GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10285/1
Permit Holder:	BHP Iron Ore Pty Ltd
Duration of Permit:	From 05 July 2024 to 30 November 2034

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

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of geotechnical investigations, utilities, installation, access to existing poles, road upgrades, staging, laydown activities, access roads and associated works.

2. Land on which clearing is to be done

Lot 125 on Deposited Plan 219861, Boodarie
Lot 311 on Deposited Plan 194620, Boodarie
Lot 372 on Deposited Plan 35620, Boodarie
Lot 3000 on Deposited Plan 51079, Finucane
Lot 321 on Deposited Plan 74344, Boodarie
Lot 1497 on Deposited Plan 404497, Boodarie
Lot 600 on Deposited Plan 407880, Finucane

3. Clearing authorised

The permit holder must not clear more than 75 hectares of *native vegetation* within an approximately 1407.2-hectare clearing footprint within the areas cross-hatched yellow in Figure 1 of Schedule 1.

4. Clearing not authorised

The Permit Holder must ensure that:

(a) no clearing of *native vegetation* occurs within areas identified as fauna habitat of mangrove and major drainage line within the area cross-hatched red on Figure 2 and Figure 3 of Schedule 1.

(b) no clearing of *native vegetation* occurs within areas identified as fauna habitat of tidal flat/drainage within the area cross-hatched red in Figure 4 of Schedule 1, with the exception for the purpose of geotechnical investigation and associated tracks.

5. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 30 November 2029.

PART II – MANAGEMENT CONDITIONS

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

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

(a) avoid the clearing of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of clearing on any environmental value.

7. Weed management

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

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

8. Directional clearing

The permit holder must

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

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

9. Flora management – pre-clearance survey

(a) Prior to undertaking any clearing authorised under this permit within the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must engage a *botanist* to conduct a targeted flora survey of the area(s) intended to be cleared to identify possible occurrences of the following *priority flora* species:

- *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (priority 1);
- *Gomphrena pusilla* (priority 2);
- *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (priority 3);
- *Euploca mutica* (priority 3);

- *Eragrostis crateriformis* (priority 3);
- *Gomphrena leptophylla* (priority 3);
- *Gymnanthera cunninghamii* (priority 3);
- *Rothia indica* subsp. *australis* (priority 3).

(b) Where *priority flora* are identified in relation to condition 9(a) of this permit, the permit holder shall ensure that:

(i) no clearing occurs within 10 metres of identified *priority flora*, unless approved by the *CEO* in writing;

(ii) no clearing of identified *priority flora* occurs unless approved by the *CEO* in writing.

(c) Prior to undertaking any clearing authorised under this permit within the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must provide the results of the *targeted flora survey* in a report to the *CEO*.

(d) If any of the abovementioned *priority flora* are identified within the area cross-hatched yellow in Figure 1 of Schedule 1, the targeted flora survey report must include the following:

(i) the location of each *priority flora*, identified under condition 9(a), either as the location of individual plants, or where this is not practical, the areal extent of the population and an estimate of the number of plants, 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;

(ii) the species name of each *priority flora* species identified under condition 9(a); and

(iii) the methodology used to survey the permit area.

10. Fauna management – Greater bilby and brush-tailed mulgara

(a) Within seven (7) days, or within another timeframe approved by the *CEO,* prior to undertaking any clearing authorised within the area cross-hatched yellow in Figure 1 of Schedule 1 under this permit, the permit holder must engage a *fauna specialist* to undertake pre-clearance survey of the area(s) intended to be cleared for the greater bilby (*Macrotis lagotis)* and brush-tailed mulgara *(Dasycercus blythi)* 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 10 metres of the flagged burrow/s;

(iii) clearing of the burrows showing signs of recent use cannot be undertaken until a *fauna specialist* is engaged to monitor with cameras, the flagged burrow/s for a maximum of five days, or until such time that greater bilby or brush-tailed mulgara have been observed to independently move on from the burrow/s; and

(iv) prior to clearing any burrows showing signs of recent use, engage a *fauna specialist* to re-inspect any flagged burrow/s for the presence of greater bilby or brush-tailed mulgara.

(c) If greater bilby or brush-tailed mulgara are identified utilising any flagged burrow/s under condition 10(b)(iv) of this permit and cannot be avoided in

accordance with condition 6 of this permit, the permit holder shall engage a *fauna specialist* to remove and relocate the identified greater bilby or brush-tailed mulgara to an area of *suitable habitat*, in accordance with a section 40 authorisation under the *Biodiversity Conservation Act 2016*.

(d) Where active greater bilby or brush-tailed mulgara burrows are identified under condition 10(a) of this permit, and/or greater bilby or brush-tailed mulgara are relocated under condition 10(c) of this permit, the permit holder must include the following in a report submitted to the *CEO* within 14 calendar days of undertaking any *clearing* authorised under this permit:

(i) the location of any greater bilbies or brush-tailed mulgara, as referred to under condition 10(a) of this Permit, captured 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) a description of the camera monitoring measures undertaken under condition 10(b)(iii) of this Permit;

(iii) the date and time of greater bilbies or brush-tailed mulgara were recorded as independently moving from a flagged burrow;

(iv) the number of individuals, gender of each greater bilby or brush-tailed mulgara captured/relocated under condition 10(b) and 10(c) of this permit;

(v) the date, time, vegetation type and weather conditions at each location where greater bilbies or brush-tailed mulgaras were captured under condition 10(c) of this permit;

(vi) the method of removal;

(vii) the location where each greater bilby or brush-tailed mulgara was relocated to, recorded using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(viii) details pertaining to the circumstances of any death of, or injury sustained by, an individual;

(ix) the relevant qualifications of the *fauna specialist* undertaking removal and relocation; and

(x) a copy of the fauna licence authorising the relocation of fauna under condition 10(c) of this permit.

11. Fauna management – Northern quoll

(a) When undertaking any clearing authorised under this permit within the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to inspect area(s) intended to clear immediately prior to, and for the duration of clearing activities, for the presence of northern quoll(s) (*Dasyurus hallucatus*).

(b) Clearing activities must cease in any area where fauna referred to in condition 11(a) are identified until either:

(i) the northern quoll individual(s) has moved on from that area to adjoining *suitable habitat*.

(ii) the northern quoll individual(s) has been removed by a *fauna specialist*.

(c) Any northern quoll individual(s) removed in accordance with condition 11(b)(ii) must be relocated by a *fauna specialist* to an area of *suitable habitat*, in accordance with a section 40 authorisation under the *Biodiversity Conservation Act 2016*.

(d) Where northern quoll individual(s) is identified under condition 11(a), the permit holder must within 14 calendar days provide the following records to the *CEO*:

(i) the number of individuals identified;

(ii) the date each individual was identified;

(iii) the location where each individual was identified 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;

(iv) the number of individuals removed and relocated;

(v) the date each individual was removed and relocated;

(vi) the method of removal;

(vii) the location where each individual was relocated to, recorded using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees; and

(viii) details pertaining to the circumstances of any death of, or injury sustained by, an individual;

(ix) the relevant qualifications of the *fauna specialist* undertaking removal and relocation; and

(x) a copy of the fauna licence authorising the relocation of fauna under condition 11(c) of this permit.

12. Fauna management – Flatback turtle

The permit holder must not clear any *native vegetation* within the beach/dune areas cross-hatched red in Figure 4 of Schedule 1 during the period from October to March annually.

13. Fauna management – 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.

14. Vegetation management – watercourses and drainage line surface flow

The permit holder must:

(a) avoid clearing *riparian vegetation*, where practicable; and

(b) maintain the existing surface flow of any watercourse that is to be impacted by the authorised clearing.

15. 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 six (6) months following clearing authorised under this permit, *revegetate* and *rehabilitate* the areas that are no longer required for the purposes of clearing 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 15(a) on the cleared areas.
(iv) undertake ongoing *weed* control over the *revegetated* and *rehabilitated* areas.

(c) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 15(b) of this permit, the permit holder must:

(i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
(ii) engage an *environmental specialist* to make a determination as to whether the composition, structure and density determined under condition 15(c)(i) of this permit will, without further *revegetation/rehabilitation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area.

(d) If the determination made by the *environmental specialist* under condition 15(c)(ii) is that the species composition, structure, and density determined under condition 15(c)(i) will not, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must *revegetate* the area by deliberately *planting local provenance* propagating material and/or *direct seeding* of *local provenance* seeds that will result in a similar species composition, structure, and density of native vegetation to pre-clearing vegetation types in that area.

(e) Where additional *planting* or *direct seeding* of *native vegetation* is undertaken in accordance with condition 15(d), the permit holder must repeat the activities required by condition 15(c) and 15(d) within two years of undertaking the additional *planting* or *direct seeding* of *local provenance* native vegetation.

(f) Where a determination is made by an *environmental specialist* under condition 15(c)(ii) that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, that determination shall be submitted to the *CEO* within three months of the determination being made by the *environmental specialist*.

(g) During the next *optimal time* occurring after receiving notice from the *CEO*:

(i) stating that the *CEO* disagrees with the determination submitted under condition 15(f); and
(ii) specifying the required further planting of *local provenance* propagating material and/or direct seeding of *local provenance* seeds that in the *CEO*'s reasonable opinion are necessary to ensure that the *native vegetation* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must carry out the further *planting* and/or *direct seeding* specified in the notice.

PART III - RECORD KEEPING AND REPORTING

16. 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(s); (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area(s) were cleared; (d) direction of clearing; (e) the size of the area(s) cleared (in hectares); (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 6; (g) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 7; and (h) actions undertaken to reduce impacts to fauna in accordance with condition 13 of this permit
2.	In relation to flora management pursuant to condition 9	(a) the name and location of each *priority flora* species, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (b) actions taken to demarcate each *priority flora* species recorded and their relevant buffers; (c) any approvals obtained from the *CEO* and (d) actions taken to avoid the clearing of *priority flora* species.
3.	In relation to fauna management pursuant to condition 10	(a) results of the pre-clearance surveys undertaken in accordance with condition 10 of this permit; and (b) a copy of the *fauna specialist*'s report.

No.	Relevant matter	Specifications
4.	In relation to fauna management pursuant to condition 11	(a) actions taken to manage and mitigate impacts to the northern quoll in accordance with condition 11; and (b) a copy of the *fauna specialist*'s report.
5.	In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 15	(a) the size of the area(s) *revegetated* and *rehabilitated*; (b) the date(s) on which the area(s) *revegetation* and *rehabilitation* was undertaken; and (c) details of the *revegetation* and *rehabilitation* activities undertaken; (d) the boundaries of the area(s) *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 Northing; (e) any remedial actions required to be undertaken; (f) the date the *environmental specialist* determined the *revegetation/rehabilitation* would result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area; and (g) a copy of the *environmental specialist*'s report.

