



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	9482/1
Duration of Permit:	From 29 March 2022 to 28 March 2032
Permit Holder:	Hamersley Iron Pty Ltd

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I - CLEARING AUTHORISED

1. Land on which clearing is to be done

Iron Ore (Hamersley Range) Agreement Act 1963; Special Lease for Mining Operations, Document N104744, Lot 24 on Deposited Plan 241372

Iron Ore (Hamersley Range) Agreement Act 1963; Special Lease for Mining Operations, Document N104747, Lot 38 on Deposited Plan 241372

Iron Ore (Hamersley Range) Agreement Act 1963; Special Lease for Mining Operations, Document I195323, Lot 32 on Deposited Plan 47815

Iron Ore (Hamersley Range) Agreement Act 1963; Special Lease for Mining Operations, Document I123646, Lot 150 on Deposited Plan 242287

Iron Ore (Hamersley Range) Agreement Act 1963; Special Lease for Mining Operations, Document N104346, Lot 110 on Deposited Plan 241947

Iron Ore (Hamersley Range) Agreement Act 1963; Special Lease for Mining Operations, Document N104329, Lots 34 and 55 on Deposited Plan 241372

Lot 643 on Deposited Plan 29300 (PIN 11263084), Dampier Central Avenue Road Reserve (PIN 11434708), Dampier

Miscellaneous Licence 47/221

Miscellaneous Licence 47/844

Miscellaneous Licence 47/852

Miscellaneous Licence 47/854

2. Clearing authorised (purpose)

The Permit Holder is authorised to clear native vegetation for the purpose of removal and construction of a powerline, substation and associated activities.

3. Area of Clearing

The Permit Holder must not clear more than 62.7 hectares of native vegetation within the area shaded yellow in Figure 1 of Schedule 1.

4. Period in which clearing is Authorised

The Permit Holder must not clear any native vegetation after 28 March 2027.

PART II - MANAGEMENT CONDITIONS

5. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation 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.

6. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the 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;
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

7. Vegetation Management

- (a) where practicable the Permit Holder shall avoid *clearing riparian vegetation*; and
- (b) where a *watercourse* or *wetland* is to be impacted by clearing, the Permit Holder shall ensure that the existing surface flow is maintained, or reinstated downstream into existing natural *drainage lines*.

8. Retain vegetative material and topsoil, revegetation and rehabilitation

The Permit Holder shall:

- (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) within 12 months following completion of clearing authorised under this Permit, *revegetate* and *rehabilitate* the areas that are no longer required for the purpose for which they were cleared under this Permit by:
 - (i) ripping the ground on the contour to remove soil compaction;
 - (ii) laying the vegetative material and topsoil retained under Condition 8(a) on the cleared area;
 - (iii) re-shaping the surface of the land so that it is consistent with the surrounding 10 metres of uncleared land;
- (c) within 4 years of undertaking *revegetation* and *rehabilitation* in accordance with Condition 8(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 8(c)(i) of this Permit will not result in a similar species composition, structure and density to that of *pre-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.
- (d) where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with Condition 8(c)(ii) of this Permit, the Permit Holder shall repeat Condition 8(c)(i) and 8(c)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.
- (e) where a determination by an *environmental specialist* 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, as determined in Condition 8(c)(i) and (ii) of this Permit, that determination shall be submitted for the *CEO's* consideration. If the *CEO* does not agree with the determination made under Condition 8(c)(ii), the *CEO* may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under Condition 8(c)(ii).

PART III - RECORD KEEPING AND REPORTING

9. Records to 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	<ul style="list-style-type: none"> (a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) the date that the area was cleared; (c) the size of the area cleared (in hectares); (d) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with Condition 5; and (e) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with Condition 6; and (f) actions taken in accordance with Condition 7.
2.	In relation to the <i>revegetation</i> and <i>rehabilitation</i> management pursuant to Condition 8	<ul style="list-style-type: none"> (a) The location of any areas revegetated and rehabilitated, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) a description of the <i>revegetation</i> and <i>rehabilitation</i> activities undertaken; and (c) the size of the area <i>revegetated</i> and <i>rehabilitated</i> (in hectares).

10. Reporting

- (a) The Permit Holder shall provide a report to the *CEO* by 30 June each year for the life of this Permit, demonstrating adherence to all conditions of this Permit, and setting out the records required under Condition 9 of this Permit in relation to clearing carried out between 1 January and 31 December of the previous calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January and 31 December of the previous calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* by 30 June of each year.
- (c) Prior to 28 March 2032, the Permit Holder must provide to the *CEO* a written report of records required under Condition 9 of this Permit where these records have not already been provided under Condition 10(a) or 10(b) of this Permit.

DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	the Chief Executive Officer of the Department responsible for administering the clearing provisions contained within the <i>Environmental Protection Act 1986</i> or an Officer with delegated authority under Section 20 of the <i>Environmental Protection Act 1986</i> ;
clearing	has the meaning given under section 3(1) of the EP Act.
condition/s	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.
drainage line/s	means a natural depression that carries surface water runoff.
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 <i>CEO</i> as a suitable environmental specialist.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
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 in 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.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
rehabilitate / rehabilitated / rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate / vegetated / revegetation	means the re-establishment of a cover of <i>local provenance</i> native vegetation in an area using methods such as natural <i>regeneration</i> , <i>direct seeding</i> and/or <i>planting</i> , 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) Regulation 2004.
watercourse	has the meaning given to it in section 3 of the <i>Rights in Water and Irrigation Act 1914</i> .
weed/s	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

Term	Definition
	Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.
wetland/s	means an area of seasonally, intermittently or permanently waterlogged or inundated land, whether natural or otherwise, and includes a lake, swamp, marsh, spring, dampland, tidal flat or estuary.

END OF CONDITIONS



Dan Endacott
 General Manager Environmental Compliance
 Resource and Environmental Compliance Division
 04 March 2022

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

SCHEDULE 1

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

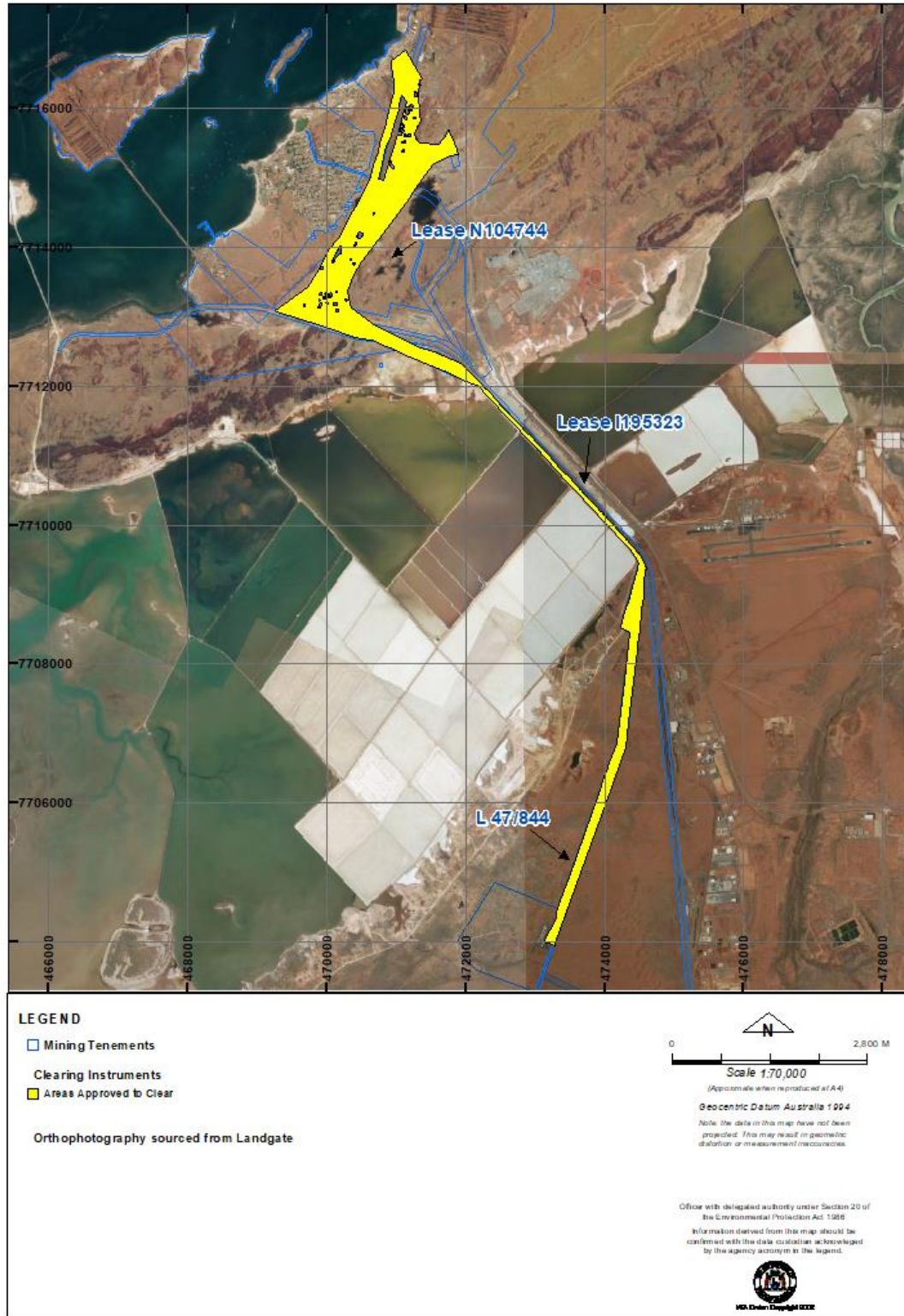


Figure 1: Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	9482/1
Permit type:	Purpose Permit
Applicant name:	Hamersley Iron Pty Ltd
Application received:	3 November 2021
Application area:	62.7 hectares
Purpose of clearing:	Removal and construction of a powerline, substation and associated activities.
Method of clearing:	Mechanical Removal
Tenure:	<i>Iron Ore (Hamersley Range) Agreement Act 1963</i> ; Special Lease for Mining Operations, Document N104744, Lot 24 on Deposited Plan 241372 <i>Iron Ore (Hamersley Range) Agreement Act 1963</i> ; Special Lease for Mining Operations, Document N104747, Lot 38 on Deposited Plan 241372 <i>Iron Ore (Hamersley Range) Agreement Act 1963</i> ; Special Lease for Mining Operations, Document I195323, Lot 32 on Deposited Plan 47815 <i>Iron Ore (Hamersley Range) Agreement Act 1963</i> ; Special Lease for Mining Operations, Document I123646, Lot 150 on Deposited Plan 242287 <i>Iron Ore (Hamersley Range) Agreement Act 1963</i> ; Special Lease for Mining Operations, Document N104346, Lot 110 on Deposited Plan 241947 <i>Iron Ore (Hamersley Range) Agreement Act 1963</i> ; Special Lease for Mining Operations, Document N104329, Lots 34 and 55 on Deposited Plan 241372 Lot 643 on Deposited Plan 29300 (PIN 11263084), Dampier Central Avenue Road Reserve (PIN 11434708), Dampier Miscellaneous Licence 47/221 Miscellaneous Licence 47/844 Miscellaneous Licence 47/852 Miscellaneous Licence 47/854
Location (LGA area/s):	City of Karratha
Colloquial name:	Dampier Power Resilience Project

1.2. Description of clearing activities

Hamersley Iron Pty Ltd proposes to clear up to 62.7 hectares of native vegetation within a boundary of approximately 377.25 hectares, for the purpose of the construction of a powerline, substation and associated activities.

The application is to allow for the decommissioning and removal of the existing powerlines and substation and constructing a new 220 kV powerline and substation.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	4 March 2022
