



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8270/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Resources Limited

1.3. Property details

Property: Iron Ore (Rhodes Ridge) Agreement Authorisation Act 1972, Temporary Reserves 70/4192, 70/4193, 70/4266, 70/4267, 70/4737, 70/4881, 70/4882, 70/4883, 70/4884
Local Government Area: Shire of East Pilbara
Colloquial name: Rhodes Ridge

1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
|--------------------|-----------|--------------------|------------------------------------------------------------------------------------------------------|
| 600 | | Mechanical Removal | Mineral Exploration, Hydrogeological and Geotechnical Investigations, Camp and Associated Activities |

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 27 June 2019

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The vegetation of the application area is broadly mapped as the following Beard vegetation associations (GIS Database):

- 18: Low woodland; mulga (*Acacia aneura*);
- 29: Sparse low woodland; mulga, discontinuous in scattered groups;
- 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* and
- 175: Short bunch grassland – savanna/grass plain.

The clearing permit boundary covers an area of over 82,000 hectares. Several flora surveys have been conducted over portions of the permit boundary. The following vegetation associations have been recorded within the application area (Rio Tinto, 2018):

HS1 - EICHAsppTsp

Mid to upper rocky hillslopes of the Newman, Platform and Egerton Land System supporting *Eucalyptus leucophloia* subsp. *leucophloia* and emergent *Corymbia hamersleyana* low open woodland to scattered low trees over mixed shrubs (dominated by *Acacia* spp.) over open hummock grassland of *Triodia* spp. (\pm *T. wiseana*, *T. epactia*, *T. vanleeuwenii*);

HS2 - EICHdAsppTsp

Rocky mid slopes of the Newman, Platform and Egerton Land System supporting *Eucalyptus leucophloia* subsp. *leucophloia* and emergent *Corymbia hamersleyana*, *C. deserticola* low open woodland over mixed sparse shrubs (dominated by *Acacia* spp.) over open hummock grassland of *Triodia* spp. (\pm *T. vanleeuwenii*, *T. wiseana* and occasionally *Triodia epactia*);

HS3 - EICHAsppTsp

Stony mid to lower slopes and low hills of the Newman, Rocklea, Boolgeeda, McKay and to a lesser degree Wannamunna and Spearhole Land Systems supporting *Eucalyptus leucophloia* subsp. *leucophloia* and/or *Corymbia hamersleyana* low open woodland over mixed *Acacia* spp. open shrubland over *Triodia* spp. (\pm *T. basedowii*, *T. epactia* and occasionally *T. wiseana*) hummock grassland;

HS4 - EICdEgAsppTeTv

Undulating stony lower slopes of the Newman, Rocklea, Boolgeeda and to a lesser degree Wannamunna and Spearhole Land Systems supporting low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia deserticola* and *Eucalyptus gamophylla* over open shrubland (dominated by *Acacia* spp.) over open hummock grassland of *Triodia epactia* and/or *T. vanleeuwenii*;

P1 – CdEgTsp

Stony undulating plains of the Boolgeeda Land System supporting scattered *Corymbia deserticola* low trees over scattered *Eucalyptus gamophylla* mallees over scattered low shrubs over open to very open *Triodia* spp. (\pm *T.*

vanleeuwenii, *Triodia basedowii*) hummock grassland;

P2 - AsppTm

Gravelly clay plains or lower slopes supporting *Acacia* spp. (\pm *A. aptaneura*, *A. catenulata* subsp. *occidentalis*, *A. pruinocarpa*) low open woodland to tall open shrubland over scattered mixed shrubs over *Triodia melvillei* or *T. pungens* scattered hummock grassland and scattered tussock grasses;

P3 - AsppEgTg

Broad clay plains of the Spearhole, Wannamunna and Boolgeeda Land Systems supporting low woodland to low open woodland of *Acacia* spp. (\pm *A. aptaneura*, *A. pruinocarpa*, *A. catenulata* subsp. *occidentalis* and *A. rhodophloia*) with emergent *Eucalyptus gamophylla* over sparse low shrubs and numerous tussock grasses such as *Chrysopogon fallax*, *Themeda triandra*, *Eriachne* spp. and *Aristida* spp.;

