



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	7608/2
Permit type:	Purpose Permit
Applicant name:	Hamersley Iron Pty Ltd
Application received:	22/11/2023
Application area:	170 hectares
Purpose of clearing:	Mineral exploration, hydrogeological and geotechnical investigations, and associated activities
Method of clearing:	Mechanical removal
Tenure:	Prospecting Licence 47/1559-I Prospecting Licence 47/1560-I Prospecting Licence 47/1561-I Prospecting Licence 47/1562-I Prospecting Licence 47/1563-I Prospecting Licence 47/1564-I Prospecting Licence 47/1578-I
Location (LGA area/s):	Shire of Ashburton
Colloquial name:	Marra Mamba Orebody Exploration Project

1.2. Description of clearing activities

Hamersley Iron Pty Ltd proposes to clear up to 170 hectares of native vegetation within a boundary of approximately 1,019.6 hectares, for the purpose of mineral exploration, hydrogeological and geotechnical investigations for their Marra Mamba Orebody Exploration Project. The project is located approximately 44 kilometres east of Tom Price, within the Shire of Ashburton. The total cumulative area of land cleared to date is approximately 3.95 hectares and approximately 3.01 hectares of rehabilitation activities (Rio Tinto, 2024).

On 22 November 2023, the Permit Holder applied to amend CPS 7608/1 to extend Condition 4; the period in which clearing is authorised to 31 December 2028, and to extend the duration of the permit to 31 December 2033 (Rio Tinto, 2023a).

Clearing permit CPS 7608/1 was granted by the Department of Mines, Industry Regulations and Safety (now the Department of Energy, Mines, Industry Regulation and Safety) on 31 August 2017 and was valid from 23 September 2017 to 31 December 2027. The permit authorised the clearing of up to 170 hectares of native vegetation within a boundary of approximately 1019.6 hectares, for the purpose of mineral exploration, hydrogeological and geotechnical investigations, and associated activities.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	18 April 2024
Decision area:	170 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with section 51KA(1) of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) on 22 November 2023. DEMIRS advertised the application for a public comment for a period of 7 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 flora and vegetation surveys, 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,
- potential impacts to conservation significant flora,
- potential impacts to conservation significant fauna, and
- potential secondary impacts of a priority ecological community.

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; and
- no clearing within 10 metres of priority flora *Dolichocarpa* sp. Hamersley Station, *Rostellularia adscendens* var. *latifolia* and *Themeda* sp. Hamersley, unless first approved by the CEO;

The assessment has not changed since the assessment for CPS 7608/1, except in the case of principle (a) and principle (b). The Delegated Officer determined that the proposed extension in which clearing is authorised and extension of permit duration is not likely to lead to an unacceptable risk to environmental values and can be managed by the permit conditions and avoidance and mitigation measures in place.

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)
- *Biosecurity and Agriculture Management Act 2007*
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)
- *Rights in Water and Irrigation Act 1914*

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

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. Operational control measures were submitted by the applicant demonstrating (Rio Tinto, 2017; Rio Tinto 2023a; Rio Tinto 2023b):

- avoid and minimise clearing,
- environmental management systems,
- ground disturbance procedure,
- rehabilitation management,
- weed management plan and records,
- soil resource management procedure,
- erosion monitoring procedure, and
- restriction zones established to avoid priority flora.

3.2. Assessment of impacts on environmental values

The assessment against the clearing principles identified that the impacts of the proposed clearing present a risk to conservation significant flora and fauna, watercourses, adjacent 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.

A review of current environmental information (Appendix A) reveals that the assessment against the clearing principles has not changed significantly from the Clearing Permit Decision Report CPS 7608/1, except for Clearing Principles (a) and (b).

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

Assessment

Priority flora:

A systematic conservation listed flora survey was conducted over the amendment area with a one kilometre buffer by Astron Environmental Services during two field trips between 9 and 15 March 2018, and 22 and 28 March 2018 (Astron, 2018). Five Priority 3 flora were recorded within the amendment area (Astron, 2018):

- *Vittadinia* sp. Coondewanna Flats (S. van Leeuwen 4684);
- *Acacia effusa* Maslin;
- *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) (formerly *Oldenlandia* sp. Hamersley Station (A.A. Mitchell PRP 1479));
- *Rostellularia adscendens* var. *latifolia* (Domin) R.M.Barker; and
- *Themeda* sp. Hamersley Station (M.E. Trudgen 11431).

A total of 829 *Vittadinia* sp. Coondewanna Flats individuals have been recorded at 73 locations within the amendment area, with approximately 19 hectares mapped as critical habitat for this species (Astron, 2018). There were 12,025 individuals recorded at 143 locations outside the amendment area, approximately 169 hectares mapped as critical habitat (Astron, 2018). The extent of occurrence for this species is limited to the Hamersley region extending from approximately 42 kilometres northeast of Tom Price to 30 kilometres east of Newman (Western Australia Herbarium, 1998-). A total of 4,100 individuals of *Acacia effusa* have been recorded at 180 locations within the amendment area, with approximately 47 hectares mapped as critical habitat for this species (Astron, 2018). There were 2,182 individuals recorded at 195 locations within approximately 169 hectares of critical habitat outside the amendment area (Astron, 2018). The extent of occurrence for this species is limited to the Hamersley region ranging from approximately 25 kilometres east of Tom Price to 25 kilometres southeast of Karijini National Park (Western Australia Herbarium, 1998-). The proposed clearing of *Vittadinia* sp. Coondewanna Flats and *Acacia effusa* is not likely to have a significant impact on the conservation status of these species due to large representations within conservation areas outside the amendment area, and the disturbed areas will be rehabilitated within 12 months following completion of the proposed clearing (DBCA, 2018).

