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

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5925/1
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,* Mining Lease 266SA (AM 70/266)
Exploration Licence 52/21
Exploration Licence 52/23
Local Government Area: Shire of East Pilbara and Shire of Meekatharra
Colloquial name: Prairie Downs Exploration Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
150		Mechanical Removal	Mineral Exploration, Hydrogeological Investigations, Geotechnical Investigations and Associated Works

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 8 May 2014

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation in a regional context. The following Beard vegetation associations are located within the application area (GIS Database):

18: Low woodland; mulga (*Acacia aneura*);
82: Hummock grasslands, low tree steppe; snappygum over *Triodia wiseana*; and
175: Short bunch grassland – savannah/grass plain (Pilbara).

Onshore Environmental (Onshore) conducted a one season Level 2 flora and vegetation survey over the application area between 18 and 27 July 2009 (Onshore, 2010). Onshore (2010) identified the following 23 vegetation associations within the application area:

Eucalyptus Open Woodland
1a. Open Woodland of *Eucalyptus victrix* and *Eucalyptus camaldulensis* ssp. *obtusa* with Low Woodland of *Acacia citrinoviridis* and Very Open Tussock Grassland of *Eriachne tenuiculmis*, *Themeda triandra* and *Eulalia aurea*.

Acacia Low Open Forest
2a. Low Open Forest of *Acacia aneura* var. *tenuis*, *Acacia catenulata* ssp. *occidentalis* and *Eucalyptus xerothermica* with Low Open Shrubland of *Ptilotus obovatus*, **Malvastrum americanum* and *Sida fibulifera* and Very Open Tussock Grassland of *Chrysopogon fallax*, *Aristida contorta* and *Digitaria ammophila*.

2b. Low Open Forest of *Acacia aneura* var. *tenuis*, *Acacia catenulata* ssp. *occidentalis*, *Acacia ayersiana* and *Acacia pruinocarpa* with Open Shrubland of *Eremophila fraseri* ssp. *fraseri* and Very Open Tussock Grassland of *Aristida contorta* and *Aristida obscura*.

Acacia Low Woodland
3a. Low Woodland of *Acacia aneura* var. *tenuis*, *Acacia catenulata* ssp. *occidentalis* and *Acacia pruinocarpa* with Open Shrubland of *Eremophila forrestii* ssp. *forrestii* and Open Hummock Grassland of *Triodia pungens*.

3b. Low Woodland of *Acacia catenulata* ssp. *occidentalis*, *Corymbia ferriticola* and *Acacia aneura* var. *tenuis* with High Open Shrubland of *Dodonaea pachyneura* and *Ficus brachypoda* and Open Hummock Grassland of *Triodia pungens*.

3c. Low Woodland of *Acacia paraneura* and *Acacia aneura* var. *tenuis* with High Shrubland of *Acacia tetragonophylla* and Very Open Hummock Grassland of *Triodia wiseana*.

Acacia Low Open Woodland
4a. Low Open Woodland of *Acacia aneura* var. *tenuis* and *Grevillea striata* with Open Shrubland of *Acacia*

tetragonophylla and *Acacia synchronicia* and Low Open Shrubland of *Maireana georgei* and *Maireana melanocoma*.

Acacia High Shrubland
5a. High Shrubland of *Acacia wanyu* and *Acacia sclerosperma* with Open Shrubland of *Acacia synchronicia* and *Acacia tetragonophylla* and Open Hummock Grassland of *Triodia wiseana* and *Triodia angusta*.

Acacia High Open Shrubland
6a. High Open Shrubland of *Acacia subcontorta*, *Acacia aneura* var. *tenuis* and *Acacia rhodophloia* with Low Open Shrubland of *Eremophila compacta* ssp. *compacta*, *Eremophila caespitosa* and *Eremophila forrestii* ssp. *forrestii* and Very Open Tussock Grassland of *Aristida contorta* and *Enneapogon polyphyllus*.

