Government of **Western Australia**
Department of **Mines and Petroleum**

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3283/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Hamersley Iron Pty Ltd**

1.3. Property details

Property: *Iron Ore (Hamersley Range) Agreement Act 1963*, Mineral Lease 272SA (AM 70/272)
Iron Ore (Hamersley Range) Agreement Act 1963, Special Leases for mining operations: 3116/6044; 3116/6045; 3116/6868; 3116/11869.
Local Government Area: Shire of Ashburton
Colloquial name: Marandoo Mine Phase 2 Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
7.91		Mechanical Removal	Geotechnical Investigations

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia. Three Beard Vegetation Associations have been mapped within the application areas (GIS Database): 18: Low woodland; mulga (*Acacia aneura*); 29: Sparse low woodland; mulga, discontinuous in scattered groups; and 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*. Biota Environmental Sciences, on behalf of Rio Tinto, conducted a vegetation survey of the application areas and surrounding vegetation between 6-9 March 2007 and 18-26 May 2007 with additional survey work undertaken between 21-28 April 2008 (Biota, 2008a). Fifteen vegetation types were identified within the application areas (Biota, 2008a). These are: 1) Broad Drainage areas and basins: *Acacia aneura* woodland on broad flat alluvial and colluvial areas. 2) Broad Drainage areas and basins: Open grassland. 3) Broad Drainage areas and basins: *Triodia melvillei* hummock grassland. 4) Major Flowlines and Creeks: Acacia aneura - A. pruinocarpa woodland in major flowlines. 5) Major Flowlines and Creeks: *Eucalyptus xerothermica* - *Acacia aneura* woodland in major flowlines. 6) Major Flowlines and Creeks: *Eucalyptus victrix* woodland in secondary creeklines.	Hamersley Iron Pty Ltd is proposing to clear up to 7.91 hectares of native vegetation within a boundary of 472.5 hectares (Hamersley Iron, 2009). The application areas are located approximately 20 kilometres north-east of Tom Price. The proposed clearing is for the purpose of geotechnical investigations for a dewatering pipeline which will involve both test pitting and sampling. Clearing will be done using the raised blade technique where practicable or scrub rake in level terrain. Where previously cleared tracks require maintenance, the track may be graded using blade down (Rio Tinto, 2009).	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994). To Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	The application areas are located in the Pilbara region, approximately 20 kilometres north-east of Tom Price (GIS Database). The application area has suffered previous disturbance from historic earthworks for infrastructure including airstrip, waste dump, and various access tracks (Biota, 2008a). The vegetation condition was derived from a vegetation survey conducted by Biota (2008a).

7) Minor Creeks: Acacia species shrubland in major flowlines.

8) Flats: *Acacia aneura* - *A. pruinocarpa* woodland.

9) Flats: *Acacia synchronicia* - *Vachellia farnesiana* tall shrubland.

10) Flats: *Acacia aneura* scattered low trees over open grassland.

11) Flats: *Triodia wiseana*, *T. pungens* hummock grassland.

12) Flats: *Triodia wiseana*, T. sp. Shovelanna Hill, *T. angusta* hummock grassland.

13) Flats: *Triodia angusta*, *T. longiceps* hummock grassland.

14) Low Foothills and Escarpments: Mixed Triodia spp. Hummock grassland on upper slopes and ridges of small foothills and escarpments.

15) Disturbed Land.

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments

Proposal may be at variance to this Principle

The application areas occur within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by Mulga low woodland over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils on the ranges (Kendrick, 2001).

Approximately half the southern application area occurs within an excised area of Karijini National Park. The rest of the application is positioned outside Karijini National Park. Karijini National Park is listed on the Register of National Estate for its high level of flora and fauna diversity and endemism. According to the Australian Heritage Database (2009), 8 flora species and 3 fauna species that are rare, poorly known or endemic to the Pilbara region occur within Karijini National Park. Karijini National Park is also described as being valued as a representative example of the area as most of it is relatively unmodified by pastoralism or large scale mining operations (Australian Heritage Database, 2009).