17. Reporting

(a) The **p**ermit **h**older must provide to the *CEO* on or before 01 October of each year, a written report:

(i) of records required under condition 16 of this permit; and

(ii) concerning activities done by the permit holder under this permit between 1 July to 30 June of the preceding financial year.

(b) if no clearing authorised under this permit was undertaken between 1 July to 30 June of the preceding financial year, a written report confirming that no clearing under this permit has been carried out must be provided to the *CEO* on or before 01 October of each year.

(c) prior to 31 March 2034, the permit holder must provide to the *CEO* a written report of records required under condition 16 of this permit where these records have not already been provided under condition 17(a) of this permit.

DEFINITIONS

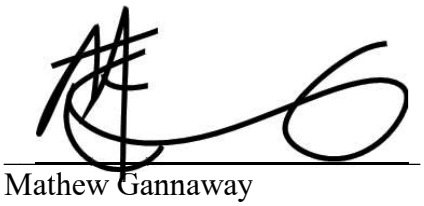
In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
direct seeding	means a method of re-establishing vegetation through establishment of a seed bed and the introduction of seeds of the desired plant species
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.
EP Act	*Environmental Protection Act 1986* (WA)
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 *Biodiversity Conservation Act 2016*.
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 200 kilometres and the same Interim Biogeographic Regionalisation for Australia (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.
optimal time	means the period from November to December for undertaking direct seeding.
planting	means the re-establishment of vegetation by creating soil conditions and planting seedlings of the desired 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.
riparian vegetation	has the meaning given to it in Regulation 3 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.
suitable habitat (brush-tailed mulgara)	means habitat known to support the brush-tailed mulgara within the known current distribution of the species. This often includes arid sandy regions that support spinifex grasslands.
suitable habitat (greater bilby)	means habitat known to support the greater bilby within the known current distribution of the species. This often includes three main habitats: open tussock grassland on uplands and hills, *Acacia aneura* (mulga) woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas.
suitable habitat (northern quoll)	means habitat known to support the northern quoll within the known current distribution of the species. This often includes predominantly rocky habitats often with gorges, breakaways and hills, with rugged rocky areas. This also includes the habitat type of Major Drainage Line identified within and adjacent to the application area.

