



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3210/1
Permit type: Purpose Permit

1.2. Proponent details

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

1.3. Property details

Property: *Iron Ore (Hamersley Range) Agreement Act 1963*,
Mineral Lease 4SA (AML70/4)
Local Government Area: Shire of Ashburton
Colloquial name: Marra Mamba HBS Dump Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
4.7		Mechanical Removal	Access Track, Exploration Drilling and Waste Dump Extension

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
<p>Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia. Two Beard Vegetation Associations have been mapped within the application area (GIS Database).</p> <p>82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i>.</p> <p>567: Hummock grasslands, shrub steppe; mulga and kanji over soft spinifex and <i>T. basedowii</i> (Kendrick, 2001).</p> <p>Keith Lindbeck and Associates (2007) conducted a vegetation survey over the application areas and surrounding vegetation between November 2006 and March 2007. Seven vegetation types have been identified as occurring within the application areas (Keith Lindbeck and Associates, 2007). These are:</p> <p>1) Hilltops with Gently Rounded Slopes (H1-1): <i>Eucalyptus leucophloia</i> and <i>E. gamophylla</i> scattered low trees over <i>Acacia hamersleyensis</i> and <i>A. bivenosa</i> open shrubland over <i>Triodia wiseana</i> hummock grassland.</p> <p>2) Very Steep Serrated Escarpments (H2-1): <i>Eucalyptus leucophloia</i> and <i>Acacia pruiocarpa</i> low woodland over <i>Dodonaea pchyneura</i> open heath over <i>Triodia wiseana</i> and <i>T. wiseana</i> hummock grassland with patches of <i>Themeda</i> sp. Mt Barricade tussock grassland.</p> <p>3) Steep Colluvial Upper Slopes (H3): Open Shrubland over <i>Triodia wiseana</i> hummock grassland with patches of <i>Themeda</i> sp. Mt Barricade closed tussock grasslands. Sub-unit: <i>Eucalyptus leucophloia</i> low open forest (hillside drainage lines).</p> <p>4) Moderately Inclined Colluvial Mid and Lower Slopes (H4): <i>Corymbia hamersleyana</i> scattered low trees over high shrubland over <i>Triodia wiseana</i> hummock grassland.</p> <p>5) Smooth Rocky Slopes (synclinal surface) (H5): <i>Eucalyptus leucophloia</i> and <i>Corymbia hamersleyana</i> low open woodland over high shrubland over <i>Triodia wiseana</i> hummock grassland with open tussock grassland.</p>	<p>Hamersley Iron Pty Ltd has applied to clear up to 4.7 hectares within two application areas which total approximately 16 hectares. The proposal is situated within the Tom Price Iron Ore Mine on Mineral Lease 4SA (AML70/4), located approximately three kilometres south of Tom Price (GIS Database). Clearing will be required for: Maintaining and establishing tracks; Clearing of drill lines and access tracks; Creation of 6 drill pads; Drilling of 6 holes; and North-east extension of the Marra Mamba HBS Dump.</p> <p>Vegetation will be cleared by a bulldozer with its blade down, and vegetation and topsoil will be collected and stockpiled for future rehabilitation (Keith Lindbeck and Associates, 2007).</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).</p>	<p>The vegetation descriptions were derived from descriptions by Keith Lindbeck and Associates (2007).</p>

6) Steep Rocky Slopes (synclinal breakaway or hanging wall) (H6): Scattered low trees over open shrubland over open spinifex hummock grassland and open tussock grassland.

7) Undulating Rocky Hills (H8-1): *Acacia aneura* and *A. pruinocarpa* low open woodland over open shrubland over *Triodia wiseama* hummock grassland.

3. Assessment of application against clearing principles

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

Comments **Proposal may be at variance to this Principle**

The application areas occur within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) (GIS Database). This subregion is characterised by sedimentary ranges and plateaux, dissected by gorges (basalt, shale and dolerite) (Kendrick, 2001). At a broad scale, vegetation can be described as Mulga low woodlands over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (Kendrick, 2001).

The application areas form part of the Hamersley Ranges and are located on a banded ironstone formation ridge colloquially known as the Marra Mamba Ridge. This is separated into three sections described as: Marra Mamba West Ridge; Marra Mamba Central Ridge and the Marra Mamba East Ridge (adjoining an upland platform in the north-east) (Keith Lindbeck and Associates, 2007). The Marra Mamba Ridge is located immediately south of the existing Tom Price Iron Ore Mine (Keith Lindbeck and Associates, 2007).

