Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2603/1
Permit type: Purpose Permit

1.2. Proponent details

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

1.3. Property details

Property: *Dampier Solar Salt Industry Agreement Act 1967*, Mineral Lease 253SA (AML 70/253)
Local Government Area: Shire Of Roebourne
Colloquial name: Dampier Access Road

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
12		Mechanical Removal	Road construction and maintenance

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. One Beard vegetation association is located within the application area; 589: Mosaic: Short bunch grassland savanna, with soft spinifex hummock grasslands (Shepherd et al., 2001; GIS Database). Biota Environmental Sciences (2008), conducted two flora surveys of the application area in March and April, 2008. The following five vegetation types were identified within the application area: Vegetation of Stony Hills and Plains 1) AbTw (on plains): Acacia bivenosa scattered shrubs to shrubland over *Triodia wiseana* hummock grassland. This vegetation type occurred on stony plains with a calcareous component to the substrate. Other associated species included *Bonamia rosea*, *Diplopeltis eriocarpa*, *Hakea chordophylla*, *Indigofera trita* and *Triumfetta clementii*. Only scattered weeds were present, and this vegetation was considered to be in Very Good condition. 2) AbCEcCEsTw: *Acacia bivenosa* scattered shrubs to open shrubland over *Cenchrus ciliaris*, *C. setiger* open tussock grassland to tussock grassland with *Triodia wiseana* scattered hummock grasses to open hummock grassland. This vegetation comprised areas of the vegetation unit AbTw which had been historically cleared but had begun to regenerate. Weeds (mainly *Cenchrus spp.*) were widespread through this habitat, and the vegetation was considered to be in Good to Poor condition. Vegetation of Sandy or Loamy Plains 3) AiAbCEcCEsTe: *Acacia inaequilatera* scattered tall shrubs over *Acacia bivenosa* scattered shrubs to open shrubland over *Cenchrus ciliaris*, *C. setiger* open tussock grassland to tussock grassland with *Triodia epactia* open hummock grassland. This vegetation unit occurred along disturbed loamy plain. Other	Hamersley Iron Pty Ltd has applied to clear up to 12ha of native vegetation within an application area of approximately 19ha, for the purpose of constructing and maintaining an access road to the 7-mile power station. The proposal includes the construction and maintenance of the access road, drainage systems and potential relocation of some existing infrastructure. The site is located approximately 8km south of Dampier and approximately 8km west of Karratha. Clearing will be by dozer, blade down, and the topsoil and vegetation will be used in the rehabilitation process (Hamersley Iron, 2008).	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994). To Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	The vegetation condition was derived from two flora surveys conducted by Biota Environmental Sciences in March and April 2008.

associated species included *Acacia ancistrocarpa* and *Chrysopogon fallax*. Weeds (mainly *Cenchrus spp.*) were widespread through this habitat, and the vegetation was considered to be in Good to Poor condition.

Vegetation of Clayey Plains

4) ERAx: *Eragrostis xerophila* tussock grassland with patches of herbs. This vegetation occurred on clayey plains. It comprised a mosaic of patchy vegetation units, dominated by the *E. xerophila* tussock grassland, with frequent patches of herbs such as *Neptunia dimorphantha* and *Gomphrena affinis* subsp. *pilbarensis*, and small patches of other tussock grasses such as *Chrysopogon fallax*, *Eriachne benthamii* and *Astrebla pectinata*. Other associated species included *Aristada latifolia*, *Atriplex bunburyana*, *A. codonocarpa*, *Corchorus tridens*, *Dactyloctenium radulans*, *Dichanthium sericeum* var. *humilius*, *Operculina aequisepala*, *Ptilotus murrayi*, *Salsola tragus*, *Trianthema turgidifolia* and *Xerochloa laniflora*. Historic clearing was evident in places, and weeds (mainly *Cenchrus spp.*) were widespread through this habitat, although these were generally not in large infestations. Overall, this vegetation was considered to be in Good condition.

5) AbERAx: *Acacia bivenosa* scattered shrubs to open shrubland over *Eragrostis xerophila* open tussock grassland. This vegetation occurred between the *Acacia bivenosa* and *Triodia wiseana* dominated vegetation, and the *Eragrostis xerophila* dominated vegetation, and probably represents an interzone between the two. This vegetation was considered to be in Good condition, with only scattered weeds.

(Biota Environmental Sciences, 2008).

