Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4983/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Mining Co Pty Ltd

1.3. Property details

Property: Miscellaneous Licences L47/47;
Miscellaneous Licences L47/48;
Miscellaneous Licences L47/49;
Miscellaneous Licences L47/67;
Miscellaneous Licences L47/79;
Miscellaneous Licences L47/127;
Miscellaneous Licences L47/128;
Iron Ore (Hamersley Range) Agreement Act 1963, Special Lease for Mining Operations 3116/4984 (I 195323 L) Lots 9, 13, 32 on Deposited Plan 47815;
Iron Ore (Robe River) Agreement Act 1964, Special Lease for Mining Operations 3116/4621 (I 123393 L), Lot 53 on Deposited Plan 56850, Lot 62 on Deposited Plan 57725, Lot 64 on Deposited Plan 57724;
Iron Ore (Robe River) Agreement Act 1964, Special Lease for Mining Operations 3116/4623 (I 123396 L), Lot 65 on Deposited Plan 241547

Local Government Area: Shire of Ashburton, Shire of Roebourne
Colloquial name: Autohaul Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
86.12		Mechanical Removal	Rail Activities and Associated Works

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 28 June 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 and are useful to look at vegetation in a regional context. Ten Beard vegetation associations have been mapped within the application areas:

Beard vegetation association 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;

Beard vegetation association 93: Hummock grasslands, shrub steppe; kanji over soft spinifex;

Beard vegetation association 152: Hummock grasslands, grass steppe; soft & hard spinifex soft spinifex;

Beard vegetation association 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana*;

Beard vegetation association 175: Short bunch grassland - savanna/grass plain (Pilbara);

Beard vegetation association 565: Hummock grasslands, low tree steppe; bloodwood over soft spinifex;

Beard vegetation association 587: Mosaic: Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana* / Hummock grasslands, shrub-steppe; kanji over *T. pungens*;

Beard vegetation association 589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex soft spinifex;

Beard vegetation association 607: Hummock grasslands, low tree steppe; snappy gum & bloodwood over soft spinifex & *Triodia wiseana*; and

Beard vegetation association 644: Hummock grasslands, open low tree steppe; mulga & snakewood over soft spinifex & *Triodia basedowii* (GIS Database; Government of Western Australia, 2011).

A vegetation survey was conducted over the application areas and surrounding areas by Biota (2008a; 2008b;

2008c; 2008d); Biota (2010a; 2010b), Ecologia (2000), Ecologia (2004), Pilbara Iron (2007), Rio Tinto (2009) and Rio Tinto (2010a; 2010b; 2010c; 2010d) between 2000 and 2010. The following 39 vegetation communities within the application area were identified:

- Mixed *Acacia* open to very open shrubland over *Cenchrus ciliaris* tussock grassland;
- Mixed *Acacia* open to very open shrubland over *Eremophila longifolia, Corchorus walcottii* scattered low shrubs over *Triodia epactia, T. wiseana* open to very open hummock grassland over *Cenchrus ciliaris* very open tussock grassland;
- *Corymbia hamersleyana* scattered low trees, over *Acacia bivenosa, A. ancistrocarpa* and *A. pyrifolia* open shrubland over *Triodia wiseana* and *T. pungens* open hummock grassland over *Cenchrus ciliaris* open tussock grassland;
- *Acacia pyrifolia* high open shrubland over *Cenchrus ciliaris* tussock grassland;
- *Acacia pyrifolia* and *A. bivenosa* high open shrubland over *Triodia wiseana* and *T. pungens* open hummock grassland over *Cenchrus ciliaris* open tussock grassland;
- *Acacia bivenosa* and *A. arida* open shrub over *A. bivenosa* and *A. synchronicia* open shrubland over *Triodia wiseana* and *T. pungens* open hummock grassland over *Cenchrus ciliaris* open tussock grassland;
- *Acacia pyrifolia* and *A. inaequilatera* high open shrubland over *A. arida* open shrubland over *Triodia pungens* hummock grassland over *Cenchrus ciliaris* open tussock grassland over *Enneapogon caerulescens* scattered bunch grass;
- *Corymbia hamersleyana* low woodland over *Acacia pyrifolia, A. ancistrocarpa* and *A. bivenosa* high shrubland over *Triodia pungens* and *T. wiseana* hummock grassland over *Cenchrus ciliaris* very open tussock grassland;
- *Acacia inaequilatera* scattered tall shrubs, over *Acacia arida* shrubland, over *A. arida, A. inaequilatera* and *Corchorus tectus* low open shrubland over *Triodia wiseana* hummock grassland;
- *Acacia maitlandii* and *A. arida* scattered tall shrubs, over *A. maitlandii* shrubland, over *A. maitlandii, A. arida* and *Indigofera rugosa* low open shrubland, over *Triodia wiseana* tussock grassland;
- *Acacia inaequilatera* and *Senna glutinosa* subsp. *glutinosa* scattered tall shrubs, over *A. arida* and *Corchorus tectus* open shrubland/low open shrubland, over *Triodia wiseana* hummock grassland;
- Disturbed;
- *Eucalyptus victrix, Terminalia canescens* low woodland over *Acacia pyrifolia* tall open scrub over *Triodia wiseana, T. epactia* hummock grassland and *Cenchrus ciliaris, C. setiger* open tussock grassland;
- *Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia wiseana, T. epactia* hummock grassland;
- *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* tall open shrubland over *Triodia wiseana* open hummock grassland;
- *Acacia bivenosa* scattered tall shrubs over *Triodia wiseana* hummock grassland with mixed very open herbland;
- *Corymbia hamersleyana* scattered trees over *Acacia ancistrocarpa, A. trachycarpa* tall shrubland over *Triodia wiseana* hummock grassland;
- *Corymbia hamersleyana* scattered trees over *Acacia ancistrocarpa, A. trachycarpa* tall open shrubland over *Triodia wiseana* hummock grassland;
- *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. atkinsiana* tall shrubland over *Triodia wiseana* hummock grassland;
- *Acacia maitlandii, A. atkinsiana* open shrubland over *Triodia melvillei, T. epactia* hummock grassland;
- *Corymbia hamersleyana* scattered low trees over *Acacia monticola, Grevillea wickhamii, Petalostylis labicheoides* tall closed scrub over *Triodia epactia* very open hummock grassland;
- *Corymbia hamersleyana, Eucalyptus leucophloia* scattered low trees over *Acacia atkinsiana, A. ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland;
- *Corymbia hamersleyana, Eucalyptus leucophloia* scattered low trees over *Acacia atkinsiana, A. ancistrocarpa* open shrubland over *Triodia epactia* hummock grassland;
- *Corymbia hamersleyana* low open woodland over *Acacia monticola, A. tumida* high open shrubland over *Triodia epactia* open hummock grassland over *Themeda triandra* very open to scattered tussock grassland;
- *Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* open scrub over *Acacia atkinsiana, A. pyrifolia* shrubland over *Triodia epactia* hummock grassland;
- *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. dictyophleba* tall open scrubland over *Triodia epactia* hummock grassland;
- *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. dictyophleba* tall open scrubland over *Triodia epactia* hummock grassland with *Cenchrus ciliaris, C. setiger* open tussock grassland;
- *Corymbia hamersleyana* scattered low trees, over *Grevillea wickhamii* tall shrubland, over *Acacia ancistrocarpa, G. wickhamii* and *A. atkinsiana* shrubland, over *A. spondylophylla* low open shrubland (to scattered low shrubs), over *Cenchrus ciliaris*;
- *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. trachycarpa* tall open shrubland over *Triodia epactia* hummock grassland;
- *Eucalyptus leucophloia* scattered low trees over *Acacia atkinsiana* open shrubland over *Triodia wiseana* hummock grassland;
- *Eucalyptus xerothermica* scattered low trees over *Acacia inaequilatera* shrubland over *Cenchrus ciliaris* tussock grassland and *Triodia wiseana* hummock grassland;
- *Corymbia deserticola, Eucalyptus leucophloia* scattered low trees over *Acacia pruinocarpa, A. ancistrocarpa* shrubland over *Triodia wiseana* hummock grassland;
- *Acacia aneura, Eremophila fraseri* open shrubland over *Aristida contorta* bunch grassland;
- *Acacia aneura* low open forest over *Eremophila forrestii* open shrubland over *Triodia melvillei* hummock grassland and *Aristida contorta* open bunch grassland;
- Tall open shrub over tussock grassland;

- *Acacia inaequilatera, A. coriacea* subsp. *pendens* scattered tall shrubs over *A. pyrifolia, A. bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland;
- Erosional spurs/flat surface of remnant plateau;
- Disturbed vegetation – regrowth, rehabilitation, altered vegetation; and
- Heavily disturbed.