Decision area:	62.7 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 3 November 2021. DMIRS advertised the application for public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix E), supporting information provided by the applicant (Appendix A) including the results of a flora and vegetation survey, the clearing principles set out in Schedule 5 of the EP Act, proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3). The Delegated Officer also took into consideration the purpose of the clearing to facilitate the replacement of significant power infrastructure.

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- impacts to conservation significant flora;
- the loss of native vegetation that is suitable habitat for conservation significant fauna;
- Impacts to riparian vegetation.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing poses some risks to flora and fauna however, these risks can be adequately managed with conditions to ensure the proposal is environmentally acceptable.

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;
- retain cleared vegetation and topsoil and respread this on cleared areas after the completion of construction activities;
- Avoiding clearing of riparian vegetation, and maintaining existing surface water flows.

2. Legislative context

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

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

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

Other legislation of relevance for this assessment includes:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Land Administration Act 1997* (WA)
- *Mining Act 1978* (WA)
- *Iron Ore (Hamersley Range) Agreement Act 1963*

Relevant agreements (treaties) considered during the assessment include:

- Japan-Australia Migratory Bird Agreement
- China-Australia Migratory Bird Agreement
- Republic of Korea-Australia Migratory Bird Agreement

The key guidance documents which inform this assessment are:

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

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant has proposed a number of measures to avoid and mitigate impacts from the proposed clearing. Some significant areas have already been excluded from the application prior to submission. Specific mitigation measures have been proposed where the clearing will impact on a Priority Ecological Community (PEC). Within areas of the PEC in very good condition the following measures are proposed (Rio Tinto, 2021):

Construction activities:

- No new access tracks will be established;
- All new power pole pads will abut the existing access road and the pads will be reduced in size post construction i.e.: reduced from 50 metres x 50 metres down to 30 metres x 30 metres with the difference being rehabilitated; and
- No clearing works will occur between the power pole pads.

Decommissioning activities:

- No new blade down clearing is to take place;
- All decommissioning works will be contained to the existing disturbance footprint where possible;
- The conductors will be lowered to the ground and then cut with sheers into lengths where they can be rolled up and removed from the PEC on foot and placed on a vehicle on an existing track and then removed;
- There may be a small amount of vehicle activity adjacent to the existing pads as part of the decommissioning of the existing lattice towers but this will be minimised; and
- Any disturbances will be rehabilitated.

The same measures will be implemented in areas of the PEC in poor condition however, there will be an operational corridor cleared to bare earth which will be used for access and maintenance purposes as well as for fire protection (Rio Tinto, 2021).

In order to minimise the spread of weeds the following measures will be implemented (Rio Tinto, 2021):

- Weed hygiene treatment prior to entering each Project area;
- Visual inspections of disturbed areas for weed infestations;
- Control of known populations; and
- Education.

Weed management measures specific to the PEC include (Rio Tinto, 2021):

- Limiting the number of vehicles within the PEC where possible;
- All heavy vehicles entering into the PEC will be washed down and cleaned prior to entering the site.
- Prior to the light vehicles entering the very good condition PEC from either the north or the south, they will pass through a vehicle wash bay system which is fully self-contained.

