

1. Application details and outcomes

1.1. Permit application details

Permit number:	3215/4
Permit type:	Purpose Permit
Applicant name:	BHP Iron Ore Pty Ltd
Application received:	17 May 2024
Application area:	200 hectares
Purpose of clearing:	Mineral exploration, geotechnical investigations, hydrological investigations, installation of meteorological masts and LiDAR stations and any associated activities
Method of clearing:	Mechanical Removal
Tenure:	<i>Iron Ore (Mount Newman) Agreement Act 1964</i> , Mineral Lease 244SA (AML 70/244)
Location (LGA area/s):	Shire of East Pilbara
Colloquial name:	South Parmelia Exploration Project

1.2. Description of clearing activities

BHP Iron Ore Pty Ltd proposes to clear up to 200 hectares of native vegetation within a boundary of approximately 4,617 hectares, for the purpose of mineral exploration, geotechnical investigations, hydrological investigations, installation of meteorological masts and LiDAR stations and any associated activities. The project is located approximately 53.5 kilometres northwest of Newman, within the Shire of East Pilbara.

Clearing permit CPS 3215/1 was granted by the Department of Mines and Petroleum on 17 September 2009 and was valid from 17 October 2009 to 30 November 2014. The permit authorised the clearing of up to 140 hectares of native vegetation within a boundary of approximately 4,688 hectares, for the purpose of mineral exploration.

CPS 3215/2 was granted on 10 July 2014, amending the permit to extend the duration of the permit by 10 years from 30 November 2014 to 30 November 2024, and to amend the annual reporting date to 1 October each year. An additional 5 years has been added to the permit end date to allow for rehabilitation.

On 4 January 2021, the Permit Holder applied to amend CPS 3215/2 to include additional purposes for which clearing is authorised and to remove permit conditions 4, 8a, 8b(i) and 8b(ii).

On 17 May 2024, the Permit Holder applied to amend CPS 3215/3 to increase the disturbance limit from 140 hectares to 200 hectares, amend the permit boundary to exclude recently identified caves and waterholes, extend the permit duration, the final reporting date, and the authorised clearing period by 5 years, and to amend the permit holder name to "BHP Iron Ore Pty Ltd".

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	19 November 2024
Decision area:	200 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed, and determined in accordance with sections 51KA(1) of the *Environmental Protection Act 1986* (EP Act). The Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) advertised the application for a 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 A), relevant datasets (Appendix E), supporting information including the results of a flora and vegetation survey, the clearing principles set out in Schedule 5 of the EP Act (Appendix B), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

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;

- impacts to conservation significant fauna;
- the loss of native vegetation that is suitable habitat for conservation significant species of the region; and
- potential impacts to riparian vegetation and water flows.

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 can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- avoid clearing within 10 metres of identified Priority flora species;
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- avoid clearing within areas identified as critical habitat for conservation significant fauna of the region; and
- retain cleared vegetation and topsoil and respread this within 12 months of clearing to ensure fauna habitat is not permanently lost.

The Delegated Officer determined that the proposed amendments being sought are not likely to lead to an unacceptable risk to environmental values.

1.5. Site map

A site map of proposed clearing is provided in Figure 1 below.

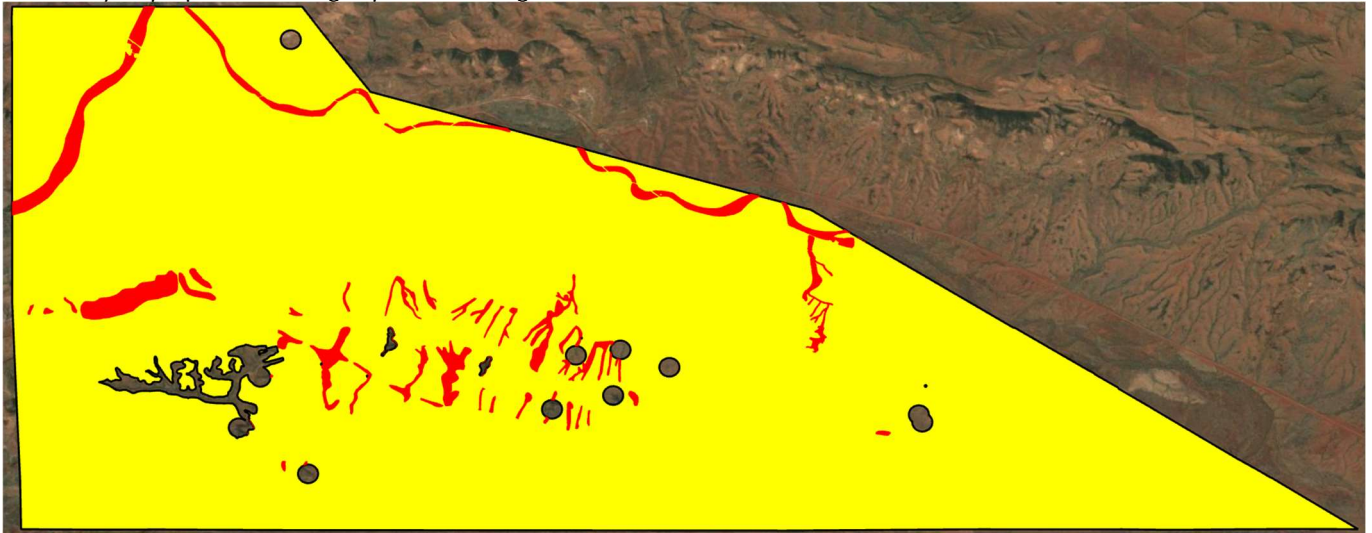


Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit. The red areas indicate where clearing is to only be undertaken for the construction of access tracks.

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)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)
- *Iron Ore (Mount Newman) Agreement Act 1964*, Mineral Lease 244SA (AML 70/244)

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 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- *Guidance for the Assessment of Environmental Factors – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA, 2004)
- *Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- *Technical guidance – Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The Amendment Supporting Document (BHP, 2024) outlines commitments made by the Permit Holder for this application. These commitments are listed below:

- Populations of Priority flora will be avoided by a 10 metre buffer where practicable;
- control of established weed populations will be carried out according to BHP's standard Weed Control and Management Procedures;
- should any active Mulgara burrows be identified they will be avoided using a 10 metre buffer, where practicable;
- active Pebble-mouse mounds will be avoided using a 10 metre buffer, where practicable;
- existing cleared tracks will be used to cross Weeli Wolli Creek;
- where practicable, existing cleared tracks will be used to cross the unnamed non-perennial minor drainage lines. If it is necessary for new crossings to be installed, clearing will be kept to a bare minimum and will be constructed flat level to the surface to maintain the natural surface flow; and
- The permit boundary is being amended to exclude recently identified caves (100 metre buffer) and waterholes (10 metre buffer).

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

A total of 26.92 hectares have been cleared in the amendment application area under the previously granted clearing permits (CPS 3215/1, CPS 3215/2, and CPS 3215/3) (BHP, 2023). In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

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

A review of current environmental information (Appendix A) reveals that the assessment against the clearing principles has not changed significantly from the Clearing Permit Decision Report CPS 3215/1. However, the variance of principles (a) and (b) have been modified to represent the presence of conservation significant flora, fauna, and fauna habitats in the amendment application area. Principle (c) has changed because the flora species *Lepidium catapycnon* is no longer listed as a Threatened flora species (mentioned in the Decision Report for CPS 3215/3).

3.2.1. Biological values (flora) - Clearing Principles (a)

Assessment

There have been ten flora and vegetation surveys across the amendment application area. The most relevant surveys are:

- Jinidi Detailed Flora and Vegetation Survey Interim Report: Dry-season (Biologic, 2024a)
- Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure (Onshore Environmental, 2014); and
- Flora and vegetation Review Jinidi Iron ore Project (Onshore Environmental, 2012).

