Department of Energy, Mines, Industry Regulation and Safety

GOVERNMENT OF WESTERN AUSTRALIA

Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	10646/1
Permit type:	Purpose Permit
Applicant name:	Robe River Mining Company Pty Ltd
Application received:	15 May 2024
Application area:	180 hectares
Purpose of clearing:	Mineral exploration, hydrogeological and geotechnical investigations, and associated activities
Method of clearing:	Mechanical Removal
Tenure:	*Iron Ore (Robe River) Agreement Act 1964*, Mineral Lease 248SA (ML248SA)
	General Purpose Leases 47/1235 and 47/1236
	Miscellaneous Licences 47/50 and 47/63
Location (LGA areas):	Shire of Ashburton and Shire of East Pilbara
Colloquial name:	West Angelas Project

1.2. Description of clearing activities

Robe River Mining Company Pty Ltd proposes to clear up to 180 hectares of native vegetation within a boundary of approximately 6,698 hectares, for the purpose of mineral exploration, hydrogeological and geotechnical investigations, and associated activities (Robe River, 2024). The project is located approximately 85 kilometres west of Newman, within the Shire of Ashburton and the Shire of East Pilbara (GIS Database).

The application is to allow for undertaking works including resource and hydrogeological drilling, geotechnical drilling and test pitting, fauna/flora monitoring access, groundater/hydrogeological monitoring access, infrastructure access, Aboriginal Heritage survey/access, infrastructure corridor maintenance and associated activities across the application area (Robe River, 2024).

In 2015, Rio Tinto Iron Ore submitted a regional purpose permit application requesting the amalgamation of several previous Native Vegetation Clearing Permits (NVCP) into one larger permit, covering current and future clearing areas of the West Angelas mining area, CPS 6545/1. All clearing for that permit has been completed and this permit will replace CPS 6545/1.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	29 November 2024
Decision area:	180 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed, and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of 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 D), supporting information provided by the applicant including the results of a flora and vegetation survey (SLR, 2024), 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 a priorty ecological community;
- impacts to riparian vegetation;
- potential impacts to conservation significant fauna;

- potential land degradation in the form of erosion.

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;
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- commence construction no later than three months after undertaking clearing to reduce the risk of erosion;
- restrict the clearing within vegetation type P15 (Priority Ecological Community);
- limited clearing of Priority Flora species *Indigofera gilesii*, *Sida* sp. Hamersley Range, *Triodia* sp. Mt Ella, *Acacia bromilowiana, Acacia bromilowiana* and *Sida* sp. Barlee Range;
- restricted clearing within gorge/gully and drainage habitats;
- 50 metre exclusion area around ghost bat caves;
- 50 metre exclusion area around semi-permanent pool;
- 50 metre exclusion area from Karijini National Park;
- avoid riparian vegetation and maintain surface water flow; and
- retain cleared vegetation and topsoil and respread this on a cleared area of equivalent size within the adjacent existing gravel extraction area within 12 months of clearing to ensure fauna habitat is not permanently lost.

1.5. Site map

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

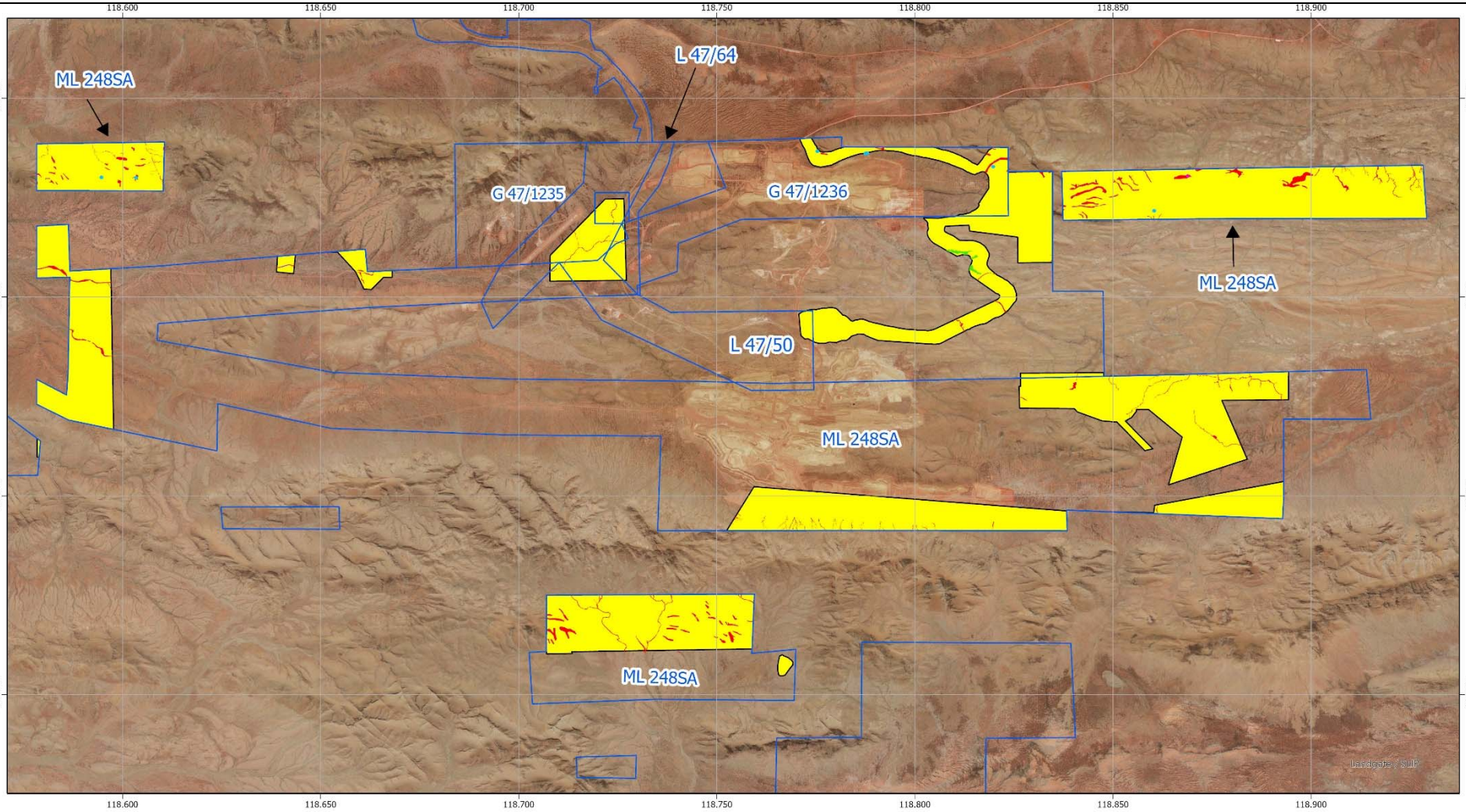

Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit.

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 (Robe River) Agreement Act 1964*

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)
- 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

Robe River (Rio Tinto, 2024) have outlined they maintain the following internal databases, and avoidance and mitigation measures:

- Exploration works are managed under Rio Tinto's Approvals Request Co-ordination System (ARCS). Significant biological and environmental features are spatially identified in ARCS with appropriate buffers.
- No new exploration or associated works will be conducted within the potentially conservation significant vegetation unit P15 as identified in SLR (2024). An additional 50 metre buffer will be applied to this vegetation unit in ARCS to further reduce the risk of potential indirect and inadvertent impacts to this vegetation unit with affinities to the Priority Ecological Community.
- All known location of Priority 2 flora species within the application area will be avoided and a 30 metre buffer will be applied.
- A 50 metre exclusion zone will be applied around the semi-permanent pool where the Pilbara Olive Python was recorded.
- Western Pebble Mouse Mounds have been identified through multiple surveys across the application area, a 25 metre exclusion zone will be applied where practicable.
- All seven known Category 3 and 4 caves will be avoided. A minimum 50 metre exclusion area will be applied to these known caves in ARCS to avoid potential indirect and inadvertent impacts from exploration works on the Ghost Bat. Existing cleared areas may be accessed and maintained, as necessary, where the activity type would not cause any significant disturbance to Ghost Bat.
- A 50 metre buffer will be applied to the boundary of Karijini National Park to ensure no clearing in conducted within the National Park nor indirect impacts.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

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

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

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

Assessment

A flora, vegetation, and terrestrial vertebrate fauna desktop assessment of the proposed clearing area, consolidating all previous surveys undertaken within the application area, was submitted in support of this clearing permit application (SLR, 2024). A total of 62 significant flora species were identified as occurring within 50 kilometres of the application area, 24 have the potential to occur within the application area and the following 19 conservation significant flora species were identified as occurring within the application area (SLR, 2024):