Term	Definition
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

11 June 2024

Schedule 1

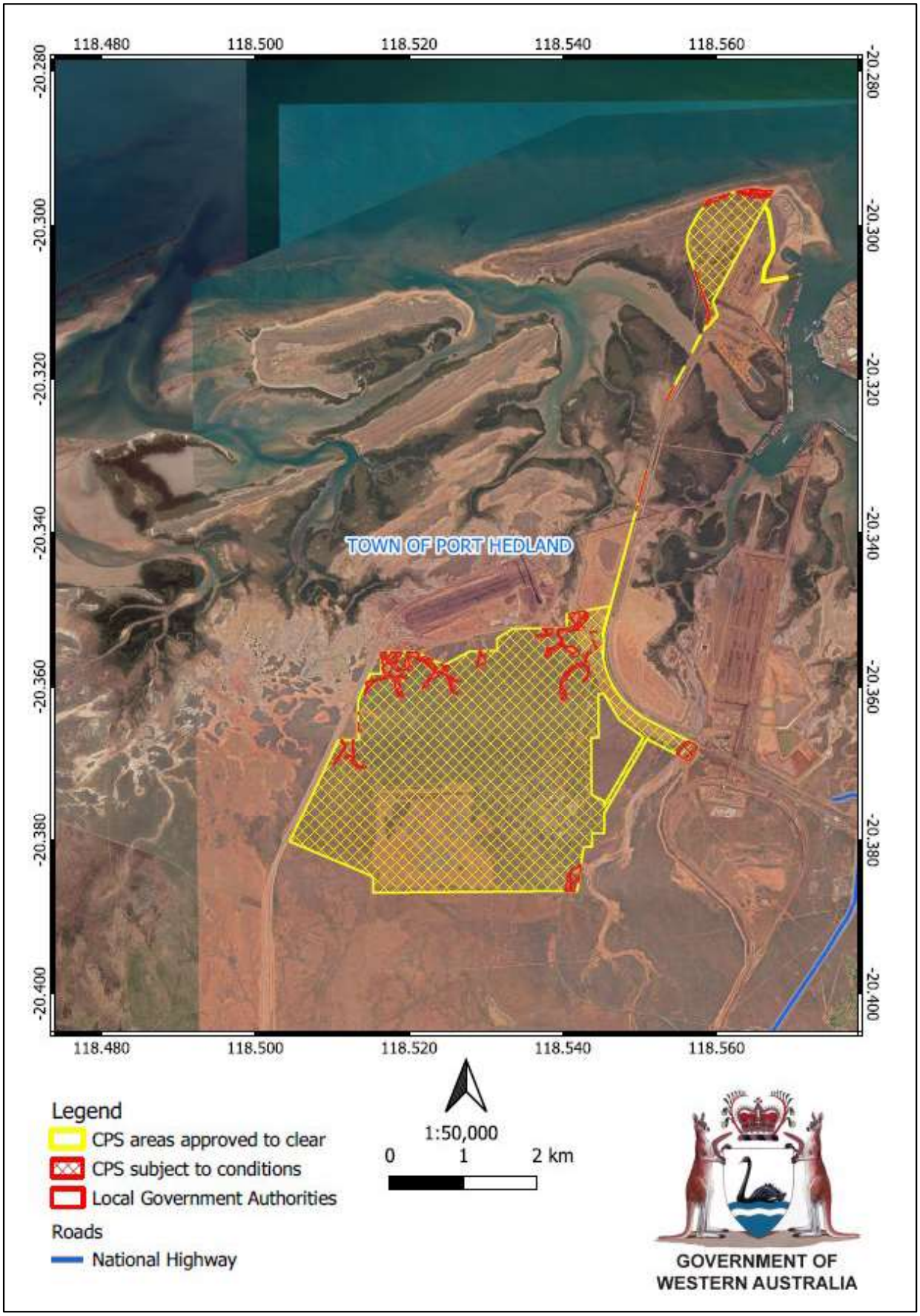


Figure 1: Map of the boundary of the area within which clearing may occur

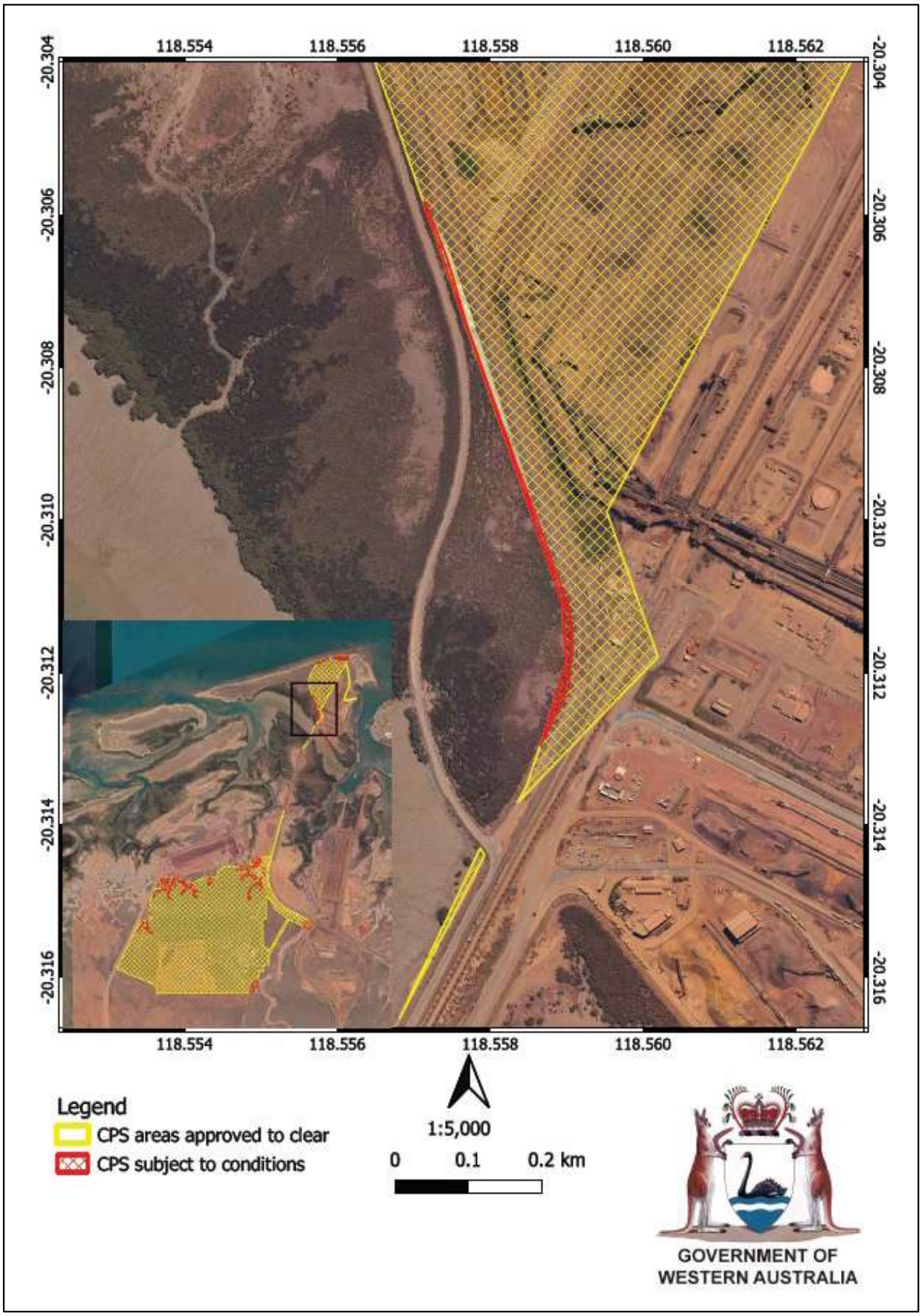


Figure 2: Map of the mangrove area (red polygon) subject to the condition 4a

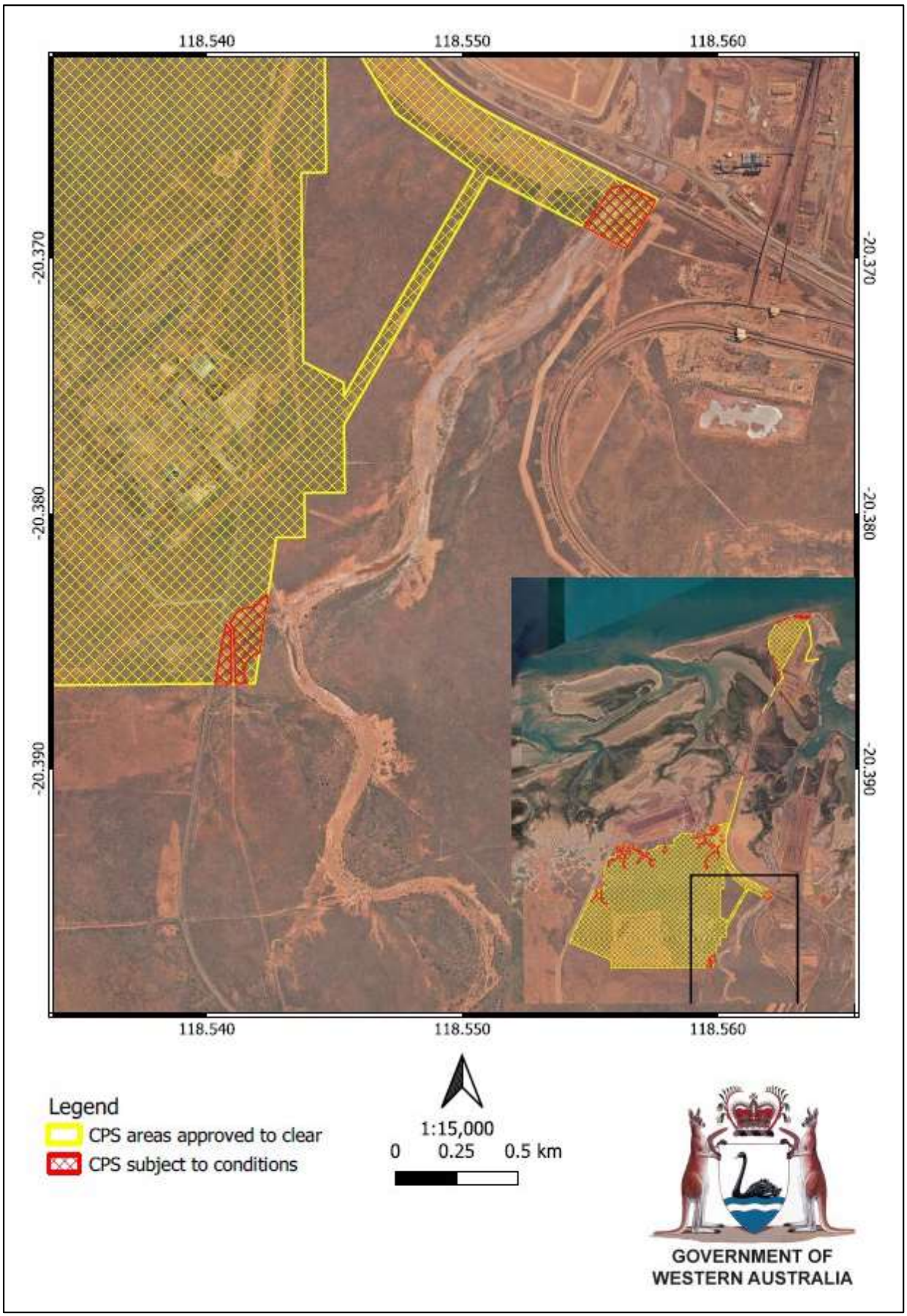


Figure 3: Map of the major drainage line areas (red polygons) subject to the condition 4a

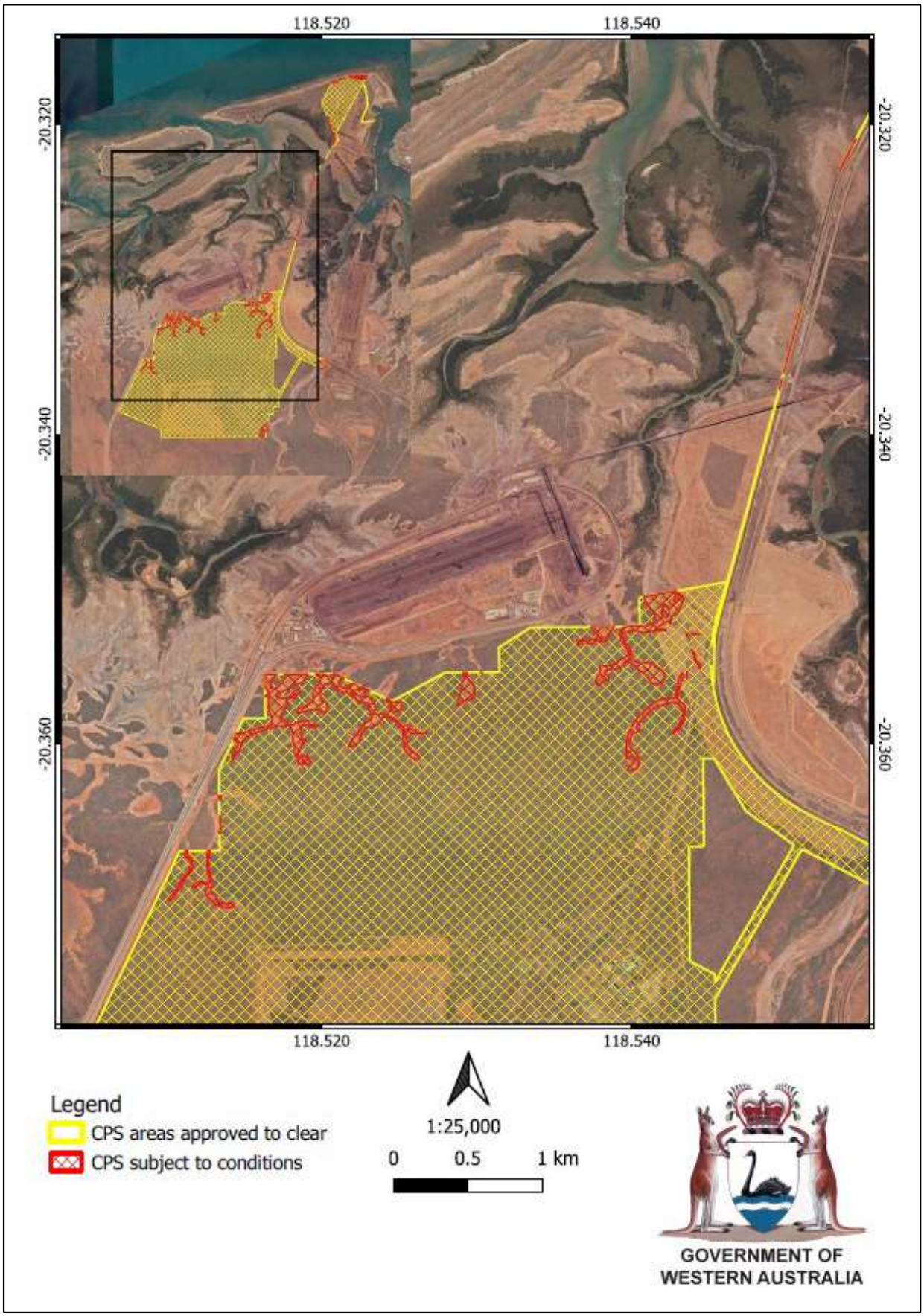


Figure 4: Map of the tidal flat/drainage areas (red polygons) subject to the condition 4b