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 BB) 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 identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and vegetation). 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 (flora) – Clearing Principle (a)

Assessment

The application area has been covered by several previous flora surveys, the most recent survey was undertaken in May 2021 (AECOM, 2021). The flora survey recorded a total of 107 flora taxa from 75 genera and 30 families (AECOM, 2021). This included eight species of weeds (AECOM, 2021). Weeds have the potential to out-compete native flora and reduce the biodiversity of an area. Potential impacts to biodiversity as a result of the introduction of weeds may be minimised by the implementation of a weed management condition.

The flora survey identified three species of Priority flora within the application area; *Eragrostis surreyana* (Priority 3), *Rhynchosia bungarensis* (Priority 4) and *Themeda* sp. Hamersley Station (Priority 3) (AECOM, 2021). *Eragrostis surreyana* was recorded at two locations within the application area and was considered to be locally common where it occurs with approximately 985 individuals at these locations (AECOM, 2021). There was one population growing along the edge of standing fresh water in an artificial wetland and the other was found in a shallow ephemeral drainage line amongst undulating rocky terrain (AECOM, 2021). This species has not been recorded by any of the previous flora surveys on the Burrup Peninsula and is more commonly found in the Hamersley and Fortescue regions (AECOM, 2021; Western Australian Herbarium 1998-). Both of the populations are not proposed to be cleared as part of the works. The population within the artificial wetland is located adjacent to the existing powerline. In order to prevent impacting this species, the conductors will be lowered to the ground and then cut with sheers into lengths where they can be rolled up and removed from the area on foot.

There was 27 individuals of *Rhynchosia bungarensis* recorded from two populations within the application area (AECOM, 2021). This species has been recorded by previous flora surveys on the Burrup Peninsula and can be considered locally common (AECOM, 2021). *Themeda* sp. Hamersley Station was recorded extensively on the plains in the south of the application area (AECOM, 2021). It is estimated the population of this species was in excess of 18,000 plants (AECOM, 2021). It has also been previously recorded in areas adjacent to the application area (AECOM, 2021). Both *Rhynchosia bungarensis* and *Themeda* sp. Hamersley Station are common in the Burrup Peninsula and have significant distributions across the Pilbara bioregion. The proposed clearing for the decommissioning and construction of powerlines and a substation is not likely to impact on large numbers of these plants and is unlikely to have a significant impact on local populations.

The vegetation association SfEx was considered to be representative of the 'Roebourne Plains coastal grasslands with gilgai microrelief on cracking clays' Priority Ecological Community (PEC) (AECOM, 2021). There was 45.13 hectares of this community mapped within the application area (AECOM, 2021). The condition of vegetation within the PEC ranged from poor to very good. The proposed amount of clearing within the PEC will be up to 3.20 hectares within areas of the PEC in very good condition and up to 1.52 hectares of the PEC in poor condition (Rio Tinto, 2021). The applicant will implement additional controls and mitigation measures when undertaking clearing within the PEC as outlined in Section 3.1. Specific measures to reduce the spread of weeds in the PEC will also be implemented and cleared areas will be rehabilitated following clearing (Rio

Tinto, 2021). Given the proposed clearing will only impact a small portion of the PEC and the mitigation measures which will be put in place, the proposed clearing is not likely to have a significant impact on this occurrence of the PEC.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on Priority flora and the Priority Ecological Community can be managed by taking steps to minimise the risk of the introduction and spread of weeds, reduce the amount of clearing and rehabilitating the site post construction to ensure the habitat is not permanently lost. The proposed clearing does not constitute a significant residual impact.

Conditions

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- retain cleared vegetation and topsoil and respread this on cleared areas after the completion of construction activities.

3.2.2. Biological values (fauna) – Clearing Principle (b)

Assessment

The following six fauna habitats have been identified within the application area (AECOM, 2021):

- Triodia on rocky slopes
- Artificial wetlands
- Tussock grassland plain
- Minor creeks
- Saline flats
- Cleared/disturbed

The majority of the application area is comprised of the Triodia on rocky slopes habitat (over 37%) with a significant portion of the application area mapped as cleared/disturbed (over 30%) (AECOM, 2021). The Triodia on rocky slopes habitat is described as grasslands with moderate ground cover on rocky slopes and flat areas (AECOM, 2021). The habitat varies in complexity from high to low depending on the presence of rock piles where animals can seek shelter (AECOM, 2021).

The artificial wetland habitat was created from historical earthworks which following significant rainfall events contain ponded water (AECOM, 2021). It is likely that this habitat would be dry for most of the year. This area has the potential to provide habitat for several migratory shorebirds (AECOM, 2021).

The minor creeks habitat has a moderate to high complexity as it contains upper, mid and understorey vegetation including mature trees and logs of moderate size (AECOM, 2021). Drainage lines are often used as dispersal pathways and foraging habitat for a range of fauna species. These creeks are dry for the majority of the year, only flowing following significant rainfall. This habitat has been impacted by altered drainage patterns from the existing railway (AECOM, 2021).

Based on known records and the habitat present there are several conservation significant fauna species which may utilise vegetation within the application area, including five species which were considered likely to occur; Northern Quoll (*Dasyurus hallucatus* – Endangered), Ghost Bat (*Macroderma gigas* – Vulnerable), Pilbara Olive Python (*Liasis olivaceus barroni* – Vulnerable), Northern Short-tailed Mouse (*Leggadina lakedownensis* – Priority 4) and Lined Soil-crevice Skink (*Notoscincus butleri* – Priority 4) (AECOM, 2021).