P4 - CcAaApTg

Clay plains of the Wannamunna Land System supporting *Corymbia candida* subsp. *dipsodes* and *Acacia aptaneura* low open woodland over *Acacia pruinocarpa* scattered tall shrubs over mixed tussock grassland;

P5 - AapEsppP sppM sppTm

Hardpan clay plains and intergroves of the Wannamunna, Spearhole and Boolgeeda Land Systems supporting scattered tall or low shrublands of *Acacia aptaneura*, *Eremophila* spp., *Ptilotus* spp. and *Maireana* spp. over scattered *Triodia melvillei* hummock grasses and/or open to scattered tussock grasslands and mixed herbs;

P6 - AsppExCcEppP sppS sppTg

Mulga Groves of the Wannamunna, Spearhole and to a lesser degree Boolgeeda Land Systems supporting closed woodlands to tall shrublands (and occasionally low open forests) of *Acacia* spp. (\pm *A. aptaneura*, *A. catenulata* subsp. *occidentalis*, *A. pruinocarpa*), with emergent *Eucalyptus xerothermica* and *Corymbia candida* subsp. *dipsodes* over numerous low shrubs of *Eremophila* spp. *Ptilotus* spp. and *Sida* spp. over mixed tussock grasslands and mixed herblands;

P7 - AsppTg

Internally draining plains of the Wanna Munna Flats (Wannamunna Land System) supporting moderately close to closed woodlands of *Acacia* spp. (\pm *A. aptaneura*, *A. catenulata* subsp. *occidentalis*, *A. pruinocarpa*) with sparse low shrublands and very open to scattered tussock grassland;

P8 - EvAsppMfTg

Internally draining plains of the Wanna Munna Flats (Wannamunna Land System) supporting moderately close to closed woodland of *Eucalyptus victrix* and *Acacia* spp. (\pm *A. aptaneura*, *A. catenulata* subsp. *occidentalis*, *A. pruinocarpa*) with sparse low shrublands including *Muehlenbeckia florulenta* over patchy or scattered tussock grassland;

D1 - EICHAmPIGrAmTp

Minor drainage on hillslopes supporting Low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and/or *Corymbia hamersleyana* over tall open shrubland of *Acacia monticola*, *Petalostylis labicheoides* and *Gossypium robinsonii* over scattered shrubs of *Acacia maitlandii* over open hummock grassland of *Triodia pungens*;

D2 - EvEcAsppTg

Moderate drainage lines on sandy soils supporting open woodland of *Eucalyptus victrix*, *Eucalyptus camaldulensis* var. *obtusata* over mixed shrubland dominated by *Acacia* spp. over mixed tussock grasslands and herbs; and

D3 - ExCcAayPoTg

Broad shallow drainage lines on plains supporting *Eucalyptus xerothermica* and (\pm *Corymbia deserticola*, *Corymbia hamersleyana*, *Corymbia candida* subsp. *dipsodes*) low open woodland over *Acacia ayersiana* open shrubland over scattered *Ptilotus obovatus* low shrubs over mixed tussock grassland.

Clearing Description

Rhodes Ridge project.
Hamersley Resources Ltd proposes to clear up to 600 hectares of native vegetation within a boundary of approximately 82,168 hectares, for the purposes of mineral exploration, hydrogeological and geotechnical investigations, camp and associated activities. The project is located approximately 33 kilometres northwest of Newman, within the Shire of East Pilbara.

Vegetation Condition

Pristine: No obvious signs of disturbance (Keighery, 1994);
to
Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

Comment

The vegetation conditions were described using a scale based on Trudgen (1988) and have been converted to the corresponding conditions from the Keighery (1994) scale.

The proposed clearing is for purposes of mineral exploration, hydrogeological and geotechnical investigations, camp and associated activities in the Rhodes Ridge area. The permit area covers nine clearing permits that are currently in the area. The intention is for CPS 8270/1 to replace these permits.

3. Assessment of application against Clearing Principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments **Proposal may be at variance to this Principle**

The clearing permit application area is located within the Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion (GIS Database). The Hamersley subregion is characterised by ranges and plateaux, dissected by gorges, supporting Mulga low woodland over bunch grass (CALM, 2002).

