Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3547/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **BHP Billiton Iron Ore Pty Ltd**

1.3. Property details

Property: *Iron Ore (McCamey's Monster) Agreement Authorisation Act 1972*, Special Lease for Mining Operations, I 126948, Lot 32 on Deposited Plan 217524, Lot 39 on Deposited Plan 194318; *Iron Ore (Mount Newman) Agreement Act 1964*, Mineral Lease 244 SA, Miscellaneous Licences 52/108, 52/109

Local Government Area: Shire of East Pilbara

Colloquial name: Jimblebar No. 2 Spur Rail Duplication Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
295		Mechanical Removal	Railway construction and maintenance, and associated works

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 and are useful to look at vegetation extent in a regional context. Three Beard Vegetation Associations are located within the proposed clearing area (GIS Database): 1. Beard Vegetation Association 29: Sparse low woodland; Mulga, discontinuous in scattered groups; 2. Beard Vegetation Association 82: Hummock grasslands, low tree steppe; Snappy Gum over *Triodia wiseana*; and 3. Beard Vegetation Association 216: Low woodland; Mulga (with spinifex) on rises (Shepherd, 2007). Outback Ecology Services (2009a) undertook a Level Two dual season flora and vegetation survey spanning a distance of 23 kilometres from west to east along the Jimblebar Rail Spur from Marble Road to the Wheelarra Mine site (including the proposed clearing area). A total of 16 vegetation associations were mapped from the survey area, 12 of which occur in the proposed clearing area: **Eucalyptus Low Open Woodland** **2a** - Low Open Woodland of *Eucalyptus xerothermica* and *Corymbia hamersleyana* over Open Shrubland of *Acacia bivenosa*, *Acacia sclerosperma ssp. sclerosperma* and *Acacia synchronicia* over Very Open Hummock Grassland of *Triodia pungens*;	BHP Billiton Iron Ore Pty Ltd has applied to clear up to 295 hectares of native vegetation within a project boundary of approximately 1,017 hectares, spanning approximately 14 kilometres along the existing Jimblebar Rail Spur. The proposed clearing will allow the proponent to duplicate the Jimblebar Rail Spur and undertake ancillary works. Native vegetation clearing will be undertaken via mechanical means. Topsoil and vegetation removed during clearing operations will be stockpiled for future rehabilitation works of areas not required for permanent infrastructure (BHP Billiton Iron Ore Pty Ltd, 2009a).	Pristine: No obvious signs of disturbance (Keighery, 1994); to Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).	The vegetation condition rating is derived from information provided by Outback Ecology Services (2009a) and ENV Australia Pty Ltd (2009a).

Corymbia Low Open Woodland

3a - Low Open Woodland of *Corymbia hamersleyana* and *Eucalyptus odontocarpa* over Open Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835), *Triodia basedowii* and *Triodia schinzii* with Open Shrubland of *Acacia melleodora*, *Acacia ancistrocarpa* and *Acacia pachyacra*;

3b - Low Open Woodland of *Corymbia hamersleyana*, *Corymbia deserticola* and *Eucalyptus odontocarpa* over Open Shrubland of *Acacia ancistrocarpa*, *Acacia adsurgens* and *Acacia tenuissima* over Open Bunch Grassland of *Amphipogon sericeus* and *Paraneurachne muelleri*;

Acacia Low Woodland

4a - Low Woodland of *Acacia aneura var. pilbarensis*, *Acacia pruinocarpa* and *Acacia paraneura* over Shrubland of *Acacia sclerosperma ssp. sclerosperma*, *Eremophila longifolia* and *Rhagodia eremaea* over Open Hummock Grassland of *Triodia pungens*;

4b - Low Woodland of *Acacia aneura var. pilbarensis*, *Acacia catenulata ssp. occidentalis* and *Acacia citrinoviridis* over Very Open Hummock Grassland of *Triodia pungens*;

Acacia Low Open Woodland

5a - Low Open Woodland of *Acacia aneura var. pilbarensis*, *Acacia catenulata* and *Acacia citrinoviridis* over Open Hummock Grassland of *Triodia basedowii* with Open Shrubland of *Eremophila forrestii ssp. forrestii*;

5b - Low Open Woodland of *Acacia aneura* and *Corymbia hamersleyana* over Bunch Grassland of *Aristida contorta*, *Dactyloctenium radulans* and *Paspalidium clementii* with Open Shrubland of *Eremophila fraseri*, *Acacia tetragonophylla* and *Acacia synchronicia*;

