Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5457/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Atlas Iron Limited**

1.3. Property details

Property: Mining Lease 45/1197
Mining Lease 45/1209
Miscellaneous Licence 45/280
Local Government Area: Shire of East Pilbara
Colloquial name: Mt Webbber DSO Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
499		Mechanical Removal	Mineral Production and Associated Activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 26 April 2013

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):

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

Beard vegetation association 93: Hummock grasslands, shrub steppe; kanji over soft spinifex (Government of Western Australia, 2011; GIS Database).

A flora and vegetation survey conducted by Woodman (2012a) identified 12 vegetation communities within the application area:

VT1 – Tall open to sparse Shrubland of mixed *Acacia* species dominated by *A. inaequilatera* over low sparse shrublands of mixed species including *Indigofera monophylla, Evolvulus alsinoides* var. *villosicalyx*, *Sida clementii* and *Mollugo molluginea* over closed to open low hummock grassland of mixed *Triodia* species dominated by *T. lanigera* or *T. epactia* on red or red-brown sand, sandy loam, loamy sand, clayey sand and clay loams often with granite and/or quartz pebbles on undulating plains and simple slopes;

VT3 – Tall open to sparse shrubland of mixed *Acacia* species dominated by *A. inaequilatera* over tall to mid sparse shrubland of mixed species including *Senna glutinosa* subsp. *glutinosa* over low sparse shrubland of mixed species including *Bonamia media* var. *villosa*, *Cleome viscosa* and *Goodenia muelleriana* over hummock grassland to closed hummock grassland of mixed *Triodia* species usually with *Triodia wiseana* present on red, brown or red-brown clay loam, loamy sand and sandy loam over granite and ironstone on plains, lower slopes, mid slopes, hillocks and crests;

VT4 - Low open shrubland to isolated shrubs of mixed species dominated by *Acacia stellaticeps* and *Pluchea ferdinandi-muelleri* over low open tussock grassland to isolated clumps of tussock grasses of mixed species including *Sporobolus actinocladus* over tall to mid hummock grassland to sparse hummock grassland of mixed *Triodia* species often with *Triodia longiceps* on red, brown and red-brown sand, sandy loam, clay, clay loam, clayey sand often with quartz pebbles on plains, drainage lines and closed depressions;

VT5 - Mid open forest to open woodland of mixed *Eucalyptus* species dominated by *Eucalyptus victrix* over low open woodland dominated by *Corymbia hamersleyana* over tall open shrubland to sparse shrubland of *Acacia* species dominated by *Acacia pyrifolia* var. *pyrifolia* and *Acacia trachycarpa* over low sparse shrubland of mixed species including *Cleome viscosa*, *Corchorus parviflorus, Hybanthus aurantiacus, Phyllanthus maderaspatensis, Polymeria ambigua, Senna notabilis* and *Stemodia grossa* over closed hummock grassland to isolated hummock grasses of mixed *Triodia* species often with *Triodia epactia* on red, brown, red-brown, pale brown and orange sand and sandy loam in major drainage lines;

VT6 - Mid woodland of *Eucalyptus camaldulensis* subsp. *obtusa* and /or, *E. victrix* and *Melaleuca argentea* over

tall shrubland of mixed species including, *A. trachycarpa, A. pyrifolia* var. *pyrifolia*, *Melaleuca glomerata* and *M. linophylla* over low open hummock grassland to isolated clumps of hummock grasses of mixed Triodia species including *Triodia epactia* and/or *T. longiceps* over low open sedgeland of mixed *Cyperus* species including *Cyperus ixiocarpus* on red, red-brown and orange sand, silty sand and silty clay loam in major drainage lines;

VT8 - Low isolated trees of *Corymbia hamersleyana* over tall sparse shrubland dominated by *Acacia inaequilatera* over low sparse shrubland of mixed species including *Goodenia stobbsiana* over low hummock grassland to closed hummock grassland dominated by *Triodia wiseana* on red, brown, red-brown and orange clay loam, sandy loam and silty loam over ironstone, granite or calcrete on hill crests, slopes and undulating plains;

VT9 - Tall open to sparse shrubland of mixed *Acacia* species dominated by *Acacia inaequilatera* over low shrubland to sparse shrubland of mixed species including *Indigofera monophylla* and *S. glutinosa* subsp. *glutinosa* over low hummock grassland to closed hummock grassland dominated by *Triodia wiseana* and/or *Triodia brizoides* on red, brown, red-brown and orange clay loam, sandy loam, silty loam and loam over ironstone and granite on hill crests, hill slopes and undulating plains;

