



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 2527/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: BHP Billiton Iron Ore Pty Ltd

### 1.3. Property details

Property: Iron Ore (Mt Newman) Agreement Act 1964, Mineral Lease 244SA (AML 70/244)  
Local Government Area: Shire of East Pilbara  
Colloquial name: Orebody 17 Exploration Project

### 1.4. Application

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

## 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 at 1:250,000 scale for the whole of Western Australia, and are a useful tool to examine the vegetation extent in a regional context. Two Beard vegetation associations are located within the area proposed to be cleared (GIS Database). These vegetation associations are (Shepherd et al., 2001):

- Beard Vegetation Association 82: Hummock grasslands, low tree steppe; Snappy Gum over *Triodia wiseana*; and
- Beard Vegetation Association 216: Low woodland; Mulga (with spinifex) on rises.

A flora and vegetation survey was conducted in the Orebody 17 area by Pilbara Flora between 21 – 22 October 2008. The survey area was approximately 950 metres long and between 200 – 400 metres wide, covering a total area of approximately 26.18 hectares. Seventeen 50m x 50m quadrats were surveyed, the standard size used for flora and vegetation surveys undertaken in the Pilbara bioregion (Pilbara Flora, 2008). Six vegetation communities were recorded within the survey area (Pilbara Flora, 2008):

#### **Ridges and colluvial upperslopes with Spinifex open grassland :**

Ridges and colluvial upperslopes with Spinifex open grassland: Open grassland of *Triodia basedowii* with scattered *Hakea chordophylla*, *Halgania solanacea* var / *Keraudrenia velutina* subsp *elliptica* and *Gompholobium karijini*;

**Colluvial hillsides with open Acacia woodland:** Open shrubland of *Acacia rhodophloia*, *Grevillea wickhamii* subsp / and *Hakea chordophylla* over *Gompholobium karijini* and *Halgania solanacea* var / over *Triodia basedowii*;

**Colluvial hillsides with low mixed shrubland:** Low shrubland of over *Acacia adoxa* var *adoxo*, *Eriachne mucronata*, *Mirbelia viminialis*, *Keraudrenia velutina* subsp *elliptica*, *Gompholobium karijini* and *Triodia basedowii* with emergent *Eucalyptus leucophloia* subsp *leucophloia*;

**Breakaways with low open Eucalypt woodland:** Low woodland of *Eucalyptus leucophloia* subsp *leucophloia* and *Eucalyptus kingsmillii* subsp *kingsmillii* over *Eriachne mucronata*, *Keraudrenia velutina* subsp *elliptica*, *Gompholobium karijini* and *Triodia epactia*;

**Narrow valley with mixed high shrubland:** High shrubland of *Grevillea wickhamii* subsp / *Acacia rhodophloia*, *Petalostylis labicheoides* and *Rulingia luteiflora* over *Gompholobium karijini*, *Eriachne lanata*, *Eriachne mucronata*, *Triodia basedowii* and *Triodia epactia*; and

**Minor narrow drainage line with high shrubland:** Open scrub of *Petalostylis labicheoides* over *Acacia adoxa* var *adoxo*, *Gompholobium karijini* and *Triodia basedowii*.

<b>Clearing Description</b>	BHP Billiton Iron Ore Pty Ltd (here after referred to as BHP Billiton) have applied to clear 50 hectares within a 612 hectare purpose permit boundary for the Orebody 17 exploration project (BHP Billiton, 2008). The project will comprise drill pads approximately 20 metres wide and 20 metres long, and associated tracks which will be no wider than 4 metres (BHP Billiton, 2008).
	The area applied to clear is located approximately 32 kilometres east/north-east of Newman in the Pilbara region of Western Australia (ENV Australia, 2008).
<b>Vegetation Condition</b>	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994);  to  Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).
<b>Comment</b>	Vegetation within the application area was described as 'Very Good' to 'Degraded', with most of the survey sites rated as 'Very Good'. The main disturbances within the application area were associated with old drill pads and associated tracks (Pilbara Flora, 2008).

