Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4073/4
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Mining Co Pty Ltd

1.3. Property details

Property: *Iron Ore (Robe River) Agreement Act 1964*; Special Lease for Mining Operations 3116/4622; Document I 123390 L, Lots 63, 106 on Deposited Plan 54397
Iron Ore (Robe River) Agreement Act 1964; Special Lease for Mining Operations 3116/4623; Document I 123396 L, Lot 65 on Deposited Plan 241547, Lots 404, 405 on Deposited Plan 194355
Iron Ore (Robe River) Agreement Act 1964; Lease K 58441; Lot 500 on Deposited Plan 53285
Iron Ore (Robe River) Agreement Act 1964; Special Lease for Mining Operations 3116/11346; Document I 126942 L, Lot 307 on Deposited Plan 218388
Section 91 Licence 00338-2008_3_70 under the *Land Administration Act 1997*
Section 91 Licence 02405-1975_4_178 under the *Land Administration Act 1997*

Local Government Area: Shire of Roebourne
Colloquial name: Cape Lambert 33 kV Powerline

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
30		Mechanical Removal	Construction and Installation of Utilities and Associated Infrastructure

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 19 January 2012

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

Beard vegetation associations have been mapped for the whole of Western Australia. Two Beard vegetation associations have been mapped within the application area (GIS Database).

43: Low forest; mangroves (Kimberley) or thicket; mangroves (Pilbara).

157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana*.

A Rio Tinto botanist conducted a field survey of the application area on 1-2 October 2010. Previous vegetation mapping of sections of the application area by Biota were incorporated into the Rio Tinto survey (RTIO, 2010).

Eighteen vegetation types were identified in the application area, as well as a unit being assigned for heavily disturbed areas. The broad landform that the vegetation types occurred in was also recorded. The vegetation types are listed below with the landform in brackets:

SDu (Coastal dunes) - Tall shrubland of *Acacia coriacea* subsp. *coriacea* over *Crotalaria cunninghamii*, *Rhagodia eremaea*, *Scaevola sericophylla* and *Scaevola spinescens* low open shrubland over *Triodia epactia* hummock grassland.

CP (Coastal plains) - Open shrubland dominated by *Acacia stellaticeps* or *Acacia bivenosa* over *Scaevola spinescens*, *Rhagodia eremaea* scattered low shrubs over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* tussock grassland.

AtuAstTe (Minor flowlines) - *Acacia tumida* var. *pilbarensis* tall open scrub over *A. stellaticeps* low shrubland over *Triodia epactia* hummock grassland.

AvmTYd (Mudflats) - *Avicennia marina* scattered low trees over *Typha domingensis* sedgeland.

AcAbCEc (Plains) - *Acacia coriacea* subsp. *pendens*, *A. bivenosa* tall shrubland over *Cenchrus ciliaris* tussock grassland.

AcDlsEHsTwCEc (Rockpile) - *Acacia coriacea* subsp. *coriacea*, *Dichrostachys spicata*, *Ehretia saligna* tall open shrubland over *Triodia wiseana* very open hummock grassland and/or *Cenchrus ciliaris* very open tussock grassland.

BZ (Rocky and sandy beach areas) - Rocky and sandy beach areas - devoid of vegetation.

AiAcApyAbTw (Rocky and stony slopes) - *Acacia inaequilatera*, *A. coriacea* subsp. *pendens* scattered tall shrubs over *A. pyrifolia*, *A. bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland.

ApyAbTwTeTHt (Rocky and stony slopes) - *Acacia pyrifolia*, *A. bivenosa* scattered shrubs over *Triodia wiseana*, *T. epactia* hummock grassland and *Themeda triandra* very open tussock grassland.

RH (Rocky slopes) - Rocky hillcrests and upper slope habitats inland from the coast with *Triodia wiseana* and/or *Triodia epactia* hummock grassland.

SD (Saline drainage areas) - *Halosarcia halocnemoides* subsp. *tenuis*, *H. indica* subsp. *leiostachya* low samphire shrubland or open heath with *Frankenia ambita*, *Muellerolimon salicorniaceum* low open shrubland.

SIZ (Saline interzone areas) - *Acacia ampliceps* tall shrubland, with *Sesbania cannabina* tall open herbland over *Sporobolus virginicus* tussock to closed tussock grassland.

