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

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3124/1
Permit type: Purpose Permit

1.2. Proponent details

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

1.3. Property details

Property: Mineral Lease 246SA (AML 70/246)
Mineral Lease 4SA (AML70/4)
Iron Ore (Hamersley Range) Agreement Act 1963
Local Government Area: Shire of Ashburton
Colloquial name: Paraburdoo Exploration Drilling Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
10		Mechanical Removal	Mineral exploration, access tracks and associated activities

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 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 application areas (GIS Database):

82: Hummock Grasslands, low tree steppe; snappygum over *Triodia wiseana;*

181: Shrublands; mulga & snakewood scrub; and

567: Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex & *Triodia basedowii*.

The clearing application comprises of three separate application areas. A vegetation and flora survey was conducted over each of the application areas between 2 and 5 March 2009. Twenty-two intact vegetation types were recorded during the vegetation survey of the application areas (Rio Tinto Iron Ore, 2009). The vegetation types have been described for each of the application areas (Rio Tinto Iron Ore, 2009).

Area 1 (AR-08-04081)

Crests

C1: Rocky Crest (ApSgEjEcTpEm) - *Acacia pruinocarpa* high open shrubland over *Senna glutinosa* open shrubland over *Eremophila jucunda* and *E. cuneifolia* low open heath over *Triodia pungens* hummock grassland over *Eriachne mucronata* very open tussock grassland.

Slopes

S1: Upper Slope (AaGbEjEeTp) - *Acacia aneura* and *Grevillea berryana* low open forest over *Eremophila jucunda* and *E exilis* low open heath over *Triodia pungens* hummock grassland.

S2: Stony South Slope (ArGbEjTp) - *Acacia rhodophloia* and *Grevillea berryana* low open forest over *Eremophila jucunda* low open heath over *Triodia pungens* hummock grassland.

S3: Steep North Slope (ApApAtSoTsTp) - *Acacia pruinocarpa* high shrubland over *Acacia pyrifolia* and *A. tetragonophylla* open shrubland over *Senna oligophylla* and *Tribulus suberosus* low open shrubland over *Triodia pungens* hummock grassland.

S4: Lower South Slope (AaApAwAtSoSaEcEpTsTp) - *Acacia aneura* and *A. pruinocarpa* low woodland over *Acacia wanyu, A. tetragonophylla* open scrub over *Senna oligophylla* open shrubland over *Senna artemisioides*, *Eremophila cuneifolia, E. phyllopoda* and *Tribulus suberosus* low shrubland over *Triodia pungens* hummock grassland.

S5: Lower South Slope (AxAwAsSaMvTp) - *Acacia xiphophylla* open scrub over *Acacia wanyu* and *A. synchronicia* shrubland over *Senna artemisioides* and *Maireana villosa* low shrubland over *Triodia pungens* very open hummock grassland.

Minor Drainage Lines

D1: Drainage Line Mid-Slope (AaArCfElEjEeTsPoTp) - *Acacia aneura, A. rhodophloia* and *Corymbia ferriticola* low open forest *over Eremophila latifolia* shrubland over *E. jucunda, E. exilis, Tribulus suberosus* and *Ptilotus obovatus* low open heath over *Triodia pungens* hummock grassland.

D2: Drainage Line Lower South Slope (GbAcAaAmSgEpSoTsTp) - *Grevillea berryana, Acacia citrinoviridis* and *A. aneura* low open forest over *Acacia marramamba* and *Senna glutinosa* high open shrubland over *Eremophila phyllopoda* and *Senna oligophylla* shrubland over *Tribulus suberosus* low open shrubland over *Triodia pungens* hummock grassland.

Area 2 (AR-08-04080 North)

Crests

C2: Crest (GbAtApElEcEjSaSgTp) - *Grevillea berryana* low open woodland over *Acacia tetragonophylla* and *A. pruinocarpa* high open shrubland over *Eremophila latifolia*, *E. cuneifolia, E. jucunda, Scaevola acacioides* and *Senna glutinosa* low open shrubland over *Triodia pungens* hummock grassland.

