



## 1. Application details

### 1.1. Permit application details

Permit application No.: 3008/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

### 1.3. Property details

Property: Iron Ore (Rhodes Ridge) Agreement Authorisation Act 1972, Temporary Reserves 70/4192 and 70/4737  
Local Government Area: Shire Of East Pilbara  
Colloquial name: Rhodes Ridge Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
5.5		Mechanical Removal	State Agreement

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard Vegetation Associations have been mapped at a scale of 1:250,000 for the whole of Western Australia. Three Beard Vegetation Associations are located within the application areas (Shepherd et al., 2001):  <b>Vegetation Association 18:</b> low woodland, mulga ( <i>Acacia aneura</i> );  <b>Vegetation Association 29:</b> sparse low woodland; mulga, discontinuous in scattered groups;  <b>Vegetation Association 82:</b> hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> .	Hamersley Iron (2009) proposes to clear up to 5.5 hectares of native vegetation within a larger area totalling approximately 46.1 hectares. The application areas consist of six parcels of land that are spread over approximately 20 kilometres.  The proposed clearing is for the purpose of exploratory drilling (Hamersley Iron, 2009). Vegetation will be cleared by a bulldozer with its blade raised or with a scrub rake in level terrain (Hamersley Iron, 2009). The application areas are located approximately 35 kilometres north-west of Newman (GIS Database).	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).  To  Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	The vegetation condition rating was based on the flora and vegetation survey of the proposed clearing areas which was conducted by Rio Tinto in December 2008. Rio Tinto (2008) reports the vegetation within the four main survey areas as being in the following conditions:  <b>Area 1:</b> The general condition of the vegetation within this area was very poor due to the very dry conditions at the time of the survey. Approximately 90% of the area had been affected by fire in the last 5 years. A total of two dominant vegetation communities were recorded within the survey area, both of which consisted of <i>Acacia aneura</i> clay flats.  <b>Area 2:</b> The general overall condition of the vegetation within this area was very poor due to the very dry conditions at the time of the survey. Approximately 100% of the area had been affected by fire in the last 3 years. A total of one dominant vegetation community was recorded within the survey area.
<b>Area 1:</b>  <b>Acacia aneura clay flats</b>  <b>1a)</b> <i>Acacia aneura</i> , <i>Acacia pruinocarpa</i> open scrub over <i>Triodia pungens</i> very open hummock grassland over <i>Eriachne benthamii</i> tussock grassland over <i>Triodia pungens</i> scattered hummock grassland. The vegetation condition is rated as being poor, very dry.  <b>1b)</b> <i>Eucalyptus xerothermica</i> , <i>Corymbia candida</i> <i>dispodis</i> low open scrub over <i>Eremophila latifolia</i> open shrubland over <i>Ptilotus obovatus</i> low open shrubland over <i>Chrysopogon fallax</i> and <i>Eriachne</i> sp. tussock grassland. The vegetation condition is rated as being poor, very dry.			

## Area 2:

### Clay Flats with calcrete

2a) *Corymbia candida dispodes* low open woodland over *Acacia aneura*, *Acacia pruinocarpa* high shrubland over *Senna artemisioides* shrubland over *Eremophila longifolia*, *Ptilotus obovatus* low open heath over *Chrysopogon fallax* and *Paraneurachne muelleri* very open tussock grassland over *Enneapogon* sp. open bunch grass. The vegetation condition is rated as being poor and very dry.

## Area 3:

### Rolling hills

3a) *Eucalyptus gamophylla*, *Eucalyptus socialis* and *Eucalyptus xerothermica* low open forest over *Petalostylis labicheoides* high shrubland over *Senna oligophylla*, *Senna artemisioides* and *Corchorus lasiocarpus* low open shrubland over *Triodia basedowii* and *Triodia wiseana* hummock grassland over *Amphipogon caricinus* open tussock grassland. The vegetation condition is rated as being very poor with an existing track. The vegetation unit has been burnt in the last five years.

