Government of Western Australia
Department of Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8319/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Robe River Limited**

1.3. Property details

Property: *Iron Ore (Robe River) Agreement Act 1964*, Mineral Lease 248SA (AML 70/248)
Local Government Area: Shire of Ashburton
Colloquial name: Puluru

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 18 April 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 Beard vegetation association 82: Hummock grassland, low tree steppe; Snappy Gum (*Eucalyptus leucophloia*) over *Triodia wiseana* (GIS Database).

A flora and vegetation survey was conducted over the application area by Biota Environmental Services during July 2018. The following vegetation units were recorded within the application area (Biota, 2018):

Vegetation of River Systems and Drainages

R1: EcEvMaAtrCYPvCYa
Eucalyptus camaldulensis subsp. *refulgens, E. victrix, Melaleuca argentea* closed forest over *Acacia trachycarpa* tall open shrubland over *Cyperus vaginatus* open sedgeland and *Cymbopogon ambiguus* scattered tussock grasses.

R2: EcEvMgAtrCYPvEUaTHtERItCYa
Eucalyptus camaldulensis subsp. *refulgens, E. victrix* woodland over *Melaleuca glomerata*, *Acacia trachycarpa* tall shrubland over *Cyperus vaginatus,* very open sedgeland and *Eulalia aurea*, *Themeda triandra, Eriachne tenuiculmis, Cymbopogon ambiguus* very open tussock grassland.

R3: AtrERIt
Acacia trachycarpa tall shrubland over *Eriachne tenuiculmis* scattered tussock grasses.

Vegetation of Gorges and Gullies

G1: CfPHbTHt
Corymbia ferriticola low woodland over *Phyllanthus baccatus* scattered tall shrubs over *Themeda triandra* very open tussock grassland.

Vegetation of Mesa Plateaus and Hillslopes

M1: El(Ch)AoTe
Eucalyptus leucophloia subsp. *leucophloia (Corymbia hamersleyana)* scattered low trees over *Acacia orthocarpa* shrubland to open heath over *Triodia epactia* open hummock grassland.

M2: El(Ch)AmTw
Eucalyptus leucophloia subsp. *leucophloia (Corymbia hamersleyana)* scattered low trees over *Acacia maitlandii* tall shrubland to tall open scrub over *Triodia wiseana* open hummock grassland.

M3: ElAprTw
Eucalyptus leucophloia subsp. *leucophloia* scattered low trees over *Acacia pruinocarpa* tall shrubland to tall open scrub over *Triodia wiseana* open hummock grassland.

Clearing Description

Puluru Project.
Robe River Limited proposes to clear up to 110 hectares of native vegetation, within a boundary of approximately 264 hectares, for the purpose of mineral exploration, hydrogeological investigations and associated activities.

The project is located approximately 125 kilometres northwest of Tom Price, within the Shire of Ashburton.

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

to

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

However the bare riverbed (B) that was devoid of native vegetation was ranked as being in Good condition due to the presence of large numbers of Mexican Poppy (*Argemone ochroleuca* subsp. *ochroleuca*) seedlings.

Comment

The vegetation condition was derived from a vegetation survey conducted by Biota Environmental Services (2018).

Two vegetation units (M3 and R3) defined by this survey were unsuitable for establishment of the desired minimum of two relevés, due to the small area of unit R3, and the steep terrain of M3 limiting safe survey capability. The areas of steep slopes that could not be surveyed by foot due to safety concerns, were however assessed from below (Biota, 2018).

In recognition of the significance of 'watercourses, steep rocky hillslopes and rocky gorges', identified as communities of elevated conservation significance in the Puluru Native Vegetation Clearing Report Supporting Report (prepared by Biota Environmental Sciences, September 2018), the Proponent commits to avoid disturbance to vegetation units R1, R2, R3, M3 and B. Avoidance of these communities will also ensure that the values of Wild Rivers are maintained.

Further, disturbance to vegetation unit G1 will be limited to the purpose of establishment of access tracks (owing to the Robe River dissecting the application area, it is not possible to avoid disturbance to these communities / tributaries of the Robe River however, tracks will not result in significant alteration of the natural hydrological regime and geomorphology of the Wild River or be detrimental to Wild River values.