The Northern Quoll has been previously recorded on the Burrup Peninsula and also in Tussock grassland plain habitat adjacent to the south of the application area (AECOM, 2021). The Northern Quoll is known to utilise a variety of habitat however, the Triodia on rocky slopes habitat is likely to represent significant habitat for this species as the rock piles present provide potential denning opportunities and shelter from predators (AECOM, 2021). A significant amount of rocky areas have already been excluded from the application area, so the proposed clearing will primarily impact on grasslands which are utilised as foraging habitat.

The Pilbara Olive Python has been recorded numerous times within 20 kilometres of the application area (AECOM, 2021). It has a preference for granophyre rock piles and neighbouring spinifex grasslands (AECOM, 2021). The Triodia on rocky slopes habitat is therefore likely to represent significant habitat for this species. Significant areas of rockpiles associated with this habitat have already been excluded from the application area.

The Triodia on rocky slopes habitat also represents suitable habitat for the Lined Soil-crevice Skink (AECOM, 2021). This species has not been observed within the application area however, it may utilise habitat in the area (AECOM, 2021).

There are no known caves or roosting sites for the Ghost Bat within the application area (AECOM, 2021). This species may forage within the application area however, the proposed clearing is not likely to have a significant impact on roosting habitat in the local area.

The tussock grassland plain habitat has been previously described as core habitat for the Northern Short-tailed Mouse (AECOM, 2021). This species has not been recorded within the application area however, it is likely to be present (AECOM, 2021). The tussock grassland plain habitat corresponds within the 'Roebourne Plains coastal grasslands with gilgai microrelief on cracking clays' PEC. The applicant has minimised the amount of clearing proposed within the PEC and it estimated that only 4.72 hectares of clearing will be required in this habitat (Rio Tinto, 2021).

Conclusion

Based on the above, the proposed clearing will impact on habitat significant for conservation significant fauna species. The applicant has reduced the potential impact on this habitat by removing significant amounts of rocky areas from the application prior to submission. Proposed mitigation measures have been proposed which reduce impact of clearing. Given the purpose of the proposed clearing for the decommissioning and construction of a new powerline and substation, the proposed clearing impacts are likely to be small localised impacts across the application area and will not significantly impact on the representation and function of these habitats in the local area (20 kilometre radius).

Conditions

No specific fauna management conditions are required on the permit to address impacts to fauna.

3.3. Relevant planning instruments and other matters

The City of Karratha was invited to comment on the clearing permit application as a direct interest party. The City of Karratha provided the following comments on the application (City of Karratha, 2021):

'Any native vegetation clearance should be restricted to those immediate areas of works. Dust mitigation measures should be built into any works program and/or construction environmental management plan and these should be prepared prior to clearance beginning on site.'

Clearing will be restricted to the clearing permit boundary. Dust mitigation during construction activities is outside of the scope of the clearing permit assessment. The applicant proposes to manage dust emissions through the implementation of their standard operating procedure which includes the use of water carts and rehabilitating cleared areas.

