



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4594/1
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 1968 (Paraburdoo), Mineral Lease 246SA (AML 70/246)
Local Government Area: Shire of Ashburton
Colloquial name: Western Range

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
202		Mechanical Removal	Mineral exploration and geotechnical investigations

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 15 December 2011

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia. Four Beard vegetation associations have been mapped within the application area (GIS Database; Shepherd, 2009):

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;

163: Shrublands; eremophila and cassia dwarf scrub;

181: Shrublands; mulga & snakewood scrub; and

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

A flora and vegetation survey of the application area was conducted by Biota (2009) in June, September and October 2009. This survey identified the following 17 vegetation communities within the application area (Biota, 2009):

AanAprAteTe: *Acacia aneura*, *Acacia pruinocarpa* tall open shrubland to low woodland over *Acacia tetragonophylla* scattered shrubs over *Triodia epactia* hummock grassland;

AprGbERsppTe: *Acacia pruinocarpa*, *Grevillea berryana* tall open shrubland over *Eremophila fraseri* subsp. *fraseri*, *Eremophila canaliculata*, *Eremophila cuneifolia* scattered over *Triodia epactia* hummock grassland;

DpERcrTe: *Dodonaea pachyneura*, *Eremophila cryptothrix* tall shrubland over *Triodia epactia* hummock grassland;

AteAsyERcTe: *Acacia tetragonophylla*, *Acacia synchronica* scattered tall shrubs over *Eremophila cuneifolia* scattered shrubs over *Triodia epactia* hummock grassland;

AteERfTw: *Acacia tetragonophylla* scattered tall shrubs over *Eremophila fraseri* subsp. *fraseri* scattered shrubs over *Triodia wiseana* hummock grassland;

AteTw: *Acacia tetragonophylla* tall open shrubland over *Triodia wiseana* hummock grassland;

AanGAoERsppARc: *Acacia aneura* tall open scrub over *Senna artemisioides* subsp. *oligophylla*, *Eremophila* spp. open heath over *Aristida contorta* open bunch grassland;

AxAteERcCA spp: *Acacia xiphophylla* tall open shrubland over *Acacia tetragonophylla* open

shrubland over *Eremophila cuneifolia*, *Senna* spp. scattered low shrubs;

AanAteCAspp: *Acacia aneura*, *Acacia tetragonophylla* tall open shrubland over *Senna* spp. scattered low shrubs;

AanAteTe: *Acacia aneura*, *Acacia tetragonophylla* tall shrubland over *Triodia epactia* open hummock grassland;

AanAxAteERcTa: *Acacia aneura*, *Acacia xiphophylla* tall open shrubland over *Acacia tetragonophylla*, *Eremophila cuneifolia* shrubland over *Triodia angusta* hummock grassland;

EcEvAamMgCYPv: *Eucalyptus camaldulensis*, *Eucalyptus victrix* open forest over *Acacia ampliceps*, *Melaleuca glomerata* tall shrubland over *Cyperus vaginatus* open sedgeland to sedgeland;

EvAcMgCE: *Eucalyptus victrix* woodland to scattered trees over *Acacia coriacea* subsp. *pendens*, *Melaleuca glomerata* tall shrubland over *Cenchrus* spp. open tussock grassland;

EvTER: *Eucalyptus victrix* scattered trees over *Tephrosia rosea* var. *glabrior* scattered low shrubs;

AciAanCE: *Acacia citrinoviridis*, *Acacia aneura* tall shrubland to low open forest over *Cenchrus* species open tussock grassland to tussock grassland;

AanAxTe: *Acacia aneura*, *Acacia xiphophylla* tall open scrub over mixed open shrubland over *Triodia epactia* open hummock grassland; and

CfAciDpERcrTe: *Corymbia ferritcola* low open woodland over *Acacia citrinoviridis*, *Dodonaea pachyneura*, *Eremophila cryptothrix* tall shrubland over *Triodia epactia* open hummock grassland.

Clearing Description Hamersley Iron Pty Ltd is proposing to clear up to 202 hectares of native vegetation within a broader boundary of 5,081 for the purpose of undertaking mineral exploration, geotechnical investigations, hydrogeological drilling and access tracks.

Clearing will be conducted with a dozer using blade down techniques. Vegetation and topsoil will be stockpiled for use in rehabilitation.