Twelve Priority flora species have been identified within the amendment application area, the table below shows the potential impacts on these species (BHP, 2024)

Conservation Significant Species	Description	Habitat Relevance	Potential Impact on Species
Priority 2 (DBCA)			
<i>Hibiscus</i> sp. Gurinbiddy Range (M.E. Trudgen MET 15708)	<i>Hibiscus</i> sp. Gurinbiddy Range (M.E. Trudgen MET 15708) is a large diffuse perennial shrub 1.5 to 2.5 m tall. It has creamish brown to rusty brown erect star-shaped hairs densely covering all vegetative parts so as to appear woolly in texture. Flowers are pale mauve with a darker mauve marking at the base (DPaW and Rio Tinto, 2015).	The current distribution of <i>Hibiscus</i> sp. Gurinbiddy Range (M.E. Trudgen MET 15708) is restricted to the southeast Pilbara. The distribution is likely to be wider with additional survey work (Onshore Environmental, 2015). It is known to occur in sheltered/ shaded rocky drainage lines, gullies and gorges, often below associated cliff-lines or rocky ridges of massive ironstone hills and mountain ranges across the southern Pilbara from Newman to Paraburdoo (Rio Tinto & WAH, 2015; WAH, 1998-). There are currently 27 records for this species, each of which has a corresponding specimen held at WAH (WAH, 1998-). This species has been recorded from: <ul style="list-style-type: none"> • nine location within the Amendment Application Area; • one location excluded from the Amendment Application Area; • one location in the local region northeast of the Amendment Application Area; and • six locations in the broader Pilbara ; and • two additional locations within Karijini National Park. 	Low The clearing of the record of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> 1. The preferred habitat for this species rocky drainage lines, gullies and gorges is typically too dangerous to access for exploration activities and therefore unlikely to be disturbed by the proposed activities under this permit; 2. This species is known from within Karijini National Park; and 3. The species is distributed throughout the south-eastern Pilbara region and is considered likely to have a wider distribution.
Priority 3 (DBCA)			
<i>Acacia subtiliformis</i>	A spindly, slender, single-stemmed, erect shrub, growing to 3.5 m in height (WAH, 1998-). The new growth of this species is slightly viscid, resinous, aromatic and produces yellow flowers in June (Maslin, 2018; WAH, 1998-).	<i>Acacia subtiliformis</i> has been recorded in low, undulating country on calcareous rises adjacent to drainage lines and is known only from the Hamersley Range; specifically the Hancock and Ophthalmia Ranges (WAH, 1998-). This species is relatively widely distributed in the Pilbara and has been recorded from: <ul style="list-style-type: none"> • one location within the Amendment Application Area; and • 654 other locations in the Southern Pilbara including: <ul style="list-style-type: none"> ○ a large population (585 records) immediately west of the Amendment Application Area; and ○ one record within Karijini National Park. 	Low The clearing of the single record of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> 1. This species is known from within Karijini National Park; and 2. There is a large population of this species to the west of the Amendment Application Area; and 3. Other populations across the southern Pilbara.
<i>Eremophila naaykensis</i>	An erect, usually dome-shaped, shrub growing to 3.5 m high (Curtis et al., 2022; WAH, 1998-). It has fibrous, grey bark with short "velvety" hairy branchlets, pale grey-green leaves with a shiny silver appearance, and resinous young leaves. It produces white-cream to pale purple flowers typical of the genus from June to October (Curtis et al., 2022; WAH, 1998).	<i>Eremophila naaykensis</i> typically occurs on a variety of rocky ironstone hillslope landforms, often forming a mid to tall shrub layer, particularly in gully / gorge situations (Curtis et al., 2022; WAH, 1998-). There are currently 22 records for this taxon, confined to the Pilbara and Gascoyne regions (WAH, 1998). Its distribution is quite restricted, occurring sporadically from Newman to Paraburdoo, extending north to central Karijini. However, observed frequency of individuals at locations can be extremely common, with numbers often in the hundreds in 50x50 m floristic sample sites. The Biologic (2024a) study recorded this species in rocky gullies, ridges, cliffs and on ironstone hills and summits mainly in the northern and south-western sections of the Survey Area. This species is relatively widely distributed in the Pilbara and has been recorded from: <ul style="list-style-type: none"> • 15 locations within the Amendment Application Area; • four locations the local region and • A further 15 locations across the broader Pilbara region; and • One record in Karijini National Park. 	Low The clearing of any of the records of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> 1. Key habitat for this species (rocky gullies, ridges, cliffs) are typically too dangerous to access for exploration activities and therefore unlikely to be disturbed by the proposed activities under this permit; 2. This species has a wide distribution across the Pilbara; and 3. This species is known from within Karijini National Park.
<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727)	<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727) is an open erect annual or biennial herb that grows up to 0.2 m in height. This species produces yellow flowers between March and September (WAH, 2016).	<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727) occurs in red-brown clay soil with calcrete pebbles on low undulating plains or swampy plains in close proximity to major drainage lines. This species is relatively widely distributed in the southern Pilbara and has been recorded from: <ul style="list-style-type: none"> • 136 locations within the Amendment Application Area • 821 locations adjacent to the Amendment Application Area (to the north and north east); and • A further 63 locations across the Southern Pilbara between Paraburdoo and Mount Cooke. 	Low The clearing of any of the records of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as this species relatively widely distributed in the southern Pilbara.
<i>Grevillea saxicola</i>	<i>Grevillea saxicola</i> is a single stemmed tree or tall shrub with grey-black rough bark up to 7 m in height with cream flowers (Onshore Environmental 2015; DPaW and Rio Tinto, 2015).	Based on WA Herbarium records, <i>Grevillea saxicola</i> appears to be restricted to the southern Pilbara. It typically occurs on orange / brown loam soils on steep breakaway and scree slopes (often with southerly aspect) (Onshore Environmental 2015). This species has been recorded from: <ul style="list-style-type: none"> • 18 locations within the Amendment Application Area; • 29 locations adjacent to the north and north east of the Amendment Application Area; • eight locations within Karijini National Park; and • 59 other locations across the broader region. 	Low While restricted to the southern Pilbara, the clearing of any of the records of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> 1. This species is found across the broader southern Pilbara; and 2. This species is known from within Karijini National Park.

