



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5315/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Iron Ore (Mount Bruce) Agreement Act 1972, Mineral Lease 252SA (AML 70/252)
Local Government Area: Shire of Ashburton
Colloquial name: Koodaideri Drilling Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
40		Mechanical Removal	Mineral Exploration

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 20 December 2012

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. Two Beard vegetation associations have been mapped within the application area (GIS Database):

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; and
111: Hummock grasslands, shrub steppe; *Eucalyptus gamophylla* over hard spinifex.

A flora and vegetation survey of the application area was conducted by botanists from Rio Tinto (2012) in August 2011. This survey identified the following 30 vegetation communities within the application area (Rio Tinto, 2012):

Vegetation of Foothills, Slopes and Hilltops

Acacia woodlands to scattered trees

A1 – AmaApEp: Low open woodland to tall open shrubland of *Acacia macraneura* and *Acacia pruinocarpa* over open shrubland to scattered shrubs of *Eremophila latrobei* subsp. *filiformis* and *Eremophila platycalyx* over open hummock grassland of *Triodia wiseana* and *Triodia epactia*.

A2 – AmaCfAr: Scattered trees of *Acacia macraneura*, *Corymbia ferritcola* and *Acacia pruinocarpa* over tall open woodland of *Acacia rhodophloia* and *Acacia pruinocarpa* over scattered low shrubs of *Eremophila tietkensis* and *Eremophila latrobei* subsp. *filiformis* over open hummock grassland of *Triodia wiseana* and *Triodia epactia*.

Corymbia woodlands to scattered trees

C1 – ChGwTb: Low open woodland to scattered low trees of *Corymbia hamersleyana* over scattered shrubs of *Grevillea wickhamii* over low open shrubland of *Acacia spondylophylla* and *Acacia hilliana* over open hummock grassland of *Triodia basedowii*.

C2 – ChGwTw: Low open woodland to scattered low trees of *Corymbia hamersleyana* over scattered shrubs of *Grevillea wickhamii* and *Acacia inaequilatera* over low open shrubland of *Acacia spondylophylla* and *Acacia hilliana* over open hummock grassland of *Triodia wiseana*.

C3 – ChGwTe: Low open woodland to scattered low trees of *Corymbia hamersleyana* over scattered shrubs of *Grevillea wickhamii* and *Petalostylis labicheoides* over low open shrubland of *Acacia spondylophylla* and over open hummock grassland of *Triodia epactia*

C4 – CfGwEg: Scattered low trees of *Corymbia ferritcola* over tall scattered shrubs of *Hakea chordophylla* and *Grevillea wickhamii* over open mallee to scattered mallee of *Eucalyptus gamophylla* over low open shrubland of *Acacia spondylophylla*, *Acacia hilliana* and *Gompholobium* sp. Pilbara (N.F. Norris 908) over open hummock grassland of *Triodia basedowii*.

C5 – CdHcGw: Open mallee to scattered mallee of *Corymbia deserticola* with tall scattered shrubs of *Hakea chordophylla*, *Grevillea wickhamii* and *Acacia trudgeniana* over scattered shrubs of *Acacia hilliana*, *Gompholobium* sp. Pilbara (N.F. Norris 908), *Acacia spondylophylla* and *Goodenia stobbsiana* over scattered

herbs of *Ptilotus calostachyus* over open hummock grassland of *Triodia basedowii*.

Eucalypt woodlands to scattered trees

E1 – ElGwTb: Scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* over scattered shrubs of *Grevillea wickhamii* and *Hakea chordophylla* over low open shrubland of *Acacia spondylophylla* and *Acacia hilliana* over open hummock grassland of *Triodia basedowii*.

E2 – ElGwTw: Low open woodland to scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* over scattered shrubs of *Grevillea wickhamii* over low open shrubland of *Acacia spondylophylla* and *Acacia hilliana* over open hummock grassland of *Triodia wiseana*.

E3 – ElGwTe: Scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* over scattered shrubs of *Acacia inaequilatera*, *Acacia pyrifolia* and *Grevillea wickhamii* over low open shrubland of *Acacia spondylophylla* and *Acacia hilliana* over open hummock grassland of *Triodia epactia*.

E4 – ElChTb/w: Low open woodland to scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over *Grevillea wickhamii* over low open shrubland of *Acacia spondylophylla* and *Acacia hilliana* over open hummock grassland of *Triodia basedowii* and *Triodia wiseana*.