C3: Crest (GbAaApSaEjTp) - *Grevillea berryana, Acacia aneura* and *A. pruinocarpa* low open forest over *Scaevola acacioides* open shrubland over *Eremophila jucunda* low open heath over *Triodia pungens* hummock grassland.

S6: Steep Stony Slope (ElGbArDpESTsTp) - *Eucalyptus leucophloia* and *Grevillea berryana* low woodland over *Acacia rhodophloia* high shrubland over *Dodonaea pachyneura* and various *Eremophila shrubland* over various *Senna* sp. and *Tribulus suberosus* low shrubland over *Triodia pungens* hummock grassland.

S7: Steep North Slope (AaAtEcSpEcTsTp) - *Acacia aneura* and *A. tetragonophylla* high open shrubland over *Eremophila cryptothrix* and *Senna pruinosa* shrubland over *Eremophila cuneifolia* and *Tribulus suberosus* low shrubland over *Triodia pungens* open hummock grassland.

S8: Stony Mid North Slope (AtApSoEcEcTp) - *Acacia tetragonophylla* and *A. pruinocarpa* high shrubland over *Senna oligophylla* and *Eremophila cryptothrix* shrubland over *Eremophila cuneifolia* low open shrubland over *Triodia pungens* hummock grassland.

Area 3 (AR-08-04080 South)

Crests

C4: Crest (ApGbSaSgEcTp) - *Acacia pruinocarpa* and *Grevillea berryana* low woodland over *Scaevola acacioides* and *Senna glutinosa* open shrubland over *Eremophila cuneifolia* low shrubland over *Triodia pungens* hummock grassland.

C5: Crest (GbApSgEcEcTp) - *Grevillea berryana* and *Acacia pruinocarpa* low woodland over *Senna glutinosa* high shrubland over *Eremophila cryptothrix* open shrubland over *Eremophila cuneifolia* low open shrubland over *Triodia pungens* hummock grassland.

Slopes

S9: Stony Mid-South Slope (GbAaCfAmSgElEcEjTp) - *Grevillea berryana, Acacia aneura* and *Corymbia ferriticola* low open forest over *Acacia marramamba* high open shrubland over *Senna glutinosa* and *Eremophila latifolia* open shrubland over *Eremophila cuneifolia* and *E. jucunda* low open shrubland over *Triodia pungens* hummock grassland.

S10: Steep South Slope (ApAaEcSgHPoMvTp) - *Acacia pruinocarpa* and *A. aneura* low woodland over *Eremophila cryptothrix* and *Senna glutinosa* high shrubland over *Hibiscus* sp. open shrubland over *Ptilotus obovatus* and *Maireana villosa* low shrubland over *Triodia pungens* hummock grassland.

S11: Lower Stony Slope (ApSoTp) - *Acacia pruinocarpa* low open forest over *Senna oligophylla* open heath over *Triodia pungens* hummock grassland.

S12: Lower Stony Slope/Breakaway (ApAqSgTpEm) - *Acacia pruinocarpa* low open woodland over *Aluta quadrata* and *Senna glutinosa* open heath over *Triodia pungens* hummock grassland over *Eriachne mucronata* very open tussock grassland.

S13: Stony Mid-North Slope (SaSoEcTp) - *Senna artemisioides*, *S. oligophylla* and *Eremophila cuneifolia* low open heath over *Triodia pungens* hummock grassland.

Drainage Lines

D3: Creek (AcPlCcCc) - *Acacia citrinoviridis* low open forest over *Petalostylis labicheoides* high open shrubland over *Corchorus crozophorifolius* low open shrubland over *Cenchrus ciliaris* closed tussock grassland.

D4: Small Creek (MgAcSoTpCc) - *Melaleuca glomerata* and *Acacia citrinoviridis* low open forest over *Senna oligophylla* open shrubland over *Triodia pungens* very open hummock grassland over *Cenchrus ciliaris* tussock grassland.

