



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 5240/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: BHP Billiton Iron Ore Pty Ltd

### 1.3. Property details

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

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
30		Mechanical Removal	Mineral Production, Water Pipelines, Powerlines and Associated Activities

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 18 October 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 and are useful to look at vegetation in a regional context. Two Beard vegetation associations have been mapped within the application area:

**Beard vegetation association 18:** Low woodland; mulga (*Acacia aneura*); and  
**Beard vegetation association 82:** Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (Government of Western Australia, 2011; GIS Database).

Several flora and vegetation surveys conducted over the application area have identified a total of six broad floristic formations with 22 vegetation associations within the application area (ENV, 2012; Syrinx, 2012; Onshore, 2012).

ENV (2012) surveyed the application area during April and July 2011, and mapped two broad floristic formations with three vegetation associations:

**2a: Acacia High/Open Shrubland** – High/Open Shrubland of *Acacia bivenosa*, *A. sibirica*, *A. tenuissima* over (Very Open) Hummock Grassland of *Triodia pungens*, *T. sp.* Shovelanna Hill (S. van Leeuwen 3835) with scattered low shrubs of *Bonamia rosea*, *Scaevola parvifolia* and *Hibiscus sturtii* var. *grandiflorus* on red sandy loam on depressions of lower slopes and gently undulating stony plains;

**3a: Cenchrus (Closed) Tussock Grassland** – (Closed) Tussock Grassland of *Cenchrus ciliaris* (*Themeda* spp. *C. setiger*) with scattered low trees to low open woodland of *Acacia pruinocarpa*, *A. aneura* and *Corymbia candida* subsp. *dipsodes* and scattered (low) shrubs of mixed species on red brown loam to sandy clay on alluvial plains;

**3b: Cenchrus Tussock Grassland** – Tussock Grassland of *Cenchrus ciliaris* with low woodland to low open forest of *Acacia citrinoviridis* and *A. aneura* and low scattered shrubs of mixed species on red brown loam to sandy clay on alluvial plains.

Syrinx (2012) surveyed the application area during March 2012, and mapped four broad floristic formations with six vegetation associations:

**1b: Eucalyptus Open Forest** – Open Forest of *Eucalyptus victrix*, *E. camaldulensis* subsp. *obtusa* and *Acacia citrinoviridis* over open tussock grassland of *Cenchrus ciliaris*, *Cynodon dactylon* and *Themeda triandra* with high open shrubland of *Petalostylis labicheoides*, *Melaleuca glomerata* and *Acacia pyrifolia* var. *morrisonii*;

**2: Mixed Open Forest** – Open forest of *Acacia aptaneura*, *A. citrinoviridis* and *Corymbia candida* subsp. *dipsodes* over Tussock grassland of *Cenchrus ciliaris* with high open shrubland of *A. tetragonophylla*;

**3a: Acacia Low Open Woodland** – Low open woodland of *Acacia aptaneura*, *A. pruinocarpa* and *A. pteraneura* over high open shrubland of *A. ?synchronica*, *A. sibirica* and *A. sclerosperma* subsp. *sclerosperma* over very

open Hummock grassland of *Triodia pungens*;

**5a: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia wiseana*, *T. sp.* Shovelanna Hill (S. van Leeuwen 3835) and *T. pungens* with shrubland of *Acacia bivenosa*, *Senna glutinosa* subsp. *pruinosa* and *Senna glutinosa* subsp. *glutinosa* with low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *A. aptaneura*;

**5c: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia sp.* Shovelanna Hill (S. van Leeuwen 3835), *T. pungens* and *T. lanigera* with open shrubland of *Acacia bivenosa*, *Senna glutinosa* subsp. *x luerssenii* and *Ptilotus rotundifolius* with low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia*;

**5d: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia pungens* with high open shrubland of *Acacia pachyacra* and *A. dictyophleba* with low open woodland of *Corymbia candida* subsp. *dipsodes*, *C. hamersleyana* and *Hakea lorea* subsp. *lorea*.