The proposed clearing is for a period of 10 years (2019 – 2029)

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 is at variance to this Principle

The clearing permit application area is located within the Hamersley subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara Bioregion (GIS Database).

The Hamersley subregion is generally described as Mulga low woodland over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (CALM, 2002).

Beard vegetation association 82 is widespread in the Hamersley subregion and has been subject to only minor clearing (Government of Western Australia, 2018).

The proposed clearing area is within the Upper Robe River, Priority 1 Wild river catchment area which is classified as near pristine (Water and Rivers Commission, 1999; GIS Database).

Seven vegetation units were described in the application area and are all common through the Hamersley subregion. Vegetation units R1 and R2 (21.9 ha in total) represent Groundwater Dependent Vegetation (GDV), and are considered to be of elevated conservation significance (Biota, 2018).

The majority of the vegetation was considered to be in very good to excellent condition, with small areas of the bare river bed that was mainly devoid of vegetation ranked as being in Good condition due to the presence of large numbers of Mexican Poppy (*Argemone ochroleuca* subsp. *ochroleuca*) seedlings (Biota, 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.

The survey recorded a total of 189 native vascular flora species including 4 Priority species, all of which are typical of the Puluru locality and surrounds: *Sida* sp. *Hamersley Range* (Priority 3), *Indigofera* sp. *Bungaroo Creek* (Priority 3), *Triodia basitricha* (Priority 3), and *Rhynchosia bungarensis* (Priority 4) (Biota, 2018).

There are no known records of Threatened flora within the application area (GIS Database). Flora surveys of the application area did not record any species of Threatened flora (Biota, 2018).

Two fauna species of conservation significance were recorded from the survey area: the Pilbara Leaf-nosed Bat (Schedule 3 / Vulnerable) and the Rainbow Bee-eater (Schedule 5). The Pilbara Leaf-nosed Bat would likely occur in the study area in a transitory or foraging sense only. The Rainbow Bee-eater (previously listed as a migratory species) is widespread throughout the Pilbara bioregion. The Pilbara Olive Python (Schedule 3 / Vulnerable) would be expected to be resident in the area, restricted to the '*Eucalyptus /Melaleuca* Dominated Drainages' and 'Rocky Gorges' habitats (Biota, 2018).

Vegetation units R1 and R2 support considerable numbers of Priority flora species, particularly the Priority 3 *Indigofera* sp. *Bungaroo Creek* and Priority 4 *Rhynchosia bungarensis* (Biota, 2018).

Two additional vegetation units were considered to be of local significance as they supported large populations of the Priority 3 *Sida* sp. *Hamersley Range*, which was most commonly recorded from rocky habitats (G1 and M3). Vegetation unit G1 occurred in rocky gorges and gullies, covering 7.7 hectares of the study area; vegetation unit M3 covered 34.0 hectares of the study area and occurred on steep rocky slopes immediately below mesa free-faces (Biota, 2018).

Two specimens collected from the survey area could not be conclusively determined, but would require further work (including genetic analysis) to determine their taxonomic status (Biota, 2018):

***Acacia* sp. (hybrid)**
One specimen of *Acacia* collected from the survey area was considered to be a hybrid specimen of unknown origin. The specimen lacked fruit and was unable to be conclusively determined.

***Eremophila* sp. (aff. *latrobei*)**
There are two priority species from the *Eremophila* genus that had the potential to occur in the area, neither of which were found during the survey. A flowering specimen of *Eremophila* collected from the Puluru study area was not able to be identified confidently to species; while it appeared superficially similar to *E. latrobei*, this entity may represent a hybrid, or potentially a new species (Biota, 2018). This taxon was recorded from two locations in rocky habitats in vegetation types G1 and M3. The number of individuals in these locations was not recorded in the Biota (2018) survey report. With the potential for this to be a new species, impacting these undetermined individuals should be avoided.

The proposed clearing permit does contain areas that represent higher biodiversity than surrounding areas, with four Priority flora species recorded along with unidentified species, the presence of groundwater dependant vegetation, and the presence of habitat for two vulnerable and one EPBC Act listed fauna species.

Based on the above, the proposed clearing is at variance to this Principle. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by conditions restricting clearing of the vegetation of the gorges and gullies (vegetation unit G1); preventing the clearing of vegetation of the river systems, drainages and steep rocky hillslopes (vegetation units R1, R2, R3, M3 and B); and by the implementation of a flora management condition preventing the clearing of individuals of *Eremophila sp. (aff. latrobei)*.

