



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4716/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Iron Ore (Yandicoogina) Agreement Act 1996, Mining Lease 274SA (AM 70/274)
Colloquial name: Yandi Junction HV Powerline Upgrade

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
25		Mechanical Removal	Utilities and Associated Infrastructure

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 5 January 2012

2. Background

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation in a regional context. Two Beard vegetation associations have been mapped within the application area (GIS Database; Shepherd, 2009):

Beard vegetation association 29: Sparse low woodland; mulga, discontinuous in scattered groups;

and

Beard vegetation association 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wieseana*.

Biological surveys conducted by Biota Environmental Sciences and Mattiske and Associates provide extensive flora, vegetation and fauna data for the application area. Information from these studies forms the basis of the assessment. A total of 31 vegetation associations have been described from within the application area (Biota, 2010a; Biota, 2010b; Biota, 2004a; Biota 2004b; Mattiske, 1995):

Major and Minor Creeklines – EcEvMaMg – *Eucalyptus camaldulensis*, *E. victrix* woodland over *Melaleuca argentea*, *M. glomerata* low open woodland
Major and Minor Creeklines – EvAtuGwRITeCYPERIt – *Eucalyptus victrix* scattered low trees over *Acacia tumida* var. *pilbarensis*, *Grevillea wickhamii* subsp. *hispidula*, *Rulingia luteiflora* tall shrubland over *Tephrosia rosea* low shrubland over *Cymbopogon procerus*, *Eriachne tenuiculmis* very open tussock grassland
Major and Minor Creeklines – 2a – Woodland of *Acacia aneura* – *Acacia pruinocarpa*
Major and Minor Creeklines – 2b – Woodland of *Eucalyptus xerothermica* – *Acacia aneura*
Major and Minor Creeklines – 2c – Woodland of *Eucalyptus xerothermica* – *Acacia aneura* – *Acacia citrinoviridis*
Major and Minor Creeklines – 2d – Woodland of *Eucalyptus camaldulensis*
Major and Minor Creeklines – 3a – Low shrubland of mixed *Acacia* species
Major and Minor Creeklines – 3b – *Eucalyptus leucophloia*, *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis*, *A. bivenosa*, *A. ancistrocarpa*, *Petalostylis labicheoides*, *Grevillea wickhamii* tall open shrubland over *Acacia adoxa* var. *adoxo*, *A. hilliana* low open shrubland over *Triodia* sp. mid-dense hummock grassland with *Themeda triandra* and *Paraneurachne muelleri* very open tussock grassland; stony minor crests
Major and Minor Creeklines – 3c – *Corymbia hamersleyana* open woodland over *Acacia tumida* var. *pilbarensis*, *A. dictyophleba*, *A. pyrifolia*, *Gossypium robinsonii*, *Petalostylis labicheoides*, *Grevillea wickhamii*, *Rulingia luteiflora*, *Eremophila longifolia* mixed shrubland to open shrubland over *Triodia pungens* open hummock grassland and *Themeda triandra* tussock grassland; secondary creeks
Major and Minor Creeklines – 3d – *Eucalyptus camaldulensis* and *E. victrix* scattered trees over scattered mixed shrubs, sedges, tussock grasses and *Triodia pungens*; major creek channel
Major and Minor Creeklines – 3e – *Eucalyptus victrix* woodland over *Acacia coriacea* subsp. *pendens*, *Atalaya hemiglauc*a and *Melaleuca glomerata* tall open shrubland over *Triodia pungens* open hummock grassland over *Cymbopogon dependens*, *Eulalia aurea* and *Themeda triandra* open tussock grassland
Major and Minor Creeklines – 3f – *Acacia citrinoviridis*, *A. coriacea* subsp. *pendens* low open forest over *Acacia pyrifolia* scattered tall shrubs over *Corchorus crozophorifolius*, *Tephrosia rosea* var. *glabrior* scattered low shrubs to low open shrubland over *Triodia pungens* very open hummock grassland and *Themeda triandra*, *Cenchrus cillaris* open grassland
Major and Minor Creeklines – 3h – *Eucalyptus victrix* woodland to open woodland over *Acacia citrinoviridis* low open woodland over *Atalaya hemiglauc*a, *Acacia tumida* var. *pilbarensis*, *A. bivenosa*, *Petalostylis labicheoides*,