### 3. Assessment of application against clearing principles

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

<b>Comments</b>	<p><b>Proposal is not likely to be at variance to this Principle</b></p> <p>The proposed clearing area is located within the Fortescue sub-region of the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). The subregion is described as having extensive salt marshes, Mulga-bunch grass, and short grass communities on alluvial plains in the east (Kendrick, 2001). In addition, River Gum woodlands fringe the drainage lines and in the northern limit of the subregion there are numerous Mulga stands (Kendrick, 2001).</p> <p>A flora and vegetation survey covering part of the proposed clearing area was undertaken by Pilbara Flora (2008) between 21 – 22 October 2008. A total of 61 flora taxa were recorded, including 39 genera and 23 families. The most species rich families were Poaceae, Mimosaceae, Myrtaceae and Caesalpiniaceae. Pilbara Flora (2008) have stated that the total taxa count is considered lower than expected compared to the high species diversity within the Pilbara bioregion in general, however the level of diversity found in the survey area is comparable to other small vegetation surveys undertaken in the local area. No vegetation types or landscape units were identified that were considered as being rare, restricted or unique (Pilbara Flora, 2008). There were no Declared Rare Flora (DRF) or Priority flora species recorded within the survey area (Pilbara Flora, 2008).</p> <p>During the flora and vegetation survey Pilbara Flora (2008) noted that approximately five percent of the project area was degraded from exploration tracks and drill pads. Pilbara Flora (2008) also stated that there were no weed species recorded in the survey area (Pilbara Flora, 2008). Care must be taken to ensure that no weed species are introduced or spread through the proposed clearing area via vehicles and other machinery involved in the vegetation clearing and subsequent exploration activity. Should a clearing permit be granted, it is recommended that a condition be imposed on the permit for the purpose of weed management.</p> <p>ENV Australia (2007) undertook a fauna assessment of the Orebody 18 project area (this included part of the area subject to this clearing permit application, but largely included areas up to 3 kilometres west and 2 kilometres south of the proposed clearing area) between 18 and 29 September 2006. As a result of the field survey, there were 113 fauna taxa recorded within the survey area, including: 15 mammals, 42 reptiles and 56 birds (ENV Australia, 2007). During the fauna assessment, ENV Australia (2007) noted that the habitat types recorded were all typical of the Pilbara region.</p> <p>One conservation significant fauna species; a Blind Snake (<i>Ramphotyphlops ganeii</i>) was recorded on a hilltop approximately 3 kilometres west of the proposed clearing area at its nearest point (ENV Australia, 2007). This species is typically associated with moist microhabitats which exist in many of the deeper, better shaded gorges throughout the Pilbara region (Aplin, 1998). BHP Billiton (2008) has committed to avoid all gullies and gorges within the proposed clearing area. This will minimise the risk of <i>Ramphotyphlops ganeii</i> being impacted by the proposed clearing.</p> <p>Based on the above, the proposed clearing is not likely to be at variance to this Principle.</p>
<b>Methodology</b>	<p>BHP Billiton (2008).  ENV Australia (2007).  Kendrick (2001).  Pilbara Flora (2008).  GIS Database:  - Interim Biogeographic Regionalisation of Australia.  - Interim Biogeographic Regionalisation of Australia (subregions).</p>

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

**Comments Proposal may be at variance to this Principle**

ENV Australia (2007) undertook a fauna assessment of the Orebody 18 project area between 18 and 29 September 2006. The fauna assessment involved two processes, firstly there was a detailed desktop survey including a search of literature, data, aerial photographs and maps for information relating to habitats likely to be found in the project area. Secondly, there was a field survey of the project area including a fauna habitat assessment, trapping program, opportunistic searches, an ornithological census and bat recordings (ENV Australia, 2007).

During the fauna assessment there were five habitat types recorded within the survey area, including; drainage lines / floodplains, floodplains, scree slopes / gullies, gullies and rocky hilltops (ENV Australia, 2007). ENV Australia (2007) note that the habitat types recorded are all typical of the Pilbara region.

As a result of the field survey, there were 113 fauna taxa recorded within the survey area, including: 15 mammals, 42 reptiles and 56 birds (ENV Australia, 2007). There were two conservation significant species recorded in the survey area, including: the Rainbow Bee-eater (*Merops ornatus*) and the Blind Snake *Ramphotyphlops ganei*. ENV Australia (2007) have stated that a number of other conservation significant species may utilise the project area. These include: Pilbara Olive Python (*Liasis olivaceus barroni*), Western Pebble-mound Mouse (*Pseudomys chapmani*), Australian Bustard (*Ardeotis australis*) and the Peregrine Falcon (*Falco peregrinus*).