Methodology

Biota (2018)
CALM (2002)
Government of Western Australia (2018)
Water and Rivers Commission (1999)

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

(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 is at variance to this Principle

Sixteen Schedule species (four mammals, eleven birds and one reptile) listed under the WA *Wildlife Conservation Act 1950* and five Priority species (four mammals and one reptile) listed by the Department of Biodiversity, Conservation and Attractions (DBCA) have been recorded in the broader locality (Biota, 2018). It was considered that two species are likely to occur (Biota, 2018) including Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (Schedule 3 / Vulnerable) and Rainbow Bee-eater (*Merops ornatus) (Schedule 5).* Additionally, eight species "may potentially occur" (Biota, 2018) including the Northern Quoll (*Dasyurus hallucatus*) (Schedule 2 / Endangered), Ghost Bat (*Macroderma gigas*) (Schedule 3 / Vulnerable), Pilbara Olive Python (*Liasis olivaceus barroni*) (Schedule 3 / Vulnerable), Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4), Long-tailed Dunnart (*Sminthopsis longicaudata*) (Priority 4), Grey Falcon (*Falco hypoleucos*) (Schedule 3), Fork-tailed Swift (*Apus pacificus*) (Schedule 5), and Peregrine Falcon (*Falco peregrinus*) (Schedule 7).

The following four fauna habitats have been recorded within the application area (Biota, 2018):

1. Eucalyptus / Melaleuca Dominated Drainages
A total of 37.6 hectares (14.3%) of the application area was classified as drainages dominated by *Eucalyptus* and *Melaleuca* and relates to vegetation units R1 and R2. This habitat comprised a broad, major riverbed and a tributary within a steep-sided valley. A mature closed-canopy woodland of *Eucalyptus spp.* and *Melaleuca argentea* trees is known to support higher than average faunal biodiversity in the Pilbara. Within this habitat, 3.9 ha of standing water (seasonally-inundated water pools) was mapped, typically located where the riverbed was exposed and riparian vegetation was sparse (Biota, 2018).

This habitat represents core habitat for the Pilbara Olive Python (*Liasis olivaceus barroni*), whilst also supporting a high diversity of birds (Biota, 2018).

2. Steep Rocky Hillslopes
A total of 34.8 hectares (13.2%) of the area was classified as steep rocky hillslopes and relates to vegetation unit M3. This habitat type predominantly comprised steep hillslopes and associated lower foothills with small ironstone boulders and small free-faces, bordering all sides of the drainages within the study area. This is a very common habitat type in the Hamersley Range, and is particularly typical of the Newman land system (Biota, 2018).

Rocky hillslopes and foothills may represent foraging habitat for the Northern Quoll (*Dasyurus hallucatus*), particularly where located adjacent to core habitat such as free faces, breakaways and gorges. No core denning or breeding habitat for this species was recorded within the area (Biota, 2018).

The Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) and Ghost Bat (*Macroderma gigas*) may forage in the application area, however no core cave habitat suitable for roosting was present. The closest known roost for the Pilbara Leaf-nosed Bat is 26 kilometres north (Biota, 2018).

3. Acacia Shrubland over Triodia
A total of 183.9 hectares (69.9%) of the area was classified as *Acacia* shrubland over *Triodia* and relates to vegetation units M1 and M2. This habitat comprises stony mesa plateaus and hillslopes to open heath and represents suitable habitat for the Priority 4 Western Pebble-mound Mouse (*Pseudomys chapmani*) (Biota, 2018).

4. Rocky Gorges
A total of 6.9 hectares (2.6%) of the area was classified as Rocky gorge habitat related to vegetation unit G1. These gorges are likely to include semi-permanent water pools and also support water for long periods of time following rainfall (Biota, 2018).

The gorges in the study area are likely to represent core habitat for the Pilbara Olive Python (*Liasis olivaceus*) and Pilbara Leaf-nosed bat (*Rhinonicteris aurantia*). Echolocation calls of the Pilbara leaf-nosed Bat were recorded from within a rocky gorge, however the delay of the calls after sunset is indicative of foraging individuals coming from a roost located outside of the study area (Biota, 2018).