Gossypium robinsonii shrubland to tall shrubland over *Triodia pungens* hummock grassland and *Themeda triandra* open tussock grassland
Plains – EIAprAbERfTwTe – *Eucalyptus leucophloia*, *Acacia pruinocarpa* low woodland over *A. bivenosa* scattered shrubs over *Eremophila fraseri* scattered low shrubs over *Triodia wiseana*, *T. epactia* hummock grassland
Plains – EIAprGwTe – *Eucalyptus leucophloia* subsp. *leucophloia* scattered tall shrubs over *Triodia epactia* hummock grassland
Plains – GpERfPTTTe – *Grevillea pyramidalis* scattered tall shrubs over *Eremophila fraseri* open shrubland over *Ptilotus rotundifolius* scattered low shrubs over *Triodia epactia* hummock grassland
Plains – GwHcTsps – *Grevillea wickhamii* subsp. *hispidula*, *Hakea chordophylla* open shrubland over *Triodia* sp. Shovelanna Hill (S. Van Leeuwen 3835) hummock grassland
Plains – 4j – Hummock grassland of *Triodia pungens* – *Triodia* spp. with emergent *Eucalyptus patellaris* and *Acacia* spp.
Plains – 2a – *Corymbia hamersleyana* open woodland over *Acacia inaequilatera*, *A. dictophleba*, *A. tenuissima*, *A. ancistrocarpa*, *A. sclerosperma*, *A. pruinocarpa*, *Hakea chordophylla*, *Eremophila longifolia* tall open shrubland to open shrubland over *Triodia* spp. mid-dense hummock grassland
Rocky Hill Slopes and Crests – 5b – Hummock grassland of *Triodia wiseana* with occasional *Triodia brizoides* and *Triodia basedowii* with emergent *Acacia* spp. and *Eucalyptus leucophloia*
Rocky Hill Slopes and Crests – 5c – Hummock grassland of *Triodia basedowii* with occasional *Triodia wiseana* with emergent *Acacia* spp. and *Eucalyptus leucophloia*
Rocky Hill Slopes and Crests – 5j – Low shrubland of *Eremophila* spp. – *Senna* spp. and *Acacia* spp.
Rock Hill Slopes and Crests – 5k – Hummock grassland of *Triodia basedowii* with emergent *Eucalyptus leucophloia* and occasional *Acacia* spp.
Rocky Hill Slopes and Crests – 5l – Hummock grassland of *Triodia basedowii* with emergent *Eucalyptus leucophloia*, *E. gamophylla* and dense shrub layer of *Acacia* spp.
Rocky Hill Slopes and Crests – EIAITw – *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia inaequilatera* tall open shrubland over *Triodia wiseana* open hummock grassland
Rocky Hill Slopes and Crests – EITspsTw – *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835), *T. wiseana* hummock grassland
Rocky Hill Slopes and Crests – 1a – *Hakea chordophylla* scattered low trees over *Grevillea wickhamii* scattered shrubs to open shrubland over *Acacia hilliana* and *Ptilotus rotundifolius* low open shrubland over *Triodia* aff. *basedowii* mid-dense hummock grassland
Rocky Hill Slopes and Crests – 1b – *Eucalyptus leucophloia* low open woodland over *Acacia hilliana* and *A. adoxa* var. *adoxo* low open shrubland over *Triodia* aff. *basedowii* mid dense hummock grassland
Rocky Hill Slopes and Crests – 1c – *Eucalyptus leucophloia*, *Corymbia ferricola* scattered low trees over *Eremophila latrobei* subsp. *filiformis* ms., *Senna* spp. scattered shrubs over *Cymbopogon ambiguus*, *Eriachne mucronata*, *Themeda* sp. Mt Barricade and *T. triandra* open tussock grassland
Rocky Hill Slopes and Crests – 1g – *Acacia pruinocarpa*, *Acacia aneura* (flat curved; MeT 15548) scattered low trees over *Eremophila fraseri*, *Senna glutinosa* subsp. *x luerssenii* over *Triodia* aff. *basedowii* mid dense hummock grassland.
Disturbed

