



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4372/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Miscellaneous Licence 47/276
Miscellaneous Licence 47/282
Miscellaneous Licence 47/283
Local Government Area: Shire of Ashburton
Colloquial name: Tom Price Railway Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
34		Mechanical Removal	Railway maintenance and associated activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 21 July 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 and are useful to look at vegetation in a regional context. Three Beard vegetation associations have been mapped within the application areas (Shepherd, 2009; GIS Database):

Beard vegetation association 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;
Beard vegetation association 565: Hummock grasslands, low tree steppe; bloodwood over soft spinifex; and
Beard vegetation association 567: Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex and *Triodia basedownii*.

Rio Tinto (2011) conducted a flora survey of the application areas and surrounding areas on 8 to 15 October 2010, and described the vegetation communities of the application areas as follows:

Borrow Area 3 (BA3):

LFD2-EcCh: Low open Forest – Drainage: *Eucalyptus camaldulensis* and *Corymbia hamersleyana* low open forest in moderate to large drainage lines. Includes *Eucalyptus camaldulensis*, *Corymbia hamersleyana* (*Eucalyptus xerothermica*) low open forest over *Gossypium robinsonii* tall open scrub over *Eulalia aurea* and *Themeda triandra* tussock grassland;

LFD-ChEx: Low open Forest – Drainage: *Corymbia hamersleyana* and *Eucalyptus xerothermica* low open forest over tall open scrub on and flanking minor to moderate drainage. Consists of *Corymbia hamersleyana*, *Eucalyptus xerothermica* low open forest over *Gossypium robinsonii* tall open scrub over *Eulalia aurea*, *Themeda triandra* tussock grassland; and

LSHLOW-EI: Low Stony Hill-slopes – Low Open Woodland: *Eucalyptus leucophloia* and *Triodia wiseana* dominated tree steppe on low rolling stony hill slopes. Includes *Eucalyptus leucophloia* scattered low trees (to low open woodland) over *Acacia spondylophylla* low shrubland over *Triodia wiseana*, *T. epactia* hummock grassland.

Borrow Area 12 (BA12):

CPTS-ExEsAb: Tall Open Scrub: *Eucalyptus xerothermica* and *E. socialis* low open woodland/mallee, over *Acacia bivenosa* tall shrubland on undulating calcrete plain. Includes *Eucalyptus xerothermica* low open woodland, over *E. socialis* open to scattered mallee, over *Acacia bivenosa* Tall shrubland (to tall open scrub), over open shrubland of *A. bivenosa*, *Capparis umbonata*, *A. synchronicia*, and *A. inaequilatera*, over *Triodia wiseana* hummock grassland;

DAW-Ex: Drainage Associated Woodland: *Eucalyptus xerothermica* low woodland over *Acacia bivenosa* open scrub associated with defined and relatively undefined drainage lines. Includes *Eucalyptus xerothermica* low woodland (with scattered *Hakea chordophylla* low trees), over *Acacia bivenosa* tall shrubland/shrubland, over *A. synchronicia*, *Senna artemisioides* subsp. *helmsii* and *S. artemisioides* subsp. *artemisioides* low open shrubland,

over *Cenchrus ciliaris* and *Themeda triandra* open tussock grassland over *Triodia epactia* open hummock grassland;

DSEW-Ev: Drainage – Shrubland with Emergent low open Woodland: Mixed *Acacia* spp. tall shrubland with emergent *Eucalyptus victrix* low open woodland on well defined minor to moderate drainage lines. Includes *Eucalyptus victrix* low open woodland (with scattered tall trees) over *Acacia citrinoviridis* and *A. bivenosa* tall shrubland, over *Rulingia luteiflora* and *A. bivenosa* shrubland, over *A. inaequilatera* and *A. atkinsiana* open shrubland, over *Themeda triandra* open tussock grassland, over *Triodia epactia* and *Triodia wiseana* very open hummock grassland;

DSEW2-AcApAa: Drainage – Shrubland with Emergent low open Woodland: *Acacia aneura* tall open shrubland with *A. citrinoviridis*/*A. pruinocarpa* emergent open woodland on drainage corridors. Includes low open woodland of *Acacia citrinoviridis* and *A. pruinocarpa*, over *A. aneura* tall open shrubland, over *A. tetragonophylla* open shrubland, over *Senna artemisioides* subsp. *helmsii* and *Eremophila forrestii* low open shrubland, over *Cenchrus ciliaris* open tussock grassland, over *Triodia wiseana* open hummock grassland;

