



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10387/1
Permit type:	Purpose permit
Applicant name:	BHP Iron Ore Pty Ltd
Application received:	20 October 2023
Application area:	2.74 hectares of native vegetation
Purpose of clearing:	Removing stockpiled railway sleepers and undertaking soil testing and site rehabilitation.
Method of clearing:	Mechanical
Property:	Lot 5418 on Deposited Plan 404418, Mulga Downs, and Lot 909 on Deposited Plan 72909 and Lot 19 on Deposited Plan 48921, Newman
Location (LGA area/s):	Shire of Ashburton and Shire of East Pilbara
Localities (suburb/s):	Mulga Downs and Newman

1.2. Description of clearing activities

The area proposed to be cleared is 2.74 hectares of regrowth native vegetation distributed across two separate areas (see Figures 1 and 2, Section 1.5). The application is to selectively clear native vegetation which cannot be avoided to remove old, stockpiled railway sleepers that no longer occur on BHP tenure, complete soil testing and rehabilitate the area post removal of the stockpiled railway sleepers to its natural state.

1.3. Decision on application

Decision:	Granted
Decision date:	2 August 2024
Decision area:	2.74 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

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

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix F.1), the findings of the flora, fauna and vegetation survey's (see Appendix E), supporting documents (see Appendix D and E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The Delegated Officer also took into consideration the temporary nature of the clearing, the purpose to remove historical railway waste, the necessity of clearing noting the sleepers have been stockpiled since the 1960's, and consideration of the applicant's commitment to rehabilitate the temporary cleared areas.

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,
- contains suitable habitat for conservation significant fauna (see Section 3.2.1) and may impact on these fauna should they be utilising the application areas at the time of clearing,
- contains suitable habitat for conservation significant flora species which may occur within the application areas (see Section 3.2.2),
- intersects (0.43 hectares) a mapped portion (8500 hectare mapped patch) of the Wona Land System Priority Ecological Community (PEC).

After consideration of the available information, as well as the applicant's avoidance and mitigation measures (see Section 3.1), the Delegated Officer determined that the proposed clearing is unlikely to have long-term adverse impacts on the environmental values of flora and fauna. Environmental impacts resulting from this application can be managed such that they will not lead to an unacceptable risk to environmental values, through the implementation of the mitigation hierarchy and clearing permit conditions.

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

- undertake avoid and minimise measures to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds,
- engage a fauna specialist to undertake pre-clearance surveys to identify the presence of greater bilby burrows, western pebble-mound mouse mounds, and northern quoll artificial denning habitat within the application area,
- should any greater bilby burrows, western pebble-mound mouse mounds or northern quoll artificial denning habitat be identified:
 - not clear within 10 metres of greater bilby burrows, unless approved by the CEO
 - not clear within 10 metres of western pebble-mound mouse mounds, unless approved by the CEO and;
 - not clear northern quoll artificial denning habitat between October and March, unless approved by the CEO.
- undertake slow progressive one directional clearing to allow fauna to move into adjacent native vegetation ahead of the clearing activity,
- allow clearing during daytime hours only, to reduce the risk of fauna strike,
- engage a botanist to undertake pre-clearance surveys to identify the presence of priority flora and not clear within 20 meters of the identified priority flora, unless approved by the CEO,
- revegetate temporarily cleared areas.