Onshore Environmental (2012) surveyed the application area during July 2012, and mapped five broad floristic formations with 13 vegetation associations:

**1b: *Acacia* Low Open Forest** – Low open forest of *Acacia aptaneura* and *Eucalyptus leucophloia* subsp. *leucophloia* over Hummock grassland of *Triodia pungens* with very open Tussock grassland of *Themeda triandra* in skeletal sandy loam soils in incised rocky gullies;

**2a: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia pungens* with low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Acacia pruinocarpa* and *Hakea chordophylla* with very open Mallee of *E. gamophylla* in sandy loam soils on drainage flats and outwashed plains;

**2b: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia pungens* with shrubland of *Acacia bivenosa* and *A. synchronicia* in loam soils on outwash plains;

**2c: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia sp.* Shovelanna Hill (and *Triodia wiseana*) with scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* and scattered shrubs of *Senna glutinosa* subsp. *x luerssenii*, *Hakea chordophylla* and *Grevillea berryana* in red brown loam soils on footslopes and plains;

**2d: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia sp.* Shovelanna Hill and *Triodia pungens* with low woodland of *Acacia aptaneura*, *Eucalyptus leucophloia* subsp. *leucophloia* and *A. pruinocarpa* over shrubland of *A. pruinocarpa*, *Eremophila latrobei* subsp. *latrobei* and *A. bivenosa* in pisolitic ironstone on hill crests;

**2e: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia sp.* Shovelanna Hill and *Triodia pungens* with shrubland of *Acacia bivenosa*, *A. synchronicia* and *Senna glutinosa* subsp. *leuressenii* and scattered low trees of *A. aptaneura* and *A. pruinocarpa* in red brown loam soils on footslopes and plains;

**2f: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia sp.* Shovelanna Hill with shrubland of *Acacia bivenosa*, *A. pruinocarpa* and *Senna glutinosa* subsp. *leuressenii* and low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *A. pruinocarpa* in pisolitic soils on hill crests;

**2g: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia wiseana* and *T. pungens* with open shrubland of *Acacia bivenosa* and *A. aptaneura* with low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia* in sandy loam soils on U-shaped gullies;

**2h: *Triodia* Hummock Grassland** – Hummock grassland of *Triodia wiseana* and *T. pungens* with shrubland of *Acacia bivenosa*, *A. synchronicia* and *Senna glutinosa* subsp. *x leuressenii* and low open woodland of *Eucalyptus leucophloia* subsp. *leucophloia* in sandy loam soils on undulating low hills;

**3a: *Cenchrus* Closed Tussock Grassland** – Closed tussock grassland of *Cenchrus ciliaris* and *Cenchrus setiger* with low open forest of *Acacia citrinoviridis* and open woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *E. victrix* in deep loam soils along major incised drainage channels and adjacent levee banks;

**4a: *Themeda* Closed Tussock Grassland** – Closed tussock grassland of *Themeda triandra* and *Cenchrus ciliaris* (also very open hummock grassland of *T. pungens*) with high open shrubland of *Acacia bivenosa*, *Petalostylis labicheoides* and *A. tenuissima* and very open Mallee of *Eucalyptus gamophylla* in loam soils on stony outwash plains;

**4b: *Themeda* Closed Tussock Grassland** – Closed tussock grassland of *Themeda triandra* open heath of *Acacia bivenosa*, *Petalostylis labicheoides* and *Acacia adsurgens* and scattered low trees of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* (scattered Mallees of *E. gamophylla*) in sandy alluvium along narrowly incised drainage lines; and

**5a: *Themeda* Tussock Grassland** – Tussock grassland of *Themeda triandra* (also open hummock grasslands of *T. pungens*) with shrubland of *Acacia bivenosa*, *Petalostylis labicheoides* and *A. tenuissima* and very open Mallee of *Eucalyptus gamophylla* in loam soils on unincised drainage lines and outwash plains.