A vegetation survey of the application areas and the surrounding vegetation identified 295 native flora species belonging to 121 genera from 49 families (Keith Lindbeck and Associates, 2007). This constitutes a higher level of biological diversity in comparison to other vegetation and flora surveys undertaken in the bioregion. It is acknowledged that the Keith Lindbeck and Associates (2007) flora and vegetation survey was conducted over a four year period, including the unusually wet year of 2006 where more than 700 millimetres of rainfall was recorded (Keith Lindbeck and Associates, 2007). Such favourable conditions can most likely account for the high number of plant taxa recorded. The recent fire history over much of the survey area may also have resulted in a species composition that reflects the early years of the regeneration cycle. Keith Lindbeck and Associates (2007) also point out that the floristic assemblages at Tom Price are generally different to other study areas due to physiographic differences.

The application areas are known to contain two Priority Flora species: *Indigofera ixocarpa* (P2); and *Sida* sp. Barlee Range (P3) (Keith Lindbeck and Associates, 2007). The presence of Priority Flora within the application area increases its biodiversity significance; however these species are not confined to the vegetation survey area or immediate vicinity, and have populations at other locations. It is therefore considered unlikely that the proposed clearing will impact on the conservation values of any of these species. Some species may even increase as a result of disturbances, such as the observed response of *Indigofera ixocarpa* to fire.

Five introduced flora species were recorded within the application area (Keith Lindbeck and Associates, 2007). These were: *Cenchrus ciliaris* (Buffel Grass); *Acetosa vesicaria* (Ruby Dock); *Bidens Bipinnata* (Bipinnate Beggars Tick); *Malvastrum americanum* (Spiked Malvastrum); and *Datura leichhardtii* (Native Thornapple). Apart from three localised alluvial areas which were infested with Buffel grass, there were no major weed infestations (Keith Lindbeck and Associates, 2007). Care must be taken to ensure that the proposed clearing activities do not spread or introduce the above listed weed species to non infested areas. Should the permit be granted, it is recommended that appropriate conditions be imposed on the permit for the purpose of weed management.

From a fauna perspective, no detailed surveys have been undertaken to measure the species richness of the application areas. It is acknowledged that the Pilbara bioregion is known to support a diversity of arid zone reptiles. However, based on an assessment of fauna habitat it is not likely that the area applied to clear would support a higher level of fauna species diversity than any other area in the Hamersley Ranges (GIS Database; Keith Lindbeck and Associates, 2007).

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

Methodology Keith Lindbeck and Associates (2007)
Kendrick (2001)
GIS Database:
-Interim Biogeographic Regionalisation of Australia
-Interim Biogeographic Regionalisation of Australia (Subregions)
-Mount Lionel 50cm Orthomosaic

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

Comments Proposal is not likely to be at variance to this Principle

The assessing officer has conducted a search of the Western Australian Museum's online fauna database, centred on the coordinate 22°45'15"S, 117°45'12"E, with a radius of 40 kilometres. This search identified seven amphibian, 51 avian, 20 mammalian and 69 reptilian species (Western Australian Museum, 2009). Of these, the following species of conservation significance have previously been recorded within the search area:

- *Amytornis striatus* subsp. *striatus* (Striated Grasswren) listed DEC Priority Four;
- *Ardeotis australis* (Australian Bustard) listed DEC Priority Four;
- *Falco peregrinus* subsp. *macropus* (Peregrine Falcon) Schedule Four (Specially Protected Fauna) of the Wildlife Conservation (Specially Protected Fauna) Notice 2008(2);
- *Leggadina lakedownensis* (Short-tailed Mouse) listed DEC Priority Four;
- *Pseudomys chapmani* (Western Pebble-mound Mouse) listed DEC Priority Four; and
- *Liasis olivaceus* subsp. *barroni* (Pilbara Olive Python) Schedule One (Fauna that is rare or is likely to become extinct) of the Wildlife Conservation (Specially Protected Fauna) Notice 2008(2); listed as 'Vulnerable' under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999;

Keith Lindbeck and Associates (2007) conducted a desktop search of the DEC's Threatened Fauna Database and the Department of Environment and Water Resources' "Protected Matters Search Tool" for Environment Protection and Biodiversity Conservation (EPBC) Act 1999, listings. In addition to those species of conservation significance listed above, this search identified the following species within the search area:

- *Dasyurus hallucatus* (Northern Quoll) Schedule One (Fauna that is rare or is likely to become extinct) of the Wildlife Conservation (Specially Protected Fauna) Notice 2008(2); listed as 'Endangered' under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999;
- *Rhinonicteris aurantius* (Pilbara Leaf-nosed Bat) Schedule One (Fauna that is rare or is likely to become extinct) of the Wildlife Conservation (Specially Protected Fauna) Notice 2008(2); listed as 'Vulnerable' under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999;
- *Merops ornatus* (Rainbow Bee-eater) (Migratory species under the EPBC act, 1996).

