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.: 8382/1
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)
General Purpose Lease 47/1235
Miscellaneous Licence 47/409
Miscellaneous Licence 47/842
Local Government Area: Shire of East Pilbara
Colloquial name: West Angelas Gas Pipeline

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
75		Mechanical Removal	Gas Pipeline 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 the following Beard vegetation association/s:
18: Low woodland; mulga (*Acacia aneura*); and
82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (GIS Database).

A flora and vegetation survey was conducted over the application area by Rio Tinto during October, 2016. The following vegetation associations were recorded within the application area (Biota, 2018):

Vegetation of Hill Slopes and Colluvial Slopes

H1: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia pruinocarpa* scattered tall shrubs over *Acacia bivenosa, Senna glutinosa* subsp. *glutinosa, Senna glutinosa* subsp. x *luerssenii* open shrubland over *Ptilotus rotundifolius, Corchorus lasiocarpus* subsp. *parvus* scattered low shrubs over *Triodia vanleeuwenii* hummock grassland.

H2: *Acacia pruinocarpa* and *Eucalyptus leucophloia* subsp. *leucophloia* isolated low trees over *Acacia aptaneura* scattered tall shrubland over *Senna glutinosa* subsp. *glutinosa, Acacia bivenosa, Eremophila phyllopoda* open shrubland over *Triodia epactia* hummock grassland.

H3: *Acacia pruinocarpa* and *Eucalyptus leucophloia* subsp. *leucophloia* isolated low trees over *Acacia aptaneura* scattered tall shrubs over *Senna glutinosa* subsp. *glutinosa, Acacia bivenosa, Eremophila phyllopoda* open shrubland over *Triodia epactia* hummock grassland.

Vegetation of Mulga Groves

MG: *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia* tall shrubland over *Eremophila forrestii* subsp. *forrestii, Senna glutinosa* subsp. *glutinosa, Senna stricta, Eremophila phyllopoda* open shrubland over *Ptilotus schwartzii, Maireana villosa, Maireana planifolia* scattered low shrubs over *Aristida contorta, Eragrostis eriopoda, Paspalidium basicladum*, *Triodia epactia* scattered grasses.

MG-2: *Acacia* tall shrubland over *Acacia tetragonophylla, Eremophila forrestii* subsp. *forrestii, Senna glutinosa* subsp. *glutinosa, Rhagodia eremaea* open shrubland over *Ptilotus schwartzii, Maireana villosa, Enchylaena tomentosa* var. *tomentosa, Solanum lasiophyllum* scattered low shrubs over *Enneapogon polyphyllus* and *Triodia epactia* scattered grasses.

MGT: *Eucalyptus leucophloia* scattered low trees over *Acacia* tall shrubland over *Acacia bivenosa, Eremophila forrestii* subsp. *forrestii, Senna glutinosa* subsp. *glutinosa, Senna stricta, Eremophila phyllopoda* open shrubland over *Ptilotus obovatus* var. *obovatus* and *Ptilotus schwartzii* scattered low shrubs over *Triodia epactia, Triodia vanleeuwenii* open hummock grassland.

MGT-2: *Acacia* tall shrubland over *Acacia tetragonophylla, Eremophila forrestii* subsp. *forrestii, Eremophila fraseri* open shrubland over *Ptilotus obovatus* var. *obovatus, Senna artemisioides* subsp. *helmsii, Solanum lasiophyllum* scattered low shrubs over *Triodia epactia* open hummock grassland over scattered tussock grasses and herbs.

MG-FL: *Acacia* tall shrubland over *Acacia bivenosa, Eremophila forrestii* subsp. *forrestii, Senna artemisioides* subsp. *helmsii* scattered shrubs over *Themeda triandra, Aristida contorta, Eulalia aurea* and *Enneapogon polyphyllus* scattered tussock grasses over mixed scattered herbs to very open herbland.