There are two native title claims over the area under application (DPLH, 2022). These claims have been determined by the Federal Court on behalf of the claimant groups. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are several registered Aboriginal Sites of Significance within the application area (DPLH, 2022). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Additional information	Further information about potential impacts on <i>Eragrostis surreyana</i> and mitigation measures which will be implemented to minimise impacts on this species.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The application area is located directly adjacent to both the Karratha and Dampier townsites. The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. There is an existing powerline and substation within the application area and there are also existing disturbances from access roads and rail lines.
Ecological linkage	According to available databases, the application area does not contain any known or mapped ecological linkages.
Conservation areas	The closest conservation area is the Murujuga National Park which is located approximately one kilometre southeast of the application area at its closest point.
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>117: Hummock grassland, grass steppe; soft spinifex; 127: Bare areas; md flats; and 589: Mosaic: Short bunch grassland – savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by AECOM during May, 2021. The following vegetation associations were recorded within the application area (AECOM, 2021):</p> <p>AaAtTw: <i>Acacia ampliceps</i> tall shrubland over <i>Adriana tomentosa</i>, <i>Streptoglossa decurrens</i> and <i>Sesbania cannabina</i> mid to low mixed shrubs and herbs over <i>Triodia wiseana</i>, *<i>Cenchrus ciliaris</i> and <i>Eragrostis cumingii</i> tall to low mixed hummock and tussock grasslands.</p> <p>AaEgPr: <i>Acacia ampliceps</i> and <i>Sesbania cannabina</i> medium open shrubland over <i>Eleocharis geniculata</i>, <i>Schoenus falcatus</i> and <i>Cyperus vaginatus</i> low open sedgeland over <i>Pluchea rubelliflora</i>, <i>Samolus repens</i> and <i>Stemodia grossa</i> low open herbland.</p> <p>EcScCc: <i>Eucalyptus camaldulensis</i> and <i>Melaleuca lasiandra</i> low woodland over <i>Sesbania cannabina</i>, <i>Acacia coriacea</i> and <i>Solanum horridum</i> mid open shrubland over *<i>Cenchrus ciliaris</i> low open tussock grassland.</p> <p>PaTiEo: <i>Pitosporum phillyreoides</i> and <i>Acacia coriacea</i> scattered tall trees over <i>Tecticornia indica</i>, <i>Enchylaena tomentosa</i> and <i>Acacia ampliceps</i> low open shrubland over <i>Eriachne obtusa</i> and *<i>Cenchrus ciliaris</i> low open tussock grassland.</p> <p>AbEtTa: <i>Acacia bivenosa</i>, <i>Salsola australis</i> and <i>Corchorus walcottii</i> mid to low open shrubland over <i>Euphorbia tannensis</i> subsp. <i>eremophila</i>, <i>Euphorbia australis</i> and <i>Tribulus hirsutus</i> low open herbland over <i>Triodia angusta</i> and <i>Triodia epactia</i> tall Hummock Grassland.</p> <p>SdSfTe: <i>Solanum diversifolium</i>, <i>Indigofera monophylla</i> and <i>Acacia synchronicia</i> mid to low open shrubland with <i>Swainsona formosa</i>, <i>Boerhavia coccinea</i> and <i>Euphorbia australis</i> mid to low open herbland over <i>Triodia epactia</i> Hummock Grassland.</p> <p>ToAlTe: <i>Trachymene oleracea</i> subsp. <i>oleracea</i>, <i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i> and <i>Swainsona formosa</i> mid to tall herbland with <i>Abutilon lepidum</i>, <i>Crotalaria novae-hollandiae</i> and <i>Senna notabilis</i> low shrubland over <i>Triodia epactia</i> tall hummock grassland.</p> <p>AbHcPo: <i>Acacia bivenosa</i>, <i>Hibiscus sturtii</i> var. <i>campylochlamys</i> and <i>Sida fibulifera</i> mid to low sparse shrubland over <i>Heteropogon contortus</i>, <i>Triodia epactia</i> and <i>Aristida latifolia</i> low mixed tussock and hummock grassland over <i>Portulaca oleracea</i>, <i>Crotalaria medicaginea</i> and <i>Boerhavia coccinea</i> low sparse herbland.</p>

Characteristic	Details
	<p>AxAhPa: <i>Acacia xiphophylla</i> isolated low trees over <i>Aristida holathera</i>, <i>Triodia epactia</i> and <i>Heteropogon contortus</i> low sparse mixed tussock and hummock grassland over <i>Ptilotus auriculifolius</i>, <i>Portulaca oleracea</i> and <i>Boerhavia coccinea</i> low sparse Herbland.</p> <p>SfEx: <i>Sida fibulifera</i>, <i>Crotalaria medicaginea</i> and <i>Neptunia dimorphantha</i> low mixed herb and shrubland with <i>Eragrostis xerophila</i>, <i>Heteropogon contortus</i> and <i>Panicum laevinode</i> low tussock grassland.</p> <p>CL: Cleared – devoid of native vegetation, includes hardstand roads and rail as well as roadside with weeds.</p> <p>* denotes weed species</p>
Vegetation condition	<p>The vegetation survey by AECOM (2021) indicates the vegetation within the proposed clearing area is in very good to completely degraded (Trudgen, 1991) condition. There are significant portions of the application area which have been previously cleared and degraded by exiting activities such as rail, road, power and port infrastructure.</p> <p>The full Trudgen (1991) condition rating scale is provided in Appendix DD.</p>
Climate and landform	<p>The application area is mapped within elevations of 10-50 metres AHD. The annual average rainfall (Karratha) is 297.5 millimetres (BoM, 2022).</p>
Soil description	<p>The soil is mapped as Bz15, MM17 and SV8 soil units (GIS Database). The Bz15 soil unit is described as rocky hills and offshore islands of acid intrusive rock. Largely bare rock outcrop with pockets of shallow siliceous sands and loams (Northcote 1960-68). The SV8 soil unit is described as salt flats, tidal swamps, and coastal dune sands: chief soils are saline loams with shelly sands (Northcote 1960-68). MM17 is described as alluvial plains with occasional stony residuals of basic and ultrabasic rocks: chief soils are deep cracking clays (Northcote 1960-68).</p>
Land degradation risk	<p>The application area has been mapped as the Calcrete, Cherrawarra, Granitic, Horseflat, Littoral and Rocklea land systems (GIS Database).</p>
Waterbodies	<p>The desktop assessment and aerial imagery indicated that several minor, non-perennial watercourses transect the area proposed to be cleared.</p>
Hydrogeography	<p>The application area is not within any public drinking water source areas. The mapped groundwater salinity is 500-1,000 milligrams per litre total dissolved solids which is described as brackish.</p>
Flora	<p>There has been three species of Priority flora recorded within the application area; <i>Eragrostis surreyana</i> (Priority 3), <i>Rhynchosia bungarensis</i> (Priority 4) and <i>Themeda</i> sp. Hamersley Station (Priority 3) (AECOM, 2021).</p>
Ecological communities	<p>Part of the application area is within the boundary of the 'Roebourne Plains coastal grasslands with gilgai microrelief on cracking clays' Priority Ecological Community.</p>
Fauna	<p>There are numerous records of conservation significant fauna within the local area (20 kilometre radius) including multiple records of Northern Quoll, Pilbara Olive Python and Peregrine Falcon.</p>

B.2. Flora analysis table

Flora analysis of conservation significant flora which have the potential to occur within the application area (AECOM, 2021).