Clearing Description

Robe River Mining Co Pty Ltd is proposing to clear up to 86.12 hectares of native vegetation for the purpose rail activities and associated works. This includes the installation and upgrade of boom gates, level crossings and flashing lights.

The vegetation will be cleared using a dozer, blade down. The vegetation and topsoil will be stockpiled separately for use in rehabilitation.

Vegetation Condition

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994);

To:

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).

Comment

The application areas are located in the Roebourne, Chichester, Fortescue and Hamersley subregions of Western Australia and are situated between the Karratha and Tom Price town sites (GIS Database).

The vegetation condition was derived from a vegetation survey conducted by Biota (2008a; 2008b; 2008c; 2008d); Biota (2010a; 2010b), Pilbara Iron (2007), Rio Tinto (2009) and Rio Tinto (2010a; 2010b; 2010c; 2010d).

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 areas occur across the Chichester (PIL1), Fortescue (PIL2), Hamersley (PIL3) and Roebourne (PIL4), Interim Biogeographic Regionalisation of Australia (IBRA) subregions (GIS Database).

The Chichester subregion is generally described as undulating archaean granite and basalt plains include significant areas of basaltic ranges. Plains support a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* (formerly *Triodia pungens*) hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002a). The Fortescue subregion is described as alluvial plains and river frontage with extensive salt marsh, mulga-bunch grass, and short grass communities on alluvial plains in the east. River gum woodlands fringe the drainage lines and an extensive calcrete aquifer feeds numerous permanent springs in the central Fortescue, supporting large permanent wetlands with extensive stands of river gum and cadjeput *Melaleuca* woodlands (CALM, 2002b). The Hamersley subregion is 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, 2002c). The Roebourne subregion is generally described as quaternary alluvial and older colluvial coastal and subcoastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera*. Uplands are dominated by *Triodia* hummock grasslands. Ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands. Samphire, *Sporobolus* and mangal occur on marine alluvial flats and river deltas (CALM, 2002d).

Numerous flora and vegetation surveys of the application areas (which spread across an area of 210 kilometres) were undertaken by Biota (2008a; 2008b; 2008c; 2008d); Biota (2010a; 2010b), Pilbara Iron (2007), Rio Tinto (2009) and Rio Tinto (2010a; 2010b; 2010c; 2010d) between 2000 and 2010. The floristic composition and structure of the vegetation types are not considered to be geographically unique or restricted and do not support a high level of biological diversity (Rio Tinto, 2012). Diversity of the landforms and habitats in the study area is considered to be within expected ranges for a study area of this size and varied locality. No unique or range restricted habitats were observed in the study area or locality, nor were any threatened or Priority Ecological Communities (Rio Tinto, 2012; GIS Database). No Threatened Flora was recorded within the application areas, and one Priority flora species *Goodenia nuda* (P4) was recorded at the 225.7kp application area (Rio Tinto, 2012). This species is widespread throughout the local and regional area, and is well documented by previous flora surveys (Biota, 2008a; 2008b; 2008c; 2008d; Biota, 2010a; 2010b; Pilbara Iron, 2007; Rio Tinto, 2009; Rio Tinto, 2010a; 2010b; 2010c; 2010d).

Vegetation units in the study area were generally in "good" to "degraded" condition due to previous clearing for tracks, railways and infrastructure and the presence of introduced species, particularly Buffel Grass (*Cenchrus ciliaris*) (Rio Tinto, 2012; Keighery, 1994). Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There were three faunal habitat types identified across the application areas and are considered to be well represented within the local and regional area (GIS Database). There were no unique or significant faunal assemblages found within the application area (Rio Tinto, 2012). The clearing of 86.12 hectares of native vegetation is unlikely to have a significant impact on fauna in a regional and local context.