Clearing Description

Hamersley Iron Pty Ltd (Hamersley Iron) is proposing to clear up to 25 hectares of native vegetation within a 336 hectare application area for the Yandi Junction HV Powerline Upgrade (Hamersley Iron, 2011). The clearing of vegetation is required for utilities and associated infrastructure.

Ground disturbance will involve the placement of poles every 120-150 metres which will require a two metre deep hole, depending on ground stability. Power lines can be strung up between poles using a string line which can be done without causing any disturbance between the poles. A 3-5 metre wide access track will be required to each pole for construction and servicing. The track will follow the power line route where possible, but in some areas this might not be practicable and the construction of a new track will be required. Laydown areas will be required at intervals along the route. In some sections, the powerlines cross Marilliana Creek and Yandicoogina Creek. Where this occurs, the poles will be located at either side of the creek, and lines will be strung across, as mentioned above, so there will be no disturbance to the creek (Hamersley Iron, 2011).

Vegetation Condition

Completely degraded: No longer intact; completely/almost completely without native species (Keighery, 1994);

To:

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

Comment

The application area is located in the Hamersley subregion of Western Australia and is situated approximately 50 kilometres south-east of the Karijini National Park (Hamersley Iron, 2011).

The vegetation condition was derived from a vegetation survey conducted by Biota (2010a), Biota (2010b), Biota (2004a), Biota (2004b) and Mattiske (1995).

3. Assessment of application against Clearing Principles

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

Comments

Proposal may be at variance to this Principle

The application area occurs within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by sedimentary ranges and plateaux, dissected by gorges. At a broad scale, the 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 (CALM, 2002).

The vegetation within the application area consists of Beard vegetation associations 29 and 82, which are common and widespread throughout the Pilbara bioregion with approximately 100% of the pre-European vegetation extent remaining (Shepherd, 2009; GIS Database). Studies by Biota (2004a), Biota (2004b), Biota (2010a), Biota (2010b) and Mattiske (1995) of the application area and surrounding area identified 31 vegetation types. The condition of these vegetation types classified from 'completely degraded' to 'excellent' (Keighery, 1994). The main signs of disturbance comprised grazing and trampling damage by cattle, especially within areas of both Yandicoogina and Marillana Creeks. The application area contains approximately 16.5 % of heavily disturbed areas (Hamersley Iron, 2011).

No Threatened Ecological Communities or Priority Ecological Communities were recorded or identified within the application area, or adjacent to the study area, or likely to be affected by the proposal (GIS Database).

A search of the Department of Environment and Conservation Declared Rare and Priority Flora databases revealed five Priority Flora species which may potentially occur within a 20 kilometre radius of the application area:

Acacia subtiliformis – Priority 3;
Fimbristylis sieberiana – Priority 3;
Goodenia nuda – Priority 4;
Goodenia sp. East Pilbara (A.A. Mitchell PRP 727) – Priority 3; and
Stylidium weeliwolli – Priority 2.

This search revealed no potential Declared Rare Flora (DRF) species (DEC, 2011).

The following studies (Biota, 2004a; Biota, 2004b; Biota, 2010a; Biota, 2010b; Mattiske 1995) identified no DRF or Priority Flora species within the application area.

No weed species were identified in Hamersley Iron (2011), however, it is likely that weeds are present in the disturbed application areas. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

The Mulga (*Acacia aneura*) dominated vegetation units 2a, 2b, 2c and 4j were noted to support a moderately rich understorey of shrubs, herbs and tussock grasses. While a small amount of these vegetation types may be impacted by the proposed clearing, it is not expected to significantly impact flora diversity at a sub-regional or regional scale (Hamersley Iron, 2011).