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 Roebourne Interim Biogeographic Regionalisation for Australia (IBRA) sub-region (GIS Database). The Roebourne sub-region primarily consists of quartenary alluvial plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* over *Triodia pungens* (Hamersley Iron, 2008; CALM, 2002). The climate of the Roebourne sub-region is semi-arid-tropical with summer rain and has significant cyclonic activity (Hamersley Iron, 2008; CALM, 2002).

The application area is located approximately 15km south of the Burrup Peninsula and near to the Dampier Archipelago region (GIS Database) which is a region of high diversity (Department of Environment, Water, Heritage and the Arts, 2008). Over 100 species of birds have been recorded within the Dampier Archipelago region, including both terrestrial and sea and shore birds, some migratory (Department of Environment, Water, Heritage and the Arts, 2008). Many reptiles occur within the region with 32 species known from the Burrup Peninsula and 41 species known from the Dampier Archipelago (Department of Environment, Water, Heritage and the Arts, 2008). In addition the region is high in plant diversity with 393 species of vascular plants, recorded from the Burrup Peninsula, representing 67 families and 184 genera (Department of Environment, Water, Heritage and the Arts, 2008).

Two flora surveys of the application area was carried out by Biota Environmental Sciences in March and April 2008. Within the application area these surveys identified a total of 98 native flora species from 62 genera belonging to 29 families (Biota Environmental Sciences, 2008). Within the application area the plant families with the most species richness are the Grass family (*Poaceae*), Pea family (*Papilionaceae*), Wattle family (*Mimosaceae*), Amaranth family (*Amaranthaceae*), Caesalpinia family (*Caesalpiniaceae*) and the Hibiscus family (*Malvaceae*) (Biota Environmental Sciences, 2008).

The application area shows extensive invasion by weeds (Biota Environmental Sciences, 2008). These species include Kapok Bush (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*), Purpletop Chloris (*Chloris barbata*), Weedy Melon (*Cucumis sp.*), Purslane (*Portulaca oleracea*), Caltrop (*Tribulus terrestris*), Mimosa Bush (*Vachellia farnesiana*) and various planted ornamentals such as, Cotton Palms (*Washingtonia filifera*) and Bougainvillea (*Bougainvillea sp.*) (Biota Environmental Sciences, 2008). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This can in turn lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. Extensive infestations of weeds were recorded within the

application area and the clearing of native vegetation may exacerbate the spread of weeds through these areas. Therefore, it is recommended that should a permit be granted, conditions be imposed on the permit with regards to weed management.

Biota Environmental Sciences (2008) reported that no Rare or Priority flora were recorded during the survey. A Priority Ecological Community (PEC) was identified as occurring within the application area; the Roebourne Plains coastal grasslands (Biota Environmental Sciences, 2008). Hamersley Iron will attempt to minimise impacts on this PEC and where possible to protect the grasslands by erecting fences to prevent cattle from entering the PEC (Hamersley Iron, 2008).

Hamersley Iron (2008) have performed a search of the Western Australian Museums Fauna Database. This search found that up to 149 fauna species may potentially occur within the Dampier and Cape Lambert areas including 25 mammal species, 43 bird species, 4 amphibian species and 77 reptile species (Western Australian Museum, 2008). This would indicate that the area is high in diversity, however, this diversity can be primarily attributed to the complex topography of the Burrup Peninsula and Dampier Archipelago and the consequent diversity of habitats in these areas (Department of Environment and Conservation, 2006). Therefore, the application area is expected to have lower fauna species diversity than indicated above.

The landforms, flora species and fauna habitats in the application area are well represented locally and within the Pilbara region generally (Biota Environmental Sciences, 2008). The application area has suffered from previous disturbance from cattle grazing and other industrial use from nearby industries and therefore, the application area is not expected to represent an area of high diversity within the region. The proposed clearing of 12ha of vegetation is not likely to have any significant impact upon the biological diversity of the region.

Based on the above, the proposed clearing is not likely to be at variance to this Principle. It is recommended that should a permit be granted, a condition be imposed on the permit to require the permit holder to erect fences to exclude cattle access from the PEC along the eastern boundary of the Dampier access road corridor.