Taxa	Number within Application Area	Number in RTIO database (within 20km of application area) (% within Application Area)	Number in RTIO regional database (% within Application Area)
Priority 2			
Aristida lazaridis	291	13,864 (2.1)	23,159 (1.26)
Eremophila pusilliflora	9	10,723 (0.08)	11,897 (0.08)
Hibiscus sp. Gurinbiddy Range (M.E. Trudgen MET 15708)	145	7,500 (1.9)	9,541 (1.52)
Priority 3			
Acacia effusa	220	5,444 (4.04)	12,959 (1.7)
Acacia subtiliformis	101	2,219 (4.5)	223,170 (0.05)
Aristida jerichoensis var. *subspinulifera*	294	7,669 (3.8)	16,248 (1.81)
Eremophila naaykensii	1	23,132 (0.00)	29,506 (0.00)
Indigofera gilesii	1,030	3,277 (31.4)	12,216 (8.43)
Isotropis parviflora	70	4,933 (1.4)	6,648 (1.05)
Rhagodia sp. Hamersley (M. Trudgen 17794)	67	9,718 (0.7)	107,318 (0.06)
Rostellularia adscendens var. *latifolia*	7	373 (1.9)	5,467 (0.13)
Sida sp. Hamersley Range (K. Newbey 10692)	2	2 (100)	5,658 (0.04)
Solanum kentrocaule	44	3,452 (1.3)	4,405 (1)
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	440	6,471 (6.8)	165,661 (0.27)
Triodia sp. Mt Ella (M.E. Trudgen 12739)	24,243	240,097 (10.1)	295,176 (8.21)
Priority 4			
Acacia bromilowiana	135	1,166 (11.6)	4,548 (2.97)
Eremophila magnifica subsp. *magnifica*	7	694 (1)	11,536 (0.06)
Lepidium catapycnon	104	2,746 (3.8)	33,364 (0.31)
Sida sp. Barlee Range (S. van Leeuwen 1642)	238	430 (55.3)	12,160 (1.96)

Of these, potential impacts to the following six Priority flora species are considered to be of greatest significance:

- *Indigofera gilesii*
- *Sida* sp. Hamersley Range (K. Newbey 10692)
- *Themeda* sp. Hamersley Station (M.E. Trudgen 11431)
- *Triodia* sp. Mt Ella (M.E. Trudgen 12739)
- *Acacia bromilowiana*
- *Sida* sp. Barlee Range (S. van Leeuwen 1642)

The Permit Holder has committed to avoiding Priority flora where practicable, and has determined the least amount of impact to the aforementioned six Priority flora species:

Taxa	Number within Application Area to be impacted	Number in RTIO database (within 20km of application area) (% within Application Area)	Number in RTIO regional database (% within Application Area)
Priority 3			
Indigofera gilesii	250	3,277 (7.6)	12,216 (2)
Sida sp. Hamersley Range (K. Newbey 10692)	0	2 (0)	5,658 (0)
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	150	6,471 (2.3)	165,661 (0.09)
Triodia sp. Mt Ella (M.E. Trudgen 12739)	8,500	240,097 (3.5)	295,176 (2.9)
Priority 4			
Acacia bromilowiana	35	1,166 (3)	4,548 (0.8)
Sida sp. Barlee Range (S. van Leeuwen 1642)	40	430 (9.3)	12,160 (0.3)

The Permit Holder has committed to limiting the footprint to avoid Priority flora where practicable and the proposed number of individuals to be impacted will be conditioned on the permit. Given this condition is put in place, the proposed clearing is not considered to significantly impact to these flora species as there is suitable habitat within the surrounding environment and additional populations within the bioregion (Western Australian Herbarium, 1998-).

The proponent has committed to avoid all known locations of Priority 2 flora, including a 30 metre buffer to reduce the risk of potential direct and indirect impacts from new exploration works on these Priority 2 flora species.

Several species of priority flora from the flora analysis table (Appendix A.3) have been identified to potentially occur within the application area (SLR, 2024). Many of the conservation significant flora that occur within the local surrounds are restricted to specific landforms such as major drainage, cracking clay or deeply incised gullies (SLR, 2024). These habitats occur within parts of the application area, potential impacts may be managed through conditioning the clearing within these habitats.

A total of 13 introduced flora species were recorded from within the application area (SLR, 2024). None of these species are listed as Weeds of National Significance or declared pest plants in Western Australia under the *Biosecurity and Agriculture Management Act 2007*, however weeds have potential to out-compete native flora and reduce biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Thirty-nine vegetation types across four broad landforms were identified within the application area (SLR, 2024). Of these 39 vegetation types:

- Nine were represented by the Drainages landform.
- 13 were represented by the Hills landform.
- Two were represented by the Gorges and Gullies landform; and
- 15 were represented by the Plains landform.

No State or Commonwealth listed Threatened Ecological Communities (TECs) were identified within the application area (SLR, 2024). The buffer zones of one State listed Priority Ecological Community (PEC), West Angelas Cracking-Clays (Priority 1), intersect the application area (GIS Database). This PEC occurs throughout the West Angelas area, and is described as: 'open tussock grasslands of *Astrebla pectinata, A. elymoides, Aristida latifolia*, in combination with low scattered shrubs of *Sida fibulifera*, on basalt (Jerrinah formation) derived cracking-clay loam depressions and flowlines (SLR, 2024). The P15 vegetation present within the application area is considered to be analogous with West Angelas Cracking-Clays (Priority 1) PEC (SLR, 2024). A total of 7.19 hectares of this PEC was recorded within the application area (SLR, 2024). The proponent has committed to ensure no new exploration or associated works will be conducted within vegetation unit P15 and an additional 50 metre buffer will be applied to this vegetation unit, however areas of existing disturbance, such as existing tracks and service corridors, will continue to be accessed and maintained where necessary.

One vegetation type (D2) was considered to have a restricted distribution due to its association with a major drainage line (SLR, 2024). It represents a potential Ground Dependent Ecosystem (GDE), dominated by *Eucalyptus victrix* (SLR, 2024). No other vegetation types recorded within the application area were considered to represent restricted distribution (SLR, 2024). Impacts to this GDE may be managed by implementing a restricted clearing condition only permitting clearing within major drainage lines for the purpose of access tracks.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on conservation significant flora and vegetation can be managed by avoiding and minimising disturbance by taking steps to minimise the risk or the introduction and spread of weeds, restricting the clearing within the potential PEC and limiting clearing within major drainage lines.

Conditions

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- restricting the clearing within major drainage lines for access tracks only;
- not permitting any further clearing vegetation P15; and
- limiting the clearing of any individuals of *Indigofera gilesii*, *Sida* sp. Hamersley Range (K. Newbey 10692), *Triodia* sp. Mt Ella (M.E. Trudgen 12739), *Acacia bromilowiana, Acacia bromilowiana* and *Sida* sp. Barlee Range (S. van Leeuwen 1642).

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

Assessment

The flora, vegetation, and terrestrial vertebrate fauna desktop assessment of the proposed clearing area, which consolidating all previous surveys undertaken within the application area, identified 30 conservation significant fauna species as potentially occurring within the application area (SLR, 2024).

Five had been previously recorded within the Application Area:

- Ghost Bat (*Macroderma gigas*), listed as Vulnerable under the BC Act and EPBC Act
- Pilbara Olive Python (*Liasis olivaceus barroni*), listed as Vulnerable under the BC Act and EPBC Act
- Gane's Blind Snake (*Anilios ganei*), listed as P1 by DBCA
- Pilbara Barking Gecko (*Underwoodisaurus seorsus*), listed as P2 by DBCA
- Western Pebble-mound Mouse (*Pseudomys chapmani*), listed as P4 by DBCA

Three species have a high likelihood of occurrence within the Application Area:

- Northern Quoll (*Dasyurus hallucatus*) listed as Endangered under the BC Act and EPBC Act
- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*), listed as Vulnerable under the BC Act and EPBC Act

- Fork-tailed Swift (*Apus pacificus*), listed as Migratory and Marine under the EPBC Act and as Migratory under the BC Act and

Four species have a medium likelihood of occurrence within the Application Area:
- Grey Falcon (*Falco hypoleucos*), listed as Vulnerable under the BC Act and EPBC Act
- Peregrine Falcon (*Falco peregrinus*), listed as Other Specially Protected under the BC Act
- Unpatterned Robust Slider (*Lerista macropisthopus remota*), listed as P2 by DBCA
- Pilbara Grasswren (*Amytornis whitei whitei*), listed as P4 by DBCA (as *A. striatus striatus*).

A further 18 species were assessed as having a low likelihood of occurrence within the Application Area.

Six broad fauna habitats were mapped within the application area:
- Mulga Woodland – 3.52%
- Rocky Hill – 45.12%
- Gorge/Gully – 1.4%
- Low Hills and Slopes – 31.01%
- Major Drainage – 1%
- Clay Plain – 0.01%

Reptiles
The Pilbara olive python is a subspecies of olive python that is endemic to the Pilbara and northern Gascoyne regions (Smith, 1981; Pearson, 1993; *Storr et al*., 2002). Common habitat characteristics for this species is rocky gorges, gullies, and permanent waterholes (Rayner *et al.,* 2016). During warmer months, Pilbara olive python is typically encountered in riparian vegetation where they utilise water bodies to hunt and ambush prey from a submerged position, while other times of the year they are generally found in rocky habitats (DEWHA, 2008). The Pilbara Olive Python has been recorded from one location within the application area, within a semi-permanent pool (Rio Tinto, 2024). The Permit Holder has committed to avoiding clearing within 50 metres of the semi-permanent pool (Rio Tinto, 2024). Potential impacts to suitable habitat may be managed by implementing a restricted clearing condition to limit the clearing within gorge/gully habitats and a watercourse management condition to avoid riparian vegetation.

The Gane's Blind Snake is restricted to the Pilbara region, typically found between Newman and Pannawonica (Wilson and Swan, 2021). This species is generally associated with moist gullies and gorges (Wilson and Swan, 2021). The Rio Tinto Database has one record of this species within the application area and eight records within 20 kilometres of the application area (Rio Tinto, 2024b). The gorge/gully habitats located within the application area provides suitable habitat for this species (SLR, 2024). Potential impacts may be managed by restricting the clearing within gorge/gully habitats and a watercourse management condition to avoid riparian vegetation.