Species	WA	Habitat ¹	Count Date
Known			
<i>Eragrostis surreyana</i>	P3	Seasonally wet areas. Shallow soils over rock and deep fine alluvial sands of creeks.	2020
Likely			
<i>Cucumis</i> sp. Barrow Island (D.W. Goodall 1264)	P2	Lower footslope of a basalt hill. Area burnt. Limestone plateau. Swale in a sandplain. Wide, 3m deep wash in a limestone landscape. Gentle calcrete slope. Red, sandy loam.	2011 (Rio Tinto)
<i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	Cracking clay, basalt. Gently undulating plain with large surface rocks, flat crabholed plain.	2005
<i>Rhynchosia bungarensis</i>	P4	Associated with rocky slopes, rock piles, rock pools and gullies.	2010
<i>Stackhousia clementii</i>	P3	Saline soil over limestone or sandy loam clay flats.	2013
<i>Terminalia supranitifolia</i>	P3	Rocky outcrops, slopes, piles. Among basalt rocks and on sand.	2003
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	P3	Drainage lines, clay flats, crabhole flats and self mulching clays.	2007
May			
<i>Glycine falcata</i>	P3	Stony loam or cracking clays, typically in grassland in low lying areas.	2011
<i>Gomphrena cucullata</i>	P3	Plains, red soils (loam/sand) in grassland. Open floodplains.	2012
<i>Goodenia pallida</i>	P1	Red soils. Annual grassland.	2001
<i>Rostellularia adscendens</i> var. <i>latifolia</i>	P3	Ironstone soils. Near creeks, rocky hills.	2007
<i>Solanum albostellatum</i>	P3	Cracking clay soils on open floodplains in open scrubland over grasses.	2011
<i>Vigna triodiophila</i>	P3	Scree and rock piles.	2009

1. Habitat derived from Florabase (WAH 1998) unless otherwise referenced.

B.3. Fauna analysis table

Fauna analysis of conservation significant fauna which have the potential to occur within the application area (AECOM, 2021).

Taxon	Common Name	Cons. Status ¹		Habitat ²
		EPBC Act	DBCA / BC Act	
Known to occur				
<i>Actitis hypoleucos</i>	Common Sandpiper	Mi, Ma	MI	The Common Sandpiper is widespread in small numbers utilising a wide range of coastal wetlands and some inland wetlands where it forages in muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. Areas of national importance within Western Australia include Nuytsland Nature Reserve and Roebuck Bay (Watkins 1993). This species has been recorded in Artificial Wetlands within the survey area (AECOM 2021).
<i>Hydroprogne caspia</i>	Caspian Tern	Mi, Ma	MI	The largest tern in Australia, the Caspian Tern is widespread in coastal regions, breeding on variable types of sites including low islands, cays, spits, banks, ridges, beaches of sand or shell, terrestrial wetlands and stony or rocky islets or banks. This species has been recorded in Artificial Wetlands within the survey area (AECOM 2021).
Likely to occur				
<i>Dasyurus hallucatus</i>	Northern Quoll	EN	EN	This species occupies a wide range of habitats including, rocky areas, deserts, eucalypt forests and woodlands, hummock grass (<i>Plectrachne</i> spp.), basalt hills, mesas, high and low plateaux, lower slopes, occasional tor fields and stony plains supporting either hard or soft spinifex grasslands (Braithwaite & Griffiths 1994; van Vreeswyk et al. 2004). Northern quolls on the Burrup Peninsula are likely to inhabit complex landforms of rocky outcrops, which can afford greater cover from predators than more open areas (Cardno 2019). There are 38 records within 20 km of the survey area, the nearest is less than 100 m from the survey area.

Taxon	Common Name	Cons. Status ¹		Habitat ²
		EPBC Act	DBCA / BC Act	
<i>Leggadina lakedownensis</i>	Northern Short-tailed Mouse		P4	Suitable habitat includes cracking clays and adjacent tussock and hummock grasslands, Acacia shrubland and savannah woodland (Biota 2018). There are two records within 20 km of the survey area, the closest is approximately 12 km from the survey area.
<i>Macroderma gigas</i>	Ghost Bat	VU	VU	The Ghost Bat occupy a range of habitats including arid Pilbara to tropical savanna woodlands and rainforests (TSSC 2016). They roost in caves, rock crevices and old mines during the daytime (TSSC 2016). Foraging occurs on average 1.9 km from active roosting areas (TSSC 2016). The species has been recorded from a recent survey in the King Bay-Hearson Cove area of the Burrup Peninsula (Cardno 2019). There are three records within 20 km of the survey area, the closest is approximately 11 km from the survey area.
<i>Liasis olivaceus barroni</i>	Pilbara Olive Python	VU	VU	The Olive Python (Pilbara subspecies) is known from Hammersley Range and Dampier Archipelago (Wilson & Swan 2010) where it is often associated with rock piles around permanent water pools and seasonal creeks (DAWE, 2021b). On the Burrup Peninsula they prefer granophyre rock piles and occasionally are found in neighbouring spinifex grasslands (Cardno 2019). There are 20 records within 20 km of the survey area, the nearest record is approximately 1 km.
<i>Notoscincus butleri</i>	Lined Soil-crevice Skink (Dampier)		P4	Usually found in hummock grasslands on stony or sandy ground. A relatively poorly known species that has been collected in the Hearson Cove - King Bay area of the Burrup Peninsula.