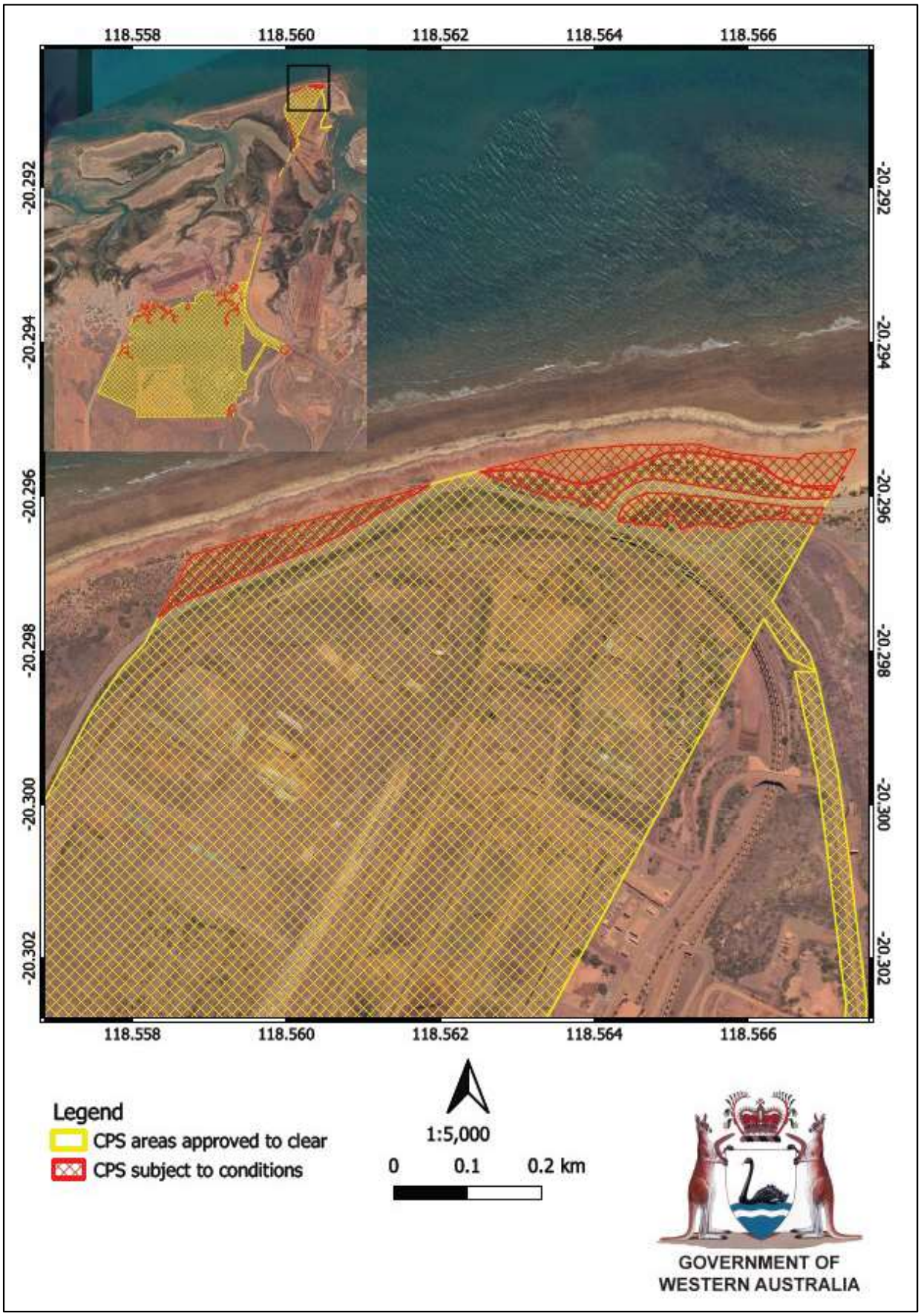


Figure 5: Map of the beach/dune areas (red polygons) subject to the condition 12

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10285/1
Permit type:	Purpose permit
Applicant name:	BHP Iron Ore Pty Ltd
Application received:	28 July 2023
Application area:	75 hectares (revised) of native vegetation within an approximately 1407.2-hectare clearing footprint
Purpose of clearing:	Geotechnical investigations, utilities installation, access to existing poles, road upgrades, staging, laydown activities, access roads and associated works
Method of clearing:	Mechanical
Property:	Lot 125 On Deposited Plan 219861 Lot 311 On Deposited Plan 194620 Lot 372 On Deposited Plan 35620 Lot 3000 On Deposited Plan 51079 Lot 321 On Deposited Plan 74344 Lot 1497 On Deposited Plan 404497 Lot 600 On Deposited Plan 407880
Location (LGA area/s):	Town of Port Hedland
Localities (suburb/s):	Boodarie and Finucane

1.2. Description of clearing activities

The vegetation proposed to be cleared is distributed across several separate areas (see Figure 1, Section 1.5). The proposed clearing is for several activities including geotechnical investigations, utilities, installation, access to existing poles, road upgrades, staging, laydown activities, access roads and associated works. These activities serve for the transportation of ore from a number of BHP's iron ore mines within the Pilbara region of Western Australia (BHP, 2023a).

1.3. Decision on application

Decision:	Granted
Decision date:	11 June 2024
Decision area:	75 hectares of native vegetation within an approximately 1407.2-hectare clearing 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). The Department of Water and Environmental Regulation (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 B), relevant datasets (see Appendix F.1), the findings of biological surveys (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing will result in:

- impact on habitat for conservation significant fauna species including greater bilbies, brush-tailed mulgaras, northwest free-tailed bats, flatback turtles and different species of birds.
- impact on individuals of northern quolls and northwestern coastal ctenotus should they be present within the areas to be cleared.
- potential impact on eight priority flora species (*Abutilon* sp. Pritzelianum (S. van Leeuwen 5095), *Eragrostis crateriformis, Euploca mutica, Gomphrena leptophylla, Gomphrena pusilla, Gymnanthera cunninghamii, Rothia indica* subsp. *australis* and *Tephrosia rosea* var. Port Hedland (A.S. George 1114)); and
- potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that the potential impacts of the proposed clearing can be minimised and managed to unlikely lead to an unacceptable risk to environmental values. With the proposed management conditions, the Delegated Officer considers that there will not be a significant impact to conservation significant fauna species, fauna individuals present at the time and for the duration of clearing, priority flora species and the proposed clearing is not likely to impact on adjacent vegetation and its habitat values.

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

- avoid, minimise to reduce the impacts and extent of clearing.
- take hygiene steps to minimise the risk of the introduction and spread of weeds.
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.
- undertake pre-clearance survey for the greater bilby and brush-tailed mulgara and avoid clearing these species and their habitat as required.
- inspect the areas to be cleared immediately prior to and for the duration of clearing for northern quoll and relocate this species as required.
- avoid clearing the fauna habitats of Mangrove and Major Drainage Line
- avoid clearing the fauna habitats of Tidal Flat/Drainage, restricted for only clearing for the purpose of geotechnical investigation and associated tracks.
- avoid clearing the fauna habitat of Beach/Dunes during period of October to March annually.
- undertake pre-clearance survey for the eight priority flora species mentioned above and avoid clearing these species as required.
- cover test pits at the end of each day and backfilling once complete to avoid trapping fauna.
- avoid clearing riparian vegetation where practical and maintain the existing surface flow.
- revegetation of all areas cleared for temporary works within six months upon conclusion of the purposes of the proposed clearing.

1.5. Site map

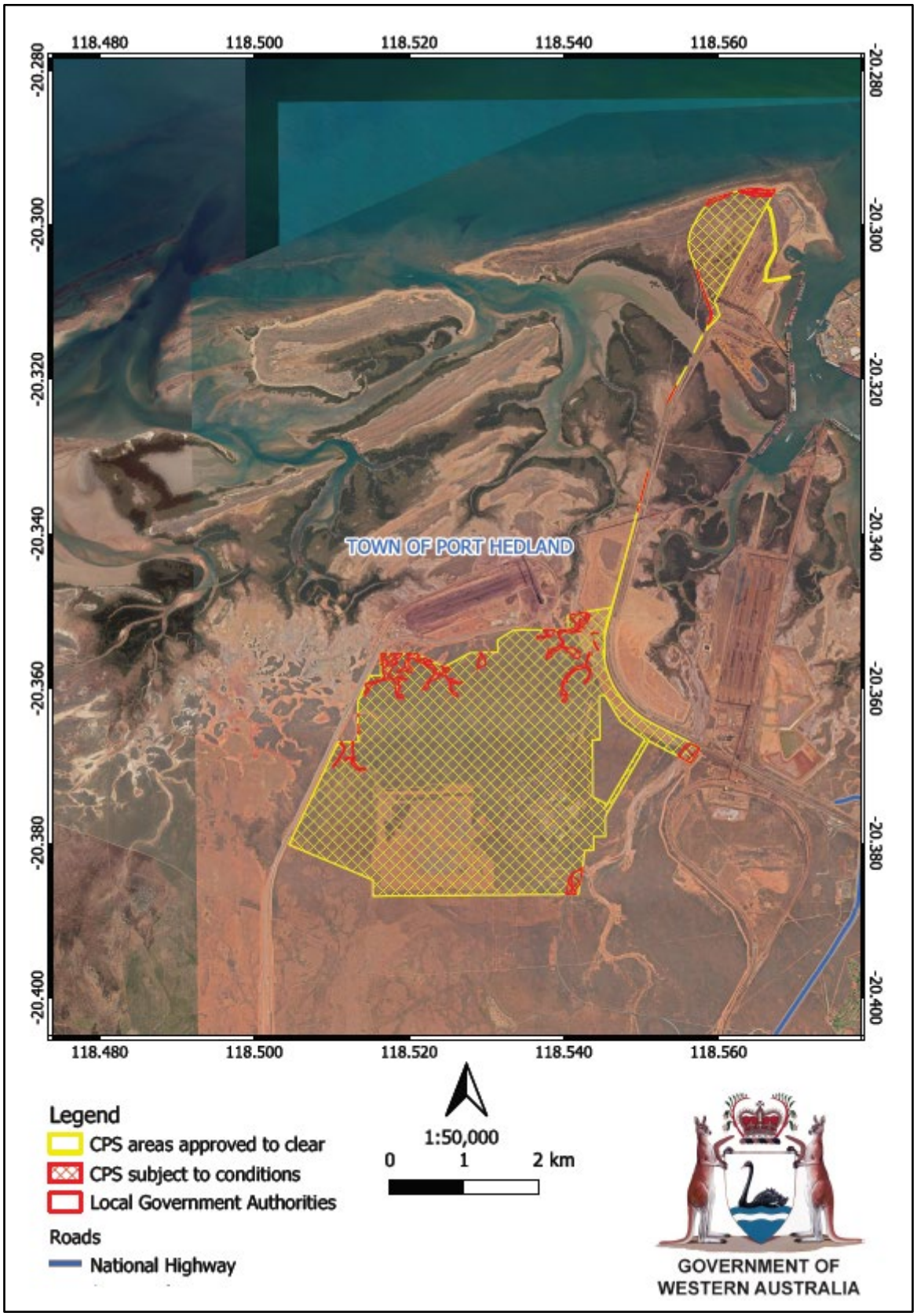


Figure 1 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit. The areas cross-hatched red indicate areas within which specific conditions apply.

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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Rights in Water and Irrigation Act 1914* (RIWI Act)

The key guidance documents which inform this assessment are:

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

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The application was revised during the assessment in response to a request for avoidance and mitigation of the clearing. The changes included:

- Removal of “accommodation camp” from purposes of the proposed clearing;
- Reduction of proposed clearing area by 20 hectares, from 95 hectares to 75 hectares.

Supporting documents and further information were submitted by the applicant (BHP, 2023a, 2023b, 2024a, 2024b), demonstrating that the applicant applied/committed to the following avoidance/mitigation measures:

- Removing the purpose of “accommodation camp” from the initial purpose of clearing, and hence reducing the proposed clearing area by 20 hectares, from 95 hectares as described in the initial application form to 75 hectares.
- There will be no impacts to intertidal mud flats within the application footprint.
- Fauna habitat areas identified as Mangroves and Major Drainage Lines within the application footprint will not be cleared.
- Restricting clearing in fauna habitat areas identified as Beach/Dune between October to March annually.
- Populations of priority flora will be avoided by a 10-metre buffer where practicable.
- Control of established weed populations will be carried out according to BHP’s standard weed control and management procedures.
- Where practicable, existing cleared tracks will be used to cross drainage lines. If it is necessary for new crossings to be installed, clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural surface flow.
- Appropriate surface water management practices will be implemented to minimise erosion and minimise potential impacts on the quality of surface water.
- Drainage infrastructure will be designed to ensure that post-construction flows will not differ significantly from pre-construction flows.

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 B) 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 C) identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and biodiversity) 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 (fauna and biodiversity) - Clearing Principles (a) and (b)

Assessment

The supporting document (BHP, 2023a) identified that the application footprint area comprises of six types of fauna habitat, including Beach/Dune, Major Drainage Line, Tidal Flat/Drainage, Mangrove, Mixed Acacia shrubland and Sand Plain, in which the Sand plain is the dominant habitat type within the application area. The vegetation structure, habitat value and map of these fauna habitats are presented in Appendix E.

The desktop assessment identified that there are 66 conservation significant fauna species recorded in the local area (excluding the ocean), including 49 bird species, 11 mammal species and six reptile species. In determining the likelihood of conservation significant fauna occurring within the application area, consideration was given to the results of the preferred habitat types, proximity of records to the application area, number of records and the type and condition of the vegetation within the application area. Based on these analysis factors, 46 bird species, five mammal species and two reptile species are considered to potentially occur in the application area.