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

To

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

Comment The application area is located within the Gascoyne and Pilbara regions of Western Australia and is situated approximately 8 kilometres west of Paraburdoo.

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 proposed clearing is located approximately 8 kilometres west of Paraburdoo in the Ashburton and Hamersley sub-regions of the Gascoyne and Pilbara, respectively, Interim Biogeographic Regionalisation for Australia (IBRA) bioregions (GIS Database). The Ashburton subregion can be broadly defined as Mulga/Snakewood low woodlands on shallow earthy loams on hardpan plains, with Mulga scrub and *Eremophila* shrublands on the shallow stony loams of the ranges (CALM, 2002). Low mixed shrublands on hills with other areas supporting large areas of *Triodia* (CALM, 2002). The Hamersley subregion can be broadly described as Mulga low woodland over bunch grasses on fine textured soils in valley floors and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (CALM, 2002).

A flora survey of the application area was conducted by Biota Environmental Sciences (Biota) (2009) in June, September and October 2009. A total of 249 native flora taxa from 109 genera and 45 families have been recorded within the Western Ranges study area during the 2009 survey and from a Declared Rare Flora search conducted by Biota in 2002 (Biota, 2009). This is considered to be within the range expected for a study area of this size in this locality (Rio Tinto, 2011).

The following three Priority Flora species were recorded during a flora and vegetation survey of the application area conducted by Biota (2009):

- *Aluta quadrata* (Priority 1) – this species has been recorded only from the southern flanks of the range of hills surrounding Paraburdoo. It is known from 142 records on the Western Range. All recorded locations of this species have been avoided in the design of the drilling program (Rio Tinto, 2011). Rio Tinto (2011) have also

committed to conducting flora surveys of all areas deemed to be of suitable habitat for this species prior to any disturbance. Potential impacts to this species as a result of the proposed clearing may be minimised by the implementation of a flora management condition;

- *Sida* sp. Barlee Range (Priority 3) – this species was recorded in four locations within the application area. This species has a broad distribution within the Pilbara and extends into the northern Gascoyne bioregion (Rio Tinto, 2011). Rio Tinto (2011) have committed to avoiding this species during the drilling program; and

- *Ptilotus trichocephalus* (Priority 4) – 81 records of this species were made on the stony plains supporting snakewood vegetation on the southern side of the Western range. According to FloraBase, this species is known from a broad range (West Australian Herbarium, 2011). This species is very inconspicuous outside of flowering season (September/October) and therefore may be better represented on plains in the Paraburdoo area than current records indicate (Rio Tinto, 2011).

A flora and vegetation survey conducted by Biota (2009) identified eleven weed species, *Acetosa vesicaria*, *Aerva javanica*, *Argemone ochroleuca* subsp. *ochroleuca*, *Bidens bipinnata*, *Cenchrus ciliaris*, *Cenchrus setiger*, *Citrullus colocynthis*, *Cynodon dactylon*, *Malvastrum americanum*, *Portulaca oleracea* and *Sonchus oleraceus*, within the application area. 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. None of these species are listed as 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There are no known Priority Ecological Communities (PEC's) within the application area (GIS Database). The nearest known PEC is approximately 80 kilometres south west of the application area (GIS Database). At this distance, there is little likelihood of any impact to the PEC as a result of the proposed clearing.

A fauna survey of the application area was conducted in June and October 2009 by Biota (2010). The survey recorded 111 fauna species comprised of 51 avifauna species, 20 mammal species and 40 herpetofauna species (Biota, 2009). The species recorded within the application area are representative of the taxa commonly recorded in the Hamersley and Gascoyne subregions and are consistent with habitat data, indicating no uncommon or geological units or land systems occur within the study area (Biota, 2011).

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

Methodology Biota (2009)
Biota (2010)
Biota (2011)
CALM (2002)
Rio Tinto (2011)
West Australian Herbarium (2011)
GIS Database:
- IBRA WA (regions – subregions)
- 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

Based on a desktop survey and a two-phase field fauna survey conducted by Biota (2010; Biota, 2011), a total of twelve conservation significant fauna species have been identified as occurring or potentially occurring within the application area (Rio Tinto, 2011):

- Northern Quoll (*Dasyurus hallucatus*) – Schedule 1, Endangered – Not recorded during survey by Biota (2011), however NatureMap show this species occurs within the vicinity of the application area. The preferred habitat for this species is rocky breakaways, escarpments and gorges (adjacent to an ephemeral river and spring at the east of the application area);