Eriachne Tussock Grassland
7a. Tussock Grassland of *Eriachne benthamii*, *Digitaria ammophila* and *Panicum effusum* with Low Open Woodland of *Acacia paraneura* and *Acacia aneura* var. *tenuis* and Low Open Shrubland of *Solanum lasiophyllum*, *Ptilotus obovatus* and *Sida fibulifera*.

7b. Tussock Grassland of *Eriachne benthamii* and *Eriachne flaccida* with Low Open Woodland of *Acacia aneura* var. *tenuis* and Open Shrubland of *Acacia synchronicia.*

Triodia Hummock Grassland
8a. Hummock Grassland of *Triodia pungens* and *Triodia* sp. Shovelanna Hill with Low Woodland of *Acacia aneura* var. *tenuis*, *Eucalyptus leucophloia* ssp. *leucophloia* and *Acacia pruinocarpa* and High Shrubland of *Rulingia luteiflora*, *Acacia bivenosa* and *Petalostylis labicheoides*.

8b. Hummock Grassland of *Triodia pungens* with Low Woodland of *Acacia aneura* var. *tenuis*, *Acacia catenulata* ssp. *occidentalis*, *Acacia ayersiana* and *Acacia pruinocarpa* with Open Shrubland of *Acacia marramamba*, *Eremophila fraseri* ssp. *fraseri* and *Eremophila forrestii* ssp. *forrestii*.

8c. Hummock Grassland of *Triodia pungens* with Low Woodland of *Acacia aneura* var. *tenuis*, *Acacia catenulata* ssp. *occidentalis* and *Eucalyptus xerothermica* and Open Tussock Grassland of *Chrysopogon fallax* and *Themeda triandra*.

8d. Hummock Grassland of *Triodia longiceps* with Low Woodland of *Eucalyptus victrix*, *Eucalyptus xerothermica* and *Acacia citrinoviridis* with High Open Shrubland of *Acacia sclerosperma*, *Petalostylis labicheoides* and *Acacia tumida*.

8e. Hummock Grassland of *Triodia pungens* with Low Open Woodland of *Corymbia hamersleyana* and *Corymbia deserticola* and Open Shrubland of *Eremophila fraseri* ssp. *fraseri*, *Acacia marramamba* and *Ptilotus obovatus*.

8f. Hummock Grassland of *Triodia* sp. Shovelanna Hill and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* ssp. *leucophloia*, *Corymbia deserticola* and *Corymbia ferriticola* and Low Open Shrubland of *Eremophila exilifolia*.

8g. Hummock Grassland of *Triodia wiseana* and *Triodia angusta* with Open Mallee of *Eucalyptus socialis* and High Open Shrubland of *Acacia wanyu*.

8h. Hummock Grassland of *Triodia wiseana* with Open Mallee of *Eucalyptus socialis* and Open Shrubland of *Acacia sclerosperma*, *Acacia synchronicia* and *Acacia bivenosa*.

8i. Hummock Grassland of *Triodia wiseana* and *Triodia angusta* with Open Mallee of *Eucalyptus socialis* and *Eucalyptus repullulans* and Open Shrubland of *Acacia subtiliformis*.

8j. Hummock Grassland of *Triodia angusta* with High Open Shrubland of *Acacia synchronicia*, *Acacia tetragonophylla* and *Acacia pruinocarpa* with Open Shrubland of *Eremophila platycalyx* ssp. *pardalota*, *Templetonia egena* and *Rhagodia eremaea*.

8k. Hummock Grassland of *Triodia wiseana* with High Open Shrubland of *Acacia inaequilatera* and Open Shrubland of *Acacia bivenosa*, *Acacia dictyophleba* and *Acacia synchronicia*.

Triodia Open Hummock Grassland
9a. Open Hummock Grassland of *Triodia* sp. Shovelanna Hill and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* ssp. *leucophloia* and *Acacia aneura* var. *tenuis* and Very Open Herbs of *Ptilotus calostachyus* and *Goodenia stobbsiana*.

Clearing Description

Prairie Downs Exploration Project.