A vegetation survey of the application areas and surrounding vegetation identified 537 native flora species belonging to 176 genera from 60 families from 23 vegetation communities (Biota, 2008a). This is considered to be particularly diverse for the survey area, and can most likely be attributed to the variety of habitats encompassed by the survey area, including extensive areas off Mulga vegetation on clayey substrates which are generally recognised to be species rich (Biota, 2008a). However, these vegetation communities are well represented locally and within the Pilbara region and the clearing of 7.91 hectares is unlikely to significantly impact on the biodiversity of the area.

Three alien weed species were recorded within the application areas (Biota, 2008a). These were Bipinnate Beggartick (*Bidens bipinnata*), Spiked Malvastrum (*Malvastrum americanum*) and Buffel Grass (*Cenchrus ciliaris*) (Biota, 2008a). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This in turn can lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. None of these species are listed as 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food (DAFWA). Should the permit be granted, it is recommended that appropriate conditions be imposed on the permit for the purpose of weed management.

An area search of the Department of Environment and Conservation's online fauna database conducted by the assessing officer suggests that the application area is diverse in reptile species (DEC, 2009). The database search found 67 reptile species as potentially occurring within the application areas, or within a 25 kilometre radius of them. The vegetation communities within the application areas are not likely to be considered as rare, geographically restricted or of significant conservation value. The vegetation communities and potential fauna habitats within the application areas are considered common within the Pilbara region, and are unlikely to be of higher biodiversity than the surrounding areas. The proposed clearing is unlikely to have a significant impact on the biological diversity of the region, or comprise of a high level of biological diversity.

Based on the above, the proposed clearing may be at variance to this Principle. The application areas contain vegetation types and habitats which are well represented and conserved within Karijini National Park (GIS Database; Australian Heritage Database, 2009). The areas under application (7.91 hectares) are highly unlikely to be acting as an important buffer for, or ecological linkage to, Karijini National Park given that the area surrounding Karijini National Park is largely uncleared.

Methodology

Australian Heritage Database (2009)
Biota (2008a)
DEC (2009)
Kendrick (2001)
GIS Database:
-Declared Rare and Priority Flora List
-Interim Biogeographic Regionalisation of Australia
-Interim Biogeographic Regionalisation of Australia (Subregions)
-Threatened Fauna

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments

Proposal is not likely to be at variance to this Principle

The assessing officer has conducted a search of the Department of Environment and Conservation's (DEC) online fauna database centred on the coordinates 118'03'12'E, 22'34'22'S (approximately the centre of the application area), with a 25 kilometre radius.

This search identified three Amphibian, 38 Avian, 20 Mammalian and 68 Reptilian species that may occur within the search area (DEC, 2009). Of these, the following species of conservation significance has previously been recorded within the search area:

Schedule 1 - Fauna that is rare or likely to become extinct, Wildlife Conservation (Specially Protected Fauna) Notice, 2008: *Dasyurus hallucatus* (Northern Quoll), *Liasis olivaceus subsp. barroni* (Pilbara Olive Python); and

P4 - DEC Priority Fauna List: *Pseudomys chapmani* (Western Pebble-mound Mouse), *Leggadina lakedownensis* (Short-tailed Mouse).

An initial survey of the application areas and surrounding vegetation was carried out between 1-11 March 2007, however was interrupted by rainfall associated with tropical cyclone Jacob and was subsequently recommenced between 10-15 April 2007 (Biota, 2008b). The seasonal survey was carried out between 6-12 November 2007 (Biota, 2008b). In addition to the species listed above, the following fauna species of conservation significance were identified through this search:

P4 - DEC Priority Fauna List: *Macroderma gigas* (Ghost Bat); and

JAMBA International Agreement: *Merops ornatus* (Rainbow Bee-eater).

Previous searches have also identified the following species of conservation significance as being found in or having the potential to occur within the application area:

Schedule 1 - Fauna that is rare or likely to become extinct, Wildlife Conservation (Specially Protected Fauna) Notice, 2008: *Pezoporus occidentalis* (Night Parrot), *Rhinonicteris aurantius* (Orange Leaf-nosed Bat), *Macrotis lagotis* (Bilby);

Schedule 4 - Other specially protected fauna, Wildlife Conservation (Specially Protected Fauna) Notice, 2008: *Falco peregrinus* (Peregrine Falcon);

P1 - DEC Priority Fauna List: *Mormopterus loriae cobourgiana* (Little North-western Mastiff Bat);

P3 - DEC Priority Fauna List: *Lagorchestes conspicillatus leichardti* (Spectacled Hare-wallaby);

P4 - DEC Priority Fauna List: *Ardeotis australis* (Australian Bustard), *Burhinus grallarius* (Bush Stone-curlew), *Neochima ruficauda subclarescnes* (Star Finch); and

JAMBA, CAMBA and ROKAMBA International Agreements: *Apus pacificus* (Fork-tailed Swift) (Biota, 2008b).