The Pilbara barking gecko is known from the Hamersley Range in the Pilbara, from north of Tom Price to southeast of Newman (Wilson and Swan, 2021). This species preferred habitat is rocky slopes and gorges with sparse tree cover and spinifex (*Triodia* spp.) dominant ground cover (Cogger, 2018). The Rio Tinto Database has one record of this species within the application area and two records within 20 kilometres (Rio Tinto, 2024b). The hills and low slopes habitat is considered core habitat, while other areas of the application area would be supporting habitat (SLR, 2024). The habitat is common in the region and the proposed clearing is unlikely to significantly impact the conservation status of this species. Impacts can be minimised with a slow directional clearing condition.

Unpatterned Robust Slider favours sandy to sandy loam soils which support Acacia shrubland or woodland (Wilson and Swan, 2010). It inhabits loose soil under leaf litter at the base of shrubs (Wilson and Swan, 2010). Threats to this species are not well known, it is listed as conservation significant due to its very restricted distribution range. The Rio Tinto Database has one record of this species within 15 kilometres of the application area (SLR, 2024). Suitable habitat is present within the application area and surrounding areas and potential impacts may be managed by implementing a slow directional clearing condition.

Small mammals
The Western pebble-mound mouse has a distribution through the non-coastal, central and eastern parts of the Pilbara, with large populations recorded in the major national parks of the region (Karijini, Rudall River, Millstream-Chichester and Collier Range) (Burbidge, 2016). This species is found in areas of rocky, hummock grassland with little or no soil and an overstory of Acacia (Burbidge, 2016). Individuals live in groups in burrows below mounds of pebbles, typically on low gravelly and stony rises (Burbidge, 2016). Eighty records returned from the Rio Tinto Internal Database within the application area (SLR, 2024). The Permit Holder has committed to avoiding clearing within a minimum of 25 metres of mounds where practicable (Rio Tinto, 2024). The habitat is common in the region and the proposed clearing is unlikely to significantly impact the conservation status of this species.

Northern quoll
The northern quoll can be found in a variety of habitats, with a preference to complex rocky areas in the Pilbara (DNREAS, 2010). Daytime den sites provide important shelter and protection from predators and weather, occurring in rocky outcrops, tree hollows, logs, termite mounds and goanna burrows (DNREAS, 2010). The National Recovery Plan for the Northern Quoll (DNREAS, 2010) states that habitat critical to survival is where the species is least exposed to threats, with this broadly being defined as rocky areas and offshore islands. The Rio Tinto Database has no records of this species within the application area, however 46 records were identified within 20 kilometres (Rio Tinto, 2024b). The low hills and slopes and stony plain habitat is low value habitat as individuals may potentially utilise this habitat, however are not reliant on them, however, the caves recorded within this habitat type provides denning habitat and constitutes as critical habitat for the northern quoll (SLR, 2024). Drainage habitat associated with flowlines is considered to hold high habitat value, as these areas facilitate connectivity for dispersal and foraging (Cowan *et al*., 2022; Shaw *et al*., 2023). Potential impacts may be managed by restricting the clearing within and

around caves, gorge/gully and major drainage habitats and implementing a watercourse management condition to avoid riparian vegetation.

Ghost bat
The ghost bat is a carnivorous species with patchy distribution of isolated populations within the semi-desert Pilbara region (Bat Call WA, 2021a; Bullen, 2023). This species moves seasonally or as dictated by weather conditions between a number of roost sites in caves, rock crevices and disused mine adits (Bat Call WA, 2021a). Excluding colonies in large, abandoned mines, ghost bats in the Pilbara region are often present either singularly or in small groups of less than 15 (Bat Call WA, 2021a). This species depends on day roosts found deep underground in temperature-stable caves with chambers and/or cavities that trap humidity (Bat Call WA, 2021a). The Pilbara populations forage on productive plain areas with thin mature woodland over patchy or clumped tussock or hummock grass on sand or stony ground and drainage lines along riparian corridors (Bat Call WA, 2021a; Cramer *et al*., 2022). Ghost bats tend to forage less than five kilometres from diurnal roost sites, although larger distances have been recorded (TSSC, 2016). There are three records of ghost bats within the application area and 48 records within 0.2 kilometres of the application area (SLR, 2024; GIS Database). The gorge/gully habitat contains caves and rock pools which is suitable habitat for this species and the major drainage habitat may be suitable for hunting areas (SLR, 2024). Seven ghost bat caves have been recorded within the application area, two of which are category 3 and five are category 4 (Rio Tinto, 2024). The Permit Holder has committed to avoiding all seven caves with a minimum 50 metre exclusion area (Rio Tinto, 2024). Potential impacts to suitable habitat may be managed by implementing a restricted clearing condition to protect high value habitat and watercourse management to avoid riparian vegetation.

Pilbara leaf-nose bat
The Pilbara leaf-nose bat (PLNB) is a slightly divergent form of the Orange leaf-nose bat that occurs only in the Pilbara region. The PLNB forages in a variety of habitats and roosts during the day in the dark areas of caves and underground mines with stable, warm and humid microclimates (Bat Call WA, 2021b). Females are highly dependent on foraging habitat within close proximity to maternal roosts and are typically located within 5-7 kilometres from permanent water, however the species is known to travel up to 45 kilometres from roosts to forage (Bat Call, 2021b; Bullen; 2023). There are no records of PLNB within the application area and Rio Tinto's database has 32 records within 20 kilometres of the application area (Rio Tinto, 2024). There are no known PLNB roosts within close proximity of the area proposed to be cleared (GIS Database). The gorge/gully habitat contains caves and rock pools which is suitable habitat for this species and the major drainage habitat may be suitable for hunting areas (SLR, 2024). Potential impacts to suitable habitat may be managed by implementing a restricted clearing condition to protect high value habitat and water course management to avoid riparian vegetation.

Birds
Wide ranging species, migratory species or species that forage or hunt over vast areas such as the Fork-tailed Swift, Grey Falcon, Peregrine Falcon and Pilbara Grasswren are unlikely to be impacted by the proposed clearing.

Conclusion
For the reasons set out above, it is considered that the impacts of the proposed clearing on conservation significant fauna and associated habitat can be managed by the implementation of restricted clearing zones to avoid critical habitat, slow directional clearing to allow fauna and to move into adjacent vegetation, watercourse management to avoid riparian vegetation, and rehabilitating the site post clearing activities to ensure the habitat is not permanently lost.

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;
- retain cleared vegetation and topsoil and respread this on a cleared area of equivalent size within the permit boundary within 12 months of clearing to ensure fauna habitat is not permanently lost;
- vegetation management – avoid riparian vegetation and where a watercourse is to be impacted by clearing, the permit holder shall ensure that the existing surface flow is maintained, or reinstated downstream into existing natural drainage lines; and
- restricted clearing condition to avoid critical habitat for conservation significant fauna species (gorge/gully and major drainage habitats).

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 9 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 are two native title claims (WCD2017/003 and WCD2016/007) over the area under application (DPLH, 2024). These claims have been determined by the Federal Court on behalf of the claimant groups (Yinhawangka Part A, Yinhawangka Part B, and Ngarlawangga 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 are six 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 West Angelas Revised Proposal (Assessment Number: 2290). This proposal is to assess the development of new above and below water table iron ore mine pits and associated infrastructure to sustain existing West Angelas operations. This proposal is not assessing mineral exploration or other activities proposed for this clearing permit.

Other relevant authorisations required for the proposed land use include:

- A Programme of Work approved under the *Mining Act 1978*.

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 of the Pilbara bioregion and adjacent to the West Angelas Mining Project (GIS Database).
Ecological linkage	According to 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. However, it is adjacent to Karijini National Park (GIS Database).
Vegetation description	The vegetation of the application area is broadly mapped as the following Beard vegetation associations: • 18: Low woodland; mulga (*Acacia aneura*); and • 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (GIS Database). Vegetation mapping has been previously undertaken by multiple consultancies across the West Angelas locality between 1998 and 2023 (SLR, 2024). The following 39 vegetation types were identified within the application area (SLR, 2024):