#### Clearing Description

BHP Billiton Iron Ore Pty Ltd is proposing to clear up to 30 hectares of native vegetation within a 116.15 hectare application area for the purposes of mineral production, water pipeline and associated activities. The proposed works will involve the construction of a water supply pipeline and associated infrastructure from the Homestead bore field to the Newman water treatment plant.

The vegetation will be cleared by mechanical means. The vegetation and topsoil will be stockpiled separately for use in rehabilitation

#### Vegetation Condition

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

To:

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

**Comment**

The application area is located in the Hamersley subregion of Western Australia and is situated approximately two kilometres south of the Newman town site (GIS Database).

The vegetation condition was derived from a vegetation survey conducted by ENV (2012), Syrinx (2012) and Onshore (2012).

### 3. Assessment of application against clearing principles

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

**Comments**

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

The application areas occur within the Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by mountainous area of Proterozoic sedimentary ranges and plateaux, dissected by gorges. 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).

There have been several flora and vegetation surveys conducted over the application area which have identified a total of six broad floristic formations with 22 vegetation associations within the application area (ENV, 2012; Syrinx, 2012; Onshore, 2012). Similar habitat to the application area is located outside the application area. The vegetation within the application area has also been significantly affected by disturbance (ENV, 2012; Syrinx, 2012; Onshore, 2012). These other areas of similar vegetation type are expected to have a similar or better biological diversity and conservation value than that of the application area (BHP Billiton Iron Ore, 2012). The condition of the vegetation types were classified from 'very good' to 'completely degraded' (Keighery, 1994; GIS Database).

There were no Priority Flora species recorded within the application area (ENV, 2012; Syrinx, 2012; Onshore, 2012). A search on the Department of Environment and Conservation's Threatened and Priority Flora databases revealed no Priority Flora species that may potentially occur in the application area (DEC, 2012).

There are no Threatened Flora species, Threatened Ecological Communities or Priority Ecological Communities recorded within the application area (GIS Database).

Several species of weeds were identified during the surveys (ENV, 2012; Syrinx, 2012; Onshore, 2012). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There were eight faunal habitats identified within the application area (ENV, 2009; ELA, 2012; Onshore, 2012). All of the habitats within the application area are considered to be common and widespread within the subregion and faunal assemblages are unlikely to be different to that found in similar habitat located elsewhere in the region (BHP Billiton Iron Ore, 2012). The clearing of 30 hectares of native vegetation within a 116.15 hectare application area is unlikely to have a significant impact in a regional and local context.

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

**Methodology**

CALM (2002)  
DEC (2012)  
ENV (2009)  
ENV (2012)  
ELA (2012)  
Keighery (1994)  
Onshore (2012)  
Syrinx (2012)  
GIS Database:  
- IBRA WA (Regions - Subregions)  
- Pre-European vegetation  
- Threatened Ecological Sites Buffered  
- Newman Townsite 20cm Orthomosaic ? Landgate 2002

#### (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**

There were eight broad fauna habitat types recorded within the application area by ENV (2009, 2012), ELA (2012) and Onshore (2012);

1. Hillcrest;
2. Alluvial plain/Sand plain;
3. Hill slopes and footslopes;
4. Medium / Minor drainage lines;
5. Stony plains;
6. Major Drainage line;
7. Plain; and
8. Hillslope.

The condition of the vegetation types were classified from 'very good' to 'completely degraded' (Keighery, 1994).

The landforms and habitat found within the application area is considered as being well represented in the Pilbara bioregion (BHP Billiton Iron Ore, 2012). The application area contains two habitats or faunal assemblages that are ecologically significant: the medium/minor drainage lines and major drainage lines, however, it is unlikely that any species of conservation significance will be significantly impacted by the clearing of native vegetation in the application areas. The proposed clearing of 30 hectares of native vegetation within a 116.15 hectare application area is not likely to contain significant habitat for fauna.