Methodology

Biota Environmental Sciences (2008)
CALM (2002)
Department of Environment and Conservation (2006)
Department of Environment, Water, Heritage and the Arts (2008)
Hamersley Iron (2008)
Western Australian Museum (2008)
GIS Database
- Interim Biogeographic Region for Australia (Subregions) (Sub_name)
- Natmap - 250K Series Mapping (Image)

(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

Biota Environmental Sciences (2008) have identified two main fauna habitats within the application area:
1) Stony Hills and Plains: *Acacia bivenosa* scattered shrubs over *Triodia wiseana* or *T. epactia* hummock grassland; and
2) Clayey Plains: *Eragrostis xerophila* open tussock grassland with patches of herbland.

Biota Environmental Sciences have searched databases maintained by the WA Museum and the Department of Environment and Conservation (DEC), for Schedule and Priority fauna within a 50km radius around the Dampier and Cape Lambert areas (Biota Environmental Sciences, 2008). This search has identified 16 fauna species of conservation significance that could potentially occur within the application area based on their known distributions; Northern Quoll (*Dasyurus hallucatus*), Mulgara (*Dasycercus cristicauda*), Banded Hare-wallaby (*Lagostrophus fasciatus fasciatus*), Orange Leaf-nosed Bat (*Rhinonicteris aurantius*), Pilbara Olive Python (*Liasis olivaceus barroni*), Peregrine Falcon (*Falcon peregrinus*), Little North-western Mastiff Bat (*Mormopterus loriae cobourgiana*), a skink (*Lerista quadrivincula*), Spectacled Hare-wallaby (*Lagorchestes conspicillatus leichardti*), Lakeland Downs Mouse (*Leggadina lakedownensis*), Ghost Bat (*Macroderma gigas*), Western Pebble-mound Mouse (*Pseudomys chapmani*), Eastern Curlew (*Numenius madagascariensis*), Australian Bustard (*Ardeotis australis*), Star Finch (*Neochima ruficauda subclarescens*) and the Rainbow Bee-eater (*Merops ornatus*) (Biota Environmental Sciences, 2008).

Biota Environmental Sciences (2008) have performed an EPBC Protected Matters search for the survey area and have listed 20 migratory birds listed under the JAMBA and CAMBA international migratory agreements that could potentially occur within the application area. The following species are likely to be overfly and occasional visitors, rather than using the habitats of the project area regularly; White-bellied Sea-Eagle (*Haliaeetus leucogaster*), Barn Swallow (*Hirundo rustica*), Great Egret (*Ardea alba*), Cattle Egret (*Ardea ibis*), Ruddy Turnstone (*Arenaria interpres*), Oriental Plover (*Charadrius veredus*), Oriental Pratincole (*Glareola maldivarum*), Little Curlew (*Numenius minutus*), Whimbrel (*Numenius phaeops*), Common Greenshank (*Tringa nebularia*), Fork-tailed Swift (*Apus pacificus*), Southern Giant-Petrel (*Macronectes giganteus*), Wedge-tailed Shearwater (*Puffinus pacificus*), Caspian Tern (*Sterna caspia*), Silver Gull (*Larus novaehollandiae*), Osprey (*Pandion haliaetus*), Crested Tern (*Sterna bergii*), Sooty Tern (*Sterna fuscata*) and the Fairy Tern (*Sterna nereis*) (Biota Environmental Sciences, 2008).

The Pilbara Leaf-nosed Bat, Ghost Bat and Little North-western Mastiff Bat may potentially forage over the application area, however, due to a lack of suitable roosting sites, the vegetation of the application area is not considered to represent significant habitat for these species. In addition the application area is not expected to support suitable habitat for the Pilbara Olive Python or the Star Finch due to a lack of free-standing water. The Banded Hare-wallaby is considered to be extinct on the mainland and the Spectacled Hare-wallaby has not been recorded in the Dampier locality since 1979 and therefore, neither of these species would be expected to occur within the application area (Biota Environmental Sciences, 2008). Despite extensive pit-trapping and targeted searches the Skink has not been recorded in the area since its first sighting. Therefore, the vegetation of the application area is not likely to represent significant habitat for this species.

Based on the habitat preferences of the following species, it is not expected that the vegetation of the application area would represent significant habitat for the Northern Quoll, Mulgara, Eastern Curlew or the Western Pebble-mound Mouse. In addition, although the Peregrine Falcon and Rainbow Bee-eater may utilise the application area for feeding, the species are not expected to nest within the application area due to a lack of suitable nesting sites.