BHP Billiton Iron Ore Pty Ltd (BHPBIO) proposes to clear up to 150 hectares of native vegetation within a boundary of approximately 6,815 hectares (GIS Database) for the purpose of mineral exploration, hydrogeological investigations, geotechnical investigations and associated works. The project area is located within the Shire of East Pilbara and the Shire of Meekatharra and is approximately 35 kilometres west of Newman (GIS Database).

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994);

To

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

Comment

Vegetation condition was determined by Onshore (2010) using the Keighery (1994) scale.

The purpose of the application is for construction and maintenance of access tracks and drill pads, exploration drilling, hydrogeological investigations, geotechnical investigations and associated works (BHPBIO, 2013). Clearing will be by mechanical means.

Onshore (2010) notes that July 2009 was towards the end of the most suitable time for a survey given that the survey area had received significant rainfall during the summer period of 2009. However, many annual and ephemeral plant life forms were recorded during the survey, and a number of the perennial flora was collected in flower (Onshore, 2010).

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 area mostly comprises low ironstone hills, ridges, breakaway slopes and gently sloping stony plains (Onshore, 2010). Other common landscape units include drainage lines (major and minor) and associated floodplains, low calcrete rises and plateaux adjacent to Ironstone Creek, flat clayey loam plains containing dense groves of mulga (*Acacia aneura*) forest, and gently rolling basaltic hills and associated drainage lines flanking the ironstone hills (Onshore, 2010).

Twenty three vegetation communities were identified within the application area, none of which were identified as having special conservation significance (Onshore, 2010). Vegetation condition mostly ranged from 'excellent' to 'very good' with minor disturbances restricted to historical access tracks and fire. Vegetation rated as 'good' and 'degraded' had been disturbed by introduced weeds, historical exploration, and grazing by domestic stock. Onshore (2010) adds that habitats supporting reduced vegetation condition occurred at lower relief in the landscape and included ephemeral drainage lines, floodplains, and stony plains.

A total of 363 plant taxa (including varieties and subspecies) from 46 families and 144 genera were recorded by Onshore (2010). Six introduced species were recorded within the application area. The presence of introduced weed species lowers the biodiversity values of the proposed clearing areas. Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Available databases show no Threatened Flora or Priority Ecological Communities (PECs) or Threatened Ecological Communities (TECs) are known to occur within the application area (GIS Database). No Threatened Flora or PECs or TECs were recorded by Onshore (2010). The following seven Priority Flora species were recorded within the application area (Onshore, 2010):

- *Aristida jerichoensis* ssp. *subspinulifera* (Priority 1) – Recorded at three sites in the southwest and central sectors of the application area.
- *Brachyscome* sp. Wanna Munna Flats (S. van Leeuwen 4662) (Priority 1) - Recorded at five sites in the central sector of the application area.
- *Aristida lazaridis* (Priority 2) - Recorded from a single location asssociated with a major drainage line habitat in the north east sector of the application area.
- *Acacia subtiliformis* (Priority 3) - Recorded from seven sites at the western fringe of the application area, associated with a calcrete drainage feature.
- *Goodenia* sp. East Pilbara (Priority 3) - Recorded from 18 sites distributed across the entire application area, associated with calcrete drainage features.
- *Rhagodia* sp. Hamersley (Priority 3) - Recorded from seven sites situated through the middle sector of the application area.
- *Goodenia nuda* (Priority 4) – Recorded at a single site in the far northeast corner of the application area.

BHPBIO (2013) state that no vegetation will be disturbed within 10 metres of these populations. Onshore (2010) also recorded a possible new flora species referrred to as *Aristida* aff. *nitidula* (Onshore PD53.03) at five sites within the application area. As this species is possibly a new species its conservation status is unknown. As such BHPBIO (2014) state that no vegetation will be disturbed within ten metres of the *Aristida* aff. *nitidula* (Onshore PD53.03) populations. Potential impacts to the abovementioned Priority Flora species and *Aristida* aff. *nitidula* (Onshore PD53.03) may be minimised by the implementation of a flora management condition.