1.5. Site maps

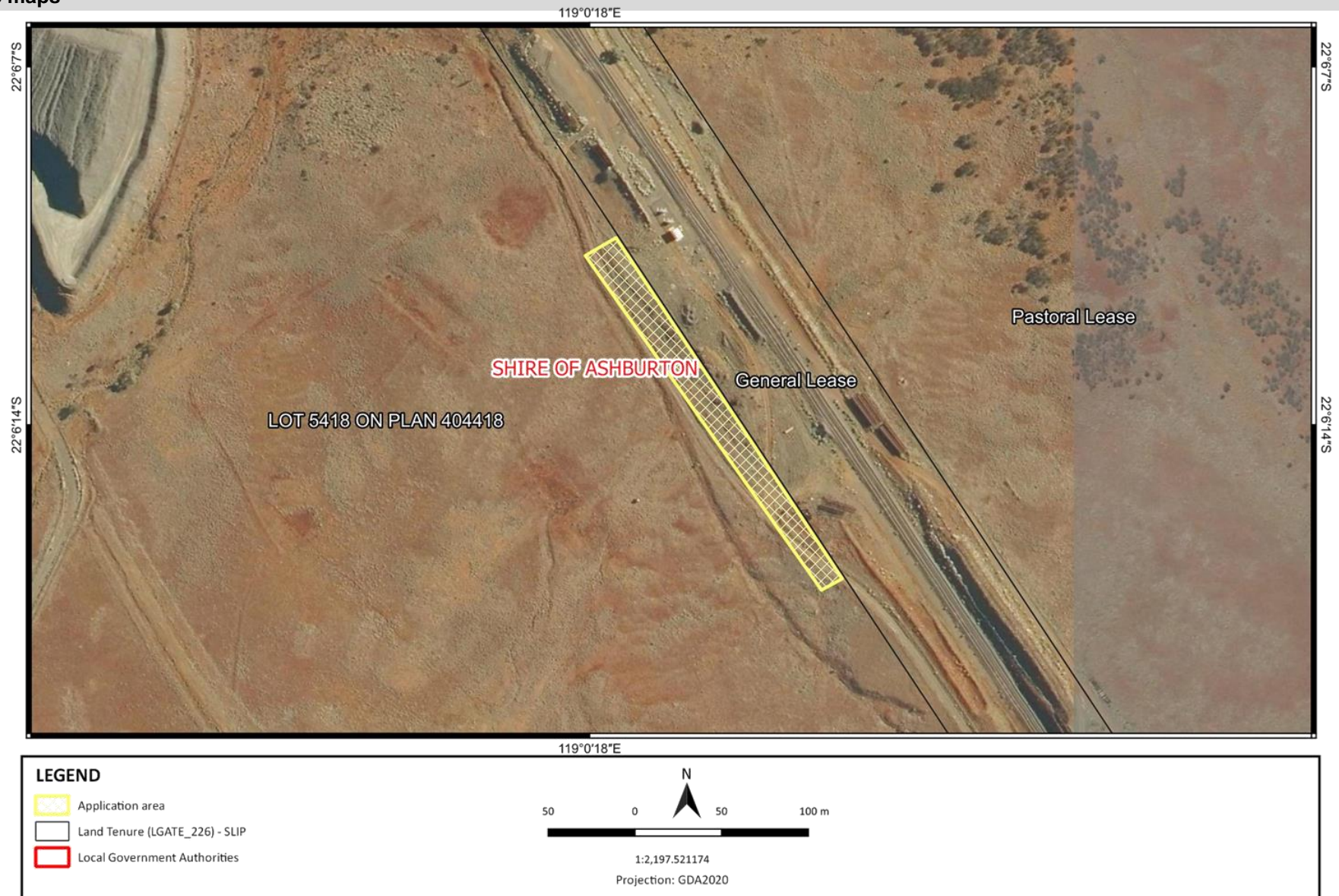


Figure 1: The northern application area. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

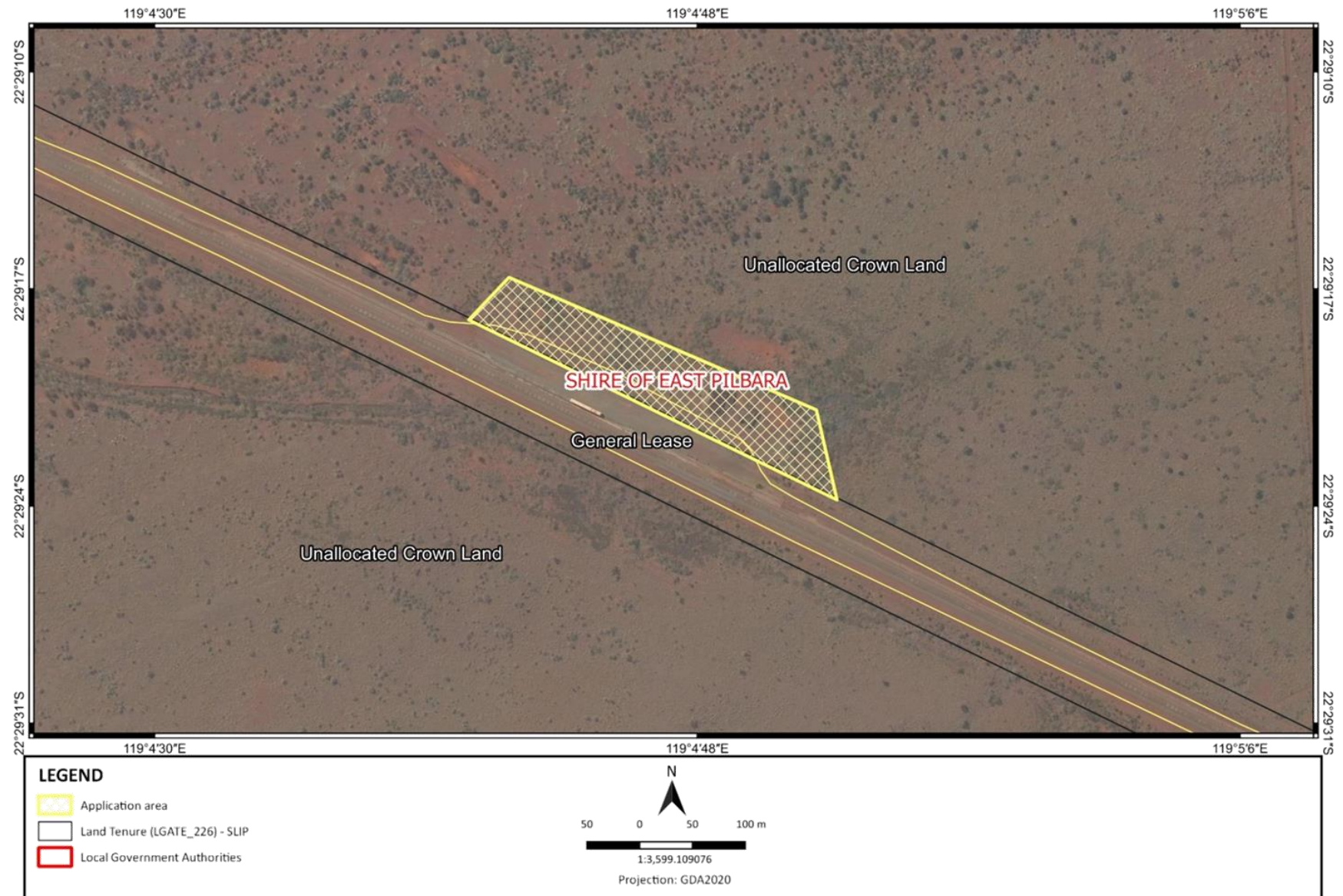


Figure 2: The southern application area. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.



2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC 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 – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016).

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence of avoid, minimise and mitigate measures was submitted by the applicant, demonstrating that clearing will only be to the extent necessary to remove the waste material and to undertake rehabilitation activities. 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, and notes the applicants commitment to rehabilitation.

3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (see Appendix B) identified that the impacts of the proposed clearing present a risk to fauna, flora and biodiversity. 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

DWER's desktop assessment identified records of 28 conservation significant fauna species within the local area (50 kilometre radius) including; 15 avian species, three reptiles, nine mammals and one fish species. Of these, nine are migratory birds of which breeding habitat is not represented within the application area, there is also no permanent freshwater sources to provide habitat for the one fish species, and therefore these records were excluded from the analysis.

