



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 3373/2  
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), Special Lease for Mining Operations 3116/3687, Document I 154279 L, Lot 19 on Deposited Plan 48921, Lot 65 on Deposited Plan 4989*

Local Government Area: Shire of East Pilbara  
Colloquial name: Jimblebar Junction to Newman Rail Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
282		Mechanical Removal	Railway construction and maintenance, and associated works

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 20 October 2011

## 2. Site Information

### 2.1. Existing environment and information

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

**Vegetation Description** Beard Vegetation Associations have been mapped for the whole of Western Australia and are useful to look at vegetation extent in a regional context. Three Beard Vegetation Associations are located within the proposed clearing area (GIS Database):

1. **Beard Vegetation Association 18:** Low woodland; Mulga (*Acacia aneura*);
2. **Beard Vegetation Association 29:** Sparse low woodland; Mulga, discontinuous in scattered groups; and
3. **Beard Vegetation Association 82:** Hummock grasslands, low tree steppe; Snappy Gum over *Triodia wiseana* (Shepherd, 2009).

ENV Australia Pty Ltd (2009a) mapped 11 vegetation associations from the proposed clearing area during a flora and vegetation survey undertaken between 14 and 17 July 2009:

**1a** - Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835) and *Triodia pungens* with Open Shrubland of *Acacia bivenosa* and *Acacia aneura* var. *aneura* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia*;

**1b** - Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835) with Low Open Shrubland of *Acacia hilliana* and *Acacia adoxa* var. *adoxo* with Scattered Low trees of *Eucalyptus leucophloia* subsp. *leucophloia*;

**1c** - Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835) and *Triodia wiseana* with Open Shrubland of *Grevillea wickhamii* subsp. *hispidula* and *Hakea chordophylla*;

**1d** - Open Hummock Grassland of *Triodia pungens* with Open Shrubland of *Acacia aneura* var. *aneura*, *Acacia bivenosa* and *Acacia synchronicia* with Scattered Trees of *Corymbia aspera*;

**1e** - Hummock Grassland of *Triodia pungens* with Low Open Shrubland of *Bonamia rosea*, *Kennedia prorepens* and *Scaevola parvifolia* subsp. *pilbarae* over Scattered Mallees of *Eucalyptus gamophylla*;

**1f** - Open Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835) and *Triodia pungens* with Shrubland of *Acacia bivenosa* and *Acacia tenuissima* with Scattered Mallees of *Eucalyptus gamophylla*;

**1g** - Open Hummock Grassland of *Triodia pungens* with Open Shrubland of *Acacia sclerosperma* subsp. *sclerosperma*, *Acacia bivenosa* and *Acacia synchronicia* with Scattered Mallees of *Eucalyptus trivalva*;

**2a** - Open Tussock Grassland of *Eulalia aurea* and \**Cenchrus ciliaris* with Open Shrubland of *Acacia coriacea* subsp. *pendens*, *Hakea lorea* subsp. *lorea* and *Eremophila longifolia* with Open Woodland of *Corymbia aspera* and *Corymbia hamersleyana*;

**3a** - Tussock Grassland of *Themeda triandra* and *Eriachne mucronata* with High Open Shrubland of *Grevillea wickhamii* subsp. *hispidula*, *Petalostylis labicheoides* and *Eremophila macmillaniana* with Open Woodland of *Corymbia hamersleyana* and *Eucalyptus gamophylla*;

**4a** - Open Woodland of *Eucalyptus victrix* and *Eucalyptus camaldulensis* var. *obtusata* over Tussock Grassland of \**Cenchrus ciliaris* and *Eulalia aurea* with High Open Shrubland of *Acacia citrinoviridis*; and

**5a** - Shrubland of *Acacia monticola* and *Acacia bivenosa*, over Open Tussock Grassland of *Eriachne benthamii* with Open Hummock Grassland of *Triodia pungens* with Scattered Low Trees of *Corymbia hamersleyana*, *Eucalyptus victrix* and *Eucalyptus leucophloia* subsp. *leucophloia*.