Conservation Significant Species	Description	Habitat Relevance	Potential Impact on Species
<i>Indigofera gilesii</i>	<i>Indigofera gilesii</i> is a shrub growing up to 1.5 m in height. It produces pink or purple flowers between May and August (Onshore Environmental, 2015).	<i>Indigofera gilesii</i> is widely distributed within the southeast Pilbara (west of Newman) and represented in three other bioregions extending east to the Northern Territory border and south to Wiluna. This species is generally found in pebbly loam amongst boulders and outcrops amongst hills. Within and adjacent to the Amendment Application Area this species has been recorded on rocky hill tops and creek lines. This species has been recorded from: <ul style="list-style-type: none"> Five locations within the Amendment Application Area; 12 locations adjacent to the Amendment Application Area (to the northeast); one location within Karijini National Park; and 22 other locations outside of the Amendment Application Area. 	Low The clearing of any of the records of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> This species has a large range (distributed across four bioregions); This species is widely distributed within the southeast Pilbara (west of Newman); and This species is known from within Karijini National Park.
<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794)	<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794) is a shrub or scrambler species growing to a height of 2 to 4 m. Fruit grows in small red drupelets (DPaW and Rio Tinto, 2015).	<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794) occurs in orange to red loam soils on flood plains. The current known distribution is restricted to the Pilbara IBRA region with increasing numbers of populations recorded in recent years between Tom Price and Newman. This species has been recorded from: <ul style="list-style-type: none"> two locations within the Amendment Application Area; 56 locations adjacent to the Amendment Application Area (to the north and east); one location within Karijini National Park; and more than 1,200 locations across the broader region outside of the Amendment Application Area. 	Low The clearing of any of the records of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> This species has been recorded in large numbers across the broader southern Pilbara region outside of the Amendment Application Area; This species is known from within Karijini National Park.
<i>Rostellularia adscendens</i> var. <i>latifolia</i>	<i>Rostellularia adscendens</i> var. <i>latifolia</i> is a low shrub to 0.3 m in height. It has blue-purple-violet flowers in April and May (WAH, 2016).	<i>Rostellularia adscendens</i> var. <i>latifolia</i> grows in ironstone soils in protected areas near watercourses or along shaded rocky ridges, often in dry gullies and gorges (DPaW and Rio Tinto, 2015). At times this species is heavily grazed. While <i>Rostellularia adscendens</i> species is widespread from Africa India and south-East Asia and occurs in all Australian States except Victoria this subspecies is only found in the Pilbara (DPaW and Rio Tinto, 2015). This species has been recorded from: <ul style="list-style-type: none"> 9 locations within the Amendment Application Area; five locations within Karijini National Park; and 239 other locations across the broader region outside of the Amendment Application Area. 	Low The clearing of any of the records of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> This species is widely distributed within the southeast Pilbara (west of Newman). there are five records of this species within Karijini National Park; and This species has been recorded from 239 other locations across the broader region outside of the Amendment Application Area.
<i>Triodia</i> sp. Mt Ella (M.E. Trudgen 12739)	<i>Triodia</i> sp. Mt Ella (M.E. Trudgen 12739) is a diffuse, loose sprawling, rather than rounded perennial hummock grass to 1.5 m wide to 0.4 m in height, which flowers between May and August (DPaW and Rio Tinto, 2015).	<i>Triodia</i> sp. Mt Ella (M.E. Trudgen 12739) occurs amongst rocks and outcrops on hill slopes and gullies on light orange brown pebbly loam (Onshore Environmental, 2015). It has been recorded from the Gascoyne, Little Sandy Desert and Pilbara bioregions (WAH, 2016) and is considered to be geographically restricted and uncommon, but unlikely to be rare (Trudgen, 1998 in Onshore Environmental, 2015). This species has been recorded from: <ul style="list-style-type: none"> Seven 14 locations within the Amendment Application Area; four areas excluded from the Amendment Application Area nine locations adjacent to the Amendment Application Area (to the north and northeast); six locations within Karijini National Park; one location within Karlamilyi National Park; and more than 350 other locations across the southern Pilbara and northern Gascoyne regions. 	Low The clearing of any of the records of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> This species has been recorded in large numbers across the broader southern Pilbara region outside of the Amendment Application Area; This species is known from within Karijini and Karlamilyi National Parks.
Priority 4 (DBCA)			
<i>Acacia bromilowiana</i>	<i>Acacia bromilowiana</i> is a tree / shrub typically growing to 6 m but can reach up to 12 m in favourable areas. It has dark grey fibrous bark with leafstalks that are covered in a grey/blue powdery wax coating. It has yellow/pink flowers between July and August (WAH, 2016).	<i>Acacia bromilowiana</i> occurs on red skeletal stony loam, orange-brown pebbly, gravel loam, laterite, banded ironstone and basalt and is typically found on rocky hills, breakaways, scree slopes, gorges and creek beds of the Southern Pilbara (WAH, 2016). This species has been recorded from: <ul style="list-style-type: none"> one location within the Amendment Application Area; four locations within Karijini National Park; and 59 other locations across the southern Pilbara. 	Low The clearing of a single record of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> There are four records of this species within Karijini National Park; and This species has been recorded from 59 other locations across the broader southern Pilbara outside of the Amendment Application Area.
<i>Eremophila youngii</i> subsp. <i>lepidota</i>	<i>Eremophila youngii</i> subsp. <i>lepidota</i> is a dense, spreading shrub growing from 1 to 3 m high. It has purple-red-pink flowers between January to March or June to September (WAH, 2016).	<i>Eremophila youngii</i> subsp. <i>lepidota</i> occurs on stony red sandy loam and is typically found on flat plains, floodplains, sometimes semi-saline, clay flats (WAH, 2016). This species has been recorded from: <ul style="list-style-type: none"> one location within the Amendment Application Area; and 465 other locations across the southern Pilbara. 	Low The clearing of a single record of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as this species has been recorded from 465 other locations across the broader southern Pilbara outside of the Amendment Application Area

Conservation Significant Species	Description	Habitat Relevance	Potential Impact on Species
<i>Lepidium catapycnon</i>	<i>Lepidium catapycnon</i> is an open, woody perennial herb / shrub growing between 0.2 to 0.3 m high with distinctive zigzag stems with white flowers in October (DPaW and Rio Tinto, 2015).	<i>Lepidium catapycnon</i> occurs on skeletal soils in open woodland in usually hilly areas, more frequently on south facing slopes (DPaW and Rio Tinto, 2015) in the southern Pilbara (WAH, 2016). <i>Lepidium catapycnon</i> has been identified as a pioneer species that responds rapidly to disturbance, especially fire (Onshore Environmental, 2013). The majority of known populations of this species have been recorded in areas that were recently burnt. This species has been recorded from: <ul style="list-style-type: none"> • 341 locations within the Amendment Application Area • 347 locations adjacent to the Amendment Application Area (to the north and north east); • 45 locations within Karijini National Park; and • Over 400 other locations across the southern Pilbara. 	Low The clearing of any of the records of this species (if required) within the Amendment Application Area would not result in any significant impact upon species distribution as: <ol style="list-style-type: none"> 1. This species has been recorded broadly across the southern Pilbara outside of the Amendment Application Area. 2. This species is known from within Karijini National Park; and 3. This species is a disturbance opportunist.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on Priority flora can be managed by taking steps to avoid clearing Priority flora.

Conditions

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

- Priority flora condition to avoid the priority flora species that had been identified in flora and vegetation surveys conducted in the amendment application area including a 10 metre buffer.

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

There have been nine vertebrate fauna surveys across the amendment application area. The most relevant surveys are:

- Jinidi Targeted Vertebrate Fauna Survey (Biologic, 2024b); and
- South Parmelia Level 2 Vertebrate Fauna survey (Biota, 2013).

The surveys undertaken across the amendment application area have resulted in two fauna species of conservation significance being recorded within the amendment application area (Western pebble-mound mouse and Pilbara olive python). One fauna species has been recorded from solely from habitat features which have been excluded from the amendment application area. Based on the occurrence of the habitat types and significant fauna species previously recorded in the vicinity, an additional seven species are considered to potentially occur within the amendment application area. Other species have been recorded within 50 kilometres of the application area. These faunas are listed in Appendix 3.2.2.

An assessment of the potential impact of the proposed clearing on the species of significant fauna that may occur in the application amendment area is provided below.

Northern quoll (*Dasyurus hallucatus*) (Endangered)

There were 12 records of scats within the survey area that were identified as belonging to northern quolls. These records were not located within the amendment application area. However, the Gorge/Gully, Breakaway/Cliff, and Major Drainage Line habitats meet the definition of critical habitat (denning/ foraging habitat within the home range of low rocky hills, gorges, escarpments, ranges, breakaways, boulder fields, major drainage lines) for northern quoll. These habitats also provide critical foraging and dispersal habitat for the species. Potential supporting habitat for the northern quoll occurs in the Hillcrest/ Hillslope, Drainage Area/ Floodplain, and Minor Drainage Line habitats, where proximal to critical habitat (Gorge/ Gully, Breakaway/ Cliff, and Major Drainage Line) (Biologic, 2024b).

In consideration of the overall scarcity and concentration of records, the species is unlikely to be reliant on the habitats within the amendment application area for long-term persistence at a regional scale, however the habitat is considered critical for individual persistence. The proximity to Weeli Wollie creek may support this, as the drainage line may act as a dispersal corridor in the local region to other critical denning and foraging habitat (Biologic, 2024b).

Greater bilby (*Macrotis lagotis*) (Vulnerable)

No evidence of occurrence of greater bilby was recorded within the survey area. Based on the limited number of nearby recent records, and lack of suitable Sand Plain habitat or evidence of species occurrence, the greater bilby is considered unlikely to occur in the amendment application area. Although the species is known to utilise broad habitats occurring within the amendment application area in other parts of its distribution such as Major Drainage Line, Mulga Woodland, and Drainage Area/ Floodplain, these habitats are rarely utilised by the species within the Pilbara region, likely due to the high amount of alluvial material making substrates less suitable for burrowing activity compared to sand-plain habitats (Biologic, 2024b).

Ghost bat (*Macroderma gigas*) (Vulnerable)

Ghost bat was recorded on 18 occasions and 34 caves were identified in the survey area during the current surveys. Nine caves are located in the amendment application area. Three of these caves are considered to be critical habitat for the ghost bat as 2 of these caves have been assessed to be category 2 roost (maternity/diurnal roost caves with regular occupancy) and the other one is a category 3 (diurnal roost caves with occasional occupancy) within a block with a category 2 cave. The remaining six caves are considered to be supporting habitat and have been identified to be category 3 and category 4 (nocturnal roost caves with opportunistic usage) (Biologic, 2024b; Biota, 2013).