The supporting information provided by the applicant (BHP, 2023; Onshore, 2014a & 2014b) identified three vegetation complexes within the application areas. These include *Astrelba* tussock grassland, *Acacia* low woodland and *Triodia* hummock grassland. Consolidated regional fauna habitat mapping undertaken by Biologic (2017), indicates that the application areas comprise of three fauna habitat types; gilgai plain, mulga woodland and sand plain. The fauna habitat within northern application area has undergone the highest level of disturbance

Through analysing the suitability of habitat, distance to the closest known records and the number of known records within the local area, seven species of conservation significant fauna have the potential to occur within the application areas (see Appendix A.4 fauna analysis table).

The Department of Biodiversity, Conservation and Attractions (DBCA) provided advice to the Department of Planning, Lands and Heritage regarding this project as part of a section 91 licence application, which was required to authorise land access for the project. DBCA's advice also identified the below fauna species as having the potential to occur within the application areas.

While a fauna assessment was provided as supporting evidence (Biologic, 2012), DWER, in undertaking this assessment, has considered the limitations of the fauna assessment, noting it covered the entire 270-kilometre rail line and was conducted in 2012.

Greater bilby

The greater bilby (*Macrotis lagotis*) is a nocturnal burrowing marsupial listed as vulnerable under the BC Act and *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. This species was once found across 70 per cent of Australia, however, is now restricted to the Tanami desert in the Northern Territory, the Mitchell Grasslands of Queensland, Gibson Desert, Little Sandy Desert, Great Sandy Desert, parts of the Pilbara and southern Kimberley of Western Australia. The greater bilby occupies three main habitat types: open tussock grassland on uplands and hills, *Acacia aneura* (mulga) woodland and shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas (TSSC, 2016). They also utilise complex burrow systems up to three metres deep for diurnal refuge, and shelter (TSSC, 2016). There are 36 records of the greater bilby mapped within the local area with the closest record 6.4 kilometres from the southern application area. Noting the presence of suitable habitat, the records mapped within the local area and the distance to the nearest record, it is considered that this species may utilise the application area. The extent of impact to this species habitat resulting from the proposed clearing is unlikely to be significant. This is noting the extent of clearing of previously disturbed areas relative to the surrounding extensively vegetated landscape which includes suitable habitat, and the applicant's commitment to rehabilitation post clearing. However, individuals of this species may be impacted through fauna strike should they occur on site at the time of clearing. The avoidance of any bilby burrows (should they be present) would help to manage this potential risk.

Grey falcon

The grey falcon (*Falco hypoleucos*) is listed as vulnerable under the BC Act and EPBC Act and is endemic to mainland Australia occurring in arid and semi-arid inland Australia, associated with timbered lowland plains such as tussock grassland, open woodland, and *Acacia* shrublands that are crossed by tree-lined watercourses (TSSC, 2020). The grey falcon roosts and nests in the tallest trees along watercourses, particularly river red gum (*Eucalyptus camaldulensis*) and coolibah (*Eucalyptus coolabah*) (TSSC, 2020). Within the local area there are 14 mapped records with the nearest record mapped 0.67 kilometres from the northern application area. The northern application may be utilised as foraging habitat for this species, however considering there is no permanent watercourses within or in close proximity to either application area, along with the absence of tall trees, the application areas are not considered representative of breeding or roosting habitat. Therefore the proposed clearing is unlikely to significantly impact on this species.

Northern quoll

The northern quoll (*Dasyurus hallucatus*) is an endemic nocturnal marsupial, listed as endangered under the EPBC Act and BC Act. This species was once common across northern Australia occurring almost continuously from the Pilbara region in Western Australia to the Brisbane region in Queensland. Distribution of this species has rapidly declined due to several factors including changes to vegetation structure, changes to fire frequency and introduced species; specifically, the cane toad (*Bufo marinus*) (DCCEEW, 2005). The northern quoll occupies a diverse range of habitats including rocky areas, eucalypt forests, woodlands, shrubland and grassland as well as preferred rocky habitat, gorges, breakaways and hills with rugged rocky areas used for denning (Biologic, 2012). The northern quoll utilises denning habitat of both natural and artificial nature; including waste rock dumps and similar manmade features. Their home ranges typically cover 35 hectares, although during the breeding season, males can extend their range to greater than 100 hectares (DCCEEW, 2005). Within the local area 649 records of the northern quoll have been recorded, the nearest of which is located 3.5 kilometres from the southern application area. The stockpiled railway sleepers provide potentially suitable artificial denning habitat which may be utilised to house young between October and March, post the mating season (DBCA, 2023a). Given this and with consideration to the distribution of the species, their home ranges, and the number of records within the local area, northern quoll may occur within the application areas and therefore may be impacted by the clearing. The avoidance of impacts to artificial denning habitat between October and March would help to manage this risk.

Northern short-tailed mouse

The northern short-tailed mouse (*Leggadina lakedownensis*) is listed as Priority 4 by DBCA. This species is endemic to northern Australia where it occurs from Cape York to the Pilbara region; however, the distribution is discontinuous. There are two translocated island populations within Western Australia, located on Thevenard and Serrurier Islands (Biologic, 2012). This species is nocturnal and inhabits areas of open tussock and hummock grasslands, *Acacia* shrublands and savanna woodlands, where they take refuge in burrows during the day to shelter from the heat (CALM, 2002a). Therefore, suitable habitat is mapped within the application areas. The northern short-tailed mouse consists of an average home range of 4.8 hectares (CSIRO, 2000). There are 30 records mapped within the local area with the closest record located 0.11 kilometres from the northern application area. Given the presence of suitable habitat within the application areas, distance to local records, and considering this species average home range, the northern short-tailed mouse may occur within the application area. The extent of impact to this species habitat resulting from the proposed clearing is unlikely to be significant. This is noting the extent of clearing proposed and the condition of the application areas, relative to the surrounding extensively vegetated landscape which includes suitable habitat, and the applicant's commitment to rehabilitation post clearing. However, individuals of this species may be impacted through fauna strike should they occur on site at the time of clearing. Slow, one directional clearing activities and avoiding clearing during nighttime hours would assist to minimise this risk.