Based on the above, the proposed clearing is at variance to this Principle. Potential impacts to fauna habitat as a result of the proposed clearing may be minimised by conditions restricting clearing of the vegetation of the gorges and gullies (vegetation unit G1) and preventing the clearing of vegetation of the river systems, drainages and steep rocky hillslopes (vegetation units R1, R2, R3, M3 and B).

Methodology Biota (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 at variance to this Principle

There are no known records of Threatened flora within the application area (GIS Database). Flora surveys of the application area did not record any species of Threatened flora (Biota, 2018).

Vegetation association 82 is common and widespread within the region (Government of Western Australia, 2018), and the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened (rare) flora.

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

Methodology Biota (2018)
Government of Western Australia (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 application area (GIS Database).

The flora and vegetation survey of the application area did not identify any TECs (Biota, 2018).

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

Methodology Biota (2018)

GIS Database:
- 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% of the pre-European vegetation still exists in the IBRA Pilbara Bioregion (Government of Western Australia, 2018). The application area is broadly mapped as Beard vegetation association 82 (GIS Database). Approximately 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, 2018).

Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA managed lands
IBRA Bioregion – Pilbara	17,808,657	17,733,583	~99	Least Concern	10.1
Beard vegetation associations – WA					
82	2,565,901	2,553,217	99	Least Concern	11.5
Beard vegetation associations – Pilbara Bioregion					
82	2,563,583	2,550,898	99	Least Concern	11.5

* Government of Western Australia (2018)
** Department of Natural Resources and Environment (2002)

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

Methodology Biota (2018)
Department of Natural Resources and Environment (2002)
Government of Western Australia (2018)

GIS Database:
- IBRA Australia
- 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

The proposed clearing area is within the Upper Robe River (Priority 1) Wild river catchment which is classified as near pristine (DWER, 2019; Water and Rivers Commission, 1999; GIS Database). There are no permanent watercourses or wetlands, however there several non-perennial water courses that occur within the area proposed to clear (GIS Database) and semi-permanent water pools (Biota, 2018). The application area falls within and directly adjacent to the Robe River and one of its tributaries (DWER, 2019).

Vegetation units R1 and R2 contain numerous seasonally-inundated semi-permanent pools and accommodate large flows of water during the wet season (Biota, 2018). These vegetation units represent Groundwater Dependent Vegetation (Biota, 2018):

> Approximately 11.1 hectares of vegetation unit R1 occurrs along the margins of the Robe River in the western half of the proposed clearing area, and in another stand in the tributary in the eastern section. It is dominated by the large paperbark Cadjeput (*Melaleuca argentea*) and the River Gum (*Eucalyptus camaldulensis* subsp. *refulgens*), both recognised for their dependence on groundwater.
>
> Approximately 10.8 hectares of vegetation unit R2 is distributed through the Robe River tributary situated between steep mesa free-faces in the eastern half of the study area. It is dominated by *Eucalyptus camaldulensis* subsp. *refulgens*, with isolated stands of *Melaleuca argentea.*

Based on the above, the proposed clearing is at variance to this Principle**.** Potential impacts to vegetation growing in association with the watercourse may be minimised by conditions restricting clearing of the vegetation of the gorges and gullies (vegetation unit G1) and preventing the clearing of vegetation of the river systems and drainages (vegetation units R1, R2, R3 and B).

Methodology

Biota (2018)
DWER (2019)
Water and Rivers Commission (1999)

GIS Database:
- Hydrography, Lakes
- Hydrography, linear
- Wild Rivers

(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 Newman, River and Robe 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).

The Newman land system covers approximately 112.4 hectares of the application area (Biota, 2018) and is described as Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al, 2004). Spinifex is the dominant vegetation and the system is not noted as being susceptible to erosion (Van Vreeswyk et al, 2004).

The River land system covers approximately 13.9 hectares of the application area (Biota, 2018) and is described as active flood plains and major rivers supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands (Van Vreeswyk et al, 2004). The system is largely stabilised by buffel and spinifex and accelerated erosion is uncommon. However, susceptibility to erosion is high or very high if vegetative cover is removed (Van Vreeswyk et al, 2004).

The Robe land system covers approximately 136.7 hectares of the application area (Biota, 2018) and is described as Low plateaus, mesas and buttes of limonites supporting soft spinifex (and occasionally hard spinifex) grasslands (Van Vreeswyk et al, 2004). The system is not generally susceptible to vegetation degradation or erosion (Van Vreeswyk et al, 2004).