### Mulga clay flats, edge of drainage line

3b) *Eucalyptus xerothermica* low open woodland over *Acacia aneura* and *Acacia pruinocarpa* open scrub over *Eremophila longifolia* and *Rhagodia eremaea* open shrubland over *Eremophila forrestii* low open shrubland over *Triodia pungens* very open hummock grassland over *Chrysopogon fallax* and *Themeda triandra* open tussock grassland over *Enneapogon polyphyllus* and *Aristida contorta* very open bunch grass. The vegetation condition is rated as being poor, very dry and dust affected from a nearby road.

## Area 4:

### Slopes

#### 4a) Slight slope

*Eucalyptus leucophloia* low woodland over *Acacia bivenosa* and *Acacia synchronicia* high open shrubland over *Triodia wiseana* and *Triodia longiceps* hummock grassland. The vegetation condition is rated as being good with an existing track and no recent fire activity.

#### 4b) Slight slope

*Corymbia hamersleyana* and *Eucalyptus leucophloia* low woodland over *Acacia bivenosa* and *Acacia ancistrocarpa* open scrub over *Triodia wiseana* and *Triodia basedowii* hummock grassland. The vegetation condition is rated as being in good condition with no recent fire activity.

#### 4c) Rocky slope

*Eucalyptus leucophloia* low open forest over *Acacia bivenosa*, *Acacia synchronicia* and *Scaevola acacioides* open scrub over *Triodia wiseana* hummock grassland over *Eriachne mucronata* open tussock grassland. The vegetation condition is rated as being in very good condition.

## Area 3:

The general overall condition of the vegetation within this area was very poor due to the very dry conditions at the time of the survey and also through man-made disturbances. Parts of the areas had been affected by fire in the last five years while in the remaining areas the fire history was unknown. A total of two dominant vegetation communities were recorded within the survey area.

## Area 4:

The general overall condition of the vegetation within this area was good despite the dry conditions at the time of survey. There was only one vegetation type that was described as poor due to a recent fire event. There was no evidence of fire in the remaining areas. A total of eight dominant vegetation communities were recorded within the survey area.

## Drainage line

### 4d) Flat, drainage line

*Eucalyptus leucophloia*, *Eucalyptus xerothermica* and *Corymbia hamersleyana* low open forest over *Petalostylis labicheoides* and *Acacia pachyacra* open scrub over *Acacia bivenosa* shrubland over *Triodia wiseana* hummock grassland. The vegetation condition is rated as being in very good condition despite the dry condition with no recent fire history.

### 4e) Drainage line

*Eucalyptus xerothermica* and *Corymbia hamersleyana* low woodland over *Acacia pyrifolia*, *Petalostylis labicheoides* open scrub over *Stylobasium spatulatum* open shrubland over *Triodia pungens* open hummock grassland over *Themeda triandra*, *Eriachne tenuiloba* open tussock grassland over *Tephrosia rosea* very open herbs. The vegetation condition is rated as being in very good condition despite the dry condition with no recent fire history.

## Hills

### 4f) Rolling hills

*Acacia catenulata*, *Acacia aneura*, *Acacia pruinocarpa* high open shrubland over *Petalostylis labicheoides* shrubland over *Triodia basedowii* open hummock grassland over *Aristida contorta* and *Enneapogon polyphyllus* very open bunch grass. The vegetation condition is rated as being in poor condition with recent fire in the last 12 months.

### 4g) Rolling hills

*Eucalyptus leucophloia*, *Eucalyptus gamophylla* and *Corymbia deserticola* low open forest over *Petalostylis labicheoides* high open shrubland over *Acacia bivenosa* open shrubland over *Triodia basedowii* hummock grassland. The vegetation condition is rated as being in good condition with an existing track and no recent fire history.

## Flats

### 4h) Mulga flats

*Acacia ayersiana*, *Acacia aneura* and *Acacia pruinocarpa* open scrub over *Eremophila forrestii* open shrubland over *Triodia basedowii* hummock grassland. The vegetation condition is rated as being in good condition with an existing track and no recent fire history.

