Targeted Bilby Survey for the Port Hedland Solar Farm Project* (Phoenix Environmental Science Pty. Ltd, 2022b)
- *Detailed Vertebrate Fauna Survey 2021-2022.* Hemi Gold Project, (Western Wildlife, 2023)
- *Port Hedland Transmission Line Basic and Targeted Fauna Survey,* (Biologic Environmental Survey, 2024 b)

Schedule 1

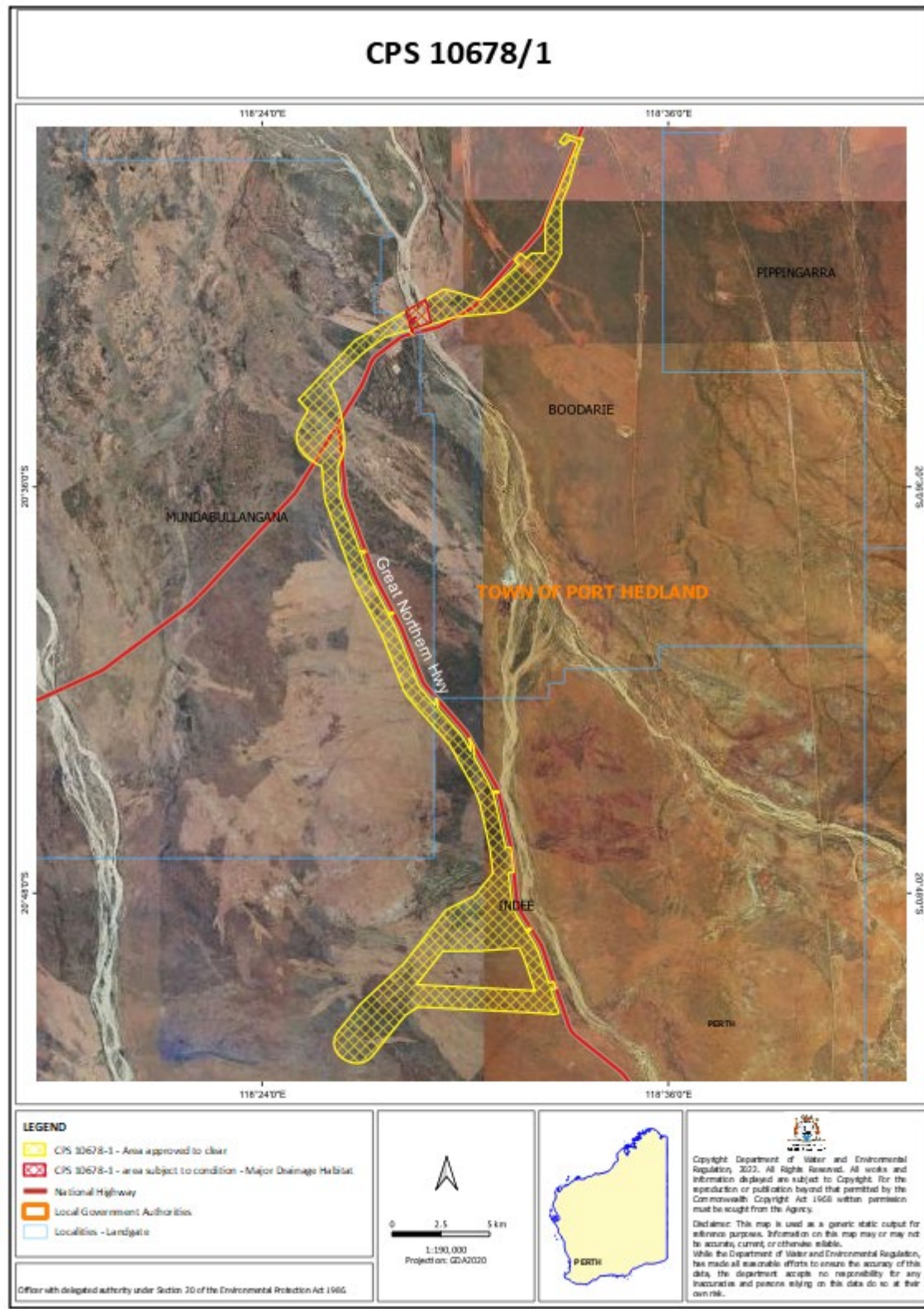


Figure 1. Map of the Permit area. Area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit. Areas crosshatched red indicate the areas subject to conditions.

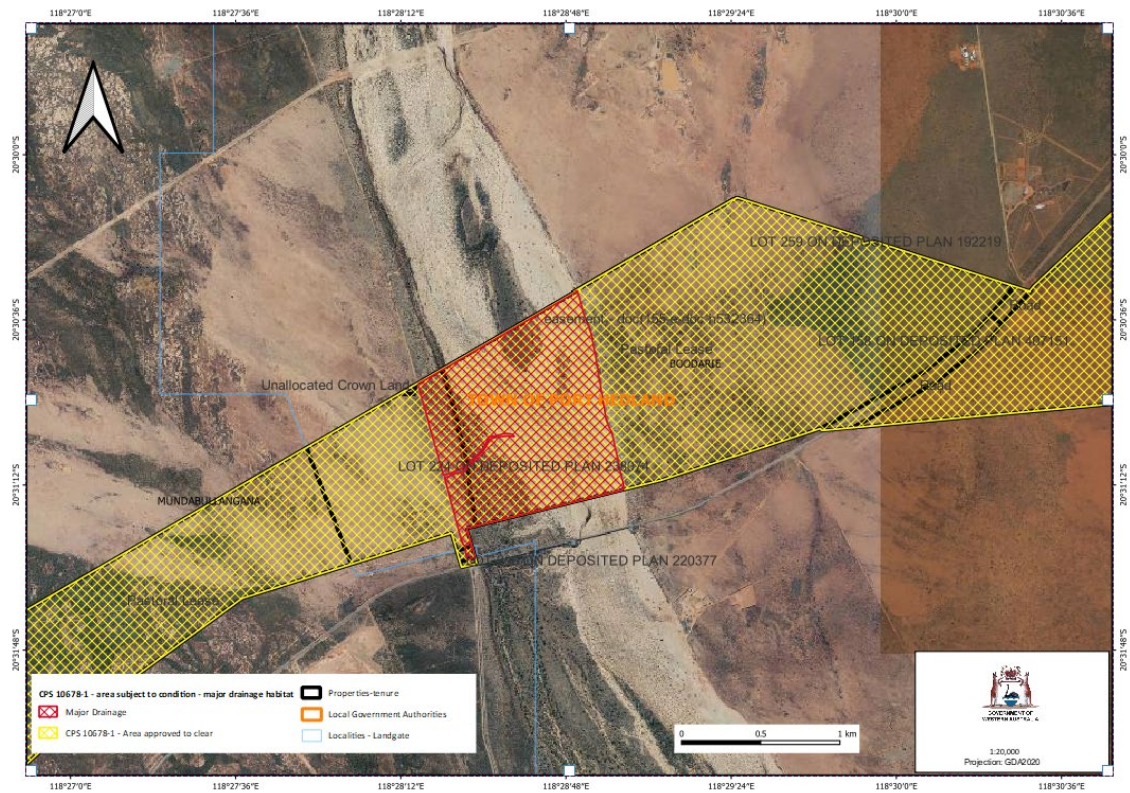


Figure 2. Map of major drainage habitat within the permit area. Area crosshatched red indicates the area subject to condition under the granted permit.



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10678/1
Permit type:	Purpose permit
Applicant name:	APA Pilbara Holdings Pty Ltd
Application received:	11 July 2024
Application area:	150 hectares (ha) of native vegetation within an 8,603.4-ha footprint
Purpose of clearing:	Construction of a high voltage electrical transmission line
Method of clearing:	Mechanical
Property:	Mining Lease tenements L45/807, L45/808, L45/809, L45/818, L45/819, L45/820, L45/821, L47/1162, L47/1163 Lot 273 on Deposited Plan 219540, Boodarie Lot 30051499 on Deposited Plan 415083404497, Boodarie Lot 1506 on Deposited Plan 423425, Boodarie Lot 325 on Deposited Plan 220768, Boodarie Lot 1507 on Deposited Plan 423425, Boodarie Lot 1505 on Deposited Plan 423425, Boodarie Lot 255 on Deposited Plan 192056, Boodarie Lot 158 on Deposited Plan 407151, Boodarie Lot 391 on Deposited Plan 76777, Boodarie Lot 155 on Deposited Plan 407151, Boodarie Lot 224 on Deposited Plan 238074, Boodarie Lot 332on Deposited Plan 217385, Boodarie Great Northern Highway Road Reserve (PIN 11734364), Boodarie Great Northern Highway Road Reserve, (PIN 11734365), Boodarie Great Northern Highway Road Reserve (PIN 11734366), Boodarie Great Northern Highway Road Reserve (PIN 11734367), Boodarie Great Northern Highway Road Reserve (PIN 11734368), Boodarie Lot 206 on Deposited Plan 220377, Mundabullangana Lot 326 on Deposited Plan 217380, Mundabullangana Lot 375 on Deposited Plan 219335. Mundabullangana Lot 223 on Deposited Plan 238074, Mundabullangana Lot 208 on Deposited Plan 238219, Indee Lot 328 on Deposited Plan 217382, Indee

	Lot 330 on Deposited Plan 217383, Indee
	Lot 331 on Deposited Plan 217384, Indee
	Lot 332 on Deposited Plan 2173852, Indee
Location (LGA area/s):	Town of Port Hedland
Localities (suburb/s):	Boodarie, Mundabullangana, Indee

1.2. Description of clearing activities

APA Pilbara Holdings Pty Ltd (APA Pilbara) is proposing to construct and operate a High Voltage Electrical Transmission Line (HVT) from APA's existing power generation facilities at the Port Hedland Power Station (originally commissioned in 1995) (PHPS) within the Boodarie Strategic Industrial Area (BSIA) to support the transition to decarbonise the Pilbara. This will include delivery of renewable power generated from the Port Hedland Solar Farm (PHSF) and Port Hedland Battery Energy System project and firming power supply from the gas fired PHPS to Hemi Gold, located approximately 65 kilometres (km) southwest of Port Hedland (Project). The construction of the new HVT from the PHPS and PHSF to Hemi Gold is the first stage of the Project. This will require a clearing of up to 150 hectares (ha) of native vegetation within an 8,603.4 ha of footprint (see Figure 1 Section 1.5) for the following activities:

- geotechnical investigations to inform detailed designs;
- construction and operation of a HVT line; and
- construction of laydown areas, unsealed access tracks and tower footings installation and stringing of towers with an indicative height of 40-70 metres and typical span between towers of 300-500 metres height.

The applicant submitted that the final design and alignment of the transmission line and location of the investigation sites which comprise the 150 ha of actual clearing area within the application area of 8,603 ha. The application area is relatively flexible to enable further avoidance of impact on environmental values. The proposed clearing will comprise of temporary clearing and permanent clearing. Only areas required for ongoing operation and maintenance of the line and substations will remain permanently disturbed, areas required only for construction purposes will be rehabilitated. Cleared vegetation between transmission towers, for example, will be rehabilitated.

1.3. Decision on application

Decision:	Granted
Decision date:	13 October 2025
Decision area:	150 ha of native vegetation within an 8,603.4-ha footprint 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). DWER advertised the application for 21 days and 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 the biological surveys, in particular
 - *Baseline flora and vegetation survey for Port Hedland Solar Farm Project* (Phoenix Environmental Sciences Pty Ltd, 2022a)
 - *Port Hedland Transmission Line Flora and Vegetation Survey*, (Biologic Environmental Survey, 2024a)

- *Single season detailed flora and vegetation survey for the Port Hedland Transmission Project*, (Phoenix Environmental Sciences Pty Ltd, 2025)
- *Detailed Terrestrial Fauna and Targeted Bilby Survey for the Port Hedland Solar Farm Project* (Phoenix Environmental Science Pty. Ltd, 2022b)
- *Detailed Vertebrate Fauna Survey 2021-2022*. Hemi Gold Project, (Western Wildlife, 2023).
- *Baseline Flora and Vegetation Assessment*. Hemi Gold Project, (Umwelt Australia Pty Ltd, 2023)
- *Port Hedland Transmission Line Basic and Targeted Fauna Survey*, (Biologic Environmental Survey, 2024 b)
- the clearing principles set out in Schedule 5 of the EP Act (see Appendix B),
- advice received from:
 - the Department of Biodiversity, Conservation and Attraction (DBCA) (DBCA, 2024)
 - the DWER regarding requirements under the *Rights in Water and Irrigation (RIWI) Act 1914* (DWER, 2024a)
- 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 of the application is to support the transition to renewable energy. The proposal will reduce greenhouse gas emissions in the region, representing actions towards the State and Federal Government's targets of achieving net zero emissions by 2050.