\* = introduced flora species

**Clearing Description** BHP Billiton Iron Ore Pty Ltd has applied to clear up to 282 hectares from 11 separate areas between Newman and Jimblebar Junction. The 11 areas proposed for clearing (colloquially termed blocks A – K inclusive) total approximately 640 hectares and are spaced over a distance of approximately 20 kilometres.

The proposed clearing will allow the proponent to source borrow material and undertake drainage control works associated with railway construction and maintenance activities for the Newman - Port Hedland 'Mainline'.

Native vegetation clearing will be undertaken via mechanical means. Topsoil and vegetation removed during clearing operations will be stockpiled for future rehabilitation works of areas not required for permanent infrastructure.

**Vegetation Condition** Pristine: No obvious signs of disturbance (Keighery, 1994);

to

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

**Comment** The vegetation condition rating is derived from information provided by ENV Australia Pty Ltd (2009a; 2009b; 2009c).

Clearing permit CPS 3373/1 was granted by the Department of Mines and Petroleum on 11 February 2010 and was valid from 13 March 2010 to 13 March 2020. The clearing permit authorised the clearing of 282 hectares within an area of approximately 640 hectares. The proponent has requested an amendment to increase the permit boundary by 0.2 hectares. This additional area is required for the upgrade of an unsealed road to allow access for large vehicles required for construction activities. The proponent has also requested that two of the areas that were not permitted to be cleared under Condition 3 on the original permit be modified to allow clearing. This is to allow clearing for power lines to be undertaken under clearing permit CPS 3445/2 which overlaps areas of CPS 3373/1.

The vegetation unit present in the additional area for the road upgrade is '1a - Hummock Grassland of *Triodia sp. Shovelanna Hill* (S. van Leeuwen 3835) and *Triodia pungens* with Open Shrubland of *Acacia bivenosa* and *Acacia aneura* var. *aneura* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia*'. The fauna habitat present in this area is the Rocky Plains/Low Hills habitat type. The additional clearing of 0.2 hectares of this vegetation unit and fauna habitat is not likely to have significant impacts to the local environment. Whilst the Breakaways/Rocky Outcrops habitat type is considered to be of high value for fauna, allowing clearing within two of the areas that were not authorised to be cleared is not expected to have a significant impact on this habitat within the local area.

### 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 proposed clearing area is located east of Newman in the Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The Hamersley subregion is characterised by sedimentary ranges and plateaux, dissected by gorges (Kendrick & McKenzie, 2002). At a broad scale, vegetation can be described as Mulga low woodlands over bunch grasses on fine textured soils in valley floors and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (Kendrick & McKenzie, 2002). The Hamersley subregion is extensive, covering approximately 6,215,000 hectares; most of which is un-cleared rangelands.

ENV Australia Pty Ltd (2009a) conducted a flora and vegetation survey of the proposed clearing area ("Blocks A-K" inclusive) between 14 and 17 July 2009. The survey recorded 11 vegetation associations and 214 flora taxa from 39 families and 96 genera. The average species richness per 50 metre x 50 metre quadrat was 34. 3 species. ENV Australia Pty Ltd (2009a) described the species richness as comparable to other flora surveys using similar methodologies elsewhere in the local area.

ENV Australia Pty Ltd (2009b) conducted a flora and vegetation survey of the Homestead Creek Culvert Project area on 14 July 2009. The Homestead Creek Culvert Project area covers approximately 35 hectares and forms a small part of the overall clearing permit application area ("Block I"). The survey recorded 3 vegetation associations and 80 flora taxa from 24 families and 53 genera. The average species richness per 50

metre x 50 metre quadrat was 30.75 species. ENV Australia Pty Ltd (2009b) described the species richness as comparable to other flora surveys using similar methodologies elsewhere in the local area.