## 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 are located within the Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). This subregion is generally a mountainous area of Proterozoic sedimentary ranges and plateaux, dissected by gorges (basalt, shale and dolerite) (CALM, 2002). The Hamersley subregion consists primarily of 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 botanical survey has been conducted over the application areas by Rio Tinto in December 2008. The survey was split into four separate areas that sampling took place within and that covered the application areas. The following number of plant families, genera and species were recorded from within the four survey areas (Rio

Tinto, 2008):

**Table 1.1: Summary of Native Plant Families, Genera and Species**

	Family	Genus	Species
Area 1	11	20	33
Area 2	7	12	19
Area 3	18	33	64
Area 4	35	74	153

In addition Rio Tinto (2008) has identified the three most dominant families in each area:

Table 1.2: Three most dominant families in each area

	Area 1	Area 2	Area 3	Area 4
<i>Poaceae</i>	12	9	16	25
<i>Mimosaceae</i>	4	2	8	22
<i>Amaranthaceae</i>		2	7	10
<i>Myrtaceae</i>	4			

Rio Tinto (2008) reports that the overall study area represents a moderate level of species richness and is typical for the size of the study areas.

The application areas fall within the Department of Environment and Conservation (DEC) File Notation Area (FNA) 532 (Rio Tinto, 2008). This FNA has been noted due to the significance of mulga (*Acacia aneura*) diversity and covers an area over 900,000 hectares (Rio Tinto, 2008). The dominant vegetation type within the application areas includes *Acacia aneura*, however, Rio Tinto (2008) reports that the amount of disturbance to this species will be minimal, particularly in relation to the size of the FNA.

Rio Tinto (2008) reported one introduced flora species as occurring within the application areas: Whorled Pigeon Grass (*Setaria verticillata*). The presence of introduced flora species would lower the biodiversity value of the application area and therefore, care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

A search of DEC databases was conducted by the assessing officer for fauna species that have the potential to occur within 40 kilometres of the application area. The search indicated that 111 fauna species have the potential to occur within the search area (DEC, 2009a). The search additionally indicated a fairly high level of reptile diversity, with a particularly high level of skinks and geckos having been previously recorded from within the search area (DEC, 2009a). Based on the linear nature of the application areas and their distribution over approximately 20 kilometres, the proposed clearing is unlikely to have a significant impact on the diversity of fauna within the region.

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

**Methodology** CALM (2002)  
DEC (2009a)  
Rio Tinto (2008)  
GIS Database  
- Interim Biogeographic Regionalisation for Australia

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

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

The assessing officer has conducted a search of Department of Environment and Conservation (DEC) and *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* protected matters databases. In addition the DEC has conducted a database search for Threatened and Priority fauna within a 10 kilometre radius of the application areas. The following species of conservation significance are likely to occur within the application areas based on known distribution (DEC, 2009a; 2009b):

- Australian Bustard (*Ardeotis australis*) – Priority 4 on the DEC Threatened and Priority Fauna list;
- Ghost Bat (*Macroderma gigas*) – Priority 4 on the DEC Threatened and Priority Fauna list;
- Pilbara Olive Python (*Liaises olivaceus barroni*) – Schedule 1 (Fauna that is rare or likely to become extinct), *Wildlife Conservation (Specially Protected Fauna) Notice 2008* and Vulnerable, *EPBC Act 1999*;
- Western Pebble-mound Mouse (*Pseudomys chapmani*) – Priority 4 on the DEC Threatened and Priority Fauna list.

The Australian Bustard is a dispersive species with widespread movements over long distances (DECC, 2005). The Australian Bustard is known to inhabit grasslands, low shrublands, grassy woodlands as well as altered environments such as croplands and airfields (DECC, 2005). Suitable habitat for this species is present within

the application areas, however, based on the widespread distribution of this species it is unlikely that the vegetation within the application areas represents significant habitat for this species.

The Ghost Bat has a patchy distribution across northern Australia (DEC, 2009b). It shelters in caves, mine shafts and deep rock fissures and is sensitive to disturbance (DEC, 2009b). Based on the vegetation descriptions provided by Rio Tinto (2008), this habitat type does not appear to be present within the application areas. Therefore, the vegetation of the application areas is unlikely to represent significant habitat for this species.