Clearing Description

Hamersley Iron Pty Ltd has applied to clear up to 10 hectares of native vegetation within three disjunct application areas totalling approximately of 291 hectares. The application areas are located on the ridges, crests, slopes and drainage plains of three hills systems that are located within the Paraburdoo mine site. The

proposed clearing is for the purpose of exploration drilling and access tracks. Hamersley Iron Pty Ltd has advised that the proposed clearing will be for drill lines (5 kilometres by 5 metres), up to 156 drill pads (25 metres by 15 metres) and 50 sumps (5 metres by 3 metres) (Hamersley Iron Pty Ltd, 2009).

Vegetation will be cleared using raised blade techniques where practicable, or scrub rake in level terrain. Blade down clearing may be used for the maintenance of cleared tracks within the application area. The vegetation and topsoil will be collected and stockpiled for use in future rehabilitation (Hamersley Iron Pty Ltd, 2009).

Vegetation Condition

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

to

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

Comment

The condition of the vegetation within the application areas has been assessed as 'Excellent to 'Very Good' based on the flora and vegetation assessment by Rio Tinto Iron Ore (2009), as well as assessment of site photographs and aerial imagery.

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion which encompasses an area of 17,804,164 hectares (GIS database). The Hamersley subregion is characterised by sedimentary ranges and plateaux, dissected gorges, low Mulga woodlands over bunch grasses in valley floors and *Eucalyptus* woodlands over *Triodia* spp. on skeletal soils of the ranges (Kendrick, 2001).

The application area comprises of three disjunct areas which are situated within the Paraburdoo mine site. A total of twenty-two intact vegetation types were recorded within the application areas from landform types that includes crests, stony slopes and minor drainage lines. A botanist from Rio Tinto Iron Ore carried out a flora and vegetation survey of the three application areas. The number of vegetation types and flora taxa recorded within each of the application areas is provided (Rio Tinto Iron Ore, 2009).

Area 1 (AR-08-04081): Eight vegetation types which comprised of a total of 95 native flora species from 51 genera belonging to 30 families. Three weed species; Purslane (*Portulaca oleracea*), Kapok Bush (*Aerva javanica*) and Buffel Grass (*Cenchrus ciliaris*), were recorded within this area.

Area 2 (AR-08-04080 North): Five vegetation types which comprised of a total of 74 native flora species from 42 genera belonging to 26 families. Three weed species; Purslane (*Portulaca oleracea*), Kapok Bush (*Aerva javanica*) and Buffel Grass (*Cenchrus ciliaris*), were recorded within this area.

Area 3 (AR-08-04080 South): Nine vegetation types which comprised of a total of 95 native flora species from 56 genera belonging to 33 families. Five weed species; Stinking Passion Flower (*Passiflora foetida*), Kapok Bush (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*) and Mimosa Bush (*Vachellea farnesiana*) were recorded within this area.

The number of flora species recorded within each of the application areas is considered diverse. However, this is considered typical of the floristic diversity for similar landform features which are widespread throughout the Pilbara region.

The vegetation communities within the application area 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 area 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.

Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. The disturbance of soil may promote weed growth, and there is a risk that the movement of contaminated soil and clearing equipment throughout the project areas may cause the spread of weed species. The assessing officer recommends that should the permit be granted, conditions be imposed on the permit for the purpose of weed management.

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

Methodology

Kendrick (2001)
Rio Tinto Iron Ore (2009)
GIS Database:
- Interim Biogeographic Regionalisation of Australia
- Interim Biogeographic Regionalisation of Australia (subregions)

(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

A fauna habitat assessment of the application area was undertaken in conjunction with the flora and vegetation survey (Rio Tinto Iron Ore, 2009). Three fauna habitat types were identified within the application areas and these have been described as (Rio Tinto Iron Ore, 2009):

1. Minor drainage lines supporting *Acacia* low open forest over *Acacia, Eremophila* and *Senna* shrubland over *Triodia* hummock grassland over *Cenchrus* tussock grassland;
2. Stony slopes of *Acacia* woodland/forest over *Acacia, Senna* and *Eremophila* shrubland over *Senna* and *Eremophila* heath over *Triodia* hummock grassland over *Cenchrus* and *Eriachne* tussock grassland; and
3. Crests of *Grevillia* and *Acacia* low woodland over *Acacia, Senna* and *Eremophila* shrubland over *Triodia* hummock grassland.