E5 – ElEgTb/w: Scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* over tall scattered shrubs of *Hakea chordophylla* and *Grevillea wickhamii* over open mallee to scattered mallee of *Eucalyptus gamophylla* over low open shrubland of *Acacia spondylophylla* and *Acacia hilliana* over open hummock grassland of *Triodia basedowii* and *Triodia wiseana*.

E6 – ElAbTw/b: Scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* over open shrubland of *Acacia bivenosa* over open hummock grassland of *Triodia wiseana* or *Triodia basedowii*.

E7 – ElAmaTw: Scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* over scattered shrubs of *Grevillea wickhamii* over open shrubland of *Acacia maitlandii* over low open shrubland of *Acacia spondylophylla* over open hummock grassland of *Triodia wiseana*.

E8 – ElCfAp: Low open woodland to scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia ferriticola* and *Acacia pruinocarpa* over *Grevillea wickhamii* over *Eremophila platycalyx* or *Eremophila jucunda* subsp. *jucunda* over open hummock grassland of *Triodia wiseana* and *Triodia epactia*

E9 – ElEgAh: Low woodland *Eucalyptus leucophloia* subsp. *leucophloia* over scattered mallee of *Eucalyptus gamophylla* over scattered low shrubs of *Acacia hilliana* over open hummock grassland of *Triodia basedowii* and *Triodia wiseana*.

Vegetation of Flats, Low undulating slopes & Floodplains

Acacia woodlands to shrublands

A3 – AmaEfEl: Low woodland of *Acacia macraneura* over open shrubland to scattered shrubs of *Eremophila forrestii*, *Eremophila latrobei* subsp. *filiformis* and *Senna artemisioides* subsp. *oligophylla* over open hummock grassland of *Triodia wiseana* and *Triodia epactia*.

A4 – AiAtGw: Tall open shrubland of *Acacia inaequilatera* or *Acacia trudgeniana* and *Grevillea wickhamii* over scattered low shrubs of *Acacia spondylophylla* and *Goodenia stobbsiana* with scattered herbs of *Ptilotus calostachyus* over open hummock grassland of *Triodia basedowii* or *Triodia wiseana*.

Corymbia woodlands to scattered trees

C6 – ChAiAp: Low open woodland to scattered low trees of *Corymbia hamersleyana* over tall open shrubland of *Acacia inaequilatera*, *Acacia pyrifolia*, *Grevillea wickhamii*, *Jasminum didymum* over scattered low shrubs of *Senna artemisioides* subsp. *oligophylla*, *Indigofera monophylla* and *Ptilotus obovatus* var. *obovatus* open hummock grassland of *Triodia epactia* and *Triodia* spp.

Eucalypt mallee

E10 – EgAi: Open mallee of *Eucalyptus gamophylla* with open shrubland of *Acacia inaequilatera* over open hummock grassland of *Triodia epactia* and *Triodia* spp.

Vegetation of Flowlines

F1 – ChAtGw: Scattered low trees of *Corymbia hamersleyana* over tall shrubland to shrubland of *Acacia tumida* var. *pilbarensis*, *Petalostylis labicheoides*, *Grevillea wickhamii* and *Acacia pyrifolia* over low open shrubland of *Indigofera monophylla* over open hummock grassland of *Triodia epactia*.

F2 – ElGwAs: Scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* over tall open shrubland of *Grevillea wickhamii*, *Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* over low open shrubland of *Acacia spondylophylla* over open hummock grassland *Triodia wiseana*.

F3 – ElChPl: Low open woodland to scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over shrubland of *Petalostylis labicheoides*, *Gossypium robinsonii*, *Acacia tumida* var. *pilbarensis* & *Grevillea wickhamii* over low open shrubland of *Acacia spondylophylla* over open hummock grassland of *Triodia* spp.

F4 – AtGwTe: Tall open scrub to tall shrubland of *Acacia tumida* var. *pilbarensis* and *Grevillea wickhamii* over open hummock grassland of *Triodia epactia*.

F5 – ElAmoPl: Scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* over tall open shrubland of *Acacia monticola*, *Petalostylis labicheoides* and *Grevillea wickhamii* over low open shrubland of *Acacia*

spondylophylla over open hummock grassland of *Triodia wiseana* or *Triodia epactia*.