Onshore (2012) recorded one species of conservation significance which was identified within the application area; the Rainbow Bee-eater (*Merops ornatus*). The Rainbow Bee-eater has a widespread distribution and an ability to undertake long-distance movements (DSEWPaC, 2012a). Other conservation significant fauna that may utilise the habitats within the application area are the Australian Bustard (*Ardeotis australis*), Bush Stone-curlew (*Burhinus grallarius*), Oriental Plover (*Charadrius veredus*) (migratory), Western Pebble-mound mouse (*Pseudomys chapmani*) and the Pilbara Olive Python (*Liasis olivaceus* subsp. *barroni*). These species; the Australian Bustard, Oriental Plover, Western Pebble-mound Mouse and Bush Stone-curlew (*Burhinus grallarius*) may use the study area for foraging as part of a larger territory area (BHP Billiton Iron Ore, 2012). The Pilbara Olive Python prefers escarpments, gorges and water holes surrounded by spinifex (Tutt et al., 2004; DSEWPaC, 2012b), faunal habitats which are not represented within the application area (ENV, 2009, 2012; ELA, 2012; Onshore, 2012; GIS Database). The habitat present within the application areas is not considered significant habitat for these species (BHP Billiton Iron Ore, 2012). The proposed clearing of 30 hectares of native vegetation within a 116.15 hectare application area is not likely to impact critical feeding or breeding habitat for any conservation significant fauna species as the application area does not contain significant habitat for the potential species.

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

**Methodology** BHP Billiton Iron Ore (2012)  
 DSEWPaC (2012a)  
 DSEWPaC (2012b)  
 ENV (2009)  
 ENV (2012)  
 ELA (2012)  
 Keighery (1994)  
 Onshore (2012)  
 Tutt et al. (2004)  
 GIS Database:  
 - Newman Townsite 20cm Orthomosaic - Landgate 2002

**(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.**

**Comments** **Proposal is not likely to be at variance to this Principle**  
 According to available databases, there are no records of Threatened Flora within the application area (GIS Database). A search of the Department of Environment and Conservation's Threatened and Priority Flora databases identified no Threatened Flora species as occurring within a 20 kilometre radius of the application area (DEC, 2012).

Flora and vegetation surveys of the application area were conducted by ENV (2012) in 2011, and by Syrinx (2012) and Onshore (2012) during 2012. No Threatened Flora species were recorded during any of these surveys (ENV, 2012; Syrinx, 2012; Onshore, 2012).

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

**Methodology** DEC (2012)  
 ENV (2012)  
 Onshore (2012)  
 Syrinx (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 Threatened Ecological Communities (TEC's) within the application area (GIS Database). The application area sits within a TEC buffer, which is the Ethel Gorge aquifer stygobiont community (GIS Database). Groundwater drawdown is listed as a threatening process for the Ethel Gorge stygofauna (CALM, 2002), however, the proposed clearing is not expected to have any effect on groundwater levels.

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

**Methodology** CALM (2002)  
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 falls within the Pilbara IBRA bioregion (GIS Database). The vegetation within the application area is recorded as:

**Beard vegetation association 18:** Low woodland; mulga (*Acacia aneura*); and  
**Beard vegetation association 82:** Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (Government of Western Australia, 2011; GIS Database).