The Delegated Officer particularly considered the following:

- The removal of 150 ha of vegetation mostly in Very Good (Keighery, 1994) condition may reduce the extent of native vegetation from a predominately vegetated landscape in the same or better condition but will not significantly impact on the extent of native vegetation cover and their biodiversity values in the local and regional extent. Clearing, however, may facilitate the introduction and spread of weeds to the adjacent vegetation, which may reduce its quality and habitat values. Weed management and control measures can mitigate this and is required as a condition in the permit.
- Clearing may reduce the number of individuals of *Tephrosia rosea* var. *Port Hedland* (P1), *Abutilon* sp. *Pritzelianum* (P3), *Eragrostis crateriformis* (P3), *Euploca mutica* (P3), and *Triodia chichesterensis* (P3) which occur abundantly in the local area and region. Noting their distributions and the occurrence of suitable habitats for the species surrounding the application area in the same of better conditions, the reduction is considered proportionally small and unlikely to have significant impact on the population and conservation of the species at local and regional levels. Demarcation of the clearing area can further mitigate the inadvertent removal of the species from adjacent vegetation. This is required as a condition in the permit.
- Clearing may result in indirect impact on *Falco hypoleucos* (grey falcon) (VU), *Liasis olivaceus barroni* (Pilbara olive python) (VU), *Macrotis lagotis* (greater bilby) (VU), *Dasycercus blythi* (brush-tailed mulgara) (P4) and *Pseudomys chapmani* (western pebble-mound mouse) (P4) (Phoenix, 2022b, Western Wildlife, 2023, Biologic, 2024b). None of the fauna species were directly identified within the application area, but clearing may have indirect impact to suitable habitat for foraging and dispersal for the fauna species. Given the extent and temporary nature of some of the clearing, and the occurrence of similar habitats beyond the application area in the same or better condition, the proposed clearing of a maximum of 150 ha of native vegetation within 8,603.4 ha footprint (approximately 1.7%) is not expected to limit the movement of the fauna species or sever the ecological linkages in the landscape. Limiting disturbance of suitable habitat, restricting clearing activities to daytime, conducting clearing in slow and progressive manner in the direction of adjacent vegetation, pre-clearing survey for the species, and the presence of fauna specialist at the time of clearing can further reduce and mitigate the potential impact of inadvertent removal of fauna individuals, if they are present at the time of clearing. These are required as conditions in the permit.
- Geotechnical works will result in pits that could trap fauna. Rehabilitation and covering of the pits after use is required as a condition on the permit.
- Clearing will disturb a vegetation type associated with waterways (the Turner River) which is also mapped as significant habitat for the grey falcon and the Pilbara olive python. Limiting disturbance on this vegetation type to up to 3.6 ha along with implementation of other waterway management measures can mitigate the potential impact of clearing on waterways. The measures are required as conditions in the permit.
- Clearing may exacerbate sediment transport via the ephemeral drainage lines occurring within the application area, as well as increase the risk of wind erosion and dust deposition. The impacts, however, are likely to be localised and temporary. Noting the narrow and linear shape of clearing within the context of largely vegetated surrounds, the relatively minimal clearing is unlikely to result in appreciable land degradation. Limiting the time of soil exposure to the risks, restricting clearing within the drainage lines, and progressive rehabilitation and revegetation of cleared areas which are no longer required for the proposed activities can further mitigate the potential impacts.

After consideration of the above, available information, the minimisation and mitigation measures (see Section 3.1) the Delegated Officer determined the proposed clearing is unlikely to lead to long-term adverse impacts on the

environmental values of the local area. Potential impacts of clearing can be minimised and managed to lead to an unacceptable risk to environmental values by imposing management conditions to the Permit and the residual impacts counterbalanced with the offset.

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;
- limit clearing to up to 150 ha inclusive of a maximum 3.4 ha of drainage vegetation;
- perform clearing only in the daytime;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat;
- engage a fauna spotter ahead of the clearing activity to identify for Greater Bilby, Brush-tailed Mulgara and other conservation significant fauna species; and avoid the active and inactive burrows and mounds of fauna species and to remove fauna at risk;
- minimise areas of loose soil and soil piles within and immediately adjacent to the application area, to discourage bilbies from constructing new burrows;
- rehabilitate geotechnical test pits to avoid fauna trapping;
- progressive rehabilitation and revegetation of cleared area no longer required for the proposed activities;
- undertake works associated with the clearing within three months of authorised clearing to mitigate the potential risks to wind and water erosion; and
- ensure surface flow around the impacted watercourses is maintained.

1.5. Site maps

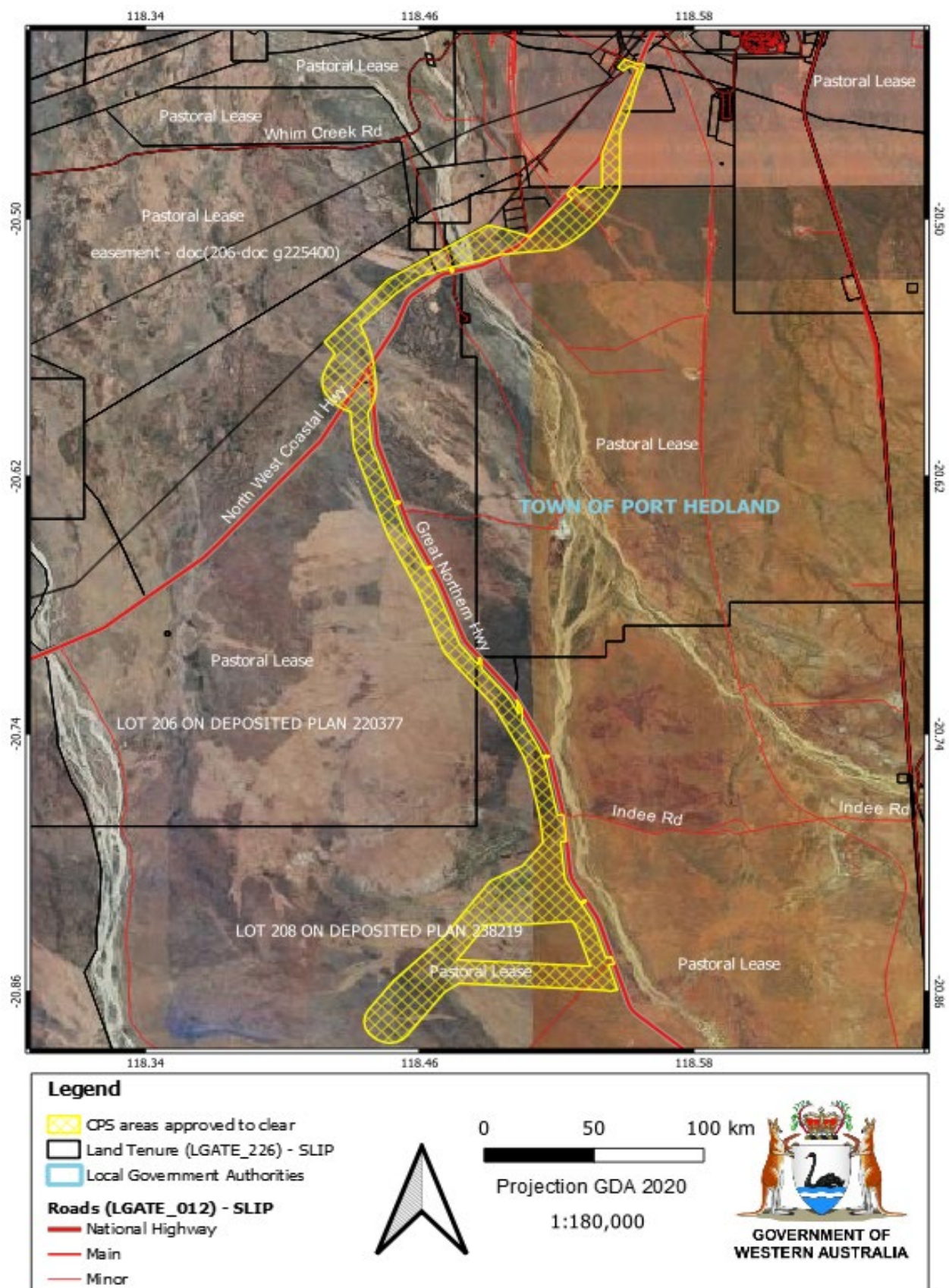


Figure 1: Map of the application area

The area cross-hatched 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 polluter pays principle
- 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)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Rights in Water and Irrigation Act 1914* (RiWI Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Land Administration Act 1997* (WA)
- *Native Title Act 1993* (Cth)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

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)
- *Environmental Offsets Guidelines* (August 2014)
- 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 submitted that the following minimisation and mitigation measures had been and will be applied to minimise impacts on the environmental values: (Preston Consulting, 2024)

- project site selection which avoids and minimises the amount of clearing, including placement of infrastructure close to or within the existing assets (corridors)
- siting of project to avoid Threatened and Priority Ecological Communities, conservation areas, known conservation significant flora, and areas with known burrows for the conservation significant fauna.
- avoid clearing of significant vegetation and fauna habitat where possible, limiting clearing to a maximum of 3.6 ha of *Major Drainage Line* Habitat (riparian vegetation) and *Sandplain* habitat to 136.5 ha
- placing transmission towers on the island of the Turner River to avoid sedimentation of the river
- commitment to clear the vegetation without disturbing topsoils as much as possible
- siting of geotechnical works within degraded areas as much as possible
- commitment to rehabilitate temporary cleared areas
- commitment to restore geotechnical testing sites
- commencement of works for which the permit is required within three months of clearing
- adherence to the Construction Environmental Management Plan (CEMP) (Horizon Power, 2025b) which includes avoidance and minimisation of clearing through the Ground Disturbance Permit process or similar and weed control and management measures
- commitment to perform preclearing surveys for conservation significant fauna and flora and adjusting project alignment and clearing site to avoid impacts.

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.

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) and land and water resources. 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 – Biodiversity, Flora, Vegetation - Clearing Principles (a) and (c)

Assessment

Vegetation

APA has commissioned four vegetation and flora surveys over an area that extended beyond the application area during the autumns and springs of 2021, 2023 and 2024 (Phoenix Environmental Sciences, 2022a and 2025; Biologic Environmental Survey, 2024a; Umwelt, 2023) as depicted in Figure 2 below.