Short Code	Vegetation Unit	Vegetation Description	Vegetation Condition	Extent (ha) Within Study Area	Proportion (%) of Study Area
Vegetation of Drainages					
D2	EvAcTErTHtTp	*Eucalyptus victrix* low open woodland over *Acacia citrinoviridis* tall open shrubland over *Tephrosia rosea* var. Fortescue Creeks (M.I.H. Brooker 2186) scattered low shrubs over *Themeda triandra* very open tussock grassland over *Triodia pungens* scattered hummock grasses to very open hummock grassland.	Very Good - Good	36.45	0.54%
D3	ExChPlApyTErTHtTp	*Eucalyptus xerothermica* and/or *Corymbia hamersleyana* low open woodland over *Petalostylis labicheoides, Acacia pyrifolia* tall open shrubland over *Tephrosia rosea* var. Fortescue Creeks (M.I.H. Brooker 2186) low open shrubland over *Themeda triandra* very open tussock grassland over *Triodia pungens* very open hummock grassland to scattered hummock grasses.	Excellent - Good	33.03	0.49%
D6	ChCdAanPlTp	*Corymbia hamersleyana* and/or *C. deserticola* subsp. *deserticola* low open woodland over *Acacia 'aneura', Petalostylis labicheoides* tall open shrubland over *Triodia pungens* open hummock grassland.	Excellent - Good	45.95	0.69%
D7	ChAmoTHtTp	*Corymbia hamersleyana* low open woodland over *Acacia monticola* tall shrubland over *Themeda triandra* very open tussock grassland over *Triodia pungens* very open hummock grassland.	Excellent – Very Good	31.95	0.48%
D8	ElChPlGOrAmoTHtTp	*Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana* low open woodland over *Petalostylis labicheoides, Gossypium robinsonii, Acacia monticola* open shrubland over *Themeda triandra* tussock grassland over *Triodia pungens* open hummock grassland.	Excellent	4.89	0.07%
D9	EtTp	*Eucalyptus trivalva* low mallee woodland over *Triodia pungens* very open hummock grassland.	Excellent – Very Good	26.71	0.40%
D11	ExAanEtPlANlEUsTHtTp	*Eucalyptus xerothermica* and/or *Acacia 'aneura'* low open woodland over *E. trivalva* low open mallee woodland over *Petalostylis labicheoides, Androcalva luteiflora* open shrubland over *Eulalia symonii* and/or *Themeda triandra* very open tussock grassland with *Triodia pungens* very open hummock grassland.	Excellent – Very Good	27.09	0.40%
D13	ExPlAppTtEmu	*Eucalyptus xerothermica* low open woodland over *Petalostylis labicheoides, Acacia pyrifolia* tall sparse shrubland over *Themeda triandra, Eriachne mucronata* tussock grassland.	Excellent	3.33	0.05%
D14	AcAapApyPlTpTHtEENlCYa	*Acacia citrinoviridis, A. aptaneura* isolated trees/low open woodland/woodland over *A. pyrifolia* var. *pyrifolia, Petalostylis labicheoides* tall sparse to tall open shrubland over *Indigofera georgei, Ptilotus obovatus, Solanum lasiophyllum* low isolated to low open shrubland over *Triodia pungens* sparse to open hummock grassland over *Themeda triandra, Enneapogon lindleyanus, Cymbopogon ambiguus* sparse to open tussock grassland.	Excellent - Good	175.48	2.62%
Vegetation of Gorges and Gullies					
G2	AanCALcCfCAPmPToERImARbTp	*Acacia 'aneura', Callitris columellaris* and/or *Corymbia ferriticola* low woodland over *Capparis mitchellii* scattered tall shrubs over *Ptilotus obovatus* low open shrubland over *Eriachne mucronata* and/or *Aristida burbidgeae* very open tussock grassland with *Triodia pungens* scattered hummock grasses.	Excellent – Very Good	0.89	0.01%
G3	CfAmoTHtTp	*Corymbia ferriticola* low open woodland over *Acacia monticola* tall open shrubland over *Themeda triandra* very open tussock grassland over *Triodia pungens* scattered hummock grasses.	Excellent	2.86	0.04%
Vegetation of Hills					
H1	AanAayElERfoERlaTpTw	*Acacia 'aneura'* and/or *A. ayersiana, (Eucalyptus leucophloia* subsp. *leucophloia)* low woodland over *Eremophila forrestii* subsp. *forrestii, E. latrobei* subsp. *latrobei* scattered shrubs over *Triodia pungens, T. wiseana* very open hummock grassland.	Excellent – Very Good	74.53	1.11%
H2	AanERsppTp	*Acacia 'aneura'* low woodland over *Eremophila jucunda* subsp. *pulcherrima, E. phyllopoda* subsp. *obliqua, (E. cuneifolia, E. oppositifolia* subsp. *angustifolia)* open shrubland over *Triodia pungens* very open hummock grassland.	Excellent – Very Good	5.68	0.08%
H3	AcaElAanTp	*Acacia catenulata* subsp. *occidentalis, (Eucalyptus leucophloia* subsp. *leucophloia, A. 'aneura')* low open forest over *Triodia pungens* open hummock grassland.	Excellent – Very Good	9.83	0.15%

Characteristic	Details

H4	AiTw	*Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland.	Excellent – Very Good	615.84	9.20%
H5	ChElAmHAgTpTw	*Corymbia hamersleyana, Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Acacia maitlandii* open heath over *Halgania gustafsenii* var. Mid West (G. Perry 370) low open shrubland over *Triodia pungens, T. wiseana* hummock grassland.	Excellent	186.10	2.78%
H7	ElAmTvTp	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia maitlandii* scattered shrubs over *Triodia vanleeuwenii, T. pungens* open hummock grassland.	Excellent – Good	258.02	3.86%
H8	ElCdApTvTp	*Eucalyptus leucophloia* subsp. *leucophloia* and/or *Corymbia deserticola* subsp. *deserticola* low open woodland over *Acacia pruinocarpa* scattered tall shrubs over *Triodia vanleeuwenii* and/or *T. pungens* open hummock grassland.	Excellent – Very Good	90.29	1.35%
H9	ElCdEgTv	*Eucalyptus leucophloia* subsp. *leucophloia* and/or *Corymbia deserticola* subsp. *deserticola* low open woodland over *E. gamophylla* low open mallee woodland over *Triodia vanleeuwenii* open hummock grassland.	Excellent – Very Good	482.30	7.21%
H10	ElEgAmPlTvTw	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* low open mallee woodland *Acacia maitlandii, Petalostylis labicheoides* open shrubland over *Triodia vanleeuwenii, T. wiseana* open hummock grassland.	Excellent – Good	978.43	14.62%
H11	ElEkAhTvTw	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. kingsmillii* low open mallee woodland *Acacia hamersleyensis* scattered tall shrubs over *Triodia vanleeuwenii, T. wiseana* open hummock grassland.	Excellent	65.68	0.98%
H14	ElTbrTw	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia brizoides, (T. wiseana)* open hummock grassland.	Excellent – Very Good	56.84	0.85%
H15	ElTpTw	*Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia pungens* and/or *T. wiseana* open hummock grassland.	Excellent – Very Good	168.70	2.52%
H16	ElTvTpTsm	*Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia vanleeuwenii, T. pungens* and/or *T.* sp. Mt Ella (M.E. Trudgen 12739) open hummock grassland.	Excellent	211.71	3.16%
Vegetation of Plains					
P1	AanAayApTvTp	*Acacia 'aneura', A. ayersiana, A. pruinocarpa* low open woodland over *Triodia vanleeuwenii, T. pungens* open hummock grassland.	Excellent – Very Good	52.16	0.78%
P2	AanAayERfoTm	*Acacia 'aneura', A. ayersiana* low open woodland over *Eremophila forrestii* subsp. *forrestii* open shrubland over *Triodia melvillei* open hummock grassland.	Excellent	38.78	0.58%
P3	AanAcaApERfoTp	*Acacia 'aneura', A. catenulata* subsp. *occidentalis* and/or *Acacia pruinocarpa* low woodland to low open forest over *Eremophila forrestii* subsp. *forrestii* open shrubland over *Triodia pungens* very open hummock grassland.	Excellent – Good	183.74	2.75%
P4	AanApAayTp	*Acacia 'aneura', A. pruinocarpa, A. ayersiana* woodland over *Triodia pungens* open hummock grassland.	Excellent – Very Good	98.09	1.47%
P5	AanApERfoTp	*Acacia 'aneura'* and/or *A. pruinocarpa* low woodland to low open forest over *Eremophila forrestii* subsp. *forrestii* open shrubland over *Triodia pungens* very open hummock grassland.	Excellent – Very Good	22.53	0.34%
P6	AanApTp	*Acacia 'aneura', A. pruinocarpa* low open woodland over *Triodia pungens* open hummock grassland.	Very Good	59.24	0.89%
P7	AanExERfoERloTHtTwTp	*Acacia 'aneura', Eucalyptus xerothermica* scattered low trees to low open woodland over *Eremophila forrestii* subsp. *forrestii* and/or *E. longifolia* very open shrubland over *Themeda triandra* scattered tussock grasses over *Triodia wiseana* and/or *T. pungens* open hummock grassland.	Excellent – Good	250.07	3.74%
P8	AanTHtARcTp	*Acacia 'aneura'* scattered tall shrubs over *Themeda triandra* scattered tussock grasses to tussock grassland with *Aristida contorta* scattered bunch grasses to bunch grassland over *Triodia pungens* scattered hummock grasses.	Very Good	1.20	0.02%
P10	ElAtenAdAmTw	*Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Acacia tenuissima, A. dictyophleba, A. maitlandii* open shrubland *Triodia wiseana* hummock grassland.	Excellent	21.83	0.33%
P12	EgTpTv	*Eucalyptus gamophylla* low open mallee woodland over *Triodia pungens* and/or *T. vanleeuwenii* open hummock grassland.	Excellent – Very Good	275.57	4.12%
P13	ErEsMeTwTa	*Eucalyptus repullulans, E. socialis* subsp. *eucentrica* low open mallee woodland over *Melaleuca eleuterostachya* low open shrubland over *Triodia wiseana, T. angusta* very open hummock grassland.	Excellent	0.78	0.01%
P14	EtErEsTspp	*Eucalyptus trivalva, E. repullulans, E. socialis* subsp. *eucentrica* low open mallee woodland over *Triodia wiseana, (T. angusta, T. pungens, T. longiceps)* open hummock grassland.	Excellent – Very Good	522.04	7.80%
P15	ASpASeARla	*Astrebla pectinata, Astrebla elymoides* and *Aristida latifolia* open tussock grassland (West Angelas Cracking-Clays Priority 1 PEC).	Excellent – Very Good	7.19	0.11%
P16	AanERfoCHf	*Acacia 'aneura'* tall open shrubland over *Eremophila forrestii* subsp. *forrestii, Rhagodia eremaea* open shrubland over *Chrysopogon fallax* scattered tussock grasses.	Excellent – Very Good	16.89	0.25%
M1	AanApTp/AanAcaApERfoTp	*Acacia 'aneura', A. pruinocarpa* low open woodland/*A. 'aneura', A. catenulata* subsp. *occidentalis* and/or *A. pruinocarpa* low woodland to low open forest over *Eremophila forrestii* subsp. *forrestii* open shrubland over *Triodia pungens* open hummock grassland/*T. pungens* very open hummock grassland.	Excellent – Good	430.11	6.43%
Other Units					
Dis	Disturbed	Devoid of vegetation.	Completely Degraded	1,122.67	16.78%

Vegetation condition	Vegetation mapping has been previously undertaken by multiple surveys across the West Angelas locality between 1998 and 2023 (SLR, 2024). The consolidated vegetation mapping indicate the vegetation within the application area is in “Excellent” to “Completely Degraded” (Trudgen, 1991) condition, described as • 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.