DW-ExCh: Drainage – Woodland: *Eucalyptus xerothermica* and *C. hamersleyana* low woodland over mixed *Acacia* spp. open scrub on well defined minor to moderate drainage lines. Includes *Eucalyptus xerothermica* and *Corymbia hamersleyana* low woodland, over *Acacia citrinoviridis*, and *A. bivenosa* tall shrubland, over *A. citrinoviridis*, *Santalum lanceolatum* and *A. bivenosa* shrubland, over low open shrubland of mixed *Senna* spp. and *Dipteracanthus australasicus*, over *Themeda triandra* open tussock grassland, over *Triodia wiseana* and *Triodia epactia* open hummock grassland;

LRHOH-Am: Low Rocky Hill – Open Heath: *Acacia maitlandii* open heath, over *Triodia wiseana* open hummock grassland on low rocky hills and footslopes. Includes isolated *Eucalyptus leucophloia* subsp. *leucophloia* low trees, over *Acacia maitlandii*, *A. inaequilatera*, and *A. bivenosa* scattered tall shrubs, over *A. maitlandii* open heath (to shrubland), over *Triodia wiseana* open hummock grassland, over *Themeda triandra* scattered tussock grasses (to open tussock grassland);

UPS-AiAb: Undulating Plain – Shrubland: *Acacia inaequilatera* and *A. bivenosa* tall open shrubland over *Triodia wiseana* hummock grassland on stony undulating plains. Includes scattered *Acacia aneura* and *Codonocarpus cotinifolius* low trees, over *Acacia inaequilatera* and *A. bivenosa* tall open shrubland, over *A. bivenosa*, *A. inaequilatera*, and *A. maitlandii* shrubland (to open shrubland), over *Triodia wiseana* hummock grassland; and

UPTS3-AbAp: Undulating Plain – Shrubland: *Acacia bivenosa* and *A. pruinocarpa* tall shrubland with emergent *Eucalyptus xerothermica* on low trees on stony undulating plains/footslopes. Includes *Eucalyptus xerothermica* scattered low trees, over *Acacia pruinocarpa*, and *A. bivenosa* tall shrubland, over *A. bivenosa*, *A. inaequilatera* and *A. atkinsiana* open shrubland, over *Triodia epactia* and *T. wiseana* hummock grassland, over patches of *Cenchrus ciliaris* open tussock grassland.

Borrow Area 13 (BA13):

RSHLW-EIAaAat: Rolling Stony Hill-slopes – Low Woodland: *Eucalyptus leucophloia* low woodland over *Acacia aneura* and *A. atkinsiana* shrubland on low rolling stony hill slopes. Includes *Eucalyptus leucophloia* low woodland over scattered *Eucalyptus gamophylla* low Mallee, over tall open shrubland of *Acacia aneura* and *A. atkinsiana*, over open shrubland of *A. atkinsiana* with scattered *A. rhodophloia*, and *Stylobasium spathulatum*, over *A. spondylophylla* low open shrubland over *Triodia epactia*, *T. wiseana* hummock grassland with *Eriachne mucronata* scattered tussock grasses;

BDLF-EvAcAa: Broad Drainage – Low open Forest: *Eucalyptus victrix*, *Acacia citrinoviridis*, and *A. aneura* low open forest on broad moderately sized drainage dissecting stony slopes. Includes *Eucalyptus victrix*, *Acacia citrinoviridis*, and *A. aneura* var. *pilbarana* low open forest, over *A. citrinoviridis* and *A. aneura* tall open shrubland, over mixed open shrubland, over *Triodia wiseana*, *T. epactia* open hummock grassland, over *Cenchrus ciliaris* and *Themeda triandra* open tussock grassland; and

MDSH-AcPI: Minor Drainage line on Stony Hill-slopes: *Acacia citrinoviridis* and *Petalostylis labicheoides* tall shrubland on minor drainage lines dissecting low stony hill-slopes. Includes *Eucalyptus victrix* scattered low trees, over *Acacia citrinoviridis* and *Petalostylis labicheoides*, tall shrubland, over *Petalostylis labicheoides*, *Acacia atkinsiana*, and *Stylobasium spathulatum* shrubland, over *Triodia epactia* open hummock grassland with scattered *Cenchrus ciliaris* tussock grasses.