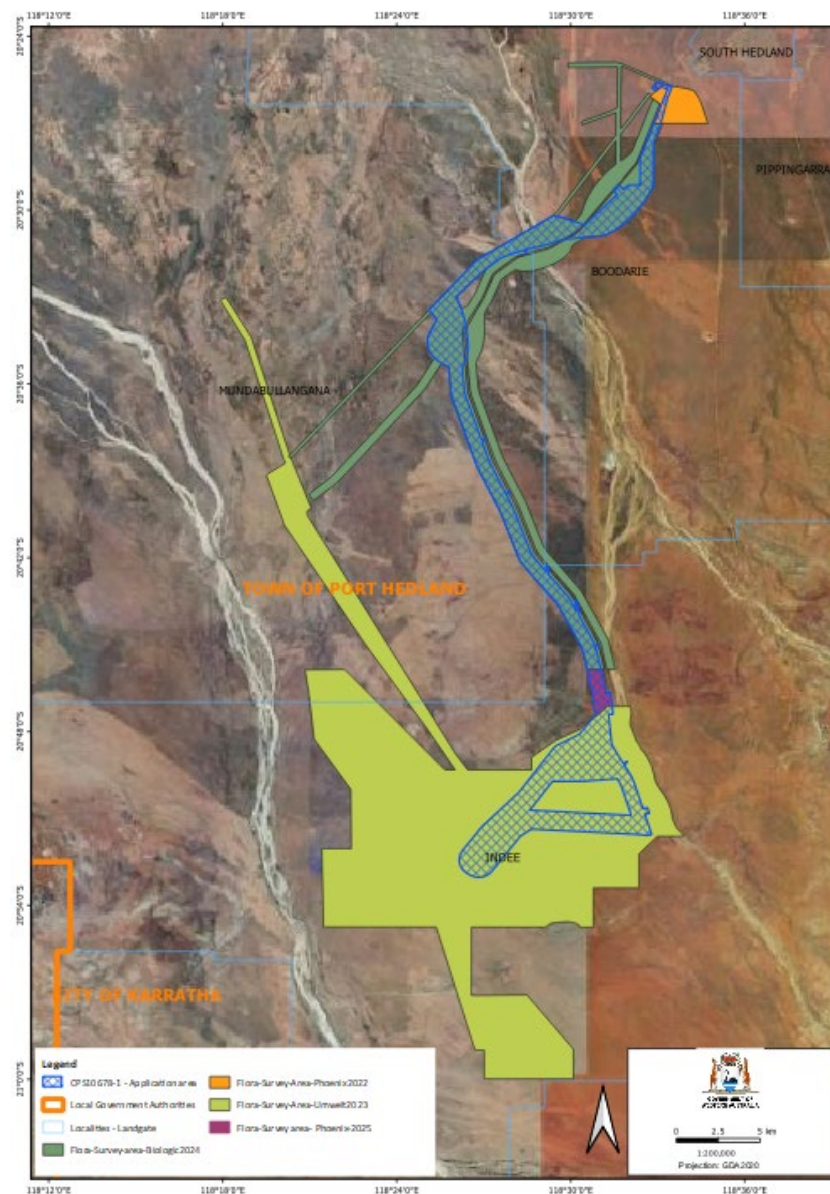


Figure 2. The survey areas for flora and vegetation assessments carried out by Phoenix (2022a), Biologic (2024a), Western / Umwelt (2023) and Phoenix (2025).

A total of 105 floristic sampling sites were surveyed across the survey areas. The surveys included 58 quadrats, 33 relevés, and 11 vegetation mapping notes, along with some opportunistic observations.

Eighteen (18) introduced species were identified in the surveys, including the following significant weed species:

- *Cenchrus ciliaris*, listed as environmental weeds as defined by the Environmental Weed Strategy for WA (Department of Conservation and Land Management (CALM, 1999)
- *Calotropis procera*, listed as a Declared Plant under the *Biosecurity and Agriculture Management Act 2007* (WA)
- *Opuntia* sp., listed Weeds of National Significance by the Australian Government
- *Aerva javanica*

Aerva javanica, *Cenchrus ciliaris* and *Calotropis procera* were recorded within the application area, while *Opuntia* sp. was recorded outside of the application area.

The application area lies within the Chichester (PIL01) and Roebourne (PIL04) Interim Biogeographic Regionalisation of Australia (IBRA) subregions of the Pilbara (PIL) bioregion. The vegetation in the Chichester subregion is characterised by a range of vegetation including shrub steppe and hummock grasslands. The Roebourne subregion is characterised by sub-coastal plains with hummock grasses and dwarf shrub steppe (Kendrick & Stanley, 2001). The four surveys identified twenty-eight (28) vegetation units, excluding cleared areas, across the application area. The complete list of vegetation units is provided in Appendix D. Of the vegetation units, the following dominate the vegetation in the application area:

- Tall open shrubland to isolated shrubs dominated by *Acacia ancistrocarpa*, *Acacia colei* and *Acacia inaequilatera* over low open shrubland to isolated shrubs dominated by *Acacia stellaticeps* and *Pluchea tetranthera* over low hummock grassland dominated by *Triodia epactia* on red or red brown sandy or clay loam, often with colluvial gravel, on plains and flats
- Tall open to sparse shrubland dominated by *Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia sericophylla*, *Acacia acradenia* and occasionally *Melaleuca lasiandra* over low shrubland to sparse shrubland dominated by *Acacia stellaticeps* and occasionally *Sida irsutea*, *Indigofera irsutea*, *Pluchea tetranthera* and *Corchorus parviflorus* over low hummock grassland to open hummock grassland dominated by *Triodia lanigera* and/or *Triodia schinzii* on red or red-brown sandy loam on plains
- *Corymbia zygophylla* low isolated trees over *Acacia inaequilatera*, *Hakea lorea* tall, isolated shrubs over *Acacia stellaticeps* low-mid shrubland over *Bonamia erecta* low sparse shrubland over *Triodia schinzii*, *Triodia epactia* mid open hummock grassland
- *Corymbia candida*, *Corymbia zygophylla* low isolated trees over *Acacia ancistrocarpa*, *Acacia inaequilatera*, *Hakea lorea* subsp. *lorea* tall, isolated shrubs over *Acacia stellaticeps*, *Indigofera monophylla* mid shrubland over *Triodia epactia*, *Triodia schinzii* low open hummock grassland over *Bonamia erecta* low sparse shrubland over *Ptilotus fusiformis*, *Ptilotus astrolasius* low sparse herbland

The vegetation types recorded during the survey are largely consistent with the regional vegetation mapping. Specifically, the majority aligns with vegetation associations 93 and 647 as described by Shepherd et al. (2002) as “Hummock grassland with scattered shrubs or mallee *Triodia* spp. *Acacia* spp., *Grevillea* spp. *Eucalyptus* spp. short bunch grassland–savanna / hummock grasslands with soft spinifex” and “Hummock grassland with scattered shrubs or mallee *Triodia* spp. *Acacia* spp., *Grevillea* spp. *Eucalyptus* spp” respectively, which are typical for the Pilbara region. This suggests that the vegetation identified during the survey is representative of the broader landscape and vegetation structure of the area. Vegetation associations 03 and 647 retain over 99% of their pre-European extents and is of least concern in terms of conservation.

No Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) were recorded within the application area. However, two vegetation types associated within the Turner River (*Eucalyptus camaldulensis*, *Melaleuca argentea* mid open woodland over *Acacia trachycarpa*, *Acacia colei*, *Acacia tumida* tall sparse shrubland over hummock grassland and the *Melaleuca argentea* low open woodland over *Melaleuca glomerata*, *Melaleuca linophylla* tall sparse shrubland over *Crotalaria cunninghamii* mid isolated shrubs over *Cyperus vaginatus*, *Cyperus ixiocarpus* mid sparse sedgeland over tussock grassland’) were considered to significant due to the presence of groundwater-dependent vegetation (GDV). While these are not listed TECs or PECs, the applicant has largely avoided these riparian vegetations during project planning. The riparian vegetation types comprise the ‘Major Drainage’ habitat which provide habitat to the conservation significant fauna including the Pilbara olive python, grey falcon, bilby and quoll. While much of these types of vegetation was avoided, disturbance of some of this vegetation cannot be avoided and impacts are discussed further in Section 3.2.2 below.

The condition of the vegetation across the application area ranges from Excellent to Degraded (Keighery, 1994), with the majority (approximately 73.7%) classified as being in Very Good condition. While some parts of the

application area exhibit signs of degradation, the overall level of degradation is considered low. This suggests a generally well-preserved landscape with localised areas of disturbance.

Given the above, the relatively limited clearing of native vegetation within the context of the mostly intact and well-preserved landscape is not expected to result in the significant degradation of the conservation values of the native vegetation in the local and regional contexts. However, clearing may spread and introduce weeds to neighbouring vegetation. The declared weed *Cenchrus ciliaris* (Buffel grass) which was found over the application area, for example, has been known as the most widespread weed species in the arid and semi-arid zones of Australia, introduced and spread by people movement, feral animals including camels, road and rail corridor development, and the application of dust control measures in the widely scattered Aboriginal communities (Scott et.al. in H. Lambers, 2018). Long-lived seedbanks and vegetative parts of the weed species may be present in the soil and other materials from an area previously infested by the weed species. As the application area contains the weed, a stringent measure that controls the transport and transfer of such soils or materials from the proposed clearing activities is therefore crucial to minimise and mitigate the risks of weed spread and introduction to nearby vegetation. A weed control condition is imposed on the permit to mitigate this impact. In addition, the applicant is committed to the stockpiling of topsoil salvaged from cleared areas in designated areas, which can minimise the weed transport and transfer. Progressive rehabilitation and revegetation of temporary cleared sites using the salvaged topsoils is also required as a condition to the permit, which would further mitigate the potential impacts by reducing the exposure time of the cleared areas and stockpiles to weed seeds deposition, as discussed in section 3.2.3 below.

Flora

According to available databases, a total of 19 conservation significant flora species have been recorded within the local area (50 km radius). The flora and vegetation surveys (Phoenix, 2022a, Biologic, 2024a) identified the occurrence of multiple *Seringia exastia* within the application area. *S. exastia* was previously classified as Threatened but has recently been delisted from the Threatened flora list (DBCA, 2025). Consequently, no Threatened flora species was identified within the application area.

One Priority 1 (P1) and four Priority3 (P3) flora species have been identified within the application area and maybe impacted by the proposed clearing (Biologic, 2024, Umwelt, 2023 and Phoenix, 2025). The flora species, their local population and relative potential impacts based on the surveys are listed below:

Table 1. Conservation significant flora species within the application area potentially impacted by the proposed clearing (Biologic, 2024; Umwelt, 2023)

Species	Number of plants within survey areas	Number of plants within application area	Relative (maximum) impacts - Percentage
<i>Tephrosia rosea</i> var. <i>Port Hedland</i>	1 <i>Note: further 33 records each comprising of one to 300 plants are recorded within 50 km radius of the application area (WA Herbarium, 2018)</i>	1	3.30
<i>Abutilon</i> sp. <i>Pritzelianum</i> (S. van Leeuwen 5095) (P3) (Biologic, 2024; Umwelt, 2023)	7,758	385	4.96
<i>Eragrostis crateriformis</i> (P3)	1,309	25	1.91
<i>Euploca mutica</i> (P3)	59	11	18.64
<i>Triodia chichesterensis</i> (P3)	72,941	62,520	85.71

Tephrosia rosea var. *Port Hedland* (A.S. George 1114) (P1) was recorded by Phoenix in 2023 and 2024 (Phoenix, 2025) at a disturbed area near to the existing industrial site within the application area in the Town of Port Hedland. The species is known from 52 records that occur in the Chichester and Roebourne sub-regions of the Pilbara bioregion and the Mackay sub-region of the Great Sandy Desert bioregion, none of the records occur in conservation estate (WA Herbarium 1998). Within the local area (50 km radius of the application area), Herbarium

(1998) have recorded the species in 33 occasions, many of which are located near to the application area (see Figure 3). Each of these records comprises of between one to 300 plants. The records indicate that the flora species is abundantly occurring in the local area, many of which occur on the roadsides or disturbed areas; which suggests that the flora species thrives in disturbed areas and is a disturbance opportunist.



Figure 3. Map of identified *Tephrosia rosea* within the application area and other records of the species in the local area

The applicant designed the footprint of the proposed clearing area to be much larger than the actual clearing to provide them with flexibility in the effort to avoid and minimise impact on significant environmental values. They submitted that they intent to avoid clearing of the *T. rosea* individual identified within the proposed clearing footprint whenever feasible. However, noting that the identified *T. rosea* plant is growing on the roadside within the existing industrial complex where other infrastructure network (gas, power, water pipelines) may have existed or will be constructed, clearing of this individual may be inevitable. If the *T. rosea* individual is to be removed, within the context of tother 33 communities of hundreds of plants nearby, the loss of 1 plant (approximately 3% of the total known records in the local area) is proportionally small. In addition, noting the availability of similar habitat in Very Good to Excellent condition surrounding the application area and the plant's tendency to survive in disturbed environment, the potential removal of 1 plant is considered unlikely to have significant impact on the local

population. Demarcation of the clearing area can further mitigate the potential impact of inadvertent clearing of this species individuals, if they occur, in adjacent vegetation.