AcoGpTeTs (Sandy plains) - *Acacia colei* var. *colei*, *Grevillea pyramidalis* tall open shrubland over *Triodia epactia*, *T. schinzii* closed hummock grassland.

AsAcScCcTsTe (Sandy plains) - *Acacia sabulosa*, *A. coriacea* subsp. *pendens* tall shrubland over *Scaevola sericophylla*, *Crotalaria cunninghamii* open shrubland over *Triodia schinzii*, *T. epactia* hummock grassland.

MlAcoTeTs (Sandy plains) - *Melaleuca lasiandra*, *Acacia colei* var. *colei* tall shrubland over *Triodia epactia*, *T. schinzii* closed hummock grassland.

AcoAaAbAstTwTe (Stony plains) - *Acacia colei* var. *ileocarpa*, *A. ancistrocarpa* tall open shrubland over *A. bivenosa* open shrubland over *A. stellaticeps* low open shrubland over *Triodia wiseana*, *T. epactia* hummock grassland.

AbAstTe (Stony plains and lower stony slopes) - *Acacia bivenosa* scattered shrubs over *Acacia stellaticeps* low open shrubland over *Triodia epactia* hummock grassland.

AamSPOv (Tidal interzone) - *Acacia ampliceps* tall shrubland over *Sporobolus virginicus* closed tussock grassland.

HD (Heavily disturbed) - Areas which are completely degraded.

Clearing Description

Robe River Mining Co Pty Ltd has applied to clear up to 30 hectares of native vegetation within an application area of approximately 227.7 hectares for the purpose of construction of construction and installation of utilities and associated infrastructure. The utilities and infrastructure will service Rio Tinto Iron Ore's port facilities at Cape Lambert and include a powerline, water pipeline and water tank. Cape Lambert is approximately 5 kilometres north of Wickham in the Pilbara region.

Vegetation will be cleared using dozers with their blade down. Vegetation will be stockpiled and used in rehabilitation.

Vegetation Condition

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994);
To
Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

Comment

The vegetation condition was assessed by a botanist from Rio Tinto. 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.

Clearing permit CPS 4073/1 was granted by the Department of Mines and Petroleum (DMP) on 20 January 2011 and was valid from 12 February 2011 to 29 August 2012. The clearing permit authorised the clearing of 20 hectares of native vegetation. An application to amend the permit was recieved by DMP on 3 May 2011. Robe River Mining Co Pty Ltd requested an extension of approximately 0.5 hectares to the approved clearing boundary to allow for the construction and installation of up to four additional power poles. The amount of clearing remained the same (20 hectares). An application for an amendment to clearing permit CPS 4073/2 was submitted by Robe River Mining Co Pty Ltd on 26 October 2011. The proponent requested a modification to the clearing permit boundary and an increase in the amount of clearing authorised from 20 hectares to 30 hectares. Clearing permit CPS 4073/3 was granted by DMP on 29 December 2011.

Robe River Mining Co Pty Ltd requested an amendment to clearing permit CPS 4073/3 to change the purpose of the permit and add additional tenure to the permit. There were no significant additional environmental impacts identified as a result of this amendment.

adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

X — **Declared Rare Flora - Presumed Extinct taxa**: taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

Schedule 1 — **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.

Schedule 2 — **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.

Schedule 3 — **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.

Schedule 4 — **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna.* Department of Conservation and Land Management, Como, Western Australia} :-

P1 — **Priority One: Taxa with few, poorly known populations on threatened lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P2 — **Priority Two: Taxa with few, poorly known populations on conservation lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P3 — **Priority Three: Taxa with several, poorly known populations, some on conservation lands**: Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P4 — **Priority Four: Taxa in need of monitoring**: Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

P5 — **Priority Five: Taxa in need of monitoring**: Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999)*

EX — **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.