Acacia Shrubland

6a - Shrubland of *Acacia bivenosa* over Open Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835) with Low Open Woodland of *Eucalyptus leucophloia*;

6c - Shrubland of *Acacia monticola*, *Petalostylis labicheoides* and *Acacia melleodora* over *Themeda triandra* Open Tussock Grassland with Low Open Woodland of *Corymbia hamersleyana*;

Triodia Hummock Grassland

7b - Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835) with Low Shrubland of *Acacia hilliana*, *Acacia adoxa var. adoxa* and *Ptilotus rotundifolius* and Low Open Woodland of *Eucalyptus leucophloia*;

7c - Hummock Grassland of *Triodia basedowii* and *Triodia pungens* with Shrubland of *Acacia sclerosperma ssp. sclerosperma* and *Acacia pachyacra* over Low Shrubland of *Eremophila margarethae*; and

7d - Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835) with Very Open Bunch Grassland of *Amphipogon sericeus* and *Paraneurachne muellerii* and Scattered Low Trees of *Eucalyptus leucophloia* (Outback Ecology Services, 2009a).

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 proposed clearing area and surrounds have been subject to numerous flora and vegetation assessments in recent years. Those of most relevance to this assessment include Outback Ecology Services' Level Two dual season survey in October 2008 and March 2009, ENV Australia Pty Ltd's Level One survey in September 2009 and ENV Australia Pty Ltd's Level Two survey in November 2007.

Outback Ecology Services (2009a) recorded 275 plant taxa from 41 families and 111 genera during a dual season flora and vegetation survey spanning a distance of 23 kilometres from west to east along the Jimblebar Rail Spur from Marble Road to the Wheelarra Hill Mine site (including the entire proposed clearing area). An average of 19 plant taxa was recorded in each of the sixty six 50 metre x 50 metre quadrats. Floristic richness was considered to be moderate in comparison to other surveys in the local area. None of the taxa identified were classified as Declared Rare Flora, whilst one Priority Flora species, *Aristida jerichoensis var. subspinulifera* (P1) was recorded. None of the 16 vegetation communities mapped from the survey area are listed as Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's). Eleven introduced flora species were recorded. Vegetation condition ranged from 'degraded' to 'excellent', with a majority of the area being described as 'very good'. Pastoral activities were noted as having the most pronounced impact upon vegetation condition, whilst historic mineral exploration and the existing rail alignment were associated with less pronounced and more localised disturbances (Outback Ecology Services, 2009a).

ENV Australia Pty Ltd (2009a) recorded 152 plant taxa from 33 families and 79 genera during a flora and vegetation survey covering the eastern-most section (approximately 3 kilometres in length) of the proposed clearing area. An average of 27 taxa was recorded in each of the ten 50 metre x 50 metre quadrats. Floristic richness was considered to be typical of the local area. None of the taxa identified were classified as Declared Rare Flora (DRF) or Priority Flora. None of the 10 vegetation communities mapped from the area are listed as Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's), and all communities are considered to be well represented locally. Three introduced flora species were recorded. Vegetation condition ranged from 'completely degraded' to 'pristine', with a majority of the area being described as 'excellent' to 'pristine' (ENV Australia Pty Ltd, 2009a).

ENV Australia Pty Ltd (2008) recorded 112 plant taxa from 28 families and 58 genera during a flora and vegetation survey covering the western-most section (approximately 455 hectares) of the proposed clearing area. An average of 19 taxa was recorded in each of the twenty two 50 metre x 50 metre quadrats. Floristic richness was considered to be moderate in comparison to other surveys in the local area. None of the taxa identified were classified as Declared Rare Flora (DRF) or Priority Flora. None of the 10 vegetation communities mapped from the area are listed as Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's), and all communities are considered to be well represented locally. Three introduced flora species were recorded. Vegetation condition ranged from 'completely degraded' to 'excellent', with a majority of the area being described as 'very good' to 'excellent' (ENV Australia Pty Ltd, 2008).