Abutilon sp. Pritzelianum (S. van Leeuwen 5095) is a shrub that grows approximately one to two metres in height. 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), typical of the region. At least 1,091 records of this species are available for the local area (50 km radius). There are 40 records of this taxon in DBCA databases, potentially representing approximately 34 regional populations, none of which occur within DBCA-managed tenure. As presented in Table 1 above, a maximum of approximately 5 percent of the known population identified in the surveys will be impacted by the proposed clearing. However, noting the flexibility of the exact clearing locations, the actual proportion of impact may be lower. Given the vegetation types and conditions and the soil types of the application area and surrounds, it is likely that the flora species also occur in the adjacent vegetation. Therefore, the potential removal of up to 5 percent of the known local population is unlikely significant for the species or the conservation status of the species within the local and regional contexts.

Eragrostis crateriformis is an annual grass/herb which can grow up to 0.5 meters in height. It is found, among other regions, in the Pilbara region in Port Hedland. It produces deep pink flowers from January to May, July, and is commonly found in clay or clayey loam soils near creeks, banks or depressions (WA Herbarium, 1998). *E. crateriformis* occurs over a wide range of approximately 2,080 km, from near ex-Giralia station south of Onslow in WA, east to near Alice Springs in the Northern Territory (Umwelt, 2023). Within Western Australia, the taxon occurs in the Pilbara, Tanami and Great Sandy Desert IBRA regions, and the northern extent of the Carnarvon region. There are 46 records of this taxon in DBCA databases in WA, potentially representing approximately 37 regional populations, two of which occur within DBCA-managed tenure. Surveys over the local area identified 1,309 plants, 25 of which occur within the application area and may be removed by the proposed clearing. This represents up to 1.8 percent of the known individuals within the locality (surveys area) of the application area. Noting that only up to 150 ha of the 8,603.4-ha of application area, or approximately 1.7% will be cleared and the flexibility of the locations of clearing that removal this species could also be avoided, and the potential loss is likely to be less than 1.8 percent. Given the above, and the availability of vast and intact vegetation that would provide suitable habitat for the species, the removal of a maximum of 25 individuals is not expected to result in significant impact to the species and its conservation status within the local and regional contexts.

Euploca mutica is a low perennial shrub that grows up to approximately 0.4 metres in height. It is found in the Pilbara region in East Pilbara, Karratha, and Port Hedland. It produces white flowers from April to November and is commonly found in flats and sandplains in orange, brown sandy loam soils (WA Herbarium, 1998). *E. mutica* appears to be endemic to the Abydos Plain in northern part of the Pilbara region of WA, occurring over a range of approximately 240 km from Sherlock (east of Roebourne) in the west, to Marble Bar in the east, and south to near Mungaroona Range Nature Reserve (Umwelt, 2023). There are 63 records of this taxon in DBCA databases, representing approximately 56 regional populations, none of which occur in DBCA-managed tenure. Surveys over the application area and surrounds identified 59 individuals, 11 of which, or approximately 18%, are located within the application area and may be impacted by the proposed clearing (Table 1). It is considered likely that given the availability of the types and conditions of vegetation preferred by the species in the area, more individuals occur in the adjacent vegetation. Removal of 11 individuals is not expected to be significant for the species and its conservation values. Further avoidance of the species at the time of clearing and demarcation of the clearing area can minimise inadvertent clearing of other individuals that may occur in the adjacent vegetation.

Triodia chichesterensis is a hummock grass that grows up to approximately 0.4 metres in height. It is found in the Pilbara region in East Pilbara and Port Hedland. It is commonly found on stony plains and low stony ridges associated with ironstone, basalt and quartz (WA Herbarium, 1998). There are 23 records of this taxon in DBCA databases, representing as many regional populations, and none of which occur within DBCA-managed tenure. In each population / community recorded, hundreds of *T. chichesterensis* plants were recorded (WA Herbarium, 1998). Many of the records note how common and dominating the species was at the sites. Surveys performed over the application area and surrounds found that the species was common in the application area. The surveys identified a total of 72,941 individuals in the survey area, 62,520 (85.7%) of which were found within the application area. Within the context of the proposed clearing of a maximum of 150 ha within an application area of 8,603.4-ha footprint, approximately only 1.74% of areas that may contain the known flora species in the application area will be cleared. As such, it is very likely that only a fraction of the known *T. chichesterensis* individuals within the application area will be cleared. Moreover, noting the flexibility of the location of the actual clearing within the application area, the applicant is committed to avoid and minimise clearing of significant flora including this taxon.

Given the above, and the vegetation types and conditions of the surrounding vegetation, clearing of this flora species is unlikely to result in significant impact to the species at the local and regional contexts. Demarcation of

the clearing area can minimise inadvertent clearing of other individuals that may occur in the adjacent vegetation. This is placed as a condition in the permit.

Conclusion

For the reasons set out above, it is considered that the proposed clearing will not result in significant direct impact to the biodiversity at the local and regional levels. The impact of the potential removal of *Tephrosia rosea* var. *Port Hedland* (P1), *Abutilon* sp. *Pritzelianum* (P3), *Eragrostis crateriformis* (P3), *Euploca mutica* (P3), *Triodia chichesterensis* (P3) is considered likely to be proportionally small and not significant. Demarcation of the clearing areas can minimise the potential inadvertent removal of the species from adjacent vegetation. Indirect impact of clearing in the form of the introduction and spread of weeds can be minimised and mitigated by the implementation of weed control and management measures and are imposed on the permit.

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
- demarcate the clearing area to avoid inadvertent clearing of priority flora species in adjacent vegetation.

3.2.2. Biological values (Fauna) - Clearing Principles (b)

Assessment

Assessment of available data base indicated that 35 conservation significant fauna species have been recorded within 50 km radius of the application area most of which are of migratory bird species.

One basic and two targeted fauna surveys have been carried out over the project area (Phoenix, 2022b; Western Wildlife, 2023; Biologic, 2024b). The survey areas of the three fauna surveys within the context of the application area are depicted in Figure 3, below.

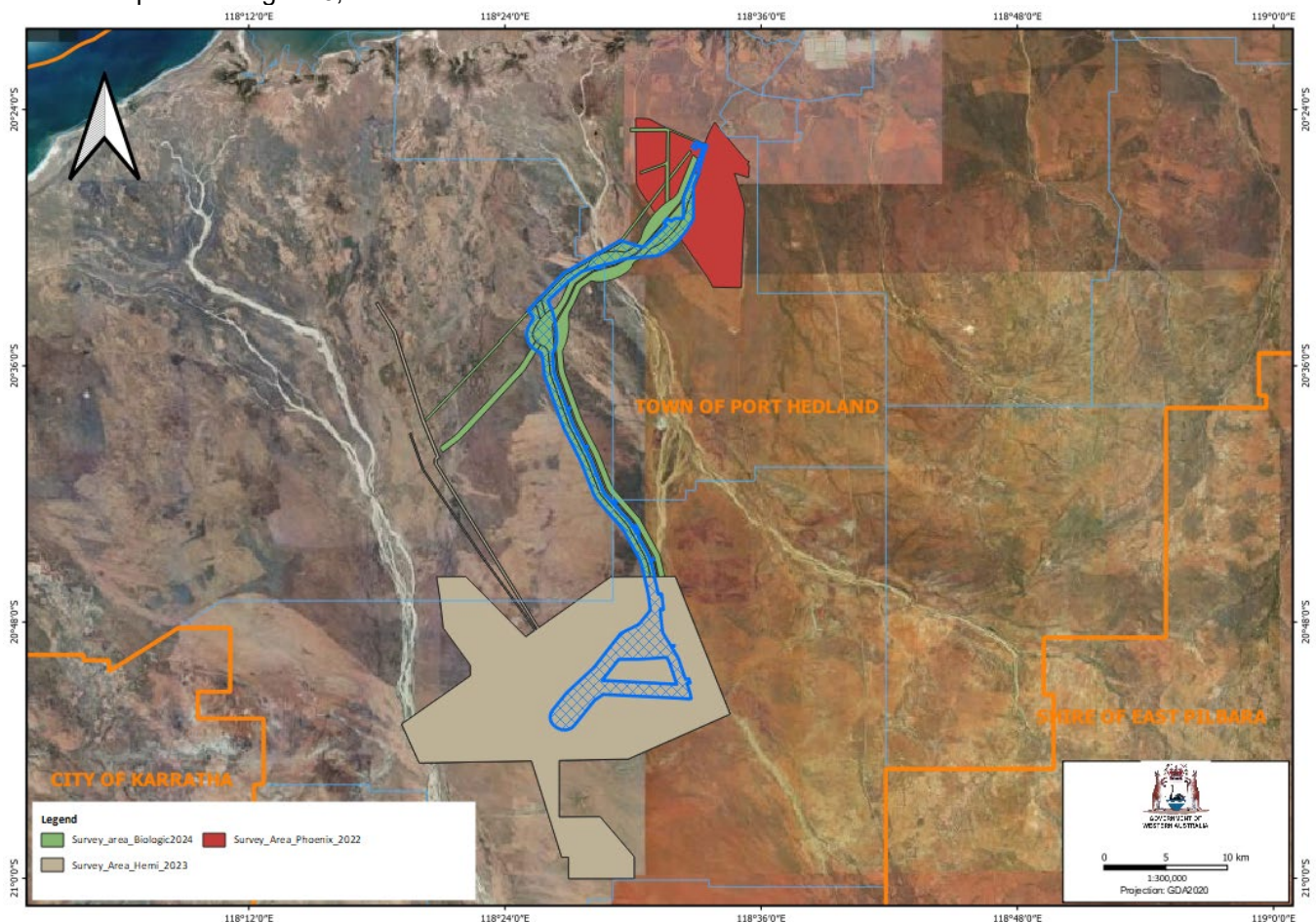


Figure 4. The survey areas for fauna assessments carried out by Phoenix (2022b), Biologic (2024b) and Western Wildlife (2023). Across the three surveys, five broad fauna habitats (excluding disturbed areas) were identified within the application area. Disturbed area of approximately 79.71 ha (0.93 %) was mapped separately.

Table 2. Fauna habitat types identified from three surveys

Fauna habitat type	Area (ha)	Percentage
Claypan	0.79	0.01
Drainage Area	2,474.46	29.02
Major Drainage	132.01	1.55
Sand Plain	5,761.54	67.56
Stony hills	79.52	0.93

The dominant habitat types of Sand Plain and Drainage areas are characteristic of the Uaroo land system, which is widespread across the Roebourne subregion and other areas within the Pilbara Bioregion.

The surveys recorded eight (8) conservation-significant fauna species via primary and secondary evidence including tracks, diggings, and burrows (active and inactive).

- *Macrotis lagotis* (greater bilby) (VU) (Biologic, 2024b; Phoenix, 2022b; Western Wildlife, 2023)
- *Dasycercus blythi* (brush-tailed mulgara) (P4) (Phoenix, 2022b; Western Wildlife, 2023)
- *Dasyurus hallucatus* (northern quoll) (EN) (Western Wildlife, 2023)
- *Rhinonictis aurantia* (Pilbara leaf-nosed bat) (VU) (Biologic, 2024b; Western Wildlife, 2023)
- *Falco hypoleucos* (grey falcon) (VU) (Biologic, 2024b)
- *Ozimops cobourgiana* (northern coastal free-tailed bat) (P1) (Western Wildlife, 2023)
- *Pseudomys chapmani* (western pebble-mound mouse) (P4) (Western Wildlife, 2023).
- *Apus pacificus* (fork-tailed swift) (MI) (Western Wildlife, 2023)

Advice from DBCA indicated that previous surveys in the area have recorded the occurrence of five Priority and Migratory fauna (bird) species (DBCA, 2024). Noting the previous records and habitat features, the Sandplain and Drainage habitat types within the application area have been assessed as likely to provide suitable habitat for the fauna species listed above as well as *Liasis olivaceus barroni* (Pilbara olive python) (VU).