Birds

Most of the identified bird species inhabit coastal environments and water associated habitat. The fauna habitat types identified as Beach/Bune, Tidal flat/Drainage, Major Drainage Line, and Mangrove within the application area are likely to provide the most suitable nesting, roosting and foraging habitat for these birds. However, considering the abundance of similar habitat types within the local context and the relatively small ratio of the proposed disturbance area over the application footprint (75 hectares, equivalent to 5.3 per cent) the proposed clearing is not likely to significantly impact available habitat for these bird species. Furthermore, the clearing within these habitats will be conditioned to limit the disturbance activities, which further reduces the potential impacts on bird species of conservation significance.

Mammals

Five mammal species considered to potentially occur in the application area include:

- Greater bilby *(Macrotis lagotis)* (VU)
- Brush-tailed mulgara *(Dasycercus blythi)* (P4)
- Crest-tailed mulgara *(Dasycercus cristicauda)* (P4)
- Northern quoll *(Dasyurus hallucatus)* (VU)
- North-western free-tailed bat *(Mormopterus cobourgianus)* (P1)

Greater bilby

The greater bilby (*Macrotis lagotis* - Vulnerable*)* is a medium-sized burrowing marsupial, occupying three major habitats including open tussock grassland on uplands and hills, mulga woodland or shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas (TSSC, 2016). Bilbies are a highly mobile species with an average home range of 110 – 300 hectares around their burrow network (DBCA, 2024). This species inhabits hummock grassland on sand plains and dunes (TSSC, 2016). The greater bilby is known from 39 records within the local area, the closest of which is approximately 1.3 kilometres from the application area. As the sand plains within the application area provide suitable habitat for the bilby and the application area is within the distribution map of this species (DCCEEW, 2023), bilbies are likely to occur within the proposed clearing footprint area (DBCA, 2024). However, noting the disturbed context of the application area, it is unlikely to be a preferable habitat for bilbies compared to native vegetation south of the application area where most records of this species are mapped.

Mulgaras

The brush-tailed mulgara *(Dasycercus blythi)* (Priority 4) is a carnivorous marsupial associated with *Triodia* spinifex grasslands with medium to dense cover (CALM, 2002). The species utilises extensive burrow systems with multiple entrances on sand dunes, typically at the base of grass clumps or bushes (CALM, 2002). There are 279 records of brush-tailed mulgaras mapped within the local area with the closest record mapped approximately 800 metres from the application area. Given the proximity of mapped records and the suitability of the habitat, it is considered that *D.*

blythi are likely present in the proposed clearing area. DBCA also advised that this species has been confirmed as occurring in the area (DBCA, 2024).

The crest-tailed mulgara (*Dasycercus cristicauda*) (Priority 4) is similar but larger and more brightly coloured than the brush-tailed mulgara. This species is often associated with a sparse cover of vegetation (such as *Zygochloa paradoxa* (cane grass), or in herblands and sparse grasslands bordering salt lakes with *Nitraria billardierei* (nitre bush) (TSSC, 2019). There are three records of crest-tailed mulgaras mapped within the local area with the closest record mapped approximately 2.9 kilometres away from the application area. However, DBCA advised that the status of *D. cristicauda* has been updated to likely to be extinct and this species is unlikely to occur within the proposed clearing area (DBCA, 2024).

To mitigate the impacts on habitat of greater bilbies and brush-tailed mulgara, a pre-clearance survey to identify their burrows and avoidance of clearing the identified burrows with a minimum buffer of 10 metres are considered sufficient, noting the relatively small ratio of area proposed to be cleared in comparison with the proposed footprint area. It is also recommended that the avoidance of identified burrows should minimize the fragmentation from other breeding and foraging habitat, e.g. burrows should not be excluded as islands (DBCA, 2024).

Northern quoll

The Northern quoll (*Dasyurus hallucatus*) (Endangered) occupies a diverse range of habitats including rocky areas, eucalypt forest and woodlands, shrubland and grassland, but occurs predominantly in rocky habitat and often with gorges, breakaways and hills, with rugged rocky areas used for denning purposes, but can also occur along creek lines and beaches (Hill and Ward, 2010). The Major Drainage Lines and Sand plains provide suitable foraging habitat for northern quoll (BHP, 2023a). According to available databases, there are 655 records of the northern quoll within the local area, the nearest being 1.65 kilometres from the application footprint. The recovery plan of northern quoll identified that rocky areas and offshore islands are two particular broad habitats critical to survival of this species (Hill & Ward, 2010). Noting that none of these habitats occurs within the application footprint, the proposed clearing is unlikely to impact the northern quoll's critical habitat. Their critical habitat within the local area is likely located approximately 20 kilometres southeast of the application footprint, where most of the records are mapped on rugged rocky areas. However, as northern quolls are opportunistic foragers that feed on a broad range of items including invertebrates, vertebrates, vegetative materials, carrion and human refuse (DoE, 2024) and noting the proximity of the nearest mapped record, it is considered that this species may utilise the application area for foraging and dispersal. DBCA (2024) also advised that although the habitat within the application area is unlikely to be critical for northern quoll breeding, it is likely to form an important dispersal linkage through the landscape. However, considering the relatively small ratio of proposed clearing area over the application footprint, the proposed clearing is unlikely to significantly impact this species foraging and dispersal habitat. Inspection of areas to be cleared conducted by a qualified fauna specialist immediately prior to and during the clearing period is likely to be sufficient to mitigate the potential impacts of the proposed clearing on northern quolls that may occur within the application area.

North-western free-tailed bat

North-western free-tailed bat (*Mormopterus cobourgianus*) (Priority 1) habitat is generally restricted to mangroves and surrounding areas where they can roost in small crevices and spouts in dead branches of mangrove trees (Australian Museum, 2024). The known distribution of this bat species is along the west-northern coasts of Australia (Australian Museum, 2024). According to available databases, seven records of this species are mapped within the local area, of which one was recorded within the application area in 2008. Mangrove areas within the application footprint provides suitable habitat for *M. cobourgianus*. With the applicant's commitment to avoid mangrove habitat, the proposed clearing will not impact habitat of this priority species.

Reptiles

Two reptile species considered to potentially occur in the application area include:

- Northwestern coastal ctenotus *(Ctenotus angusticeps)* (P3)
- Flatback turtle *(Natator depressus)* (VU)

Northwestern coastal ctenotus

Northwestern coastal ctenotus *(Ctenotus angusticeps)* (Priority 3) primarily occurs in coastal areas with populations found on Airlie Island and several mainland locations. On Airlie Island, this species inhabits tussock grassland and *Acacia* shrubland with coastal spinifex, while on mainland, its habitats are mostly associated with salt marsh communities adjacent to mangroves (TSSC, 2019). There are 16 records of this lizard within the local area, with the closest record of 360 metres from the application footprint. The Mangrove and Sand plain areas within the proposed clearing area is likely to provide suitable habitat for this species. Considering the existence of similar habitat in adjacent areas, the proposed clearing is unlikely to significantly impact habitat for the northwestern coastal ctenotus.

However, individuals are likely to be affected by the clearing activities if present at the time. The application of slow and directional clearing may mitigate the potential impacts on individuals.

Flatback turtle

Flatback turtle *(Natator depressus)* (Vulnerable) is endemic to Australia and all known breeding sites are found only in Australia with four major nesting areas, of which the Kimberley and Pilbara regions, from approximately the Lacepede Islands to Exmouth, are the major nesting areas of this species in Western Australia (DCCEEW, 2024). Nesting time of the flatback turtle in the Pilbara region is from October to March (Commonwealth of Australia, 2017). There are more than 10,000 records of the flatback turtle within the local area with the closest record approximately two kilometres from the application footprint. The Beach/Dune areas are likely to provide suitable breeding habitat for this species. The avoidance of disturbing these areas during nesting season (October to March) is likely to mitigate the impact on this vulnerable marine species.

Conclusion

Based on the above assessment, the proposed clearing may impact habitat for conservation significant fauna species including greater bilbies, brush-tailed mulgaras, northwest free-tailed bats, flatback turtles and different species of birds. It may also affect individuals of northern quolls and northwestern coastal ctenotus should they be present within the areas to be cleared. It is considered that some of the purposes to clear may also have secondary impacts to individuals, e.g. the test pits in geotechnical investigation have the potential to trap fauna.

For the reasons set out above, it is considered that the impacts of the proposed clearing on fauna habitat can be managed by avoiding/limiting disturbance in significant habitats within the application footprint; undertaking pre-clearance surveys for bilbies and brush-tailed mulgaras to avoid clearing identified habitat of these species; inspecting and relocating northern quolls if required; slow directional clearing to allow fauna to move into adjacent vegetation and covering test pits at the end of each day and backfilling once complete to avoid trapping fauna.

Given the possibility of greater bilby and northern quoll (threatened species and Matter of National Environmental Significance) being within the application area, an authorisation under section 40 of the BC Act and a referral under the EPBC Act may be required should these species need to be relocated.

Conditions

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

- undertake pre-clearance survey for the greater bilby and brush-tailed mulgara by qualified personnel and avoid clearing these species and their habitat as required.
- inspect the areas to be cleared immediately prior to and for the duration of clearing for northern quoll and relocate this species as required.
- slow directional clearing to allow fauna to move into adjacent vegetation.
- avoid clearing the fauna habitats of Mangrove and Major Drainage Line
- avoid clearing the fauna habitats of Tidal Flat/Drainage, restricted to only clearing for the purpose of geotechnical investigation and associated tracks.
- avoid clearing the fauna habitat of Beach/Dunes during the period of October to March annually.
- covering test pits at the end of each day and backfilling once complete to avoid trapping fauna.
- implement weed control measures to minimise the risk of the introduction and spread of weeds into adjacent fauna habitat.
- revegetation of all areas cleared for temporary works upon conclusion of the purposes of the proposed clearing.

3.2.2. Biological values (flora and biodiversity) - Clearing Principles (a) and (c)

Assessment

Results from the desktop assessment and an analysis on the suitable soil type, vegetation type and habitat showed that there are eight priority flora species having potential to occur within the application area (see B.3 for flora analysis table), including:

- *Abutilon* sp. Pritzelianum (S. van Leeuwen 5095) (P3)
- *Eragrostis crateriformis* (P3)
- *Euploca mutica (P3)*
- *Gomphrena leptophylla* (P3)
- *Gomphrena pusilla* (P2)

- *Gymnanthera cunninghamii* (P3)
- *Rothia indica* subsp. *australis* (P3)
- *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (P1)

The above priority flora species are associated with similar soil and vegetation types, as well as similar habitats, as those which occur within the application area. DBCA also advised that these conservation significant species can be considered to likely occur within the application area (DBCA, 2024).