Western pebble-mound mouse

Western pebble-mound mouse (*Pseudomys chapmani*) is a Priority 4 (listed by DBCA) native rodent species endemic to Western Australia. This species has seen a decline in its range and is now predominately found within the Pilbara region, inhabiting gentle slopes, with coverings of a stony mantle, vegetated by hard spinifex; typically *Triodia basedowii* or *Triodia wiseana*, often with a sparse *Eucalyptus* overstorey, with exposed pebbles, often near drainage lines (Biologic, 2012 & DBCA, 2000). The western pebble-mound mouse constructs large mounds above the ground to create a burrow. These mounds vary in size from 0.5 to five metres in diameter and the mouse burrows to a depth of 40 centimetres below the surface (DBCA, 2020). Within the local area there are 377 records of the western pebble-mound mouse, with the nearest records 4.6 kilometres from the northern application area and 5.8 kilometres from the southern application area. Given the southern application area is mapped as *Triodia* Hummock grasslands of *Triodia basedowii* and is intersected by a non-perennial drainage line, the western pebble-mound mouse may occur. The northern application area does not contain suitable habitat features, however. The extent of impact to this species habitat resulting from the proposed clearing is unlikely to be significant. This is noting the extent of clearing relative to the surrounding extensively vegetated landscape, which includes suitable habitat, and the applicant's commitment to rehabilitation post clearing. However, individuals of this species may be impacted through fauna strike should they occur on site at the time of clearing. The avoidance of any mounds (should they occur onsite) is important to manage this potential risk.

Pilbara leaf nose bat

Pilbara leaf nosed bat (*Rhinonictis aurantia*) is listed as vulnerable under the BC Act and EPBC Act. This species is a small insectivorous bat occurring throughout the Pilbara and upper Gascoyne region of Western Australia. This species relies on underground roosts with warm, high humidity microclimates of caves and abandoned underground mines. These roosting habitat requirements are important as this species has very limited ability to conserve heat and water (Biologic, 2012). Within the local area 1,292 records have been mapped, with the closest located 4.6 kilometres from the southern application area. The type and quality of potential foraging habitat surrounding roosts is critical for the survival of the species; this critical foraging habitat includes gorges with pools, gullies, rocky outcrops, major watercourses and open grasslands and woodlands. The application areas are not representative of roosting habitat for the species, however, do consist of foraging habitat and therefore it is possible for the species to occur within the application areas during night foraging. The extent of impact to this species habitat resulting from the proposed clearing is unlikely to be significant. This is noting an absence of roosting habitat, the extent of clearing relative to the surrounding extensively vegetated landscape which includes suitable, higher quality foraging habitat, and the applicant's commitment to rehabilitation post clearing. The avoidance of clearing during nighttime hours will assist in mitigating the potential risk of fauna strike to this species.

Gane's blind snake

Gane's blind snake (*Anilius ganei*), is endemic to the Pilbara region of Western Australia and is listed as Priority 1 under the BC Act. Little is known about this species as it is rarely encountered during surveys due to its fossorial habitat. Like most blind snakes it is insectivorous, feeding on termites and their eggs, as well as the larvae and pupae of ants (Wilson & Swan, 2017). There are nine records of the Gane's blind snake in the local area, with the closest record located 3.75 kilometres south of the northern application area. Gane's blind snake is typically associated with

moist gorges and gullies, as well as other rocky or stony habitats (Biologic, 2012). Noting the absence of gully or rocky habitat features within the application areas, the proposed clearing is not likely to impact on this species.

Conclusion

Given the above assessment, the application areas provides suitable habitat for conservation significant fauna. The extent of impact to these species habitat resulting from the proposed clearing is unlikely to be significant. This is noting the extent of proposed clearing and condition of the application areas, relative to the surrounding extensively vegetated landscape which includes similar mapped habitat, and the applicant's commitment to rehabilitation post clearing. Therefore, this impact is not considered a significant residual impact. However, given the potential for fauna strike should conservation significant species be utilising the application areas at the time of clearing, management conditions to minimise this risk have been included on the permit.

Conditions

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

- A pre-clearance survey by a fauna specialist to identify the presence of greater bilby burrows, western pebble-mound mouse mounds, and northern quoll artificial denning habitat within the application area
- Should any greater bilby burrows, western pebble-mound mouse mounds or northern quoll artificial denning habitat be identified;
 - not clear within 10 metres of greater bilby burrows, unless approved by the CEO
 - not clear within 10 metres of western pebble-mound mouse mounds, unless approved by the CEO and;
 - not clear northern quoll artificial denning habitat between October and March, unless approved by the CEO.
- clearing is to occur in a slow progressive manner in one direction allowing fauna to move into adjacent native vegetation ahead of the clearing
- clearing is to occur during daytime hours to reduce the risk of fauna strike, noting most foraging occurs outside of these hours for the identified species.

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

Assessment

The application areas are located within the Chinchester and Fortescue subregions of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (DCCEEW, 2023). At a broad scale, vegetation of the Chinchester subregion is comprised of undulating Archaean granite and basalt plains with significant areas of basaltic ranges. Plains support a shrub-steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* trees occur on ranges (CALM, 2002b). The Fortescue subregion is comprised of river gum woodlands fringing drainage lines and is the northern limit of the Mulga (*Acacia aneura*). An extensive calcrete aquifer (originating within a paleo-drainage valley) feeds numerous permanent springs in the central Fortescue, supporting large permanent wetlands with extensive stands of river gum and *Melaleuca cajuput* woodlands (CALM, 2002b).

Both the application areas have undergone disturbance related to the railway construction from the 1960's, which resulted in stockpiled railway sleepers with regrowth around the stored material (BHP, 2023). Due to the disturbance within the application areas the vegetation condition ranges from very poor to good condition and the vegetation adjacent to the application areas is in similar or very good condition (Onshore, 2014a and 2014b). In its assessment of this application, DWER has considered the limitations of the flora and vegetation survey (Onshore 2014a) provided in support of this application, which covered the entire 270 kilometre rail line and was conducted between February and April of 2012.