The Pilbara Olive Python's preferred habitat consists of deep gorges and water holes in the ranges of the Pilbara region (Pearson, 1993 as cited in DEWR, 2007). Radio-telemetry has shown that individuals are usually in close proximity to water and rock outcrops (Pearson, 2001, as cited in DEWR, 2007). Based on the vegetation descriptions provided by Rio Tinto (2008), none of these habitat types appear to be present within the application areas. Based on the above, the vegetation within the application area is unlikely to represent significant habitat for this species.

The Western Pebble-mound Mouse generally occurs on gentler slopes of rocky ranges where the ground is covered by a stony mulch and vegetated by hard spinifex, often with an overstorey of eucalypts and scattered shrubs (Van Dyck and Strahan, 2008). Mounds are often sited close to narrow ribbons of *Acacia*-dominated scrub that grows along incised drainage lines (Van Dyck and Strahan, 2008). Several mounds of this species were recorded during the botanical survey (Rio Tinto, 2008). Based on the above, this species may be present within the application areas, however, the clearing of 5.5 hectares of native vegetation within a 46.1 hectare area is unlikely to have a significant impact upon habitat for this species.

The habitat types present within the application areas are well represented on a local and regional scale (Rio Tinto, 2008). Therefore, the vegetation of the application areas is unlikely to represent significant habitat for any fauna species. Furthermore, the clearing of 5.5 hectares of native vegetation within 46.1 hectares, in addition to the linear nature of the proposed clearing, is unlikely to result in a significant impact to any fauna species.

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

**Methodology** DEC (2009a)  
DEC (2009b)  
DECC (2005)  
DEWR (2007)  
Rio Tinto (2008)  
Van Dyck and Strahan (2008)

**(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**

Rio Tinto conducted a botanical survey for an area that included the application areas in December 2008. The survey area was traversed on foot by a botanist, who covered a 50 metre wide strip (Rio Tinto, 2008). The botanical survey recorded the Declared Rare Flora (DRF) species *Lepidium catapycnon*.

*Lepidium catapycnon* is an open, woody perennial, herb or shrub standing between 0.2 and 0.3 metres high (Rio Tinto, 2008). Its stem zigzags and during October white flowers are visible (Rio Tinto, 2008). It is found in skeletal soils on hillsides around the Wittenoom Gorge, Hamersley Range, Weeli Wolli and Newman regions (Rio Tinto, 2008).

Rio Tinto (2008) recorded 13 populations of *Lepidium catapycnon* during the botanical survey however, none of these populations occur within the application areas. In addition no Priority flora species were recorded during the botanical survey (Rio Tinto, 2008).

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

**Methodology** Rio Tinto (2008)

**(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 Threatened Ecological Communities (TEC's) within the area applied to clear (GIS Database). The closest TEC is located approximately 45 kilometres west of the application areas (GIS Database).

Rio Tinto (2008) reports that no TEC's were identified during the botanical survey of the application areas.

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

**Methodology** Rio Tinto (2008)  
GIS Database  
- Threatened Ecological Communities

**(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 IBRA Pilbara Bioregion (GIS Database). Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists within this Bioregion (see table below). The vegetation within the application area is recorded as the following three Beard Vegetation Associations (Shepherd et al., 2001):

**Beard Vegetation Association 18:** low woodland; mulga (*Acacia aneura*);

**Beard Vegetation Association 29:** sparse low woodland; mulga, discontinuous in scattered groups;

**Beard Vegetation Association 82:** hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*.

According to Shepherd et al. (2001) approximately 100% of these vegetation associations remain within the Bioregion (see table below). In addition all three Beard Vegetation Associations are well represented in conservation estate (see table below).

Therefore, the vegetation within the application areas is not a significant remnant of vegetation within 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	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
18	19,892,437	19,890,348	~100	Least Concern	2.1
29	7,904,064	7,904,064	~100	Least Concern	0.3
82	2,565,930	2,565,930	~100	Least Concern	10.2
Beard veg assoc. – Bioregion					
18	676,561	676,561	~100	Least Concern	16.8
29	1,133,228	1,133,228	~100	Least Concern	1.9
82	2,563,610	2,563,610	~100	Least Concern	10.2

\* Shepherd et al. (2001) updated 2005

\*\* 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 et al. (2001)  
GIS Database  
- Interim Biogeographic Regionalisation for Australia