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>
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.
The full Trudgen (1991) condition rating scale is provided in Appendix C.
</td></tr>
<tr><td>Climate and landform</td><td>Mean annual rainfall for Newman (nearest recording site) is approximately 318 millimetres (BoM, 2024). The Pilbara region has an arid climate, with rainfall events occurring throughout the summer months (December – April) (BoM, 2024) and cyclonic rains are common.</td></tr>
<tr><td>Soil description and Land degradation risk</td><td>The soils of the application area are mapped as:

Boolgeeda system: Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands;
Egerton system: Highly dissected plains and slopes with sparse mulga shrublands or shrubby hard spinifex grasslands;
Newman system: Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands;
Platform system: Dissected slopes and raised plains supporting shrubby hard spinifex grasslands;
Rocklea system: Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex and occasionally soft spinifex grasslands with scattered shrubs; and
Wannamunna system: Hardpan plains and internal drainage tracts supporting mulga shrublands and woodlands and occasionally eucalypt woodlands (DPIRD, 2024).

Of the six mapped land systems, four were not susceptible to erosion, and two were identified as having a low potential for erosion (Van Vreeswyk et al., 2004). All six systems were generally non-saline, with either a moderate risk of inundation in low lying areas or other nil risk of inundation or flooding (Van Vreeswyk et al., 2004).
</td></tr>
<tr><td>Waterbodies</td><td>The desktop assessment and aerial imagery indicated that there are no wetlands or permanent sources of surface water within the application area (GIS Database). Several minor non perennial watercourses including Turee Creek flows intersects the application area and represents a significant area of surface drainage (GIS Database).</td></tr>
<tr><td>Hydrogeography</td><td>The application area is not mapped within a Public Drinking Water Source Area (GIS Database). The application area is mapped within the Pilbara Groundwater Area and the Pilbara Surface Water Area (GIS Database). The mapped groundwater salinity is within 500-1,000 total dissolved solids milligrams per litre, which is described as marginal water quality (GIS Database).</td></tr>
<tr><td>Flora</td><td>Significant flora, vegetation, and fauna species identified from the desktop assessment were assessed for their likelihood of their occurrence within the application area, 62 conservation significant flora species have been identified as potentially occurring within the application area, of these, 22 species have been recorded within the application area (see A.3) (SLR, 2024; GIS Database).</td></tr>
<tr><td>Ecological communities</td><td>There are no Threatened Ecological Communities mapped within the application area and flora and vegetation surveys have not recorded any (GIS Database). Flora surveys identified approximately 7.19 hectares of vegetation type P15 which is considered analogous to with West Angels Cracking Clay Priority Ecological Community (Priority 1) within the application area (SLR, 2024).</td></tr>
<tr><td>Fauna</td><td>The likelihood of occurrence assessment identified 30 significant fauna species potentially occurring within the Application Area (SLR, 2024; GIS Database). Five had been previously recorded within the application area (see A.4).</td></tr>
<tr><td>Fauna habitat</td><td>Six broad fauna habitats have been identified within the application area (SLR, 2024):
<table>
<tr><th>Fauna Habitat</th><th>Fauna Habitat Description</th><th>Significant Microhabitat</th><th>Extent (ha) Within Application Area</th><th>Proportion of Application Area</th></tr>
<tr><td>Mulga Woodland</td><td>Mulga woodland habitat comprises areas where vegetation is a dense mix of Acacia, with a mixture of mulga (Acacia aneura), A. maitlandii and A. pruninocarpa over a mixture of sparse small shrubs and grasses, such a Triodia and Senna sp. This habitat may be suitable for Short-tailed Mouse, Bilby, Pilbara Barking Gecko, and woodland birds such as the Rufous Grasswren.</td><td>No</td><td>236.94</td><td>3.52%</td></tr>
<tr><td>Rocky Hill</td><td>Rocky Hill habitat comprises hills and undulating stony plains of higher elevation, often supporting hard spinifex with a mantle of gravel and larger rocks. Scattered areas of minor outcropping and breakaway, particularly atop hillcrests.
This habitat may be suitable for Brush- tailed Mulgara, Short-tailed Mouse, Western Pebble-mound Mouse, and Pilbara Olive-Python.</td><td>No</td><td>3,033.78</td><td>45.12%</td></tr>
<tr><td>Gorge/Gully</td><td>Gorges and gullies are rugged, steep- sided valleys incised into the surrounding landscape. Gorges tend to be deeply incised, with vertical cliff faces, while gullies are more open (but not as open as Drainage Area or Valleys). Caves and rock pools are present. This habitat may be suitable for Northern Quoll, Ghost Bat, Pilbara Leaf-nosed Bat, Pilbara Olive Python, and Gane’s Blind Snake.</td><td>Yes</td><td>93.92</td><td>1.40%</td></tr>
<tr><td>Low Hills and Slopes</td><td>Low hills and slopes habitat comprises low-lying open plains and the rolling hills below upland areas. Vegetation consists of isolated trees (Corymbia hamersleyana, Eucalyptus leucophloia subsp. leucophloia, and C. deserticola) and moderate to densely</td><td>No</td><td>2,085.07</td><td>31.01%</td></tr>
</table>
</td></tr>
</table>

Characteristic	Details				
		vegetated plains of spinifex grassland. This habitat may be suitable for Brush-tailed Mulgara, Short-tailed Mouse, Western Pebble-mound Mouse, Pilbara Olive-Python, Pilbara barking Gecko, and many grassland bird species such as the Pilbara Grasswren.			
	Major Drainage	Major drainage habitat comprises densely vegetated plains occurring on low-lying deeply alluvial plains, with a moderate-high amount of leaf litter and woody debris. Vegetation often consists of *Eucalyptus victrix* woodland over *Acacia citrinoviridis* shrublands and various sedges and grasses fringing the channel. This habitat becomes seasonally inundated with water after heavy rain events, which flows through the channels from higher altitude areas into nearby rivers, streams, and pools. This habitat may be suitable hunting areas for Northern Quoll, Ghost Bat, Pilbara Leaf-nosed Bat, and Pilbara Olive Python. Many birds of prey will also utilise the airspace above this habitat for hunting.	Yes	67.40	1.00%
	Clay Plain	Clay plain habitat is characterised by open and sparse low vegetation with approximately half of its area being bare ground. Isolated shrubs of *Salsola australis*, *Boerhavia paludosa* and *Ptilotus nobilis* subsp. *nobilis* occur over open tussock grass. This habitat is of little value to most significant fauna, but the tussocks may be utilised when animals are moving through the area to different landscapes. This area may also be seasonally inundated with water which will be utilised by all fauna species.	No	0.58	0.01%
	Disturbed		No	1,177.58	17.94%

A.2. Vegetation extent

	Pre-European area (ha)	Current extent (ha)	Extent Remaining %	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA Managed Lands
IBRA Bioregion Pilbara	17,808,657.04	17,731,764.88	99.57	1,801,714.98	10.12
Beard vegetation associations - State					
Veg Assoc No. 18	19,892,306.46	19,843,148.07	99.75	1,317,179.00	6.62
Veg Assoc No. 82	2,565,901.28	2,553,206.19	99.51	295,377.96	11.51
Beard vegetation associations - Bioregion					
Veg Assoc No. 18	676,556.72	671,843.35	99.30	170,297.48	25.17
Veg Assoc No. 82	2,563,583.23	2,550,888.14	99.50	295,377.96	11.52

Government of Western Australia (2019)

A.3. Flora analysis table

Significant flora, vegetation, and fauna species identified from the desktop assessment were assessed for their likelihood of their occurrence within the application area (SLR, 2024). The following table is an excerpt from this assessment, the 62 conservation significant flora species listed below have been identified as potentially occurring within the application area (SLR, 2024).