Greater bilby

The bilby (*Macrotis lagotis*) is a solitary species that shelters in burrows during daylight. It is known from 356 records from within 50 km radius of the application area. It occupies a variety of habitats, including *Eucalyptus* and *Acacia* woodlands, as well as *Acacia* shrublands over hummock and tussock grasslands (DCCEEW, 2023). Bilbies are highly mobile and have been recorded travelling up to 5 km between burrows on consecutive nights. Greater bilby can use up to 18 of these burrows concurrently over several months, as well as construct a new burrow on average every 2.5 weeks (Threatened Species Scientific Committee (TSSC), 2016). Their home ranges typically span between 110 ha and 300 ha and vary in response to rainfall and food availability, with individuals often sparsely distributed over large areas (DBCA, 2024). The application area is within the mapped / modelled distribution of the greater bilby (DCCEEW, 2023). The Recovery Plan for bilby suggests that habitat critical to the survival of bilby includes any area where the species is known or likely to occur as shown in the distribution map (TSSC, 2016). Within the application area, the Sandplain (including Spinifex Sandplain) and Drainage Line habitat types are considered suitable for the species, as supported by the surveys performed by Western Wildlife (2023), Biologic (2024b), and Phoenix Environmental (2022b).

The surveys did not identify any bilby individuals in the application area, active burrowing by bilby in the application area was not evident either. However, bilby was indirectly identified in more than 330 occasions via tracks, burrows and other secondary evidence throughout the application area and surrounds. Noting the location of the application area being in the distribution area of the species (DCCEEW, 2023; TSSC, 2016), the numerous previous and recent recordings of the bilby within the application area and adjacent vegetation, and the availability of suitable habitat for the species, it is likely that bilby utilises the application area for foraging and traversing.

Advice was sought from the DBCA in support of this assessment. In their advice, DBCA (2024) advised that that given the above, clearing of the native vegetation may result in direct and indirect losses of habitat for bilby. Direct impacts on bilby individuals, if they occur at the time of clearing and construction, may be mitigated by implementing management measures. This includes limiting activities to daytime and pre-clearing surveys for bilby by a qualified and authorised terrestrial fauna spotter/handler to ensure that no individuals will be directly impacted

by the clearing and construction activities. If active burrows are located and individuals require relocation, a Section 40 authorisation under the *Biodiversity Conservation Act 2016* would be required. Additionally, to discourage bilbies from establishing new burrows in the area, soil piles beside newly created access tracks should be minimised or removed. These management measures are required as conditions in the permit.

Although suitable foraging and dispersal habitats for bilby occur in the application area, noting the relatively small proportion of clearing (150 ha) within the context of 8,603.4-ha of clearing footprint (approximately 1.74%), the contiguous extent of vegetation and similar habitats in the same condition or better in beyond the application area, and that the local area retains more than 90 per cent of its pre-European vegetation extent, the vegetation proposed to be cleared is not likely to comprise significant habitat for bilby. Limiting the clearing of the Sandplain habitat to a maximum of 136.5 ha can further mitigate the potential impact on bilby.

Indirect impacts of clearing may include the temporary disturbance of bilby in their dispersal and foraging during the clearing and construction period. However, although the extent of the proposed clearing area is long, much of the clearing will be in the form of disturbance caused by driving or walking over narrow areas for access. In addition, the transmission network for which the proposed clearing is required, will also mostly comprise of aboveground structures that allow for regrowth of the disturbed vegetation and dispersal of bilby beneath it. The proposed clearing is unlikely to create a barrier for movement or result in the permanent fragmentation of the foraging and dispersal habitat for bilby.

Pilbara olive python

The Pilbara olive python is likely to be a resident in rocky ridge and gorge, ironstone ridgetop, drainage line and riverine habitats, where breeding habitat and shelter sites are available in the form of rocky crevices and tree hollows in some areas, and where permanent or semi-permanent water occurs (DCCEEW, 2008; Pearson, 1993). Due to their cryptic nature, opportunistic sightings of Pilbara olive python individuals are usually the first indication of the species' presence in an area. There are six historical records in the local area and one anecdotal record approximately 1.5 km south of the application area. No evidence of the Pilbara Olive Python was found within the application area during current or previous surveys. However, the surveys provided with the application identified that suitable habitat for the species in the form of drainage areas within the application area. The applicant submitted that the proposed clearing would disturb 3.6 ha of the Major Drainage habitat that is mapped as critical for the python (DCCEEW, 2003). However, noting the abundance of similar habitats in the Turner River systems adjacent to the application area and the absence of any evidence for the occurrence of the species, the 3.6 ha habitat is unlikely to comprise significant habitat for the python. Disturbance to this small area for the construction of the transmission network is unlikely to sever the connectivity between habitats in the landscape. Potential direct impact to the fauna species that may be present at the time of clearing can be avoided by conducting clearing in slow and one directional manner toward adjacent vegetation to allow the fauna species to move ahead of clearing. Limiting clearing of the Major Drainage habitat to 3.6 ha will further mitigate potential impact to the fauna species. These are placed as conditions in the Permit.

Grey falcon

The grey falcon typically inhabits open woodlands, tussock grasslands, and Acacia shrublands, with a particular preference for tree-lined watercourses, which may be used for roosting and nesting (TSSC, 2020). During the current fauna survey, a single individual was observed perching on a powerline in the northern part of the application area (Biologic, 2024). An additional previous 16 records of the species exist within the local area. The species is known to favour sparsely treed open plains and creek lines, and breeding habitat has been recorded in riparian zones and other productive 'oases' within arid environments, not always directly adjacent to waterholes (Biologic, 2024). Such habitat occurs within the application area in the form of Major Drainage Area. Within the application area, 133 ha of Major Drainage habitat in addition to the 2,474 ha of Drainage habitat are present. Approximately 3.6 ha area mapped as the Major Drainage habitat, or about 2.7% of the total Major Drainage habitat available in the application area will be disturbed with the clearing. The falcon may fly over or utilise the 3.6 ha habitat in their dispersal, however, given the availability of similar habitat in abundance in the vicinity, it is unlikely to comprise a significant habitat for the falcon. Additionally, the applicant is committed to avoid clearing of tall trees from this habitat. The proposed clearing of up to 3.6 ha of vegetation within this habitat is therefore unlikely to disrupt the continuance of the grey falcon in the landscape. A condition to limit the clearing of the Major Drainage Habitat to 3.6 ha is placed as a condition in the permit.

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 species has previously been recorded in the application area (11 records) and a further 305 records exist for the species in the local area (50 km radius of

the application area) (DBCA Threatened and Priority Flora Database). However, no evidence of the species was recorded within the application area during the surveys of Western Wildlife (2023), Biologic (2024b), and Phoenix Environmental (2022b). Despite the absence of the fauna individuals or their burrows, the hummock grassland, sandplain and drainage line habitat within the application area are considered to comprise suitable habitat for foraging and dispersal by species (Preston Consulting, 2024). This type of vegetation and habitat extend beyond the application area within the Pilbara region which retains more than 90% of its pre-European extent. Given this and noting the absence of the fauna individuals or other evidence of occurrences in the application area, the available habitat within the application area is unlikely to comprise significant habitat for the mulgara. The proposed clearing is unlikely to result in significant impact to the species. However, to further mitigate the potential impacts to the species, clearing should not be undertaken at night and a pre-clearing survey for Mulgara should be performed to avoid direct impact on any individuals or active burrow, if present, at the time of clearing. This are required as conditions on the permit.

Northern quoll

Northern quolls mostly favour rocky habitats (e.g. escarpments, mesas, gorges, breakaways, boulder fields, major drainage lines and treed creek lines as denning/shelter habitat, and foraging occurs in the vegetated areas surrounding their dens (Hill and Ward 2010). The ecology of Northern Quolls is complex, and they use habitats in a variety of ways for denning and foraging. Northern quolls are generally considered to be solitary, with females having mutually exclusive denning areas, but can have overlapping foraging areas with populations fluctuating annually which is likely to be related to the abundance, dispersion and renewability of food (Oakwood 2002). Northern quolls may den in small rocky areas occasionally if they are travelling long distances to find food or males are dispersing during the breeding season (Moore et al. 2021). The Northern quoll was recorded outside of the application area near the southern part of the Western Wildlife (2023)'s survey area in the Drainage line habitat of the Yule and Turner Rivers (in addition to secondary evidence). The species has been described as abundant in the area (1690 records in the local area with several less than 0.3 km from the application area) and is part of a population studied by the DBCA. Although foraging and minor drainage area and critical habitat for shelter and breeding (Rocky outcrops) occurs adjacent to the application area, it does not overlap with the application area. However, this species has a large home range. Therefore, it is considered likely that this species will utilise the application area for foraging and dispersal. To mitigate any indirect impact to individuals of northern quoll, a directional clearing condition and a condition restricting clearing to daytime have been included in the clearing permit.

Western pebble-mound mouse

The western pebble-mound mouse, a native to the Pilbara region, has been historically recorded in the local area and the region. It thrives in arid tussock grassland and acacia woodlands which also occurs within the application area. During the surveys for this project, although no individuals were directly observed, secondary evidence of the species in the form of active, inactive and historic mounds were recorded in the Stony Hills habitat close to the southern border of the application area. The species' foraging range is relatively small, within 10-20 m of their mound. Noting the abundance of records of the species and the availability of suitable habitat in excellent condition surrounding the application area, it is likely that the western pebble-mound mouse utilises part of the application area for foraging and dispersal. However, although the native vegetation within the application area may provide a transient habitat for the mouse, given the extent and conditions of the contiguous vegetation surrounding the application area and the absence of any evidence of the fauna species occurrence within the application area, it is unlikely that the vegetation within the application area comprises a significant habitat. Potential impact from the clearing to any individual present at the time of clearing can be mitigated by the application of fauna management measures which are placed as conditions in the permit.

Ghost bat and Pilbara leaf-nosed bat

The habitats for both ghost bat and Pilbara leaf-nosed bat are dependent on the availability of roost sites in the area. For both species, day roosts consist of suitable caves and abandoned mine shafts that are warm and humid (Armstrong and Anstee, 2000). Transitory or night roosts, however, can consist of shallower caves and rocky outcrops that act as shelters/overhangs (TSSC 2016). For the Pilbara Leaf-nosed bat, roosts are associated with semi-permanent water bodies being nearby (Armstrong 2001, Churchill 2008), and both species forage along drainage areas and over low Spinifex-covered hills and gorges. The Pilbara leaf-nosed bat and ghost bat had been recorded in the local area, with 132 records and 139 records, respectively. During the surveys, no roost sites were identified nearby, but both species were identified through their calling. It is likely that both bat species utilise the application area for foraging and transit. As mentioned above, 133 ha of Major Drainage habitat in addition to the 2,474 ha of Drainage habitat, which would be suitable for foraging by the bats, are present within the application area, of which 3.6 ha will be cleared. Noting the abundance of the Drainage habitats of locality, the 3.6 ha of Major

Drainage Habitat is unlikely to comprise significant habitat to both bat species. It is unlikely that the extent of the clearing in the application area will impact either species.

Northern coastal free-tailed bat (P1)

The northern coastal free-tailed bat was recorded in the survey area during the survey of Western Wildlife (2023) at several sites near the southern part of the application area through their callings. No roosts sites were identified nearby during the surveys. It is considered likely that the species uses the area in a vagrant manner to disperse through the region, and it is unlikely that the northern coastal free-tailed bat inhabits the vegetation proposed to be cleared. Limited clearing of vegetation from the application area is considered unlikely to have significant impact on the species.

Migratory bird species (OS, MI)

Migratory bird species including the peregrine falcon, the oriental pratincole, gull-billed tern and caspian tern, have been recorded in the local area and immediate vicinity of the application area. Many of the recorded migratory bird species occur in woodlands, grasslands and coastal cliffs, usually in proximity to watercourses/bodies (Marchant & Higgins, 1993). The Drainage line habitat that intersects the application area and the surrounding native vegetation attracts the migratory species which are all likely to be seasonal visitors in the area in their transit traversing the landscape. Similar habitat and vegetation in excellent conditions are available in the area that the proposed clearing area is unlikely to comprise a significant habitat for the migratory bird species. The proposed clearing activities are not likely to impact on the conservation status of the migratory species here.