A flora survey conducted in 2011 for a significantly larger area (80,874 hectares) including the application area recorded species of *Eragrostis crateriformis, Gomphrena pusilla,* and *Tephrosia rosea* var. Port Hedland within the current application footprint (ENV, 2011). However, it is unlikely that the entire 80,874 hectares of that study area was traversed on foot and the 2011 survey is not considered current (DBCA, 2024). Furthermore, there are several changes to the threatened and priority species list since 2011 and additional priority taxa which should be considered now might not have been targeted for survey in 2011. The abundance and distribution of recorded species may also have changed over time (DBCA, 2024).

Conclusion:
Given the possibility of the flora species listed above occurring within the application area footprint, the proposed clearing has the potential to impact on these priority flora species.

Since no recent biological surveys of the application area have been undertaken to confirm the presence, abundance and distribution of these species, to manage the risk of significant impacts to these species, a condition of undertaking pre-clearance survey for the flora species listed above and avoiding the clearing of these species is required.

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

- undertake pre-clearance survey for the above listed priority flora species by qualified personnel and avoid clearing these species as required.
- implement weed control measures to minimise the risk of the introduction and spread of weeds into adjacent remnant vegetation.

3.2.3. Water resources - Clearing Principles (f), (i) and (j)

Assessment

There are sections of the South West Creek intersecting the eastern edge of the application area (Major Drainage Line habitat) and several non-perennial watercourses are mapped within the application footprint.. The proposed clearing may result in the removal of riparian vegetation which increases the mobilization of soil into the watercourse, however, this should only be a short term, localised impact and limited to during the clearing process itself. For the watercourses that are non-perennial, if clearing and works are undertaken during the dry season, these impacts would be significantly reduced.

The commitment of the applicant to avoid Major Drainage Line habitat and to minimize impacts on the natural water flow and surface water quality, together with a condition on avoiding clearing riparian vegetation and maintaining the drainage surface flow will minimise the potential impacts.

Conclusion

Based on the above assessment, the proposal clearing may impact on surface watercourses within the application area and requires management conditions in relation to this environmental value.

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

- Vegetation management – watercourses and drainage line surface flow.
- Avoiding the Major Drainage Line habitat.

3.3. Relevant planning instruments and other matters

Initially, the Town of Port Hedland (the Town) advised DWER that the Town did not support the application at this stage due to the lack of information regarding the actual clearing areas associated to actual infrastructure location, details of proposed infrastructure layout, staging of clearing areas, dust management, and commitment to

revegetation post construction (Town of Port Hedland, 2023). After DWER communicated the applicant's clarification and justification regarding the above issues, the Town advised that they have no further comments on the proposal at this stage. However, the applicant may need a building permit for a site office and/or any infrastructure for laydowns areas, fencing, etc. (Town of Port Hedland, 2024). It is the applicant's responsibility to fulfill the Town's requirement regarding relevant permit/approval (if any).

DWER's Contaminated Sites branch, advised that soils at some locations within the application area have been classified as possibly contaminated/contaminated due to historical iron ore processing and shipping activities (DWER, 2024). However, the soil contamination is centred around the existing infrastructure which is unlikely to be the subject of the proposed clearing (DWER, 2024). Therefore, no comments relating to contamination need to be considered for the clearing of native vegetation under this application (DWER, 2024).

Several Aboriginal sites of significance have been mapped within the application area. BHP committed "in the event that a heritage site is identified which cannot be practicably avoided, BHP would consult the relevant traditional owners and seek approval under the *Aboriginal Heritage Act 1972* before the site is disturbed" (BHP, 2023a). It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Additional information provided by applicant

During the assessment, the applicant responded to requests for information on the following (see below).

Summary of additional information	Consideration of provided additional information
Shapefiles of fauna habitats within the application area	These shapefiles have been used to illustrate areas subjected to permit's conditions.
Justification on the Town of Port Hedland's comments	The information had been communicated to the Town, resulting in the Town's no objection in this stage (described in Section 3.3 of this Report)
Request to remove "accommodation camps" from the clearing purpose and reduce the proposed clearing area by 20 hectares	This information has been described in Section 3.1

Appendix B. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to the department at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is in the extensive land use zone of Western Australia. The application area is located approximately three kilometres west of the Port Hedland Town, and mostly borders the ocean on its north. Aerial imagery indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared – excluding the ocean) retains approximately 94.5 per cent of the original native vegetation cover.
Ecological linkage	The application area is not within any mapped linkages and is unlikely to be part of any local ecological linkage.
Conservation areas	No conservation areas are mapped within the local area. The closest conservation area is Eighty Mile Beach Marine Park, located over 100 kilometres from the application area.
Vegetation description	Supporting document (BHP, 2023a) indicates that the vegetation communities within the proposed clearing area consists of: 1. Beach: Unvegetated shoreline 2. Dune • Dune A: Scattered *Acacia bivenosa* shrubs over a low open *Crotalaria cunninghamii* shrubland over a **Cenchrus ciliaris* tussock grassland over scattered **Aerva javanica* herbs. • Dune C: A low open *Acacia stellaticeps*, *Acacia bivenosa* and *Acacia ampliceps* shrubland over a *Spinifex longifolius* and **Cenchrus ciliaris* open grassland over scattered *Gomphrena canescens* herbs. 3. Drainage • Drainage A: A low open *Eucalyptus victrix* woodland over a high open *Acacia ampliceps* and *Acacia trachycarpa* shrubland over a low open *Acacia stellaticeps*, *Pluchea ferdinandi-muelleri* and *Corchorus incanus* subsp. *incanus* shrubland over a *Triodia epactia* hummock grassland over an *Aristida holathera* var. *latifolia*, *Eriachne obtuse* and **Cenchrus ciliaris* tussock grassland. • Drainage B: A low open *Eucalyptus victrix* woodland over a high open *Acacia ampliceps* shrubland over a low open *Acacia stellaticeps* and *Pluchea ferdinandi-muelleri* shrubland over a closed *Triodia epactia* and *Triodia secunda* hummock grassland over an open *Eriachne obtusa*, *Aristida holathera* var. *latifolia* and **Cenchrus ciliaris* tussock grassland.

Characteristic	Details
	• Major Drainage Line A: Scattered low *Eucalyptus victrix* trees over a high open *Melaleuca argentea*, *Acacia ampliceps* and *Acacia trachycarpa* shrubland over scattered *Adriana tomentosa* var. *tomentosa* and *Pluchea ferdinandi-muelleri* shrubs over open *Triodia epactia* hummock grassland. 4. Grassland • Grassland A: *Triodia secunda* and *Triodia epactia* hummock grassland. 5. Mangrove: A high closed *Rhizophora stylosa* and *Avicennia marina* shrubland. 6. Saline Flat and Marsh (SF – Am (VT01)): Low open forest of *Avicennia marina* (mangrove) on dark grey clay with some sand patches on tidal saline flats influenced by tidal inundation. VT01 does have tidal inundation in very high tides, however, influenced by road and rail line infrastructure. 7. Samphire • Samphire B: Scattered *Avicennia marina* shrubs over a low open *Tecticornia halocnemoides* subsp. *tenuis*, *Tecticornia halocnemoides* and *Trianthema turgidifolium* shrubland. 8. Sandplain • Sandplain A: Low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/*Triodia epactia* and *Triodia secunda* hummock grasslands mosaic. • Sandplain B: An open *Acacia colei* var. *colei* shrublands over low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands mosaic. • Sandplain C: Low open *Corymbia flavescens* woodland over open *Acacia colei* var. *colei* shrubland over low *Acacia stellaticeps* shrubland over *Triodia epactia* hummock grassland/ low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/ *Triodia epactia* and *Triodia secunda* hummock grasslands mosaic. • Sandplain D: Low *Eucalyptus victrix* woodland over *Acacia colei* var. *colei* shrubland over low open *Acacia stellaticeps* and *Pluchea tetranthera* shrubland over *Triodia epactia* hummock grassland. • Sandplain J: Scattered low *Corymbia flavescens* trees over open *Acacia tumida* var. *pilbarensis* shrubland over low open *Acacia stellaticeps* shrubland over *Triodia epactia* and *Triodia secunda* hummock grassland/*Triodia secunda* and *Triodia epactia* hummock grassland mosaic. 9. Other (OT AbApAc): Shrubland of *Acacia bivenosa*, *Acacia pyrifolia* and *Acacia colei* over **Cenchrus ciliaris* (Buffel Grass), *Eragrostis falcata* and *Eragrostis eriopoda* open tussock grasses over mixed herbs on embankment soil/large boulders and gravel. Other associated species include *Cleome viscosa,* **Aerva javanica*, *Enchylaena tomentosa*, *Ipomoea pes-caprae* and *Bonamia media*. Majority of the application area is mapped as Sandplain A and disturbed infrastructure. Vegetation map is available in Appendix E. This is partly consistent with the mapped Beard vegetation types: • Beard 647, which is described as hummock grassland with scattered shrubs or mallee Triodia spp. Acacia spp., Grevillea spp. Eucalyptus spp. • Beard 43, which is described as low forest (Kimberley) or thicket (Pilbara) mangroves *Avicennia marina*, *Rhizophora stylosa, Bruguiera exaristata*. • Beard 117, which is described as hummock grassland Triodia spp. • Beard 589, which is described as short bunch-grass savanna/grass-steppe • Beard 127, which is described as tidal mud flat (Shepherd et al, 2001) The mapped vegetation types of Beard 647, 43, 117, 589 and 127 within the Pilbara IBRA bioregion retain approximately 97.9, 86.3, 94.4, 99.4 and 89.8 per cent of the original extent, respectively (Government of Western Australia, 2019).