ENV Australia Pty Ltd (2009c) conducted a flora and vegetation survey of the Whaleback Creek Culvert Project area on 13 July 2009. The Whaleback Creek Culvert Project area covers approximately 15 hectares and forms a small part of the overall clearing permit application area (part of "Block B"). The survey recorded 4 vegetation associations and 102 flora taxa from 29 families and 68 genera. The average species richness per 50 metre x 50 metre quadrat was 31.5 species. ENV Australia Pty Ltd (2009c) described the species richness as comparable to other flora surveys using similar methodologies elsewhere in the local area.

Floristically, ENV Australia Pty Ltd (2009a; 2009b; 2009c) concluded that flora and vegetation of the proposed clearing area is typical of the Eastern Pilbara and is of comparable species richness to other areas surveyed in the local vicinity (within a 50 kilometre radius).

There are no known records of Priority Flora within the proposed clearing area (GIS Database). No Priority Flora species were recorded within the proposed clearing area despite three separate flora and vegetation surveys conducted by ENV Australia (2009a; 2009b; 2009c).

One flora species of interest was identified in the proposed clearing area. This species, *Rostellularia adscendens* var. ? *latifolia*, could not be identified to variant level as the specimen collected from the project area lacked bracts and corollas, both key characters when separating the two variants of *Rostellularia adscendens* that occur near Newman:

*Rostellularia adscendens* var. *clementii* (no conservation status); and  
*Rostellularia adscendens* var. *latifolia* (Priority 3).

As a precaution, the proponent is treating the specimen collected from the proposed clearing area as the Priority 3 variant, *Rostellularia adscendens* var. *latifolia*. Consequently, disturbance to this species will be avoided where possible during clearing operations (BHP Billiton Iron Ore Pty Ltd, 2009a).

*Rostellularia adscendens* var. ? *latifolia* was recorded in one quadrat during ENV Australia Pty Ltd's (2009d) flora and vegetation assessment and was described as covering less than 1% of the quadrat in which it was recorded. According to the Western Australian Herbarium's 'Florabase', there are ten collection records for *Rostellularia adscendens* var. ? *latifolia*, all from the Pilbara bioregion (Western Australian Herbarium, 2010).

The vegetation communities present within the proposed clearing area are typical of the Pilbara bioregion and are well represented outside of the project area. On this basis, it is unlikely that flora habitats within the proposed clearing area are necessary for the continued in situ existence of DRF or Priority Flora.

From a faunal perspective, ENV Australia Pty Ltd (2009d) report that there has been numerous fauna surveys within a 50 kilometre radius of the proposed clearing area in the last 5 years. Based on data collected during these surveys and from various fauna databases, 276 terrestrial vertebrate fauna taxa potentially occur in the proposed clearing area. This includes 124 species of birds, 99 species of reptile, 46 species of mammal (including 7 introduced species) and 7 species of amphibian (ENV Australia Pty Ltd, 2009d).

Whilst the proposed clearing area is likely to support a high fauna diversity (particularly of birds and reptiles), faunal diversity in the proposed clearing area is not likely to be higher than adjacent areas which contain similar habitat types; most of which are well represented throughout the Pilbara bioregion.

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

**Methodology** ENV Australia Pty Ltd (2009a).  
ENV Australia Pty Ltd (2009b).  
ENV Australia Pty Ltd (2009c).  
ENV Australia Pty Ltd (2009d).  
Kendrick & McKenzie (2002).  
Western Australian Herbarium (2010).  
GIS Database:  
- IBRA WA (Regions - Subregions).

**(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 Pty Ltd (2009d) undertook a fauna assessment of the 11 blocks subject to this clearing permit application between 14 and 17 July 2009. Site-specific surveys of Whaleback Creek and Homestead Creek were also undertaken by ENV Australia Pty Ltd (2009e; 2009f) on the 13 and 14 July 2009 respectively. Four broad fauna habitat types were described from the proposed clearing area:

1. **Rocky Plains/Low Hills** (368.8 hectares or 61.16% of the proposed clearing area) – This habitat type is dominated by a thick Spinifex ground cover and scattered Snappy Gum and Acacia shrubs. Hard pebbly soils are not conducive for burrowing species. Spinifex provides good shelter for small ground-dwelling fauna such

as the Western Pebble mound Mouse (*Pseudomys chapmani*). Rocky Plains/Low Hills support a high diversity of reptile species. Minor drainage lines are included in this habitat type. Rocky plains/low hills are considered to be well represented in the region. ENV Australia Pty Ltd (2009d) consider Rocky Plains/Low Hills habitat to have a moderate habitat value for indigenous fauna;

2. **Alluvial Plains** (180.4 hectares or 30% of the proposed clearing area) - This habitat type is characterised by a sparse to moderate cover of low Mulga over a sparse ground cover of spinifex grasses. There is often a high percentage of bare ground. Alluvial plains support high fauna diversity (particularly birds), but are also the preferred habitat for cattle which is reflected in the amount of disturbance in this habitat type. Alluvial plains are considered to be well represented in the region. ENV Australia Pty Ltd (2009d) consider Alluvial Plains habitat to have a low habitat value for indigenous fauna;

3. **Breakaways/Rocky Outcrops** (12.8 hectares or 2.12% of the proposed clearing area) – This habitat type occurs on steeper hills and consists of low ridges, rocky slopes and boulder piles. It is also noted that small, shallow caves occur in this habitat type that are likely to provide roosting habitat for common cave bats. The conservation significant Ghost Bat (*Macroderma gigas*) may roost in caves within the project area on a transitory basis, although its preferred habitat is deeper caves. This habitat type is in very good condition and is poorly represented in the region. ENV Australia Pty Ltd (2009d) consider Breakaways/Rocky outcrops habitat to have a high habitat value for indigenous fauna; and

4. **Riverine** (7.2 hectares or 1.19% of the proposed clearing area) – Includes riparian vegetation of Whaleback Creek, Homestead Creek and ephemeral drainage lines. Coolabah's and River Red Gums line drainage tracts with a sparse understorey of Acacia shrubs. Riverine habitat has a vast array of microhabitats and can be important as movement corridors for fauna. For example, the conservation significant Pilbara Olive Python (*Liasis olivaceus barroni*) may use Whaleback Creek and Homestead Creek as movement corridors during breeding and when moving between habitats. This habitat type is in very good condition and is poorly represented in the region. ENV Australia Pty Ltd (2009d) consider Riverine habitat to have a high habitat value for indigenous fauna.

In addition, 33.8 hectares of completely degraded land (5.6% of the proposed clearing area) has been included as part of this clearing permit application. Such land is deemed to have little or no habitat value (ENV Australia Pty Ltd, 2009d).

The proposed vegetation clearing is predicted to result in the following impacts to fauna (ENV Australia Pty Ltd, 2009d):

- Reduction of potential habitat for local fauna;
- Reduction of local population sizes of common ground-dwelling fauna such as reptiles and small mammals; and
- Disruption to the movement of fauna along Whaleback Creek and Homestead Creek.

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

Approximately 97% of the proposed clearing area consists of habitats of low to moderate value for indigenous fauna species (ENV Australia Pty Ltd, 2009d; 2009e; 2009f). Such areas are unlikely to constitute significant habitat for indigenous fauna species.

Approximately 3% of the proposed clearing area consists of riverine habitat and breakaways/rocky outcrops of high habitat value for indigenous fauna. Should a clearing permit be granted, there will be unavoidable impacts to some riverine habitat to allow drainage control works (installation of culverts, bridges, levee banks) to be undertaken. The assessing officer notes that such disturbance will be localised and should be undertaken in accordance with the proponent's environmental management commitments which stipulate:

- avoid unnecessary disturbance to natural surface drainage;
- ensure that cleared vegetation and topsoil is stockpiled away from watercourses; and
- no native vegetation clearing for borrow pits within watercourses or wetlands (BHP Billiton Iron Ore Pty Ltd, 2009; 2009b).

Adherence to these commitments will minimise impacts to riverine habitats as far as practicable.