Flora and vegetation surveys have been undertaken over a portion of the permit area. These surveys have identified 15 different vegetation associations within the permit area (Rio Tinto, 2018). None of these vegetation associations were considered to be a Threatened Ecological Community (Rio Tinto, 2018; GIS Database). The 'Kumina Land System' Priority Ecological Community (PEC) has been mapped within the permit area (GIS Database). This is a restricted land system and is under threat from mining activities (DBCA, 2019). The PEC has been mapped at one location within the permit area, totalling approximately 32 hectares (GIS Database). The vegetation association 'P8:EvAsppMfTg' was identified as likely to be representative of the 'Coolibah and mulga (*Acacia aneura*) woodland over lignum and tussock grasses on clay plains (Coondewanna Flats and Wanna Munna Flats)' PEC (Rio Tinto, 2018). This PEC is a sub-type of the 'Coolibah-lignum flats: *Eucalyptus victrix* over lignum community' PEC (DBCA, 2019). There is approximately 530 hectares of this PEC across several locations within the permit area (Rio Tinto, 2018). A previous assessment of clearing permit 2283/6 identified areas of vegetation which potentially represented the 'West Angelas cracking-clays' PEC. Further investigations have not identified any areas of this PEC within the permit area (Rio Tinto, 2018). Potential impacts to Priority Ecological Communities may be minimised by the implementation of a condition excluding clearing of these vegetation communities.

Previous flora surveys within the permit area have recorded between 67 and 519 flora taxa (Rio Tinto, 2018). No Threatened flora species have been recorded within the permit area (Rio Tinto, 2018; GIS Database). There has been 21 species of Priority flora recorded within the permit area (Rio Tinto, 2018). Based on the vegetation within the area and known distributions, there are a further 16 taxa which are likely or have the potential to occur within the permit area (Rio Tinto, 2018).

The Priority 1 flora species *Euphorbia inappendiculata* var. *queenslandica*, *Vittadinia* sp. Coondewanna Flats and Priority 2 flora species *Aristida lazaridis*, *Teucrium pilbaranum* have each been recorded from one location within the permit area (Rio Tinto, 2018; GIS Database). *Oxalis* sp. Pilbara (Priority 2) was recorded from two locations within the permit area. *Eremophila* sp. Hamersley Range (Priority 1) and *Goodenia pedicellata* (Priority 1) have not been recorded within the permit area, however, suitable habitat is present and they are considered likely to be present (Rio Tinto, 2018). Whilst the removal of plants from one or two locations is not likely to have a significant impact on these species, they are likely to be found within other areas of suitable habitat in the permit area. Where possible, impacts on suitable habitat should be minimised and individuals avoided when encountered. The Priority 2 species *Isotropis parviflora* was recorded from 147 locations within the permit area, in particular in the southern section of the permit area which is covered by existing clearing permit 2283/6 (Rio Tinto, 2018; GIS Database). Conditions have been placed on underlying clearing permits 2283/6 and 4149/3 to restrict clearing of the Priority flora species *Euphorbia inappendiculata* var. *queenslandica*, *Isotropis parviflora* and *Oxalis* sp. Pilbara.

Acacia bromilowiana (Priority 4), *Acacia subtiliformis* (Priority 3), *Aristida jerichoensis* var. *subspinulifera* (Priority 3), *Dampiera metallorum* (Priority 3), *Eremophila magnifica* subsp. *magnifica* (Priority 4), *Goodenia nuda* (Priority 4), *Goodenia* sp. East Pilbara (Priority 3), *Indigofera gilesii* (Priority 3), *Lepidium catapycnon* (Priority 4), *Rhagodia* sp. Hamersley (Priority 3), *Rostellularia adscendens* var. *latifolia* (Priority 3), *Solanum kentrocaule* (Priority 3), *Themeda* sp. Hamersley Station (Priority 3), *Triodia* sp. Mt Ella (Priority 3) and *Xerochrysum boreale* (Priority 3) have all been previously recorded within the permit area (Rio Tinto, 2018). Based on the habitat present and their known distributions, *Eremophila magnifica* subsp. *velutina* (Priority 3), *Eremophila youngii* subsp. *lepidota* (Priority 4), *Fimbristylis sieberiana* (Priority 3), *Goodenia lyrata* (Priority 3), *Grevillia saxicola* (Priority 3), *Gymnanthera cunninghamii* (Priority 3), *Phyllanthus hebecarpus* (Priority 3), *Ptilotus mollis* (Priority 4), *Rhynchosia bungarensis* (Priority 3), *Sida* sp. Barlee Range (Priority 3) and *Styidium weeliwoilli* (Priority 3) are all considered likely or have the potential to be present within the permit area (Rio Tinto, 2018).