VT10 - Low isolated trees of *Corymbia hamersleyana* and/or *Eucalyptus leucophloia* subsp. *leucophloia* over tall sparse shrubland of mixed species dominated by *Acacia inaequilatera* over low sparse shrubland of mixed species including *Indigofera monophylla* and *S. glutinosa* subsp. *glutinosa* over low hummock grassland to closed hummock grassland dominated by *Triodia epactia* and/or *Triodia wiseana* over low isolated clumps of tussock grasses including *Cymbopogon ambiguus* on red, brown, red-brown and orange sand, sandy loam, silty loam and clay loam over predominantly granite and sometimes ironstone on hill slopes, crests, undulating plains and drainage lines;

VT11 - Low open woodland to isolated trees of *Corymbia hamersleyana* and/or *Eucalyptus leucophloia* subsp. *leucophloia* over tall sparse shrubland of mixed species including *Acacia inaequilatera* and G*revillea wickhamii* over low sparse shrubland of mixed species including *Goodenia stobbsiana* over low hummock grassland to closed hummock grassland of mixed *Triodia* species usually dominated by *Triodia brizoides* and/or *Triodia epactia* over low isolated clumps of tussock grasses including *Eriachne mucronata* on red, brown, red-brown and orange sandy loam, clay loam, silty loam and loam over granite and ironstone on hill slopes, crests, undulating plains and drainage lines;

VT12 - Tall open shrubland of mixed species including *Grevillea wickhamii* subsp. *hispidula* over low hummock grassland of mixed *Triodia* species usually dominated by *T. epactia* over low sparse tussock grassland to isolated clumps of tussock grasses including *Eriachne mucronata* on red, red-brown and orange sand, sandy loam and clay loam over granite and ironstone on lower slopes to crests;

VT15 - Tall sparse shrubland of mixed species dominated by *Acacia inaequilatera* and *Grevillea pyramidalis* subsp*. leucadendron* over low isolated shrubs of mixed species including *Bonamia media* var. *villosa* over mid to low closed hummock grassland dominated by *Triodia epactia* and/or *T. wiseana* on red, brown, red-brown and orange clay loam, sandy loam, silty loam and loam over granite and ironstone on drainage lines, hill slopes, upper hill slopes and hill crests; and

VT16 - Tall sparse shrubland of mixed species dominated by *Acacia ancistrocarpa, A. inaequilatera* and *Grevillea pyramidalis* subsp*. leucadendron* over mid sparse shrubland of mixed species including *Acacia bivenosa* over low sparse shrubland of mixed species including *Gossypium australe* over mid to low closed hummock grassland dominated by *Triodia epactia* and occasionally also by *T. wiseana* on red-brown sandy loam or silty loam over granite or ironstone on flat or undulating plains.

Clearing Description

Atlas Iron Limited (2012a) is proposing to clear up to 499 hectares of native vegetation with an application area of 781 hectares for the purposes of mineral production and associated activities. The project involves the development of two open pits, three waste rock dumps, run-of-mine area, low grade and topsoil stockpiles, accommodation, administration, explosives magazine and borefields, and borrow pits.

The vegetation will be cleared using earthmoving equipment.

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 application area is located in the Chichester subregion of Western Australia and is situated approximately 62 kilometres south-west of the Marble Bar town site (GIS Database).

The vegetation condition was derived from a vegetation survey conducted by Woodman (2012a).

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 Chichester subregion (PIL1) comprises of the northern section of the Pilbara Craton which is characterised by undulating Archaean granite and basalt plains, which include significant areas of basaltic ranges. Plains support a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002).

Woodman (2012a) conducted several level 2 flora and vegetation surveys over the application area and surrounding areas during July and August 2010, May and June 2011, and again 22 to 29 April 2012. The survey identified 354 vascular plant taxa from 139 genera and 50 families within the application area. There were 12 vegetation types identified within the application area, two of significance as they are representative of groundwater dependant ecosystems (Woodman, 2012a). The condition of the vegetation types was classified from 'excellent' to 'completely degraded' (Keighery, 1994; GIS Database). The diversity of the flora and vegetation identified within the application area can be described as comparable too or lower than that recorded for other nearby projects (Woodman, 2012a).