Clearing Description

Hamersley Iron is proposing to clear up to 34 hectares of native vegetation, for the Tom Price Railway Project. The clearing of vegetation is required for borrow pits and associated activities, such as laydown areas, access tracks, topsoil stockpiles and water bores.

The vegetation will be cleared using a dozer with the blade down. The vegetation and topsoil will be stockpiled and used in rehabilitation.

Vegetation Condition

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

To:

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

Comment

The application areas are located in the Hamersley subregion of Western Australia and are situated approximately 3 kilometres east of Tom Price.

The vegetation condition was derived from a vegetation survey conducted by Rio Tinto (2011).

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application areas occur within the Pilbara (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by 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 vegetation survey by Rio Tinto (2011) between 8 to 15 October 2010 of the application areas and surrounding vegetation identified 302 species of flora taxa belonging to 116 Genera and 36 Families. Rio Tinto (2011) identified 14 vegetation communities within the application. The condition of the vegetation types were classified as 'completely degraded' to 'very good' (Keighery, 1994; GIS Database).

The vegetation within the application areas consist of Beard vegetation associations 82, 565 and 567, which are common and widespread throughout the Pilbara bioregion with approximately 100% of the pre-European vegetation extent remaining (Shepherd, 2009; GIS Database). A search of the Department of Environment and Conservation Declared Rare and Priority Flora databases revealed 13 Priority flora species which may potentially occur within a 20 kilometre radius of the application areas (DEC, 2011). No Declared Rare Flora (DRF) species were identified (DEC, 2011). Rio Tinto (2011) identified no DRF and no Priority species within the application areas. The likelihood of Priority flora occurring in the application areas is low, as approximately 50% (or more) of the study areas are previously disturbed, and the application areas do not contain habitats suited for the potential Priority Flora species that could occur in the area (Rio Tinto, 2011).

No Threatened Ecological Communities or Priority Ecological Communities were recorded or identified within the application areas (GIS Database).

Nine weed species were identified during the survey: Kapok Bush (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*), Bitter Apple (*Citrullus colocynthis*), Sunnhemp (*Crotalaria juncea*), Musk Melon (*Cucumis melo*), Bermuda Grass (*Cynodon dactylon*), Awnless Barnyard Grass (*Echinochloa colona*), and Needle Bush (*Vachellia arnesiana*) (Rio Tinto, 2011). None of these species are listed by the Western Australian Department of Agriculture and Food as Declared Plants. 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 fauna habitats within the application areas are considered to be common and widespread within the subregion and faunal assemblages are unlikely to be different to that found in similar habitat located elsewhere in the region (Rio Tinto, 2011). The application areas have been previously disturbed and have rail infrastructure running through them. Given this disturbance and habitat fragmentation, the application areas are not likely to comprise a high level of faunal diversity. The habitat types are not of high ecological significance and the clearing of 34 hectares of native vegetation is unlikely to have a significant impact on the faunal diversity in a local and regional context.

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

Methodology

CALM (2002)
DEC (2011)
Keighery (1994)
Rio Tinto (2011)
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 is not likely to be at variance to this Principle

No targeted fauna surveys have been conducted over the application areas. There were two broad fauna habitat types occurring within the survey area as recorded by Rio Tinto (2011);

1. Tree steppe or low open woodland of *Acacia* and *Eucalyptus*/*Acacia* shrubland/hummock grassland on:

- a. Undulating plains (BA3, BA12);
- b. Undulating plains with calcrete substrates (BA12);
- c. Minor drainage systems on open plains / undulating plains (BA12);
- d. Minor stony slopes/low hills (BA12);
- e. Low to moderate stony/rocky slopes and hills (BA3, BA12 and BA13);
- f. Minor drainage systems on stony/rocky slopes and low hills (BA3, BA12 and BA13); and

- g. Minor/moderate sized broad drainage on undulating plains/low hill slopes (BA13)
2. Open forest to Woodland/*Acacia* shrubland/open tussock grassland on:
- a. Moderately sized drainage systems on undulating valley floors (BA3).

The value of these habitats has been somewhat diminished as a result of historical clearing and fragmentation from existing rail infrastructure and access roads (Rio Tinto, 2011). The application areas do not contain habitats or faunal assemblages that are ecologically significant, and it is unlikely that any species of conservation significance will be directly affected to a large degree by the clearing of native vegetation in the application areas. The proposed clearing is not likely to significantly impact important habitat for endemic fauna.