The vegetation types associated with the Marillana and Yandicoogina Creek hold elevated significance at the scale of the Hamersley sub-region. The vegetation units associated with these creeks are: EcEvMaMg, 3d, 3e, 3f, 3h, and 2d (Hamersley Iron, 2011). These habitats comprise an 'ecosystem at risk' (CALM, 2002), and support a diverse suite of species which may be restricted to such ephemeral inundated habitats. Clearing within these vegetation units should be avoided or minimised where it cannot be avoided. The nature of the proposed clearing (clearing for power poles) is such that the clearing can be avoided in these areas by positioning the poles at either side of the creek (Hamersley Iron, 2011).

The riparian habitat which makes up the Marillana and Yandicoogina Creeks was considered to be significant at a sub-regional scale for fauna, as it supports fauna species which may be restricted to these areas (such as passerines) (Hamersley, 2011). An assessment on results from database searches (no fauna surveys were conducted) yielded a number of conservation significant fauna potentially occurring in the application area. While some of these species may temporarily utilise the habitats in the application area, the proposed loss of foraging habitat is unlikely to impact the conservation status of fauna taxa (Hamersley Iron, 2011).

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

Methodology

- Biota (2004a)
- Biota (2004b)
- Biota (2010a)
- Biota (2010b)
- CALM (2002)
- DEC (2011)
- Hamersley Iron (2011)
- Keighery (1994)
- Mattiske (1995)
- Shepherd (2009)
- GIS Database:
 - IBRA WA (regions - subregions)
 - Pre-European Vegetation
 - Threatened Ecological Sites Buffered

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

Comments Proposal may be at variance to this Principle

Broadly, the fauna habitats which are present in the application area are (Hamersley Iron, 2011):

- Major drainage line: *Eucalyptus* spp. over *Acacia* spp. over mixed shrubs over *Triodia* spp. and tussock grasses on river gravel;
- Drainage line: *Eucalyptus* spp. over *Acacia* spp. (some with *Grevillea wickhamii*) over *Triodia* spp. and grasses on sandy loams;
- Hillslopes: Scattered *Eucalyptus* spp.; *Corymbia* spp. and *Acacia* spp. over *Triodia* on stony slopes;
- Plain and valley floors: *Acacia* spp. and *Grevillea* sp. over *Triodia* spp. on stony loams; and
- Rocky breakaways and screes: Scattered *Eucalyptus* spp. and native grasses on scree slopes.

Hamersley Iron (2011) identified the vegetation condition to be 'completely degraded' to 'excellent' (Keighery, 1994). The landforms and habitat found within the application area are considered as being well represented in the Pilbara bioregion. The application area does contain habitats or faunal assemblages that are ecologically significant, but it is unlikely that any threatened species will be adversely impacted by the clearing of native vegetation in the application area. The riparian habitat of the Marilliana and Yandicoogina Creeks is an important habitat and clearing will be avoided or minimised in these areas (Hamersley, 2011).

There is approximately 100% of the pre-European vegetation remaining within the Pilbara bioregion (Shepherd, 2009; GIS Database). Given the extent of the native vegetation remaining in the local area and bioregion, the vegetation to be cleared does not represent a significant ecological link.

An assessment of potential fauna species utilising the area within a 20 kilometre radius of the central point of the application area, by the assessing officer, revealed three Priority species (DEC, 2011):

- Australian Bustard (*Ardeotis australis* – Priority 4);
- Western Pebble-mound Mouse (*Pseudomys chapmani* – Priority 4); and
- *Raphotyphlops ganeii* (Priority 1).

Although habitat for these species may be present in the application area, the vegetation associations present in the application area are widespread throughout the Pilbara. It is therefore unlikely that the area to be cleared represents a significant habitat for these species.