Onshore (2010) also conducted a Level 1 fauna assessment of the application area between 20 and 23 July 2009. This recorded 42 bird, six reptile and nine mammal species within the application area. The species list was significantly smaller compared to other surveys of similar scope and was likely due to cold temperatures during the survey period (Onshore, 2010). Four broad habitats were identified within the application area including riverine, hill tops, slopes with outcrops and Mulga woodland. According to BHPBIO (2013), the habitat found within the application area is considered to be well represented in the Pilbara bioregion.

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

Methodology

BHPBIO (2013)
BHPBIO (2014)

Onshore (2010)
GIS Database:
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

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

Comments

Proposal may be at variance to this Principle

A Level 1 fauna assessment was undertaken over the application area by Onshore (2010) with the field survey undertaken between 20 and 23 July 2009. The following four broad habitats were identified within the application area (Onshore, 2010):

- Riverine – *Eucalyptus camaladulensis* and *E. victrix* over sparse medium and low shrubs, over herbs and grasses. Characteristics of this habitat include large trees; good hollows; some waterholes; good ground cover; fallen logs and debris; and shady and cool. This habitat has high value and is important for hollow nesting bird species, providing potential nesting sites in large trees for birds of prey and probably aids reptiles in thermoregulation in cool areas.
- Low spinifex hilltop/slopes - Scattered *Eucalyptus* sp. over scattered medium shrubs, over *Triodia* hummock grassland. Characteristics of this habitat include hummock grassland; occasional tree hollows; and small pebbles and cobbles. This habitat has low value with hummock grass providing protection and foraging areas.
- Slopes with outcropping - *Eucalyptus* sp over sparse medium shrubs, over open hummocks *Triodia* sp. Shovelana Hill. Characteristics of this habitat include caves, crevices and overhangs; hummock grassland; occasional tree hollows; and small pebbles and cobbles. This habitat has medium value and provides caves for bat species and ledges and crevices for birds of prey to nest on.
- Patches of Mulga woodland - Moderately dense tall shrubs of *Acacia aneura* and *Acacia* sp. Characteristics of this habitat include high structural complexity within shrub layer; and shady and cool. This habitat has medium value and provides structural complexity for many bird species as well as habitat for specific fauna.

The habitat found within the application area is considered to be well represented in the Pilbara bioregion (BHPBIO, 2013). The riverine habitat appears to correspond to vegetation association 1a as it also lists flora species *Eucalyptus camaldulensis* and *Eucalyptus victrix* in its description. This vegetation association has been mapped in three locations within the application area (Onshore, 2010). Available databases show two of the locations are associated with a river (in the southern portion of the application area) and the third is associated with a minor, non-perennial watercourse (in the northern portion of the application area) (GIS Database). According to BHPBIO (2013), the river is a perennial creek known as Spearhole Creek. This appears to be an upper tributary of the Fortescue River (GIS Database). BHPBIO (2013) states that where possible existing cleared tracks will be used to cross vegetation association 1a and where new crossings are required clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural surface flow. BHPBIO (2014) has also advised that some disturbance for drill pads is proposed within the northern location of vegetation association 1a and that disturbance will be kept to a minimum. This location of 1a is associated with a minor, non-perennial watercourse which are common in the Pilbara landscape. Potential impacts to vegetation associated with Spearhole Creek (i.e. the two southern locations of 1a) may be minimised by the implementation of a condition that limits clearing to tracks only.

Opportunistic observations made during the field survey recorded 42 bird, six reptile and nine mammal species within the application area (Onshore, 2010). Three conservation significant fauna species have been recorded in the application area. These include the Rainbow Bee-eater (*Merops ornatus*) (Marine; Migratory under *EPBC Act*; Schedule 3), Australian Bustard (*Ardeotis australis*) (Priority 4) and Bush Stone-curlew (*Burhinus grallarius*) (Priority 4). According to Onshore (2010), these species are likely to move into vast surrounding areas of suitable habitat if disturbed and are therefore, unlikely to be affected.