Species	Conservation Status		Source					Distance to Nearest Record	Flowering Period	Preferred Habitat	Habitats Occurs in Application Area	Likelihood of Occurrence
	State	Federal	NM	PMST	DBCA	RTIO	Literature					
Seringia exastia	-	CR	X			X	X	N/A	Apr – Dec	Pindan plain, orange sand.[2]	Yes	Previously Recorded.
Thryptomene wittweri	T	VU	X	X	X			14.04 km	Apr - Jul or Aug	Skeletal red stony soils on hills, breakaways.[2]	Yes	Medium. Some suitable habitat available, and limited survey effort conducted in suitable habitat.
Dicrastylis mitchellii	P1		X		X			29.48 km	Unknown	Sand or clay soils. Around dunes.[2]	No	Low. No suitable habitat.
Eremophila tenella	P1		X					Within 50 km	May or Aug - Sep	Stony slopes and hills.[2]	Yes	Low. Limited records from with 50km of Application Area.
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1					X	X	13.71 km	May - Nov	Red-brown skeletal soil, red - brown sand, banded ironstone with ironstone gravel.	Yes	Medium. Nearest records are greater than 10km
Isotropis forrestii	P1					X	X	3.53 km	Apr - Sep or Dec	Stony clay loam, sandy alluvium. Along drainage lines.	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Rhodanthe ascendens	P1		X		X			2.85 km	Aug	Clay. Roadside verge.[2]	Yes	Medium. Records within 10km of Application Area, however suitable habitat is limited.
Sida sp. Turee Creek (P.-L.de Kock PLDK1116)	P1		X		X			6.07 km	Jul	Clay loam. Mulga plains with ironstone gravel, pebbles and cobbles.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Aristida lazaridis	P2		X		X	X	X	N/A	Apr	Sand or loam.[2]	Yes	Previously Recorded.
Arthropodium vanleeuwenii	P2		X		X			32.75 km	Sep	Moderately steep, south-facing slope of banded iron formation with dark orange- brown loam soil.[2]	Yes	Low. Limited records within 50km of Application Area.
Eragrostis sp. Mt Robinson (S. van Leeuwen 4109)	P2		X		X	X	X	8.86 km	Sep	Red-brown skeletal soils, ironstone. Steep slopes, summits.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Eremophila pusilliflora	P2		X		X	X	X	N/A	Aug - Sep	Red brown loam over ironstone.[2]	Yes	Previously Recorded.
Eremophila sp. West Angelas (S. van Leeuwen 4068)	P2		X		X	X	X	1.19 km	Aug - Sep	Steep rock slopes and scree, skeletal brown-red soils.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Euphorbia inappendiculata var. inappendiculata	P2					X	X	750 m	May, Aug	Red, brown clay or loam. Plains.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Euphorbia inappendiculata var. queenslandica	P2		X		X			22.59 km	Oct	Plains, cracking clays.[2]	Yes	Low. Records present within 50km however limited suitable available.
Hibiscus sp. Gurinbiddy Range (M.E. Trudgen MET 15708)	P2		X		X	X	X	N/A	Apr - Jun or Aug - Oct	Drainage lines, gullies.[2]	Yes	Previously Recorded.

Ipomoea racemigera	P2					X	X	9.99 km	Apr - Aug	Sandy loam gravel, river bank, red-brown clay loam	Yes	Medium. Records just within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Neptunia longipila	P2		X		X			2.19 km	Sep	Plain. Stony sandy-clay.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Oxalis sp. Pilbara (M.E. Trudgen 12725)	P2		X		X	X	X	100 m	May	Gorges with sandy loam soil, creeklines.[2]	Yes	High. Suitable habitat present and records directly adjacent survey area. Species is annual and would not be detectable every season.
Pentalepis trichodesmoides subsp. hispida	P2					X	X	15.76 km	Jul - Sep	Red brown clay loam, stony brown clayey sand. Hillslopes.[2]	Yes	Low. Nearest records 15km from Application Area, however reasonable effort has been applied in suitable habitat.
Tetratheca fordiana	P2		X		X	X	X	1.31 km	Apr	Cliff wall, breakaway.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Teucrium pilbaranum	P2		X					50 km	May or Sep	Clay. Crab hole plain in a river floodplain, margin of calcrete table.[2]	No	Low. No suitable habitat.
Triodia karijini	P2		X		X			8.1 km	Unknown	Hillcrest with sandy loam soil.[2]	Yes	Low. Records within 10km however limited suitable habitat within Application Area.
Acacia daweana	P3		X		X	X	X	9.35 km	Jul - Sep	Stony red loamy soils. Low rocky rises, along drainage lines.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Acacia effusa	P3		X		X	X	X	N/A	May - Aug	Stony red loam. Scree slopes of low ranges.[2]	Yes	Previously Recorded.
Acacia subtiliformis	P3		X		X	X	X	N/A	Jun	On rocky calcrete plateau.[2]	Yes	Previously Recorded.
Aristida jerichoensis var. subspinulifera	P3		X		X	X	X	N/A	Unknown	Hardpan plains.[2]	Yes	Previously Recorded.
Dampiera metallorum	P3		X		X	X	X	780 m	Apr or Jun - Oct	Skeletal red-brown gravelly soil over banded ironstone. Steep slopes, summits of hills.	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3				X	X	X	N/A	May - Jul or Sep	Brown sandy clay, or medium clay. Claypans, drainage lines, cracking clays, crabhole plains.[2]	Yes	Previously Recorded.
Eremophila magnifica subsp. velutina	P3		X		X	X	X	1.59 km	Aug - Sep	Skeletal soils over ironstone. Summits.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Eremophila naaykensii	P3		X		X	X	X	N/A	Aug - Sep	Red clay loam on rocky hill slopes, hill crests and upper hill slopes. Ironstone gorges.[2]	Yes	Previously Recorded.
Eremophila rigida	P3		X		X			35.05 km	Oct	Red sand alluvium. Hardpan plains, stony clay depressions.[2]	Unknown	Low. Limited suitable habitat and records more that 35km from Application Area.
Euphorbia clementii	P3		X			X	X	360 m	May - Jul	Gravelly hillsides, stony grounds	Yes	High. No search effort within 4km of known record, and suitable habitat present with Application Area.
Euphorbia stevenii	P3		X		X			2.19 km	Unknown	Clay, sandy soils.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Fimbristylis sieberiana	P3						X	approx. 40km	May - Jun	Mud, skeletal soil pockets. Pool edges, sandstone cliffs.[2]	No	Low. Recorded from literature only and no suitable habitat available.

Geijera salicifolia	P3					X	X	800 m	Sep	Skeletal soils, stony soils. Massive rock scree, gorges.	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Goodenia lyrata	P3		X		X	X	X	9.75 km	Aug	Red sandy loam. Near claypan.[2]	Yes	Low. Records 9.75km away however minimal suitable habitat available.
Goodenia sp. East Pilbara (A.A. Mitchell PRP 727)	P3		X		X	X	X	2.92 km	July	Red-brown clay soil, calcrete pebbles. Low undulating plain, swampy plains.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Grevillea saxicola	P3		X		X	X	X	280 m	Mar	Gully system in rocky valley, loamy soils.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Gymnanthera cunninghamii	P3					X	X	13.71 km	Jan - Dec	Sandy soils. Drainage lines.[2]	Yes	Low. Nearest records 15km from Application Area, however reasonable effort has been applied in suitable habitat.
Indigofera gilesii	P3		X		X	X	X	N/A	May or Aug	Pebbly loam. Amongst boulders and outcrops, hills.[2]	Yes	Previously Recorded.
Isotropis parviflora	P3		X		X	X	X	N/A	Mar	Valley slope of ironstone plateau.[2]	Yes	Previously Recorded.
Nicotiana umbratica	P3						X	approx. 40km	Apr - Jun	Shallow soils. Rocky outcrops.[2]	Yes	Low. Limited records recorded and nearest recorded approx. 40km from Application Area.
Olearia mucronata	P3		X		X	X	X	720 m	Aug - Dec or Jan	Schistose hills, along drainage channels.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Pilbara trudgenii	P3		X		X	X	X	140 m	Sep	Skeletal, red stony soil over ironstone. Hill summits, steep slopes, screes, cliff faces.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3		X		X	X	X	N/A	Unknown	Red sandy loam over gravelly ironstone. Plains.[2]	Yes	Previously Recorded.
Rostellularia adscendens var. latifolia	P3		X		X	X	X	N/A	Apr - May	Ironstone soils. Near creeks, rocky hills.[2]	Yes	Previously Recorded.
Sida sp. Hamersley Range (K. Newbey 10692)	P3		X		X	X	X	N/A	Aug - Oct	Ironstone crevices of breakaways, gullies.[2]	Yes	Previously Recorded.
Solanum kentrocaule	P3		X		X	X	X	N/A	May - Jul	Steep slope of ironstone hills.[2]	Yes	Previously Recorded.
Stackhousia clementii	P3		X		X			20.98 km	Nov-Mar	Skeletal soils. Sandstone hills.[2]	Unknown	Low. Limited suitable habitat.
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3		X		X	X	X	1.79 km	Unknown	Cracking clays, colluvial and alluvial gravels in floodplain.[2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Stylidium weeliwolli	P3		X		X		X	23.57 km	Aug - Sep	Gritty sand soil, sandy clay. Edge of watercourses.[2]	Yes	Low. Limited suitable habitat.
Swainsona thompsoniana	P3		X		X	X	X	660 m	Unknown	Cracking clay floodplain. Dark reddish brown cracking clays.[2]	Yes	Low. High level survey effort undertaken adjacent nearest record (660m) in suitable habitat.
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3		X		X	X	X	N/A	Aug	Red clay. Clay pan, grass plain.[2]	Yes	Previously Recorded.
Triodia basitricha	P3		X		X			22.62 km	Mar - Jun	Stony ground, gravelly hill, crests, hills, in gorges.[2]	Yes	Low. Reasonable survey effort applied and records greater than 20km from Application Area.
Triodia sp. Mt Ella (M.E. Trudgen 12739)	P3		X		X	X	X	N/A	Feb - Mar	Light orange-brown, pebbly loam. Amongst rocks and outcrops, gully slopes.[2]	Yes	Previously Recorded.

Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	P3		X		X	X	X	N/A	Jul	Flat plain. Red, brown sandy clay-loam.[2]	Yes	Previously Recorded.
Acacia bromilowiana	P4		X		X	X	X	N/A	Jul - Aug	Red skeletal stony loam, orange-brown pebbly, gravel loam, laterite, banded ironstone, basalt. Rocky hills, breakaways, scree slopes, gorges, creek beds.[2]	Yes	Previously Recorded.
Eremophila magnifica subsp. magnifica	P4		X		X	X	X	N/A	Aug - Nov	Skeletal soils over ironstone. Rocky screes.[2]	Yes	Previously Recorded.
Lepidium catapycnon	P4		X		X	X	X	N/A	Oct	Stony hill slopes, south facing slopes, road verges and cuttings.[1]	Yes	Previously Recorded.
Ptilotus mollis	P4		X		X	X	X	4.41 km	May or Sep	Stony hills and screes. [2]	Yes	Medium. Records within 10km of Application Area, however reasonable effort has been applied in suitable habitat.
Sida sp. Barlee Range (S. van Leeuwen 1642)	P4		X		X	X	X	N/A	Aug	Skeletal red soils pockets. Steep slope. [2]	Yes	Previously Recorded.

Conservation Status: State - Listed under Biodiversity Conservation Act 2016 or Department of Biodiversity, Conservation and Attractions Conservation, Federal - Listed under Environmental Protection and Biodiversity Conservation Act 1999. CR - Critically Endangered, EN - Endangered, VU - Vulnerable, MI - Migratory, CD - Conservation Dependent fauna, OS - Other Specially Protected fauna, MA - Marine, P - Listed as Priority by DBCA. Source: RTIO – Rio Tinto Iron Ore internal database, DBCA - DBCA Threatened and Priority Fauna database search, NM - NatureMap, PMST - EPBC Protected Matters Search Tool, record numbers - inside Desktop Assessment Area (within Application Area). Literature numbers reflect number of sources that recorded each taxon.

A.4. Fauna analysis table

Significant flora, vegetation, and fauna species identified from the desktop assessment were assessed for their likelihood of their occurrence within the application area (SLR, 2024). The following table is an excerpt from this assessment, the 30 conservation significant fauna species listed below have been identified as potentially occurring within the application area (SLR, 2024).

Taxa	Conservation Status		Source					Likelihood of Occurrence	Justification
	State	Federal	RTIO	DBCA	NM	PMST	Literature		
Birds									
Calidris ferruginea Curlew Sandpiper	CR	CR, MI, MA				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes inter-tidal mudflats of estuaries, lagoons, mangrove channels, dams, floodwaters, flooded saltbush surrounds of inland lakes.[1]
Pezoporus occidentalis Night Parrot	CR	EN				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes long unburnt spinifex and samphire shrublands bordering salt lakes.[1]
Rostratula australis Australian Painted Snipe	EN	EN, MA				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes well vegetated surrounds and shallows of wetlands.[1]
Erythrotriorchis radiatus Red Goshawk	VU	EN				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes tropical and subtropical open-forests and woodlands dominated by eucalypts and paperbarks along streams and near wetlands.[2]
Falco hypoleucos Grey Falcon	VU	VU		4	4	x		Medium	Four DBCA records within 35 km of the Application Area, including 12.1 km north of the Application Area in 2008 and 2.3 km northwest of the Application Area in 1997.[3] Suitable habitat is present in the Application Area. Preferred habitat includes open plains with treed watercourses in arid inland.[2]
Polytelis alexandrae Princess Parrot	P4	VU				x		Low	No nearby records identified from the database searches or literature. Suitable habitat is present in the Application Area. Preferred habitat includes spinifex with *Eucalyptus*, *Acacia*, desert oaks, and *Hakea* around salt lakes.[4]

Aphelocephala leucopsis Southern Whiteface		VU			2	x		Low	Two NatureMap records within 40 km of the Application Area.[5] Suitable habitat is present in the Application Area. Preferred habitat includes wide range of open woodlands and shrublands where there is an understorey of grasses and/or shrubs, usually dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains.[6]
Actitis hypoleucos Common Sandpiper	MI	MI, MA				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes coastal and interior wetlands, narrow muddy edges of billabongs, river pools, mangroves, rocky beaches, estuaries, near-coastal salt lakes, lagoons, claypans, sewage ponds.[1 7]
Apus pacificus Fork-tailed Swift	MI	MI, MA	8	6	6	x	2	High	Six unique records returned from the Rio Tinto Internal Database within 20km of the Application Area, including 0.1 km north of the Application Area in 2013 and 0.3 km south of the Application Area in 2013.[8] No additional records were identified from the DBCA database.[3] Suitable habitat is present in the Application Area. Preferred habitat includes low to very high airspace over varied habitat.[1]
Calidris acuminata Sharp-tailed Sandpiper	MI	MI, MA				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes fresh and salt wetlands, muddy edges of lagoons, swamps, lakes, dams, soaks, sewage farms, temporary floodwaters.[1]
Calidris melanotos Pectoral Sandpiper	MI	MI, MA				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes coastal fresh to saline wetlands, inland permanent and temporary wetlands, mudflats, swamps with dense vegetation.[1]
Charadrius veredus Oriental Plover	MI	MI, MA	1	1		x	1	Low	One unique record returned from the Rio Tinto Internal Database 11.7 km northeast of the Application Area in 2019.[8] No additional unique records were identified from the DBCA database.[3] Suitable habitat is present in the Application Area. Preferred habitat includes grasslands, thinly vegetated plains.[2]
Hirundo rustica Barn Swallow	MI	MI, MA				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes coastal, wetlands.[2] Forages over open country, often congregates in areas with high densities of flying insects.
Motacilla cinerea Grey Wagtail	MI	MI, MA				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes fresh sandy or rocky streams, mown grass, ploughed land, sewage ponds.[1]
Motacilla tschutschensis Eastern Yellow Wagtail	MI	MI, MA				x		Low	No nearby records identified from the database searches or literature. No suitable habitat is present in the Application Area. Preferred habitat includes damp short grass flats, swamp edges, sewage ponds, mowed grass.[7]
Falco peregrinus Peregrine Falcon	OS			4	6			Medium	Four DBCA records within 35 km of the Application Area, including 14.5 km northwest of the Application Area in 2013.[3] Suitable habitat is present in the Application Area. Preferred habitat includes most environments with suitable nest sites: cliff faces preferred, including man-made ones, commonly uses stick nests built by other species.[2] May use the Survey Area for hunting.
Amytornis whitei whitei Pilbara Grasswren	P4 (as *A. striatus striatus*)		13		45		1	Medium	Seven unique records returned from the Rio Tinto Internal Database within 20km of the Application Area, including 9.4 km northeast of the Application Area in 2018 and 15.7 km northeast of the Application Area in 2022.[8] Suitable habitat is present in the Application Area. Preferred habitat includes tall dense spinifex hummocks on rocky slopes and ridges.[2] Distributed across the ironstone Chichester, Hamersley, Ophthalmia, Parry and Barlee Ranges.[9]
Elanus scriptus Letter-winged Kite	P4		2	1	1		1	Low	One unique record returned from the Rio Tinto Internal Database, 3.7 km north of the Application Area in 2018.[8] No additional unique records were identified from the DBCA database.[3] Suitable habitat is present in the Application Area. Preferred habitat includes open country and grasslands of arid and semi-arid interior.[2]