The Pilbara Olive Python is listed on the *Wildlife Conservation (Specially Protected Fauna) Notice 2008* as Schedule 1 'Fauna that is rare or is likely to become extinct' and 'Vulnerable' under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. The species inhabits deep rocky gorges and gullies, usually near watercourses, but may also be found in other habitats such as drier areas or woodlands (Department of the Environment, Water, Heritage and the arts (DEWR), 2009a). ENV Australia (2007) have stated that the drainage lines / floodplains and gullies may provide suitable habitat for the Pilbara Olive Python. However, BHP Billiton (2008) have stated that they will not be conducting any exploration activities within any of the gorges or gullies of the application area. This action is likely to reduce impacts to the habitat of this species.

The Western Pebble-mound Mouse (Priority 4 - DEC) is found in rocky hummock grasslands and is endemic to the Pilbara (ENV Australia, 2007). Suitable habitat for the Western Pebble-mound Mouse exists within the project area (ENV Australia, 2007). This species has been recorded in many sites surrounding the application area, including the Ophthalmia Ranges, and its habitat is well represented throughout the Pilbara (ENV Australia, 2007). Additionally, this species is abundant in at least five large conservation reserves found in the Pilbara (Start et al., 1980). Based on this, it is unlikely that the proposed clearing will significantly reduce the overall habitat of the Western Pebble-mound Mouse.

The Australian Bustard (DEC - Priority 4) is limited to the arid areas of Northern and Central Australia (Caughley et al., 1986). It is found in tussock grasslands, Triodia hummock grassland, grassy woodland and low shrublands (Garnett & Crowley, 2000). Although not recorded within the application area, there have been several recordings within the Ophthalmia Ranges which are close by. Suitable habitat for this species (woodlands and grasslands) is also present in the application area (ENV Australia, 2007). However, it is unlikely that this species would be reliant on the application area for habitat, as the habitat types within the application area are well represented in the local area (ENV Australia, 2007). It should also be noted that this species is nomadic in nature and would be able to move on to neighboring habitats at the onset of clearing. Based on the above, it is unlikely the proposed clearing will significantly reduce the overall habitat of this species.

The Rainbow Bee-eater (Migratory and Marine species – *EPBC Act 1999* is a medium sized bird, and the only species of Bee-eater in Australia (DEWR, 2009b). The Rainbow Bee-eater is distributed across much of mainland Australia and on several near shore islands. It occurs in a range of habitats including open forests and woodlands, shrubland areas, grasslands, inland and coastal sand dune systems, mangroves and cleared or semi-cleared habitats (DEWR, 2009b). The Rainbow Bee-eater was recorded in the project area, and at four other locations in the Ophthalmia Ranges that have been surveyed (ENV Australia, 2007). However, the Rainbow Bee-eater is a common and widespread species, and its habitat is well represented in surrounding areas (ENV Australia, 2007). The non-contiguous clearing of 50 hectares for mineral exploration is unlikely to significantly reduce the overall habitat of this species.

The Peregrine Falcon (Schedule 4 - Other specially protected fauna, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) is widespread across Australia including some continental islands but absent from most deserts and the Nullarbor Plain (Johnstone & Storr, 1998). Its habitat consists of areas such as cliffs along coasts, rivers and ranges, and near wooded watercourses and lakes (Johnstone & Storr, 1998). During the fauna survey ENV Australia (2007) noted that there were two cliff areas which may be suitable nesting sites for the Peregrine Falcon. However, further information provided by ENV Australia (2008) confirms that these two cliffs were not found in the application area but rather to the west near the neighboring Orebody 18 mine site. ENV Australia also stated that Peregrine Falcons may nest in trees, however, none were noted in the application area which are likely to support Peregrine Falcon nests. It is therefore unlikely that the application area provides suitable nesting habitat for this species.