F6 – CfElzGr: Low open woodland of *Corymbia ferriticola* and *Eucalyptus leucophloia* subsp. *leucophloia* over tall shrubland to shrubland of *Gossypium robinsonii*, *Grevillea wickhamii*, *Acacia monticola* and *Petalostylis labicheoides* over open hummock grassland of *Triodia epactia* and *Triodia wiseana*

F7 – EgAtGw: Mallee of *Eucalyptus gamophylla* with tall shrubland to shrubland of *Acacia tumida* var. *pilbarensis*, *Gossypium robinsonii* and *Grevillea wickhamii* over open hummock grassland of *Triodia epactia*.

F8 – PlGwTe/b: Tall shrubland to shrubland of *Petalostylis labicheoides* and *Grevillea wickhamii* over low open shrubland of *Acacia spondylophylla* or *Acacia arida* or *Gompholobium* sp. Pilbara (N.F. Norris 908) over open hummock grassland of *Triodia epactia* or *Triodia basedowii*

F9 – ElAb: Low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia* or *Corymbia hamersleyana* over tall open shrubland of *Acacia bivenosa* over open hummock grassland of *Triodia wiseana* and *Triodia basedowii*.

F10 – ChApTer: Scattered low trees of *Corymbia hamersleyana* over tall open shrubland to scattered tall shrubs of *Acacia pyrifolia* and *Acacia tumida* var. *pilbarensis* over low open shrubland of *Tephrosia rosea* over very open tussock grassland of *Cymbopogon ambiguus*.

Clearing Description	Hamersley Iron Pty Ltd has applied to clear up to 40 hectares of native vegetation within a 306 hectares boundary. The purpose of the clearing is to conduct an exploration drilling program at Koodaideri.
Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994); To Pristine: No obvious signs of disturbance (Keighery, 1994).
Comment	The application area is located within the Pilbara region of Western Australia and is situated approximately 58 kilometres south east of Wittenoom.

2.1.2.

3. Assessment of application against clearing principles

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

Comments	<p>Proposal is not likely to be at variance to this Principle</p> <p>The proposed clearing is located approximately 58 kilometres south east of Wittenoom predominantly within the Hamersley subregion and partly within the Fortescue subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). At a broad scale, vegetation of the Hamersley subregion can be described as Mulga low woodlands over bunch grasses on fine textured soils in valley floors and <i>Eucalyptus leucophloia</i> over <i>Triodia brizoides</i> on skeletal soils of the ranges (CALM, 2002). Rare features of the subregion include gorges of the Hamersley Ranges (particularly those within Karijini National Park), Palm Spring, Duck Creek and Themeda grasslands (CALM, 2002). Permanent spring systems such as Weeli Wolli are also listed for their importance as refugia (CALM, 2002).</p> <p>A flora and vegetation survey of the application area was conducted by botanists from Rio Tinto (2012) in August 2011. This survey identified a total of 204 plant taxa from 94 genera and 40 families within the application area (Rio Tinto, 2012). This is considered to be within the expected range for an area of this size in this locality (Rio Tinto, 2012).</p> <p>According to available databases there are no Threatened Ecological Communities within the application area (GIS Database). The application area lies within the buffer of the Fortescue Marsh Priority Ecological Community (PEC), however the PEC itself is located approximately 9 kilometres east of the application area (Rio Tinto, 2012; GIS Database). The flora and vegetation survey conducted by Rio Tinto (2012) identified 30 vegetation communities within the application area. None of these vegetation communities are considered to be rare or restricted and previous surveys indicated that these communities are present outside of the application area.</p> <p>According to available databases there are no Threatened or Priority Flora species within the application area (GIS Database). Rio Tinto (2012) did not record any Threatened or Priority Flora species within the application area during the flora and vegetation survey. Based on a desktop survey and the habitats present within the application area, Rio Tinto (2012) identified the potential for the following 12 Priority Flora species to occur within the application area:</p> <ul style="list-style-type: none">- <i>Isotropis parviflora</i> (Priority 2);- <i>Spartothamnella puberula</i> (Priority 2);- <i>Stylidium weeliwolli</i> (Priority 2);- <i>Acacia effusa</i> (Priority 3);- <i>Dampiera metallorum</i> (Priority 3);- <i>Nicotiana umbratica</i> (Priority 3);- <i>Rostellularia adscendens</i> var. <i>latifolia</i> (Priority 3);
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- *Sida* sp. Barlee Range (S. van Leeuwen 1642) (Priority 3);
- *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (Priority 3);
- *Eremophila magnifica* subsp. *magnifica* (Priority 4);
- *Goodenia nuda* (Priority 4); and
- *Rhynchosia bungarensis* (Priority 4).