The northern application area is within a large mapped patch (around 8500 hectares) of the Wona Land System Priority Ecological Community (Priority 1). This system is described as a basalt upland gilgai plains with tussock, in Chinchester National Park, pastoral leases and scattered occurrences in the Hamersley Ranges. This system is susceptible to high levels of erosion and is threatened by grazing stock and kangaroos (DBCA, 2023b). The northern application intersects 0.43 hectares of the PEC which represents less than 0.01 percent of the Pilbara occurrence of this PEC. Therefore, the proposed impact to the mapped Wona Land System, being the loss of up to 0.43 hectares of vegetation in a very poor (Trudgen, 1991) condition, is not considered significant, also noting that the applicant has committed to rehabilitating the area post clearing. The requirement to undertake weed hygiene measures as a condition of the clearing permit will help to reduce the risks of indirect impacts to the broader PEC.

Available databases identified one threatened flora species, 11 priority 1 (P1) species, 12 P2 species, 36 P3 species and seven P4 species, within the local area (50 kilometre radius). Given mapped soil types, vegetation types and topography of the application areas, five conservation listed species have the potential to occur (see Appendix A.3 for the flora analysis table) as listed below:

- *Dipteracanthus chichesterensis* (P1)
- *Abutilon sp. Pritzelianum* (S. van Leeuwen 5095) (P3)
- *Dolichocarpa sp. Hamersley Station* (A.A. Mitchell PRP 1479) (P3)
- *Euphorbia stevenii* (P3)
- *Themeda sp. Hamersley Station* (M.E. Trudgen 11431) (P3)

Available databases indicate *Abutilon sp. Pritzelianum* (S. van Leeuwen 5095) is known from 51 records statewide and one record within the local area, located 0.53 kilometres from the northern application area. This single location was also confirmed within the flora and vegetation survey provided in support of the application (Onshore, 2014a). The application area includes habitat features known to support this species. Given this, and distance to the nearest record, there is the potential for this species to occur within the application areas. Most mapped records of the species are located closer to Port Headland; outside of the local area, and while the overall conservation status of this species is unlikely to be impacted by the clearing, the potential clearing of any individuals (should they occur) may be significant at a local level.

Dipteracanthus chichesterensis is known from three records within the local area with the closest record being 0.35 kilometres from the northern application area. This species is known from only 8 records statewide. This species was not identified within the Onshore (2014a) survey, however, was only officially classified in 2015 after the survey was conducted. Noting the habitat features of the application area and the proximity to the nearest record, this species may occur. Given the limited number of known records within the local area and region, the potential clearing of this species (should it occur on site) may have significant impacts to this species at a local and regional level, and the conservation status of this species.

Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479) is known from two mapped records within the local area, the closest being 0.63 kilometres from the northern application area. This species is known from 38 records statewide. While most known records of this species are mapped outside the local area, the application area includes suitable habitat, and given the proximity to the nearest record, this species may occur. While the overall conservation status of this species is unlikely to be impacted by the clearing, from a local context, the potential clearing of any individuals (should they occur) may be significant at a local level.

The Onshore (2014a) survey identified *Euphorbia stevenii* within 600 metres of the northern application area. Available databases indicate that two locations of the species occur within the local area. There are 18 known records statewide. The application area includes suitable habitat for this species, which has been previously recorded within degraded and previously cleared areas (Western Australian Herbarium, 1998). Given the application area consists of suitable habitat for this species and the proximity to nearby records, the species may occur within the application area. Given the relatively small number of known records statewide, the potential clearing of any individuals (should they occur) may be significant at a local and regional level.

Themeda sp. Hamersley Station (M.E. Trudgen 11431) is known from 10 records within the local area, the closest mapped 5.02 kilometres from the southern application area. This species is known from 60 records statewide. The application area includes suitable habitat for this species, and it may therefore occur onsite. Given the nature and size of the clearing, it is unlikely the proposed clearing will impact on the conservation status of the species, however, depending on the extent of impact (if occurring within the application area), impacts to this species may be significant at a local level.

The flora and vegetation survey identified 10 invasive weed species within the local area with some species occurring near the application areas (Onshore, 2014a). Moving machinery into the proposed clearing and surrounding areas increases the potential for the spread of weeds, increasing competition with the native vegetation; in particular the priority species identified above. Without adequate weed control the overall condition of the vegetation and the biodiversity value within (post rehabilitation) and surrounding the application areas may increase.

Conclusion

Given the potential for conservation significant flora species to occur within the application area, and be significantly impacted depending on the extent of occurrence (if present), management conditions have been imposed through the conditions of the permit.

Conditions

The following management measures will be required as conditions on the clearing permit:

- undertake pre-clearance surveys for priority flora. If present priority flora must be demarcated and avoided with a 20 metre buffer, unless otherwise approved by the CEO.
- revegetate and rehabilitate the cleared area post clearing
- undertake weed management measures to avoid indirect impacts to surrounding vegetation.

3.3. Relevant planning instruments and other matters

The Shire of Ashburton advised DWER that it has no objections to the proposed clearing. The Shire of East Pilbara was offered the opportunity to comment on the proposed clearing, however, no comment was provided.

The Application Area is situated within the Banjima Native Title Claim (WC2011/006). No Aboriginal Heritage sites have been identified within the application area, however there are several in the local area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

The applicant has advised that all its land disturbance activities are subject to ethnographic and archaeological surveys to ensure that all heritage sites in the vicinity of the project area are identified and avoided where practicable. The applicant notes that if any heritage sites are identified and cannot practicably be avoided, it will consult with the relevant traditional owners and seek approval under the *Aboriginal Heritage Act 1972* before the site is disturbed (BHP, 2023).

The applicant notes that the Banjima People have been consulted as part of the Section 91 tenure application for this application and are aware that this clearing permit application is being sought to enable the removal of historical rail waste and to enable the areas to be rehabilitated back into the surrounding landscape (BHP, 2023).