With respect to breakaways/rocky outcrops, the proponent has advised that these areas are not suitable for the sourcing of borrow material or the placement of infrastructure associated with the rail project; therefore there should be no requirement to clear these habitats. Should a clearing permit be granted, it is recommended that breakaways/rocky outcrops be excluded from areas permitted to clear. BHP Billiton Iron Ore Pty Ltd has requested two of these areas be amended to allow clearing for the construction of power lines. The clearing of these two areas is not expected to have a significant impact on this habitat within the local area.

**Methodology** BHP Billiton Iron Ore Pty Ltd (2009a).  
BHP Billiton Iron Ore Pty Ltd (2009b).  
ENV Australia Pty Ltd (2009d).  
ENV Australia Pty Ltd (2009e).  
ENV Australia Pty Ltd (2009f).

**(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**

There are no known records of Declared Rare Flora (DRF) within the proposed clearing area (GIS Database). ENV Australia Pty Ltd (2009a; 2009b; 2009c) did not record any DRF within the proposed clearing area during flora and vegetation surveys of the proposed clearing area in July 2009.

The vegetation communities present within the proposed clearing area are typical of the Pilbara bioregion and are well represented outside of the project area. On this basis, it is unlikely that flora habitats within the proposed clearing area are necessary for the continued in situ existence of DRF.

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

**Methodology** BHP Billiton Iron Ore Pty Ltd (2009a).  
ENV Australia Pty Ltd (2009a).  
ENV Australia Pty Ltd (2009b).  
ENV Australia Pty Ltd (2009c).

**(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**

According to available databases, there are no known Threatened Ecological Communities (TEC's) within the proposed clearing area (GIS Database). ENV Australia Pty Ltd (2009a; 2009b; 2009c) did not record any TEC's in the proposed clearing area during three separate flora and vegetation assessments in July 2009.

TEC 78 – 'Ethel Gorge groundwater aquifer stygobiont community' is located approximately 2 kilometres from the proposed clearing area at its nearest point (GIS Database). This TEC occurs in the Ethel Gorge groundwater aquifer beneath the existing Orebody 23 open pit (ENV Australia Pty Ltd, 2009e). Groundwater drawdown is listed as a threatening process for the Ethel Gorge stygofauna (Kendrick & McKenzie, 2002); however the proposed vegetation clearing is not likely to have any significant affect on groundwater levels.

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

**Methodology** ENV Australia Pty Ltd (2009a).  
ENV Australia Pty Ltd (2009b).  
ENV Australia Pty Ltd (2009c).  
ENV Australia Pty Ltd (2009e).  
Kendrick & McKenzie (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 area applied to clear is within the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara bioregion (GIS Database). According to Shepherd (2009) there is approximately 99.9% of the pre-European vegetation remaining in the Pilbara bioregion.

The vegetation of the application area is classified as:

**Beard Vegetation Association 18** - Low woodland; Mulga (*Acacia aneura*);

**Beard Vegetation Association 29** - Sparse low woodland; Mulga, discontinuous in scattered groups; and

**Beard Vegetation Association 82** - Hummock grasslands, low tree steppe; Snappy Gum over *Triodia wiseana* (GIS Database).

There is approximately 100% of the pre-European vegetation remaining of Beard Vegetation Associations 18, 29 and 82 in the Pilbara bioregion (Shepherd, 2009). Approximately 16.8% and 10.2% of Beard Vegetation Associations 18 and 82 are represented in conservation reserves within the Pilbara bioregion respectively, however Beard Vegetation Association 29 is poorly represented (see table below). The area proposed to clear does not represent a significant remnant of vegetation in the wider regional area. The proposed clearing will not reduce the extent of Beard Vegetation Associations 18, 29, or 82 below current recognised threshold levels, below which species loss increases significantly.