The survey identified one Priority Flora species recorded within the application area (Woodman, 2012a). The species *Ptilotus mollis* (Priority 4) was identified in 93 locations, comprising of 5 populations totalling 2,504 plants. Of these, 1,202 plants will be impacted by the proposed clearing (Woodman, 2012b). Removal of these plants will locally, have a moderate impact to this taxon. Studies have shown that a further 14 populations are known from outside the application area (Woodman, 2012a). The clearing of 499 hectares of native vegetation is not likely to significantly influence the conservation status of these flora species (Woodman, 2012b).

There are no known Threatened Flora species, Threatened Ecological Communities or Priority Ecological Communities recorded within the application area (Woodman, 2012a; GIS Database).

There were several species of weeds identified during the survey (Woodman, 2012a). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There were six broad faunal habitats identified within the application area (Outback Ecology, 2012a). Of those, two faunal habitats are considered to be locally significant (Outback Ecology, 2012a). The clearing of 499 hectares of native may have a significant impact on fauna in a local context.

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

Methodology

CALM (2002)
Keighery (1994)
Outback Ecology (2012a)
Woodman (2012a)
Woodman (2012b)
GIS Database:
- IBRA WA (Regions - Subregions)
- Pre-European vegetation
- 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

There were six broad fauna habitat types recorded within the survey area by Outback Ecology (2012a);

1. Rocky foothills;
2. Rocky ridges and gorges,
3. Stony rise;
4. Spinifex stony plain;
5. Drainage line; and
6. Upland drainage line.

Outback Ecology (2012a) identified the vegetation condition to be 'completely degraded' to 'excellent' (Keighery, 1994). The rocky ridges and gorges habitat type was identified as the most important for supporting species of conservation significance (Outback Ecology, 2012a). The drainage faunal habitat is also significant as it provides important refuge to various fauna species (Outback Ecology, 2012a). With the exception of rocky ridges and gorges and drainage line habitat types, habitats identified within the application area are generally well represented both in the local and regional area (Outback Ecology, 2012a). The indicative project footprint by Atlas Iron Limited (2012a) will result in the clearing of approximately 182 hectares of rocky ridges and gorges habitat, 14 caves, 96 hectares of drainage lines, and over 6 kilometres of cliff faces within the application area (Outback Ecology, 2012a; Woodman, 2012a; 2012b).

The fauna survey report by Outback Ecology (2012a) draws upon the findings of a desktop study, an initial reconnaissance survey (22 to 24 March 2010), a multi-phase vertebrate level 2 fauna survey (9 to 20 April 2010, 24 September to 4 August 2010, and 13 to 23 October 2010), and a follow up reconnaissance survey including selected cave habitats (1 to 7 March 2012). All of the surveys were conducted within the application area. The level 2 survey identified 155 vertebrate fauna species including 20 native mammals, 68 species of bird, 59 reptile species and six amphibian species (Outback Ecology, 2012a). The vertebrate fauna assemblages recorded within the application area was found to be comparable with findings of similar sized surveys conducted within the surrounding region (Outback Ecology, 2012a).

The level 2 fauna survey (Outback Ecology, 2012a) recorded nine species of conservation significance within the application area;

- Northern Quoll (*Dasyurus hallucatus*) (WC Act - Schedule 1, EPBC - Endangered),
- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (WC Act - Schedule 1, EPBC - Vulnerable),
- Pilbara Olive Python (*Liasis olivaceus barroni*) (DEC - Threatened, EPBC - Vulnerable),
- Unnamed Blind Snake (*Ramphotyphlops ganei*) (DEC - Priority 1),
- Ghost Bat (*Macroderma gigas*) (DEC - Priority 4),
- Western Pebble-mound Mouse (*Pseudomys chapmani*) (DEC - Priority 4),
- Bush Stone-curlew (*Burhinus grallarius*) (DEC - Priority 4),
- Australian Bustard (*Ardeotis australis*) (DEC - Priority 4), and
- Rainbow Bee-eater (*Merops ornatus*) (EPBC Act - Migratory species; JAMBA, CAMBA) (Outback Ecology, 2012a; Woodman, 2012a).

Due to its impacts on species protected under the *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*), the project was referred to the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). The proposed activities were deemed to be a controlled action under the *EPBC Act*.