All landscape units observed during the field survey were common throughout the Pilbara. No other significant fauna habitats were observed within the application areas. There is approximately 100% of the pre-European vegetation remaining within the Pilbara bioregion (Shepherd, 2009; GIS Database). The application areas are unlikely to function as a significant corridor for fauna movement throughout the landscape, and the clearing of 34 hectares of native vegetation will not isolate existing areas of fauna habitat or restrict the movement of fauna through the landscape.

There are 14 species of conservation significance listed as either Threatened Species under the *Environment Protection and Biodiversity Conservation Act (EPBC) 1999* or protected under Western Australian legislation (*Wildlife Conservation Act 1950*), that may potentially occur within a 20 kilometre radius of the application areas (DEC, 2011). The Northern Quoll (*Dasyurus hallucatus*) has been identified as being likely to occur (Rio Tinto, 2011). However, given the close proximity of the main rail line, and lack of suitable habitat for foraging within the application areas, it is unlikely that the clearing of 34 hectares of native vegetation will have any effect on the conservation status of the Northern Quoll. Whilst the clearing will result in the loss of some habitat, the application areas are not likely to represent significant habitat for this or the other 13 conservation significant fauna species.

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

Methodology DEC (2011)
Rio Tinto (2011)
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's NatureMap database identified no DRF species as occurring within a 20 kilometre radius of the application area (DEC, 2011).

Rio Tinto (2011) conducted a vegetation and flora survey of the application area between 8 and 15 October 2010. No DRF were recorded within the survey area.

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

Methodology DEC (2011)
Rio Tinto (2011)
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

A search of the available databases shows that one of the application areas sits within the outer edge of the buffer zone of the 'Hammersl01' Threatened Ecological Community (TEC) (GIS Database; Rio Tinto, 2011). 'Hammersl01' is identified as the Themeda grasslands. This TEC is characterised as grassland plains which are dominated by the perennial Themeda (kangaroo grass) and many annual herbs and grasses (CALM, 2002; DEC, 2010). The vegetation units mapped within this application area does not match the vegetation units which comprise the TEC. Furthermore, this area is not intended to be disturbed and is contained within the RTIO exclusion Zone, which excludes any potential future medium to high impact activity (Rio Tinto, 2011). The clearing of 34 hectares of native vegetation is not likely to impact upon this TEC.

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

Methodology CALM (2002)
 DEC (2010)
 Rio Tinto (2011)
 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 areas fall within the Pilbara IBRA bioregion (GIS Database). The vegetation within the application areas are recorded as Beard vegetation associations:

- 82:** Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;
- 565:** Hummock grasslands, low tree steppe; bloodwood over soft spinifex; and
- 567:** Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex and *Triodia basedownii* (GIS Database; Shepherd, 2009).

According to Shepherd (2009), Beard vegetation associations 82, 565 and 567 all 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	~99.89	Least Concern	6.32
Beard vegetation associations - State					
82	2,565,901.28	2,565,901.28	~100.00	Least Concern	10.24
565	143,438.92	143,438.92	~100.00	Least Concern	-
567	777,506.85	777,506.85	~100.00	Least Concern	22.33
Beard vegetation associations - Bioregion					
82	2,563,583.23	2,563,583.23	~100.00	Least Concern	10.25
565	108,956.73	108,956.73	~100.00	Least Concern	-
567	776,823.96	776,823.96	~100.00	Least Concern	22.35

* 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 is at variance to this Principle

According to available databases there are several non-perennial drainage lines within the application areas (GIS Database). Based on vegetation mapping by Rio Tinto (2011), this moderate sized drainage system is associated with *Eucalyptus camaldulensis* (vegetation type LFD2-EcCh). This vegetation type is of relatively high structural complexity and intersects the BA3 application area. However, the presence of a dual track rail line and associated access tracks through this vegetation unit means that the value of the drainage lines represented within the BA3 application area is not likely to be environmentally significant (GIS Database; Rio Tinto, 2011).

As the ephemeral drainage lines located within the application areas are only likely to flow following significant

rainfall and considering the low structural complexity and minor nature of the majority of the drainage features within the application areas (Rio Tinto, 2011), the proposed clearing of 34 hectares is unlikely to result in any significant impact to any watercourse or wetland.

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

Methodology Rio Tinto (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 is not likely to be at variance to this Principle

The application area is broadly mapped as the Newman land system, Boolgeeda land system and Rocklea land system (GIS Database).