The search also identified a range of migratory marine and wetland bird species. However, it is unlikely that the proposed clearing will impact on these migratory species (Keith Lindbeck and Associates, 2007).

Of the 50 vegetation types identified in the vegetation survey (including the seven identified within the application areas), none were considered as being restricted to the survey area (Keith Lindbeck and Associates, 2007). There were no unique, restricted, or fauna specific habitat types observed during the survey that are not well represented elsewhere throughout the Pilbara region (Keith Lindbeck and Associates, 2007). Although it has been noted that some Schedule or Priority fauna species may utilise these habitats, neither the landforms nor vegetation types represent 'core habitat' for any of these species. As the size of the proposed clearing is relatively small, it is unlikely to result in a significant impact on fauna or the availability of fauna habitat in the local area or region.

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

Methodology Keith Lindbeck and Associates (2007)
Western Australian Museum (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

There are no known Declared Rare Flora (DRF) species within the application areas (GIS Database; Keith Lindbeck and Associates, 2007). The DRF species *Lepidium catapycnon* does occur at the Tom Price Iron Ore Mine, including one population on a steep hillside near the Tom Price Minesite Mining Operations Centre and another north of the tailings storage facility (Keith Lindbeck and Associates, 2007). No other populations of DRF have been found at the Tom Price Iron Ore Mine or its surrounds despite a massive flora survey effort by Pilbara Iron botanists over a four year period between 2003 - 2006 (Keith Lindbeck and Associates, 2007).

According to the Pilbara Iron Declared Rare and Priority Flora Database, with updates from the Western Australian Herbarium (1998-2009), six Priority Flora species have previously been recorded within the Tom Price Iron Ore Mine lease area. These are: *Dampiera anonyma* (P3); *Eremophila magnifica* subsp. *magnifica* ms (P4); *Eremophila magnifica* subsp. *velutina* ms (P3); *Indigofera ixocarpa* (P2); *Olearia mucronata* (P3); and *Sida* sp. Barlee Range (P3).

Of the above listed Priority Flora species, the following were recorded by Keith Lindbeck and Associates (2007) within the application areas; *Indigofera ixocarpa* and *Sida* sp. Barlee Range.

Indigofera ixocarpa has previously been recorded from 63 sites (21 sites in and immediately adjacent to the application area) within the vegetation survey area (Keith Lindbeck and Associates, 2007). It has a distribution occurring within a 30 to 40 kilometre radius of Tom Price and another population between Nullagine and Marble

Bar. This species seems to favour disturbed rocky ironstone slopes that have recently been burnt (Keith Lindbeck and Associates, 2007). Approximately 2900 plants of *Indigofera ixocarpa* have previously been recorded within the vegetation survey area (Keith Lindbeck and Associates, 2007). Based on the flora and vegetation survey conducted by Keith Lindbeck and Associates (2007), this clearing will result in the removal of 100 individual plants of *Indigofera ixocarpa*. Given that this would be less than 3.5% of the Tom Price population being removed, and with another population between Nullagine and Marble Bar, it is unlikely that this clearing proposal will significantly threaten *Indigofera ixocarpa*.

Sida sp. Barlee Range is known to occur over a 220 kilometre range in an east - west direction and 250 kilometres from Turee Creek to Hamersley Station (Keith Lindbeck and Associates, 2007). This species has been recorded on previous Rio Tinto surveys in the Channar, Turee Syncline, Brockman, Western Turner Syncline, Koodaideri and Rhodes Ridge area (Rio Tinto, 2009). The amount of individual plants within these populations total in the hundreds (Rio Tinto, 2009). As this species is not restricted to the Tom Price Mine locality, it is unlikely the proposed clearing in the two request areas will impact on the conservation significance of this species.

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

Methodology Western Australian Herbarium (1998-2009)
Keith Lindbeck and Associates (2007)
Rio Tinto (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 or in the vicinity of the application areas (GIS Database; Keith Lindbeck and Associates, 2007). The nearest known TEC is located approximately 36 kilometres north, north-east of the application areas (GIS Database; Keith Lindbeck and Associates, 2007). Given the distance between the proposal and the nearest known TEC, the proposed clearing is not likely to impact on the conservation of the TEC.