The Lakeland Downs Mouse (DEC - Priority 4) is known to occur on sandy soils and cracking clays that support native grasses (DEC, 2006). It is known that this species experiences great fluctuations in population size depending on seasonal factors, reaching plague proportions in good years (DEC, 2006). The Lakeland Downs Mouse has been recorded from three sites in an area adjacent to the application area in similar habitat to that occurring within the application area, that is, tussock grassland of Eragrostis xerophila (Biota Environmental Sciences, 2008). Based on the above, this species could occur within the application area. The vegetation within the application area is well represented locally and within the Pilbara region generally, therefore, it is not likely that the vegetation within the application area is significant habitat for this species, in a regional context.

The Australian Bustard (DEC - Priority 4) is generally found in areas of tussock grassland, Triodia hummock grassland, grassy woodland and low shrublands (Department of Environment and Climate Change, 2005). The species is known to breed on bare ground on low sandy ridges or stony rises and is dispersive with widespread movements over long distances (Department of Environment and Climate Change, 2005a). This species has been recorded within habitats near the application area and could therefore occur within the application area, however, given the widespread distribution of this species, the vegetation within the application area is not likely to be significant habitat for this species.

The habitat types found within the application area are well represented locally and within the Pilbara region generally (Biota Environmental Sciences, 2008). In addition the application area is a long, narrow corridor located immediately adjacent to existing disturbance. Therefore, the vegetation of the application area is not likely to represent significant habitat for the fauna species found within the application area and surrounding regions.

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

Methodology Biota Environmental Sciences (2008)
DEC (2006)
Department of Environment and Climate Change (2005)

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

Comments

Proposal is not likely to be at variance to this Principle

According to available databases, no Declared Rare or Priority flora species occur within the application area (GIS Database). The nearest known Priority flora are seven populations of *Terminalia suprantifolia* (Priority 3), six of which occur approximately 5km north of the application area and one population which occurs approximately 30km south of the application area (GIS Database). DEC databases have no other records of Declared Rare or Priority flora within a 50km radius of the application area (GIS Database).

During previous surveys of surrounding areas, three Priority flora species have been recorded in areas adjacent to the application area; *Goodenia nuda* (Priority 3) is an erect herb to 50cm that prefers red loamy soils, red sands, red clays and can also be found in river sand in dry scoured river beds (Sage and Pigott, 2003). *Themeda sp.* Hamersley Station (Priority 3) is a perennial tussock grass restricted to heavy clay soils (Biota Environmental Sciences, 2008) and *Hibiscus brachysiphonius* (Priority 3) is a perennial herb to low shrub which has a wide distribution and is largely restricted to clay substrates (Biota Environmental Sciences, 2008). Clayey soil types occur within the application area and therefore, all these species could potentially occur within the application area. However none of these species have yet been recorded within the application area (Biota Environmental Sciences, 2008).

Flora surveys were conducted over the application area by Biota Environmental Sciences in March and April 2008. No Declared Rare or Priority flora were recorded within the application area (Biota Environmental Sciences, 2008).

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

Methodology Biota Environmental Sciences (2008)
Sage and Pigott (2003)
GIS Database
- Declared Rare and Priority flora
- Threatened Plant Communities

(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 may be at variance to this Principle

There are no known Threatened Ecological Communities (TEC's) within the application area (GIS Database). There is one Priority Ecological Community (PEC) within the application area; the Roebourne Plains Coastal Grasslands (Biota Environmental Sciences, 2008).

Within the application area the Roebourne Plains Coastal Grasslands consist primarily of vegetation type 4: ERAx - *Eragrostis xerophila* tussock grassland with patches of herbs, and vegetation type 5: AbERAX - *Acacia bivenosa* scattered shrubs to open shrubland over *Eragrostis xerophila* open tussock grassland (Biota Environmental Sciences, 2008). The section of this PEC that falls within the application area is generally in a Good condition with some weed infestation.

Hamersley Iron will endeavour to protect the PEC in areas outside of the application area. For example, following consultation with the Department of Environment and Conservation, Hamersley Iron have altered the design of the permanent access road to the site in order to negate potential surface hydrological impacts that the development could have caused to the PEC (Hamersley Iron, 2008).

The eastern side of the Dampier Power Station access road corridor will be fenced along its boundary to protect the area of high quality Roebourne Plains coastal grassland from any inadvertent clearing and to protect from cattle grazing (Hamersley Iron, 2008).

Based on the above, the proposed clearing will impact upon the PEC. However, if managed correctly, and if the measures mentioned above are carried out, these impacts could be significantly reduced. Furthermore, reducing cattle access to the PEC could potentially improve the quality of the PEC in areas outside of the application area.