From a faunal perspective, Outback Ecology Services (2009b) report that 215 vertebrate fauna species have been recorded within the proposed clearing area and immediate surrounds, including six species of conservation significance. All broad fauna habitats within the proposed clearing area are widely represented on a regional basis. Consequently, the vertebrate fauna assemblage in the study area is expected to be similar to other regional sites. Other recent fauna studies within the proposed clearing area by ENV Australia Pty Ltd (2009b) and Pilbara Flora (2008) support the conclusions made by Outback Ecology Services (2009b).

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

Methodology

Outback Ecology Services (2009a).
Outback Ecology Services (2009b).
ENV Australia Pty Ltd (2008).
ENV Australia Pty Ltd (2009a).
ENV Australia Pty Ltd (2009b).
Pilbara Flora (2008).

(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 proposed clearing area has been subject to various fauna assessments in recent years, including Outback Ecology Services' Level Two dual season survey in October 2008 and April 2009, ENV Australia Pty Ltd's Level One survey in September 2009 and Pilbara Flora's Level One survey in October 2008.

According to Outback Ecology Services (2009b), five broad fauna habitat types occur in the proposed clearing area:

1. Alluvial Plains;
2. Mulga Woodlands;

3. Spinifex Shrubland;
4. Hill Crest; and
5. Drainage Lines.

ENV Australia Pty Ltd (2009b) described five broad fauna habitat types from the 153 hectare study area which includes an eastern portion of the proposed clearing area:

1. Hill Top/Breakaway;
2. Mulga/Alluvial Plain;
3. Low Hill/Stony Plain;
4. Drainage Lines; and
5. Cleared/Developed Areas.

Pilbara Flora (2008) described four broad fauna habitat types from the 455 hectare study area which includes the west portion of the proposed clearing area:

1. Hills;
2. Slopes
3. Drainage Lines; and
4. Plains.

All of the broad habitats identified within the proposed clearing area are widely represented throughout the region (Outback Ecology Services, 2009b). Similarly, Pilbara Flora (2008) did not record any unique or specialised fauna habitats during their 2008 fauna study. ENV Australia Pty Ltd (2009b) noted most of the fauna habitat in the study area to be well represented regionally and adjacent to the study area.

According to Outback Ecology Services (2009b), ENV Australia Pty Ltd (2009b) and Pilbara Flora (2008), a number of conservation significant fauna species potentially occur in the proposed clearing area, including:

Schedule 1 – 'Fauna that is rare or is likely to become extinct' ***Wildlife Conservation (Specially Protected Fauna) Notice 2008*** **and 'Vulnerable',** ***Environment Protection and Biodiversity Conservation Act 1999***

- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*)
- Pilbara Olive Python (*Liasis olivaceus barroni*)

Schedule 4 – 'Other specially protected fauna' ***Wildlife Conservation (Specially Protected Fauna) Notice 2008***

- Peregrine Falcon (*Falco peregrinus*)

Migratory, ***Environment Protection and Biodiversity Conservation Act 1999***

- Fork-tailed Swift (*Apus pacificus*)
- Rainbow Bee-eater (*Merops ornatus*)

DEC Priority 1

- *Ramphotyphlops ganei*

DEC Priority 2

- *Lerista macropisthopus remota*

DEC Priority 3

- Long-tailed Dunnart (*Sminthopsis longicaudata*)

DEC Priority 4

- Australian Bustard (*Ardeotis australis*)
- Bush Stone Curlew (*Burhinus grallarius*)
- Ghost Bat (*Macroderma gigas*)
- Grey Falcon (*Falco hypoleucos*)
- Star Finch (*Neochmia ruficauda clarescens*)
- Western Pebble-mound Mouse (*Pseudomys chapmani*)

A majority of the conservation significant fauna potentially occurring in the proposed clearing area are highly mobile and transitory and are therefore unlikely to rely on habitat within the proposed clearing area. Ground-dwelling species with small home ranges and poor powers of dispersal (*Ramphotyphlops ganei, Lerista macropisthopus remota,* Long-tailed Dunnart and the Western Pebble-mound Mouse) are likely to be impacted on a local scale if present during clearing operations (ENV Australia Pty Ltd, 2009b).

Given that the habitat types within the proposed clearing area are well represented on a local and regional basis, it is considered unlikely that the proposed clearing area comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

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

Methodology ENV Australia Pty Ltd (2009b).
Outback Ecology Services (2009b).
Pilbara Flora (2008).