Characteristic	Details
Vegetation condition	Supporting document (BHP, 2023a) indicates the vegetation within the proposed clearing area ranges from excellent to completely degraded (Trudgen, 1991) condition. The full Trudgen (1991) condition rating scale is provided in Appendix D. A map showing vegetation condition within the application footprint and surrounding area in 2011 is presented in Appendix E.
Climate and landform	**Climate** Mean maximum temperature: 33.4 ˚C Mean maximum temperature: 19.6 ˚C The annual average rainfall is 315.5 millimetres (taken from Port Hedland Airport) (BOM, 2023). **Landform** Two landforms are mapped within the application area, including: • The Uaroo System 281Ua: Depositional surfaces; level sandy plains up to 10 kilometres or more in extent with little organised through drainage; pebbly surfaced plains and plains with calcrete at shallow depth; broad, mostly unchanneled, tracts receiving more concentrated sheet flow. • The Littoral System 286Li: Depositional surfaces; saline coastal flats; estuarine and littoral surfaces with extensive bare saline tidal flats subject to infrequent tidal inundation, slightly higher samphire flats and alluvial plains, mangrove seaward fringes
Soil description	The soils are mapped as: • The Uaroo System 281Ua, which is described as broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs. • The Littoral System 2816Li, which is described as bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests.
Land degradation risk	The soil unit 281Ua is generally not susceptible to erosion or significant vegetation degradation (DPIRD, 2022). The soil unit 286Li has high risk of salinity (Refer to Table B.4)
Waterbodies	The desktop assessment and aerial imagery indicated that several minor nonperennial watercourses intersect the application area. An unnamed minor perennial waterbody is located adjacent to the eastern edge of the application area. A small section of the application area intersects the bridge connecting Finucane Island and Boodarie, which intersect a major river (estuary).
Hydrogeography	The application area is within the Pilbara Groundwater area and the Pilbara Surface Water area as proclaimed under the RiWI Act. The mapped groundwater salinity is 1000-3000 milligrams per litre total dissolved solids which is described as brackish to saline.
Flora	According to available databases, there are 14 conservation significant flora species within the local area. The most frequently recorded species is *Heliotropium muticum* (P3) which is more recently known as *Euploca mutica*. The closest recorded species is *Tephrosia rosea* var. *Port Hedland* (P1) which is mapped within the application area footprint.
Ecological communities	The application area is not within any mapped conservation significant ecological communities. The closest ecological community is Eighty Mile Land System (Priority 3), located approximately 32 kilometres from the application area.
Fauna	According to available databases, 66 species of conservation significance have been recorded within the local area (excluding the ocean), including 19 threatened fauna species, seven priority fauna species, and 40 specially protected fauna species. The species recorded include 41 migratory species.

Characteristic	Details
	Records of greater sand plover (vulnerable species), lesser sand plover (endangered species), north-western free-tailed bat (Priority 1 species) and osprey (migratory species) have been mapped within the application area.

B.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	17,731,765	99.6	1,801,715	10.1
Vegetation complex within IBRA region					
BVA 647		191,711	97.9		
BVA 589	728,768	724,696	99.4	15,304	2.1
BVA 127	177,750	159,595	89.8	3,704	2.1
BVA 43	17,053	14,709	86.3	2.53	0.01
BVA 117	82,706	78,097	94.4	17,600	21.3
Local area					
50km radius		492,365	94.5	-	-

*Government of Western Australia (2019)

B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), and biological survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records within local area	Are surveys adequate to identify? [Y, N, N/A]
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	P3	Y	Y	Y	5.99	31	N
Eragrostis crateriformis	P3	Y	Y	Y	0.50	14	N
Euploca mutica	P3	Y	Y	Y	10.24	34	N
Gomphrena leptophylla	P3	Y	Y	Y	1.20	1	N
Gomphrena pusilla	P2	Y	Y	Y	0.03	4	N
Gymnanthera cunninghamii	P3	Y	Y	Y	1.47	7	N
Rothia indica subsp. *australis*	P3	Y	Y	Y	14.66	5	N
Tephrosia rosea var. Port Hedland (A.S. George 1114)	P1	Y	Y	Y	0.00	20	N

P: priority

B.4. Land degradation risk table

Risk categories	281Ua	286Li
Wind erosion	N/A	coastal dunes (3% of map unit) are highly susceptible to wind erosion if plant cover is lost by fire or other disturbance
Soil erosion	1% of map unit has a slight risk, 99% of map unit has no risk	2% of map unit has a slight risk, 2% of map unit has a minor risk, 96% of map unit has no risk
Salinity	100% of map unit has a slight to no risk	90% of map unit has extreme risk, 10% has slight to no risk
Subsurface Acidification	23% of map unit has a low risk, 77% of map unit has moderate risk	100% of map unit has low risk

(DPIRD, 2022)

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared comprises suitable habitat for more than 50 threatened and priority fauna species. It also contains suitable habitat for several priority flora species.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The area proposed to be cleared contains foraging, breeding, and sheltering habitat for conservation significant fauna.	At variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The area proposed to be cleared is unlikely to contain habitat for threatened flora.	Not likely to be at variance	Yes *Refer to Section 3.2.2, above.*
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The area proposed to be cleared does not contain species that can indicate a threatened ecological community.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
is not considered to be part of a significant ecological linkage in the local area.		
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given sections of the South West Creek and several non-perennial watercourses are recorded within the application footprint area, the proposed clearing is likely to impact an environment associated with a watercourse or wetland.	At variance	Yes *Refer to Section 3.2.3, above.*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are not susceptible to land degradation. Noting the relatively small ratio (5 per cent) of the proposed clearing area over the large application footprint and the areas cleared for temporary works will be revegetated, the proposed clearing is not likely to have an appreciable impact on land degradation.	Not likely to be at variance	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: Given surface water courses recorded within the application area are minor and non-perennial, the proposed clearing is not likely to significantly impact on the surface water quality. In addition, due to the purposes of the clearing, the proposed clearing is unlikely to cause any deterioration in the quality of groundwater.	Not likely to be at variance	Yes *Refer to Section 3.2.3, above.*
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. Although several non-perennial water courses are recorded within the application area footprint, considering the applicant's commitment on avoidance and minimising impacts to these areas, the proposed clearing is unlikely to contribute to waterlogging and flooding.	Not likely to be at variance	Yes *Refer to Section 3.2.3, above.*

Appendix D. Vegetation condition rating scale

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

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Biological survey information excerpts

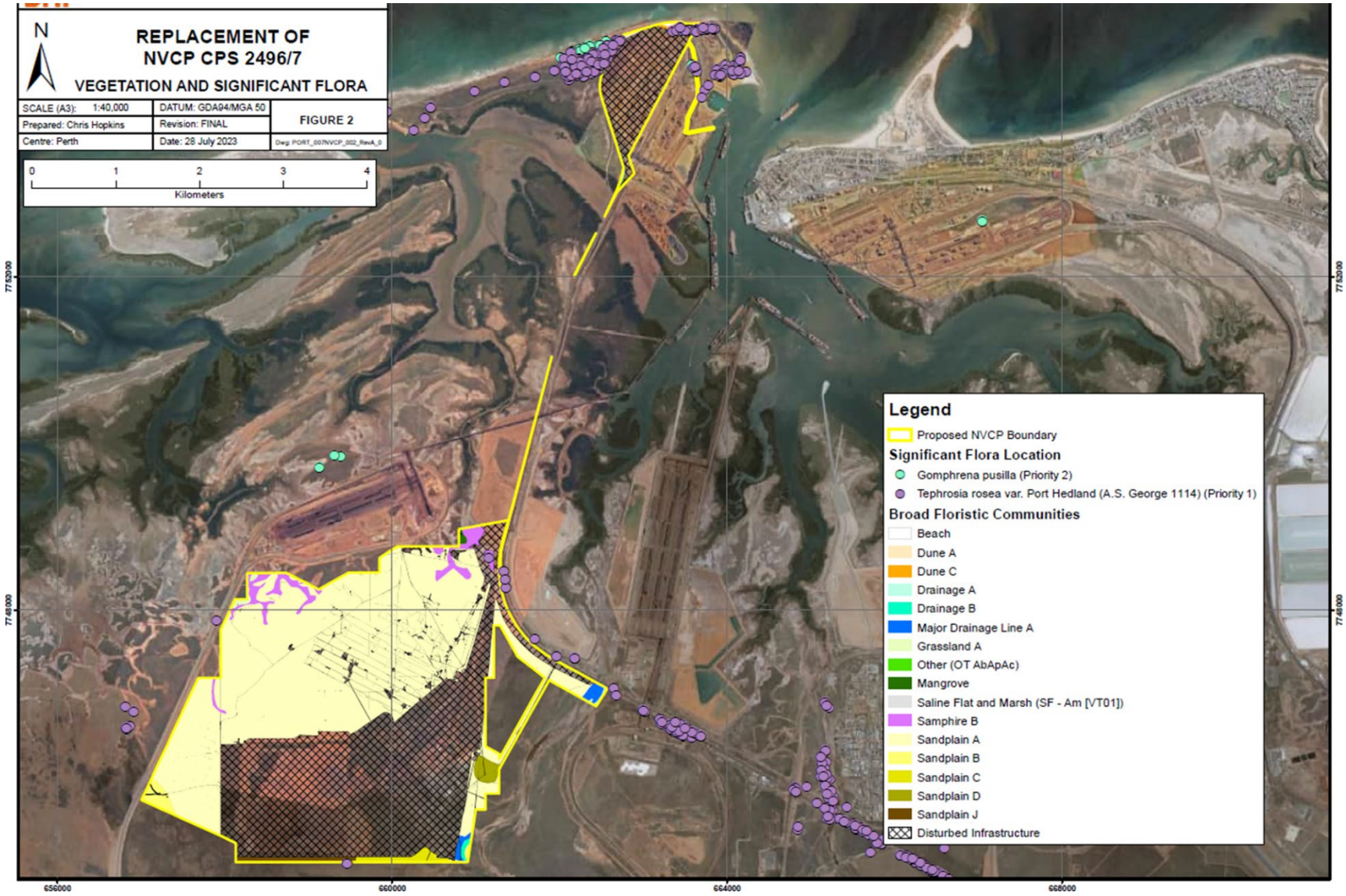


Figure E.1. Map showing vegetation associations and conservation significant flora species within the application area (BHP, 2023a)