Impact of geotechnical investigation

Geotechnical investigation, as a part of the project, involves excavation of the ground for test pits. The pits may pose risks to the fauna species in the local area. Fauna species can fall into the pits and be trapped within. The potential impact can be mitigated by ensuring that test pits be covered during the process and backfilled after use. This is also required as a condition for the permit.

Conclusion

Based on the assessment set out above, the proposed clearing is at variance with principle (b) of *the Clearing Principles* as it will remove or disturb native vegetation that are considered suitable habitats for the Threatened fauna species greater bilby, the Pilbara olive python, and the grey falcon. However, noting the availability of contiguous vegetation and similar habitats in the application area and surrounds, the vegetation proposed to be cleared are considered unlikely to comprise significant habitats for the continuance of the fauna species in the landscape. Clearing may also have direct and indirect impact to other conservation significant fauna species including brush-tailed mulgara, northern quoll and western pebble-mound mouse if they are present at the time of clearing. A set of fauna management measures can be put in place to mitigate the potential impacts. This includes limiting the extent of clearing of suitable habitat and a pre-clearing survey and the presence of qualified fauna specialist at the time of clearing to avoid impacts on the fauna species and active mounds or burrows if present. Covering of test pits after use can avoid fauna trapping, and slow progressive clearing in the direction of adjacent vegetation can further mitigate potential impacts on fauna. Application of additional management measures will ensure there are no significant residual impacts to threatened fauna species.

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;
- restrict any clearing to daylight hours;
- undertake targeted pre-clearance surveys for bilby and brush-tailed mulgara. Surveys should also target other conservation significant fauna species that may occur;
- engage a fauna spotter/ handler for the duration of clearing activities;
- limit the clearing of Major Drainage and Sandplain Fauna habitat to a maximum of 3.6 ha and 136.5 ha respectively; and
- geotechnical test pits covering and backfilling to prevent trapping of fauna.

3.2.3. Land and Water resources - Clearing Principles (f) and (g)

Assessment

The application area is situated across four land systems namely the Uaroo, Mallina, River and Ruth systems. The Uaroo and Mallina systems comprise the majority of the land within the application area and are characterised by sandy and pebbly plains supporting hard and soft spinifex hummock and tussock grasslands with scattered acacia shrubs (DPIRD, 2019). The sandy soils of the application area maybe prone to wind erosion and increased surface water flow if remains bare for an extended period after clearing. Loose soils and dust lifted by the wind may be deposited on the adjacent vegetation which in turn may decrease its quality. Noting the mostly linear shape of clearing area required for the transmission line and the availability of intact native vegetation surrounding the clearing area, this impact is not expected to be significant. However, management practices will help mitigate this potential impact. This includes limiting the time of soil exposures and rehabilitation of cleared areas no longer required for the purpose of the project works. This will be imposed on the permit as conditions.

The application area intersects part of the Turner River, a major water course running to the North and South of the application area. No other wetlands or water courses have been recorded within the application area. The activities occur within the Pilbara Surface water and groundwater areas proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act). Expert advice received from the Department suggested that although the applicant submitted that no RiWI licences are required, the applicant will need to apply for a 5C licence to take water and a 2D licence to construct any new water supply bores should they need to utilise groundwater or surface water for dust suppression or any other purposes. It is the applicant's responsibility to comply with the requirements under the RiWI Act.

It is also advised that clearing and works within and around the waterways should be minimised to maintain foreshore stability and the integrity of the bed and bank of the watercourse, and protect important riparian vegetation (DWER, 2024).

The applicant submitted that some clearing around the waterway is necessary. However, clearing within the waterways will be kept to a maximum 3.6 ha. The towers for the transmission line will be placed on an existing island in the Turner River to minimise impacts on water flow and prevent sedimentation and erosion within the riverbed. In addition, the applicant seeks to target areas of low vegetation cover at the creek lines to reduce impacts on soil and ground layers within the creek line. Furthermore, no existing drainage will be impacted, and access roads will be graded with no expected disruption to sheet flow, and vegetation will be rehabilitated in areas not required for ongoing operation of their project to prevent sedimentation downstream of the waterway. With an exception to some permanent water pools along its drainage, the Turner River is an ephemeral river whose flow rates and inundation largely depends on the rainfall. The low flow period typically occurs during the dry seasons (May – October) (Stantec, 2022). Noting the necessity of some clearing at this site and the ephemeral nature of the river, clearing during the low flow period can further avoid the disruption of the water flow and alteration of the soil composition of the Turner River, or water logging. It was noted that flows within the river typically remain confined to the main channel, and flows are episodic for overbank inundation (GHD, 2013). Most of the vegetation within the application area that crosses the Turner River is elevated, notably so on the island where the transmission pole is proposed to be placed, reducing the likelihood of waters interacting with the proposed clearing. To ensure that the Turner River flow is maintained, in the event of impacts during clearing, management actions can restore and maintain any disruptions to the natural flow. This will be conditioned as part of the permit.

Noting the above, and the proposed management measures, it is considered that the proposed clearing is unlikely to impact on water quality of water resources in the long term or beyond the application area. Limiting the clearing of major drainage area to 3.6 ha will further mitigate the potential impacts and is required as a condition on the Permit.

Conclusion

Based on the above assessment the proposed clearing is unlikely to result in appreciable land and water resources degradation provided appropriate management measures are implemented. These are required as conditions on the permit.

Conditions

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

- commencement of works for which the clearing is proposed no later than three months after undertaking the authorised clearing activities.

- restrict the clearing of the Major Drainage vegetation to a maximum of 3.6 ha
- maintain the surface flow
- progressive rehabilitation and revegetation of cleared areas no longer required for the proposed activities using stockpiled topsoils
- the permit holder must undertake the works authorised by this permit with minimal disturbance to the bed and banks of the watercourses to ensure surface flow is maintained.

3.3. Relevant planning instruments and other matters

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

The Delegated Officer noted that the application area is zoned 'Rural/Local Road' under the Town of Port Hedland's Local Planning Scheme. The Town of Port Hedland was informed about the application but did not provide any comment on the proposed clearing.

The application area lies within the proclaimed Pilbara groundwater and surface water areas and is subject to licencing requirements under the *Rights in Water and Irrigation (RIWI) Act 1914*. The proposed geotechnical investigation does not require water supplies. The applicant submitted that no licence under the RIWI Act is required. However, the application area intersects with the Turner River and it is the responsibility of the applicant to apply for the permit to interfere with bed and banks under the *Rights in Water and Irrigation Act 1914*.

Part of the application area lies within a Crown Land administered by the Department of Planning, Lands and Heritage (DPLH). Native title rights and interests exist over the Crown Land. The applicant has been granted the Licence to Occupy Crown Land under Section 91 of the Land Administration Act 1997 (WA) with licence number Lic 00879/1993_A14405210 (DPLH, 2025). The Licence provides the Applicant access to the land for the purpose of the project.

No Aboriginal Heritage sites were recorded in the application area. However, 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 and that native title holders are notified and invited to comment on the application, in accordance with the Native Title Act 1993 (Cth) (the NT Act) and section 51E(4) of the EP Act.

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 within the Kariyarra Native Title Determination Area in the Pilbara Bioregion. The proposed clearing area commences at the Boodarie Strategic Industrial Area and extends in a general southerly direction along the Great Northern Highway to the De Grey Mining Ltd proposed Hemi Gold Project. The proposed clearing area intersects industrial land, pastoral leases and road reserves. Land uses in the region comprise pastoral grazing, mineral exploration and mining activities. Available databases indicate the local area (50-kilometre radius) retains approximately 98 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).
Conservation areas	There is no mapped conservation area within the application area neither do any occur within the combined local area (50km radius).
Vegetation description	The flora and vegetation surveys of Phoenix Environmental (2022a), Umwelt (2023), Biologic (2024a) indicate that the vegetation within the proposed clearing area consists of several vegetation types, as detailed in Appendix D. These vegetation types are consistent with the mapped vegetation types (GIS Database): • Beard Vegetation Association (BVA) 93, which is described as (3955.11 hectares) • Beard Vegetation Association 117, which is described as Hummock grassland <i>Triodia</i> spp. (3.19 hectares) • Beard Vegetation Association 589, which lacks a floristic description but is described as short bunch-grass savanna / Grass-steppe in structure (635.87 hectares) • Beard Vegetation Association 619, which is described as Wheatbelt; York gum, salmon gum etc. <i>Eucalyptus loxophleba</i>, <i>E. salmonophloia</i>. Goldfields; gimlet, redwood etc. <i>E. salubris</i>, <i>E. oleosa</i>. Riverine; rivergum <i>E. camaldulensis</i>.etc. (118.96 hectares) • Beard Vegetation Association 647, which is described as Hummock grassland with scattered shrubs or mallee <i>Triodia</i> spp. <i>Acacia</i> spp., <i>Grevillea</i> spp. <i>Eucalyptus</i> spp. (3892.16 hectares) The mapped vegetation types retain approximately 99.88 per cent for BVA 93, 98.51 per cent for BVA 117, 99.46 per cent for BVA 589, 99.24 per cent for BVA 619, 97.88 per cent for BVA 647 of their original extent (Government of Western Australia, 2019). This is consistent with the native vegetation map.
Vegetation condition	The flora and vegetation surveys of Phoenix Environmental (2022), Umwelt (2023), Biologic (2024) indicate that the existing vegetation within the proposed clearing area ranges from Excellent to Completely degraded (Keighery, 1994). • Excellent (4514.79 hectares, 52.46%) • Very good (3538.42 hectares, 41.11%) • Good (42.81 hectares, 0.49%) • Poor (15.94 hectares, 0.18%) • Degraded (0.54 hectares, 0.006%) • Completely degraded (1.1 hectares, 0.01%)

Characteristic	Details
	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° to 40.8°, with a mean annual temperature of 33.4°. The average annual rainfall received over the application area from 1942 to 2024 is 316.8 millimetres (taken from Port Hedland airport (004032), BOM 2024). The application area is situated at an elevation of approximately between 20 to 80 meters above sea level.
Soil description	The soil is mapped as: • 281Ma (Mallina System) - Sandy surfaced alluvial plains supporting soft spinifex grasslands and minor hard spinifex and tussock grasslands. • 281RiX_BED (River bed phase) - River bed with no vegetation. • 281Ri (River System) - Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex. • 281Rt (Ruth System) - Hills and ridges of volcanic and other rocks supporting shrubby hard spinifex and occasionally soft spinifex grasslands. • 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	The application area does not lie within an area with high risk of land and/or soil degradation apart from an area of 108.58 hectares associated with the Turner River System which has a low to moderate risk of consisting of acid sulphate soils.
Waterbodies	The desktop assessment and aerial imagery indicated that six non-perennials minor waterbodies occur within the application area, including a major river (Turner River) and three minor rivers of which one belongs to the Turner River system and two occur towards the southern part of the Permit area. No wetlands 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 <i>Rights in Water and Irrigation Act 1914</i> (RiWI Act). The groundwater salinity level is mapped as 1000-3000 milligrams per litre.
Flora	Data base indicated that 226 records of conservation significant flora across 19 species are available for the local area. This includes <i>Seringia exastia</i>, which was delisted from the Threatened species list, and <i>Quoya zonalis</i> (Threatened) Four conservation Priority 3 flora species were identified in the application area during the flora and vegetation surveys of Phoenix Environmental (2022a), Umwelt (2023), Biologic (2024a).
Ecological communities	No conservation significant ecological communities or buffers are mapped over the application area. The closest community is the Greory Land system approximately four (4) km Southwest of the application area.
Fauna	Surveys over the application area did not identify any conservation significant species. The native vegetation communities in the application area, however, may provide suitable habitat for conservation significant fauna species including: brush-tailed mulgara (<i>Dasyercus blythi</i>), bilby (<i>Macrotis lagotis</i>), Pilbara leaf-nosed bat (<i>Rhinonicteris aurantia</i>), ghost bat (<i>Macroderma gigas</i>), northern coastal free-tailed bat (<i>Ozimops cobourgiana</i>), pebble-mound mouse (<i>Pseudomys chapmani</i>), oriental pratincole (<i>Glareola maldivarum</i>), grey falcon (<i>Falco hypoleucos</i>).