Several other conservation significant fauna species are considered as possibly occurring within the application area (Onshore, 2010). However, the proposed clearing is unlikely to have a significant impact on these species due to the availability of similar habitat in the surrounding areas. Additionally, for some species the application area is not expected to comprise core or significant habitat (Onshore, 2010).

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

Methodology

BHPBIO (2013)
BHPBIO (2014)
Onshore (2010)
GIS Database:
- Hydrography, linear
- Rivers

(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 Threatened Flora species within the application area (GIS

Database).

No Threatened Flora were recorded during the flora and vegetation survey (Onshore, 2010).

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

Methodology Onshore (2010)
GIS Database:
- Threatened and Priority Flora

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

Comments

Proposal is not likely to be at variance to this Principle

According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is located approximately 35 kilometres east of the application area (GIS Database).

No TECs were recorded within the application area (Onshore, 2010).

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

Methodology Onshore (2010)
GIS Database:
- Threatened Ecological Sites Buffered

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments

Proposal is not at variance to this Principle

The application area is located within the Pilbara Interim Biogeographical Regionalisation for Australia (IBRA) bioregion (GIS Database). Approximately 99.58% of the pre-European vegetation remains within the Pilbara bioregion (Government of Western Australia, 2013).

The vegetation of the application area has been mapped as Beard vegetation associations 18, 82 and 175 (GIS Database). Over 90% of these Beard vegetation associations remain at both a state and bioregional level (Government of Western Australia, 2013). Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared. A review of aerial imagery also shows that vegetation within the application area is not a remnant within the local area (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Extent in DPaW Managed Lands %*
IBRA Bioregion - Pilbara	17,808,657	17,733,584	~99.58	Least Concern	~8.41
Beard vegetation associations - State					
18	19,892,305	19,843,727	~99.76	Least Concern	~6.30
82	2,565,901	2,553,217	~99.51	Least Concern	~10.56
175	526,958	524,640	~99.56	Least Concern	~4.67
Beard vegetation associations - Bioregion					
18	676,557	672,424	~99.39	Least Concern	~17.26
82	2,563,583	2,550,899	~99.51	Least Concern	~10.57
175	507,860	507,467	~99.92	Least Concern	~4.83

* Government of Western Australia (2013)
** 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 (2013)
GIS Database:

- IBRA WA (Regions - Sub Regions)
- Ophthalmia 50cm Orthomosaic - Landgate 2004
- 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

Available databases show there is a river and numerous minor, non-perennial and indefinite watercourses within the application area (GIS Database).

Several vegetation associations were identified growing in association with drainage. These were associated with major drainage lines (vegetation association 1a), drainage flats (7b), minor drainage lines (8a), medium sized drainage lines (8c) and localised drainage zone (8e) (Onshore, 2010).

Vegetation association 1a is mapped in three locations within the application area (Onshore, 2010). Available databases show two of the locations are associated with a river (in the southern portion of the application area) and the third is associated with a minor, non-perennial watercourse (in the northern portion of the application area) (GIS Database). According to BHPBIO (2013), the river is a perennial creek known as Spearhole Creek. This appears to be an upper tributary of the Fortescue River (GIS Database). BHPBIO (2013) states that where possible existing cleared tracks will be used to cross vegetation association 1a and where new crossings are required clearing will be kept to a bare minimum and will be constructed flat level to the surface (i.e. a simple clearing with no bunds) to maintain the natural surface flow. BHPBIO (2014) has also advised that some disturbance for drill pads is proposed within the northern location of vegetation association 1a and that disturbance will be kept to a minimum. This location of 1a is associated with a minor, non-perennial watercourse which are common in the Pilbara landscape. Potential impacts to vegetation associated with Spearhole Creek (i.e. the two southern locations of 1a) may be minimised by the implementation of a condition that limits clearing to tracks only.