A total of 18 *Dolichocarpa* sp. Hamersley Station individuals were recorded at three locations within the amendment area, with approximately 0.9 hectares mapped as critical habitat for this species (Astron, 2018). This species has been recorded across four subregions within Pilbara, ranging from Dampier to approximately 30 kilometres north of Fortescue Marsh and 15 southeast of Karijini National Park (Western Australia Herbarium, 1998-). A total of five *Rostellularia adscendens* var. *latifolia* individuals were recorded at one location within the amendment area (Astron, 2018). Approximately 2.85 hectares of critical habitat was mapped within the amendment area, and 0.7 hectares habitat in the local area (Astron, 2018). This species has been recorded across three subregions within Pilbara ranging from Warrawagine Station to approximately 15 kilometres southeast of Karijini National Park and 82 kilometres northeast of Tom Price (Western Australia Herbarium, 1998-). A total of 67 individuals of *Themeda* sp. Hamersley Station were recorded at three locations within the amendment area (Astron, 2018). This species has been recorded across four subregions within Pilbara, ranging from Karratha to approximately 25 kilometres north of Nullagine, and between Paraburdoo and Newman (Western Australia Herbarium, 1998-). The extent of occurrence for these species is broad, however, the impact to populations of *Dolichocarpa* sp. Hamersley Station, *Rostellularia adscendens* var. *latifolia* and *Themeda* sp. Hamersley Station from the proposed clearing is likely to be locally significant due to limited records within the area and occurrences within the amendment area. This impact can be mitigated through implementation of flora management measures. The applicant has identified restriction zones with disturbance to be avoided where practicable with no clearing of these Priority flora within 10 metres unless first approved by the CEO (DBCA, 2018; Rio Tinto, 2017).

Two Priority 3 species were considered likely to occur within the amendment area due to previous records either within the amendment area or within 10 kilometres of the area and suitable habitat present (Astron, 2018):

- *Aristida jerichoensis* var. *subspinulifera* Henrard; and
- *Goodenia lyrata* Carolin.

There are 45 records of *Aristida jerichoensis* var. *subspinulifera* across five subregions (Western Australia Herbarium, 1998-). The amendment area is within the north-western extent of the species occurrence, with most records in the Newman area outside of Karijini National Park (Western Australia Herbarium, 1998-). This species was previously recorded on the southern edge of the amendment area in 2008 (Western Australia Herbarium, 1998-), however was undetected in the 2018 flora survey potentially due to grazing impacts or presence of more dominant grass species (Astron, 2018). Given this perennial species was not recorded in the amendment area during systematic flora survey, the proposed clearing is unlikely to significantly impact the conservation status of this species.

There are 18 records of *Goodenia lyrata* across seven subregions (Western Australia Herbarium, 1998-). The amendment area is within the north-western extent of the species range, with 4 records within the Hamersley subregion (Western Australia Herbarium, 1998-). This species is an annual herb known to flower in August and has been recorded south of the railway line, with some records inside and outside of the amendment area (Biota, 2008a). There is potential for this species to occur within the amendment area, however, there is suitable habitat in the surrounding area with a record approximately two kilometres north of the amendment area (Western Australia Herbarium, 1998-). Given the above and the occurrence being south of the railway disturbance, it is unlikely the proposed clearing activities will significantly impact the conservation status of this species.

Eight Priority flora species were considered to potentially occur within the amendment area due to previous records within 10 to 20 kilometres and/or suitable habitat was present (A.2; Astron, 2018). The proposed clearing is unlikely to significantly impact the conservation status of this species given none were recorded within the amendment area during systematic flora survey.

Priority Ecological Community:

The Coolibah-lignum flats: *Eucalyptus victrix* over lignum is a Priority Ecological Community (PEC) in the Pilbara described as a woodland or forest of *Eucalyptus victrix* (coolibah) over thicket of *Duma florulenta* (lignum) on red clays in run-on zones (DBCA, 2023). There are three subtypes that have been identified, two occurring within close proximity to the amendment area (DBCA, 2023; GIS Database). Subtype 1 (P3) is approximately 0.7 kilometres from the amendment area and buffer region does not intersect the amendment area, however subtype 3 (P1) is located approximately 0.8 kilometres away and the buffer does intersect the amendment area (GIS Database). The mapped vegetation associations within the amendment area are unlikely to be representative of either subtype of the PEC (DBCA, 2024; Rio Tinto, 2017). Soil characteristics for these subtype PEC's are present within the amendment area, with some associated species recorded; *Acacia aneura*, *Eulalia aurea*, *Themeda triandra* and *Aristida latifolia*, however there is no record of *Eucalyptus victrix* or *Duma florulenta* within the amendment area (Biota, 2008a; Rio Tinto, 2017). Subtype 3 is only known from one location with current mapped extent of occurrence of approximately 84.2 hectares and subtype 1 is known from three locations between Newman and Tom Price with mapped extent of occurrence approximately 2464 hectares (DBCA, 2024; GIS Database). Clearing within the buffer region of subtype 3 may have secondary impacts associated with this PEC subtype from introduced flora and dust (DBCA, 2024). Given neither PEC have been recorded within the amendment area, it is unlikely the proposed clearing will have a significant impact on either of these subtype PEC's and secondary impacts can be managed through weed management and rehabilitation.