The proposed clearing of up to 110 hectares of native vegetation within a boundary of approximately 264 hectares, for the purpose of mineral exploration, hydrogeological investigations, and associated activities is unlikely to cause appreciable land degradation, particularly with the avoidance of clearing in the River land system.

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

Methodology Biota (2018)
Van Vreeswyk et al. (2004)

GIS Database:
- Landsystem Rangelands
- Soils, Statewide

(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 at variance to this Principle**
There are no conservation areas in the vicinity of the application area. The closest conservation reserve to the study area is the Millstream-Chichester National Park, situated approximately 47 km to the northeast (Biota, 2018; GIS Database).

Given the distance from any conservation area, the proposed clearing will not impact on the environmental values of any conservation area.

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

Methodology Biota (2018)

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 at variance to this Principle**
The proposed clearing area is within the Upper Robe River (Priority 1) Wild river catchment (Water and Rivers Commission, 1999; GIS Database).

There are no permanent watercourses or wetlands, however there are several non-perennial water courses that occur within the area proposed to clear associated with the Robe River (GIS Database). River pools of varying permanence occur along many Pilbara river systems and are often connected to and interact with the underlying alluvial aquifers (DWER, 2019).

There are two Public Drinking Water Source Areas in proximity to the application area (GIS Database). These include the Bungaroo Creek Water Reserve approximately 11 kilometres to the west and the Millstream Water Reserve approximately 20 kilometres to the north east.

Due to the presence of groundwater dependant vegetation, semi-permanent pools, and expected seasonal flooding of vegetation units R1 and R2 during rainfall events, there is potential for clearing to cause deterioration in the quality of surface water flow (Biota, 2018).

The proposed clearing is unlikely to cause deterioration in the quality of underground water.

Based on the above, the proposed clearing is at variance to this Principle**.** Potential impacts to vegetation growing in association with the watercourse may be minimised by conditions restricting clearing of the vegetation of the gorges and gullies (vegetation unit G1) and preventing the clearing of vegetation of the river systems and drainages (vegetation units R1, R2, R3 and B).

Methodology Biota (2018)
DWER (2019)
Water and Rivers Commission (1999)

GIS Database:
- Hydrography, Linear
- Public Drinking Water
- Wild Rivers

(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 407 millimetres per year (BOM, 2019). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall (Van Vreeswyk et al. 2004).

The areas mapped as vegetation units R1 and R2 would act as a focus for surface water during large rainfall events. The gullies and valleys that these units occur within would naturally be subject to seasonal flooding (Biota, 2018). 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 Biota (2018)
BoM (2019)
Van Vreeswyk et al. (2004)

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

Comments

The clearing permit application was advertised on 21 January 2019 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 is one Native Title Claim (WC1999/012) over the area (DPLH, 2019). This claim has been determined by the Federal Court on behalf of the claimant group. 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 two registered Aboriginal Sites of Significance within the application area (DPLH, 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 DPLH (2019)

4. References

Biota (2018) Puluru Native Vegetation Clearing Permit Supporting Report, prepared for Rio Tinto by Biota Environmental Sciences Pty Ltd, September 2018.

BoM (2019) Bureau of Meteorology Website – Climate Data Online, Pannawonica Station. Bureau of Meteorology. http://www.bom.gov.au/climate/data/ (Accessed 19 February 2019).

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.

DPLH (2019) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. http://maps.daa.wa.gov.au/AHIS/ (Accessed 19 February 2019).

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

DWER (2019) Advice received in relation to Clearing Permit Application CPS 8319/1. Department of Water and Environmental Regulation, Western Australia, March 2019.

Government of Western Australia (2018) 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity, Conservation and Attractions. 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.

Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia. Department of Agriculture, Western Australia.

Water and Rivers Commission (1999) Wild Rivers of Western Australia: The findings of the GIS preliminary identification and verification phases of the project, report prepared by PJ Williams, LJ Pen and JJ Alford, Water and Rivers Commission, Perth.

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	*Environmental Protection Act 1986*, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	*Rights in Water and Irrigation Act 1914*, Western Australia
TEC	Threatened Ecological Community

Definitions:

{DBCA (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.