Rio Tinto (2012) conducted a thorough gridline search of the application area with botanists generally being spaced approximately 20 metres apart. While there is the potential for the above species to occur within the application area, it is considered unlikely that significant populations are present and therefore unlikely that the proposed clearing will impact the conservation of any of these species.

Rio Tinto (2012) identified two introduced flora species, *Cenchrus ciliaris* and *Setaria verticillata*, 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. Neither 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.

A total of seven fauna habitats have been recorded in an area adjacent to the application area and are considered to be the same habitats present within the application area (Rio Tinto, 2012). These habitats are considered to be common throughout the Pilbara region and therefore unlikely to support a greater level of faunal diversity than the surrounding areas (Rio Tinto, 2012).

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

Methodology CALM (2002)
 Rio Tinto (2012)
 GIS Database:
 - IBRA WA (regions – subregions)
 - Threatened Ecological Sites Buffered
 - Threatened and Priority Flora

(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 area (Rio Tinto, 2012). A total of seven fauna habitats have been recorded in an area adjacent to the application area and are considered to be the same habitats present within the application area (Rio Tinto, 2012):

- Plain;
- Hill slope;
- Colluvial drainage line;
- Minor drainage line;
- gully floor;
- Rocky hill slope; and
- Rocky gorge.

Based on a fauna survey of the adjacent areas and a desktop survey, the following 14 conservation significant fauna species have been assessed as potentially occurring within the application area (Rio Tinto, 2012):

- Northern Quoll (*Dasyurus hallucatus*) – Schedule 1, Endangered;
- Pilbara Olive Python (*Liasis olivaceus barroni*) – Schedule 1, Vulnerable;
- Peregrine Falcon (*Falco peregrinus*) – Schedule 1;
- *Ramphotyphlops ganei* – Priority 1;
- Australian Bustard (*Ardeotis australis*) – Priority 4;
- Bush Stone-curlew (*Burhinus grallarius*) – Priority 4;
- Grey Falcon (*Falco hypoleucos*) Priority 4;
- Star Finch (*Neochmia ruficauda*) Priority 4;
- Western Pebble-mound Mouse (*Pseudomys chapmani*) Priority 4;
- Fork-tailed Swift (*Apus pacificus*) – Schedule 3, Migratory;
- Great Egret (*Ardea alba*) – Migratory;
- Cattle Egret (*Ardea ibis*) – Schedule 3, Migratory;
- Rainbow Bee-eater (*Merops ornatus*) – Schedule 3, Migratory; and
- Oriental Plover (*Charadrius veredus*) – Schedule 3, Migratory.

Active mounds of the Western Pebble-mound Mouse were recorded within the application area (Rio Tinto, 2012). This species is patchily distributed throughout the Pilbara and, while the proposed clearing may impact on some individuals, it is unlikely to impact on the conservation of this species (Rio Tinto, 2012).

While the habitats within the application area may support the conservation significant fauna species listed

above, the scale of the proposed clearing and its low impact, non-contiguous nature, it is considered unlikely to significantly impact on any particular habitat. Additionally, the majority of the species are highly mobile and likely to move away from the area while it is being disturbed.

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

Methodology Rio Tinto (2012)

(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 Threatened Flora species within the application area (GIS Database).

A flora and vegetation survey of the application area conducted by botanists from Rio Tinto (2012) did not identify any Threatened Flora within the application area.

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

Methodology Rio Tinto (2012)
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 located approximately 90 kilometres west 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 Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). Approximately 99.58% of the pre-European vegetation remains within the Pilbara bioregion (Government of Western Australia, 2011).

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

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; and
111: Hummock grasslands, shrub steppe; *Eucalyptus gamophylla* over hard spinifex.