Introduced flora:

Eight introduced flora species have been recorded within the amendment area (Astron, 2018):

- *Bidens bipinnata*,
- *Malvastrum Americanum*,
- *Cenchrus setiger*,
- *Flaveria trinervia*,
- *Cenchrus ciliaris*,
- *Vachellia farnesiana*,
- *Setaria verticillate*, and
- *Rumex vesicarius*.

None of the 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.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing of native vegetation that contains conservation significant flora can be managed through flora exclusion zones, weed management and rehabilitation of the cleared area post prospecting activities. The rehabilitation condition has been removed from the permit, as rehabilitation will be enforced through the tenement conditions of the Prospecting Licences.

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;
- no clearing within 10 metres of *Dolichocarpa* sp. Hamersley Station, *Rostellularia adscendens* var. *latifolia* and *Themeda* sp. Hamersley unless first approved by the CEO; and
- take hygiene steps to minimise the risk of the introduction and spread of weeds.

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

Assessment

There have been no fauna surveys over the amendment area or surrounding area since 2008 (Biota, 2008b; Biota, 2008c; Rio Tinto, 2023b). A desktop search identified seven records of conservation significant fauna within 20 kilometres of the amendment area (A.3; GIS Database).

- Northern quoll (*Dasyurus hallucatus*) (EN)
- Greater bilby (*Macrotis lagotis*) (VU)
- Ghost bat (*Macroderma gigas*) (VU)
- Pilbara leaf-nose bat (Pilbara form) (*Rhinonictis aurantia*) (VU)
- Pilbara olive python (*Liasis olivaceus barroni*) (VU)
- Western pebble-mound mouse (*Pseudomys chapmani*) (P4)
- Northern short-tailed mouse (*Leggadina lakedownensis*) (P4)

Three broad fauna habitats and disturbance areas were previously mapped based on landforms and vegetation associations over the amendment area (Appendix A; Rio Tinto, 2017):

- Plain: 83.3% (849 ha)
- Calcrete plain: 10.3% (104.8 ha)
- Flowline: 5.7% (58.2 ha)
- Disturbed: 0.7% (7.6 ha)

All habitat types are considered to be well represented in the region and adjacent to the amendment area is a conservation area (Rio Tinto, 2017; GIS Database). Drainage habitat associated with flowlines may hold local significance as these areas consists of habitat that facilitates connectivity for dispersal and foraging habitat (Northover et al., 2023; Rio Tinto, 2017). There are several records of northern quoll within close proximity and are considered likely to occur within the amendment area as the area contains suitable habitat for foraging and dispersal (DBCA, 2024; GIS Database). However, a large portion of the amendment area contains a high clay content, which may impede dispersal for this species (Northover et al., 2023), therefore

the amendment area is not considered significant for the northern quoll. Pilbara leaf-nose bat and ghost bat may potentially occur in the amendment area, as there are nearby records, and the area contains potential foraging habitat (DBCA 2024; GIS Database). It is unlikely any of the above species would utilise the area for breeding given the limited presence of breeding microhabitats such as denning, gorges/gullies, caves or significant drainage containing permanent or semi-permanent water bodies (DBCA, 2024; Northover et al., 2023; Rio Tinto, 2017).

The western pebble-mound mouse has been recorded within the amendment area (Rio Tinto, 2017). This species is found throughout the Pilbara region (Anstee et al., 1997), with habitat availability widespread in adjacent areas (Rio Tinto, 2017; GIS Database). The proposed clearing is unlikely to significantly impact the conservation status of this species, however active mounds should be avoided where practicable.

There is one record of Pilbara olive python and one record of greater bilby within 20 kilometres of the amendment area, however given both records are prior to 2000, the likelihood of occurrence is low (DBCA, 2024; GIS Database). Pilbara olive python may potentially occur given their cryptic nature, however common habitat characteristics include rocky gorges, gullies and permanent waterholes (Northover et al., 2023). Greater bilby inhabit a wide range of substrate and vegetation types, however the presence of soil substrate that is suitable for burrow construction is critical (Northover et al., 2023). Both these species occur in the Pilbara region; however, given limited availability of core habitat, it is unlikely either of these species will be significantly impacted by the proposed clearing.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on native vegetation consisting of potential conservation significant fauna habitat can be managed by slow directional clearing to allow fauna to move into adjacent vegetation, avoid riparian vegetation and rehabilitating the site post prospecting activities to ensure the habitat is not permanently lost. Rehabilitation will be enforced through the tenement conditions of the Prospecting Licences.

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; and
- 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.

3.3. Relevant planning instruments and other matters

The clearing permit amendment application was advertised on 19 December 2023 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 no native title claims over the area under application (DPLH, 2024). However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are several registered Aboriginal Sites of Significance within the application area (DPLH, 2024). The *Aboriginal Heritage (Marandoo) Act 1992* previously intersecting the application area has been repealed as of 1 July 2023. 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.