- Pilbara Olive Python (*Liasis olivaceus* subsp. *barroni*) – Schedule 1, Vulnerable – recorded on one occasion within the application area. The proposed clearing is likely to impact on resident individuals, however, Western Range represents a very small proportion of all Pilbara ranges and it is therefore unlikely the proposed clearing will impact on the conservation of this species;

- Pilbara Leaf-nosed Bat (*Rhinonictis aurantius*) – Schedule 1, Vulnerable – recorded at three of four bat survey sites with multiple calls consistently recorded at one site over three consecutive nights, therefore suggesting that a colony exists nearby. The preferred habitat for this species is deep caves offering suitable humidity and stable temperature;

- Peregrine Falcon (*Falco peregrines*) – Schedule 4 – not recorded within the application area, however records on NatureMap suggest it occurs within the local area. This species prefers cliff faces for nesting sites,

however may also utilise trees. The proposed clearing may impact on individuals, however it is considered unlikely that it will impact on the conservation of this species;

- *Ramphotyphlops ganei* – Priority 1 – not recorded within the application area however it potentially occurs within topsoil, moist gorges and gullies. Current records suggest that this species does not have a restricted distribution and therefore the conservation of this species is unlikely to be impacted by the proposed clearing;

- Grey Falcon (*Falco hypoleucos*) – Priority 4 – two individuals were recorded at one location within the application area. The preferred habitat for this species is lightly wooded coastal and riverine plains and may also occur near wetlands. This species has a low density and broad distribution in the Pilbara and it is therefore unlikely that the proposed clearing will impact upon the conservation of this species;

- Star Finch (*Neochmia ruficauda*) – Priority 4 – not recorded, however, may utilise the creeks and rivers in the application area;

- Australian Bustard (*Ardeotis australis*) – Priority 4 – two individuals recorded within the application area. This species has a broad home range and is highly mobile. It is therefore unlikely that the proposed clearing will impact the conservation of this species;

- Bush Stone-curlew (*Burhinus grallarius*) – Priority 4 – not recorded, however may occur within the application area. It is considered unlikely the proposed clearing will impact on the conservation of this species;

- Western Pebble-mound Mouse (*Pseudomys chapmani*) – Priority 4 – two inactive mounds were recorded within the application area. This species is endemic to the Pilbara, however it is common within this region. It is considered unlikely that the proposed clearing will impact on the conservation of this species;

- Long-tailed Dunnart (*Sminthopsis longicaudata*) – Priority 4 – given the preferred habitat of breakaways and scree slopes within the application area, there is potential for this species to be present; and

- Ghost Bat (*Macroderma gigas*) – Priority 4 – calls were recorded at two of four bat survey sites across the two survey efforts. Call activity was relatively low, therefore suggesting transient individuals rather than a nearby roost. Mine implementation and development may adversely affect the Ghost Bat by way of cave disturbance or destruction.

A total of seven fauna habitat types were recorded within the application area during the fauna survey conducted by Biota (2011):

- *Acacia* sp. over *Triodia wiseana* hummock grassland on calcrete;
- *Grevillea* sp. and *Acacia* sp. over *Triodia epactia* on rocky spur;
- Mulga and Snakewood on clay pan;
- Shrubland and *Triodia epactia* in rocky gorge;
- *Acacia* sp. over buffel grass in ephemeral river;
- *Acacia* sp. over *Triodia epactia* hummock grassland on rocky range; and
- *Acacia* and *Eremophila* spp. over *Triodia epactia* hummock grassland on rocky outcrop.

Given the conservation significant species present within the application area, the rocky gorge habitat is the most significant habitat as it contains a number of highly conservation significant fauna species. Potential impacts to fauna species such as the Northern Quoll, Pilbara Leaf-nosed bat and the Ghost Bat may be minimised by the implementation of a fauna management condition.

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

Methodology Biota (2010)
Biota (2011)
Rio Tinto (2011)

(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 records of Declared Rare Flora (DRF) within the application area (GIS Database). A flora and vegetation survey conducted over the application area by Biota (2009) did not identify any DRF.

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

Methodology Biota (2009)
GIS Database:
- Threatened and Priority Flora

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

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

There are no known records of Threatened Ecological Communities (TEC's) within the application area (GIS Database). The nearest known TEC is approximately 66 kilometres north of the application area (GIS Database). At this distance there is little likelihood of any impact to the TEC as a result of the proposed clearing.