Critical foraging and dispersal habitat within the amendment application area is provided by Drainage Area/ Floodplain, Stony Plain, Gorge/ Gully, Hillcrest/ Hillslope, Mulga Woodland, Minor Drainage Line, and Major Drainage Line, when proximal (<12 kilometres) to roosting caves. Records of ghost bat were made in Drainage Area/ Floodplain and Major Drainage Line (via ultrasonic and eDNA records) and indicates foraging and/or dispersal potential where other habitat characteristics are present. Due to the presence of known roosting caves and confirmed records within the amendment application area and surrounds, occurrence of suitable breeding and roosting habitat, and recent records of the species, it is likely to occur as a resident and utilise the above habitats within the amendment application area regularly for foraging (Biologic, 2024b).

Pilbara leaf-nosed bat (*Rhinonictis aurantia*) (Vulnerable)

No calls from Pilbara leaf-nosed bats were recorded by ultrasonic recorders during the current survey. Of the 34 caves occurring within the survey area, none were assessed as likely or potentially suitable as Category 1, 2 or 3 roosts for Pilbara leaf-nosed bats. Eight caves (six Gorge/ Gully; two Hillcrest/ Hillslope) were classified as Category 4 (nocturnal refuge). These caves were located outside the amendment application area. The remaining 26 caves (9 in the amendment application area) were classified as Category 5 (no usage by Pilbara leaf-nosed bats) (Biologic, 2024b).

Currently, no habitat within the amendment application area is considered critical for the Pilbara leaf-nosed bat. Presently, the Gorge/ Gully, Breakaway/ Cliff, and Major Drainage Line habitats provide supporting foraging and dispersal habitat for the species and tend to contain important habitat features such as nocturnal refuges and water features. Other supporting foraging and dispersal habitat for Pilbara leaf-nosed bat within the amendment application area is provided by Hillcrest/ Hillslope, Stony Plain, Drainage Area/ Floodplain, Mulga Woodland (Biologic, 2024b). The proposed clearing is unlikely to have a significant impact on the Pilbara leaf-nosed bat population of the local area.

Night parrot (*Pezoporus occidentalis*) (Endangered)

No evidence of night parrot was recorded at any of the acoustic recorder sampling sites (17 sites). Habitat within the amendment application area was considered suboptimal for the species, particularly due to most areas of *Triodia* grasslands lacking large,

long-unburnt hummocks and the absence of any chenopod shrubland habitat within the amendment application area. It is possible that any night parrots recorded 77 kilometres north and within the known cumulative foraging distance. However, based on the absence of any habitat considered to be of significance to the species, it is considered unlikely to occur within the amendment application area either as a resident or infrequent visitor during foraging and or dispersal (Biologic, 2024b).

Princess parrot (*Polytelis alexandrae*) (Priority 4)

No records or evidence of princess parrot were recorded during the current survey. The amendment application area is outside the modelled distribution for which the species or species habitat is known, likely, or may occur and there is a scarcity of records within the region. Drainage Area/ Floodplain, Major Drainage Line, Mulga Woodland, and Stony Plain habitats within the amendment application area may provide suitable nesting, foraging and dispersal for princess parrot. However overall, the habitats present are unlikely to provide critical nesting/ roosting or foraging habitat for the species in consideration of the lack of previous records and location outside the known distribution, and princess parrot is considered unlikely to occur (Biologic, 2024b).

Grey falcon (*Falco hypoleucos*) (Vulnerable)

No grey falcons were observed during the current surveys. The Major Drainage Line habitat is considered critical habitat for grey falcon. The Drainage Area/ Floodplain and Minor Drainage Line habitats may provide supporting habitat for foraging and dispersal functions, and to a lesser extent, other habitats more broadly; however, the species' occurrence is likely to be dependent on the proximity of nesting. Nesting may occur in Major or Minor Drainage Line habitats where suitable tall trees are present or suitable tall infrastructure such as powerline or transmission towers occurs. Critical habitat within the amendment application area is likely limited to the Major and Minor Drainage Line habitats in Weeli Wolli Creek (Biologic, 2024b).

Pilbara olive python (*Liasis olivaceus* subsp. *barroni*) (Vulnerable)

Evidence of Pilbara olive python was recorded from eight locations across the survey area, from live individuals, scats, and eDNA detection. Two active individuals were observed in cave 'CJIN-037' which is located in the amendment application area. One detection of the species from eDNA sampling was made at Weeli Wolli Creek (Biologic, 2024b). The amendment application area does not contain any permanent water features but there are various long-term and short-term ephemeral water features (Biologic, 2024b; GIS Database). The long-term and short-term temporary ephemeral pools in Gorge/ Gully habitat is considered supporting habitat for this species. Given the number of current and previous records along Weeli Wolli creek, the species is reliant on this feature within the amendment application area for long-term persistence.

Overall, the Gorge/ Gully, Breakaway/ Cliff, and Major Drainage Line habitats provide critical habitat for the Pilbara olive python. Areas of Major Drainage Line, and Minor Drainage Line areas that don't contain permanent or near-permanent water features are classified as supporting habitat, particularly in areas where they connectivity between areas of critical habitat. In addition, Hillcrest/Hillslope and Drainage Area/ Floodplain is considered supporting habitat (Biologic, 2024b).

Great desert skink (*Liopholis kintorei*) (Vulnerable)

The amendment application area is outside the modelled distribution for which the species or species habitat is known or likely to occur. The habitats present in the amendment application area are not considered suitable to support the species due to the absence of sand plain. In consideration of this, the lack of previous records, and location outside the known distribution, great desert skink is considered highly unlikely to occur (Biologic, 2024b; Biota, 2013; GIS Database).

Western pebble-mound mouse (*Pseudomys chapmani*) (Priority 4)

Eighteen pebble-mounds were recorded in the amendment application area. The species is likely to occur as a resident throughout the amendment application area, in Hillcrest/ Hillslope and Stony Plain habitats. The species occurrence within the amendment application area is unlikely to represent an important population and the species is not likely to be reliant upon the amendment application area, or habitat within, for the long-term persistence of the species at a local or regional scale (Biologic, 2024b).

Brush-tailed mulgara (*Dasycercus blythi*) (Priority 4)

Three brush-tailed mulgara burrows (one active and two inactive) were recorded in a sandy area of Drainage Area/Floodplain habitat outside of the amendment application area. These are the first records of this species in the survey area (Biologic, 2024b). The nearest records are from approximately 9.6 kilometres away (GIS Database). The species may occur as a resident in small sections of the survey area (which includes the amendment application area), in Drainage Area/ Floodplain and Stony Plain habitats. The species occurrence within the survey area is unlikely to represent an important population and the species is not likely to be reliant upon the amendment application area, or habitat within, for the long-term persistence of the species at a local or regional scale (Biologic, 2024b).

Other species

The species listed below were identified in the desktop assessment as recorded within the vicinity of the amendment application area, the habitats within the amendment application area are unlikely to be relied upon by any of the species listed for their long-term persistence at a local and/or regional scale (Biologic, 2024b; GIS Database).

- *Anilius ganei* (Gane's blind-snake) (Priority 1);
- *Apus pacificus* (Fork-tailed Swift) (Migratory);
- *Actitis hypoleucos* (Common sandpiper) (Migratory);
- *Elanus scriptus* (Letter-winged kite) (Migratory);
- *Falco peregrinus* (Peregrine Falcon) (Other Specially Protected Fauna);
- *Hydroprogne caspia* (Caspian tern) (Migratory);
- *Pandion haliaetus* (Eastern osprey) (Migratory);
- *Tringa nedularia* (Common greenshank) (Migratory); and
- *Underwoodisaurus seorsus* (Pilbara barking gecko) (Priority 2)

Conclusion

Conservation significant fauna of the region may be impacted by the proposed clearing in the amendment application area. The most significant impact is likely to occur in areas containing critical habitat for the northern quoll, Pilbara olive python, and the grey falcon. Caves identified to be of importance for the ghost bat have been excluded from the amendment application area. For this reason the proposed clearing is unlikely to represent a significant impact on the ghost bat.

The applicant may have notification responsibilities under the EPBC Act for impacts to northern quoll, ghost bat, Pilbara leaf-nosed bat, grey falcon, Pilbara olive python and their habitats, as set out in the EPBC Act. The applicant has been advised to contact the federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) to discuss EPBC Act referral requirements.

Conditions

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

- Undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- Clearing within areas identified to contain critical habitat for conservation significant species will be limited to the construction of access tracks; and
- Retain vegetation and topsoil to utilise in rehabilitation efforts to avoid the permanent loss of fauna habitat.