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments

Proposal may be at variance to this Principle

According to available GIS Databases, there are no known records of Declared Rare Flora (DRF) within the proposed clearing area (GIS Database). ENV Australia Pty Ltd (2008; 2009a) and Outback Ecology Services (2009a) did not record any DRF species during flora and vegetation assessments of the proposed clearing area.

According to available GIS Databases, there are no known records of Priority Flora within the proposed clearing area (GIS Database).

One Priority Flora species has been recorded from four locations within the proposed clearing area: *Aristida jerichoensis var. subspinulifera* (P1) (Outback Ecology Services, 2009a). The species was found to cover 0.25 – 3% of the 50 metre x 50 metre quadrats where it was recorded (Outback Ecology Services, 2009a).

According to information obtained from the Western Australian Herbarium's 'Florabase', *Aristida jerichoensis var. subspinulifera* is endemic to the Pilbara bioregion and is known from few collection records (Western Australian Herbarium, 2010).

The assessing officer requested that BHP Billiton Iron Ore Pty Ltd provide additional information on *Aristida jerichoensis var. subspinulifera* in order to quantify impacts of this clearing proposal on the species. BHP Billiton Iron Ore Pty Ltd advised that recent flora and vegetation surveys conducted in the central Pilbara region indicate this species is likely to be distributed throughout the central and southern Pilbara region. The species has been found at 'Area C', 'Prairie Downs' and Jimblebar, with 73 records of *Aristida jerichoensis var. subspinulifera* in the BHP Billiton Iron Ore Pty Ltd database, some locations having in excess of 100 plants and approximately 3,000 plants recorded in total (BHP Billiton Iron Ore Pty Ltd, 2009a).

The assessing officer acknowledges that specimens of *Aristida jerichoensis var. subspinulifera* collected during recent flora and vegetation surveys for the proponent are yet to be lodged with the Western Australian Herbarium, and all recent survey reports are currently in draft form.

BHP Billiton Iron Ore Pty Ltd (2009a) are yet to finalise the design of the proposed infrastructure associated with this clearing proposal, and as such, cannot commit to retaining the four locations of *Aristida jerichoensis var. subspinulifera*. BHP Billiton Iron Ore Pty Ltd will avoid impacts to this species where practicable.

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

Methodology BHP Billiton Iron Ore Pty Ltd (2009a).
ENV Australia Pty Ltd (2008).
ENV Australia Pty Ltd (2009a).
Western Australian Herbarium (2010).
GIS Database:
- Declared Rare and Priority Flora List.

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

Comments

Proposal is not likely to be at variance to this Principle

There are no known Threatened Ecological Communities (TEC's) within the proposed clearing area (GIS Database).

The proposed clearing area has been subject to multiple flora and vegetation assessments in recent years, including Outback Ecology Services (2009a) and ENV Australia Pty Ltd (2008; 2009a). No TEC's have been identified.

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

Methodology ENV Australia Pty Ltd (2008).
ENV Australia Pty Ltd (2009a).
Outback Ecology Services (2009a).

GIS Database:
- Threatened Ecological Sites.

(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 area applied to clear is located at the junction of the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara and Gascoyne bioregions (GIS Database). According to Shepherd (2007) there is approximately 100% of the pre-European vegetation remaining in the Pilbara and Gascoyne bioregions.

The vegetation of the application area is classified as:

Beard Vegetation Association 29: Sparse low woodland; Mulga, discontinuous in scattered groups;

Beard Vegetation Association 82: Hummock grasslands, low tree steppe; Snappy Gum over Triodia wiseana; and

Beard Vegetation Association 216: Low woodland; Mulga (with spinifex) on rises (Shepherd, 2007).

There is approximately 100% of the pre-European vegetation remaining of Beard Vegetation Associations 29, 82 and 216 in the Pilbara and Gascoyne bioregions (Shepherd, 2007). The area proposed to clear does not represent a significant remnant of vegetation in the wider regional area. The proposed clearing will not reduce the extent of Beard Vegetation Associations 29, 82 or 216 below current recognised threshold levels, below which species loss increases significantly.

It is acknowledged that iron ore mining activities in the Pilbara have resulted in an increase of native vegetation clearing at the bioregional scale in recent years. At the local scale, vegetation clearing around the Newman area has also increased in recent years and is expected to continue with proposed BHP Billiton expansion projects. It will therefore become increasingly important in the future to consider the cumulative impacts of native vegetation clearing both locally and regionally.