According to the Government of Western Australia (2011), Beard vegetation associations 18 and 82 retain approximately 99% of their pre-European extent. The local area has been extensively cleared, however, the area proposed to be cleared is not a significant remnant of native vegetation.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,427	17,729,352	~99.58	Least Concern	6.32
Beard vegetation associations - State					
18	19,892,305	19,843,823	~99.76	Least Concern	2.13
82	2,565,901	2,553,217	~99.51	Least Concern	10.24
Beard vegetation associations - Bioregion					
18	676,557	672,424	~99.39	Least Concern	16.79
82	2,563,583	2,550,899	~99.51	Least Concern	10.25

\* Government of Western Australia (2011)

\*\* 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)  
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 may be at variance to this Principle**

The application area is dissected at two points by Whaleback Creek. Whaleback Creek is a non-perennial creek that corresponds to the riverine fauna habitat within the application area. There are cleared tracks at each of the two crossing locations (BHP Billiton Iron Ore, 2012). Ephemeral watercourses generally run after significant rainfall events, as is typical of the Pilbara region (CALM, 2012; GIS Database).

There is one riparian vegetation type mapped within the application area; '1b: Eucalyptus Open Forest' (Syrinx, 2012). The flora species associated with vegetation types '2: Mixed Open Forest' (Syrinx, 2012) and '3a: *Cenchrus* Closed Tussock Grassland' (Onshore, 2012) also contain species which are consistent with riparian type vegetation (DEC, 2012). The condition of the riparian vegetation types are classified as 'completely degraded' to 'good' (BHP Billiton Iron Ore, 2012; Keighery, 1994).

The application area intersects two small portions of Whaleback Creek, which represents a major surface drainage feature (GIS Database). The vegetation types '1b: Eucalyptus Open Forest', '2: Mixed Open Forest' and '3a: *Cenchrus* Closed Tussock Grassland' associated with the drainage lines support habitats where numerous species may be restricted, including phreatophytic species such as *Eucalyptus victrix*, *E. camaldulensis* subsp. *obtusa* and *Melaleuca glomerata*, which are considered to be phreatophytic (ENV, 2012; Syrinx, 2012; Onshore, 2012; Loomes, 2010).

Vegetation in drainage depressions connecting to the Whaleback Creek is dependent on surface water flows, even if considered non groundwater dependant (Syrinx, 2012). BHP Billiton Iron Ore (2012) state that any disturbance at the Whaleback Creek will be kept to a bare minimum and they will utilise previously disturbed areas where possible (BHP Billiton Iron Ore, 2012). Provided disturbance to riparian habitats is avoided or minimised where possible, and strict weed hygiene procedures are followed, the proposed works are not expected to substantially impact these vegetation units. Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition.

The removal of 30 hectares of native vegetation within a 116.15 hectare application area is unlikely to have an impact on the Whaleback Creek water regime, and the associated riparian vegetation.

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

**Methodology** BHP Billiton Iron Ore (2012)  
DEC (2012)  
ENV (2012)  
Keighery (1994)  
Loomes (2010)  
Onshore (2012)  
Syrinx (2012)  
GIS Database:  
- Geodata, Lakes  
- Hydrography, Linear

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

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

The application area is within the Newman and Elimunna land systems (GIS Database).

The Elimunna land system is characterised by stony plains on basalt supporting sparse acacia and cassia shrublands and patchy tussock grasslands (Van Vreeswyk et al., 2004). Some drainage floors are slightly susceptible to erosion but most of the system is inherently resistant (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).

The removal of 30 hectares of native vegetation within a 116.15 hectare application area is unlikely to result in water-logging, acidification, salinisation or deep subsoil compaction, and significant erosion was not observed within the application area despite localised clearing (BHP Billiton Iron Ore, 2012).

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

**Methodology** BHP Billiton Iron Ore (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 any conservation area (GIS Database). The nearest conservation area is Karijini National Park, located approximately 120 kilometres west of the application area (GIS Database).

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

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

**Methodology** GIS Database:  
- DEC Tenure

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

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

The application area is located within the Newman Water Reserve Public Drinking Water Source Area (GIS Database). Advice from the Department of Water (DoW) (2012) noted that BHP Billiton Iron Ore is the water service provider for this water source and that for the benefit of the community, planning decisions on proposed land uses in the reserve need to be carefully considered. It was also noted by DoW (2012) that the application area intersects Priority 1 and Priority 3 areas of Newman Water Reserve which is compatible with the proposed activities. DoW (2012) advised that potential impacts to the Newman Water Reserve may be minimised by following DoW's water quality protection guidelines and notes. The application areas are located within the proclaimed Pilbara groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purposes other than domestic and/or stock watering is subject to licence by the Department of Water.