**(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**

The application areas contain several minor, ephemeral drainage lines (GIS Database). Rio Tinto (2008) has reported three vegetation units within the application areas that are generally associated with watercourses:

**1. Mulga clay flats, edge of drainage line**

*Eucalyptus xerothematica* low open woodland over *Acacia aneura* and *Acacia pruinocarpa* open scrub over *Eremophila longifolia* and *Rhagodia eremaea* open shrubland over *Eremophila*

*forrestii* low open shrubland over *Triodia pungens* very open hummock grassland over *Chrysopogon fallax* and *Themeda triandra* open tussock grassland over *Enneapogon polyphyllus* and *Aristida contorta* very open bunch grass.

**2. Flat, drainage line**

*Eucalyptus leucophloia*, *Eucalyptus xerothermica* and *Corymbia hamersleyana* low open forest over *Petalostylis labicheoides* and *Acacia pachyacra* open scrub over *Acacia bivenosa* shrubland over *Triodia wiseana* hummock grassland.

**3. Drainage line**

*Eucalyptus xerothermica* and *Corymbia hamersleyana* low woodland over *Acacia pyrifolia*, *Petalostylis labicheoides* open scrub over *Stylobasium spatulatum* open shrubland over *Triodia pungens* open hummock grassland over *Themeda triandra*, *Eriachne tenuiloba* open tussock grassland over *Tephrosia rosea* very open herbs.

Vegetation units 2 and 3 are reported by Rio Tinto (2008) as being in very good condition whilst vegetation unit 1 is reported as being in poor condition, very dry and dust affected from a nearby road. The application is to clear up to 5.5 hectares within a 46.1 hectare area. The 46.1 hectares is made up of six separate areas that are spread over approximately a 20 kilometre area (GIS Database). This relatively small-scale clearing, spread out over a relatively large area, is unlikely to have any significant impacts upon vegetation associated with watercourses or wetlands.

Based on the above, the proposed clearing is at variance to this Principle, however, the vegetation units associated with watercourses are well represented locally, and within the Pilbara region generally. Consequently, the proposed clearing is unlikely to have any significant impacts, on watercourses at a regional scale given their widespread distribution.

Should a permit be granted, it is recommended that if any watercourses are to be disturbed the proponent should liaise with the Department of Water (DoW) to determine whether a Bed and Banks permit is necessary for the proposed works.

**Methodology** Rio Tinto (2008)  
GIS Database  
- Clearing Instruments

**(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 areas have been mapped as occurring in the following land systems (GIS Database):

- Newman Land System;
- Platform Land System;
- Spearhole Land System;
- Wannamunna Land System.

The Newman land system is described by Van Vreeswyk et al. (2004) as having rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands. Van Vreeswyk et al. (2004) reports that much of this system is inaccessible or poorly accessible. The dominant vegetation type is spinifex and the system is burnt fairly frequently (Van Vreeswyk et al., 2004). The land system has low soil erosion risk and approximately 91% of the vegetation is reported as being in very good condition (Van Vreeswyk et al., 2004).

The Platform land system consists of dissected slopes and raised plains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). Van Vreeswyk et al. (2004) reports that this system is not susceptible to erosion and that approximately 97% of the vegetation within this system is in very good condition.

The Spearhole land system is reported by Van Vreeswyk et al. (2004) as consisting primarily of gently undulating hardpan plains supporting grooved mulga shrublands and hard spinifex. This system is not prone to erosion (Van Vreeswyk et al., 2004).

The Wannamunna land system consists primarily of hardpan plains and internal drainage tracts supporting mulga shrublands and woodlands (and occasionally eucalypt woodlands) (Van Vreeswyk et al., 2004). This system is reported by Van Vreeswyk et al. (2004) as supporting low shrubs and tussock grasses. Generally the system has low susceptibility to erosion however, disturbances to overland flow processes by inappropriate positioning or construction of infrastructure such as roads can have adverse effects on vegetation (Van Vreeswyk et al., 2004). The proponent proposes to clear 5.5 of native vegetation over four land systems and therefore, the impact to the Wannamunna land system is likely to be fairly minimal.