Vegetation of Plains
WACC-R: *Rhagodia eremaea, Acacia aptaneura* and *Eremophila lachnocalyx* scattered shrubs over *Senna hamersleyensis*, *Sida fibulifera* scattered low shrubs over *Astrebla elymoides, Aristida latifolia, Ischaemum albovillosum* open tussock grassland over very open herbland.
WACC-T: *Acacia aptaneura* scattered tall shrubs over *Rhagodia eremaea* scattered shrubs over *Sida fibulifera* scattered low shrubs over *Astrebla elymoides, Aristida latifolia, Themeda triandra* and *Ischaemum albovillosum* open tussock grassland over scattered herbs.
MG-TG-CC: *Acacia aptaneura, Acacia pruinocarpa* tall open shrubland over *Acacia bivenosa, Acacia tetragonophylla, Rhagodia eremaea* open shrubland over *Ptilotus obovatus* var. *obovatus, Senna artemisioides* subsp. *oligophylla,* and *Dipteracanthus australasicus* scattered low shrubs over *Aristida latifolia, Themeda triandra, Dichanthium fecundum, Astrebla elymoides* and/or *A. pectinata*, *Eulalia aurea* and *Aristida contorta* open tussock grassland.
ATMG: Variable shrublands: *Corymbia deserticola, Eucalyptus leucophloia* subsp. *leucophloia* and *Grevillea berryana* scattered low trees over *Acacia pruinocarpa, Acacia aptaneura* tall open shrubland over *Senna glutinosa* subsp. *glutinosa, Acacia pruinocarpa, Acacia ancistrocarpa* open shrubland over *Tribulus suberosus, Senna artemisioides, Solanum lasiophyllum* scattered low shrubs over *Triodia epactia* open hummock grassland.

Vegetation of Minor Drainage Lines
D1: *Corymbia hamersleyana, Eucalyptus leucophloia* scattered low trees over *Acacia citrinoviridis, Gossypium robinsonii, Acacia monticola* tall shrubland over *Petalostylis labicheoides, Androcalva luteiflora* open shrubland over *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186), *Ptilotus obovatus* var. *obovatus* scattered low shrubs over *Triodia epactia* very open hummock grassland.
D2: *Corymbia hamersleyana, Corymbia deserticola* and *Eucalyptus gamophylla* (mallee) scattered low trees over *Acacia monticola, Acacia bivenosa*, *Acacia pachyacra, Senna glutinosa* subsp. *glutinosa* open shrubland over *Seringa elliptica, Indigofera monophylla* scattered low shrubs over *Triodia epactia* very open hummock grassland.
D3: *Eucalyptus leucophloia* scattered low trees over *Acacia aptaneura* and *A. pruinocarpa* tall open shrubland over *Gossypium robinsonii, Androcalva luteiflora* and *Petalostylis labicheoides* sparse shrubland over *Triodia epactia* open hummock grassland.
D4: *Acacia catenulate* var. *occidentalis, Acacia aptaneura* tall shrubland over *Acacia pruinocarpa, Acacia incurvaneura, Eremophila forrestii* subsp. *forrestii*, *Petalostylis labicheoides,* and *Senna* spp. scattered shrubs over *Triodia epactia* and *Aristida contorta* very open grassland.

Vegetation of Major Creeks
CR: *Eucalyptus victrix* low open woodland over *Acacia citrinoviridis* tall open shrubland over scattered to open shrubland of *Acacia pyrifolia* and *Petalostylis labicheoides* over *Corchorus crozophorifolius* and *Tephrosia rosea var.* Fortescue creeks (M.I.H. Brooker 2186) low open shrubland over mixed open tussock grassland *of Eulalia aurea, Eriachne tenuiculmis, Themeda triandra, Chrysopogon fallax.*
CR-FL: Isolated *Eucalyptus victrix* and *Eucalyptus xerothermica* low trees over *Acacia citrinoviridis* and *Acacia aptaneura* scattered to tall open shrubland over scattered mixed shrubs over mixed very open tussock grassland over *Triodia epactia/pungens* very open hummock grassland.

Clearing Description

West Angelas Gas Pipeline.
Robe River Limited proposes to clear up to 75 hectares of native vegetation within a boundary of approximately 1,119 hectares, for the purpose of a gas pipeline. The project is located approximately 100 kilometres east-southeast of Tom Price, within the Shire of East Pilbara.

Vegetation Condition

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

To:

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).

Comment

The vegetation condition was derived from a vegetation survey conducted by Rio Tinto (Biota, 2018). The majority of the application area was in very good to excellent condition.

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 Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara Bioregion (GIS Database). The Hamersley subregion is characterised by mountainous areas of Proterozoic sedimentary ranges and plateaux, dissected by gorges supporting mulga low woodlands over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (CALM, 2002).