The majority of the permit area has not been subject to a flora survey. Given the number of Priority flora species recorded within the areas surveyed, it is likely that significant numbers will also be present across the permit area. Whilst the proposed clearing will only clear a small portion of the vegetation within the permit area, effort should be made to reduce clearing in vegetation associations which support significant populations of Priority flora. Potential impacts to Priority flora may be minimised by the implementation of a flora management condition restricting clearing of significant species and a condition requiring further targeted searches for Priority flora prior to undertaking clearing.

There were nine introduced flora species recorded within the permit area (Rio Tinto, 2018). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This can in turn lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition

Based on current survey effort, there has been six broad fauna habitats identified within the permit area (Rio Tinto, 2018). The majority of the habitats are common and widespread within the region and are not likely to support a higher level of faunal diversity. There are some more restricted habitats such as gorge/gully and drainage which contain a greater diversity of microhabitats such as breakaways, overhangs, caves, logs, leaf litter and tree hollows (Rio Tinto, 2016; 2019). These habitats have the potential to support greater levels of faunal diversity and provide habitat for conservation significant fauna species.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology CALM (2002)
DBCA (2019)
Rio Tinto (2016)
Rio Tinto (2018)

GIS Database:
- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Flora
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

(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 indigenous to Western Australia.

Comments Proposal may be at variance to this Principle

Several fauna surveys have been previously undertaken over portions of the permit area (Rio Tinto, 2018). These surveys have identified the following fauna habitats within the permit area (Rio Tinto, 2018):

- Rocky hills and hillslopes
- Gorge/gully
- Acacia shrubland on stony plains and lower slopes
- Mulga woodland on clay plains and low undulating hills
- Tussock grasslands on deep clay plains
- Drainage

The majority of the fauna habitats are common and widespread in the bioregion. The gorge/gully habitat is more restricted and contains significant microhabitats such as breakaways, overhangs and caves (Rio Tinto, 2018). Drainage areas may also contain an increased variety of microhabitats such as logs, leaf litter and hollows (Rio Tinto, 2016).

Based on known records and the habitats present within the permit area, there are a number of conservation significant fauna species which are likely to be present. The Endangered species Northern Quoll (*Dasyurus hallucatus*) and the Vulnerable species Ghost Bat (*Macroderma gigas*), Pilbara Leaf-nosed Bat (*Rhinonictis aurantia*) and Pilbara Olive Python (*Liasis olivaceus barroni*) are all considered likely or have the potential to be present within the permit area (Rio Tinto, 2019). The Priority 4 species Western Pebble-mound Mouse (*Pseudomys chapmani*) has been recorded within the permit area.

There are known adits within the permit area and preliminary assessments indicate that they have the potential to provide roosting sites for both the Ghost Bat and Pilbara Leaf-nosed Bat (Rio Tinto, 2018). Hamersley Resources Limited has committed to avoiding these adits (Rio Tinto, 2018). The gorge/gully habitat also contains suitable features such as caves and overhangs which may provide shelter for Northern Quolls (Rio Tinto, 2018). The drainage habitat has the potential to contain water pools following rainfall events which could support the Pilbara Olive Python. Many species, including Northern Quoll, Ghost Bats and Pilbara Leaf-nosed Bats may use the drainage habitat as foraging areas and for dispersing throughout the landscape. Disturbance within critical habitat for these species should be avoided where possible. Habitat mapping has not been undertaken over the permit area (Rio Tinto, 2018). Potential impacts to these species may be minimised by fauna management conditions preventing the clearing of vegetation near adits and requiring the identification and avoidance of critical habitat areas.