*Ramphotyphlops ganeii* (Priority 1 – DEC) is a Blind Snake which has been collected at opposite ends of the Pilbara, implying that the species may occur over a substantial geographic range (Aplin, 1998). However, it has been rarely collected which implies either a general scarcity or a very discontinuous distribution. According to available data, this species has never been recorded along the Ophthalmia Ranges before (ENV Australia, 2007). *Ramphotyphlops ganeii* is represented by only seven records on the Western Australian Museum database, making it one of the least recorded reptiles for the Pilbara bioregion. ENV Australia (2007) note that Blind Snakes are typically very difficult to detect during field surveys, although common taxa such as *Ramphotyphlops grypus* are usually recorded at least once per survey. Low capture records of *Ramphotyphlops ganeii* are the result of its low density and secretive nature (ENV Australia, 2007). This species is typically associated with moist microhabitats which exist in many of the deeper, better shaded gorges throughout the Pilbara region (Aplin, 1998), however it was recorded in rocky hilltop habitat by ENV Australia (2007). According to B. Marrion - Personal Communication, 25 September, 2008, this species would have been feeding or looking for a mate when discovered on the hilltop, but its optimal habitat comprises gorge and gully areas. In regards to managing impacts to this species, BHP Billiton have committed to avoid gorge and gully areas which are likely to be typical *Ramphotyphlops ganeii* habitat.

Based on the above, the proposed clearing may be at variance to this Principle. However, ENV Australia (2007) have stated that all habitats present within the application area are well represented in the Pilbara. There are a number of conservation significant species which may utilise the application area for feeding or foraging, however, the majority of these species would not be specifically reliant on the application area for habitat. The only exception may be *Ramphotyphlops ganeii*, which could be reliant on the gorge and gully areas. However, BHP Billiton (2008) have committed to avoid these gorge and gully areas during the project.

**Methodology** Aplin (1998).  
BHP Billiton (2008).  
Caughley et al., (1986).  
ENV Australia (2007).  
ENV Australia (2008).  
DEWR (2009a).  
DEWR (2009b).  
Garnett & Crowley (2000).  
Johnstone & Storr (1998).  
Start et al., (1980).

**(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**

The nearest known DRF species to the application area is *Lepidium catapycnon*, which is found approximately 40 kilometres to the west (GIS Database).

A flora and vegetation survey covering part of the application area was undertaken by Pilbara Flora (2008) between 21 and 22 October 2008. This involved a detailed database search of the application area and an on ground survey to document and describe the presence of flora species, vegetation associations and species of conservation significance in the application area (Pilbara Flora, 2008).

The results of the database search showed that there was one Declared Rare Flora (DRF) and 29 Priority flora species which could potentially be found in the application area (Pilbara Flora, 2008). However, no DRF or Priority flora species were recorded during the ground survey (Pilbara Flora, 2008). Whilst it is acknowledged that the entire area subject to this clearing permit application was not surveyed, the likelihood of DRF or Priority Flora species being present is considered low given that all main landform and vegetation types were sampled and no vegetation types or landscape units were identified that were considered as being rare, restricted or unique (Pilbara Flora, 2008).

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

**Methodology** Pilbara Flora (2008).  
GIS Database:  
- Declared Rare and Priority Flora List.

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

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

There are no known Threatened Ecological Communities (TECs) in the application area (GIS Database).

The nearest known TEC to the application area is the Ethel Gorge groundwater aquifer stygobiont community which is located approximately 20 kilometres to the west of the application area. There were no TECs identified during the flora and vegetation survey which covered all of the representative habitats of the application area (Pilbara Flora, 2008). Given the distance between the proposed clearing and the Ethel Gorge groundwater aquifer stygobiont community (approximately 20 kilometres away), it is unlikely that the conservation values of this TEC would be compromised by the proposed clearing.

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

**Methodology** Pilbara Flora (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 area is located within the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Shepherd et al. (2001) reports that approximately 99% of the pre-European vegetation remains within the Pilbara Bioregion. The vegetation within the majority of the application area is broadly mapped as Beard Vegetation Association 82: Hummock grasslands, low tree steppe; Snappy Gum over *Triodia wiseana*; with a small area at the central-southern edge of the application area mapped as Beard Vegetation Association 216: Low woodland; Mulga (with spinifex) on rises (GIS Database). According to Shepherd et al., (2001) there is approximately 100% of these vegetation types remaining at both a State and bioregional level.