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 adjacent the Marandoo Mine (GIS Database). The predominant land use in the region is grazing of native pastures, conservation, mining activities and urban development.
Conservation areas and ecological linkage	The amendment area lies within an area that has been excised from Karijini National Park (formerly Hamersley Range National Park), which is listed on the Register of National Estate (GIS Database). The amendment area occurs within a 5(1)(g) Reserve that functions as an infrastructure corridor (GIS Database). The reserve is vested in the Conservation Commission of Western Australia that is not a National Park and managed by DBCA. The amendment area is unlikely to represent a significant ecological linkage as the majority of the surrounding native vegetation remains uncleared (GIS Database).
Vegetation description	<p>The amendment area occurs within the Hamersley subregion of Pilbara (PIL03). The vegetation of the area is broadly mapped as the following Beard vegetation associations (GIS Database):</p> <ul style="list-style-type: none"> • 18: low woodland; mulga (<i>Acacia aneura</i>), • 29: sparse low woodland; mulga, discontinuous in scattered groups, and • 567: hummock grasslands, shrub steppe; mulga & kanji over soft spinifex and <i>Triodia basedowii</i>. <p>The following 11 vegetation associations were recorded across 5 major landforms within the amendment area (Rio Tinto, 2017):</p> <p><i>Vegetation of broad drainage areas and basins</i></p> <ul style="list-style-type: none"> • 1a: Woodland of <i>Acacia aptaneura</i> over a tussock grassland dominated by <i>Chrysopogon fallax</i>, • 1b: <i>Aristida contorta</i> open grassland, • 1c: Low open woodland of <i>Acacia aptaneura</i> usually with <i>Acacia pruinocarpa</i> over scattered hummocks to hummock grassland of <i>Triodia melvillei</i> or <i>Triodia schinzii</i>, • 1d: <i>Triodia melvillei</i> hummock grassland with emergent, isolated pockets of <i>Triodia pungens</i>. <p><i>Vegetation of moderate flowlines and creeks</i></p> <ul style="list-style-type: none"> • 2a: Open forest of <i>Acacia aptaneura</i>, with substantial amounts of <i>Acacia pruinocarpa</i>, over a tussock grassland broadly dominated by <i>Chrysopogon fallax</i>, <i>Eulalia aurea</i> and <i>Themeda triandra</i>, • 2b: <i>Eucalyptus xerothermica</i>, <i>Acacia aptaneura</i> low open forest over <i>Acacia bivenosa</i>, <i>Santalum lanceolatum</i> open shrubland over <i>Triodia longiceps</i> hummock grassland and <i>Themeda triandra</i>, <i>Eulalia aurea</i> very open tussock grassland, • 2c: <i>Eucalyptus xerothermica</i> – <i>Acacia aneura</i> woodland over <i>Acacia citrinoviridis</i> tall shrubland. <p><i>Vegetation of minor creeks</i></p> <ul style="list-style-type: none"> • 3a: Emergent scattered <i>Eucalyptus leucophloia</i> over mixed <i>Acacia</i> spp. shrubland over <i>Triodia wiseana</i> and <i>Triodia</i> sp. Shovelanna Hill (S. van Leeuwen 3835) hummock grassland, • 3b: Low woodland of mixed mallee eucalyptus species on shallow calcrete soils. <p><i>Vegetation of ridges and erosional spurs</i></p> <ul style="list-style-type: none"> • 5h: <i>Triodia wiseana</i> hummock grassland with mixed <i>Acacia</i> spp. emergent shrubs. <p><i>Vegetation of low foothills and escarpments</i></p> <ul style="list-style-type: none"> • 6d: <i>Eucalyptus trivalva</i>, <i>Eucalyptus socialis</i> low mallee woodland with pockets of <i>Triodia angusta</i>, <i>Triodia wiseana</i> hummock grassland on shallow calcrete soils. <p>Mapping of vegetation types is provided in Appendix D.</p>
Vegetation condition	<p>The aerial imagery indicates the vegetation within the proposed clearing area is in excellent to good condition (Trudgen, 1991), described as:</p> <p>Excellent: pristine or nearly so, no obvious signs of damage caused by human activities since European settlement,</p> <p>to</p> <p>Good: more obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.</p> <p>The full Trudgen (1991) condition rating scale is provided in Appendix C. Mapping of vegetation condition is provided in Appendix D.</p>