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

Methodology DEC (2011)
Hamersley Iron (2011)
Keighery (1994)
Shepherd (2009)
GIS Database:
- IBRA WA (regions - subregions)
- Pre-European Vegetation

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

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

According to available databases, there are no records of Declared Rare Flora (DRF) within the application area (GIS Database). A search of the Department of Environment and Conservation Declared Rare and Priority Flora databases identified no DRF species as occurring within a 20 kilometre radius of the application area (DEC, 2011).

Vegetation and flora surveys of the application area (Biota, 2010a; Biota, 2004a; and Mattiske, 1995) found no DRF within the application area.

Hamersley Lepidum (*Lepidium catapycnon*) (DRF and Threatened Flora Species under the *EPBC Act 1999*) is now known from a number of locations in the Hamersley Range, extending broadly from Tom Price across to Newman. It occurs in hummock grasslands on low stony hills and occasionally stony plains. This relatively short-lived low shrub species is often recorded from areas that have been recently disturbed, persisting for only a few years. Suitable habitat is present for the species in the application area; however, despite extensive searches within the application area, no records have been identified (Hamersley Iron, 2011).

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

Methodology Biota (2004a)
Biota (2010a)
DEC (2011)
Hamersley Iron (2011)
Mattiske (1995)

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 (TECs) within the application area (GIS Database). The nearest TEC is approximately 75 kilometres south east of the application area. At this distance, it is not likely that the proposed clearing will impact on this TEC.

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

Methodology GIS Database:
- Threatened Ecological Sites Buffered

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

Comments **Proposal is not at variance to this Principle**
The application area falls within the Pilbara IBRA bioregion (GIS Database). The vegetation within the application area is recorded as:

Beard vegetation association 29: Sparse low woodland; mulga, discontinuous in scattered groups;
and

Beard vegetation association 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*.

Although several other clearing permits have been granted in the local area, the proposed clearing is not likely to have any significant impact at a regional scale.

According to Shepherd (2009), Beard vegetation associations 29 and 82 retain approximately 100% of their pre-European extent. Therefore, the areas proposed to be cleared are not a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,193.01	17,785,000.82	~99.98	Least Concern	~6.32
Beard vegetation associations - State					
29	7,903,991	7,903,991	~100	Least Concern	~0.29
82	2,565,901	2,565,901	~100	Least Concern	~10.24
Beard vegetation associations - Bioregion					
29	1,133,219	1,133,219	~100	Least Concern	2.13
82	2,563,583	2,563,583	~100	Least Concern	~10.25

* Shepherd (2009)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd (2009)
GIS Database:
- IBRA WA (regions - 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 may be at variance to this Principle

There are no permanent watercourses or wetlands within the application area (GIS Database), however, the application area contains small sections of seasonally flowing drainage features – Marilliana Creek and Yandicoogina Creek (Hammersley Iron 2011).

These sections of creeks have already been somewhat impacted through low level weed invasion and cattle disturbance. Provided that clearing of these vegetation units (EcEvMaMg, 3d, 3e, 3h, and 2d) is avoided, or minimised if unavoidable, there should be no substantial negative impact to these creekline habitats (Hammersley Iron, 2011).

As mentioned above, placement of poles on either side of the creek will enable disturbance of the creek itself to be minimised.

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

Methodology Hammersley Iron (2011)
GIS Database:
- Geodata, Lakes
- Hydrography, Linear

(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

According to available databases, the application area is comprised of the Boolgeeda (34.2 hectares), McKay (162.7 hectares), Newman (57.5 hectares), Robe (3.1 hectares) and River (28.7 hectares) land systems (Van Vreeswyk et al., 2004; GIS Database).

The Boolgeeda, McKay, Newman and Robe land systems are considered largely erosion resistant, being at the end of millions of years of erosion and withstanding massive rainfall events on an annual basis without any appreciable land degradation (Van Vreeswyk et al., 2004).