While dewatering of orebodies is undertaken to facilitate mining, groundwater levels outside the mine are largely unaffected by dewatering (Johnson & Wright, 2001). The application area has a groundwater salinity that ranges from potable to marginal (500 - 1,000 milligrams/Litre Total Dissolved solids (TDS) (GIS Database). Depth to groundwater is approximately 100 metres below the surface (Golder, 2011). It is considered unlikely that the proposed clearing of 30 hectares of native vegetation within the Hamersley Groundwater Province (10,166,832 hectares) (GIS Database) will cause salinity levels within the application area to alter significantly.

There are no permanent water bodies within the application area (GIS Database). Several drainage tracts transect the application areas (GIS Database). The drainage patterns in the surrounding area have been impacted by existing railway activities and infrastructure. These drainage tracts are dry for most of the year and only flow and hold surface water for short durations following significant rainfall events (CALM, 2002). The application area experiences a semi-desert tropical climate with an average annual rainfall of approximately 316 millimetres recorded at Newman Aero weather station (BoM, 2012; CALM, 2002). The average annual evaporation rate within the application area is approximately 3,200 - 3,600 millimetres (GIS Database). It is therefore considered unlikely that water will pool in the application area for long periods of time.

BHP Billiton Iron Ore (2012) will implement appropriate surface water management practices to minimise erosion and minimise potential impacts on the quality of surface water.

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

**Methodology** BHP Billiton Iron Ore (2012)  
BoM (2012)  
CALM (2002)  
DoW (2012)  
Golder (2011)  
Johnson & Wright (2001)  
GIS Database:  
GIS Database:  
- Geodata, Lakes  
- Groundwater Provinces  
- Hydrography, Linear  
- Public Drinking Water Source Areas  
- RIWI Act, Groundwater Areas  
- Groundwater Salinity, Statewide

**(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 annual average rainfall of approximately 316 millimetres per year (CALM, 2002; BoM, 2012). Based on an average annual evaporation rate of 3,200 - 3,600 millimetres (BoM, 2012), any surface water resulting from rainfall events is likely to be relatively short lived.

Massive surface water runoff and localised flooding occurs following intense rainfall events. However, the incidence or intensity of flooding is not likely to be significantly influenced by the proposed clearing of native

vegetation (BHP Billiton Iron Ore, 2012). BHP Billiton Iron Ore (2012) state that it is highly improbable that surface runoff generated from the cleared area could create sufficient concentrated water volumes to cause even a localised flood event.

Given the size of the area to be cleared (30 hectares) compared to the size of the Fortescue River catchment area (2,975,192 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

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

**Methodology** BHP Billiton Iron Ore (2012)  
BoM (2012)  
CALM (2002)  
GIS Database:  
- Hydrographic Catchments - Catchments

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

##### Comments

There is one Native Title claim over the area under application. The claim WC05/6 was registered with the National Native Title Tribunal on 11 August 2010. The mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are two registered Aboriginal Sites of Significance within the application area (Site IDs: 6702 and 17394 (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 17 September 2012 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received in relation to this application with an objection to the proposed clearing.

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

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## 5. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>CALM</b>	Department of Conservation and Land Management (now DEC), Western Australia
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia
<b>DEC</b>	Department of Environment and Conservation, Western Australia
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DEC), 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 (now DEC), Western Australia
<b>DoIR</b>	Department of Industry and Resources (now DMP), Western Australia
<b>DOLA</b>	Department of Land Administration, Western Australia
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environmental 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>ha</b>	Hectare (10,000 square metres)
<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 Act</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>TEC</b>	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.