Climate and landform	The amendment area is mapped within elevations of 700-730 meters AHD (GIS Database). The climate for the Pilbara region is semi-arid to tropical with an annual rainfall average of approximately 384.5 millimetres recorded at Hamersley (BoM, 2024; CALM, 2002)
Soil description and land degradation risk	<p>The soil is mapped as part of the following landform systems and soil descriptions (DPIRD, 2023; Gool et al., 2005; Rio Tinto, 2017; Van Vreeswyk et al. 2004; GIS Database):</p> <ul style="list-style-type: none"> • Boolgeeda (285Bg): stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands. Stony lower plains consist of soil characterised as red loamy earths and stoney slopes and upper plains consist of red shallow loams or red loamy earths. This system covers roughly 497 hectares of the amendment area and is not susceptible to erosion. • Wannamunna (285Wn): hardpan plains and internal drainage tracts supporting mulga shrublands and woodlands (and occasionally eucalypt woodlands). Hardpan plains consists of soil characterised as red-brown hardpan shallow loams and internal drainage plains that are deep red/brown non-cracking clays, self-mulching cracking clays and red loamy earths. This system covers roughly 329 hectares of the amendment area and has low susceptibility to erosion. • Table Land System (285Tb): low calcrete plateaux, mesas and lower plains supporting mulga and cassia shrublands and minor spinifex grasslands. Calcrete mesas, low plateaux and hills consist of soil characterised as calcareous shallow loams and footslopes consisting of red shallow loams. This system covers roughly 193 hectares of the amendment area and is not generally susceptible to erosion.
Waterbodies and hydrogeography	The amendment area is located within Ashburton River Catchment and is directly adjacent Southern Fortescue and Marandoo Water Reserve Public Water Source Area (GIS Database). The amendment area is located within the Pilbara Ground Water Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (GIS Database). There are no permanent waterbodies or major watercourses within the amendment area; however, numerous minor ephemeral drainage lines that run through the area and some areas are subject to inundation (GIS Database). There are no Wetlands of International Importance or Nationally Important Wetlands that occur within the amendment area, the nearest Nationally Important Wetland is Mount Bruce coolabah-lignum flats (WA113), approximately 0.75 kilometres from the amendment area (GIS Database).
Flora	There are records of five Priority flora within the amendment area (Astron, 2018; Biota, 2008a; Western Australian Herbarium, 1998-). No Declared Rare or Threatened flora species have been recorded within the amendment area (Astron, 2018). The nearest record of Threatened flora is approximately 49 kilometres south-east (GIS Database).
Ecological communities	<p>The amendment area is located within one kilometre of Priority Ecological Community (PEC): Coolibah-lignum flats (GIS Database):</p> <ul style="list-style-type: none"> • subtype 1: Coolibah and mulga (<i>Acacia aneura</i>) woodland over lignum and tussock grasses on clay plains (Coondewanna Flats and Wanna Munna Flats) (P3); and • sub type 3. Coolibah (<i>Eucalyptus victrix</i>) woodland over lignum (<i>Duma florulenta</i> – formerly <i>Muehlenbeckia florulenta</i>) and silky browntop (<i>Eulalia aurea</i>) (Mt Bruce flats) (P1). <p>There are no Threatened Ecological Communities (TEC) mapped in the amendment area (Rio Tinto, 2017; GIS Database). The nearest record of a TEC is Themeda grasslands (<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)) on cracking clays (Hamersley Station, Pilbara) located 45 kilometres northwest of the amendment area (GIS Database).</p>
Fauna and fauna habitat	<p>Within the amendment area there has been record of one Priority 4 species and six additional conservation significant species have been recorded within 20 kilometres of the amendment area (Rio Tinto, 2023b; GIS Database).</p> <p>Fauna habitat within is amendment area has been mapped into four types (Rio Tinto, 2017):</p> <ul style="list-style-type: none"> • Calcrete plain: gently undulating calcrete plain vegetated with <i>Eucalyptus</i> mallee over <i>Triodia</i> hummock grasses, • Plain: flat outwash plains vegetated with <i>Acacia</i> shrubs on loamy substrates, • Flowline: small drainage lines vegetated with <i>Acacia aneura</i> over tussock grasses on loamy substrates, and • Heavily disturbed: previously cleared or heavily disturbed.

A.2. Flora analysis table

Adapted likelihood of occurrence of conservation significant flora species recorded within 20 kilometres of the survey area (Astron, 2018). *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) formerly *Oldenlandia* sp. Hamersley Station (A.A. Mitchell PRP 1479). Some of the Threatened and Priority flora database search results may occur beyond 20 kilometres (Astron, 2018).

Species	Habit and flowering information*	Life Form*	Habitat*	Likelihood of occurrence	
				Pre-survey	Post-survey
Threatened					
<i>Thryptomene wittweri</i>	Spreading or rounded shrub from 0.5 to 1.5(-2.1) m high. White-cream flowers in April or July or August.	Perennial	Skeletal red stony soils. Breakaways and stony creek beds.	Potential	Unlikely
Priority 1					
<i>Calotis squamigera</i>	Procumbent herb to 0.21 m high. Yellow flowers in July.	Annual	Pebbly loam. Poorly defined flowline on loamy plains	Potential	Potential
Priority 2					
<i>Aristida lazardis</i>	Tufted grass from 0.4 to 1.5 m high.	Perennial	Sand, loam and clayey soils. Plains and ironstone hills.	Potential	Potential
Priority 3					
<i>Acacia dawsoniana</i>	Spreading shrub from 0.3 to 1.5(-2) m high. Yellow flowers from July to September.	Perennial	Stony red loamy soils. Low rocky rises and along drainage lines.	Likely	Potential
<i>Acacia effusa</i>	Low, dense, spreading, somewhat viscid shrub from 0.3 to 1 m high. Has 'minniritchi' bark. Yellow flowers from May to August.	Perennial	Stony red loam. Scree slopes of low ranges.	Recorded 2017 (RTIO 2017c)	Recorded
<i>Euphorbia australis</i> var. <i>glabra</i>	Spreading herb or groundcover.	Annual	Creek banks. Red brown loam, some pebbles. Sump, low in landscape. Saline flats	Likely	Potential
<i>Vittadinia</i> sp. Coondewanna Flats (S. van Leeuwen 4684)	Erect herb to 1 m high. Cream flowers in July.	Annual	Flat plain, cracking clay, low in landscape and red sandy clay loam with some stone.	Likely	Recorded
<i>Amaranthus centralis</i>	Herb to 0.5 m high	Annual	Occurs in red sand in ephemeral watercourses, sandy to clayey loam on river banks and edges of pools.	Likely	Potential
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	A compactly tufted grass from 0.3 to 0.8 m high.	Perennial	Occurs on hardpan plains.	Recorded 29/05/2008 (WAHerb 2018)	Likely
<i>Astrebala lappacea</i>	Tufted grass from 0.3 to 0.8 m high. Green/purple flowers from June to July.	Perennial	Clay, loam.	Potential	Potential
<i>Goodenia lyrata</i>	Prostrate herb with lyrate leaves. Yellow flowers in August.	Annual	Red sandy loam. Near claypan.	Recorded 2008 (Biota 2008)	Likely
<i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	Spreading herb from 0.05 to 0.1 m high. Blue flowers in March.	Annual	Cracking clay and basalt. Gently undulating plain with large surface rocks and flat crabholed plain.	Potential	Recorded
<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794)	Shrub to 2 m high. Yellow flowers in May.	Perennial	Alluvial plains. Red brown clay to loamy clay.	Likely	Potential
<i>Rostellularia adscendens</i> var. <i>latifolia</i>	Herb or shrub from 0.1 to 0.3 m high. Blue-purple-violet flowers from April to May.	Short-lived perennial	Ironstone soils. Near creeks and rocky hills.	Likely	Recorded
<i>Swainsona thompsoniana</i>	Prostrate herb to 0.1 m. Mauve-cream-yellow flowers from August to September.	Annual	Open flood plains on heavy clay soils.	Potential	Potential
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	Tussock-forming grass from 0.9 to 1.8 m high. Flowers in August.	Perennial	Red clay. Clay pan and grass plain.	Likely	Recorded