EX(W) — **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CR — **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

EN — **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU — **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD — **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Department of Mines and Petroleum (DMP), received (7 December 2009). Department of Agriculture and Food, Western Australia.
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.
Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
RTIO (2010) Botanical Survey of the 33 kV Power Line and Site Access Road at Cape Lambert: Native Vegetation Clearing Permit Supporting Report. Report by Rio Tinto Iron Ore, October 2010.
Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
SKM (2008) Construction Environmental Management Plan for Cape Lambert Early Works and Port B Project. Report Prepared for Rio Tinto Iron Ore, November 2008.
Trudgen, M.E. (1988) A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished Report Prepared for Bowman Bishaw and Associates, West Perth.
Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) Technical Bulletin - An Inventory and Condition Survey of the Pilbara Region, Western Australia, No. 92. Department of Agriculture, Government of Western Australia, Perth, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
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
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005.* Department of Conservation and Land Management, Como, Western Australia} :-

P1	**Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P2	**Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P3	**Priority Three - Poorly Known taxa**: taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
P4	**Priority Four – Rare taxa**: taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
R	**Declared Rare Flora – Extant taxa** *(= Threatened Flora = Endangered + Vulnerable)*: taxa which have been

(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 application area experiences variable annual rainfall with most precipitation occurring during the summer cyclone season (RTIO, 2010). The average annual rainfall is 288.4 millimetres, recorded from the weather station at nearby Roebourne (BOM, 2010) The area experiences a high average pan evaporation rate of 3500 millimetres, measured at Port Hedland, which exceeds the average annual rainfall by more than twelve times (Luke et al., 2003 as cited in RTIO, 2010). Local flooding does occur after large seasonal rainfall events, however, clearing within the application area is unlikely to exacerbate or increase the incidence or intensity of flooding (RTIO, 2010).

The application area is located within the Coastal catchment area of the Port Hedland Coast basin (GIS Database). Given the size of the area to be cleared (30 hectares) in relation to the size of the catchment area (744,301 hectares) (GIS Database), the proposed clearing is not likely to increase the potential for flooding on a local or catchment scale.

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

Methodology

BOM (2010)
RTIO (2010)
GIS Database:
- Hydrographic Catchments - Catchments

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments

There is one Native Title Claim (WC99/14) over the area under application (GIS Database). This claim has been determined by the Federal Court on behalf of the claimant group. However, the 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 (GIS Database). 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 Environment and Conservation and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

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Methodology

GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims - Determined by the Federal Court

4. References

Biota Environmental Sciences (2008) Cape Lambert Contaminated Site and Geotechnical Investigations: Native Vegetation Clearing Permit Report. Prepared by Biota Environmental Sciences for Robe River Iron Associates, May 2008.

BOM (2010) Bureau of Meteorology Website - Climate Statistics for Australian Locations, Summary Statistics ROEBOURNE.http://www.bom.gov.au/jsp/ncc/cdio/cvg/av?p_stn_num=004035&p_prim_element_index=0&p_comp_element_index=0&redraw=null&p_display_type=statistics_summary&normals_years=1981-2010&tablesizebutt=normal (Accessed 26 November 2010).

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

DAFWA (2009) Land Degradation Advice for CPS 3452/1. Advice to assessing officer, Native Vegetation Assessment Branch,

eroded for a length of approximately 20 metres (RTIO, 2010).

All works associated with the powerline construction will be in accordance with the Cape Lambert Port B Construction Environmental Management Plan. Erosion and sediment control procedures detail the management strategies, monitoring and recording to be undertaken to control erosion (SKM, 2008).

The application area is located within an acid sulfate soil (ASS) risk area (GIS Database). The Department of Agriculture and Food (DAFWA) have previously provided advice for an application whose area largely overlaps the current application area (DAFWA, 2009). Provided the proposed clearing does not expose the subsoil or involve dewatering in areas where ASS risks have been identified, then environmental acidity is unlikely to arise (DAFWA, 2009). If disturbance of ASS is unavoidable then ASS should be neutralised and reburied taking care to ensure that the subsoil is not left exposed to air (DAFWA, 2009). The applicant should be aware of the low-moderate and moderate-high risk of ASS in certain areas of the application area and manage accordingly.

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

Methodology

DAFWA (2009)
RTIO (2010)
SKM (2008)
Van Vreeswyk et al. (2004)
GIS Database:
- Acid Sulfate Soil Risk Map, Pilbara Coastline
- Rangeland Land System Mapping

(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

The proposed clearing is not located within a conservation reserve (GIS Database). The nearest known conservation areas are on islands off the coast (GIS Database) and the application area is unlikely to provide any ecological linkage to these. The nearest mainland conservation area is Millstream Chichester National Park, located approximately 57 kilometres south of the application area (GIS Database). At this distance the proposed clearing is unlikely to impact on the environmental values of the National Park.