It is acknowledged that iron ore mining activities in the Pilbara have resulted in an increase of native vegetation clearing at the bioregional scale in recent years. At the local scale, vegetation clearing around the Newman area has also increased in recent years and is expected to continue with proposed BHP Billiton expansion

projects. It will therefore become increasingly important in the future to consider the cumulative impacts of native vegetation clearing both locally and regionally.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,187	17,794,646	~99.9	least concern	6.3
Beard veg assoc. – State					
18	19,892,305	19,890,195	~100	least concern	2.1
29	7,903,991	7,903,991	~100	least concern	0.3
82	2,565,901	2,565,901	~100	least concern	10.2
Beard veg assoc. – Bioregion					
18	676,557	676,557	~100	least concern	16.8
29	1,133,219	1,133,219	~100	least concern	1.9
82	2,563,583	2,563,583	~100	least concern	10.2

\* Shepherd (2009)

\*\* Department of Natural Resources and Environment (2002)

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

**Methodology** Department of Natural Resources and Environment (2002).  
Shepherd (2009).  
GIS Database:  
- IBRA WA (Regions - Subregions).  
- Pre-European vegetation.

**(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

**Comments Proposal is at variance to this Principle**

The proposed clearing area includes riparian vegetation of Whaleback Creek, Homestead Creek and a number of minor ephemeral drainage lines (ENV Australia Pty Ltd, 2009a; 2009b; 2009c).

BHP Billiton Iron Ore Pty Ltd (2009a) note that clearing will be required within Whaleback Creek and Homestead Creek to improve drainage control measures (culverts, bridges, levee banks) of the existing and future railways.

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

Of the 640 hectares of land within the project area, only 7.2 hectares (1.19% of the project area) has been classified as distinctly 'riverine' (ENV Australia Pty Ltd, 2009d). Disturbance to riverine habitat will be localised, occurring where drainage control works are undertaken.

The assessing officer considers that the proponent's environmental management commitments are adequate to minimise impacts to watercourses and wetlands as far as practicable.

**Methodology** BHP Billiton Iron Ore Pty Ltd (2009a).  
ENV Australia Pty Ltd (2009a).  
ENV Australia Pty Ltd (2009b).  
ENV Australia Pty Ltd (2009c).  
ENV Australia Pty Ltd (2009d).

**(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**

Land system mapping by the Department of Agriculture Western Australia has mapped a variety of land systems for the Pilbara bioregion. Land systems are mapped based on biophysical features such as soil and landform type, geology, geomorphology and vegetation type (Van Vreeswyk et al, 2004). The proposed clearing area includes five different land systems (GIS Database). A broad description of each land system is given below:

**Newman** - the Newman land system is characterised by hills and ranges, supporting hard spinifex grasslands. Relief can be up to 450 metres. The Newman land system is generally not prone to erosion (Van Vreeswyk et al, 2004).

**Elimunna** - the Elimunna land system is characterised by stony plains on basalt, supporting Acacia and Senna

shrublands and patchy tussock grasslands. Some drainage floors are slightly susceptible to erosion but most of the system is essentially resistant (Van Vreeswyk et al, 2004).

**Rocklea** – The Rocklea land system is characterised by basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands. The Rocklea land system has a very low erosion hazard.

**River** - the River land system is characterised by active floodplains for major rivers, supporting grassy Eucalypt woodlands, tussock grasslands and soft spinifex grasslands. Erosion is uncommon, however susceptibility to erosion is high or very high if vegetative cover is removed (Van Vreeswyk et al, 2004).

**McKay** – the McKay land system is characterised by hills. Ridges, plateaux remnants and breakaways supporting hard spinifex grasslands. The McKay land system is not prone to degradation or soil erosion (Van Vreeswyk et al, 2004).

On the basis of land system mapping, the proposed vegetation clearing is unlikely to result in appreciable land degradation. However, it is noted that drainage areas are more susceptible to erosion following vegetation clearing (Van Vreeswyk et al, 2004).