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 is located within the Gascoyne and Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregions (GIS Database). Shepherd (2009) reports that approximately 100% and 99.89% of the pre-European vegetation remains within the Gascoyne and Pilbara bioregions respectively.

The vegetation within the application area has been broadly mapped as the following four Beard vegetation associations:

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;

163: Shrublands; eremophila and senna dwarf scrub;

181: Shrublands; mulga & snakewood scrub; and

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

According to Shepherd (2009) approximately 100% of vegetation types 82, 181 and 567 remain within the Pilbara bioregion and approximately 100% of vegetation types 163 and 181 remain in the Gascoyne bioregion (see table on next page).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,193	17,785,001	~99.89	Least Concern	~6.32
IBRA Subregion - Hamersley	5,634,727	5,634,727	~100	Least Concern	~12.88
IBRA Bioregion - Gascoyne	18,075,219	18,075,219	~100	Least Concern	~1.93
IBRA Subregion - Ashburton	3,687,023	3,687,023	~100	Least Concern	~2.85
Beard vegetation associations - State					
82	2,565,901	2,565,901	~100	Least Concern	~10.24
163	641,918	641,918	~100	Least Concern	n/a
181	1,697,291	1,697,291	~100	Least Concern	~2.39
567	777,507	777,507	~100	Least Concern	~22.33
Beard vegetation associations - Pilbara Bioregion					
82	2,563,583	2,563,583	~100	Least Concern	~10.25
181	65,090	65,090	~100	Least Concern	~4.87
567	776,824	776,824	~100	Least Concern	~22.35
Beard vegetation associations - Gascoyne Bioregion					
163	640,581	640,581	~100	Least Concern	n/a
181	1,632,078	1,632,078	~100	Least Concern	~2.29

* Shepherd (2009)

** Department of Natural Resources and Environment (2002)

The vegetation within the application is not considered to be a remnant of native vegetation in an area that has been extensively cleared.

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd (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 is at variance to this Principle

According to available databases, there are no permanent wetlands or watercourses within the application area, however there are numerous ephemeral watercourses (GIS Database). A flora and vegetation survey of the application area conducted by Biota (2009) identified five vegetation communities growing in association with drainage lines:

EcEvAamMgCYPv (Moderate Significance): *Eucalyptus camaldulensis*, *Eucalyptus victrix* open forest over *Acacia ampliceps*, *Melaleuca glomerata* tall shrubland over *Cyperus vaginatus* open sedgeland to sedgeland;

EvAcMgCE (Moderate Significance): *Eucalyptus victrix* woodland to scattered trees over *Acacia coriacea* subsp. *pendens*, *Melaleuca glomerata* tall shrubland over **Cenchrus* spp. open tussock grassland;

EvTEr (Moderate Significance): *Eucalyptus victrix* scattered trees over *Tephrosia rosea* var. *glabrior* scattered

low shrubs;

AciAanCE (Low Significance): *Acacia citrinoviridis*, *Acacia aneura* tall shrubland to low open forest over **Cenchrus* spp. open tussock grassland to tussock grassland; and

AanAxTe (Low Significance): *Acacia aneura*, *Acacia xiphophylla* tall open scrub over mixed open shrubland over *Triodia epactia* open hummock grassland.

Vegetation unit EcEvAamMgCYPv was found in association with a permanent spring (Ratty Springs) on Pirraburdu Creek and the equivalent vegetation unit was found on Seven Mile Creek, therefore suggesting that another spring may be present in that area (Rio Tinto, 2011). Given the significance of permanent water springs and the vegetation associated with them, Rio Tinto have committed to avoiding these creek systems where possible and otherwise keep disturbance to a minimum. Potential impacts to vegetation associated with natural springs may be minimised by the implementation of a condition excluding vegetation unit EcEvAamMgCYPv from the permitted area.