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

Methodology

GIS Database:
- DEC Tenure
- Register of National Estate (Status)

(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

According to available databases the application area is not located within a Public Drinking Water Source Area (PDWSA). The nearest PDWSA is Roebourne Water Reserve, which is approximately 14 kilometres to the south (GIS Database).

The groundwater salinity within the application area is approximately 1,000 - 3,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). Given the size of the area to be cleared (30 hectares) compared to the size of the Pilbara Groundwater Province (5,557,665 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels to alter significantly.

The ephemeral drainage lines on stony plains are inundated sporadically and only hold water for short periods after large rainfall events. During these inundation periods the sediment loads in such drainage lines are already typically high and therefore any increase to the sediment loads caused by the clearing is likely to be negligible (RTIO, 2010). The sediment loads are also already typically high following sporadic rainfall events and large tidal movements for the low-lying saline drainage and interzone areas, and mudflats (RTIO, 2010). The small amount of proposed clearing is unlikely to cause deterioration in the quality of surface water.

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

Methodology

RTIO (2010)
GIS Database:
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Public Drinking Water Source Areas (PDWSAs)

The vegetation of the clearing application area has been mapped as Beard vegetation associations 43 "Low forest; mangroves (Kimberley) or thicket; mangroves (Pilbara)" and 157 "Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana*" (GIS Database). According to Shepherd (2009) approximately 81.6% and 99.8% of Beard vegetation associations 43 and 157 remain at the state level, respectively. Approximately 84.4% and 99.9% remains at a bioregional level for Beard vegetation associations 43 and 157, respectively. These vegetation associations would be given a conservation status of "Least Concern" at both a state and bioregional level (Department of Natural Resources and Environment, 2002).

The vegetation under application is not a remnant of vegetation in an area that has been extensively cleared.

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd (2009)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- 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

According to available GIS Databases, there are no permanent watercourses within the application area (GIS Database). However, the application area does contain several dry ephemeral creeks on the stony plains, marginal degraded mangrove habitat and seasonally inundated mud flat habitats (RTIO, 2010).

Based on the above, the proposed clearing is at variance to this Principle. However, similar wetland habitat occurs over much of the Pilbara coastal plain and the vegetation within the application area is not considered restricted or significant wetland habitat (RTIO, 2010). Also, the small area of proposed clearing is unlikely to have any significant impact on any watercourse or wetland.

Methodology RTIO (2010)
GIS Database:
- Hydrography, Linear

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

Comments

Proposal may be at variance to this Principle

According to available datasets the application area intersects the Cheerawarra, Littoral, Rocklea and Ruth Land Systems (GIS Database).

The Cheerawarra Land System is characterised by sandy coastal plains and saline clay plains supporting soft and hard spinifex grasslands and minor tussock grasslands (Van Vreeswyk et al., 2004). The component units found within the application area include drainage tracts and sandplains (RTIO, 2010). Most of the units of the this land system are highly susceptible to wind erosion if vegetation cover is depleted (Van Vreeswyk et al., 2004).

The Littoral Land System is characterised by bare coastal mudflats with mangroves on seaward fringes, samphire flats, sandy islands, coastal dunes and beaches (Van Vreeswyk et al., 2004). The component units found within the application area include beaches, coastal dunes, tidal channels, mangrove outer margins and sandy plains and islands (RTIO, 2010). Most of this land system supports little to no vegetation; the coastal dunes are highly susceptible to wind erosion if the plant cover is removed (Van Vreeswyk et al, 2004).

The Rocklea Land System is characterised by basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). The component units found within the application area include hills, ridges, plateaux and upper slopes, stony plains and interfluves and lower slopes (RTIO, 2010). This system has a low risk of erosion.

The Ruth Land System is characterised is characterised by hills and ridges of volcanic and other rocks supporting hard spinifex (occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). The component units found within the application area include hills, ridges and upper slopes, lower slopes and stony plains, narrow drainage floors, creeklines and channels and sandplains (RTIO, 2010). This land system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Rocklea and Ruth Land Systems cover approximately 77% of the application area (RTIO, 2010) and these areas have a low risk of erosion. Several vegetation types within the application area are associated with the Cheerawarra and Littoral Land Systems, making them highly susceptible to wind erosion if vegetation is removed. Four vegetation types were identified as having a high risk of erosion and there is existing erosion in one of these (RTIO, 2010). A small portion of the service track for the existing power line has been deeply

- Cape Lambert 20 cm Orthomosaic Landgate 2005

(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

According to available databases there are no known records of Declared Rare Flora (DRF) within the application area (GIS Database).