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

Methodology

Biota (2008a)
Biota (2008b)
Biota (2008c)
Biota (2008d)
Biota (2010a)
Biota (2010b)
CALM (2002a)
CALM (2002b)
CALM (2002c)
CALM (2002d)
Keighery (1994)
Pilbara Iron (2007)
Rio Tinto (2009)
Rio Tinto (2010a)
Rio Tinto (2010b)
Rio Tinto (2010c)
Rio Tinto (2010d)
Rio Tinto (2012)
GIS Database:
- IBRA WA (Regions - Subregions)
- 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 not likely to be at variance to this Principle

No targeted fauna surveys have been conducted over the application area. Several flora and vegetation surveys conducted over the application areas have identified four broad fauna habitats:

- Plains – including Spinifex with Acacias in the north, hummock grasslands and mixed woodlands throughout the area and Acacia aneura woodlands and mulga groves in the south at 248.1 km;
- Hills – including hilltops and hill slopes; and
- Flowlines – including larger Coolabah type creeklines and minor flowlines (Biota, 2008a; 2008b; 2008c; 2008d; Biota, 2010a; 2010b; Pilbara Iron, 2007; Rio Tinto, 2009; Rio Tinto, 2010a; 2010b; 2010c; 2010d).

The fauna habitats within the study area are considered to be common and widespread within the sub-region in which they were recorded. The application area does not contain habitats or faunal assemblages that are ecologically significant except for the Mulga groves, which have a more restricted distribution (Rio Tinto, 2012). However, these habitat types are unlikely to support specific species of conservation significance where vegetation surveys have identified nearby vegetation in the local area that is in significantly healthier condition in which fauna species are more likely to inhabit (Rio Tinto, 2012).

There are several species of conservation significance listed as either threatened species under the *Environment Protection and Biodiversity Conservation Act (EPBC) 1999* or protected under Western Australian legislation (*Wildlife Conservation Act 1950*), which may potentially occur within a 20 kilometre radius of the application areas (DEC, 2012a). While some Schedule or Priority fauna species may temporarily utilise the habitats within the application areas, given that there is little or no core habitat represented within the application area, it is unlikely that any species of conservation significance will be directly affected to a large degree by the clearing of native vegetation in the application area. The proposed clearing is not likely to significantly impact important habitat for endemic fauna (Rio Tinto, 2012).

The proposed clearing of 86.12 hectares of native vegetation is unlikely to have a significant impact on conservation significant fauna.

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

Methodology

DEC (2012a)
Biota (2008a)
Biota (2008b)
Biota (2008c)
Biota (2008d)
Biota (2010a)
Biota (2010b)
Pilbara Iron (2007)
Rio Tinto (2009)
Rio Tinto (2010a)
Rio Tinto (2010b)

Rio Tinto (2010c)
Rio Tinto (2010d)
Rio Tinto (2012)

(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 records of Threatened Flora within the application area (GIS Database). A search of the Department of Environment and Conservations Threatened and Priority Flora databases identified no Threatened Flora species as occurring within a 10 kilometre radius of the application areas (DEC, 2012a).

Biota (2008a; 2008b; 2008c; 2008d); Biota (2010a; 2010b), Pilbara Iron (2007), Rio Tinto (2009) and Rio Tinto (2010a; 2010b; 2010c; 2010d) conducted vegetation and flora surveys of various application areas and surrounding areas between 2000 and 2010. No Threatened Flora was recorded within any of the survey areas.

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

Methodology

DEC (2012a)
Biota (2008a)
Biota (2008b)
Biota (2008c)
Biota (2008d)
Biota (2010a)
Biota (2010b)
Pilbara Iron (2007)
Rio Tinto (2009)
Rio Tinto (2010a)
Rio Tinto (2010b)
Rio Tinto (2010c)
Rio Tinto (2010d)
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

According to available databases, several of the application areas fall within the buffer zone of the Themeda Grasslands Threatened Ecological Community (TEC) (GIS Database). This TEC occurs on cracking clays and consists of grassland plains dominated by the perennial Themeda (kangaroo grass) and many annual herbs and grasses. A vegetation survey was conducted over the application areas and surrounding regions by Biota (2008a; 2008b; 2008c; 2008d); Biota (2010a; 2010b), Pilbara Iron (2007), Rio Tinto (2009) and Rio Tinto (2010a; 2010b; 2010c; 2010d) between 2000 and 2010. These surveys did not identify any vegetation communities described as the Themeda Grasslands TEC within the application areas (Biota, 2008a; 2008b; 2008c; 2008d; Biota, 2010a; 2010b; Pilbara Iron, 2007; Rio Tinto, 2009; Rio Tinto, 2010a; 2010b; 2010c; 2010d).