Western Pebble-mound Mouse mounds have been recorded within the permit area (Rio Tinto, 2018). Suitable habitat for this species is widespread in the region, and the proposed clearing is not likely to have a significant impact on habitat for this species.

There are several other species of conservation significance which have the potential to utilise the permit area. However, they are almost exclusively migratory birds which are only likely to use the permit area as part of a larger home range and are not likely to be significantly impacted by the proposed clearing (Rio Tinto, 2018). The proposed clearing of 600 hectares within the larger permit boundary of 82,168 hectares is not likely to significantly impact fauna habitat on a landscape scale. Given the proposed clearing is for temporary activities, there is potential for the areas to be rehabilitated to minimise impacts on native fauna species. Potential

impacts on fauna may be minimised by the implementation of a rehabilitation condition.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology Rio Tinto (2016)
Rio Tinto (2018)

GIS Database:
- Imagery
- Pre-European Vegetation
- Threatened Fauna

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments Proposal is not likely to be at variance to this Principle

There are no known records of Threatened flora within the application area (GIS Database). Flora surveys have been undertaken over a portion of the application area. These surveys did not record any species of Threatened flora (Rio Tinto, 2018). Based on the habitat present within the permit area, it is not likely that the vegetation would support Threatened flora species (Rio Tinto, 2018; GIS Database).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Rio Tinto (2018)

GIS Database:
- Pre-European Vegetation
- Threatened and Priority 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.

Comments Proposal is not likely to be at variance to this Principle

There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the permit area (GIS Database). Flora surveys have been undertaken over a portion of the permit area (Rio Tinto, 2018). These surveys did not identify any vegetation communities which could be considered a TEC (Rio Tinto, 2018). Based on the vegetation present and the known distribution of the TECs in the Pilbara bioregion, the vegetation within the permit area is not likely to comprise or be necessary for the maintenance of a TEC.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Rio Tinto (2018)

GIS Database:
- Pre-European Vegetation
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

(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.

Comments Proposal is not at variance to this Principle

The application area falls within the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99.57% of the pre-European vegetation still exists in the Pilbara Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 18, 29, 82 and 175 (GIS Database). These vegetation associations have not been extensively cleared as over 99% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2019). The permit area does not contain any remnants nor does it form part of any remnants in the local area (GIS Database).

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology Government of Western Australia (2019)

GIS Database:
- IBRA Australia
- Imagery

- Pre-European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments Proposal is at variance to this Principle

There are no permanent watercourses or wetlands within the area proposed to clear (GIS Database). There are numerous minor ephemeral watercourses within the permit boundary (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. The vegetation associations D1: EICAmPIGrAmTp, D2: EvEcAsppTg and D3: ExCcAayPoTg were all identified as growing in association with drainage lines (Rio Tinto, 2018). In respect to fauna habitat, drainage habitat is often restricted at a local level and has the potential to support larger trees which can be used for roosting and nesting. They also often have more abundant leaf litter and looser soil which supports more burrowing animals. Whilst riparian vegetation is restricted in the local area, drainage lines are common in the surrounding region and the proposed clearing is not likely to clear a significant amount of this vegetation.

Based on the above, the proposed clearing is at variance to this Principle. Potential impacts to vegetation growing in association with a watercourse may be minimised by the implementation of a watercourse management condition.

Methodology Rio Tinto (2018)

GIS Database:
- Hydrography, Lakes
- Hydrography, linear
- Imagery

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments Proposal is not likely to be at variance to this Principle

The application area lies within the Boolgeeda, Egerton, Kumina, Newman, McKay, Platform, Spearhole and Wannamunna land systems (GIS Database). These land systems have been mapped and described in technical bulletins produced by the former Department of Agriculture (now the Department of Primary Industries and Regional Development).

Excluding the Wannamunna land system, all of the land systems within the permit area are generally not prone to erosion (Van Vreeswyk et al., 2004). The Wannawunna land system generally has a low susceptibility to erosion however, the system is prone to degradation if grazing pressure is excessive (Van Vreeswyk et al., 2004). Disturbances to overland flow processes by inappropriate positioning or construction of infrastructure such as roads can have adverse effects on vegetation (Van Vreeswyk et al., 2004).