Although several large scale mining operations are located within a 50 kilometre radius of the application area (GIS Database), the Pilbara region has not been extensively cleared on a broader scale. The area applied to clear is not considered to represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,164	17,794,164	~99.9	Least Concern	6.3
Beard vegetation associations – WA					
82	2,565,930	2,565,930	~100	Least Concern	10.2
216	280,760	280,760	~100	Least Concern	0.0
Beard vegetation associations – Pilbara Bioregion					
82	2,563,610	2,563,610	~100	Least Concern	10.2
216	26,670	26,670	~100	Least Concern	0.0

\* 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) updated 2005.  
GIS Database:  
- Interim Biogeographic Regionalisation of Australia.  
- 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**

There are no permanent watercourses or wetlands within the application area (GIS Database). There are several minor, non-perennial watercourses which intersect the application area, dispersing down stream into Jiblebar Creek (GIS Database). Given that watercourses are present within the application area, the proposed clearing is at variance to this Principle.

However, the watercourses present would only flow after major rainfall events. Wherever practicable BHP Billiton (2008) will not encroach within 10 metres of minor watercourses that may be considered significant in relation to local and/ or regional surface flow. Hence, impacts on watercourses are likely to be minimal.

If the beds and banks of any watercourses are to be disturbed during the exploration programme, a Bed and

Banks Permit may be required. The proponent is advised to liaise with the Department of Water for advice in this regard.

**Methodology** BHP Billiton (2008).  
GIS Databases:  
- Hydrography, linear.  
- Geodata, Lakes.

**(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**

**Comments** **Proposal may be at variance to this Principle**

There are three land systems located within the application area, including: Boolgeeda, Newman and Washplain land systems (GIS Database).

The Boolgeeda land system is described as stony lower plains below hill systems supporting hard and soft spinifex grasslands and Mulga shrublands (Van Vreeswyk et al., 2004). The landform of this system in which the application area is located is described as stony slopes and upper plains - very gently inclined slopes and upper interfluvies immediately down slope from adjacent hill systems; and stony lower plains –almost level plains downslope, surface mantle varying from very few to very abundant ironstone and other pebbles; subject to sheet and channelised flow. According to Van Vreeswyk et al., (2004) the Boolgeeda land system is not susceptible to soil erosion.

The Newman land system is described as rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands. (Van Vreeswyk et al., 2004) The landform in which the application area lies is Plateaux, ridges, mountains and hills - up to 400 metres; level or rounded plateaux summits and mountain crests, ridges and indented escarpments with vertical upper cliff faces and moderately inclined to very steep upper scree slopes; surface mantles of abundant to very abundant pebbles, cobbles and stones of ironstone, jaspilite, chert and other rocks (Van Vreeswyk et al., 2004). The Newman land system has a nil to minor erosion potential, which is likely to be due to the surface mantle which provides protection from erosional forces (Van Vreeswyk et al., 2004).

The Washplain land system is described as Hardpan plains supporting groves of Mulga shrublands (Van Vreeswyk et al., 2004). The landform in which the application area is found is described as: tracts receiving more concentrated through flow – almost level tracts as corridors up to one kilometre wide, receiving concentrated through flow, usually unchannelled but occasionally with minor channels with shallow incision. This land system has a moderate susceptibility to soil erosion (Van Vreeswyk et al., 2004).

The majority of the application area in its current form is protected from erosional forces as a stony mantle is present, however some areas on the plains (Washplain land system) are not completely covered by a stony mantle. Given the intense summer rainfall events associated with cyclonic activities and the topography present, it is likely that the removal of native vegetation may cause erosion within these areas. Soils of the Boolgeeda and Newman Land System are protected by a stony mantle and are less likely to erode, however the removal of the stony mantle during clearing may initiate soil erosion.

Based on the above, the proposed clearing may be at variance to this Principle. However, it is acknowledged that the proposal involves non-contiguous clearing of up to 50 hectares for discrete drill pads and access tracks within a much larger (612 hectare) purpose permit boundary, as opposed to broad scale clearing of a defined area. In addition, progressive rehabilitation will be undertaken throughout the life of the drilling program. BHP Billiton (2008) have committed to rehabilitating drill pads and access tracks within six months of the completion of each stage of the program, and/or before the commencement of the next phase of drilling (whichever comes first). All disturbance to the land surface made as a result of the exploration program will be rehabilitated as per BHPBIO's 'Exploration Environmental Management Plan' (BHP Billiton, 2008). Should a clearing permit be granted, it is recommended that suitable conditions be imposed for the purpose of rehabilitation.