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

Methodology

Biota (2008a)
Biota (2008b)
Biota (2008c)
Biota (2008d)
Biota (2010a)
Biota (2010b)
Pilbara Iron (2007)
Rio Tinto (2009)
Rio Tinto (2010a)
Rio Tinto (2010b)
Rio Tinto (2010c)
Rio Tinto (2010d)
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 application areas fall within Pilbara IBRA bioregion (GIS Database). The vegetation within the application areas is recorded as Beard vegetation associations 82, 93,152, 157, 175, 565, 587, 589, 607 and 644 (GIS Database; Government of Western Australia, 2011).

According to the Government of Western Australia (2011), the above Beard vegetation associations retain approximately 99% of their pre-European extent. Therefore, the area proposed to be cleared is not 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 IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,427	17,729,352	~99.58	Least Concern	6.32
Beard vegetation associations - State					
82	2,565,901	2,553,217	~99.51	Least Concern	10.24
93	3,044,310	3,040,641	~99.88	Least Concern	0.42
152	306,407	306,298	~99.96	Least Concern	2.22
157	502,729	498,026	~99.06	Least Concern	17.95
175	526,203	523,800	~99.54	Least Concern	4.22
565	143,439	143,427	~99.99	Least Concern	-
587	585,716	585,684	~99.99	Least Concern	20.97
589	809,603	804,022	~99.31	Least Concern	1.60
607	120,789	120,600	~99.84	Least Concern	12.84
644	27,200	27,069	~99.52	Least Concern	-
Beard vegetation associations - Bioregion					
82	2,563,583	2,550,899	~99.51	Least Concern	10.25
93	3,042,114	3,038,472	~99.88	Least Concern	0.42
152	177,946	177,836	~99.94	Least Concern	3.82
157	198,634	197,098	~99.23	Least Concern	5.69
175	507,033	506,626	~99.92	Least Concern	4.38
565	108,957	108,945	~99.99	Least Concern	-
587	585,716	585,684	~99.99	Least Concern	20.97
589	730,567	725,993	~99.37	Least Concern	1.77
607	120,789	120,600	~99.84	Least Concern	12.84
644	27,200	27,069	~99.52	Least Concern	-

* Government of Western Australia (2011)
** 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 (2011)
GIS Database:
- IBRA WA (regions - subregions)
- 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 may be at variance to this Principle

As the application areas span over 210 kilometres, they intersect numerous minor non-perennial watercourses (GIS Database). A number of application areas are located near to or within the floodplains of major watercourses. These include Western Creek, Harding River, Fortescue River and Weelumurra Creek (Rio Tinto, 2012; GIS Database). The riparian vegetation associated with river systems is considered to hold high conservation significance as it supports flora species which can be restricted to such habitat, and is generally more species-rich than surrounding habitat (particularly for ephemeral herbs and tussock grasses) (Biota, 2008a; 2010a; 2010b). This habitat also supports fauna which may be restricted to these areas (such as passerines, dragon flies and fish) (Biota, 2008b). Clearing of areas which contain riparian vegetation also have the potential to cause localised erosion to the creek habitat, however the proposed clearing of 86.12 hectares across 210 kilometres is not expect to significantly impact the hydrological functions of these drainage systems (Rio Tinto, 2012; GIS Database).

The proposed works are low-impact in nature with only a small amount of vegetation from each application area to be removed. Provided disturbance to riparian habitats is avoided or minimised where possible, and strict weed hygiene procedures are followed, the proposed works are not expected to substantially impact any watercourses or wetlands. Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition.

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

Methodology Biota (2008a)
Biota (2010a)
Biota (2010b)
Rio Tinto (2012)
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 is not likely to be at variance to this Principle

According to available databases, the application areas are comprised of the following 12 land systems:

- Boolgeeda;
- Calcrete;
- Capricorn;
- McKay;
- Newman;
- Nooingnin.
- Paraburdoo
- Platform;
- River;
- Rocklea
- Ruth; and
- Urandy (GIS Database).

The Boolgeeda land system is characterised by stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands. Hard spinifex grasslands are not preferred by livestock but soft spinifex is moderately preferred for a few years following fire. The native vegetation is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Calcrete land system is charactered by low calcrete platforms and plains supporting shrubby hard spinifex grasslands. Some shrubs and grasses associated with the spinifex grasslands of this system are attractive to grazing animals and may be depleted if grazing levels are excessive, however this system has a low erosion risk (Van Vreeswyk et al., 2004).