Despite a large amount of denning and foraging habitat available for the Northern Quoll, only one individual was identified during the fauna survey within the application area (Outback Ecology, 2012a). Scats were also identified at five locations in the rocky ridge and gorge habitat, suggesting that the species is present throughout this habitat within the application area (Outback Ecology, 2012a). DEC (2013a) advises that the proposed clearing will impact the Northern Quoll on a local scale through direct loss of fauna during land clearing, loss of habitat and indirect impacts (i.e. dust emissions, increased light, noise and vibration). A decrease in the local population is likely to occur due to the combination of these initial disturbances and from the ongoing impacts of mining activities (DEC, 2013a). The Northern Quoll populations in the Pilbara have been identified as 'important populations' in the national recovery plan due to the absence of cane toads at present, and their genetic differences to populations in the Kimberley region (DEC, 2013a). Potential impacts to the Northern Quoll as a result of the proposed clearing may be minimised by the implementation of a fauna management condition.

The presence of the Pilbara Leaf-nosed Bat was confirmed within the application area with Anabat recordings from 8 locations, primarily from caves within rocky ridge and gorge habitats (Outback Ecology, 2012a). Studies by Outback Ecology (2012a) did not identify the caves to be used for breeding or as a maternity cave, but simply for roosting after foraging. DEC (2013a) advises that the proposed clearing is likely to lead to the long-term decrease in the size of the population of the Pilbara Leaf-nosed bat. Permanent decline in the local population is expected to occur due to a combination of initial clearing disturbance and impacts from ongoing mining activities (i.e. noise, vibration, light, dust emissions). Atlas Iron Limited (2012a) proposes to clear five of the eight locations of the Pilbara leaf-nosed bats recorded within the application area (Outback Ecology, 2012a). This represents approximately 9% of Pilbara Leaf-nosed bats records from Naturemap fauna records (DEC, 2013a; 2013b). DEC (2013a) suggest that where possible clearing of caves should be undertaken at night time to reduce the amount of causalities from direct clearing. As part of the referral to DSEWPaC, Atlas Iron Limited are proposing to trial construction of artificial roosts and to undertake a regional survey of the Pilbara Leaf-nosed Bat to help offset the impacts of the proposal on this species.

Ghost Bats were also recorded via Anabat recordings and shotgun microphones from caves within the application area (Outback Ecology, 2012a). Any offsets proposed by Atlas Iron Limited to DSEWPaC regarding Pilbara Leaf-nosed Bats will also assist in mitigating impacts on the Ghost Bat as they are known to at times utilise the same caves as the Pilbara Leaf-nosed Bats (Outback Ecology, 2012a).

The Pilbara Olive Python was identified in two areas within the rocky ridges and gorges habitat (Outback Ecology, 2012a). This species has also been recorded from similar habitat in several other surveys in the surrounding region (Bamford, 2009; How et al., 1991; Outback Ecology, 2011). Potential impacts to the Pilbara Olive Python as a result of the proposed clearing may be minimised by the implementation of a fauna management condition. This management strategy was also reflected in Significant Species Management Plan by Atlas Iron Limited (2012b).

The Australian Bustard, Bush Stone-curlew, Western Pebble-mound Mouse, Rainbow Bee-eater and the unnamed blind snake may use the study area for foraging as part of a larger territory area and are considered highly mobile and/or have a wide distribution (Outback Ecology, 2012a; DEC, 2013b). The habitat present within the application area is not considered significant habitat for these species.

Outback Ecology (2012c) conducted two level 2 Short Range Endemic (SRE) invertebrate fauna surveys over the application area between 22 March and 9 May 2010, and between 29 February and 29 March 2012. The surveys identified 1,189 specimens from 25 species. Based on current knowledge, seven SRE species are known to occur within the application (Outback Ecology, 2012c);

- the mygalomorph spider *Kwonkan* `MYG200`,
- the selenopid spider *Karaops* 'Mt Webber',
- the selenopid spider *Karaops* SEL001,
- the slater *Buddelundia* sp. nov. 11,

- the slater *Buddelundia* sp nov. 18,
- the slater Gen. nov. sp. nov. B, and
- the terrestrial snail *Quistrachia turnri*.