The River land system is susceptible to erosion if vegetation cover is removed (Van Vreeswyk et al. 2004). However, provided clearing within the vegetation units associated with the creek systems (EcEvMaMg, 3d, 3e, 3f, 3h, and 2d) is avoided, or minimised if unavoidable, the proposal is unlikely to cause any appreciable land degradation beyond the clearing envelope (Hammersley Iron, 2011). Further potential impacts from erosion as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

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

Methodology Hamersley Iron (2011)
Van Vreeswyk et al. (2004)
GIS Database
- Rangeland Land System Mapping

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

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

The application area is not located within any conservation area (GIS Database). The nearest conservation area is the Karijini National Park, which lies approximately 50 kilometres north-west of the application area, while the Fortescue Marsh (a wetland of National significance) lies 35 kilometres north of the application area. The small amount of clearing proposed is not likely to impact the environmental values of either of these two areas (Hammersley Iron, 2011).

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

Methodology Hammersley Iron (2011)
GIS Database:
- DEC Tenure

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

There are no permanent watercourses or water bodies within the application area (GIS Database). Any surface water within the application area is likely to only remain for short periods following significant rainfall events as the annual evaporation rate exceeds rainfall (BoM, 2011). Given the small scale of the proposed clearing, there is no reason to expect that surface or groundwater quality in the area would become deteriorated (Hamersley Iron, 2011).

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

Methodology BoM (2011)
Hamersley Iron (2011)
GIS Database:
- Geodata, Lakes
- RIWI Act, Groundwater Areas
- Hydrography, Linear
- Public Drinking Water Source Areas

(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 a semi-desert tropical climate with summer cyclonic or thunderstorm events, with an annual average rainfall of approximately 310 millimetres per year (CALM, 2002; BoM, 2011). Rainfall is usually experienced during summer months and can be either cyclonic or through thunderstorm events (CALM, 2002). It is likely that during times of intense rainfall there may be some localised flooding. The small size of the proposed clearing (25 hectares) is unlikely to significantly alter the intensity of flooding within the application area or surrounding areas.

The application area is located within the Fortescue River-Upper catchment area. However, given the size of the area to be cleared in relation to the size of the catchment area (2,975,192 hectares), the proposed clearing is not likely to increase the potential for flooding within the application area, local area or within the catchment (GIS Database).

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

Methodology BoM (2011)
CALM (2002)
GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, Linear

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

There is one Native Title claim (WC96/61) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are several registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment 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.

The clearing permit application was advertised on 5 December 2011 by the Department of Mines and Petroleum inviting submissions from the public. A submission was received in relation to this application regarding the cumulative impacts of clearing within the Pilbara. A written response was provided on the matters raised.

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

4. References

- Biota (2004a) Yandi Expansion Vegetation and Flora Survey. Unpublished report prepared for Hamersley Iron Pty Ltd.
- Biota (2004b) Yandi Expansion Desktop Fauna Assessment and Targeted Invertebrate Survey. Unpublished report prepared for Hamersley Iron Pty Ltd.
- Biota (2010a) Vegetation and Flora Surveys of the Oxbow and Junction South West Deposits, near Yandicoogina. Unpublished report prepared for Rio Tinto Pty Ltd.
- Biota (2010b) Yandicoogina Junction South West and Oxbow Fauna Survey. Unpublished report prepared for Rio Tinto Pty Ltd.
- BoM (2011) Climate Statistics for Australian Locations: 'Newman'. Bureau of Meteorology. Available at: http://www.bom.gov.au/climate/averages/tables/cw_007151.shtml.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3 – Hamersley subregion) Department of Conservation and Land Management, Western Australia.
- DEC (2011) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation, viewed 19 December 2011, <<http://naturemap.dec.wa.gov.au>>.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Hamersley Iron (2011) Statement Addressing the 10 Clearing Principles – Yandi Junction HV Powerline Upgrade. Unpublished Report number RTIO-HSE-0127969, November 2011.
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Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). Priority Codes for Fauna. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (Environment Protection and Biodiversity Conservation Act 1999)

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
 (a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
 (b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
 (a) is not critically endangered; and
 (b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU

Vulnerable: A native species which:

- (a) is not critically endangered or endangered; and
- (b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD

Conservation Dependent: A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.