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	10.12
Vegetation complex					
Beard vegetation association 117	897,107.77	883,704.60	98.51	129,205.67	14.40
Beard vegetation association 93	3,044,293.40	3,040,639.40	99.88	59,536.96	1.96
Beard vegetation association 589	806,985.08	802,646.84	99.46	15,304.39	1.9
Beard vegetation association 619	119,074.85	118,167.58	99.24	236.34	0.2
Beard vegetation association 647	195,859.95	191,710.92	97.88	0	0
Local area					
50km radius	1,124,301.05	1,101,419.49	98	-	-

A.3. Flora analysis table

Taxon	Conservation Status (Priority)	Suitable habitat	Suitable vegetation	Number of record	Closest distance of record to application area (km)	Are survey adequate to identify?
<i>Abutilon sp. Pritzelianum</i> (S. van Leeuwen 5095)	3	Y	Y	36	0	Y
<i>Bulbostylis burbridgeae</i>	4	Y	Y	14	>6	Y
<i>Euphorbia clementii</i>	3	Y	Y	18	>10	Y
<i>Euploca mutica</i>	3	Y	Y	55	>3	Y
<i>Gomphrena cucullata</i>	3	Y	Y	1	>38	Y
<i>Gomphrena leptophylla</i>	3	Y	Y	2	>8	Y
<i>Gomphrena pusilla</i>	2	Y	Y	5	>9	Y
<i>Goodenia obscurata</i>	3	Y	Y	1	>35	Y
<i>Gymnanthera cunninghamii</i>	3	Y	Y	12	>7	Y
<i>Nicotiana umbratica</i>	3	Y	Y	2	>32	Y
<i>Phyllanthus hebecarpus</i>	3	Y	Y	1	49	Y
<i>Ptilotus mollis</i>	4	Y	Y	1	>11	Y
<i>Rothia indica subsp. australis</i>	3	Y	Y	6	>9	Y
<i>Stylidium weeliwolli</i>	3	Y	Y	1	>16	Y
<i>Tephrosia rosea</i> var. <i>Port Hedland</i> (A.S. George 1114)	1	Y	Y	33	0	Y
<i>Terminalia supranitifolia</i>	3	Y	Y	5	>36	Y
<i>Triodia chichesterensis</i>	3	Y	Y	27	>11	Y
<i>Vigna triodiophila</i>	3	Y	Y	2	>36	Y

A.4. Fauna analysis table

Taxon	Conservation status	Suitable habitat	Suitable vegetation	Minimum distance of record to application area (km)	Number of records	Are surveys adequate
<i>Actitis hypoleucos</i> (common sandpiper)	MI	Y	Y	>0	67	Y
<i>Antechinomys longicaudatus</i> (long-tailed dunnart)	P4	Y	Y	>36	1	Y
<i>Apus pacificus</i> (fork-tailed swift)	MI	Y	Y	>0	11	Y
<i>Calidris canutus</i> (red knot)	EN	Y	Y	>0	18	Y
<i>Calidris falcinellus</i> (broad-billed sandpiper)	MI	Y	Y	>14	27	Y
<i>Calidris melanotos</i> (pectoral sandpiper)	MI	Y	Y	>10	2	Y
<i>Calidris pugnax</i> (ruff)	MI	Y	Y	>0	2	Y
<i>Calidris ruficollis</i> (red-necked stint)	MI	Y	Y	>0	76	Y
<i>Calidris subminuta</i> (long-toed stint)	MI	Y	Y	>0	13	Y
<i>Calidris tenuirostris</i> (great knot)	CR	Y	Y	>0	36	Y
<i>Charadrius leschenaultii</i> (greater sand plover, large sand plover)	VU	Y	Y	>0	47	Y
<i>Charadrius mongolus</i> (lesser sand plover)	EN	Y	Y	>0	33	Y
<i>Charadrius veredus</i> (oriental plover)	MI	Y	Y	>13	17	Y
<i>Chlidonias leucopterus</i> (white-winged black tern)	MI	Y	Y	>2	41	Y
<i>Ctenopus angusticeps</i> (Airlie Island ctenopus, northwestern coastal ctenopus)	P3	Y	Y	>8	16	Y
<i>Dasycercus blythi</i> (brush-tailed mulgara)	P4	Y	Y	0	356	Y
<i>Dasycercus cristicauda</i> (crest-tailed mulgara, minyiminnyi)	P4	Y	Y	>1	3	Y
<i>Dasyurus hallucatus</i> (northern quoll)	EN	Y	Y	>0	1815	Y
<i>Falco hypoleucos</i> (grey falcon)	VU	Y	Y	>0	19	Y
<i>Falco peregrinus</i> (peregrine falcon)	OS	Y	Y	>2	6	Y
<i>Fregata ariel</i> (lesser frigatebird)	MI	Y	Y	>7	17	Y
<i>Gallinago stenura</i> (pin-tailed snipe)	MI	Y	Y	>7	3	Y
<i>Gelochelidon nilotica</i> (gull-billed tern)	MI	Y	Y	>0	31	Y
<i>Glareola maldivarum</i> (oriental pratincole)	MI	Y	Y	0	27	Y
<i>Hirundo rustica</i> (barn swallow)	MI	Y	Y	>2	19	Y
<i>Hydroprogne caspia</i> (Caspian tern)	MI	Y	Y	>0	92	Y
<i>Lagorchestes conspicillatus leichardti</i> (spectacled hare-wallaby (mainland))	P4	Y	Y	>16	142	Y
<i>Leggadina lakedownensis</i> (northern short-tailed mouse, Lakeland Downs mouse, kerakenga)	P4	Y	Y	>9	2	Y
<i>Liasis olivaceus barroni</i> (Pilbara olive python)	VU	Y	Y	>8	3	Y
<i>Limnodromus semipalmatus</i> (Asian dowitcher)	MI	Y	Y	>13	16	Y
<i>Limosa lapponica</i> (bar-tailed godwit)	MI	Y	Y	>0	64	Y
<i>Limosa lapponica menzbieri</i> (bar-tailed godwit (northern Siberian))	CR	Y	Y	>16	1	Y
<i>Limosa limosa</i> (black-tailed godwit)	MI	Y	Y	>16	11	Y
<i>Macroderma gigas</i> (ghost bat)	VU	Y	Y	>5	140	Y

<i>Macrotis lagotis</i> (bilby, dalgyte, ninu)	VU	Y	Y	>0	275	Y
<i>Numenius madagascariensis</i> (eastern curlew)	CR	Y	Y	>0	41	Y
<i>Numenius minutus</i> (little curlew)	MI	Y	Y	>0	29	Y
<i>Numenius phaeopus</i> (whimbrel)	MI	Y	Y	>0	71	Y
<i>Oceanites oceanicus</i> (Wilson's storm-petrel)	MI	Y	Y	>14	2	Y
<i>Onychoprion anaethetus</i> (bridled tern)	MI	Y	Y	>12	2	Y
<i>Ozimops cobourgianus</i> (northern coastal free-tailed bat)	P1	Y	Y	>9	8	Y
<i>Pandion haliaetus</i> (osprey)	MI	Y	Y	>0	81	Y
<i>Phalaropus lobatus</i> (red-necked phalarope)	MI	Y	Y	>33	11	Y
<i>Plegadis falcinellus</i> (glossy ibis)	MI	Y	Y	>13	5	Y
<i>Pluvialis fulva</i> (Pacific golden plover)	MI	Y	Y	>7	24	Y
<i>Pluvialis squatarola</i> (grey plover)	MI	Y	Y	>0	29	Y
<i>Pseudomys chapmani</i> (western pebble-mound mouse, ngadji)	P4	Y	Y	0	282	Y
<i>Rhinonictis aurantia</i> (orange leaf-nosed bat)	P4	Y	Y	>16	26	Y
<i>Rhinonictis aurantia</i> (Pilbara form) (Pilbara leaf-nosed bat)	VU	Y	Y	0	181	Y
<i>Sterna hirundo</i> (common tern)	MI	Y	Y	>12	12	Y
<i>Sternula albifrons</i> (little tern)	MI	Y	Y	>13	26	Y
<i>Sternula nereis nereis</i> (fairy tern)	VU	Y	Y	>12	2	Y
<i>Sula leucogaster</i> (brown booby)	MI	Y	Y	>19	1	Y
<i>Thalasseus bergii</i> (crested tern)	MI	Y	Y	>0	33	Y
<i>Tringa brevipes</i> (grey-tailed tattler)	MI & P4	Y	Y	>0	66	Y
<i>Tringa glareola</i> (wood sandpiper)	P4 & MI	Y	Y	>0	33	Y
<i>Tringa nebularia</i> (common greenshank)	MI	Y	Y	>0	77	Y
<i>Tringa stagnatilis</i> (marsh sandpiper)	MI	Y	Y	>12	35	Y
<i>Xenus cinereus</i> (Terek sandpiper)	MI	Y	Y	>0	31	Y

MI: migratory, P: Priority, VU: Vulnerable, CR: critically endangered

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity." <u>Assessment:</u> The application area does not contain any conservation significant ecological communities. However, four Priority 3 flora species and several vegetation types and fauna habitat critical to the conservation significant species occur within the application area.	May be at variance	Yes Refer to Section 3.2.1, above.

Assessment against the clearing principles	Variance level	Is further consideration required?
<u>Principle (b):</u> “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.” <u>Assessment:</u> The application area comprises critical habitat for the Grey Falcon and the Bilby in the form of Major Drainage Line habitat and Sandplain habitat. All conservation significant species that are likely to occur within the application area are further discussed in Section 3.2.2.	At variance	Yes <i>Refer to Section 3.2.2, above.</i>
<u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.” <u>Assessment:</u> No Threatened species have been recorded in the application area	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<u>Principle (d):</u> “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 (TEC).” <u>Assessment:</u> The vegetation present within the application area is not representative of any TEC.	Not at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<u>Principle (e):</u> “Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.” <u>Assessment:</u> All mapped vegetation associations occurring within the application area retain more than 90% of their original extent. These figures are consistent with the minimum 30% threshold set for the National Target for Biodiversity and Conservation.	Not at variance	No
<u>Principle (h):</u> “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.” <u>Assessment:</u> No conservation areas occur within the 50 km radius of the application area. The nearest conservation area is Mungaroona Range Nature Reserve, approximately 60 km from the application area. Given the distance, 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		
<u>Principle (f):</u> “Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.” <u>Assessment:</u> The application area intersects with part of the Turner River, a major water course running to the North and South of the application area, which will impact on some riparian vegetation. No other wetlands or water courses have been recorded within the application area.	At variance	Yes <i>Refer to Section 3.2.3, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<u>Principle (g):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.” <u>Assessment:</u> The soil is sandy, and the climate is dry making it likely that loose soils are prone to wind erosion. While the climate is generally dry, during the wet season, loose soils may be susceptible to water erosion. Although the risks may not be significant, preventive measures should be taken to mitigate potential impacts including rehabilitation of temporarily cleared areas.	May be at variance	Yes <i>Refer to Section 3.2.3, above</i>
<u>Principle (i):</u> “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.” <u>Assessment:</u> The application area intersects with the Turner River. It is also mapped within the Pilbara Surface water and Groundwater area proclaimed under the RIWI Act. However, the project will not require interception with ground water.	May be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<u>Principle (j):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.” <u>Assessment</u> 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.	Not likely to be 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 scales below were used to measure the condition of the vegetation proposed to be cleared. These have 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 Southwest 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.
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.