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is 2.74-hectares distributed between two isolated patches (2.31 and 0.43 hectares) of native vegetation in the extensive land use zone of Western Australia. The southern application area is surrounded by native vegetation to the north and is located adjacent to a railway line. The northern application area is also adjacent to a railway line and within 240 metres of an opencut mine.</p> <p>Spatial data indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared) retains approximately 99.68 per cent of the original native vegetation cover.</p>
Ecological linkage	There are no mapped ecological linkages mapped within the application or local areas.
Conservation areas	The local area consists of two A class reserves; Mungaroona Range Nature Reserve (located 45.8 kilometres northwest), and Karijini National Park (located 33.4 kilometres west), as well as 21 class C nature reserves for various land use.
Vegetation description	<p>The broader flora and vegetation surveys (Onshore Environmental, 2014a & 2014b) indicate the vegetation within the proposed clearing area consists of three floristic communities <i>Astrebla</i> tussock grassland, <i>Acacia</i> low woodland and <i>Triodia</i> hummock grasslands.</p> <p>This is consistent with the mapped vegetation type(s):</p> <ul style="list-style-type: none"> Beard 111, which is described as Hummock grasslands, shrub steppe, with <i>Eucalyptus gamophylla</i> over hard spinifex. (Shepherd et al, 2001) Beard 175, which is described as short bunch grasslands – savanna/grass plains <p>The mapped vegetation types retain approximately 99 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Vegetation surveys (Onshore 2014a & 2014b), supporting documents (BHP, 2023) and available imagery indicate the vegetation within the proposed northern clearing area is in very poor condition and the southern proposed clearing area is in poor to good condition (Trudgen, 1991), described as:</p> <ul style="list-style-type: none"> very poor: 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 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 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. <p>The full Trudgen (1991) condition rating scale is provided in Appendix C. The full survey descriptions and mapping are available in Appendix E.</p>
Climate and landform	<p>The Pilbara region has semi-desert to tropical climate with highly variable rainfall, mostly occurring during summer. The average annual rainfall over the broader Pilbara area ranges from approximately 200 to 400 millimetres.</p> <p>The northern application area is located at an elevation of 510 metres on a relatively flat landscape while the southern application area is located at an elevation of 430 metres gently increasing in elevation to the south west.</p>
Soil description	The soil of the northern application area is mapped as Wona System (282Wo), described as:

Characteristic	Details
	<ul style="list-style-type: none"> Basalt upland, gilgai plains supporting Roebourne Plains grass and Mitchell grass, tussock grasslands, minor hard spinifex grasslands or annual grasslands or herb fields. <p>The soil of the southern application area is mapped as Boolgeeda Systems (284Bg), described as:</p> <ul style="list-style-type: none"> Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands.
Land degradation risk	Both the soil systems within the application areas are not generally prone to degradation and are not susceptible to erosion, except if the stony mantle is removed in the Wona System (e.g. along tracks on sloping plains) (DPIRD, 2022a & 2022b).
Waterbodies	The desktop assessment and aerial imagery indicated that both application areas are intersected by a minor non-perennial watercourse.
Hydrogeography	Both application areas are within the Pilbara surface water and ground water areas. The groundwater salinity of both areas is 500-1000mg/L.
Flora	67 species of conservation listed flora have been recorded within the local area, of which one is listed as threatened, 11 are priority one (P1), 12 P2, 36 P3 and seven P4. Three of these records are mapped less than one kilometre from the application area.
Ecological communities	There are no threatened ecological communities (TEC) mapped within the application area. The northern application area is located within the Wona Land System which is a PEC (Priority 1).
Fauna	Within the local area 28 conservation significant fauna species have been recorded. There are 15 avian species, one fish species, nine mammals and three reptiles. There are two records located less than one kilometre from the application area; <i>Leggadina lakedownensis</i> (Priority 4) located 0.11 kilometres from the application area and <i>Falco hypoleucos</i> (vulnerable) located 0.67 kilometres from the application area.

A.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Pilbara	17,808,657.04	17,731,764.88	99.57	1,801,714.98	10.16
Vegetation complex					
Beard vegetation association 111 *	550,286.99	550,232.45	99.99	37,806.96	6.87
Beard vegetation association 175 *	507,860.16	507,466.80	99.92	40,277.79	7.94
Local area (calculation - delete if not required)					
50km radius	1,208,716.85	1,208,716.85	99.68	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

A.3. Flora analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Abutilon</i> sp. Pritzelianum (S. van Leeuwen 5095)	3	Y	Y	Y	0.528	1	N
<i>Dipteracanthus chichesterensis</i>	1	Y	Y	Y	0.352	3	N
<i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	3	Y	Y	Y	0.632	2	N
<i>Euphorbia stevenii</i>	3	Y	Y	Y	0.600	4	N
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	3	Y	Y	Y	5.024	10	N
<i>Bulbostylis burbridgeae</i>	4	N	Y	N	2.93	11	N
<i>Eremophila spongiocarpa</i>	3	N	Y	Y	6.02	20	N
<i>Lepidium catapycnon</i>	4	N	Y	N	7.34	14	N
<i>Synostemon hamersleyensis</i>	T	N	Y	N	7.95	58	N

A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Leggadina lakedownensis</i>	P4	Y	Y	0.109	30	N
<i>Falco hypoleucos</i>	VU	Y	Y	0.667	14	N
<i>Macrotis lagotis</i>	VU	Y	Y	6.353	36	N
<i>Dasyurus hallucatus</i>	EN	Y	N	3.531	649	N
<i>Anilius ganei</i>	P1	N	Y	3.750	9	N
<i>Rhinonictis aurantia</i> (Pilbara form)	VU	N	Y	4.469	1292	N
<i>Pseudomys chapmani</i>	P4	N	Y	4.646	377	N