Four of these species are known to occur outside the application area at regional sites and impacts to these species from the proposed clearing are considered minimal (Outback Ecology, 2012c). The other three species are only known from the Mt Webber Study area and all have been collected within the application area: *Karaops* 'Mt Webber', *Karaops* SEL001 and Gen. nov. sp. nov. B. Of these species, *Karaops* 'Mt Webber' is only known from within, or from a limited extent outside the application area (Outback Ecology, 2012c). Assuming that *Karaops* 'Mt Webber' has a distribution in association with the rocky ridge and gorge habitat which occurs outside of the application areas to the north, it appears unlikely that this species will be significantly impacted by the proposed clearing (Outback Ecology, 2012c). The species *Karaops* SEL001 and Gen. nov. sp. nov. B have potential to be impacted by the proposed clearing because they were collected within the application areas; however, the occurrence of collection records outside the application areas suggests that impacts to these species are unlikely to be substantial (Outback Ecology, 2012c).

Of faunal habitats identified, the rocky ridges and gorges habitat type was considered to have a high potential to support SRE species, whereas the drainage line habitat had a medium potential to support SRE species (Outback Ecology, 2012c). The remaining habitats were considered to have a low potential to support SRE species (Outback Ecology, 2012c).

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

Methodology
Atlas Iron Limited (2012a)
Atlas Iron Limited (2012b)
Bamford (2009)
DEC (2013a)
DEC (2013b)
How et al. (1991)
Keighery (1994)
Outback Ecology (2011)
Outback Ecology (2012a)
Outback Ecology (2012b)
Outback Ecology (2012c)
Woodman (2012a)

(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 Threatened Flora species 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 20 kilometre radius of the application area (DEC, 2013b).

Woodman (2011; 2012a) conducted a vegetation and flora survey of the application area during July and August 2010, May and June 2011, and again 22 to 29 April 2012, during which no Threatened Flora species were recorded within the survey area.

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

Methodology
DEC (2013a)
Woodman (2011)
Woodman (2012a)
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 the available databases showed that there are no known Threatened Ecological Communities (TEC) recorded within 100 kilometres of the application area (GIS Database).

The vegetation survey by Woodman (2012a) did not identify any of the vegetation recorded as being a TEC.

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

Methodology
Woodman (2012a)
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 area falls within the Pilbara IBRA bioregion (GIS Database). The vegetation within the application area is recorded as:

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

Beard vegetation association 93: Hummock grasslands, shrub steppe; kanji over soft spinifex (Government of Western Australia, 2011; GIS Database).

Beard vegetation associations 82 and 93 retain approximately 99% of their pre-European extent within the bioregion (Government of Western Australia, 2011). The area proposed to be cleared is not a significant remnant of native vegetation.

	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
Beard vegetation associations - Bioregion					
82	2,563,583	2,550,899	~99.51	Least Concern	10.25
93	3,042,114	3,038,471	~99.88	Least Concern	0.42

* 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 is at variance to this Principle

There are numerous ephemeral watercourses within the application area (GIS Database).

Based on the vegetation mapping by Woodman (2012a; 2012b), the vegetation types 'VT5' and 'VT6' are groundwater dependent ecosystems. Vegetation types 'VT4', 'VT11' and 'VT15' also include riparian vegetation and are considered to be associated with drainage lines. The condition of the vegetation types are classified as 'degraded' to 'very good' (Keighery, 1994; GIS Database).

Approximately 2.5 hectares of vegetation type 'VT5' and 16.8 hectares of vegetation type 'VT6' will be impacted by the proposed clearing (Woodman, 2012a; 2012b). This is not likely to have a significant impact on the drainage associated vegetation types within the local or regional area. However, a cumulative total of approximately 96 hectares of vegetation associated with drainage lines will be impacted by the proposed clearing (Woodman, 2012a; 2012b; DEC, 2013a). Proposed impacts to watercourses may be minimised by the implementation of a watercourse management condition.

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

Methodology

DEC (2013a)

Woodman (2012a)
Woodman (2012b)
Keighery (1994)
GIS Database:
- Geodata, 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 may be at variance to this Principle

The application area intercepts the Granitic, Macroy, Rocklea and Talga land systems (GIS Database).

The Granitic land system is described as rugged granitic hills supporting shrubby hard and soft spinifex grasslands. The system is subject to fairly frequent burning and is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Rocklea land system is described as basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. The system has very low erosion hazard (Van Vreeswyk et al., 2004).

The Macroy land system is described as stony plains and occasional tor fields based on granite supporting hard and soft spinifex grasslands. The system has low or very low erosion hazard (Van Vreeswyk et al., 2004).