EPBC Act and BC Act: VU Vulnerable, EN Endangered

DBCA: P Priority

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains three recorded species of Priority flora. Vegetation within the application area is also representative of the ‘Roebourne Plains coastal grasslands with gilgai microrelief on cracking clays’ Priority Ecological Community.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains foraging and potential breeding, habitat for conservation significant fauna.</p>	At variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>There are no known records of Threatened flora within the permit area (GIS Database). Based on the habitat present, Threatened flora species known from the Pilbara are not likely to be present within the permit area and the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened (rare) flora.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the permit area (GIS Database).</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>At its closest point, the application area is approximately one kilometre northwest of the Murujuga National Park (GIS Database). The proposed clearing will not impact on any ecological linkages to the National Park. Given the proximity to the National Park, care should be taken to ensure that the proposed clearing does not introduce or exacerbate the spread of weeds into the area. A weed management condition is proposed to be placed on the permit to minimise the risk of weeds being spread by the clearing.</p>	Not likely to be at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>There are several ephemeral watercourses which intersect the application area (GIS Database). The flora survey identified the vegetation association EcScCc as growing in association with ephemeral creeks and AaEgPr as being associated with artificial wetlands (AECOM, 2021). The wetlands were created from historical borrow pits which have naturally rehabilitated. Drainage patterns for many of the minor drainage lines has been previously altered by the existing railway (AECOM, 2021). Due to the nature of the proposed activities, there is minimal clearing proposed within riparian areas.</p> <p><u>Conditions</u></p> <p>Potential impacts to riparian vegetation may be minimised by the implementation of a watercourse management condition.</p>	At variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The application area has been mapped as the Calcrete, Cherrawarra, Granitic, Horseflat, Littoral and Rocklea land systems (GIS Database). The Calcrete, Granitic and Rocklea land systems are have a low erosion risk (Van Vreeswyk et al., 2004). The Littoral land system is mostly bare tidal flats however, coastal dunes are highly susceptible to wind erosion if plant cover is removed (Van Vreeswyk et al., 2004). There are no coastal dunes present within the application area (AECOM, 2021, GIS Database). The Cheerawarra land system is highly susceptible to wind erosion if vegetation cover is removed. Parts of the Horseflat land system are moderately to highly susceptible to erosion if vegetation cover is depleted. The Horseflat land system is located in the south of the application area and covers similar areas to the PEC. The mitigation measures proposed is section 3.1 for the PEC will also aid in preventing erosion risks for this land system. Rehabilitation of cleared areas will also reduce risk of erosion within the application area.</p> <p><u>Conditions</u></p> <p>Potential risks to erosion may be minimised by the implementation of a condition requiring rehabilitation of cleared areas to restore vegetation and prevent erosion.</p>	May be at variance	No
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p> <p>There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). There are no permanent watercourses or wetlands within the area proposed to clear (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. The proposed clearing is unlikely to result in significant changes to surface water flows or to cause deterioration in the quality of underground water.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The climate of the region is semi-arid, with a low average rainfall of approximately 297.5 millimetres per year (BoM, 2022). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall.</p> <p>There are no permanent water courses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.</p>	Not likely to be at variance	No

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. Sources of information

E.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- 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)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Pre-European Vegetation Statistics
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

E.2. References

- AECOM (2021) Dampier Power Resilience Project – Flora and Fauna Assessment. Prepared for Rio Tinto Group, by AECOM, 30 August, 2021.
- BoM (2022) Bureau of Meteorology Website – Climate Data Online, Karratha Aero. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 21 February 2022).
- City of Karratha (2021) Submission in relation to clearing permit application 9482/1. City of Karratha, 18 November 2021.
- Department of Environment Regulation (DER) (2013) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.
- Department of Planning, Lands and Heritage (DPLH) (2022) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 3 March 2022).
- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.
- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf.
- Environmental Protection Authority (EPA) (2016) Technical Guidance – Terrestrial Fauna Surveys. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf.
- <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) Atlas of Australian Soils, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.
- Rio Tinto (2021) Application for a Clearing Permit (Purpose Permit) – Dampier Power Resilience Project. Rio Tinto Ltd, 8 October 2021.
- 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.
- Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 24 February 2022).

4. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016</i> , Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DoEE	Department of the Environment and Energy (now DAWE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{**DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia**:-

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR Critically endangered species

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX Extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that "*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P Priority species:

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 Priority One - Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 Priority Two - Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 Priority Three - Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 Priority Four - Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (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.