BHP Billiton Iron Ore Pty Ltd (2009a; 2009b) will implement the following measures to minimise the risk of erosion during native vegetation clearing:

- strip and stockpile all available topsoil;
- utilise appropriate methods for erosion control where the potential for erosion is high (such as rip rap rock protection and reno mattresses);
- where practicable, delay the clearing of slopes leading to watercourses until construction is imminent, thus minimising erosion and sedimentation; and
- contain all surface run-off from work activities in lined sumps to prevent erosion.

Adherence to these commitments will minimise land degradation as far as practicable. Should a clearing permit be granted it is recommended that a condition be imposed requiring vegetation clearing to be undertaken in a staged approach.

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

**Methodology** BHP Billiton Iron Ore Pty Ltd (2009a).  
BHP Billiton Iron Ore Pty Ltd (2009b).  
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 at variance to this Principle**

The proposed clearing area is not located within a conservation reserve (GIS Database). The nearest known conservation reserves are the Karijini National Park and Collier Range National Park, located approximately 120 kilometres west-north west and south-south west respectively (GIS Database).

Based on the above, the proposed clearing is not 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 proposed clearing area is located entirely within the Newman Water Reserve, a Public Drinking Water Source Area (PDWSA) gazetted under the *Country Areas Water Supply Act 1947* on 21 August 1983. This PDWSA is defined a "Priority 1 (P1)" under the Water Source Protection Classification System (Department of Water, 2009).

The Department of Water (DoW) were consulted on this clearing permit application and the following advice was provided:

"Clearing activities for mineral production are compatible with conditions in a P1 PDWSA. All activities associated with the clearing including infrastructure, laydown areas, refuelling and topsoil storage should be compatible with the Department of Water's Land Use Compatibility Tables. DoW is satisfied that the proposed clearing of 282 hectares is unlikely to have a significant impact on the quality or quantity of groundwater" (Department of Water, 2009).

With respect to surface water, a number of drainage lines including the Whaleback Creek and Homestead Creek occur in the proposed clearing area (GIS Database). One of the purposes of the proposed clearing is to undertake drainage control works (installation, relocation and removal of culverts, bridges and levee banks) associated with the existing and future railway. Such works will ensure natural surface water flow regimes are maintained as far as practicable.

To minimise the risk of clearing operations deteriorating surface water quality on-site and off-site, BHP Billiton Iron Ore Pty Ltd (2009a; 2009b) will implement the following measures:

- avoid unnecessary disturbance to natural surface drainage;
- strip all available topsoil and stockpile it away from watercourses;
- contain all surface run-off from work activities in lined sumps to prevent erosion and sedimentation;
- utilise appropriate methods for erosion control where the potential for erosion is high (such as rip rap rock protection and reno mattresses);
- where practicable, delay the clearing of slopes leading to watercourses until construction is imminent, thus minimising erosion and sedimentation; and
- no native vegetation clearing for borrow pits within watercourses or wetlands.

Adherence to these commitments will minimise impacts to surface water quality as far as practicable.

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

**Methodology** BHP Billiton Iron Ore Pty Ltd (2009a).  
BHP Billiton Iron Ore Pty Ltd (2009b).  
Department of Water (2009).  
GIS Database:  
- Hydrography, linear.

**(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 proposed clearing area is located in the Pilbara bioregion, an arid environment characterised by two distinct seasons; a hot Summer from October to April and a mild Winter from May to September (ENV Australia Pty Ltd, 2009a). Peak rainfall typically occurs in the Summer months and is associated with tropical cyclones. A smaller rainfall peak is experienced between May and June and is associated with cold fronts. The average annual rainfall of Newman is approximately 310 millimetres. Annual evaporation rates in the Pilbara bioregion greatly exceed average annual rainfall, and consequently, surface water flows throughout the bioregion are ephemeral (ENV Australia Pty Ltd, 2009a).

Whilst natural flood events do occasionally occur in the Pilbara following cyclonic activity, the proposed clearing of 282 hectares of native vegetation is not expected to increase the incidence or intensity of such events given the size of the area to be cleared (282 hectares) in relation to the size of the Upper Fortescue River 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** ENV Australia Pty Ltd (2009a).  
GIS Database:  
- Hydrographic Catchments - Catchments.