Provided the clearing is not concentrated in one area, the proposed clearing of 600 hectares across a permit area of approximately 82,168 hectares is not likely to cause appreciable land degradation. Potential impacts from land degradation may be minimised by the implementation of a rehabilitation condition.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Van Vreeswyk et al. (2004)

GIS Database:
- Landsystem Rangelands

(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.

Comments Proposal is not likely to be at variance to this Principle

There are no conservation areas in the vicinity of the application area. The nearest Department of Biodiversity, Conservation and Attractions managed land is the former Roy Hill Pastoral Lease which is located approximately 32 kilometres northeast of the application area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology GIS Database:
- DPaW Tenure**

(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.

Comments Proposal is not likely to be at variance to this Principle

There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). There are no permanent watercourses or wetlands within the area proposed to clear, however, there are numerous minor ephemeral watercourses within the permit area (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. The proposed clearing is unlikely to result in significant changes to surface water flows.

The groundwater salinity of the permit area has been broadly mapped as being 500 - 1,000 milligrams per litre total dissolved solids (GIS Database). The depth of the groundwater in the area is not known, however, the proposed clearing of 600 hectares within a larger boundary of approximately 82,168 hectares is unlikely to cause deterioration in the quality of underground water.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Database:
- Groundwater Salinity, Statewide
- Hydrography, Linear
- Public Drinking Water Source Areas

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments Proposal is not likely to be at variance to this Principle

The climate of the region is semi-arid, with a low average rainfall of approximately 329.5 millimetres per year (BoM, 2019). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall.

There are no permanent water courses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology BoM (2019)

GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, linear

Planning Instrument, Native Title, previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 17 December 2018 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. No submissions were received in relation to this application.

There are three native title claims over the area under application (Department of Planning, Lands and Heritage, 2019). These claims have been determined by the Federal Court on behalf of the claimant groups. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are numerous registered Aboriginal Sites of Significance within the application area (Department of Planning, Lands and Heritage, 2019). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

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

Methodology Department of Planning, Lands and Heritage (2019)

4. References

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- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DBCA (2019) Priority Communities for Western Australia Version 28. Species and Communities Program, Department of Biodiversity, Conservation and Attractions, 17 January 2019.
- Department of Planning, Lands and Heritage (2019) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. <http://maps.daa.wa.gov.au/AHIS/> (Accessed 24 April 2019).
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Rio Tinto (2016) Flora, Vegetation and Fauna Habitat Assessment at Ophthalmia. Supporting information for clearing permit amendment CPS 4149/3. Rio Tinto Iron Ore, Perth, Western Australia, July 2016.
- Rio Tinto (2018) Flora, Vegetation and Fauna Habitat Assessment at Rhodes Ridge. Rio Tinto Iron Ore, 31 October 2018.
- Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) An inventory and condition survey of the Pilbara Region, Western Australia. Technical Bulletin No. 92. Department of Agriculture, South Perth, Western Australia.

5. Glossary

Acronyms:

| | |
|-----------------|---------------------------------------------------------------------------------------------------------------------------|
| 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) |
| DBCA | Department of Biodiversity, Conservation and Attractions, Western Australia |
| DEC | Department of Environment and Conservation, Western Australia (now DBCA and DWER) |
| DEE | Department of the Environment and Energy, Australian Government |
| 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) |
| DPIRD | Department of Primary Industries and Regional Development, Western Australia |
| DPLH | Department of Planning, Lands and Heritage, Western Australia |
| DRF | Declared Rare Flora |
| DoE | Department of the Environment, Australian Government (now DEE) |
| DoW | Department of Water, Western Australia (now DWER) |
| DPaW | Department of Parks and Wildlife, Western Australia (now DBCA) |
| DSEWPac | Department of Sustainability, Environment, Water, Population and Communities (now DEE) |
| DWER | Department of Water and Environmental Regulation, Western Australia |
| EPA | Environmental Protection Authority, Western Australia |
| EP Act | <i>Environmental Protection Act 1986</i> , 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.