Based on the above, the proposal may be at variance to this Principle. It is recommended that should a permit be granted, conditions be imposed on the permit to require the permit holder to rehabilitate areas that will not remain open for structures or infrastructure, and to erect fences to exclude cattle access from the PEC along the eastern boundary of the Dampier access road corridor.

Methodology Biota Environmental Sciences (2008)
Hamersley Iron (2008)
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 application area falls within the IBRA Pilbara Bioregion. Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists in this Bioregion (see table below). The vegetation in the application area is recorded as Beard Vegetation Association 589: Mosaic: Short bunch grassland - savanna / grass plain / Hummock grasslands, grass steppe; soft spinifex (GIS Database; Shepherd et al., 2001). According to Shepherd et al., (2001) approximately 100% of this vegetation association remains within the Bioregion (see table below).

Therefore the vegetation within the application area is not a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
589	809,764	809,647	~99.9	Least Concern	1.6
Beard veg assoc. – Bioregion					
589	730,724	730,690	~100	Least Concern	1.8

* Shepherd et al. (2001) updated 2005

** Department of Natural Resources and Environment

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

Methodology

Shepherd et al. (2001) updated 2005
Department of Natural Resources and Environment (2002)
GIS Database
- Pre-European Vegetation

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

Comments

The proposal is for the construction and maintenance of an access road and associated infrastructure. The application area is a long, narrow corridor immediately adjacent to an area of disturbance. The application area is located in a semi-desert-tropical region, with an annual average rainfall of approximately 300mm falling mainly during the summer months, and an annual evaporation rate of approximately 2,500mm (ANRA, 2007). This would suggest that surface water flows following significant rain events would be relatively short-lived.

No watercourses or wetlands lie within the application area. The application area is located approximately 150m from two perennial lakes which are possibly the result of historical quarrying activity, and approximately 100m from a coastal salt flat; an area of inundation. The coastal salt flat is highly modified due to salt works and a large proportion of it consists of drains and evaporator ponds (GIS Database). None of the vegetation units identified within the application area would classify as riparian vegetation (Biota Environmental Sciences, 2008). Hence, the proposed clearing is not likely to have a significant impact on this wetland.

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

Methodology

ANRA (2007)
GIS Database
- Hydrography - linear
- Natmap - 250k Series Mapping - GA 08/03 (Image)

(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 is broadly mapped as falling within the Cheerawarra and Horseflat Land Systems (Hamersley Iron, 2008; GIS Database).

The Cheerawarra Land System consists of sandy coastal plains and saline clay plains supporting hard spinifex grasslands and minor tussock grassland (Van Vreeswyk et al., 2004). This system is considered to be highly susceptible to wind erosion if the vegetative cover is depleted (Van Vreeswyk et al., 2004). The section of the application area mapped as this land system primarily comprises the sandplains landform unit, which is described as supporting hummock grasslands of soft spinifex (Triodia pungens or T. epactia) with isolated low shrubs, or less frequently hard spinifex (Triodia wiseana and other species) hummock grasslands (Van Vreeswyk et al., 2004; Hamersley Iron, 2008).

The Horseflat Land System consists of gilgaied clay plains supporting tussock grasslands and minor snakewood shrublands (Van Vreeswyk et al., 2004). The non-gilgaied plains, alluvial plains and dissected slopes of this system are moderately to highly susceptible to erosion if vegetation is depleted, however, other flat units with clay soils and stony mantles are inherently resistant (Van Vreeswyk et al., 2004).

Hamersley Iron (2008) report that the application area primarily consists of both gilgaied and non-gilgaied plains. Gilgaied plains consist of self-mulching cracking clays supporting primarily tussock grasslands dominated by Roebourne Plains Grass (*Eragrostis xerophila*), but also other grasses such as Ribbon Grass (*Chrysopogon fallax*) and Swamp Grass (*Eriachne benthamii*) (Van Vreeswyk et al., 2004). Non-gilgaied plains consist of deep red/brown non-cracking clays supporting very scattered to scattered shrublands of Acacia xiphophila with tussock grasses, mostly *Eragrostis xerophila* (Van Vreeswyk et al, 2004). Non-gilgaied plains are moderately to highly susceptible to erosion and therefore, based on the above, the application area may be susceptible to erosion following disturbance to the soil profile.