Vegetation associations 8a and 8c occurred throughout the application area (Onshore, 2010). No vegetation associations growing in ephemeral watercourses were identified as having significant environmental values (Onshore, 2010).

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

Methodology

BHPBIO (2013)
BHPBIO (2014)
Onshore (2010)
GIS Database:
- Hydrography, linear
- Rivers

(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 has been mapped as occurring on the Egerton, Newman, Nooingnin, Rocklea, Spearhole, Turee and Wannamunna land systems (GIS Database). Most of these land systems are not prone to erosion or have a low susceptibility to erosion (Van Vreeswyk et al., 2004). Van Vreeswyk et al. (2004) notes that the Nooingnin land system generally has low susceptibility to erosion except in extreme cases of vegetation loss. The Turee land system is mostly protected from erosion by stone surface mantles, however, less stony parts of hardpan plains, gilgai plains, saline stony plains and channelled drainage tracts are slightly to moderately susceptible to erosion (Van Vreeswyk et al., 2004). Based on the above there is potential for erosion to occur particularly within the Nooingnin and Turee land systems. Potential impacts from erosion as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

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

Methodology

Van Vreeswyk et al (2004)
GIS Database:
- Rangeland Land System Mapping

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments

Proposal is not likely to be at variance to this Principle

The application area does not lie within any conservation areas or Department of Parks and Wildlife (DPAW) managed lands (GIS Database). The nearest conservation area is Karijini National Park located approximately 70 kilometres north west of the application area (GIS Database). Based on the distance between the application area and Karijini National Park, the proposed clearing is not likely to impact the environmental values of any 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

According to available databases the application area is not located within a Public Drinking Water Source Area (GIS Database). Available databases show there is a river and numerous minor, non-perennial and indefinite watercourses within the application area (GIS Database). According to BHPBIO (2013), the river is a perennial creek known as Spearhole Creek. Potential impacts to the surface water quality within Spearhole Creek may be minimised by the implementation of a watercourse management condition.

The climate of the area is semi-desert tropical with an average of 300 millimetres of rainfall that is usually from summer cyclonic or thunderstorm events (CALM, 2002). The application area receives an average annual rainfall of approximately 316 millimetres with an average annual evaporation rate of between 3,400 and 3,600 millimetres (BoM, 2014; GIS Database). Any surface flows are therefore likely to be short lived.

According to available databases, groundwater salinity within the application area is between 500 and 1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered fresh to marginal. The proposed clearing is not expected to cause salinity levels within the application area to alter.

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

Methodology BHPBIO (2013)
BoM (2014)
CALM (2002)
Onshore (2010)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)
- Rivers

(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 is located within the Fortescue River catchment area (GIS Database). Given the size of the area to be cleared (150 hectares) in relation to the size of the catchment area (2,975,192 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

With an average annual rainfall of approximately 316 millimetres and an average annual evaporation rate of between 3,400 and 3,600 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2014; GIS Database). Whilst large rainfall events may result in flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology BoM (2014)
GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments – Catchments

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

Comments

There are two native title claims over the area under application: WC2005/003 and WC2005/006 (GIS Database). These claims have been registered with the Native Title Tribunal on behalf of the claimant groups. 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*.

According to available databases, there are three 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 Regulation, Department of Parks

and Wildlife and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 30 December 2013 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

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

4. References

BHPBIO (2013) Prairie Downs Exploration Native Vegetation Clearing Permit Application Supporting Document for Exploration Drilling December 2013. Unpublished report prepared by BHP Billiton Iron Ore Pty Ltd. Dated December 2013.

BHPBIO (2014) Further Information provided by BHP Billiton Iron Ore Pty Ltd on 26 March 2014.

BoM (2014) Climate Statistics for Australian Locations. A Search for Climate Statistics for Newman Aero, Australian Government Bureau of Meteorology, viewed 28 January 2014, <http://www.bom.gov.au/climate/averages/tables/cw_007176.shtml>.

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3 - Hamersley subregion) Department of Conservation and Land Management, Western Australia.

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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.