No significant fauna habitats such as caves, rock piles, water holes and termite mounds were observed within the application areas (Rio Tinto Iron Ore, 2009). The vegetation communities and landforms that have been identified within the application areas are considered common and widespread throughout the Pilbara region. 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.

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

Methodology Rio Tinto Iron Ore (2009)

(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 datasets there are no known records of Declared Rare Flora (DRF) within the clearing application area (GIS database).

A Declared Rare Flora and Priority Flora survey of the application area was undertaken by a botanist from Rio Tinto Iron Ore between 2 and 5 March 2009. No DRF were recorded within the survey. Two DRF species, *Lepidium catapycnon* and *Thryptomene wittweri*, occur in the Pilbara but have not been recorded within the greater Paraburdoo area (Rio Tinto Iron Ore, 2009). The closest known record for *Lepidium catapycnon* is located approximately 60 kilometres north of the application area, while the closest known record for *Thryptomene wittweri* is located approximately 110 kilometres north of the application area (Rio Tinto Iron Ore, 2009; GIS Database).

One Priority Flora species, *Aluta quadrata* (Priority 1), was recorded within the western-most application area (Rio Tinto Iron Ore, 2009). This species was recorded from one population containing up to 1,000 individuals and is the first recording of this species in the Paraburdoo mine area (Rio Tinto Iron Ore, 2009). There are 141 previous recordings of *Aluta quadrata* within Rio Tinto's flora database and four of those recordings are from the Channar region and the other 137 are from the Western Ranges (Rio Tinto Iron Ore, 2009). The botanist from Rio Tinto Iron Ore comments that this species is restricted to the Paraburdoo locality and all efforts should be made to avoid the known populations within the application area. Rio Tinto Iron Ore (2009) have placed an exclusion zone around this recorded population to prevent any disturbance to the species habitat, and this area has been excised from the clearing permit application area.

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

Methodology Rio Tinto Iron Ore (2009)
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 application areas (GIS database; Rio Tinto Iron Ore, 2009). The nearest known TEC is located approximately 90 kilometres north, north-east of the application areas (GIS database). Given the distance between the proposal and the nearest known TEC, the proposed clearing is not likely to impact on the conservation of that TEC.

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

Methodology Rio Tinto Iron Ore (2009)
GIS Database:
- Threatened Ecological Communities

(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 clearing application area falls within the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) region in which approximately 99.9% of the pre-European vegetation remains (see table) (GIS database; Shepherd et al., 2001).

The vegetation of the clearing application area has been mapped as Beard vegetation association 82: Hummock grasslands, shrub steppe; *Grevillea refracta* & Hakea over soft Spinifex, 181: Shrublands; mulga & snakewood scrub and 567: Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex & *Triodia basedowii* (GIS Database, Shepherd et al., 2001). According to Shepherd et al., (2001) approximately 100% of Beard vegetation associations 82, 181 and 567 remains at both the state and regional level (see table).

According to the Bioregional Conservation Status of Ecological Vegetation Classes, the conservation status for the Pilbara Bioregion and Beard vegetation association 82, 181 and 567 is of "Least Concern" (Department of Natural Resources and Environment, 2002) (see table).

While a small to moderate percentage of the vegetation types within the Pilbara bioregion are protected within conservation reserves, the bioregion remains largely uncleared. As a result, the conservation of the vegetation associations within the bioregion is not likely to be impacted on by this proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
82	2,565,930	2,565,930	~100	Least Concern	10.2
181	1,697,329	1,697,329	~100	Least Concern	2.4
567	777,517	777,517	~100	Least Concern	22.3
Beard veg assoc. – Bioregion					
82	2,563,610	2,563,610	~100	Least Concern	10.2
181	65,094	65,094	~100	Least Concern	4.9
567	776,833	776,833	~100	Least Concern	22.3

* Shepherd et al. (2001)
** Department of Natural Resources and Environment (2002)

The vegetation under application is not a remnant of vegetation in an area that has been extensively cleared.