The Capricorn land system is characterised by hills and ridges of sandstone and dolomite supporting shrubby hard and soft spinifex grasslands. This land system is rugged and poorly accessible with vegetation which is not preferred by livestock, where the stoniness confers resistance to erosion (Van Vreeswyk et al., 2004).

The McKay land system is characterised by hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands. This system supports predominantly hard spinifex vegetation and is not preferred by livestock. Some areas are poorly accessible and the system is not prone to degradation or soil erosion (Van Vreeswyk et al., 2004).

The Newman land system is characterised by rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands. Much of the system is inaccessible or poorly accessible and is unsuitable for pastoral purposes. Spinifex is the dominant vegetation and is generally not susceptible to erosion (Van Vreeswyk et al., 2004).

The Nooingnin land system is characterised by hardpan plains with very large groves supporting mulga shrublands. Vegetation on the system includes shrubs and grasses which are preferred by livestock, and may decline markedly if grazing pressure is excessive. Any disturbance, such as inappropriately located or constructed tracks and roads, that restricts, diverts or concentrates surface water sheet flows will often adversely affect vegetation on this system (Van Vreeswyk et al., 2004). Although this land system is generally stable, groves can be degraded by excessive grazing or by alterations to surface water flows. The system generally has low susceptibility to erosion except in extreme cases of vegetation loss (Van Vreeswyk et al., 2004).

The Paraburdoo land system is characterised by basalt derived stony gilgai plains and stony plains supporting snakewood and mulga shrublands with spinifex and tussock grasses. Snakewood communities include many low shrubs and perennial grasses which are preferred by grazing animals and are prone to degradation if grazing pressure is excessive. Much of the system is inherently resistant to erosion except for drainage zones which are moderately susceptible (Van Vreeswyk et al., 2004).

The Platform land system is characterised by dissected slopes and raised plains supporting hard spinifex grasslands. Vegetation on this system is not preferred by livestock and is of very little use for pastoralism. This land system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The River land system is characterised by active flood plains and major rivers supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands. Buffel grass and soft spinifex on this system are highly and moderately preferred respectively by livestock. 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). Potential impacts to erosion may be minimised through the implementation of a riparian vegetation management condition.

The Rocklea land system is characterised by basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. Spinifex hummock grasslands are poorly accessible and are generally not preferred by livestock and the system has very low erosion hazard (Van Vreeswyk et al., 2004).

The Ruth land system is characterised by hills and ridges of volcanic and other rocks supporting hard spinifex (occasionally soft spinifex) grasslands. Predominantly hard spinifex vegetation covers the land system and some soft spinifex which is moderately attractive for a few years following fire. The system is prone to fairly regular burning but is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Urandy land system is characterised by stony plains, alluvial plains and drainage lines supporting shrubby soft spinifex grasslands. The system supports soft spinifex vegetation which, except for old mature stands, is moderately preferred by grazing animals. The system is prone to fairly regular burning. Most of the system is not susceptible to erosion or vegetation degradation (Van Vreeswyk et al., 2004).

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

Methodology

Van Vreeswyk et al. (2004)
GIS Database
- 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 may be at variance to this Principle

Several of the application areas are located within the railway corridor within the Millstream-Chichester National Park (GIS Database). Given that the application area is located within the Millstream-Chichester National Park all of the vegetation units recorded within the application areas contribute toward the environmental values of the A Class Reserve. Most vegetation types, however, are widely represented within the local and regional area, and Rio Tinto (2012) have identified that the biodiversity of the landforms and habitats within the application area are considered to be within the expected range for a study area of this size in the locality and well represented within the remainder of the National Park. The application areas are located within the existing infrastructure associated with the Deepdale railway and as such the application areas have already suffered some disturbance, and the vegetation condition ranges from "degraded" to "good" (Keighery, 1994).

Advice from the Department of Environment and Conservation (DEC) has stated no objection to the proposed

clearing on the basis that no Threatened Flora, Priority Flora or conservation significant species are impacted by the proposed railway maintenance and upgrade activities (DEC, 2012b). Advice from DEC also requires that weed management practices are implemented and that cleared areas are rehabilitated once no longer required for the purpose for which they are cleared (DEC, 2012b). Potential impacts to the national park as a result of the proposed clearing may be minimised by the implementation of a rehabilitation and weed management conditions.