	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
IBRA Bioregion - Gascoyne	18,075,218	18,075,218	~100	least concern	~1.93
Beard vegetation Associations - State					
29	7,903,991	7,903,991	~100	least concern	~0.3
82	2,565,901	2,565,901	~100	least concern	~10.2
216	280,759	280,759	~100	least concern	No data available
Beard vegetation Associations - Pilbara					
29	1,133,219	1,133,219	~100	least concern	~1.9
82	2,563,583	2,563,583	~100	least concern	~10.2
216	26,670	26,670	~100	least concern	No data available
Beard vegetation Associations - Gascoyne					
29	3,802,459	3,802,459	~100	least concern	0
82	2,318	2,318	~100	least concern	No data available
216	254,090	254,090	~100	least concern	No data available

* 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 Environment (2002).
Shepherd (2007).
GIS Database:
- IBRA WA (Regions - Sub Regions).
- Pre - European vegetation.

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

Comments

Proposal is at variance to this Principle

The proposed clearing will involve disturbance to native vegetation growing in association with a number of tributaries feeding into Shovelanna Creek for the purpose of installing drainage controls (such as culverts for example).

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

No major watercourses will be impacted by the proposed vegetation clearing (GIS Database). Minor drainage lines that will be impacted have been subject to previous disturbance from the existing Jimblebar Rail Spur, access roads and utilities associated with nearby mining operations and cattle grazing and trampling (BHP Billiton Iron Ore Pty Ltd, 2009a).

Measures will be taken to minimise impacts to drainage lines. Such measures include (BHP Billiton Iron Ore Pty Ltd, 2009a; 2009b):

- avoid unnecessary disturbance to natural surface drainage;
- ensure that cleared vegetation and topsoil is stockpiled away from watercourses;
- where practicable, delay the clearing of slopes leading to watercourses until construction is imminent, thus minimising erosion and sedimentation;
- contain all surface run-off from work activities in lined sumps to prevent erosion; and
- utilise appropriate methods for erosion control where the potential for erosion is high (such as rip rap rock protection and reno mattresses).

The assessing officer considers that the proponent's environmental management commitments are adequate to minimise impacts to watercourses and wetlands as far as practicable.

Methodology

BHP Billiton Iron Ore Pty Ltd (2009a).
BHP Billiton Iron Ore Pty Ltd (2009b).
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

Land system mapping by the Department of Agriculture Western Australia has mapped a variety of land systems for the Pilbara bioregion. Land systems are mapped based on biophysical features such as soil and landform type, geology, geomorphology and vegetation type (Van Vreeswyk et al, 2004). The proposed clearing area includes four different land systems (GIS Database). A broad description of each land system is given below:

Boolgeeda - the Boolgeeda land system is characterised by stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and Mulga shrublands. Vegetation is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al, 2004).

McKay - the McKay land system is characterised by hills, ridges, plateaux remnants and breakaways supporting hard spinifex grasslands. The McKay land system is not prone to degradation or soil erosion (Van Vreeswyk et al, 2004).

Newman - the Newman land system is characterised by hills and ranges, supporting hard spinifex grasslands. Relief can be up to 450 metres. The Newman land system is generally not prone to erosion (Van Vreeswyk et al, 2004).

Washplain - the Washplain land system is characterised by hardpan plains supporting grooved Mulga shrublands. Some parts of alluvial plains, grooves and tracts receiving more concentrated surface water flow are moderately susceptible to erosion (Van Vreeswyk et al, 2004).

On the basis of land system mapping, the proposed vegetation clearing is unlikely to result in appreciable land degradation. However, it is noted that drainage areas are more susceptible to erosion (Van Vreeswyk et al, 2004).

BHP Billiton Iron Ore Pty Ltd (2009a; 2009b) will implement the following measures to minimise the risk of erosion during native vegetation clearing:

- strip and stockpile all available topsoil;

- utilise appropriate methods for erosion control where the potential for erosion is high (such as rip rap rock protection and reno mattresses);
- where practicable, delay the clearing of slopes leading to watercourses until construction is imminent, thus minimising erosion and sedimentation;
- contain all surface run-off from work activities in lined sumps to prevent erosion; and
- rehabilitate all temporary disturbance areas (approximately 99 hectares of the 295 hectares proposed for clearing) at the completion of railway construction activities.