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd et al. (2001)
GIS Database:
- Interim Biogeographic Regionalisation of Australia (subregions)
- Pre-European Vegetation

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

Comments **Proposal is at variance to this Principle**

There are no permanent wetlands or watercourses within the application areas. The western-most application

area is situated immediately north of Pirraburdu Creek which is considered a minor, non-perennial watercourse (GIS Database). Whilst this part of the application area does not cover the actual creek line, it does cover a portion of the northern floodplain. The vegetation identified within the floodplain is not considered to be significant riverine vegetation (Rio Tinto Iron Ore, 2009), and the applicant has advised that no drilling is proposed within this area. At the request of the assessing officer Hamersley Iron Pty Ltd has amended the size and shape of **Area 3 (AR-08-04080 South)** by excising the vegetation covered by the floodplain. As a result, the proposed clearing will not impact on the vegetation of the Pirraburdu Creek floodplain.

Numerous other ephemeral creek systems have been recorded within the application area (GIS database). These creek systems largely act as minor drainage lines and are widespread across the Pilbara region (GIS database).

As there are watercourses within the application areas, the proposed clearing is at variance to this Principle. However, these creek systems largely act as minor drainage lines and are widespread across the Pilbara region (GIS database). These watercourses are minor, natural drainage channels that are widespread across the Pilbara landscape (GIS database), and are responsible for quickly dispersing floodwaters after significant rainfall events. The vegetation communities growing in association with the watercourses are not unique and are considered common and widespread in the Pilbara bioregion (Shepherd et al., 2001; GIS Database). The proposed clearing is unlikely to significantly impact on vegetation communities growing in association with these minor ephemeral creek systems.

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

Methodology

Rio Tinto Iron Ore (2009)
Shepherd et al. (2001)
GIS Database:
- Hydrography, linear_1
- Hydrography, linear (hierarchy)

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments

Proposal not likely to be at variance to this Principle

According to the Department of Agriculture in Technical Bulletin No 62 "An inventory and condition survey of the rangelands in the Ashburton River catchment, Western Australia" (Payne et al., 1988), the application area is comprised of the Newman, River and Boolgeeda land systems.

The Newman Land System consists of rugged jaspilitic ranges, plateaux, ridges and mountains that characterise and typify much of the Pilbara. The majority of the vegetation appears to occur on the landform unit 'ridges, mountains and hills' and 'lower slopes'. The soils consist of rocky outcrops and dense stony mantles, with little soil development, and dark reddish brown stony silt loams (Payne et al., 1988). The soils are likely to have a high resistance to erosion due to the high occurrence of rock outcrops and stony mantles.

The River Land System comprises narrow, active flood plains flanking major rivers and creeks with moderately dense tall shrublands (Payne et al., 1988). The western-most application area **Area 3 (AR-08-04080 South)** is situated immediately north of Pirraburdu Creek which is considered a minor, non-perennial watercourse. Analysis of aerial imagery and land system information indicates this portion of the application area occurs on the landform unit 'flood plains' (Payne et al., 1988). The soils are red to brown cracking clays and red loamy earths. These areas may be subject to flooding following significant rainfall events and have high susceptibility to water erosion if vegetative cover is removed (Payne et al., 1988; Van Vreeswyk et al., 2004). Hamersley Iron Pty Ltd (2009) has advised that no exploration drilling is proposed within the 'floodplain' landform unit, and that the only proposed activity in this area is the use of an existing track. At the request of the assessing officer Hamersley Iron Pty Ltd has amended the size and shape of **Area 3 (AR-08-04080 South)** by excising the vegetation covered by the floodplain. Avoiding disturbance to the Pirraburdu Creek floodplain will minimise the risk of water erosion.

Only a small portion of the western-most application area is characterised by the Boolgeeda Land System which consists of stony plains with hard spinifex grasslands and Mulga shrublands (Payne et al. 1988). The soils of this land system consist of rocky outcrops with virtually no soil development and red loamy soils with dense stony mantles (Payne et al. 1988). The soils are likely to have high resistance to erosion due to the stony nature of the surface materials.