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

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p>Principle (a): <i>"Native vegetation should not be cleared if it comprises a high level of biodiversity."</i></p> <p><u>Assessment:</u></p> <p>The application areas are highly modified, however contain suitable habitat for conservation listed flora and fauna. The northern application area also intersects a mapped portion of the Wona Land System PEC.</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p>Principle (b): <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 suitable habitat for conservation listed fauna.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p>Principle (c): <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>The application area is not likely to provide suitable habitat for the threatened flora species known from the local area.</p>	Not likely to be at variance	No
<p>Principle (d): <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>The mapped vegetation types within the application area are not representative of a threatened ecological community.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p>Principle (e): <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>Principle (h): <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>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.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: land and water resources		
<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>No wetlands or major watercourses occur within the application areas, however both application areas are intersected by a minor non-perennial watercourse. Noting the limited extent of clearing proposed within each of these minor watercourses, which only flow post heavy rainfall, and that the application areas will be rehabilitated, the proposed clearing will not significantly impact on the watercourses, or on riparian vegetation within the local area.</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 mapped soils are not susceptible to erosion or land degradation except if the Wona systems stony mantle is removed. Noting the extent of proposed clearing and the temporary nature of the clearing (given the areas will be rehabilitated), the proposed clearing is not likely to result in appreciable land degradation.</p>	Not likely to 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>Noting the extent of temporary clearing and absence of wetlands or major watercourses within the application areas, the proposed clearing is not likely to result in the deterioration of surface or groundwater quality.</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>There are no permanent watercourses or wetlands recorded within the application areas. On average the annual evaporation within the Pilbara region is 3200 millimetres which greatly exceeds that of the average rainfall (200 – 400 millimetres). While both soil types are mapped as possessing a high flood risk, given that the nature of the clearing is temporary, with the areas being rehabilitated after the clearing, and noting the evaporation average, the proposed clearing is unlikely to cause or exacerbate the incidence or intensity of flooding.</p>	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

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

Considering its location, the 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 D. Supporting Document - Application Covering Letter

BHP IRON ORE MINING OPERATIONS: Application for a new Native Vegetation Clearing (Purpose)

Permit to Rehabilitate Historical Disturbance Areas between Chainages 220 and 268

BHP Iron Ore Pty Ltd (BHP) has identified the need to remove old stockpiled treated wooden sleepers that have been stored outside of the existing rail tenure. These stockpile areas were established during the rail construction in the 1960's and have experienced some regrowth of vegetation around the stored material.

BHP is seeking to remove the sleepers and any other rail material from these areas, undertake soil testing to confirm if any contamination has occurred and then rehabilitate the areas. As these activities will result in the clearing of a small amount of regrowth native vegetation BHP is seeking a Native Vegetation Clearing (Purpose) Permit (NVCP) over the stockpile areas.

Existing Environment

A number of biological surveys have been undertaken within the Application Area. The most relevant studies are:

- Mainline Rail Expansion Level 2 Flora and Vegetation Survey (Onshore, 2014a) (Appendix 1);
- Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure (Onshore, 2014b) (Appendix 2);
- Consolidation of Regional Fauna Habitat Mapping BHP Billiton Iron Ore Pilbara Tenure (Biologic, 2017) (Appendix 3); and
- Mainline Rail Expansion Vertebrate Fauna Survey (Biologic, 2013) (Appendix 4).

Flora and Vegetation

The Application Area has three Broad Floristic Communities with three vegetation associations (Onshore, 2014a and 2014b) (Figure 2).

Table 1: Vegetation Associations

Broad Floristic Community	Vegetation Association	
Astrebla Tussock Grassland	SP AspeAriSpau SifCotrTebcOpa	Tussock Grassland of <i>Astrebla pectinata</i> , <i>Aristida naeuiglumis</i> and <i>Sporobolus australasicus</i> with Low Open Shrubland of <i>Sida fibulifera</i> , <i>Corchorus trilocularis</i> and <i>Tephrosia sp. Bungaroo Creek (M.E. Trudgen 1601)</i> and Open Herbs of <i>Operculina aequisejala</i> on brown medium clay on basalt plains.
Acacia Low Woodland	FP ApAaApr AsyErffPto CcAriArc	Low Woodland of <i>Acacia paraneura</i> , <i>Acacia aptaneura</i> and <i>Acacia pruinocarpa</i> over Open Shrubland of <i>Acacia synchronicia</i> , <i>Eremophila forrestii subsp. forrestii</i> and <i>Ptilotus obovatus</i> over Open Tussock Grassland of <i>*Cenchrus ciliaris</i> , <i>Aristida inaeuiglumis</i> and <i>Aristida contorta</i> on red brown loam on floodplains.
Triodia Hummock Grassland	SP TbTp HIAancAi Ch	Hummock Grassland of <i>Triodia basedowii</i> and <i>Triodia pungens</i> with High Open Shrubland of <i>Hakea lorea subsp. lorea</i> , <i>Acacia ancistrocarpa</i> and <i>Acacia inaequilatera</i> and Scattered Low Trees of <i>Corymbia hamersleyana</i> on red brown loamy sand on stony plains.


Vertebrate Fauna

Biologic (2017) identified three vertebrate fauna habitats within the Application Area (Figure 3):


- Gilgai Plain;
- Mulga Woodland; and
- Sand Plain.

No conservation significant species have been recorded from the application area (Biologic, 2014a).


Appendix E. Supporting Document – Flora and vegetation survey Level 2 – Vegetation associations

Broad Floristic Formation	17e. <i>Triodia</i> Hummock Grassland
Vegetation Association	Hummock Grassland of <i>Triodia basedowii</i> with High Open Shrubland of <i>Hakea lorea</i> subsp. <i>lorea</i> , <i>Acacia ancistrocarpa</i> and <i>Acacia inaequilatera</i> and Scattered Low Trees of <i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>Corymbia hamersleyana</i> in red sand on plains
	