The proposal may be at variance to this principle, as a small amount of clearing will take place; however the proposed works are located along the previously disturbed rail corridor, are small in size and are not expected to substantially impact the environmental values of the reserve.

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

Methodology

DEC (2012b)
Keighery (1994)
Rio Tinto (2012)
GIS Database:
- DEC 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

The application areas are proposed to occur in the Harding Dam Catchment Area, which was gazetted under the *Country Areas Water Supply Act 1947* and the Millstream Public Drinking Water Source Area (PDWSA). These areas have been assigned a 'Priority 1' and 'Priority 2' classification, however the Department of Water (DoW) has advised that the clearing application is acceptable provided activities are carried out in accordance with DoW's water quality protection guidelines (DOW, 2012). The application area is located within the proclaimed Pilbara groundwater area under the *Rights in Water and Irrigation Act 1994* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purposes other than domestic and/or stock watering is subject to licence by the DoW. The DoW (2012) noted that the Autohaul Project activities are carried out in accordance with the previously approved Rio Tinto Conservation Environmental Management Plan, DoW water quality protection advice and guidelines, and that the proposal does not involve the creation or expansion of new infrastructure corridors.

Several drainage tracts transect the application areas (GIS Database). The drainage patterns in the surrounding area have been impacted by existing railway activities and infrastructure. These drainage tracts are dry for most of the year and only flow and hold surface water for short durations following significant rainfall events. Sediment loads are typically high in flowlines in the Pilbara following large rainfall events and any increase to the sediment load caused by the proposed clearing is likely to be negligible (Rio Tinto, 2012). The application areas have a groundwater salinity that ranges from potable to hypersaline (500 - 10,000 milligrams/Litre Total Dissolved solids (TDS) (GIS Database). Due to the wide extent of groundwater salinity levels, the proposed clearing is unlikely to further deteriorate the quality of underground water (GIS Database).

Any clearing proposed within the applied clearing area is likely to avoid low-lying areas where possible or clearing will occur along the existing rail network where impact has already occurred. If clearing of riparian vegetation is required there may be some localized short term sedimentation during the clearing process however, this is not likely to be an ongoing issue. In addition, the applicant maintains an ISO 14001 certified environmental management system under which, all environmental management plans are managed including the management of watercourses and water quality impacts (Rio Tinto, 2012). The clearing of vegetation as a result of this proposal is therefore unlikely to result in any further deterioration in surface or groundwater quality in the local area.

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

Methodology

DoW (2012)
Rio Tinto (2012)
GIS Database:
- Geodata, Lakes
- Hydrography, Linear
- Public Drinking Water Source Areas
- RIWI Act, Groundwater Areas
- Groundwater Salinity, Statewide

(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 areas lies within a low rainfall zone and any surface water within the application area is likely to only remain for short periods following significant rainfall events (CALM 2002a; 2002b; 2002c; 2002d). Local flooding occurs seasonally in the Pilbara region as a result of cyclonic activity and sporadic thunderstorm

activity. The small scale of clearing proposed is unlikely to cause or exacerbate flooding in the area (Rio Tinto, 2012). Given the size of the area to be cleared (86.12 hectares) compared to the sizes of the five catchment areas the application areas intersect (Maitland River catchment area -199,380 hectares; Coastal catchment area - 744,301 hectares; Harding River catchment area - 155,807 hectares; Fortescue River catchment area - 1,860,784 hectares and Ashburton River catchment area - 7,877,743 hectares (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

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

Methodology CALM (2002a)
CALM (2002b)
CALM (2002c)
CALM (2002d)
Rio Tinto (2012)
GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, Linear

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

Comments

There are three Native Title claim over the area under application (WC99/14; WC03/3 and WC97/89). This claim was determined by the Federal Court on 2 May 2005. 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 eight registered Aboriginal Site of Significance within the application area (Site IDs: 18088, 6323, 30463, 18241, 18790, 18243, 21075 and 17335) (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.

The clearing permit application was advertised on 7 May 2012 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to the proposed clearing.

Methodology GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims - Determined by the Federal Court
- Native Title Claims – Rigistered with the NNTT

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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

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.