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  
- Rangelands System Mapping

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

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

The application areas fall within the Department of Environment and Conservation (DEC) File Notation Area (FNA) 532 (Rio Tinto, 2008). This FNA has been noted due to the significance of mulga (*Acacia aneura*) diversity and covers an area over 900,000 hectares (Rio Tinto, 2008). The dominant vegetation type within the application areas includes *Acacia aneura*, however, Rio Tinto (2008) reports that the amount of disturbance to this species will be minimal, particularly in relation to the size of the FNA.

The nearest DEC managed National Park is Karajini National Park located approximately 70 kilometres west of the application areas (GIS Database).

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

**Methodology** Rio Tinto (2008)  
GIS Database  
- CALM Managed Land and Waters

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

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

The application areas are located in an arid region with an annual average rainfall of approximately 310 millimetres falling mainly during the summer months (BoM, 2009). Based on an average annual evaporation rate of approximately 2,500 millimetres, any surface water resulting from rain events is expected to be relatively short-lived (ANRA, 2007).

The application areas have several ephemeral drainage lines running through them (GIS Database). Based on the climate of the region these creeks are expected to be dry except following significant rainfall events which are typically associated with tropical cyclones. Therefore, the proposed clearing is unlikely to have a significant impact upon surface water quality in the area.

The proposed clearing area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The Pilbara region consists of granite - greenstone bedrock in the north, and the sedimentary and volcanic rocks of the Hamersley basin in the south (DoF, 2009). The application area is located within the south of the Pilbara region and would therefore, most likely be located in the Hamersley basin. In this basin, large amounts of groundwater are used for mining related purposes, principally from calcrete and pisolite valley fill aquifers (DoF, 2009). Groundwater is generally fresh, or brackish (DoF, 2009). The clearing of 5.5 hectares within a 46.1 hectare area that stretches across 20 kilometres, is not likely to have a significant impact upon surface or groundwater quality, or groundwater quantity.

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

**Methodology** ANRA (2007)  
BoM (2009)  
DoF (2009)  
GIS Database  
- 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 areas are located in an arid region where the average annual evaporation rate greatly exceeds the average annual rainfall (BoM, 2009). There are no permanent watercourses within the application areas, however, several ephemeral drainage lines dissect the proposed clearing areas (GIS Database). These drainage lines are expected to be dry for most of the year, and would likely only flow immediately following significant rainfall.

Natural flood events do occur in the Pilbara region following cyclonic activity. However the proposed clearing is not expected to increase the incidence or intensity of such events given the size of the area to be cleared (5.5 hectares), in relation to the Fortescue River Upper catchment area (2,975,192 hectares) (GIS Database).

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



**Methodology** BoM (2009)  
GIS Database  
- Hydrographic Catchments - Catchments

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

##### **Comments**

There is one Native Title claim (WC99/004) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenements have 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*.

According to available databases there are no known Aboriginal Sites of Significance within the application areas (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.

There were no public submissions received during the public comments period.

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

#### **4. Assessor's comments**

##### **Comment**

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

Should the permit be granted it is recommended that conditions be imposed for the purposes of weed management, rehabilitation, record keeping and permit reporting.

#### **5. References**

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## 6. Glossary

### Acronyms:

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

### Definitions:

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

<b>P1</b>	<b>Priority One - Poorly Known taxa:</b> 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.
<b>P2</b>	<b>Priority Two - Poorly Known taxa:</b> 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.
<b>P3</b>	<b>Priority Three - Poorly Known taxa:</b> 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.
<b>P4</b>	<b>Priority Four – Rare taxa:</b> 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.
<b>R</b>	<b>Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):</b> 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.
<b>X</b>	<b>Declared Rare Flora - Presumed Extinct taxa:</b> 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] :-

<b>Schedule 1</b>	<b>Schedule 1 – Fauna that is rare or likely to become extinct:</b> being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
<b>Schedule 2</b>	<b>Schedule 2 – Fauna that is presumed to be extinct:</b> being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
<b>Schedule 3</b>	<b>Schedule 3 – Birds protected under an international agreement:</b> 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.
<b>Schedule 4</b>	<b>Schedule 4 – Other specially protected fauna:</b> 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.