Approximately 99.51% and 99.99% of Beard vegetation associations 82 and 111, respectively, remain within the Pilbara bioregion (see table on next page) (Government of Western Australia, 2011).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves (and post clearing %)
IBRA Bioregion - Pilbara	17,804,427	17,729,352	~99.58	Least Concern	~6.32
Beard vegetation associations - State					
82	2,565,901	2,553,217	~99.51	Least Concern	~10.24
111	762,964	762,326	~99.92	Least Concern	~5.46
Beard vegetation associations - Bioregion					
82	2,563,583	2,550,899	~99.51	Least Concern	~10.25
111	550,287	550,232	~99.99	Least Concern	~1.28

* Government of Western Australia (2011)

** Department of Natural Resources and Environment (2002)

The vegetation within the application area is not considered to be a remnant of 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)
Government of Western Australia (2011)
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 (GIS Database). The application area does however intersect numerous minor, non-perennial watercourses (GIS Database).

A flora and vegetation survey of the application area was conducted by botanists from Rio Tinto (2012). This survey identified 10 vegetation communities growing in association with minor, non-perennial watercourses within the application area (Rio Tinto, 2012).

Given the nature of the proposed clearing, these drainage lines are unlikely to be significantly impacted. It is important, however, to maintain natural water flow throughout the area. Potential impacts to watercourses within the application area as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.

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

Methodology Rio Tinto (2012)
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 is not likely to be at variance to this Principle

According to available databases the application area intersects the Boolgeeda and Newman land systems (GIS Database).

The Boolgeeda 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).

The Newman land system is characterised by rugged jaspilite plateaux, ridges and mountains supporting hard

Spinifex grasslands (Van Vreeswyk et al., 2004). This land system is not susceptible to erosion (Van Vreeswyk et al., 2004).

According to Rio Tinto (2012), previous clearing in the local area has not resulted in water-logging, acidification, salinisation or deep subsoil compaction and it is considered unlikely that these would occur 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 Rio Tinto (2012)
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 a conservation area (GIS Database). The nearest conservation area is Karijini National Park, located approximately 10 kilometres west of the application area (GIS Database). At this distance the proposed clearing is considered unlikely to impact on the 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 is not likely to be at variance to this Principle

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the Marandoo Water Reserve located approximately 72 kilometres west of the application area (GIS Database). At this distance it is considered unlikely that the proposed clearing will impact on the quality of water within the Marandoo 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 small scale (40 hectares within a 306 hectare boundary) and the non-contiguous nature of the proposed clearing, it is considered unlikely that the proposed clearing will cause salinity levels within the application area to alter significantly.

There are no permanent wetlands or watercourses within the application area (GIS Database). The annual average rainfall for the application area is approximately 459.4 millimetres while the annual average evaporation rate is approximately 3,400 millimetres (BoM, 2012; GIS Database). Therefore, any water pooling on the surface as a result of cyclonic activity is likely to be relatively short lived. It is therefore considered unlikely that the proposed clearing will impact on the quality of any surface water.

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

Methodology BoM (2012)
GIS Database:
- Evaporation Isopleths
- 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 application area experiences a semi-desert tropical climate with an average annual rainfall of approximately 459.4 millimetres (BoM, 2012; CALM, 2002). Local flooding occurs seasonally in the Pilbara region between December and March (Rio Tinto, 2012). Some flooding of minor watercourses is expected to occur within and surrounding the application area during periods of heavy rain (Rio Tinto, 2012). However it is considered unlikely that the proposed clearing will cause or exacerbate the incidence or intensity of flooding (Rio Tinto, 2012).

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

Methodology BoM (2012)
CALM (2002)
Rio Tinto (2012)

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

Comments

There is one Native Title Claim (WC11/6) over the area under application (GIS Database). This claim has been registered with the Native Title Tribunal on behalf of the claimant group. However, the 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 is one registered Aboriginal Site of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no 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 November 2012 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 (2012) BoM Website - Climate Averages by Number, Averages for WITTENOOM
www.bom.gov.au/climate/averages/tables.shtml (Accessed 11 December 2012)
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management
- 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.
- Government of Western Australia (2011) 2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Rio Tinto (2012) Exploration Drilling at Koodaideri - Including supporting documentation for a Native Vegetation Clearing Permit. Unpublished report dated February 2012.
- Van Vreeswyk AME, Payne AL, Leighton KA & Hennig P, (2004). Technical Bulletin No. 92: An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, Western Australia.

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.