3.3. Relevant planning instruments and other matters

The clearing permit amendment application was advertised on 2 August 2024 by the Department of Energy, Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WCD2018/008) over the area under application (DPLH, 2024). This claim has been determined by the Federal Court on behalf of the claimant group (Niyiyaparli People). 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 is one registered Aboriginal Sites of Significance within the application area (DPLH, 2024). 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.

The application area is located within the EPA assessment for the BHP Pilbara Expansion Strategic Proposal (Assessment Number: 1934). This proposal is to assess the construction and operation of iron ore mine developments. This proposal is not assessing mineral exploration or other activities proposed for this clearing permit.

It is noted that the proposed clearing may impact on Pilbara olive python, which is a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Climate Change, Environment and Water for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of Climate Change, Energy, the Environment and Water and the Environment for further information regarding notification and referral responsibilities under the EPBC Act.

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. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is surrounded by the landscape and native vegetation of the Pilbara bioregion (GIS Database).
Ecological linkage	Based on aerial imagery, the application area is not located within any formal or informal ecological linkages (GIS Database).
Conservation areas	The application area is not located within any known or mapped conservation areas. The closest record is an ex-pastoral Lease with Department Interest located approximately 34 kilometres west of the application area (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>18: Low woodland, open low woodland or sparse woodland, mulga <i>Acacia aneura</i> and associated species; and</p> <p>82: Low tree-steppe, hummock grassland with scattered bloodwoods & snappy gum <i>Triodia</i> spp., <i>Corymbia dichromophloia</i>, <i>Eucalyptus leucophloia</i> (GIS Database).</p> <p>A consolidation of regional vegetation mapping over the application area was undertaken by Onshore Environmental Consultants Pty Ltd (Onshore). The following vegetation associations were recorded within the application area (Onshore, 2014):</p> <p>Acacia Low Open Forest (HS AcaoAaApr ScaEriIAb TbrTw): Low Open Forest of <i>Acacia catenulata</i> subsp. <i>occidentalis</i>, <i>Acacia aptaneura</i> and <i>Acacia pruinocarpa</i> over Open Shrubland of <i>Scaevola acacioides</i>, <i>Eremophila latrobei</i> subsp. <i>latrobei</i> and <i>Acacia bivenosa</i> over Open Hummock Grassland of <i>Triodia brizoides</i> and <i>Triodia wiseana</i> on red brown clay loam on breakaway scree slopes and steep hill slopes.</p> <p>Acacia Low Open Forest (SP AaApr ErcuColpSop TpTw): Low Open Forest of <i>Acacia aptaneura</i> and <i>Acacia pruinocarpa</i> over with Low Open Shrubland of <i>Eremophila cuneifolia</i>, <i>Corchorus lasiocarpus</i> subsp. <i>parvus</i> and <i>Solanum phlomoides</i> over Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia wiseana</i> on red brown clay loam on stony plains.</p> <p>Eucalyptus Low Open Forest (MA EcrEvEx ApypAtpGoro TtEuaCyp): Low Open Forest of <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i>, <i>Eucalyptus victrix</i> and <i>Eucalyptus xerothermica</i> over High Shrubland of <i>Acacia pyrifolia</i> var. <i>pyrifolia</i>, <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>Gossypium robinsonii</i> over Open Tussock Grassland of <i>Themeda triandra</i>, <i>Eulalia aurea</i> and <i>Cymbopogon procerus</i> on red brown clay loam on major drainage lines.</p> <p>Petalostylis Shrubland (MI PIAtpAm ChEII TwTp): Shrubland of <i>Petalostylis labicheoides</i>, <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>Acacia monticola</i> with Low Open Woodland of <i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over Open Hummock Grassland of <i>Triodia wiseana</i> and <i>Triodia pungens</i> on red brown loam on minor drainage lines.</p> <p>Triodia Hummock Grassland (CP TwTa Ese AbPIApyp): Hummock Grassland of <i>Triodia wiseana</i> and <i>Triodia angusta</i> with Open Mallee of <i>Eucalyptus socialis</i> subsp. <i>eucentrica</i> and Open Shrubland of <i>Acacia bivenosa</i>, <i>Petalostylis labicheoides</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> on light brown clay loam on calcrete plains and rises.</p> <p>Triodia Hummock Grassland (FS Ts CdHc AancAiGrwh): Hummock Grassland of <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of <i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>Hakea chordophylla</i> over Open Shrubland of <i>Acacia ancistrocarpa</i>, <i>Acacia inaequilatera</i> and <i>Grevillea wickhamii</i> subsp. <i>hispidula</i> on red brown sandy loam on footslopes and stony plains.</p> <p>Triodia Hummock Grassland (FS TsTpTw EII AbApaAanc): Hummock Grassland of <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835), <i>Triodia pungens</i> and <i>Triodia wiseana</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and Open Shrubland of <i>Acacia bivenosa</i>, <i>Acacia pachyacra</i> and <i>Acacia ancistrocarpa</i> on red brown loam on footslopes, low undulating hills and stony plains.</p> <p>Triodia Hummock Grassland (HC TpTwTs EIICh AarGooKeve): Hummock Grassland of <i>Triodia pungens</i>, <i>Triodia wiseana</i> and <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> over Low Shrubland of <i>Acacia arida</i>, <i>Gompholobium oreophilum</i> and <i>Seringa elliptica</i> on red brown loam on hill crests and upper hill slopes.</p> <p>Triodia Hummock Grassland (HC Tw Ah EkkEgCh): Hummock Grassland of <i>Triodia wiseana</i> with Shrubland of <i>Acacia hamersleyensis</i> and Open Mallee of <i>Eucalyptus kingsmillii</i> subsp. <i>kingsmillii</i>, <i>Eucalyptus gamophylla</i> and <i>Corymbia hamersleyana</i> (mallee form) on red brown loam and silty loam on hill crests.</p> <p>Triodia Hummock Grassland (HS TwTpTbr EII Ep): Hummock Grassland of <i>Triodia wiseana</i>, <i>Triodia pungens</i> and <i>Triodia brizoides</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over Open Mallee of <i>Eucalyptus pilbarensis</i> on red brown loam on steep hill slopes.</p>