Area Mapped	2,603.19 ha
Quadrats Sampled	ME2, ME4, ME6, ME9, ME11, ME12, ME19, DME1, DME2, DME3, JME1, JME5, EMES2.03, FMG047, FMG012, H015, H054, H008, PME01
Location	Maps 1-6
Leaf Litter Cover (%)	<10
Bare Ground (%)	30-40
Soils and Geology	Ironstone fine scree and pebbles with red sand
Land Form	Plains
Priority Ecological Community	None
Rare Flora	None
Introduced (Weed) Species	* <i>Cenchrus ciliaris</i>
Vegetation Condition	Excellent to Very Good
Disturbances	Rail line, access road nearby, fire, fence line, livestock
Average Fire Age	Moderate to Old
Vegetation Structure & Floristics	
Trees <10m	<i>Corymbia deserticola</i> subsp. <i>deserticola</i> , <i>Corymbia hamersleyana</i> , <i>Acacia pruinocarpa</i>
Mallee	<i>Eucalyptus gamophylla</i>
Tall Shrubs >2m	<i>Hakea lorea</i> subsp. <i>lorea</i> , <i>Acacia ancistrocarpa</i> , <i>Acacia inaequilatera</i> , <i>Acacia trudgeniana</i> , <i>Hakea chordophylla</i>
Shrubs 1-2m	<i>Acacia adsurgens</i> , <i>Acacia tenuissima</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia inaequilatera</i>
Shrubs <1m	<i>Indigofera monophylla</i> , <i>Bonamia rosea</i> , <i>Senna notabilis</i> , <i>Scaevola parvifolia</i> subsp. <i>pilbarae</i> , <i>Ptilotus astrolasius</i> , <i>Dicrastylis cordifolia</i> , <i>Corchorus tectus</i> , <i>Corchorus sidoides</i> , <i>Stylobasium spathulatum</i> , <i>Petalostylis cassioides</i>
Hummock Grasses	<i>Triodia basedowii</i>
Tussock Grasses	<i>Paraneurachne muelleri</i> , <i>Aristida inaequiglumis</i> , * <i>Cenchrus ciliaris</i> , <i>Eragrostis eriopoda</i> , <i>Aristida holathera</i> subsp. <i>holathera</i> , <i>Aristida contorta</i>
Herbs	<i>Heliotropium pachyphyllum</i>

Vegetation type recorded in the southern application area

Broad Floristic Formation	6a. Acacia Low Woodland
Vegetation Association	Low Woodland of <i>Acacia paraneura</i> , <i>Acacia aptaneura</i> and <i>Acacia pruinocarpa</i> over Open Shrubland of <i>Acacia synchronicia</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Ptilotus obovatus</i> over Very Open Tussock Grassland of <i>*Cenchrus ciliaris</i> in red/brown sandy clay loam on plains and floodplains
	
Area Mapped	209.48 ha
Quadrats Sampled	ME1, ME3, ME14, ME20, JME2
Location	Map 1-6
Leaf Litter Cover (%)	<5
Bare Ground (%)	20-30
Soils and Geology	Ironstone pebbles and fine scree with red brown sandy clay loam
Land Form	Floodplains
Priority Ecological Community	None
Rare Flora	None
Introduced (Weed) Species	<i>*Portulaca oleracea</i> , <i>*Cenchrus ciliaris</i>
Vegetation Condition	Degraded - Excellent
Disturbances	Introduced species, livestock, rail line, tracks, water point, fence line, grazing, creek diversion
Average Fire Age	Old
Vegetation Structure & Floristics	
Trees >10m	<i>Acacia paraneura</i> , <i>Acacia aptaneura</i> , <i>Acacia pruinocarpa</i> , <i>Corymbia deserticola</i>
Shrubs >2m	<i>Hakea lorea</i> subsp. <i>lorea</i>
Shrubs 1-2m	<i>Acacia synchronicia</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> , <i>Rhagodia eremaea</i> , <i>Acacia sclerosperma</i>
Shrub <1m	<i>Senna artemisioides</i> subsp. <i>helmsii</i> , <i>Ptilotus obovatus</i> , <i>Sida platycalyx</i> , <i>Maireana planifolia</i> , <i>Corchorus sidoides</i>

Vegetation type recorded in the southern application area

Broad Floristic Formation	20. <i>Astrebla/Eragrostis</i> Tussock Grassland
Vegetation Association	Tussock Grassland of <i>Astrebla pectinata</i>, <i>Aristida inaequiglumis</i> and <i>Sporobolus australasicus</i> with Low Open Shrubland of <i>Sida fibulifera</i>, <i>Corchorus trilocularis</i> and <i>Tephrosia</i> sp. Bungaroo Creek (M.E. Trudgen 11601) and Open Herbs of <i>Operculina aequisejala</i> in brown medium clay on basalt plains
	
Area Mapped	837.54 ha
Quadrats Sampled	ME70, ME36, EMES2.67, FMG058, H286, FMG071
Location	Maps 16-18
Leaf Litter Cover (%)	1
Bare Ground (%)	45-75
Soils and Geology	Basalt pebbles cobbles and boulders with brown medium clay
Land Form	Basalt plains
Priority Ecological Community	Wona Land System - Mitchell Grass plains (<i>Astrebla</i> spp.) on gilgai Priority 3(iii) PEC)
Rare Flora	<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)
Introduced (Weed) Species	* <i>Flaveria trinervia</i> , * <i>Malvastrum americanum</i> , * <i>Vachellia farnesiana</i> , * <i>Portulaca oleracea</i> , * <i>Flaveria trinervia</i>
Vegetation Condition	Good
Disturbances	Grazing, rail line, access track, livestock, weeds, quarry
Average Fire Age	Old
Vegetation Structure & Floristics	
Shrubs <1m	<i>Sida fibulifera</i> , <i>Corchorus trilocularis</i> , <i>Tephrosia</i> sp. Bungaroo Creek (M.E. Trudgen 11601), <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Corchorus tridens</i> , <i>Streptoglossa bubakii</i>
Tussock Grasses	<i>Astrebla pectinata</i> , <i>Aristida inaequiglumis</i> , <i>Sporobolus australasicus</i> , <i>Aristida latifolia</i> , <i>Aristida latifolia</i> , <i>Astrebla elymoides</i>
Herbs	<i>Operculina aequisejala</i> , <i>Calocephalus</i> sp. Wittenoom (A. S. Groge 1082), <i>Striga curviflora</i> , <i>Operculina aequisejala</i> , <i>Polymeria lanata</i>

Vegetation type recorded in the northern application area

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)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- 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
- Wheatbelt Wetlands Stage 1 (DBCA-021)

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)

F.2. References

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