Of the Schedule and Priority fauna species identified within the search area, two were found just outside the boundaries of the southern application area:

- The Northern Quoll was recorded by Biota (2008b) from a site approximately one kilometre south of the southern application area in the south-east section during the survey. The typical habitat of the Northern Quoll consists of rocky gullies and breakaways (Biota, 2008b). This habitat type has been recorded within the application area, however is extremely limited (Biota, 2008b). The application area contains vegetation types and habitats which are well represented and conserved within Karijini National Park (GIS Database; Australian Heritage Database, 2009). The area under application (7.91 hectares) is highly unlikely to be significant habitat given its proximity to Karijini National Park and that the area surrounding Karijini National Park is largely uncleared.

- The Western Pebble-mound Mouse was recorded approximately one kilometre south of the southern application area during the initial period of the survey (Biota, 2008b). Biota (2008a) recorded abundant suitable habitat for the Western Pebble-mound Mouse during the flora and vegetation survey over the application area. However, the Western Pebble-mound Mouse is recorded as being widespread and abundant within the Hamersley subregion, with the status of the species being secure (Kendrick, 2001).

The fauna habitats identified within the application areas are not considered as necessary for the on-going maintenance of any significant fauna habitat. It is likely that equal or higher quality vegetation and fauna habitats would exist throughout the surrounding area, and Pilbara region. Therefore it is unlikely that the proposed clearing will significantly impact on fauna habitat. Furthermore, the habitat types described by Biota (2008b) are well represented within Karijini National Park, which provides potentially important contemporary refugia for many species.

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

Methodology

Australian Heritage Database (2009)
Biota (2008b)
DEC (2009)
Kendrick (2001)
GIS Database:
-Mount Bruce 50cm Orthomosaic
-Mount Lionel 50cm Orthomosaic

(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, no Declared Rare Flora (DRF) or Priority Flora species were recorded within the application area (GIS Database). The nearest recorded location of DRF (*Lepidium catapycnon*) occurs approximately 37 kilometres north-east of the application area (GIS Database).

A flora survey of the application areas and surrounding vegetation was conducted between 6 - 9 March, 2007 by Biota (2008a) but was cut short due to heavy rainfall. A second survey was conducted between 18 - 26 May, 2007. Additional survey work was also conducted between 21 - 28 April, 2008. No DRF were recorded, whilst two Priority flora species were recorded during the flora survey (Biota, 2008a):

- *Goodenia lyrata* (P1)

- *Rhagodia* sp. Hamersley (P3)

Goodenia lyrata is a prostrate herb with lyrate leaves, which exists in red sandy loam soils and flowers in August (Western Australian Herbarium, 2009). *Goodenia lyrata* was identified at one location within the southern application area, with another three sites located just outside the application areas (Biota, 2008a). There are six records of *Goodenia lyrata* in Florabase (Western Australian Herbarium, 2009). Although this species has a relatively broad range (extending some 400 kilometres east into the Gibson Desert bioregion and 600 kilometres south into the Murchison bioregion), it is infrequently recorded and the records from the mining lease are thought to represent the only records from the Marandoo locality (Biota, 2008a). Due to this, the *Goodenia lyrata* populations have an internal exclusion zone around them, and are to be avoided from disturbance (Biota, 2008a).

Rhagodia sp. Hamersley is a tall shrub species that was recorded five times during the flora survey, with two of these sites being located within the southern application area (Biota, 2008a). According to Biota (2008a), this species has only recently been added to the Priority flora listing, and whilst being poorly vouchered, is not considered uncommon. This species is routinely collected in Mulga (*Acacia aneura*) and Snakewood (*A. xiphophylla*) vegetation in the Hamersley subregion and the southern Chichester subregion, and has been recorded from several study areas (Biota, 2008a). There are nine records of *Rhagodia* sp. Hamersley in Florabase (Western Australian Herbarium, 2009).