Characteristic	Details
	<p>Triodia Hummock Grassland (ME TpTlo ExAciCh PIAppGoro): Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia longiceps</i> with Low Woodland of <i>Eucalyptus xerothermica</i>, <i>Acacia citrinoviridis</i> and <i>Corymbia hamersleyana</i> over High Shrubland of <i>Petalostylis labicheoides</i>, <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Gossypium robinsonii</i> on red brown clay loam on medium drainage lines and surrounding floodplains.</p> <p>Triodia Hummock Grassland (SP TsTwTp EgEt AbApaApr): Hummock Grassland of <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835), <i>Triodia wiseana</i> and <i>Triodia pungens</i> with Very Open Mallee of <i>Eucalyptus gamophylla</i> and <i>Eucalyptus trivalva</i> over Open Shrubland of <i>Acacia bivenosa</i>, <i>Acacia pachyacra</i> and <i>Acacia pruinoarpa</i> on red brown sandy loam and clay loam on stony plains.</p> <p>Triodia Open Hummock Grassland (SP TpTm AaExAcao ApaErffAads): Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia melvillei</i> with Low Open Woodland of <i>Acacia aptaneura</i>, <i>Eucalyptus xerothermica</i> and <i>Acacia catenulata</i> subsp. <i>occidentalis</i> and Open Shrubland of <i>Acacia pachyacra</i>, <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Acacia adsurgens</i> on red brown clay loam or silty loam on stony plains and floodplains.</p>
Vegetation condition	<p>The vegetation survey (Onshore, 2014) and aerial imagery indicate the vegetation within the proposed clearing area is in Excellent to Completely Degraded (Trudgen, 1991) condition.</p> <p>The full Trudgen (1991) condition rating scale is provided in Appendix C.</p>
Climate and landform	The application area is located in an arid area with an annual average rainfall (Newman) of 321.8 millimetres (BoM, 2024).
Soil description	<p>The soil within the application area is mapped as soil units Fa13 and Fa14 (GIS Database). These soil units are described by Northcote et al. (1960-68) as:</p> <p>Fa13: Ranges of banded jaspilite and chert along with shales, dolomites, and iron ore formations; some areas of ferruginous duricrust as well as occasional narrow winding valley plains and steeply dissected pediments. This unit is largely associated with the Hamersley and Ophthalmia Ranges. The soils are frequently stony and shallow and there are extensive areas without soil cover: chief soils are shallow stony earthy loams.</p> <p>Fa14: Steep hills and steeply dissected pediments on areas of banded jaspilite and chert along with shales, dolomite, and iron ore formations; some narrow winding valley plains: chief soils are shallow stony earthy loams.</p>
Land degradation risk	<p>The application area falls within the Egerton, McKay, Newman, and Platform land systems (DPIRD, 2024). These land systems are described by van Vreeswyk et al. (2004) as:</p> <p>Egerton land system: Dissected hardpan plains supporting mulga shrublands and hard spinifex hummock grasslands. The system is not susceptible to erosion.</p> <p>McKay land system: Hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands. Some areas are poorly accessible and the system is not prone to degradation or soil erosion.</p> <p>Newman land system: Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands. The system is not susceptible to soil erosion.</p> <p>Platform land system: Dissected slopes and raised plains supporting hard spinifex grasslands. The system is not susceptible to erosion.</p>
Waterbodies	The desktop assessment and aerial imagery indicated that several minor, non-perennial watercourses transect the area proposed to be cleared (GIS Database).
Hydrogeography	The application area is located within the Pilbara Groundwater Area which is legislated by the RIWI Act 1914. The mapped groundwater salinity is 500-1000 milligrams per litre total dissolved solids which is described as marginal (GIS Database).
Flora	The flora surveys undertaken recorded nine Priority flora species in the application area (Biologic, 2024a). Three more species had been previously recorded in the application area by previous surveys (Onshore Environmental, 2012).
Ecological communities	The application area falls outside of the mapped boundary of the Weeli Wolli Spring Community (P1) Priority Ecological Community but intersects the buffer of the PEC (GIS Database).
Fauna	The surveys undertaken recorded one Priority fauna species (<i>Pseudomys chapmani</i>) and one Threatened fauna species (<i>Liasis olivaceus</i> subsp. <i>barroni</i>) (Biologic, 2024b).
Fauna habitat	<p>Three targeted fauna surveys were conducted over the application area by Biologic Environmental Survey Pty Ltd (Biologic) during 21-31 March 2023, 11-19 May 2023, and 27 September - 3 October 2023. The following fauna habitats were recorded within the application area (Biologic, 2024b):</p> <p>Calcrete Plain: The Calcrete Plain fauna habitat includes areas where some solid sheets of calcrete were present, but more commonly soils in this habitat were shallow red loams with calcrete rubble. The vegetation occurring differs from that of the surroundings, presumably due to the differences in soil type. Trees are isolated and the shrub layer tends to be sparse, with a low hummock grassland (<i>Triodia</i> sp.) dominant.</p> <p>Stony Plain: Comprises low-lying open plains and the rolling hills below upland areas, with very slight to no gradient. The substrate consists of gravel and pebbles, with vegetation dominated by</p>

Characteristic	Details
	<p><i>Triodia</i> and scattered Mulga, Eucalypt and <i>Acacia</i> trees, with patches of various small to medium shrub species. Critical habitat for the ghost bat is present in this area.</p> <p>Hillcrest/ Hillslope: Comprises a rocky substrate, often with exposed bedrock, on moderate to steep slopes leading into lower footslopes. This habitat was characterised by steep slopes with a high proportion of coarse fragments dominated by ironstone. These can contain cracks and crevices. Instances of Gorge/ Gully is contained within this habitat. This habitat is usually dominated by open <i>Eucalyptus</i> woodlands, <i>Acacia</i> and <i>Grevillea</i> scrublands and <i>Triodia</i> low hummock grasslands. Critical habitat for the ghost bat is present in this area.</p> <p>Breakaway/ Cliff: Comprises single sided rock faces within steep mid-upper slopes with bare rock outcrops or cliffs (not the entire slope). This area contains critical habitat for the northern quoll and Pilbara olive python.</p> <p>Gorge/ Gully: Characterised by rugged, steep-sided valleys incised into the surrounding landscape. Gorges are deeply incised with vertical cliff faces, while gullies are more open (but not as open as Minor Drainage Lines). Caves and rock pools are most often encountered in this habitat type. Vegetation can be dense and complex in areas of soil deposition or sparse and simple where erosion has occurred. This area contains critical habitat for the northern quoll, the Pilbara olive python, and the ghost bat.</p> <p>Drainage Area/ Floodplain: Lower lying plain often subjected to sheet flow following large rainfall events. Vegetation and substrates of this habitat was variable, often comprising scattered <i>Eucalyptus</i> over <i>Acacia</i> and/or <i>Grevillea</i> shrubs with an understory dominated by <i>Triodia</i> hummock grasses and/or mixed tussock grasses on alluvial substrates, often with heavy clays and gravel. Tussock grasses can be dominant within Drainage Area/Floodplain habitat as a result of high rainfall events. This area contains critical habitat for the ghost bat.</p> <p>Minor Drainage Line: Usually lacks a tall dense upper storey, but with a dense mid storey, including sparse <i>Eucalyptus</i> sp., and <i>Acacia</i> sp. over tussock grasses and <i>Triodia</i> sp. hummock grasses. This area contains critical habitat for the ghost bat.</p> <p>Major Drainage Line: Comprises scattered <i>Eucalyptus</i> and <i>Acacias</i>, or mulga woodland, with an understory dominated by tussock grasses. The structure and condition of vegetation often varies seasonally, particularly following rainfall events. Vegetation condition often subject to heavy cattle grazing. This habitat type is prone to pooling and ponding in areas. Also supports the Weeli Wollie PEC, which has groundwater dependent vegetation species including silver cadjeput (<i>Melaleuca argentea</i>). Critical habitat for the northern quoll, ghost bat, Pilbara olive python, and the grey falcon is present in the area.</p> <p>Mulga Woodland: Comprises stands of mulga (<i>Acacia aneura</i>) over clay or stony substrates. Differs from other plains by having a monoculture of mulga compared to a diversity of other <i>Acacia</i> species. This area contains critical habitat for the ghost bat.</p> <p>Representative photos are available in Appendix D.</p>