Adherence to these commitments will minimise land degradation as far as practicable. Should a clearing permit be granted it is recommended that conditions be imposed requiring staged clearing and rehabilitation of temporary disturbance areas.

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

Methodology BHP Billiton Iron Ore Pty Ltd (2009a).
BHP Billiton Iron Ore Pty Ltd (2009b).
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 at variance to this Principle**
The proposed clearing area is not located within a conservation reserve (GIS Database). The nearest known conservation reserve is the Karijini National Park, located approximately 135 kilometres to the north-west (GIS Database).

Based on the above, the proposed clearing is not 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 proposed clearing area is located within the Newman Water Reserve, a Public Drinking Water Source Area (PDWSA) gazetted under the Country Areas Water Supply Act 1947 on 21 August 1983. This PDWSA is defined a 'Priority 1 (P1)' under the Water Source Protection Classification System (Department of Water, 2009).

Department of Water advice has previously been provided for numerous clearing permit applications for railway construction and maintenance activities within the Newman Water Reserve, stating the following:

'Clearing activities for mineral production are compatible with conditions in a P1 PDWSA. All activities associated with the clearing including infrastructure, laydown areas, refuelling and topsoil storage should be compatible with the Department of Water's Land Use Compatibility Tables. DoW is satisfied that the proposed clearing is unlikely to have a significant impact on the quality or quantity of groundwater' (Department of Water, 2009).

With respect to surface water, a number of minor ephemeral drainage lines occur in the proposed clearing area (GIS Database). One of the purposes of the proposed clearing is to undertake drainage control works associated with the future railway. Such works will ensure natural surface water flow regimes are maintained as far as practicable.

To minimise the risk of clearing operations deteriorating surface water quality on-site and off-site, BHP Billiton Iron Ore Pty Ltd (2009a; 2009b) will implement the following measures:

- avoid unnecessary disturbance to natural surface drainage;
- strip all available topsoil and stockpile it away from watercourses;
- contain all surface run-off from work activities in lined sumps to prevent erosion and sedimentation;
- utilise appropriate methods for erosion control where the potential for erosion is high (such as rip rap rock protection and reno mattresses);
- where practicable, delay the clearing of slopes leading to watercourses until construction is imminent, thus minimising erosion and sedimentation; and
- no native vegetation clearing for borrow pits within watercourses or wetlands.

Adherence to these commitments will minimise impacts to surface water quality as far as practicable.

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

Methodology BHP Billiton Iron Ore Pty Ltd (2009a).
BHP Billiton Iron Ore Pty Ltd (2009b).
Department of Water (2009).
GIS Database:
- Hydrography, linear.

(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 average annual rainfall for Newman is approximately 310 millimetres, most of which falls between January and March. Average annual evaporation exceeds average annual rainfall by more than ten times. Consequently, surface water persists in the Newman area only following significant rainfall events (BHP Billiton Iron Ore Pty Ltd, 2009).

Native vegetation clearing is likely to increase surface water run-off, however it is unlikely to 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 BHP Billiton Iron Ore Pty Ltd (2009).

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

Comments

There is one native title claim over the area under application (GIS Database). This claim (WC99/004) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). However, the mining tenements have 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*.

According to available GIS databases, there are no registered Aboriginal Sites of Significance within the proposed clearing 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.

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.

No submissions were received from direct interest parties or members of the public when the clearing permit application was advertised for comment.

Methodology GIS Databases:
- Aboriginal Sites of Significance.
- Native Title Claims.

4. Assessor's comments

Comment

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

Should a clearing permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, staged clearing, rehabilitation, record keeping and permit reporting.

5. References

BHP Billiton Iron Ore Pty Ltd (2009a) Jimblebar Spur Rail Duplication and Ancillary Works. Application for a clearing permit under the Environmental Protection Act 1986.

BHP Billiton Iron Ore Pty Ltd (2009b) Asset Development Projects Environmental Management System: Environmental Management Plan.

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

Department of Water (2009) Public Drinking Water Source Area (PDWSA) advice to assessing officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum (DMP), 1 November 2009. Department of Water, Western Australia.

ENV Australia Pty Ltd (2008) Jimblebar Access Road Flora and Vegetation Assessment. Prepared for BHP Billiton Iron Ore Pty Ltd. March 2008.

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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.