Condition	Description
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 (*Biologic, 2024a & b; Umwelt, 2023; Western Wildlife, 2023; Phoenix, 2022a & b, Phoenix, 2025*)

Several flora, vegetation and fauna surveys have been commissioned in support of the project, as follows:

- Biologic Environmental Survey Pty Ltd (Biologic) completed a desktop and detailed flora and basic and targeted fauna survey across the survey area shown in Figure 2 (Biologic, 2024a & b). The detailed flora and fauna survey area encompasses the 54.3% of the Permit Area (Figure 1).
- Phoenix Environmental Sciences Pty Ltd (Phoenix, 2022a & b) completed a desktop and detailed flora and fauna survey for the APA's PHSF which intersects 0.9% of the Permit Area at the northernmost section (Figure 2).
- Umwelt (Australia) Pty Ltd (Umwelt) and Western Wildlife completed a basic flora and vegetation survey and a detailed fauna survey, respectively, for the Hemi Gold Project. The Umwelt (2023) survey area intersects 3,851.7 ha (44.8%) of the Permit Area and the Western Wildlife (2023) survey areas intersects 4,095.7 ha (47.6%) of the Permit Area (Figure 2).
- Phoenix Environmental Sciences (2025). Completed *Single season Detailed flora and vegetation survey for Port Hedland Transmission Project*. Prepared for APA. Dated April 2025. DWER Ref. DWERDT1194406

The survey areas covered by the three surveys is depicted in Figure 2 and 4 and the full reports of the surveys are available from <https://ftp.dwer.wa.gov.au/permit/10678/>.

The surveys were conducted in accordance with the guidelines:

- *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)).

Vegetation types

The surveys identified the following vegetation types:

Code	Mapping unit	Extent in Permit Area	
		Area (ha)	Proportion of Permit Area (%)
Cleared	N/A	171.3	2.0
Bare River Channel	N/A	30.2	0.4
Biologic (2024a)			
SP AaAaAc AsPt TeTs	<i>Acacia ancistrocarpa</i> , <i>Acacia acradenia</i> , <i>Acacia colei</i> tall open shrubland over <i>Acacia stellaticeps</i> , <i>Pluchea tetranthera</i> mid open shrubland over <i>Triodia epactia</i> , <i>Triodia schinzii</i> low open hummock grassland	491.8	5.7
SP As SpPaPt TeTs	<i>Acacia stellaticeps</i> mid isolated shrubs over <i>Sida</i> sp. Pilbara (A.A. Mitchell PRP 1543), <i>Ptilotus astrolasius</i> , <i>Pluchea tetranthera</i> low isolated shrubs over <i>Triodia epactia</i> , <i>Triodia schinzii</i> low open hummock grassland	409.5	4.8
SD AtAtpPl TcCiCc Te Eo Ahh	<i>Acacia trachycarpa</i> , <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Petalostylis labicheoides</i> tall open woodland over <i>Triumfetta chaetocarpa</i> , <i>Corchorus incanus</i> , <i>Cajanus cinereus</i> mid isolated shrubs over <i>Triodia epactia</i> mid sparse tussock grassland with <i>*Cenchrus setiger</i> low open tussock grassland	18.9	0.2
SP CcCz AaAiHll Aslm TeTs PfPaBe	<i>Corymbia candida</i> , <i>Corymbia zygophylla</i> low isolated trees over <i>Acacia ancistrocarpa</i> , <i>Acacia inaequilatera</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> tall isolated shrubs over <i>Acacia stellaticeps</i> , <i>Indigofera monophylla</i> mid shrubland over <i>Triodia epactia</i> , <i>Triodia schinzii</i> low open hummock grassland over <i>Bonamia erecta</i> low sparse shrubland over <i>Ptilotus fusiformis</i> , <i>Ptilotus astrolasius</i> low sparse herbland.	756.0	8.8
SP Cz AiHll As Be TsTe	<i>Corymbia zygophylla</i> low isolated trees over <i>Acacia inaequilatera</i> , <i>Hakea lorea</i> tall isolated shrubs over <i>Acacia stellaticeps</i> low-mid shrubland over <i>Bonamia erecta</i> low sparse shrubland over <i>Triodia schinzii</i> , <i>Triodia epactia</i> mid open hummock grassland	2,310.1	26.9
CP EbEg Te MhTtPm	<i>Eriachne benthamii</i> , <i>Eriachne glauca</i> low isolated clumps of tussock grasses with <i>Triodia epactia</i> isolated clumps of hummock grasses over <i>Marsilea hirsuta</i> , <i>Trainthema triquetrum</i> , <i>Peplidium muelleri</i> low sparse herbland	63.4	0.7

Code	Mapping unit	Extent in Permit Area	
		Area (ha)	Proportion of Permit Area (%)
DL EcMa AtAcAtp Te CcCs	<i>Eucalyptus camaldulensis</i> , <i>Melaleuca argentea</i> mid open woodland over <i>Acacia trachycarpa</i> , <i>Acacia colei</i> , <i>Acacia tumida</i> var. <i>pilbarensis</i> tall sparse shrubland over <i>Triodia epactia</i> mid sparse tussock grassland with * <i>Cenchrus ciliaris</i> , * <i>Cenchrus setiger</i> low open tussock grassland.	28.1	0.3
DL Ma MgMi Cc CvCi Eb GIPr	<i>Melaleuca argentea</i> low open woodland over <i>Melaleuca glomerata</i> , <i>Melaleuca linophylla</i> tall sparse shrubland over <i>Crotalaria cunninghamii</i> mid isolated shrubs over <i>Cyperus vaginatus</i> , <i>Cyperus ixiocarpus</i> mid sparse sedgeland over <i>Eriachne benthamii</i> isolated clumps of tussock grasses over <i>Goodenia lamprosperma</i> , <i>Pluchea rubelliflora</i> low sparse herbland.	56.8	0.7
SP Or AiAh As EeEo TeTs BmBe	<i>Owenia reticulata</i> low isolated trees over <i>Acacia inaequilatera</i> , <i>Acacia holosericea</i> tall isolated shrubs over <i>Acacia stellaticeps</i> , <i>Bonamia erecta</i> low sparse shrubland over <i>Eragrostis eriopoda</i> , <i>Eriachne obtusa</i> low tussock grassland with <i>Triodia epactia</i> , <i>Triodia schinzii</i> mid isolated clumps of grasses over <i>Bonamia media</i> low sparse herbland.	114.4	1.3
Phoenix (2022a)			
AtpAseTe	Open mid shrubland of <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>A. sericophylla</i> over a low shrubland of <i>Acacia stellaticeps</i> , <i>Corchorus incanus</i> subsp. <i>incanus</i> and <i>Bonamia erecta</i> , over mid to low grassland of <i>Triodia epactia</i> , <i>Chrysopogon fallax</i> and <i>Triodia schinzii</i>	25.6	0.3
AtpAstTe	Mid sparse shrubland of <i>Acacia tumida</i> var. <i>pilbarensis</i> over low isolated shrubs of <i>Acacia stellaticeps</i> , <i>Senna notabilis</i> and <i>Bonamia erecta</i> , over mid to low open grassland of <i>Triodia epactia</i> , <i>Chrysopogon fallax</i> and <i>Aristida holathera</i>	37.7	0.4
AsTe	Mid isolated shrubs of <i>Acacia stellaticeps</i> over a mixed grassland of <i>Triodia epactia</i> , <i>Eriachne obtusa</i> and <i>Fimbristylis dichotoma</i> .	6.7	0.08
Ye	Low grassland of <i>Triodia epactia</i> , <i>Triodia secunda</i> and <i>Eriachne obtusa</i> .	4.2	0.05
Umwelt (2023)			
2	Low tussock grassland to sparse tussock grassland dominated by a combination of <i>Eriachne glauca</i> var. <i>glauca</i> , <i>Eriachne benthamii</i> and <i>Eriachne flaccida</i> over low sparse hummock grassland of <i>Triodia epactia</i> and <i>Triodia longiceps</i> over ephemeral low sparse sedgeland and forbland of mixed species including <i>Cyperus iria</i> , <i>Fimbristylis dichotoma</i> , <i>Neptunia dimorphantha</i> , <i>Marsilea hirsuta</i> and <i>Calandrinia pumila</i> on orange, red-brown or brown clay in clay pans	2.4	0.03
9	Tall sparse shrubland of mixed species including <i>Acacia inaequilatera</i> and <i>Grevillea wickhamii</i> subsp. <i>aprica</i> over low sparse shrubland of mixed species dominated by <i>Corchorus parviflorus</i> over low hummock grassland dominated by <i>Triodia wiseana</i> and <i>Triodia epactia</i> on red-brown clay loam with chert stones and often chert outcropping on hills and low rises	3.7	0.04
10	Tall open to sparse shrubland dominated by <i>Acacia ancistrocarpa</i> , <i>Acacia inaequilatera</i> , <i>Acacia sericophylla</i> , <i>Acacia acradenia</i> and occasionally <i>Melaleuca lasiandra</i> over low shrubland to sparse shrubland dominated by <i>Acacia stellaticeps</i> and occasionally <i>Sida irtutea</i> , <i>Indigofera irtutea</i> , <i>Pluchea tetranthera</i> and <i>Corchorus parviflorus</i> over low hummock grassland to open hummock grassland dominated by <i>Triodia lanigera</i> and/or <i>Triodia schinzii</i> on red or red-brown sandy loam on plains	1,582.1	18.4

Code	Mapping unit	Extent in Permit Area	
		Area (ha)	Proportion of Permit Area (%)
11	Low open woodland to isolated trees of <i>Corymbia hamersleyana</i> over tall open to sparse shrubland dominated by <i>Acacia orthocarpa</i> , <i>Acacia inaequilatera</i> and <i>Grevillea wickhamii</i> subsp. <i>aprica</i> over low sparse shrubland dominated by <i>Acacia stellaticeps</i> over low hummock grassland dominated by a combination of <i>Triodia lanigera</i> , <i>Triodia angusta</i> , <i>Triodia epactia</i> and <i>Triodia chichesterensis</i> (P3) on red or red brown sandy or clay loam with primarily quartz and calcrete stones, occasionally with calcrete or quartz outcropping, on low rises and undulating plains	34.6	0.4
12	Isolated low trees dominated by <i>Corymbia hamersleyana</i> over low open to sparse shrubland of mixed species including <i>Acacia inaequilatera</i> , <i>Acacia acradenia</i> , <i>Acacia ancistrocarpa</i> and <i>Grevillea wickhamii</i> subsp. <i>aprica</i> over low sparse shrubland of mixed species dominated by <i>Goodenia stobbsiana</i> over low hummock grassland dominated by <i>Triodia epactia</i> and occasionally <i>Triodia wiseana</i> on red or red-brown clay loam with silica and chert stones and often silica and chert outcropping on low rises	15.1	0.2
13	Low open woodland dominated by <i>Corymbia hamersleyensis</i> and/or <i>Corymbia candida</i> subsp. <i>candida</i> over tall open to sparse shrubland dominated by <i>Acacia ancistrocarpa</i> , <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Acacia acradenia</i> and <i>Acacia colei</i> over low hummock grassland of <i>Triodia epactia</i> on red or redbrown clay or sandy loam on flats or plains	85.3	1.0
14	Tall open shrubland to isolated shrubs dominated by <i>Acacia ancistrocarpa</i> , <i>Acacia colei</i> and <i>Acacia inaequilatera</i> over low open shrubland to isolated shrubs dominated by <i>Acacia stellaticeps</i> and <i>Pluchea tetranthera</i> over low hummock grassland dominated by <i>Triodia epactia</i> on red or red brown sandy or clay loam, often with colluvial gravel, on plains and flats	2,033.6	23.6
15	Low open woodland of <i>Eucalyptus victrix</i> over tall sparse shrubland dominated by <i>Acacia colei</i> over low open hummock grassland of <i>Triodia epactia</i> over ephemeral low sparse herbland of mixed species including <i>Bergia perennis</i> subsp. <i>perennis</i> , <i>Marsilea hirsuta</i> , <i>Cyperus iria</i> and <i>Centipeda minima</i> subsp. <i>macrocephala</i> on pale brown sandy clay loam on the margins of clay pans	0.8	0.01
*Total		8,282.1	96.3

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)

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