The Newman land system is described as rugged jaspilite plateau, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). It contains erosional surfaces; plateaux and mountains with rectangular tributary drainage patterns of narrow valleys and gorges with narrow drainage floors and channels (Van Vreeswyk et al., 2004).

The Boolgeeda land system is described as stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). It has predominantly depositional surfaces, very gently inclined stony slopes and plains below hill systems becoming almost level further downslope; closely spaced and sub-parallel drainage lines. The vegetation is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Rocklea land system is described as basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. It has erosional surfaces; moderately spaced tributary drainage patterns of small channels in shallow valleys in upper parts becoming broader floors and channels downslope. This system has a very low erosion hazard (Van Vreeswyk et al., 2004).

Given the low levels of susceptibility to erosion, the 34 hectares of native vegetation to be cleared is not likely to cause any significant land degradation to the land systems above.

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

Methodology 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 application area is not located within any conservation areas (GIS Database). The nearest conservation area is Karijini National Park, located approximately 15 kilometres east of two application areas, and 30 kilometres south-east of a third application area (GIS Database).

Given the distance of the application area from the Karijini National Park, the proposed clearing is not likely to provide a significant ecological linkage or fauna movement corridor and is not likely to impact the environmental values of the conservation area.

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 is not likely to be at variance to this Principle

Tenement L47/276 occurs within the Millstream Water Reserve, a Public Drinking Water Source Area (PDWSA) gazetted under the *Country Areas Water Supply Act 1947* in March 2011. This PDWSA is defined as 'Priority 2 (P2)' under the Water Source Protection Classification System (Department of Water, 2011). The Department of Water (DoW) is satisfied that the proposed clearing of 34 hectares is unlikely to have a significant impact on the quality or quantity of groundwater, provided activities are carried out in accordance with DoW advice and guidelines. The application areas are located within the proclaimed Pilbara groundwater

area under the *Rights in Water and Irrigation Act 1994* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purposes other than domestic and/or stock watering is subject to licence by the DoW (Department of Water, 2011).

Several drainage tracts transect the application areas (GIS Database). The drainage patterns in the surrounding area have been impacted by existing railway activities and infrastructure. These drainage tracts are dry for most of the year and only flow after significant rainfall events (Rio Tinto, 2011). The application areas experience a semi-arid to semi-tropical climate, where the annual pan evaporation rate greatly exceeds the annual rainfall average (CALM 2002; BoM, 2011). There is little surface flow during normal seasonal rains. The proposed clearing of 34 hectares is not likely to cause the quality of surface water to deteriorate.

The application areas have a groundwater salinity that ranges from potable to hypersaline (500 - 10,000 milligrams/Litre Total Dissolved solids (TDS)) (GIS Database). Due to the wide extent of groundwater salinity levels, the proposed clearing is unlikely to further deteriorate the quality of underground water.

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

Methodology BoM (2011)
CALM (2002)
Rio Tinto (2011)
GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, linear
- Groundwater Salinity, Statewide
- 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 of approximately 404.8 millimetres per year (CALM, 2002; BoM, 2011). Based on an average annual evaporation rate of 3,600 - 4,000 millimetres (BoM, 2011), any surface water resulting from rainfall events is likely to be relatively short lived.

The small clearing size of 34 hectares in comparison to the size of the Fortescue catchment area (1,860,784 hectares) and Ashburton catchment area (7,877,743 hectares) (GIS Database) is not likely to lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

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, Previous EPA decision or other matter.

Comments

There is one Native Title claim over the areas under application (WC97/89). 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 two registered Aboriginal Sites of Significance within the application areas (Site IDs: 18173, 7148) (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 13 June 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

- BoM (2011) Climate Statistics for Australian Locations. A Search for Climate Statistics for Tom Price, Australian Government Bureau of Meteorology, viewed 13 July 2011, <http://reg.bom.gov.au/climate/averages/tables/cw_005072.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 (2010) List of Threatened Ecological Communities on the Department of Environment and Conservation's Threatened Ecological Community (TEC) Database endorsed by the Minister for the Environment. Species & Communities Branch, Department of Environment and Conservation, Perth, August 2010.
- DEC (2011) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation, viewed 8 July 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.
- Department of Water (2011) Advice provided to the Department of Mines and Petroleum for Clearing Permit Application CPS 4372/1 on 19 July 2011.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
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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.