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

**Comments**

Clearing permit CPS 3373/1 was granted by the Department of Mines and Petroleum on 11 February 2010 and was valid from 13 March 2010 to 13 March 2020. The clearing permit authorised the clearing of 282 hectares within an area of approximately 640 hectares. The proponent has requested an amendment to increase the permit boundary by 0.2 hectares. This additional area is required for the upgrade of an unsealed road to allow access for large vehicle required for construction activities. The proponent has also requested that two of the areas that were not permitted to be cleared under Condition 3 on the original permit be modified to allow clearing. This is to allow clearing for power lines to be undertaken under clearing permit CPS 3445/2 which overlaps areas of CPS 3373/1.

The vegetation unit present in the additional area for the road upgrade is '1a - Hummock Grassland of *Triodia* sp. *Shovelanna Hill* (S. van Leeuwen 3835) and *Triodia pungens* with Open Shrubland of *Acacia bivenosa* and *Acacia aneura* var. *aneura* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia*'. The fauna habitat present in this area is the Rocky Plains/Low Hills habitat type. The additional clearing of 0.2 hectares of these vegetation units and fauna habitats is not likely to have significant impacts to the local environment. Whilst the Breakaways/Rocky Outcrops habitat type is considered to be of high value for fauna, allowing clearing within two of the areas that were not authorised to be cleared is not expected to have a significant impact on this habitat within the local area.



The amendment application was advertised by the Department of Mines and Petroleum on 22 August, 2011. There were no submissions received.

There is one native title claim over the area under application (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 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*.

According to available GIS databases, there are numerous registered Aboriginal Site of Significance within the proposed clearing area and surrounds (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.

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** GIS Database:  
- 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 Principle (b), is not likely to be at variance to Principles (a), (c), (d), (g), (i) or (j) and is not at variance to Principles (e) and (h).

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

#### 5. References

- BHP Billiton Iron Ore Pty Ltd (2009a) Jumblebar Junction to Newman Rail Project – Ancillary Works: Application to clear native vegetation (Purpose Permit) under the Environmental Protection Act 1986. October 2009.
- BHP Billiton Iron Ore Pty Ltd (2009b) Asset Development Projects Environmental Management System: Environmental Management Plan.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Department of Water (2009) Public Drinking Water Source Area (PDWSA) advice to assessing officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum (DMP), 1 November 2009. Department of Water, Western Australia.
- ENV Australia Pty Ltd (2009a) Orebody 25 to Newman Flora and Vegetation Assessment. Prepared for Calibre Engenium Joint Venture. October 2009.
- ENV Australia Pty Ltd (2009b) Homestead Creek Culvert Flora and Vegetation Assessment. Prepared for Calibre Engenium Joint Venture. October 2009.
- ENV Australia Pty Ltd (2009c) Whaleback Creek Culvert Flora and Vegetation Assessment. Prepared for Calibre Engenium Joint Venture. October 2009.
- ENV Australia Pty Ltd (2009d) Orebody 25 to Newman Fauna Assessment. Prepared for Calibre Engenium Joint Venture. October 2009.
- ENV Australia Pty Ltd (2009e) Homestead Creek Culvert Fauna Assessment. Prepared for Calibre Engenium Joint Venture. October 2009.
- ENV Australia Pty Ltd (2009f) Whaleback Creek Culvert Fauna Assessment. Prepared for Calibre Engenium Joint Venture. October 2009.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Kendrick, P., and McKenzie, N. (2002) Pilbara 3 (PIL3 - Hamersley subregion) in: A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002.
- Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- Van Vreeswyk, A.M, Payne, A.L, Leighton, K.A & Hennig, P (2004) Technical Bulletin No. 92: An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, South Perth, Western Australia.
- Western Australian Herbarium (2010). Florabase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/>. Accessed 28 January 2010.

## 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>DoIR</b>	Department of Industry and Resources, 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.