The Talga land system is described as hills and ridges of greenstone and chert and stony plains supporting hard and soft spinifex grasslands. The system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The application area encompasses a range of different landform associations, these include: ridgelines, scree slopes, low rises, spinifex flats and drainage lines. The surface soils in all landform associations were typically single-grained in structure and were classified as loamy sand to sandy clay loams (Outback Ecology, 2012b). The soils in the major potential disturbance areas were generally shallow, over competent rock, had high amounts of coarse material and were structurally stable, with none of the surface soils sampled identified as being highly prone to dispersion (Outback Ecology, 2012b).

Due to the large area of native vegetation proposed to be cleared (499 hectares) potential land degradation impacts as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

Geochemical characterisation analyses were conducted on mine waste material and low grade ore samples within the application by GCA (2011). The samples indicated that the waste material and low grade ore samples are non acid forming, with slightly acidic to neutral pH and low to moderate salinity (GCA, 2011).

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

Methodology

GCA (2011)
Outback Ecology (2012b)
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 is not likely to be at variance to this Principle

The application area is not located within any conservation area (GIS Database). The nearest conservation area is Mungaroona Range Nature Reserve, located approximately 80 kilometres south-east of the application area (GIS Database).

Given the distance of the application area from the Mungaroona Range Nature Reserve, the proposed clearing is not likely to provide a significant ecological linkage or fauna movement corridor and is not likely to impact the environmental values of the conservation area.

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

Methodology

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 area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The application area is located within the proclaimed Pilbara groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purpose other than domestic and/or stock watering is subject to licence by the Department of Water.

The application area has a groundwater salinity that ranges from potable to marginal (500 - 1,000 milligrams/Litre Total Dissolved solids (TDS) (Aquaterra, 2010; GIS Database). The proposed clearing of 499 hectares of native vegetation is unlikely to further deteriorate the quality of underground water due to the total area of the Shaw River catchment (790,203 hectares) available for infiltration and aquifer recharge (GIS Database). Aquaterra (2010) has stated that depending on water management practices on site; water may be contained and bunded locally generating an increase in evaporation from the site. Although this practise is not anticipated to be enough to increase groundwater salinity significantly, groundwater monitoring and sampling will allow for early detection in changes to water quality.

Several drainage tracts transect the application areas (GIS Database). During periods of surface water flow, the proposed clearing may lead to an increase in turbidity in localized areas (MWH, 2012). 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. Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition. 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

Aquaterra (2010)
MWH (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 area experiences a semi-desert-tropical climate, with an annual average rainfall of approximately 311.5 millimetres per year (CALM, 2002; BoM, 2013). Based on an average annual evaporation rate of 3,200 - 3,600 millimetres (BoM, 2013), any surface water resulting from rainfall events is likely to be relatively short lived.

Given the size of the area to be cleared (499 hectares) compared to the size of the Shaw River catchment area (790,203 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.

The application is situated on relatively high ground (MWH, 2012; GIS Database). The main source of surface water flowing into the pits will be from direct rainfall onto the pit footprint area. The waste rock dumps and ROM pads are also located in small catchments and so are not expected to be affected by large volumes of surface water runoff (MWH, 2012). Parts of the mine infrastructure are located on the natural flood plain of a tributary of the Tambina Creek and may be vulnerable to flooding in a high rainfall event. To reduce the risk of flood damage the tributary is proposed to be channelized past the infrastructure area with an engineered channel and rock protection to stabilise banks (MWH, 2012).

It is proposed that the pits, waste rock dump areas, ROM area, administration area and campsite be protected with earthworks, channelling and bunds to divert naturally occurring surface water around the mine operation elements (MWH, 2012).

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

Methodology

BoM (2013)
CALM (2002)
MWH (2012)
GIS Database:
- Hydrographic Catchments - Catchments

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

Comments

There is one Native Title claim over the area under application. The claim WC99/8 was registered with the National Native Title Tribunal on 28 September 2007. 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 (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 project was referred to the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) by the applicant on 2 November 2012. On 3 December 2012 the DSEWPaC determined that project was a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* and would be assessed on preliminary information.

The clearing permit application was advertised on 11 February 2013 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received in relation to this application with an objection to the proposed clearing. The submission party has been liaised with over the past year and the Department will continue to liaise with this party in relation to clearing permit applications..

Methodology

GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims - Registered with the NNTT

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Woodman Environmental Consulting (Woodman) (2012a) Mt Webber DSO Project, Flora and Vegetation Assessment. Unpublished report prepared for Atlas Iron Pty Ltd, August 2012.
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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.