Mammals									
Dasyurus hallucatus Northern Quoll	EN	EN	38	8	17	x	5	High	Twenty-one unique records returned from the Rio Tinto Internal Database including 0.5 km south of the Application Area in 2021.[8] Three additional unique records identified from the DBCA database within 35 km of the Application Area, including 20.2 km northeast in 2019.[3] Suitable habitat is present in the Application Area. Preferred habitat includes rocky escarpments, eucalypt forest and woodland.[10]
Macroderma gigas Ghost Bat	VU	VU	79 (2)	197 (1)	184	x	7	Previously Recorded	Two unique records returned from the Rio Tinto Internal Database within the Application Area in 2018 and 2013. Forty-eight unique records returned from the Rio Tinto Internal Database, including 20 m north of the Application Area in 2013 and 0.2 km north of the Application Area in 2019.[8] One DBCA record from within the Application Area in 2017. One hundred and ninety-six DBCA records within 35 km of the Application Area, including six records 20 m north of the Application Area and 1 km south of the Application Area in 2022.[3] Suitable habitat is present in the Application Area. Preferred habitat includes deep caves and mines, and occasionally rock fissures and boulder piles occurring within a widespread but patchy distribution across northern Australia from the arid Pilbara to the lush rainforests of north Queensland.[14]
Macrotis lagotis Bilby, Dalgyte	VU	VU		3	4	x		Low	Three historical DBCA records within 35 km of the Application Area, including 6.8 km north of the Application Area in 1984.[3] Suitable habitat is present in the Application Area. Preferred habitat includes Mitchell grass and stony downs country of cracking clays, desert sandplains and dune fields sometimes containing laterite, hummock grassland and massive red earths with *Acacia* shrubland.[10]
Rhinonicteris aurantia Pilbara form Pilbara Leaf-nosed Bat	VU	VU	19	15	10	x	3	High	Fifteen unique records returned from the Rio Tinto Internal Database including 0.3 km south of the Application Area in 2013 and 1 km east of the Application Area in 2019.[8] Thirteen additional unique records identified from the DBCA database within 35 km of the Application Area, including 2.2 km east of the Application Area in 2022 and 0.3 km south of the Application Area in 2013.[3] Suitable habitat is present in the Application Area. Often observed foraging in gorges and gullies, often over pools; also, spinifex hummock grasslands.[11]
Dasycercus blythi Brush-tailed Mulgara, Ampurta	P4			1	12			Low	One DBCA record within 35 km of the Application Area,19.6 km south of the Application Area in 2022.[3] Suitable habitat is present in the Application Area. Preferred habitat includes hummock grasslands (eg *Triodia* spp.) and shrublands on sandy soils.[12]
Leggadina lakedownensis Short-tailed Mouse	P4			4	4			Low	Three unique DBCA records within 35 km of the Application Area, including 2.4 km and 3.1 km northwest of the Application Area in 1997.[3] Suitable habitat is present in the Application Area. Preferred habitat includes monsoon tropical coast to semiarid areas in spinifex and tussock grasslands, samphire, sedgelands, *Acacia* shrublands, tropical eucalypt and *Melaleuca* woodlands and stony ranges.[11]
Pseudomys chapmani Western Pebble-mound Mouse	P4		524 (80)	333 (21)	170		7	Previously Recorded	Eighty records returned from the Rio Tinto Internal Database within the Application Area from 2013 to 2022. Four hundred and forty-four records returned from the Rio Tinto Internal Database, including 0.1 km east of the Application Area in 2022 and 0.1 km south of the Application Area in 2021.[8] Three-hundred and thirty-three DBCA records within 35 km of the Application Area, including 21 records within the Application Area.[3] Suitable habitat is present in the Application Area. Preferred habitat includes gentler slopes of rocky ranges covered by stony mulch and hard spinifex, often with a sparse overstorey of eucalypts and scattered shrubs.[11]
Reptiles									

Liasis olivaceus barroni Pilbara Olive Python	VU	VU	4 (1)	4	5	x		Previously Recorded	One record returned from the Rio Tinto Internal Database within the Application Area in 2018. Two unique records returned from the Rio Tinto Internal Database, including 1.5 km east of the Application Area in 2018 and 17.3 km east in 2020.[8] Four additional unique DBCA records within 35 km of the Application Area, including 20.4 km north of the Application Area in 2022 and 13.3 northwest of the Application Area in 2013.[3] Suitable habitat is present within the Application Area. Preferred habitat includes arid to subhumid areas of the Pilbara and the northern Gascoyne. Associated with open water, watercourses, and rock pools especially those close to rocky areas. Often found in rocky hills, escarpments, and plains dominated by dense grassy vegetation such as Triodia.[13]
Liopholis kintorei Great Desert Skink	VU	VU				x		Low	No nearby records identified from the database searches or literature. Suitable habitat is present in the Application Area. Preferred habitat includes arid sandflats and clay-based/loamy soils with spinifex.[13]
Anilios ganei Gane's Blind Snake	P1		5 (1)	3	4			Previously Recorded	One record returned from the Rio Tinto Internal Database within the Application Area in 2018. Two unique records returned from the Rio Tinto Internal Database including 13.5 km northeast of the Application Area in 2019 and 2021.[8] Three additional unique DBCA records within 35 km of the Application Area, including 14.9 km south if the Application Area in 2022 and 5.6 km northeast in 1999.[3] Limited Suitable habitat is present within the Application Area. Possibly associated with moist gorges and gullies.[13]
Lerista macropisthopus remota Unpatterned Robust Slider	P2		1	4	3		1	Medium	One record returned from the Rio Tinto Internal Database, 10.2 km northeast of the Application Area in 2019.[8] Three additional unique DBCA records within 35 km of the Application Area, 14.3 to 16.2 km east of the Application Area in 2019.[3] Suitable habitat is present within the Application Area. Preferred habitat includes Acacia shrubland and woodlands in the central interior of WA, where it shelters in loose soil under leaf litter at the base of shrubs.[13]
Underwoodisaurus seorsus Pilbara Barking Gecko	P2		1 (1)	14 (1)	8		1	Previously Recorded	One record returned from the Rio Tinto Internal Database within the Application Area in 2018.[8] Ten additional unique DBCA records within 35 km of the Application Area, including 1.4 km south of the Application Area in 2011 and 14.5 km northeast of the Application Area in 2010.[3] Suitable habitat is present in the Application Area. Preferred habitat includes rocky areas with spinifex and low tree cover in the Hammersley Range from Tom Price southeast to near Newman.[13]

1 - (Morcombe, 2017), 2 - (Menkhorst et al., 2017), 3 - (DBCA, 2023c), 4 - (Pizzey & Knight, 2001), 5 - (DBCA, 2023b), 6 - (DCCEEW, 2023), 7 - (Johnstone & Storr, 1998), 8 - (Rio Tinto Iron Ore, 2023b), 9 - (Black et al., 2020), 10 - (Van Dyck & Strahan, 2008), 11 - (Van Dyck et al., 2013), 12 - (Menkhorst & Knight, 2004), 13 - (Wilson & Swan, 2021), 14 – (Baker & Gynther, 2023).

Conservation Status: State - Listed under Biodiversity Conservation Act 2016 or Department of Biodiversity, Conservation and Attractions Conservation, Federal - Listed under Environmental Protection and Biodiversity Conservation Act 1999. CR - Critically Endangered, EN - Endangered, VU - Vulnerable, MI - Migratory, CD - Conservation Dependent fauna, OS - Other Specially Protected fauna, MA - Marine, P - Listed as Priority by DBCA. Source: RTIO – Rio Tinto Iron Ore internal database, DBCA - DBCA Threatened and Priority Fauna database search, NM - NatureMap, PMST - EPBC Protected Matters Search Tool, record numbers - inside Desktop Assessment Area (within Application Area). Literature numbers reflect number of sources that recorded each taxon.

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared contains conservation significant flora, fauna, habitats and assemblages of plants (SLR, 2024; GIS Database). A portion of the application area is mapped as the 'West Angelas Cracking-Clays' (Priority 1) Priority Ecological Community (PEC) (SLR, 2024; GIS Database).	At variance	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The application area contains suitable habitat for several conservation significant fauna species (SLR, 2024; GIS Database).	At variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: There are no known records of Threatened flora within the application area (GIS Database). Flora surveys of the application area did not record any species of Threatened flora (SLR, 2024; GIS Database).	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: There are no known Threatened Ecological Communities (TECs) located within the application area and the flora and vegetation survey did not identify any TECs (SLR,2024; GIS Database).	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia, 2001).	Not at variance	No
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: There are no conservation areas transecting the application area, however Karijini National Park is located directly adjacent (GIS Database). Potential indirect impacts may be managed by restricting clearing within 50 metres of this conservation area.	Not likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: There are no permanent wetlands or watercourses within the application area, however several small, minor ephemeral drainage lines and Turee Creek east branch are present (SLR 2024; GIS Database). These drainage systems are likely to contain water following large rainfall events. One vegetation unit, D2, identified within the application area is considered a Groundwater Dependent Ecosystem (GDE) (SLR, 2024).	At variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Potential impacts to vegetation growing in association with a watercourse as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition. One semi-permanent pool was located within the application area, the proponent has committed to a 50 metre exclusion zone around this pool (Rio Tinto, 2024).		
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Of the six mapped land systems, four were not susceptible to erosion, and two were identified as having a low potential for erosion (Van Vreeswyk et al., 2004). All six systems were generally non-saline, with either a moderate risk of inundation in low lying areas or other no risk of inundation or flooding (Van Vreeswyk et al., 2004). Potential land degradation may be managed by implementing a staged clearing condition.	Not likely to be at variance	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: There are no wetlands, permanent sources of surface water, or areas of public drinking water identified within the application area (GIS Database). Several non-ephemeral drainage lines transect the application area in addition to Turee Creek which flows through the application area and represents a significant area of surface drainage (SLR, 2024). Potential impacts to surface water quality as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: Several small, minor ephemeral drainage lines and Turee Creek east branch are located within the application area (SLR, 2024; GIS Database). These drainage lines are only likely to flow after significant rainfall events. Extensive clearing of native vegetation may increase the potential for localised and/or wide scale flooding. However, given that the proposed clearing of 180 hectares of native vegetation is to be undertaken at various locations within an application area of approximately 6,699 hectares, the proposed clearing is not likely to increase the potential for flooding in this region (GIS Database).	Not likely to be at variance	No .

Appendix C. Vegetation condition rating scale

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

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

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

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.

Condition	Description
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. Sources of information

D.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
- Regional Parks (DBCA-026)
- 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)

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4. Glossary

Acronyms:

BC Act	*Biodiversity Conservation Act 2016,* 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	*Environmental Protection Act 1986*, Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (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	*Rights in Water and Irrigation Act 1914*, 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.