Groundwater salinities have been measured in the range from 500 to 1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). Paraburdoo, which is situated approximately 7 kilometres north-east of the application area, has mean annual rainfall of 280.8 millimetres and mean annual evaporation of approximately 3,600 millimetres (Bureau of Meteorology, 2009; GIS Database). Considering the low rainfall to high evaporation ratio, it is unlikely that the proposed clearing will significantly increase groundwater recharge or that land salinisation will be increased either on or off-site.

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

Methodology Bureau of Meteorology (2009)
Payne et al. (1988)
Van Vreeswyk et al. (2004)
GIS Database:
- Groundwater Salinity, Statewide
- Evaporation Isopleths

(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 areas are not located within a Department of Environment and Conservation managed conservation area (GIS Database). The nearest conservation area is Karijini National Park which is situated approximately 37 kilometres east-north-east of the application areas (GIS database). Based on the distance between the application areas and the nearest conservation area, the proposed clearing activities are not likely to impact on the conservation values of Karijini National Park.

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

Methodology GIS Database:
- CALM Managed Lands and Waters

(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

There are no permanent watercourses or wetlands within the application area, however, Pirraburdu Creek is located immediately south of **Area 3 (AR-08-04080 South)** (GIS Database). Assessment of aerial imagery and Geographic Information System (GIS) hydrography data demonstrates that Pirraburdu Creek is a minor, non-perennial watercourse which is only likely to support surface water for short periods following significant rainfall events. It is likely that any surface flows within Pirraburdu Creek would be considered high in suspended sediments.

Hamersley Iron Pty Ltd originally included the floodplain of the Pirraburdu Creek system as part of the application area, however, advised that no clearing is proposed within this area. Hamersley Iron Pty Ltd has since amended the size and shape of **Area 3 (AR-08-04080 South)** and has excised the vegetation covered by the Pirraburdu Creek floodplain. The proposed clearing activities will be restricted to the ridges, slopes, crests and ephemeral drainage lines of the hills within the application areas, and the land systems under application demonstrate high resistance to erosion (Payne et al., 1988), thereby minimising the risk of sediment export which may result in sedimentation and turbidity in nearby watercourses. The proposed clearing is not likely to cause deterioration in the quality of any surface water within Pirraburdu Creek.

The application areas are not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is Millstream Water Reserve which is located approximately 100 kilometres north of the application areas (GIS Database). Given the distance separating the application areas and the nearest water supply areas, the proposed clearing is unlikely to impact on the water quality of the Millstream Water Reserve.

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

Methodology Payne et al. (1998)
GIS Database:
- Hydrography, linear_1
- Public Drinking Water Source Areas (PDWSAs)

(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 Ashburton River Catchment Area which covers an area of approximately 7,877,743 hectares (GIS Database). Hamersley Iron Pty Ltd have applied to clear up to 10 hectares of native vegetation over three separate application areas which cover a total area of approximately 291 hectares. The proposed clearing is not likely to impact on drainage characteristics of the Ashburton Catchment, or of the local area.

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

Methodology GIS Database:
- Hydrographic Catchments - Catchments

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

Comments

There are three Native Title Claims over the areas under application (WC96/061, WC97/043 and WC98/069). These claims have been registered with the National Native Title Tribunal on behalf of the claimant group. 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 (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*.

One registered Site of Aboriginal Significance is located within the area applied to clear (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. Hamersley Iron Pty Ltd has advised that heritage surveys will be undertaken and that any sites identified will be avoided.

One direct interest submission was received during the public submissions period stating no objection to the 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.

Methodology GIS Database
- Native Title Claims
- Sites of Aboriginal Significance DIA

4. Assessor's comments

Comment

The clearing principles have been addressed and the proposed clearing is at variance to Principle (f), is not likely to be at variance to Principle (a), (b), (c), (d), (g), (h), (i) and (j), and is not at variance to Principle (e).

Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, retention of topsoil and vegetation, record keeping and permit reporting.

5. References

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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.