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

Methodology Biota (2008a)
Western Australian Herbarium (2009)
GIS Database:
-Declared Rare Flora

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments **Proposal is not likely to be at variance to this Principle**
A search of available databases reveals that there are no Threatened Ecological Communities (TEC's) within the application areas (GIS Database).

The nearest known TEC to the application areas are the Themeda Grasslands, located approximately 5.7 kilometres west of the northern application area (GIS Database). Five Priority Ecological Communities (PEC's) of Coolibah-lignum flats are located to the north-east of the southern application area, with the closest being approximately 2.3 kilometres away (GIS Database). The Department of Environment and Conservation has advised that due to the low impact nature of the proposed activities (geotechnical investigations), there will likely be no offsite impacts (DEC Advice, 2009).

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

Methodology DEC Advice (2009)
GIS Database:
-Threatened Ecological Communties

(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 the IBRA Pilbara bioregion (GIS Database). Shepherd (2007) report that approximately 99.95% of the pre-European vegetation still exists in this bioregion.

The vegetation in the application areas is recorded as Beard Vegetation Associations 18: Low woodland; mulga (Acacia aneura); 29: Sparse low woodland; mulga, discontinuous in scattered groups and 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (GIS Database; Shepherd, 2007).

According to Shepherd (2007) approximately 100% of these Beard Vegetation Associations remain within the Pilbara bioregion (see table below).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,187.89	17,794,646.75	~99.95%	Least Concern	~6.32%
Beard veg assoc. - State					
18	19,892,305	19,890,195	~100%	Least Concern	~2.1%
29	7,903,991	7,903,991	~100%	Least Concern	~0.3%
82	2,565,901	2,565,901	~100%	Least Concern	~10.2%
Beard veg assoc. - Bioregion					
18	676,557	676,557	~100%	Least Concern	~16.8%
29	1,133,219	1,133,219	~100%	Least Concern	~1.9%
82	2,563,583	2,563,583	~100%	Least Concern	~10.2%

* Shepherd (2007)
** 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 Environement (2002)
Kendrick (2001)

Shepherd (2007)
GIS Database:
-Pre European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments

Proposal is at variance to this Principle

According to available GIS Databases, there are no permanent watercourses within the application areas, however, there are numerous minor, non perennial watercourses within the application areas (GIS Database). Four of the 15 vegetation associations found within the application areas are associated with drainage areas (Biota, 2008a).

- *Acacia aneura - A. pruinocarpa* woodland in major flowlines and creeks;
- *Eucalyptus xerothermica - Acacia aneura* woodland in major flowlines and creeks;
- *Eucalyptus victrix* woodland in major flowlines and creeks; and
- Acacia species shrubland in minor creeks.

The vegetation associated with any drainage channels is likely to be a fauna refuge and as such disturbance should be kept to a minimum. The vegetation communities growing in association with the watercourses are not unique and are considered common and widespread in the Pilbara bioregion (Shepherd, 2007; GIS Database). The proposed clearing is unlikely to significantly impact on the vegetation communities growing in association with these drainage channels.

Based on the above, the proposed clearing is at variance to this Principle. The application areas have suffered prior disturbance from historic earthworks for infrastructure including an airstrip, waste dump, and various access tracks (Biota, 2008a) and as such the clearing of 7.91 hectares should not significantly impact on the extent of these vegetation communities within the application areas, or local area.

Methodology

Biota (2008a)
Shepherd (2007)
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

The application areas have been surveyed by the Department of Agriculture and Food (Van Vreeswyk et al., 2004). The application areas are composed of the following land systems (GIS Database);

- Boolgeeda Land System
- Jurrawarrina Land System
- Newman Land System
- Paraburdoo Land System
- Wannamunna Land System

The Boolgeeda Land System is described as stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). The vegetation of this land system is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application areas reveal they are most likely to fall within the 'stony slopes and upper plains' land unit. The soils of this land unit are not susceptible to erosion due to a surface mantle of very abundant pebbles of ironstone and other rocks.