A.3. Fauna analysis table

With consideration for the site characteristics set out above, 20 kilometre radius of relevant datasets (see Appendix E.1), and biological survey information, impacts to the following conservation significant fauna required further consideration (GIS Database).

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)
Mammals					
Northern quoll (<i>Dasyurus hallucatus</i>)	EN	Y	Y	2.4 km	3
Greater bilby (<i>Macrotis lagotis</i>)	VU	Y	Y	3.5 km	1 (1991)
Ghost bat (<i>Macroderma gigas</i>)	VU	Y	Y	2.6 km	4
Pilbara leaf-nose bat (Pilbara form) (<i>Rhinionictis aurantia</i>)	VU	Y	Y	11.8 km	1 (2013)
Western pebble-mound mouse (<i>Pseudomys chapmani</i>)	P4	Y	Y	0 km	54
Northern short-tailed mouse (<i>Leggadina lakedownensis</i>)	P4	Y	Y	19.6 km	9
Reptiles					
Pilbara olive python (<i>Liasis olivaceus barroni</i>)	VU	N	N	1.9 km	1 (1978)

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

A.4. Ecological community analysis table

Conservation significant ecological community within 20 kilometres of the amendment area (Biota, 2008a; GIS Database).

Community name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Mapped extent of occurrence (ha)	Are surveys adequate to identify? [Y, N, N/A]
Coolibah – Lignum Flats: subtype 3	Priority 1	Y	N	Y	0.8 km	84.2 ha	Y
Coolibah – Lignum Flats: subtype 1	Priority 3	Y	N	Y	0.7 km	2464 ha	Y

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

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains five conservation significant flora, habitat for two conservation significant flora and is within one kilometre of two subtypes of a Priority Ecological Community.</p>	<p>At variance</p> <p>Changed from CPS 7608/1</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>
<p><u>Principle (b):</u> "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."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain breeding habitat for conservation significant fauna, however, is likely to be utilised for foraging and dispersal.</p>	<p>May be at variance</p> <p>Changed from CPS 7608/1</p>	<p>Yes</p> <p>Refer to Section 3.2.2, above.</p>
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p>	<p>Not likely to be at variance</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain threatened flora.</p> <p><i>Thryptomene wittweri</i> J.W.Green has been recorded approximately 50 kilometres south of the amendment area within the Hamersley subregion, however this species has been recorded in high landscapes, skeletal red stony soils, breakaways and stony creek beds (Western Australian Herbarium, 1998-). After field survey, it was determined, the habitat within the amendment area is unlikely to support this species (Astron, 2018).</p>	As per CPS 7608/1	
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u></p> <p>There have been no records of a Threatened Ecological Communities (TEC) occurring in the area proposed to be cleared (GIS Database).</p> <p>Themeda grasslands (<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)) on cracking clays (Hamersley Station, Pilbara) has been recorded 45 kilometres northwest of the amendment area (GIS Database).</p> <p>The amendment area has records of the species <i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) and soil type that could support this TEC, however, habitat associated with <i>Themeda</i> sp. Hamersley Station was described to be 2a: open forest of <i>Acacia aptaneura</i>, with substantial amounts of <i>Acacia pruinocarpa</i>, over a tussock grassland broadly dominated by <i>Chrysopogon fallax</i>, <i>Eulalia aurea</i> and <i>Themeda triandra</i> (Astron, 2018; Rio Tinto, 2017). Given the vegetation does not appear to be analogous of this the above TEC, it is unlikely this would be representative of this TEC (Astron, 2018; Biota, 2008a; DBCA, 2024).</p>	<p>Not likely to be at variance</p> <p>As per CPS 7608/1</p>	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type is consistent with the national objectives and targets for biodiversity conservation in Australia. The current extent of vegetation associations remaining (Government of Western Australia, 2019):</p> <ul style="list-style-type: none"> • Hamersley 18: 99.3% (676,556.72 ha) • Hamersley 29: 99.87% (1,131,712.01 ha) • Hamersley 567: 99.66% (774,213.03 ha) <p>The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area (GIS Database).</p>	<p>Not at variance</p> <p>As per CPS 7608/1</p>	No
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>Given the amendment area is adjacent to a conservation area, the proposed clearing may have an impact on environmental values (GIS Database). The proposed clearing can be managed through weed management. The rehabilitation condition has been removed from the permit, as rehabilitation will be enforced through the tenement conditions of the Prospecting licences.</p>	<p>May be at variance</p> <p>As per CPS 7608/1</p>	No
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>The amendment area intersects numerous minor, non-perennial watercourses and runs adjacent to an area subject to inundation (GIS Database). Aerial imagery indicates that vegetation growing along these watercourses is riparian in nature (GIS Database). Two riparian vegetation units have been described within the amendment area and hold moderate conservation value as it represents mature</p>	<p>At variance</p> <p>As per CPS 7608/1</p>	No