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

Methodology Keith Lindbeck and Associates (2007)
GIS Database:
-Threatened Ecological Communities
-Clearing Regulations - Environmentally Sensitive Areas

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

Comments Proposal is not at variance to this Principle

The application areas are located within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). Shepherd (2007) reports that approximately 99.95% of the pre-European vegetation still exist in the Pilbara bioregion. The vegetation associations in the application areas are broadly mapped as Beard Vegetation Associations 82: Hummock grasslands; low tree steppe; snappy gum over *Triodia wiseana*; and 567: Hummock grasslands, shrub steppe; mulga and kanji over soft spinifex and *T. basedowii* (GIS Database; Kendrick, 2001). According to Shepherd (2007), there is approximately 100% of these vegetation associations remaining (see table below).

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

Although several large scale mining operations are located within a 50 kilometre radius of the application areas, the Pilbara bioregion remains largely uncleared (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,188	17,794,647	~99.95	Least Concern	~6.32
Beard veg assoc. - State					
82	2,565,901	2,565,901	~100	Least Concern	~10.2
567	777,507	777,507	100	Least Concern	~22.3
Beard veg assoc. - Bioregion					
82	2,563,583	2,563,583	~100	Least Concern	~10.2
567	776,824	776,824	~100	Least Concern	~22.4

* Shepherd (2007)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Kendrick (2001)
Shepherd (2007)
GIS Database:
-Interim Biogeographic Regionalisation of Australia
-Pre European vegetation
-Rangeland Land System Mapping

(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 areas applied to be cleared (GIS Database; Keith Lindbeck and Associates, 2007). Four minor ephemeral drainage lines traverse the Marra Mamba HBS dump site application area, but are minor systems, while none occur within the North Deposit site application area. Vegetation mapping of the application areas by Keith Lindbeck and Associates (2007) indicates that the native vegetation proposed to be cleared is not riparian vegetation.

Based on the above the proposed clearing is at variance to this Principle. However, the proposed clearing is unlikely to result in any significant impact to any watercourse or wetland. The vegetation types present within the application areas are common throughout the Tom Price region (Keith Lindbeck and Associates (2007). These vegetation communities do not demonstrate high environmental or conservation values, and are widely represented in the local area and region (Keith Lindbeck and Associates, 2007).

Methodology Bureau of Meteorology (2009)
Keith Lindbeck and Associates (2007)
Payne et al. (1988)
GIS Database:
-Hydrography, Lakes (Course Scale, 1m GA)
-Hydrography, Linear (Hyd_Type)
-Rivers

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

Comments Proposal is not likely to be at variance to this Principle

Land system mapping by the Department of Agriculture Western Australia shows that the application areas fall largely within the Newman land system, with a small area being mapped as the Rocklea land system (GIS Database).

The Newman land system is described as rugged jaspilite plateaux, ridges and mountains with hard spinifex (Payne et al., 1988). The Newman land system is comprised of three land units (Payne et al., 1988), which are:

- Plateaux, ridges, mountains and hills;
- Lower slopes; and

- Narrow drainage floors with channels.

The Rocklea land system is described as basalt hills and restricted stony plains with hard spinifex (Payne et al., 1988). The Rocklea land system is comprised of five land units (Payne et al., 1988) which are:

- Basalt hills, ridges and upper slopes;
- Lower slopes and stony interfluves;
- Gilgai plains;
- Incised upper drainage lines; and
- Drainage floors and channels.

An analysis of the land units described by Keith Lindbrook and Associates (2007), and aerial photography (GIS Database), reveals the application areas are most likely to fall within the 'plateaux, ridges, mountains and hills' and 'lower slopes' land units for the Newman land system, and 'basalt hills, ridges and upper slopes', 'lower slopes and stony interfluves' and 'incised upper drainage lines' land units for the Rocklea land system.

The landforms within the application areas are extremely erosion resistant being made up of bedded ironstone and chert formations with colluvial scree slopes and stony mantled plains (Keith Lindbrook and Associates, 2007). These landscapes are at the end point of millions of years of erosion and withstand massive rainfall events on an annual basis without any appreciable increase in land degradation or erosion. Also, given that vegetation is removed on a regular basis through fire without any apparent increase in erosion, it is unlikely that the removal of vegetation will by itself exacerbate land degradation (Keith Lindbrook and Associates, 2007).

A waste dump is proposed to occupy the south-east application area. It is acknowledged that land degradation through alluvial sedimentation could occur after construction of the waste dump (Keith Lindbrook and Associates, 2007). Pilbara Iron has developed effective means to rehabilitate waste dump outcrops as erosion resistant surfaces. The physical characteristics of the waste rock are conducive to the development of stable non-erosive waste rock landforms covered with a spinifex ecosystem (Keith Lindbrook and Associates, 2007).