The Jurrawarrina Land System is described as hardpan plains and alluvial tracts supporting mulga shrublands with tussock and spinifex grasses (Van Vreeswyk et al., 2004). This system generally has a low susceptibility to erosion (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application areas reveal they are most likely to fall within the 'groves and drainage foci' land unit. The soils of this land unit (deep red/brown non-cracking clays and self-mulching cracking clays) are not susceptible to erosion due to the presence of stony and hardpan plains (Van Vreeswyk et al,. 2004).

The Newman Land System is described as rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). Most of this system is not susceptible to erosion or vegetation degradation (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application areas reveal they are most likely to fall within the 'plateaux, ridges, mountains and hills' land unit. The soils of this land unit (stony soils, red shallow loams and some red shallow sands) are not susceptible to erosion due to a surface mantle of pebbles of ironstone and other rocks, as well as outcrops of parent rock.

The Paraburdoo Land System is described as basalt derived stony gilgai plains and stony plains supporting snakewood and mulga shrublands with spinifex and tussock grasses (Van Vreeswyk et al., 2004). Much of the system is inherently resistant to soil erosion (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application areas reveal they are most likely to fall within the 'upper interfluves and slopes' land unit. The soils of this land unit (shallow red/brown non-cracking clays and red shallow loams) are not susceptible to erosion due to surface mantles of very abundant pebbles and cobbles of basalt and quartz (Van Vreeswyk et al., 2004).

The Wannamunna Land System is described as hardpan plains and internal drainage tracts supporting mulga shrublands and woodlands (and occasionally eucalypt woodlands) (Van Vreeswyk et al., 2004). Generally this system has a low susceptibility to erosion (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application areas reveal they are most likely to fall within the 'stony plains' land unit. The soils of this land unit (red loamy earths and red-brown hardpan shallow loams) are not susceptible to erosion due to surface mantles of abundant pebbles of ironstone (Van Vreeswyk et al., 2004).

Based on the above, the proposed clearing is not likely to be at variance to this Principle. It is recommended that should a permit be granted, a condition be imposed on the permit to retain vegetative material and topsoil.

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 is not likely to be at variance to this Principle**
Approximately half of the southern application area occurs within an Environmentally Sensitive Area (ESA) (Register of National Estate), which is an excised area of Karrijini National Park (GIS Database). The rest of the application is positioned outside Karijini National Park.

According to the Australian Heritage Database (Australian Heritage Database, 2009) Karrijini National Park is an area of approximately 620,000 hectares and its value as a representative example of the Hamersley Ranges is enhanced by most of the area being relatively unmodified by pastoralism or large scale mining operations.

Karrijini National Park is an area of great flora diversity with eight of the flora species found within the national park area listed as either rare, poorly known or of restricted distribution (Australian Heritage Database, 2009). This national park is an important refuge for three mammal species which are endemic to the Pilbara, *Pseudomys chapmani* (the Western Pebble-mound Mouse), *Ninguai timealeyi* and *Antechinus rosamondae* (Australian Heritage Database, 2009).

The Marandoo iron ore deposit is located on a reserve of 48 square kilometres held under a Government Agreement Act (DEC, 1999). There are two components to the Marandoo tenement, a reserve and an infrastructure corridor, which were excised from the Park to facilitate mining of the Marandoo deposit (DEC, 1999). Part of the southern application area is located within the excised portion of Karijini National Park. The Marandoo proposal was approved on 6 October 1992, subject to Ministerial conditions on protection of the environment and pursuant to the provisions of the *Environmental Protection Act 1986* (DEC, 1999).

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

Methodology Australian Heritage Databases (2009)
DEC (1999)
GIS Database:
-DEC Tenure
-Environmentally Sensitive Areas

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments **Proposal is not likely to be at variance to this Principle**
According to available databases, the application areas are not located within a Public Drinking Water Source Area (PWDSA) (GIS Database).

The application areas are located within the Pilbara Groundwater area (GIS Database). Any extraction of

groundwater in this area will require a groundwater license. The groundwater salinity within the application area is approximately 500 - 1000 milligrams /Litre Total Dissolved Solids (TDS) (GIS Database), which is considered to be potable water. Given the size of the areas to be cleared (7.91 hectares) compared to the size of the Hamersley Ground Water Province (10,166,832 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

There are no known groundwater dependant ecosystems within the application areas (GIS Database).