A.2. Flora analysis table

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

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (in application area)	Western Australian Herbarium records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia bromilowiana</i>	P4	Y	0 km	1 location	30	Y
<i>Acacia effusa</i>	P3	Y	41.6 km	0	33	Y
<i>Acacia subtiliformis</i>	P3	Y	0 km	1 location	24	Y
<i>Amaranthus centralis</i>	P3	N	28.8 km	0	7	Y
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	Y	1.6 km	0	48	Y
<i>Aristida lazaridis</i>	P2	Y	1.09 km	0	28	Y
<i>Calotis squamigera</i>	P1	Y	42.25 km	0	5	Y
<i>Cladium procerum</i>	P2	Y	15 km	0	15	Y
<i>Dampiera metallorum</i>	P3	Y	17.8 km	0	22	Y
<i>Dolichocarpa</i> sp. Hamersley Station	P3	N	42.7 km	0	38	N
<i>Eragrostis</i> sp. Mt Robinson	P2	Y	14.3 km	0	8	Y
<i>Eremophila magnifica</i> subsp. <i>magnifica</i>	P4	Y	6.5 km	0	46	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (in application area)	Western Australian Herbarium records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Eremophila magnifica</i> subsp. <i>velutina</i>	P3	Y	41.8 km	0	22	Y
<i>Eremophila naaykensis</i>	P3	Y	0 km	15 locations	22	Y
<i>Eremophila rigida</i>	P3	N	47.7 km	0	10	N
<i>Eremophila</i> sp. West Angelas	P2	N	18.5 km	0	8	N
<i>Eremophila youngii</i> subsp. <i>lepidota</i>	P4	Y	0 km	1 location	49	Y
<i>Euphorbia australis</i> var. <i>glabra</i>	P3	N	45.6 km	0	23	Y
<i>Fimbristylis sieberiana</i>	P3	Y	12.4 km	0	29	Y
<i>Glycine falcata</i>	P3	N	47.75 km	0	14	Y
<i>Goodenia lyrata</i>	P3	N	34.2 km	0	19	Y
<i>Goodenia</i> sp. East Pilbara	P3	Y	0 km	136 locations	53	Y
<i>Grevillea saxicola</i>	P3	Y	0 km	18 locations	40	Y
<i>Gymnanthera cunninghamii</i>	P3	Y	12.4 km	0	43	Y
<i>Hibiscus</i> sp. Gurinbiddy Range	P2	Y	0 km	9 locations	38	Y
<i>Indigofera gilesii</i>	P3	Y	0 km	5 locations	40	Y
<i>Ipomoea racemigera</i>	P2	Y	35.4 km	0	18	Y
<i>Isotropis parviflora</i>	P3	Y	12.25 km	0	34	Y
<i>Kohautia australiensis</i>	P2	N	47.5 km	0	9	N
<i>Lepidium catapycnon</i>	P4	Y	0 km	341 locations	39	Y
<i>Oxalis</i> sp. Pilbara	P2	Y	9.2 km	0	16	Y
<i>Paranotis</i> sp. Pilbara	P1	N	20.6 km	0	7	Y
<i>Pilbara trudgenii</i>	P3	Y	26.4 km	0	12	Y
<i>Ptilotus mollis</i>	P4	Y	7.25 km	0	45	Y
<i>Rhagodia</i> sp. Hamersley	P3	Y	0 km	2 locations	75	Y
<i>Rhynchosia bungarensis</i>	P4	Y	44.2 km	0	106	Y
<i>Rostellularia adscendens</i> var. <i>latifolia</i>	P3	Y	0 km	9 locations	48	Y
<i>Sida</i> sp. Barlee Range	P4	Y	10.6 km	0	60	Y
<i>Solanum kentrocaule</i>	P3	N	28.3 km	0	22	N
<i>Streptoglossa</i> sp. Cracking clays	P3	N	31.8 km	0	13	Y
<i>Stylidium weeliwollii</i>	P3	Y	1.6 km	0	29	Y
<i>Synostemon hamersleyensis</i>	EN	N	37.2 km	0	35	Y
<i>Themeda</i> sp. Hamersley Station	P3	N	10.2 km	0	60	Y
<i>Triodia basitricha</i>	P3	Y	31.4 km	0	43	N
<i>Triodia karjini</i>	P2	N	26.9 km	0	14	N
<i>Triodia</i> sp. Mt Ella	P3	Y	0 km	14 locations	40	Y
<i>Vittadinia</i> sp. Coondewanna Flats	P3	N	11.9 km	0	26	N

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

(BHP, 2024; Biologic, 2024a; Onshore Environmental, 2012, 2014; Western Australian Herbarium; 1998-; GIS Database)

A.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (in application area)	Are surveys adequate to identify? [Y, N, N/A]
Brush-tailed mulgara (<i>Dasyercus blythi</i>)	P4	Y	9.6 km	0	Y
Caspian tern (<i>Hydroprogne caspia</i>)	MI	N	14.8 km	0	Y
Common greenshank (<i>Tringa nebularia</i>)	MI	N	39.6 km	0	Y
Common sandpiper (<i>Actitis hypoleucos</i>)	MI	N	34.6 km	0	Y
Eastern osprey (<i>Pandion haliaetus</i>)	MI	N	38.2 km	0	Y
Fork-tailed swift (<i>Apus pacificus</i>)	MI	Y	11.7 km	0	Y
Gane's blind snake (Pilbara) (<i>Anilius ganei</i>)	P1	Y	2.3 km	0	Y
Ghost bat (<i>Macroderma gigas</i>)	VU	Y	0.1 km	9*	Y
Great desert skink (<i>Liopholis kintorei</i>)	VU	N	>120km	0	Y
Greater bilby (<i>Macrotis lagotis</i>)	VU	N	8.3 km	0	Y
Grey falcon (<i>Falco hypoleucos</i>)	VU	Y	25.3 km	0	Y
Letter-winged kite (<i>Elanus scriptus</i>)	P4	Y	25.9 km	0	Y
Night parrot (<i>Pezoporus occidentalis</i>)	CR	N	>50 km	0	Y
Northern quoll (<i>Dasyurus hallucatus</i>)	EN	Y	5.9 km	0	Y
Pebble-mound mouse (<i>Pseudomys chapmani</i>)	P4	Y	0 km	15	Y
Peregrine falcon (<i>Falco peregrinus</i>)	OS	Y	24.4 km	0	Y
Pilbara barking gecko (<i>Underwoodisaurus seorsus</i>)	P2	Y	12.5 km	0	Y
Pilbara olive python (<i>Liasis olivaceus</i> subsp. <i>barroni</i>)	VU	Y	0 km	2**	Y
Pilbara leaf-nosed bat (<i>Rhinonictis aurantius</i>)	VU	Y	30.6 km	0	Y
Princess parrot (<i>Polytelis alexandrae</i>)	P4	Y	49.4 km	0	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, MI: migratory, OS: specially protected

*The ghost bats have been recorded solely from habitat features excluded from the amendment application area.

** One record is located in a habitat feature excluded from the amendment application area.

(BHP, 2024; Biologic, 2024b; Biota, 2013; GIS Database)

A.4. Ecological community analysis table

Community name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Weeli Wolli Spring Community	P1	N	1.5 km	2	Y

(BHP, 2024; GIS Database)

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): "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains several Priority flora species in the application area (Biologic, 2024a; Onshore Environmental, 2012). Two conservation significant fauna species were recorded in the application area (Biologic, 2024b).</p>	<p>At variance</p> <p>(changed from CPS 3215/3)</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>None of the vegetation associations or landforms identified within the boundary of the Amendment Application Area are associated with a TEC or PEC (Onshore Environmental, 2014).</p> <p>Seven introduced flora species have been recorded within the amendment application area. None of these species are declared pests (BHP, 2024). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.</p>		
<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 critical and supporting habitat for conservation significant fauna species of the region (Biologic, 2024b).</p>	<p>At variance</p> <p>(changed from CPS 3215/3)</p>	<p>Yes</p> <p>Refer to Section 3.2.2, above.</p>
<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 were no records of Threatened flora species in the application area (BHP, 2024; Biologic 2024a; Onshore Environmental, 2012; GIS Database). Flora species <i>Lepidium catapycnon</i> was previously listed as a Threatened species but has since been relisted as a Priority 4 species.</p>	<p>Not likely to be at variance</p> <p>(changed from CPS 3215/3)</p>	<p>No</p>
<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>None of the vegetation associations or landforms identified within the boundary of the Amendment Application Area are associated with a TEC or PEC (Onshore Environmental, 2014).</p>	<p>Not likely to be at variance</p> <p>(as per CPS 3215/3)</p>	<p>No</p>
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 application area falls within the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (GIS Database). Over 99 per cent of the pre-European vegetation still exists in the Pilbara Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 18 and 82 (GIS Database). These vegetation associations have not been extensively cleared as over 99 per cent of the pre-European extent of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2019).</p>	<p>Not at variance</p> <p>(as per CPS 3215/3)</p>	<p>No</p>
<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>Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of any known or mapped conservation areas.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 3215/3)</p>	<p>No</p>
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>Given a major water course (Weeli Wollie Creek) and several drainage lines are present in the application area (GIS Database), the proposed clearing is likely to impact vegetation growing in, or in association with, an environment associated with a watercourse or wetland.</p>	<p>At variance</p> <p>(as per CPS 3215/3)</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (g):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</p> <p><u>Assessment:</u></p> <p>The soils and land systems are not susceptible to erosion (van Vreeswyk et al., 2004). Noting the location of the application area, the proposed clearing is not likely to cause appreciable land degradation.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 3215/3)</p>	No
<p><u>Principle (i):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</p> <p><u>Assessment:</u></p> <p>Given no permanent watercourses, wetlands, or Public Drinking Water Source Areas are recorded within the application area (GIS Database), the proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 3215/3)</p>	No
<p><u>Principle (j):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</p> <p><u>Assessment:</u></p> <p>Given no permanent watercourses or wetlands are recorded within the application area (GIS Database), the proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 3215/3)</p>	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. Photos of habitat types in the amendment application area