A flora and vegetation survey of the application area was conducted by a Rio Tinto botanist on 1-2 October 2010. No DRF species were recorded within the application area (RTIO, 2010).

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

Methodology

RTIO (2010)
GIS Database:
- 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

A search of available databases revealed there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest recorded TEC, *Themeda* grasslands on cracking clays, is located 165 kilometres south-south-east of the application area (GIS Database).

No TECs were identified during the flora and vegetation survey by the Rio Tinto botanist (RTIO, 2010).

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

Methodology

RTIO (2010)
GIS Database:
- Threatened Ecological Sites Buffered

(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 clearing application area falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion in which approximately 99.9% of the pre-European vegetation remains (see table) (Shepherd, 2009; GIS Database). This gives it a conservation status of "Least Concern" according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002).

	Pre-European Area (ha)*	Current Extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,193	17,785,001	~99.9	Least Concern	6.3
Beard Veg Assoc. – State					
43	218,170	178,070	~81.6	Least Concern	20.4
157	502,729	501,514	~99.8	Least Concern	17.9
Beard Veg Assoc. – Bioregion					
43	15,059	12,714	~84.4	Least Concern	
157	198,634	198,519	~99.9	Least Concern	5.7

* Shepherd (2009)
** Department of Natural Resources and Environment (2002)

vegetative cover through historical clearing, or have been significantly invaded by weeds, particularly Buffel grass (RTIO, 2010). It is not likely that the area to be cleared comprises a high level of biological diversity in a regional context.

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

Methodology CALM (2002)
RTIO (2010)
Shepherd (2009)
GIS Database:
- Cape Lambert 20 cm Orthomosaic Landgate 2005
- IBRA WA (Regions - Sub Regions)
- Pre-European Vegetation
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

(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

No targeted fauna surveys were undertaken within the application area. A desktop search was conducted and information was gathered from previous nearby targeted fauna surveys conducted by Biota Environmental Sciences in the Cape Lambert Port B and Wickham vicinities (RTIO, 2010).

Fauna habitats within the study area consist of:

- Mixed hummock grasslands on rocky hills and outcrops;
- Mixed *Acacia* shrublands over spinifex (*Triodia epactia/wiseana*) grasslands on stony plains;
- *Melaleuca* and/or *Acacia* shrublands over spinifex (*Triodia epactia/schinzii*) grasslands on red-sand dunes and plains;
- Wirewood (*Acacia coriacea*) open shrublands over spinifex (*Triodia epactia*) hummock grasslands and/or *Cenchrus ciliaris* tussock grasslands on secondary coastal dunes;
- Shrubby samphire (*Halosarcia halocnemoides*) low shrublands in low-lying saline drainage areas;
- Marine Couch (*Sporobolus virginicus*) tussock grassland on saline clay plains;
- Minor flowlines of Pindan Wattle (*Acacia tumida*) over spinifex (*Triodia epactia*) and *Cenchrus ciliaris* grasslands; and
- Mangrove communities on tidal mudflats (RTIO, 2010).

The habitats within the application area would be utilised by a variety of fauna. However, the habitats have been subject to degradation from historical clearing and the close proximity to the Cape Lambert Port B (RTIO, 2010). No significant fauna habitats such as caves, waterholes, significant creek lines, gorges, large tree hollows or termite mounds were observed within the application area (RTIO, 2010).

The Priority 1 species *Lerista nevinae* is a small skink that inhabits coastal sand dunes in the vicinity of Cape Lambert (RTIO, 2010). Approximately 20 specimens of the skink *L. nevinae* were recorded from the 'Primary Dune' and 'Secondary Dune' vegetation types in the Cape Lambert area during previous fauna surveys (Biota Environmental Sciences, 2008). A small portion of the coastal secondary dune habitat occurs within the application area, covering 1.2 hectares (RTIO, 2010). The 'SDu' vegetation type occurs on the secondary dunes and has been mapped in three sections of the application area. According to aerial photographs, two of these locations already contain infrastructure (roads and existing powerlines) over most of the habitat. However, the largest most northern section, although adjacent to an existing road, appears to be continuous with remnant dune vegetation (GIS Database). It is an area of approximately 0.8 hectares that is generally in poor condition as a result of weed invasion of *Cenchrus ciliaris* (RTIO, 2010). Despite the poor condition, the restricted distribution and habitat preference of *L. nevinae* means this has the potential to be significant habitat. Robe River Mining Co Pty Ltd have advised that this northern section of secondary dune habitat will be avoided.