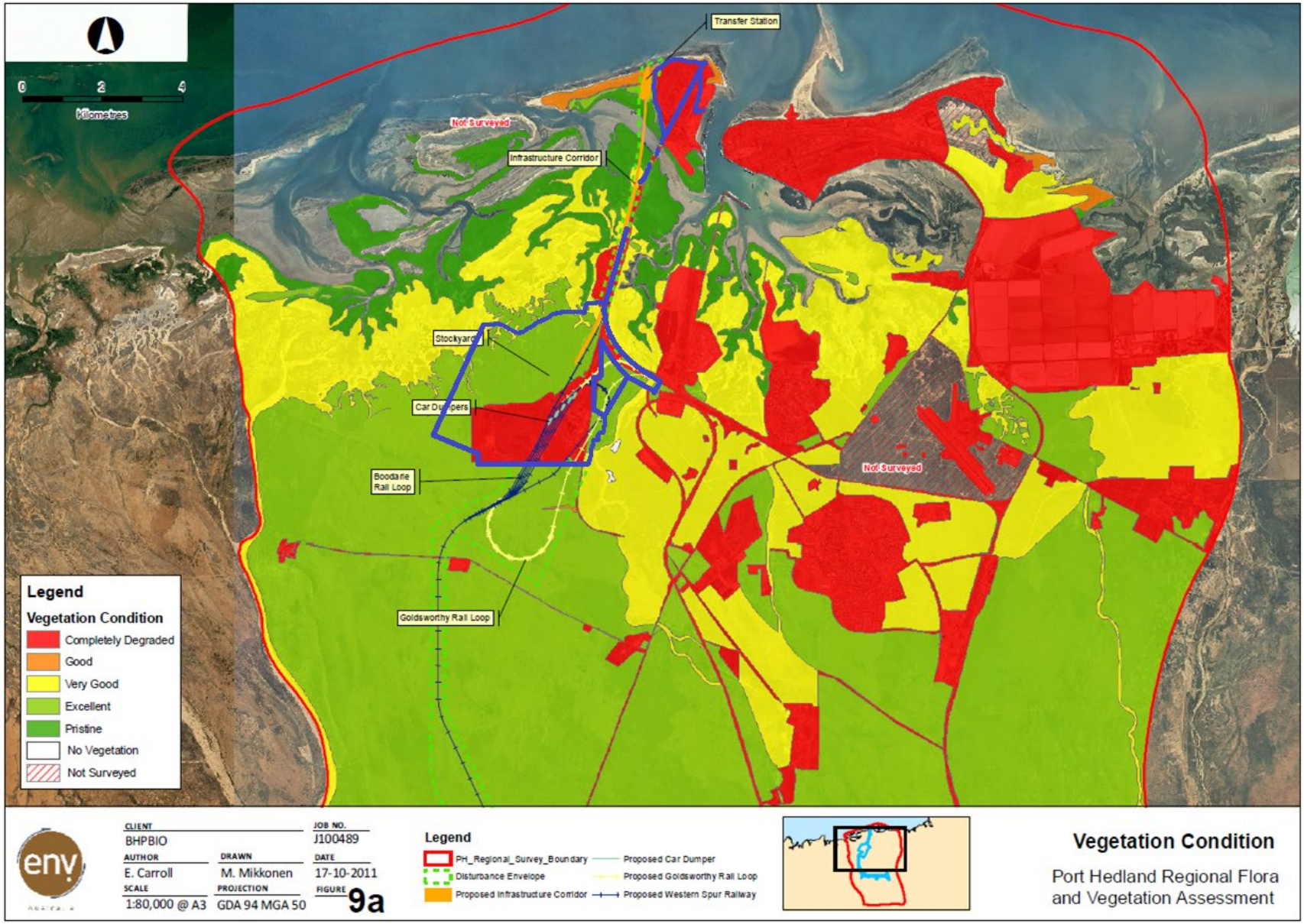


Figure E.2. Map showing vegetation condition within the application footprint (blue polygons) (condition in 2011 – BHP, 2023a)

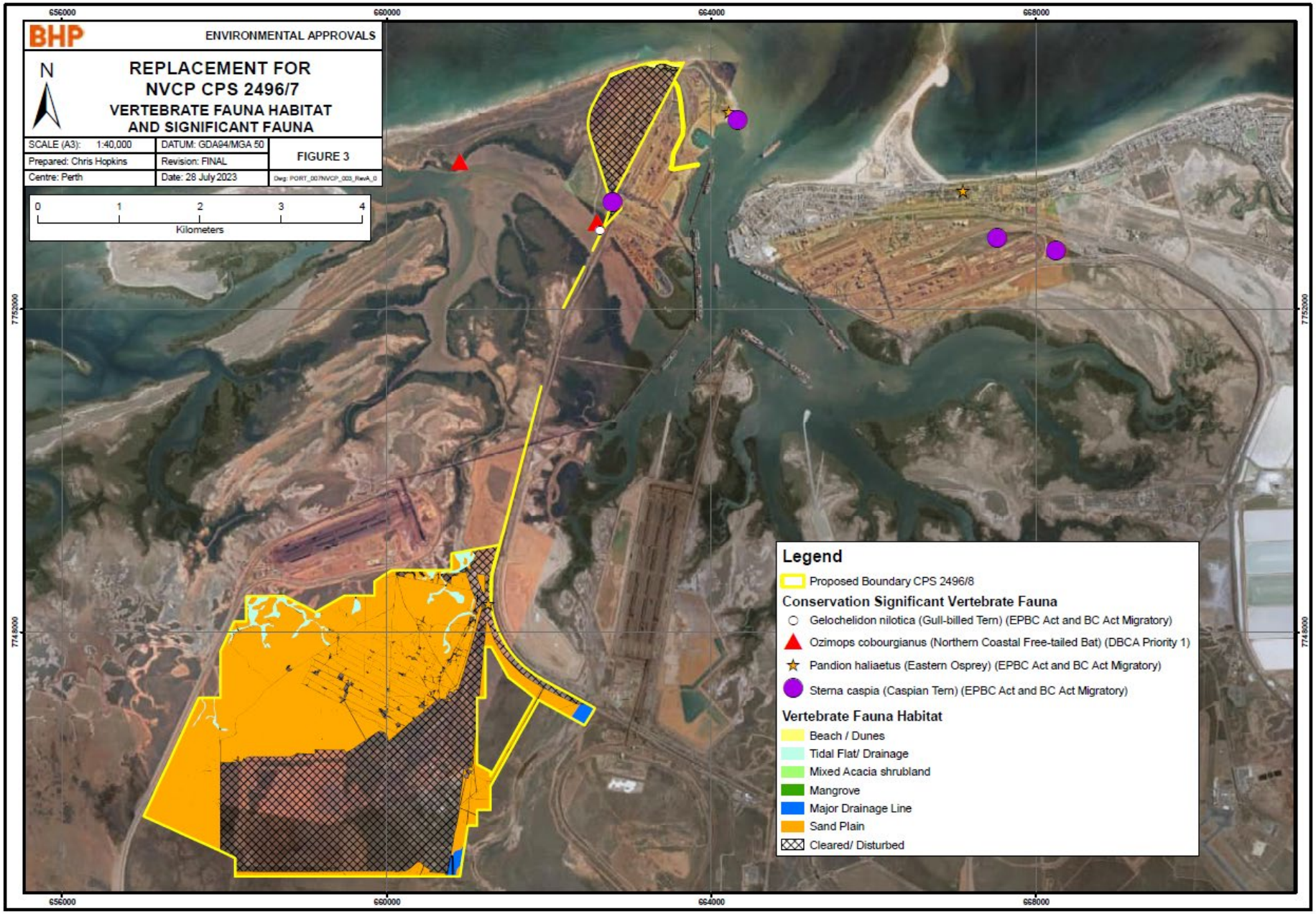


Figure E.3. Map showing vertebrate fauna habitat within the application area (BHP, 2023a)

Six fauna habitat types are identified within the application area (BHP, 2023a)

- **Beach / Dune**: The Beach/Dunal habitat type is the buffer zone that exists between the sea and land. The vegetation of this habitat type is characterised by scattered *Acacia bivenosa* shrubs over **Cenchrus ciliaris* (Buffel Grass) open tussock grassland. Given the large tides experienced in the Port Hedland region this habitat type is in continual change. Above the high tide mark limestone outcrops and sand dunes provide roost and nest locations for marine and shorebirds.
- **Major Drainage Line**: The two major Riverine habitats of the study area are located along the western and eastern boundaries and are called the Turner and Beebingarra rivers respectively. The vegetation of this habitat type is characterised by low open Eucalyptus victrix woodland over a high open Melaleuca - Acacia shrubland over open *Triodia epactia* hummock grassland. A large diversity of microhabitats are present in this habitat and include tree hollows, logs, leaf litter, thick vegetation and soft soil suitable for digging and burrowing fauna. Isolated areas of surface water were still present during the survey providing an important water source for the local fauna and shorebirds including those classified as Migratory under the EPBC Act. This habitat type contains mature eucalypt trees that are larger than other trees in the surrounding plains. These trees that line the watercourses most likely function as wildlife corridors. In particular, birds, bats, large mammals (such as the Euro *Macropus robustus*) and wide-ranging reptiles (such as snakes and goannas) are likely to use these drainage lines as a corridor for dispersal. Taking into consideration these factors, this habitat type is considered to be of High habitat value.
- **Mangrove**: Like the Tidal Flats, Mangrove habitat type is dominated by the tides and is in a constant transition between marine and terrestrial habitats. It differs from the Tidal Flats by the fact that it is dominated by thick groves of Mangrove trees. The vegetation of this habitat type is characterised by high closed *Rhizophora stylosa* and *Avicennia marina* shrubland. The Mangrove trees create a range of microhabitats in the form of tree hollows and foliage for birds to forage, roost and nest in. The Mangroves supports a unique faunal assemblage of Mangrove specialists such as the Mangrove Golden Whistler (*Pachycephala melanura*) and Mangrove Grey Fantail (*Rhipidura phasiana*).
- **Mixed Acacia shrubland**: Mixed Acacia shrubland (Embankment) habitat is completely modified and forms the transition from the roads to the mangroves. It is approximately 4 m wide from the low lying mangrove system to the completely modified road/rain area. Vegetation is very limited (30% cover) and provides little habitat for medium large fauna.
- **Sand Plain**: The Sandplain habitat type dominates the majority of the study area. The vegetation structure consists of a Low Acacia shrublands over *Triodia* hummock grasslands. A moderate diversity of microhabitats was present and includes shrubs, grass hummocks and leaf litter. In addition, the soils were suitable for digging and burrowing animals. Due to the microhabitat diversity and the number of conservation significant species this habitat may support, it has been classified as having Moderate habitat value.
- **Tidal Flat / Drainage**: The Tidal Flats is dominated by the tides and is in constant transition between marine and terrestrial habitats. At high tide most of the habitat type is inundated with seawater, however some areas of mudflats remain dry until the highest tides. The vegetation of this habitat type is characterised by scattered *Avicennia marina* shrubs over a low open *Tecticornia* spp. shrubland. The Tidal Flats have a distinct lack of vegetation and associated microhabitats, however due to the importance of this habitat type as a foraging resource for Migratory waders it is classified as having High habitat value.

Appendix F. Sources of information

F.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)
- Cadastre (LGATE-218)
- Contours (DPIRD-073)
- 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
- Imagery
- 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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