**Methodology** BHP Billiton (2008).  
Van Vreeswyk et al., (2004).  
GIS Database:  
- Rangeland Land System Mapping.  
- Topographic Contours, Statewide.

**(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 nearest known conservation area to the application area is Collier Range National Park, which is situated approximately 130 kilometres to the south-west (GIS Database). Based on this distance, it is unlikely the environmental values of Collier Range National Park (or any other conservation area) will be compromised by the proposed clearing.

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

**Methodology** GIS Database:  
- CALM Managed Lands 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**

There are no permanent watercourses or wetlands within the project area, however there are a number of non-perennial drainage lines which traverse the area (GIS Database). Care must be taken to ensure that the proposed clearing activities do not cause or increase sedimentation, erosion or turbidity to watercourses on or off site. BHP Billiton (2008) have advised that all exploration drill sites will be located a suitable distance from natural drainage lines, including a 10 metre buffer from the boundary of minor watercourses that may be considered significant in relation to local and/ or regional surface flow. Sediment traps and sumps will also be constructed where necessary to minimise the potential impacts on the quality of surface water (BHP Billiton, 2008).

The proposed clearing area is not located within a Public Drinking Water Source Area (GIS Database). The proposed clearing will be non-contiguous, and will consist of discrete drill pads and access tracks (BHP Billiton, 2008). It is not expected that the proposed clearing will significantly impact upon groundwater levels or quality within the application area.

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

**Methodology** BHP Billiton (2008).  
GIS Database:  
- 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 is made up of a number of different landforms including a series of ridges and extensive flood plains to the south (ENV Australia, 2007). There is a 120 metre gradient between the ridges above and the plains below (GIS Database). It is likely that during rainfall periods runoff would move towards drainage lines on the ridge and then onto the plains below. Additionally, runoff is likely to move in the form of sheet flows from higher areas towards low lying plains (GIS Database).

The application area experiences a very high annual evaporation rate of approximately 3,200 millimetres, whilst the Newman area experiences a low annual rainfall of approximately 310 millimetres (GIS Database). The annual evaporation rate of the application area is more than ten times the rainfall received in the Newman area. Based on this, it is likely that any water that collects and floods will evaporate quickly.

The application area is located within the Fortescue River upper catchment which is approximately 2,975,192 hectares in size (GIS Database). Given the small size of the proposed clearing (50 hectares) in relation to the size of the Fortescue River upper catchment (2,975,192 hectares), it is unlikely the proposed clearing will significantly increase the amount of surface water flow in this catchment.

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

**Methodology** ENV Australia (2007).  
GIS Database:  
- Evapotranspiration, Point Potential.  
- Hydrographic Catchments - Catchments.

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

**Comments**

There is one native title claim in the application area (GIS Database). This claim (WC99\_004) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). However, the mining tenement 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 four registered Sites of Aboriginal Significance located in the area applied to clear (Site ID 9183, 9184, 9185, and 9234) (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

BHP Billiton (2005) has an internal process; the Project Environment and Aboriginal Heritage Review (PEAHR), which is designed to prevent the inadvertent disturbance of Aboriginal heritage sites within BHP Billiton

operations as well as ensuring that all areas of proposed disturbance have been subject to adequate ethnographic and archaeological inspection and consultation. Prior to the commencement of any land disturbance activity, a PEHR must be completed and submitted to BHP Billiton's Indigenous Affairs Department, for assessment. All land disturbance activities must be approved by BHP Billiton's Environment and Aboriginal Heritage staff prior to its commencement (BHP Billiton, 2005).

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.

**Methodology** BHP Billiton (2005).  
GIS Databases:  
- Aboriginal Sites of Significance.  
- Native Title Claims.

#### 4. Assessor's comments

##### Comment

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

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

#### 5. References

- Aplin, K.P. (1998) Three new blindsnakes (Squamata: typhlopidae) from northwestern Australia. Western Australian Museum, Western Australia.
- BHP Billiton (2005) Aboriginal Heritage Induction Handbook. BHP Billiton Iron Ore Pty Ltd, Western Australia.
- BHP Billiton (2008). Orebody 17 Exploration. Purpose Permit Vegetation Clearing Permit Application. Supporting Documentation. 2008.
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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>DMP</b>	Department of Mines and Petroleum, Western Australia.
<b>DoE</b>	Department of Environment, 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*} :-

- 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.