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

Methodology Keith Lindbrook and Associates (2007)
Payne et al. (1988)
GIS Database:
-Mount Lionel 50cm Orthomosaic
-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 areas are not situated within a Department of Environment and Conservation managed conservation area (GIS Database). The nearest conservation estate is Karijini National Park, which is situated approximately 11.5 kilometres east of the application areas (GIS Database). The area between the application areas and Karijini National Park is uncleared pastoral rangeland that acts as a buffer. Based on the distance between the proposal and the nearest conservation area, the proposed clearing is 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 water bodies or watercourses within the application area (GIS Database). A number of minor ephemeral creeklines are present; however these are minor systems that only flow after heavy rainfall (GIS Database; Keith Lindbeck and Associates, 2007). The closest major river system is the Hardey River, approximately five kilometres north-west of the North Deposit Western Ridge application area (GIS Database). Due to the small size of the application areas, and the presence of surface water only being present following heavy rainfall, the proposed clearing is not likely to impact on the quality of any surface water.

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The closest PDWSA is the Millstream Water Reserve located approximately 45 kilometres north of the North Deposit Western Ridge. Given the distance between the PDWSA and the application areas, it is not likely the proposal will have an impact on the quality of the PDWSA.

The proposed clearing is located within the Hamersley Groundwater Province (GIS Database). The

groundwater salinity within the application area is approximately 500 - 1000 milligrams/litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. Given the size of the area to be cleared (4.7 hectares) compared to the size of the Hamersley Groundwater Province (approximately 10,166,832 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

Surface and groundwaters within the Tom Price mine operations are controlled to prevent both operational and environmental impacts from occurring (Keith Lindbeck and Associates, 2007). Surface flows are managed through engineered drainage systems with sediment traps installed prior to outflow points (Keith Lindbeck and Associates, 2007). Groundwater is regulated through dewatering (Keith Lindbeck and Associates, 2007). Under the Department of Environment and Conservation licence to operate, surface and groundwaters are monitored with results reported to the Department of Environment and Conservation and Department of Water (DoW) on an annual basis.

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

Methodology Bureau of Meteorology (2009)
Keith Lindbeck and Associates (2007)
GIS Database:
-Groundwater - Provinces
-Groundwater Salinity, Statewide
-Hydrography, Linear
-Public Drinking Water Source Areas (PDWSA's)

(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 (GIS Database). The size of the area to be cleared (4.7 hectares) in relation to the size of the Ashburton River catchment area (7,877,743 hectares) is not likely to lead to an increase in flood height or duration (GIS Database).

Flood events are naturally associated with the Pilbara bioregion following cyclonic downpours, and the broad valleys and drainage systems have evolved in response (Keith Lindbrook and Associates, 2007). Most of the proposed clearing area is located in an elevated environment, approximately 100 metres vertical height above the surrounding plain (Keith Lindbeck and Associates, 2007). Precipitation falling in this area naturally runs off into the surrounding valleys and plains. The proposed clearing (and subsequent waste dump, access track and exploration activities) will alter natural surface water flow patterns; however it is not likely that the incidence or intensity of natural flood events will be increased.

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

Methodology Keith Lindbeck and Associates (2007)
GIS Database:
-Hydrographic Catchments - Catchments

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

Comments

There is one native title claim over the area under application: WC97/089. This claim has been registered with the National Native Title Tribunal on behalf of the claimant groups. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (ie. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There is one known Aboriginal site of significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process. Hamersley Iron Pty Ltd has advised that a heritage survey has been undertaken and no sites have been identified.

No submissions were received raising objections to this proposal.

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

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

4. Assessor's comments

Comment

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

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

5. References

- Bureau of Meteorology (2009) Climate Statistics for Australian Locations - Tom Price. Available online from: http://www.bom.gov.au/climate/averages/tables/cw_005072.shtml Accessed 28/08/2009.
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- Keith Lindbeck and Associates (2007) Hamersley Iron Pty Ltd Botanical Survey Report - 3210/1 Marra Mamba HBS Dump Project (Purpose Permit). Rio Tinto, Western Australia.
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- Shepherd, D.P. (2007). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- Western Australian Herbarium (2009) FloraBase - The Western Australian Flora. Western Australian Herbarium - Department of Environment and Conservation. Available online from: <http://florabase.dec.wa.gov.au/> Accessed 28/08/2009.
- Western Australian Museum (2009) NatureMap - Mapping Western Australia's Biodiversity - Department of Environment and Conservation. Available online from: <http://naturemap.dec.wa.gov.au/default.aspx> Accessed 28/08/2009.

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.