The relatively small scale of the proposed clearing and the lack of specialised habitat suggest that the clearing represents a low risk of significant impact to any other conservation significant species. The fauna habitats identified within the application area are not considered as necessary for the on-going maintenance of any other significant fauna. It is likely that equal or higher quality vegetation and fauna habitats would exist throughout the surrounding area, and Pilbara region (RTIO, 2010).

Based on the above, the proposed clearing is at variance to this Principle. Potential impacts to *L. nevinae* habitat as a result of the proposed clearing may be minimised by the implementation of a fauna management condition to avoid the northern section of secondary dune habitat.

Methodology Biota Environmental Sciences (2008)
RTIO (2010)
GIS Database:

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 not likely to be at variance to this Principle

The application area occurs within the Chichester subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by plains supporting a shrub steppe of *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002).

The vegetation within the application area is broadly mapped as Beard vegetation associations 157 and 43, which are relatively common in the north of the state (Shepherd, 2009; GIS Database). Approximately 99.8% and 81.6% of the pre-European vegetation extent remains, respectively (Shepherd, 2009). Biota Environmental Sciences undertook vegetation surveys over part of the application area in 2008 and a Rio Tinto Iron Ore (RTIO) botanist conducted a botanical survey of the of the application area in October 2010 (RTIO, 2010). A total of 81 native vascular plant taxa from 51 genera, belonging to 26 families, were recorded in the survey area (RTIO, 2010). Species richness was within expected ranges for the Pilbara and the genera and families represented in the application area are generally considered characteristic of coastal Pilbara flora (RTIO, 2010). Two introduced flora species were recorded in the application area, Buffel Grass (*Cenchrus ciliaris*) and Kapok (*Aerva javanica*) (RTIO, 2010).

The flora and vegetation surveys that have been undertaken over the application area identified 18 vegetation types recorded from 8 landforms. Most of these vegetation types are relatively common to the coastal region and well represented outside of the survey area (RTIO, 2010). Two of these vegetation types are considered to have moderate to high conservation value:

- Mangrove Community: a small stand in the northern part of the study area contained a portion of mangrove vegetation and is considered to be of high conservation value due to its "high reserve priority"; and
- Rockpile Community: several rocky hills were scattered with rockpiles of varying size. Whilst none are associated with the rockpiles of the Burrup Peninsula, these rockpiles support flora species which tend to be restricted to these habitats (RTIO, 2010).

The mangrove community covers 2 hectares of the survey and application area and has been partly modified due to its close proximity to Cape Lambert site operations (RTIO, 2010). Mangrove (*Avicennia marina*) cover has decreased due to the ponding of surface water runoff providing preferential habitat for sedges and there is also minor weed invasion on the fringes (RTIO, 2010). Mangrove cover increases towards the east of the application area, as the distance from operations increases (RTIO, 2010). The mangrove community continues east of the application area and this appears to be in better condition (GIS Database).

The rockpile community covered 1.6 hectares of the vegetation survey area and is associated with the basalt ridge. The small extent of this community within the application area means the clearing is unlikely to impact on the conservation status of this vegetation community.

No Declared Rare Flora, Priority Flora, Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) were recorded within the application area (RTIO, 2010; GIS Database).

The fauna habitats within the study area consist of:

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- *Melaleuca* and/or *Acacia* shrublands over spinifex (*Triodia epactia/schinzii*) grasslands on red-sand dunes and plains;
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The habitats within the application area would be utilised by a variety of fauna. However, the habitats have been subject to degradation from historical clearing and the close proximity to the Cape Lambert Port B (RTIO, 2010). No significant fauna habitats such as caves, waterholes, significant creek lines, gorges, large tree hollows or termite mounds were observed within the application area (RTIO, 2010). It is likely that equal or higher quality vegetation and fauna habitats would exist throughout the surrounding area, and Pilbara region (RTIO, 2010).

There is existing disturbance within the application area from the Cape Lambert port, rail and associated infrastructure, roads and tracks (RTIO, 2010). Approximately 84 hectares (32%) of the study area, which approximates the application area, has been mapped as areas completely cleared or comprising little to no