The application area contains areas where the soil profile has a moderate to low risk of Acid Sulfate Soils (ASS) occurring within less than 3m of the natural soil surface (Western Australian Planning Commission, 2003). The amount of area to be cleared that is likely to fall within an area at risk of developing ASS would be relatively small. The clearing of vegetation is not likely to have a significant impact upon ASS however, for areas at risk of developing ASS, careful management is still required to prevent acid activation. In addition, the application area has already been subject to considerable historical ground disturbance and therefore, the clearing of 12ha of vegetation is not expected to increase the chance of ASS occurring.

The application area may be susceptible to erosion following disturbance to the soil profile and the soil erosion risk within the application area will be highest if the local surface hydrology is altered (DAFWA, 2008).

Based on the above, the proposed clearing may be at variance to this Principle. However, the application area is located in an area of low rainfall and high evaporation and therefore, the presence of surface water resulting from significant rain events is relatively short-lived (ANRA, 2007). In addition, the application area has been subject to considerable ground disturbance from historical activities (Biota Environmental Sciences, 2008) which was confirmed by a site visit by the assessor. Therefore, it is not expected that the clearing of 12ha of native vegetation for the purposes of road construction will significantly increase soil erosion.

Methodology

ANRA (2007)
Biota Environmental Sciences (2008)
DAFWA (2008)
Hamersley Iron (2008)
Van Vreeswyk et al. (2004)
Western Australian Planning Commission (2003)
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 closest conservation areas are a series of (mostly unnamed) A and C Class reserves on islands located approximately 15km north of the application area (GIS Database). The nearest land based conservation area is the Millstream-Chichester National Park located approximately 50km south-east of the application area (GIS Database).

Given the distance of the application area from any conservation areas, the removal of 12ha of native vegetation is not expected to have an impact on the environmental values of these conservation areas.

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

Methodology

GIS Database
- CALM managed land 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

The majority of the western Pilbara region, including the application area, has limited surface freshwater (Department of Environment and Conservation, 2006). Freshwater flows are highly variable, characterised by short periods of very high flow that coincide with major rainfall events usually associated with tropical cyclone activity (Department of Environment and Conservation, 2006). In addition, due to the low rainfall and high evaporation rate of the region, the presence of surface water resulting from significant rain events is relatively short-lived (ANRA, 2007).

Within the application area and surrounding region there is little readily accessible groundwater. Hence, industry in the region is increasingly dependant on desalinated seawater (Department of Environment and Conservation, 2006). Therefore, the proposed clearing is not likely to have a significant impact on surface or ground water quality, or groundwater levels.

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

Methodology

ANRA (2007)
Department of Environment and Conservation (2006)

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

Comments

Proposal is not likely to be at variance to this Principle

The application area experiences an arid, tropical climate with a wet summer season and dry winter season (ANRA, 2007). Most rainfall is received during the wet season, but falls can be variable (ANRA, 2007). Rain can either be sporadic (local thunderstorms) or heavy and intense (cyclonic events). It is likely that during times of intense or sporadic rainfall, flooding of the low-lying clayey habitat in the application area would occur (Biota Environmental Sciences, 2008). However the clearing of 12ha of native vegetation, in comparison to the size of the Port Hedland Coastal catchment area (approximately 774,302ha; GIS Database), is not likely to lead to an increase in the incidence or intensity of flooding.

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

Methodology

ANRA (2007)
Biota Environmental Sciences (2008)
GIS Database
- Hydrographic Catchments - catchments

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

Comments

There is one native title claim (WC99/014) over the area under application. This claim has 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*.

There are two Aboriginal Sites of Significance within the vicinity of the application area (GIS Database). Hamersley Iron (2008) have undertaken a heritage survey of the application area and will avoid any Sites of Significance. It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks permit, or any other licences or approvals are required for the proposed works.

There were no public submissions received during the public comments period.

Methodology

Hamersley Iron (2008)
GIS Database
- Aboriginal Sites of Significance
- Native Title Claims

4. Assessor's comments

Comment

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

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

5. References

ANRA (2007). Australian Natural Resources Atlas: Rangelands overview: Pilbara [online]. Available from: http://www.anra.gov.au/tropics/rangelands/overview/wa/ibra-pil.html. Accessed 23 July, 2008.

Biota Environmental Sciences (2008). Pilbara Power System Upgrade Additional Areas: Native Vegetation Clearing Permit Report. Pilbara Iron, Western Australia.

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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.
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.