Assessment against the clearing principles	Variance level	Is further consideration required?
creekline vegetation (Biota, 2008a). Potential impacts to these vegetation units as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.		
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are not susceptible to erosion (Van Vreeswyk, 2004; GIS Database). Noting the extent of the amendment area, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance As per CPS 7608/1	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>Marandoo Water Reserve Public Drinking Water Source Area is adjacent to the amendment area (GIS Database), however given no permanent water bodies or Public Drinking Water Sources Areas have been recorded within the amendment area; the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance As per CPS 7608/1	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. Localised flooding occurs seasonally in the region after intense rainfall and there is potential for some areas within the amendment area to be inundated (GIS Database).</p>	Not likely to be at variance As per CPS 7608/1	No

Appendix C. Vegetation condition rating scale

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

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

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

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

Appendix D. Mapping of vegetation types and vegetation condition

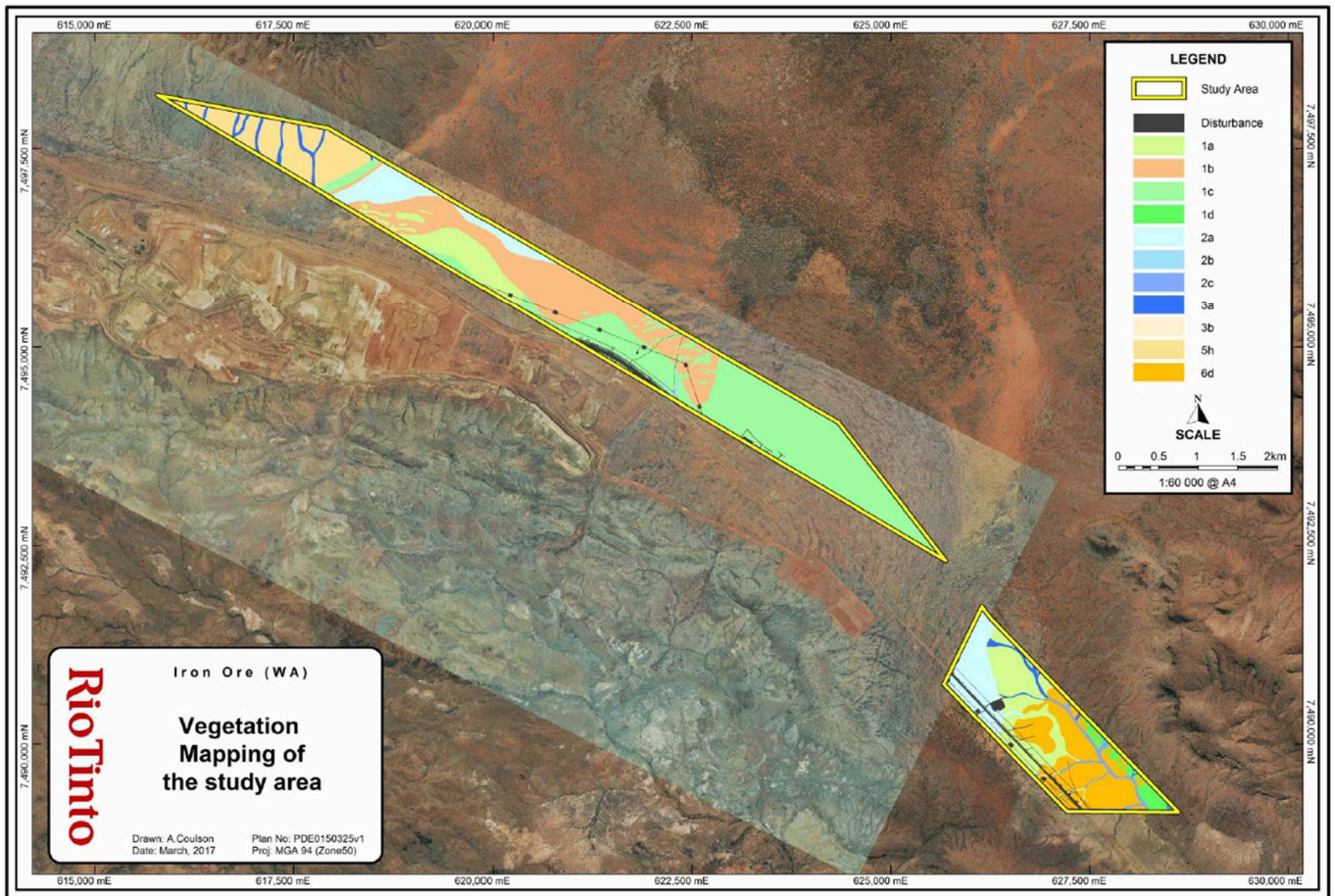


Figure 1. Map of vegetation types (Rio Tinto, 2017).