Reconnaissance field assessments of the application area conducted by Rio Tinto during October 2016 identified 18 vegetation units within the application area (Biota, 2018). Vegetation condition ranged from excellent to completely degraded, with the majority of the area in very good to excellent condition (Biota, 2018). Areas that were completely degraded were associated with roads, tracks and infrastructure. No Threatened Ecological Communities were identified during the desktop assessment or field assessments as occurring in the application area. One Priority 1 Ecological Community (PEC); West Angelas Cracking-Clays, was recorded

in the application area. The West Angelas Cracking-Clays PEC is described as open tussock grasslands of *Astrebla pectinata, Astrebla elymoides, Aristida latifolia*, in combination with *Astrebla squarrosa* and low scattered shrubs of *Sida fibulifera*, on basalt derived cracking-clay loam depressions and flowlines. Advice from the Department of Biodiversity, Conservation and Attractions (DBCA) indicated that approximately 446 hectares of the West Angelas Cracking-Clays PEC has been recorded and is restricted to the West Angelas area, with 13 occurrences over a range of approximately 18 kilometres (DBCA, 2019). Areas of the PEC existing in good or better condition are considered to be of high conservation value (DBCA, 2019). Approximately 31.5 hectares of the PEC, including associated vegetation types, occur within the application area, with the majority of the PEC being in good to very good condition (Biota, 2018). Advice from the DBCA indicated that direct clearing impacts on the PEC in good condition or better would be regarded as highly significant, and will likely result in secondary impacts such as hydrological change (DBCA, 2019). Proposed activities should avoid the mapped vegetation units WACC-R and WACC-T (11.2 hectares), which represent the PEC and closely associated vegetation type (DBCA, 2019). Where possible vegetation unit MG-TG-CC (20.3 hectares) should also be avoided due to having minor associations with the PEC, containing Priority flora and existing as a buffer to the PEC (DBCA, 2019). Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a PEC management condition, restricting clearing of the PEC.

Reconnaissance field assessments of the application area recorded a total of 314 native flora species from 124 genera and 39 families (Biota, 2018). Forty-one conservation significant flora species were identified as potentially occurring in the application area based on a 20 kilometre radius. Only 13 Priority flora species were identified as having the potential to occur in the application area due to the presence of suitable habitat (Biota, 2018). Five of these Priority species were recorded during the field assessments of the application area; *Aristida lazaridis* (P2), *Eremophila pusilliflora* (P2), *Isotropis parviflora* (P2), *Rhagodia* sp. Hamersley (M. Trudgen 17794) (P3) and *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (P3). One Threatened flora species was identified as having the potential to occur in the application, however it was identified as being unlikely to occur in the application area due to a lack of suitable habitat and was not recorded during the field assessments (Biota, 2018). Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a flora management condition, preventing the clearing of Priority flora.

Eight introduced flora species were identified within the application area, largely associated with the major creek line (Biota, 2018). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

A desktop assessment of the application area identified 25 Priority fauna species with the potential to occur in the application area based on a 20 kilometre radius (Biota, 2018). One Priority 4 fauna species, the Western Pebble-mound Mouse (*Pseudomys chapmani*) was recorded during the field assessments of the application area and two Vulnerable species; the Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) and Ghost Bat (*Macroderma gigas*) were considered likely to occur due to the presence of suitable foraging habitat (Biota, 2018). An additional five conservation significant fauna species may potentially occur: Fork-tailed Swift (*Apus pacificus*, MI); Grey Falcon (*Falco hypoleucos*, VU); Peregrine Falcon (*Falco peregrinus*, OS); Northern Quoll (*Dasyurus hallucatus*, EN); and Short-tailed Mouse (*Leggadina lakedownensis*, P4), due to the presence of suitable habitat (Biota, 2018).

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

Methodology

Biota (2018)
CALM (2002)
DBCA (2019)

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

(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 not likely to be at variance to this Principle

The following five fauna habitats have been recorded within the application area (Biota, 2018):
Mulga groves (28.4%);
Major creeks (27.6%);
Hillslopes and colluvial slopes (15.3%);
Plains (12.4%); and
Minor Drainages (8.8%).

Priority fauna were recorded in three out of the five habitat types. The Western Pebble-mound Mouse (*Pseudomys chapmani*) was recorded in both the Mulga groves and minor drainages habitat types, although they were not identified as core habitat for the species, and the hillslopes and colluvial slopes habitat type, which was described as being core habitat for the Western Pebble-mound Mouse (Biota, 2018).

Three habitat types identified within the application area provide potential habitat for other conservation significant fauna species (Biota, 2018). The plains habitat type was identified as potential habitat for the Priority 4 Short-tailed Mouse (*Leggadina lakedownensis*) and Western Pebble-mound Mouse. The minor drainages habitat was identified as containing foraging for the Northern Quoll (*Dasyurus hallucatus*, EN) and major creeks habitat may also support the Grey Falcon (*Falco hypoleucos,* VU) and Peregrine Falcon (*Falco peregrinus*, OS). However, although avian species may occur periodically as transient visitors, they are not expected to be reliant on the habitats present. The application area may also provide foraging habitat for the Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*, VU at both state and federal level) and Ghost Bat (*Macroderma gigas*, VU at both state and federal level), however no core roosting habitat was present for these species (Biota, 2018).