Surface water quality may already have been altered in the area due to the influence of changes to drainage lines because of the sitting of the railway (Biota, 2008a); however the small size and low impact nature of this proposal is highly unlikely to cause further deterioration.

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

Methodology

Biota (2008a)
GIS Database:
-Groundwater Provinces
-Groundwater Salinity, Statewide
-Potential Groundwater Dependent Ecosystems
-Public Drinking Water Source Areas (PDWSA)
-RIWI Act, Groundwater Areas

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments

Proposal is not likely to be at variance to this Principle

The application areas experience a semi-desert, tropical climate with an average annual rainfall of 405.9 millimetres, recorded from the nearest weather station at Tom Price, approximately 20 kilometres south-west of the southern application area (Bureau of Meteorology, 2009; Kendrick, 2001). Rainfall is usually experienced during summer months and can either be cyclonic or thunderstorm events (Kendrick, 2001; ANRA, 2007). It is likely that during times of intense rainfall there may be some localised flooding in adjacent areas.

The application areas are located within the Ashburton River (7,877,743 hectares) and Fortescue River 1,860,784 hectares) catchment areas (GIS Database). Given the small size of the proposed clearing in relation to the size of these catchments, and the low impact nature of the proposal, it is therefore considered unlikely that the clearing of vegetation within the application areas will cause any significant deterioration in surface or groundwater quality.

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

Methodology

ANRA (2007)
Bureau of Meteorology (2009)
Kendrick (2001)
GIS Database:
-Hydrographic Catchments - Catchments

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

Comments

There is one native title claim over the areas under application: WC97/089. This claim has been registered with the National Native Title Tribunal on behalf of the claimant groups. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (ie. 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 several known 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 Sites of Aboriginal Significance are damaged through the clearing process.

One submission was received raising no objections to this Proposal.

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 proposed clearing relates to a proposal that is currently under formal assessment by the Environmental Protection Authority (EPA) (Marandoo Mine Phase 2 Project). The proponent has been granted approval by the EPA to remove the construction of a dewatering pipeline from the proposed Marandoo Phase 2 mine to the Southern Fortescue borefield from the scope of the Public Environmental Review (PER). The EPA has advised that construction of this pipeline can be appropriately assessed through Part V of the *Environmental Protection*

Act 1986. The EPA has also noted that the operation of the dewatering pipeline and all aspects relating to dewatering would remain within the scope of the PER. The proponent has been granted approval to commence geotechnical investigations under section 43A of the *Environmental Protection Act, 1986* (EPA, 2008).

Methodology EPA (2008)
GIS Database:
-Aboriginal Sites of Significance
-Native Title Claims

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles and is not at variance to Principle (e), is not likely to be at variance to Principles (b), (c), (d), (g), (h), (i), and (j), may be at variance to Principle (a) and is at variance to Principle (f).

It is recommended that should a permit be granted, conditions be imposed on the permit for the purposes of weed management, retention of topsoil and vegetative material, record keeping and permit reporting.

5. References

ANRA (2007) Australian Natural Resources Atlas: Rangelands Overview; Pilbara. Available online from: http://www.anra.gov.au/topics/rangeland/overview/wa/ibra-pil.html (Accessed 02 November, 2009).

Australian Heritage Database (2009) Register of National Estate: Hamersley Range National Park. http://www.environment.gov.au (Accessed 02 November, 2009).

Biota Environmental Sciences Pty Ltd (2008a) Marandoo Mine Phase 2 Project Vegetation and Flora Survey. Unpublished report prepared for Rio Tinto, August 2008.

Biota Environmental Sciences Pty Ltd (2008b) Marandoo Mine Phase 2 Seasonal Fauna Survey. Unpublished report prepared for Rio Tinto, August 2008.

Bureau of Meteorology (2009) Climate statistics for Australian locations, Summary statistics for TOM PRICE. http://reg.bom.gov.au/climate/averages/tables/cw_005072.shtml (Accessed 02 November, 2009).

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6. Glossary

Acronyms:

BoM Bureau of Meteorology, Australian Government.
CALM Department of Conservation and Land Management, Western Australia.

DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), 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, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
DoW	Department of Water
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
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	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

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.