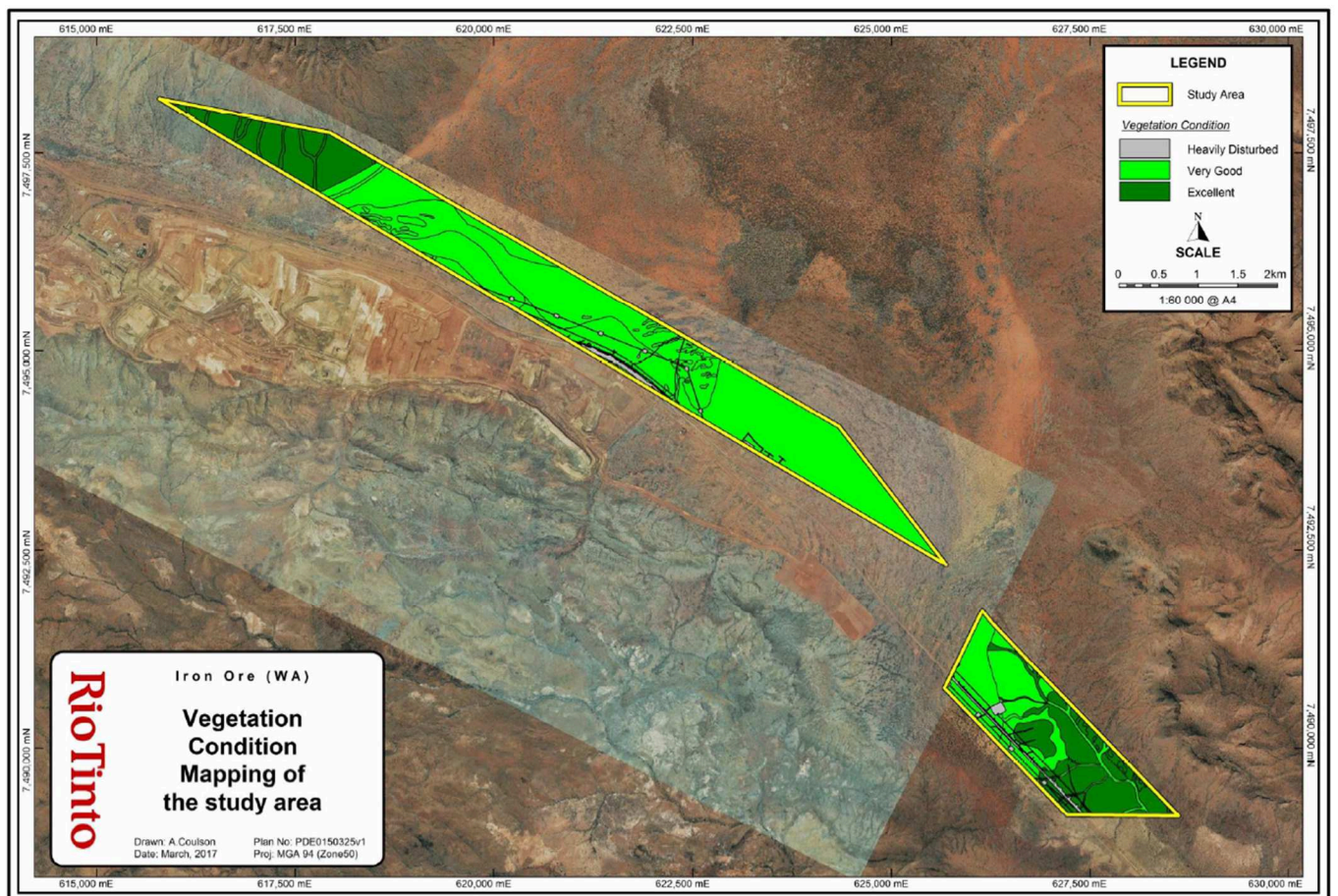


Figure 2. Map of vegetation condition (Rio Tinto, 2017).

E.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography, Linear (DWER-031)
- 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)

E.2. References

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- Biota (2008a) A vegetation and flora survey of the Rio Tinto rail duplication – bellbird siding to Juna Downs. Prepared for Rio Tinto Iron Ore by Biota Environmental Sciences Pty Ltd, August 2008.
- Biota (2008b) Marandoo Mine Phase 2 Seasonal Fauna Survey. Prepared for Rio Tinto by Biota Environmental Sciences Pty Ltd, August 2008.
- Biota (2008c) Rio Tinto Rail Duplication Fauna Assessment: Bellbird Siding to Juna Downs. Prepared for Rio Tinto Iron Ore by Biota Environmental Sciences Pty Ltd, July 2008.
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4. Glossary

Acronyms:

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

Definitions:

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

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered

or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

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

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

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

CR Critically endangered species

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

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

EN Endangered species

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

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

VU Vulnerable species

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

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

Extinct Species:

EX Extinct species

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

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

EW Extinct in the wild species

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

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

Specially protected species:

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

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

MI Migratory species

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

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

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

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

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

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

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

P **Priority species:**

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

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

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

P1 **Priority One - Poorly-known species**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 **Priority Two - Poorly-known species**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 **Priority Three - Poorly-known species**
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 **Priority Four - Rare, Near Threatened and other species in need of monitoring**
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.
- (e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
- (i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.
- (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.