Although the habitat types present within the application may provide habitat for fauna indigenous to Western Australia, it is unlikely that the clearing of 75 hectares within a within a boundary of approximately 1,119 hectares represents significant habitat due to the fauna habitats present within the application area being considered common locally and regionally (Biota, 2018; GIS Database).

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

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 to be 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).

The vegetation associations within the application area are common and widespread within the region (Biota, 2018; GIS Database), 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)

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).

A 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 associations 18: Low woodland; mulga (*Acacia aneura*); and 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (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
Beard vegetation associations – WA					
18	19,892,306	19,843,729	~99	Least Concern	6
82	2,565,901	2,553,217	~99	Least Concern	11
Beard vegetation associations – Pilbara Bioregion					
18	676,556	672,424	~99	Least Concern	25
82	2,563,583	2,550,898	~99	Least Concern	11

* 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

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

There are no permanent watercourses or wetlands within the area proposed to clear (Biota, 2018; GIS Database). Numerous seasonal creek lines pass through the application area and four vegetation units, D1, D2, D3 and D4, represent riparian vegetation associated with minor drainage lines (Biota, 2018; GIS Database). One major creek (Turee Creek) runs east-west through the application area and two vegetation units, CR and CR-FL, represent riparian vegetation associated with the Turee Creek (Biota, 2018). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall (Payne et al., 2004).

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 the implementation of a watercourse management condition.

Methodology

Biota (2018)
Payne et al. (2004)

GIS Database:
- Hydrography, Lakes
- Hydrography, linear

(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, Newman and Platform 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 Boolgeeda land system is described as stony plains supporting hard spinifex grasslands and mulga shrublands. This land system is not generally susceptible to erosion (Payne et al., 1988).

The Newman land system consists of rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands. This land system is not generally susceptible to erosion (Payne et al., 1988).

The Platform land system is characterised by extensive dissected slopes and narrow raised plains supporting hard spinifex and shrubs. This land system is not susceptible to erosion (Payne et al., 1988).

The proposed clearing of up to 75 hectares of native vegetation within a boundary of approximately 1,119 hectares, for the purpose of a gas pipeline is unlikely to cause appreciable land degradation.

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

Methodology

Payne et al. (1988)

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 DBCA (formerly DPaW) managed land is the Karijini National Park which is located approximately three kilometres west 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 (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 proposed clearing 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:
- 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-desert tropical, with a low average rainfall of approximately 300 millimetres per year, falling predominately in summer cyclonic or thunderstorm events (CALM, 2002). The nearest weather station is Paraburdoo Aero, approximately 100 kilometres west of the application area, with an average rainfall of approximately 323.0 millimetres per year (BoM, 2019).

There are no permanent water courses or waterbodies within the application area (Biota, 2018); GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur

briefly following heavy rainfall events (Payne et al., 1988). One major creek (Turee Creek) runs east-west through the application area and would be subject to seasonal flooding (Biota, 2018). Potential impacts to the incidence or intensity of natural flooding events as a result of disturbing the Turee Creek and seasonal drainage lines may be minimised by the implementation of a watercourse management condition.

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

Methodology Biota (2018)
BoM (Year)
CALM (2002)
Payne et al. (1988)

GIS Database:
- Hydrography, linear

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

Comments

The clearing permit application was advertised on 11 March 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 (WC2010/011) over the area under application (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 no 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) West Angelas Gas Pipeline: Native Vegetation Clearing Permit (B-2018-007). Report prepared for Rio Tinto, by Biota Environmental Sciences Pty Ltd, December 2018.

BoM (2019) Bureau of Meteorology Website – Climate Data Online, Paraburdoo Aero. Bureau of Meteorology. http://www.bom.gov.au/climate/data/ (Accessed 11 April 2019).

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

DBCA (2019) Advice received in relation to Clearing Permit Application CPS 8382/1. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Western Australia, March 2019.

DPLH (2019) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. http://maps.daa.wa.gov.au/AHIS/ (Accessed 15 April 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.

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.

Payne, A.L., Mitchell, A.A. and Holman, W.F. (1988) An inventory and condition survey of rangelands in the Ashburton River catchment, Western Australia. Technical Bulletin No. 62. 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	*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.