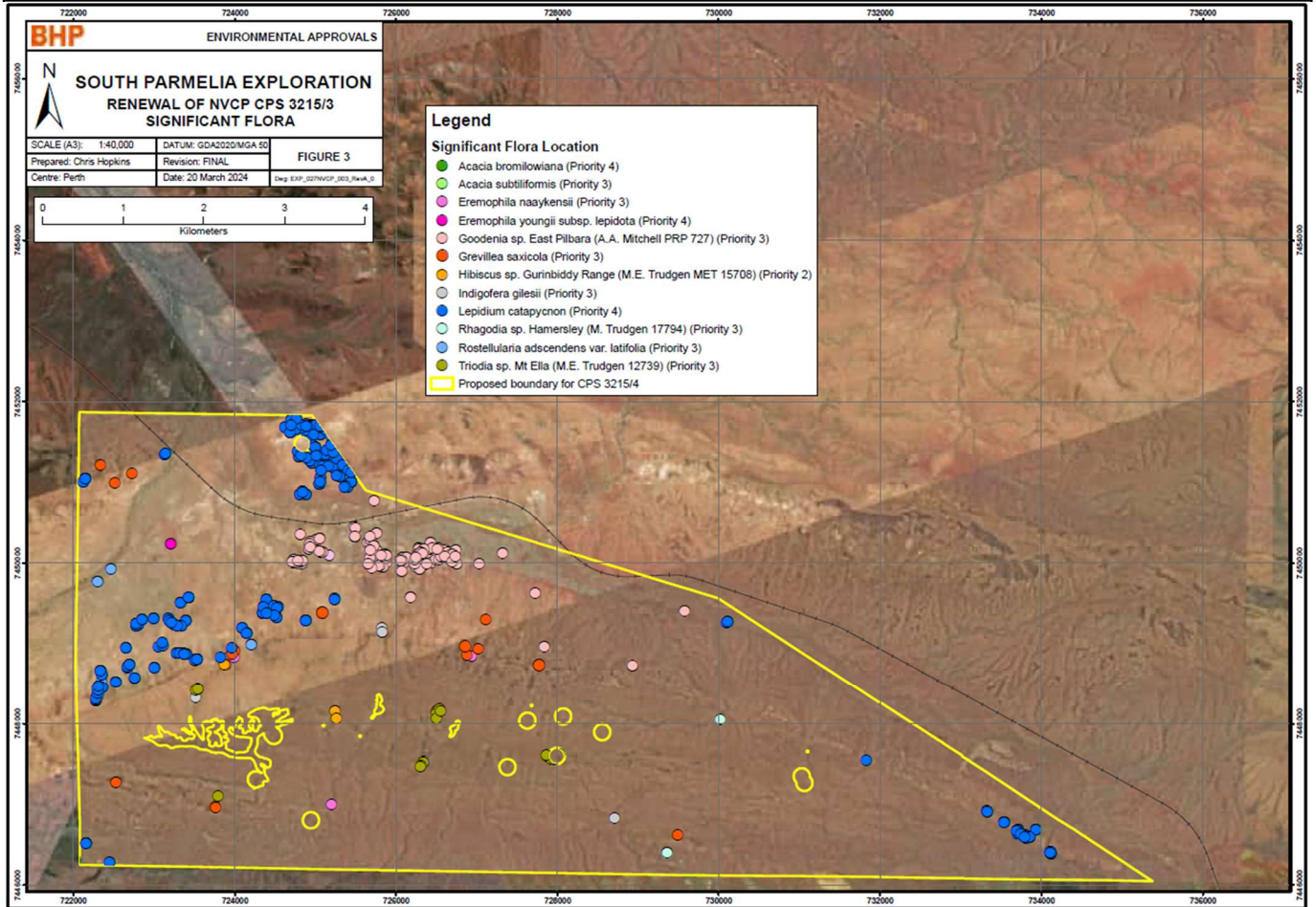


Figure 1. Priority flora species in the amendment application area.



Figure 2. Hillcrest/Hillslope habitat



Figure 3. Drainage Area/Floodplain habitat



Figure 4. Stony Plain habitat



Figure 5. Mulga Woodland habitat



Figure 6. Gorge/Gully habitat



Figure 7. Minor Drainage Line habitat



Figure 8. Major Drainage Line habitat



Figure 9. Calcrete Plain habitat



Figure 10. Breakaway/Cliff habitat

Appendix E. Sources of information

E.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- 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
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- 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

- BHP (2023) BHP Iron Ore Annual Environmental Report. Unpublished report prepared for DEMIRS, September, 2023.
- BHP (2024) Application to Amend NVCP CPS 3215/3 South Parmelia Exploration - Native Vegetation Clearing Permit Amendment Application Supporting Document, May 2024.
- Biologic Environmental Survey Pty Ltd (Biologic) (2024a) Jinidi Detailed Flora and Vegetation Survey Interim Report: Dry-season. Technical Memorandum to BHP Western Australia Iron Ore Pty Ltd, January 2024.
- Biologic Environmental Survey Pty Ltd (Biologic) (2024b) Jinidi Targeted Vertebrate Fauna Survey. Report to BHP WAIO, May 2024.
- Biota Environmental Sciences (Biota) (2013) South Parmelia Level 2 Vertebrate Fauna Survey. Report prepared for BHP Billiton Iron Ore Pty Ltd, April 2013.
- Bureau of Meteorology (BoM) (2024) Bureau of Meteorology Website – Climate Data Online, Newman Aero. Bureau of Meteorology. <https://reg.bom.gov.au/climate/data/> (Accessed 05 August 2024).
- Department of Environment Regulation (DER) (2014) *A guide to the assessment of applications to clear native vegetation*. Perth. 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) (2024) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 2 August 2024).
- Department of Primary Industries and Regional Development (DPIRD) (2024) NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia.

<https://dpird.maps.arcgis.com/apps/webappviewer/index.html?id=662e8cbf2def492381fc915aaf3c6a0f> (Accessed 2 October 2024).

- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.pdf
- Environmental Protection Authority (EPA) (2004) Guidance for the Assessment of Environmental Factors - Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia, No. 51, June 2004.
- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. 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) (2020) Technical Guidance – Terrestrial Fauna Surveys. https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- 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.
- Onshore Environmental Consultants Pty Ltd (Onshore Environmental) (2012) Flora and Vegetation Review – Jinidi Iron Ore Project. Report prepared for BHP Billiton Iron Ore Pty Ltd, May 2012.
- Onshore Environmental Consultants Pty Ltd (Onshore Environmental) (2014) Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure.
- 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.
- Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) An inventory and condition survey of the Pilbara Region, Western Australia. Technical Bulletin No. 92. Department of Agriculture, South Perth, Western Australia.
- Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 23 October 2024).

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)
DCCEEW	Department of Climate Change, Energy, the Environment and Water, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia (now DEMIRS)
DMP	Department of Mines and Petroleum, Western Australia (now DEMIRS)
DoEE	Department of the Environment and Energy (now DCCEEW)
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 (2023) 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 the species of fauna that are listed as critically endangered, endangered or vulnerable threatened species.

Threatened flora is the species of flora that are listed as critically endangered, endangered or vulnerable threatened species.

The assessment of the conservation status of threatened species is in accordance with the BC Act listing criteria and the requirements of [Ministerial Guideline Number 1](#) and [Ministerial Guideline Number 2](#) that adopts the use of the International Union for Conservation of Nature (IUCN) [Red List of Threatened Species Categories and Criteria](#), and is based on the national distribution of the species.

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.

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.

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.

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).

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.

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).

Migratory species include birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) or 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.

CD Species of special conservation interest (conservation dependent fauna)

Species of special conservation need that are 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).

Currently only fauna are listed as species of special conservation interest.

OS Other specially protected species

Species 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).

Currently only fauna are listed as species otherwise in need of special protection.

P Priority species:

Priority is not a listing category under the BC Act. The Priority Flora and Fauna lists are maintained by the department and are published on the department's website.

All fauna and flora are protected in WA following the provisions in Part 10 of the BC Act. The protection applies even when a species is not listed as threatened or specially protected, and regardless of land tenure (State managed land (Crown land), private land, or Commonwealth land).

Species that may possibly be threatened species that do not meet the criteria for listing under the BC Act because of insufficient survey 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 prioritisation for survey and evaluation of conservation status so that consideration can be given to potential listing as threatened.

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

Assessment of priority status 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 – known from few locations, none on conservation lands

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, for example, 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 for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.

P2 Priority Two - Poorly-known species – known from few locations, some on conservation lands

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, for example, 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 for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.

P3 Priority Three - Poorly-known species – known from several locations

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. These species need 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 a conservation dependent specially protected species.

(c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

(d) Other species in need of monitoring.

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.