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

Methodology Biota (2009)
Rio Tinto (2011)
GIS Database:
- 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

The application area has been mapped as intersecting the following eight land systems (GIS Database):

Boolgeeda – this land system is characterised by stony lower slopes and plains below hill systems supporting hard and soft Spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). This land system is not susceptible to erosion (Van Vreeswyk et al., 2004);

Ethel – this land system is characterised by cobble plains with sparse mulga and other *Acacia* spp. shrublands (Payne et al., 1988). This land system is inherently stable due to stony nature (Payne et al., 1988);

Marandoo – this land system is characterised by basalt hills and restricted stony plains supporting grassy mulga shrublands (Van Vreeswyk et al., 2004). This land system is not susceptible to erosion (Van Vreeswyk et al., 2004);

Newman – this land system is characterised by rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004);

Paraburdoo – this land system is characterised by basalt derived stony gilgai plains and stony plains supporting Snakewood and mulga shrublands with Spinifex and tussock grasses (Van Vreeswyk et al., 2004). Much of this land system is inherently resistant to erosion except for drainage zones which are moderately susceptible (Van Vreeswyk et al., 2004);

River – this land system is characterised by active flood plains and major rivers supporting grassy eucalypt woodlands, tussock grasslands and soft Spinifex grasslands (Van Vreeswyk et al., 2004). This land system is largely stabilised by buffel and Spinifex and accelerated erosion is uncommon (Van Vreeswyk et al., 2004). However, susceptibility to erosion is high or very high if vegetative cover is removed (Van Vreeswyk et al., 2004);

Rocklea – this land system is characterised by basalt hills, plateaux, lower slopes and minor stony plains supporting hard Spinifex (and occasionally soft Spinifex) grasslands (Van Vreeswyk et al., 2004). This land system has very low erosion hazard (Van Vreeswyk et al., 2004); and

Table – this land system is characterised by low calcrete plateaux, mesas and lower plains supporting mulga and *Cassia* (now *Senna*) shrublands and minor Spinifex grasslands (Van Vreeswyk et al., 2004). This land system is generally not susceptible to erosion (Van Vreeswyk et al., 2004).

Potential land degradation as a result of the proposed clearing, particularly in the Paraburdoo and River land systems, 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 Payne et al. (1988)
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 proposed clearing is not located within a conservation reserve (GIS Database). The nearest conservation reserve is Karijini National Park, located approximately 40 kilometres east of the application area (GIS Database). At this distance it is unlikely that the proposed clearing will impact on the environmental values of any conservation areas.

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

Methodology GIS Database:
- DEC Tenure

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

Comments Proposal may be at variance to this Principle

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the Millstream Water Reserve, located approximately 97 kilometres north of the application area (GIS Database). At this distance it is unlikely that the proposed clearing will impact on the quality of the Millstream Water Reserve.

The groundwater salinity within the application area is approximately 500 – 1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). Given the relatively low impact, non contiguous nature of the proposed clearing within the Hamersley Groundwater Province (10,166,832 hectares), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

A permanent spring occurs within the application area along the Piriburdu Creek and potentially another permanent spring on Seven Mile Creek (Rio Tinto, 2011). Rio Tinto (2011) have committed to avoiding clearing along these creek lines where possible. These creeks have been mapped as the River land system which is considered to be highly or very highly susceptible to erosion when vegetation cover is removed (GIS Database; Van Vreeswyk et al., 2004). Leaving the River land system exposed may lead to sedimentation within the permanent spring. Potential impacts to groundwater quality may be minimised by a condition excluding the vegetation unit EcEvAamMgCYPv from the permitted area and a staged clearing condition.

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

Methodology Rio Tinto (2011)
Van Vreeswyk (2004)
GIS Database:
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

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

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

The Seven Mile Creek and Pirraburdu Creek systems are the main surface features within the application area which flood seasonally during high rainfall events (Rio Tinto, 2011). Local flooding occurs seasonally in the Pilbara region as a result of cyclonic activity and sporadic thunderstorm activity (Rio Tinto, 2011). Given the low impact, non contiguous nature of the proposed clearing, it is considered unlikely that the proposed clearing will exacerbate the frequency or the intensity of flooding through the area.

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

Methodology Rio Tinto (2011)

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

Comments

There are two Native Title Claims (WC10/11 and WC 10/16) over the area under application (GIS Database). These claims have been registered with the 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 numerous 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 was advertised on 12 September 2011 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to the proposed clearing.

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

4. References

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- Shepherd, D.P. (2009) 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.
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture, Western Australia.
- Western Australian Herbarium (2011) FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.dec.wa.gov.au/> (Accessed 13/10/2011).

5. Glossary

Acronyms:

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

Definitions:

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

- P1 Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2 Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3 Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4 Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

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

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

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

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

- EX Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W) Extinct in the wild:** A native species which:

- (a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
- (b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CR **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

EN **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

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