



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5163/1
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*, Special Lease for Mining Operations 3116/3687 (Document I 154279 L), Lease Extension K846790, Lot 19 on Deposited Plan 48921
Exploration Licence 47/632
Exploration Licence 47/1191
Exploration Licence 47/1235
Exploration Licence 47/1320
Exploration Licence 47/1380
Exploration Licence 47/1387
Exploration Licence 47/1388
Prospecting Licence 47/1156
Prospecting Licence 47/1414
Local Government Area: Shire of East Pilbara
Colloquial name: Jinidi Rail Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
160		Mechanical Removal	Geotechnical Investigations

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 11 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. The following Beard vegetation associations are located within the application area (GIS Database):

29: Sparse low woodland; mulga, discontinuous in scattered groups;

82: Hummock grasslands, low tree steppe; snappygum over *Triodia wiseana*; and

111: Hummock grasslands, shrub steppe; *Eucalyptus gamophylla* over hard spinifex.

The application area was surveyed as part of a larger Level 2 flora and vegetation survey conducted by Onshore Environmental (Onshore) between BHP Billiton Iron Ore Pty Ltd's (BHPBIO) Jinidi tenement and the mainline rail (area of 36,838 hectares) (Onshore, 2012a). Field work was undertaken between 21 and 27 February, 24 March and 6 April and 1 to 14 September 2011. Onshore (2012a) also incorporated data from a survey by Woodman Environmental conducted between May and June 2009 and September 2009. Based on vegetation mapping by Onshore (2012a), the following 12 vegetation associations occur within the application area:

1. Acacia Low Open Forest (2b): Low Open Forest of *Acacia catenulata* subsp. *occidentalis*, *Acacia pruinocarpa*, *Acacia aneura* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Acacia synchronicia* and *Acacia tetragonophylla* over Open Hummock Grassland of *Triodia pungens*, *Triodia wiseana* in red brown clay loam on flood plains.

2. Acacia Low Open Forest (2c): Low Open Forest of *Acacia catenulata* subsp. *occidentalis*, *Acacia aptaneura* and *Acacia aneura* over Open Shrubland of *Scaevola acacioides* and *Eremophila latrobei* subsp. *latrobei* over Open Hummock Grassland of *Triodia pungens* and *Triodia wiseana* in red brown clay loam on upper hill and breakaway slopes.

3. Corymbia Low Open Forest (3): Low Open Forest of *Corymbia ferritcola*, *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over Open Shrubland of *Acacia hamersleyensis*, *Dodonaea viscosa* subsp. *mucronata* and *Eremophila tietkensisii* over Open Hummock Grassland of *Triodia pungens* in red brown clay

loam in gorges and deeply dissected rocky gullies.

4. Acacia Open Scrub (6b): Open Scrub of *Acacia tumida* var. *pilbarensis*, *Grevillea wickhamii* and *Acacia pyrifolia* over Open Hummock Grassland of *Triodia pungens* with Open Tussock Grassland of **Cenchrus ciliaris*, **Cenchrus setiger* and *Eriachne tenuiculmis* in brown sandy loam along minor drainage lines.

5. Acacia High Shrubland (7): High Shrubland of mixed *Acacia* spp. over Hummock Grassland of *Triodia wiseana* and/or *Triodia pungens* with Scattered Low Trees of *Eucalyptus xerothermica* or *Corymbia hamersleyana* on red/brown clay loam on flats.

6. Triodia Hummock Grassland (10a): Hummock Grassland of *Triodia brizoides* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* in orange loamy sand on steep hill slopes.

7. Triodia Hummock Grassland (10b): Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. Van Leeuwen 3835) with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* over High Open Shrubland of *Acacia bivenosa* in red sandy loam on hill slopes and hill crests.

8. Triodia Hummock Grassland (10d): Hummock Grassland of *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* in brown sandy loam on steep hill slopes.

9. Triodia Hummock Grassland (10e): Hummock Grassland of *Triodia basedowii* with Very Open Mallee of *Eucalyptus gamophylla* over High Open Shrubland of *Acacia inaequilatera*, *Acacia pachyacra* and *Acacia ancistrocarpa* in red loamy sand on sand plain.

10. Triodia Hummock Grassland (10f): Hummock Grassland of *Triodia pungens* with High Open Shrubland of *Acacia inaequilatera*, *Acacia pruinocarpa* and *Acacia sclerosperma* subsp. *sclerosperma* in red loamy sand on sand plain.

11. Triodia Hummock Grassland (10g): Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia deserticola* in orange loamy sand on footslopes.

12. Cleared: Roads, tracks and cleared areas.

* Introduced species

Clearing Description BHPBIO has applied to clear 160 hectares within an application area of approximately 5,681 hectares (GIS Database). The application area is located approximately 70 kilometres north west of Newman (GIS Database).

The purpose of the application is to undertake geotechnical investigations to inform the feasibility study of the Jinidi Junction to Central Junction rail link. These investigations involve test pitting, bore holes, water bore drilling/investigations, costeans and clearing for access tracks, laydown areas and drill holes (BHPBIO, 2012a). Clearing will be by mechanical means. Vegetation and topsoil will be stockpiled for use in rehabilitation.

Vegetation Condition Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994);
To
Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

Comment Vegetation condition was determined by Onshore (2012a) using the Keighery (1994) scale.

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 may be at variance to this Principle**
Vegetation mapping by Onshore (2012a) shows 11 of the 28 vegetation associations mapped over the broader study area occur within the application area. These are broadly described as *Acacia* low open forest, *Corymbia* low open forest, *Acacia* open scrub, *Acacia* high shrubland and *Triodia* hummock grassland and are associated with flood plains, upper hill and breakaway slopes, gorges and gullies, minor drainage lines, flats, steep hill slopes, hill slopes and crests, sand plain and footslopes (Onshore, 2012a). According to BHPBIO (2012a), the vegetation associations are well represented across the Pilbara Biogeographic region.

A total number of 471 plant taxa (including varieties and subspecies) from 59 families and 178 genera were recorded from the larger study area (Onshore, 2012a). Vegetation condition in the application area was rated as good to excellent, with a general decreasing trend in condition evident from south to north due to impacts associated with increasing numbers of domestic cattle (BHPBIO, 2012a).

A total of 17 introduced weed species were recorded within the larger study area with seven of these located within the application area. These included Kapok Bush (*Aerva javanica*), Mexican Poppy (*Argemone ochroleuca*), Bipinnate Beggartick (*Bidens bipinnata*), Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*), Prickly Lettuce (*Lactuca serriola*), Spiked Malvastrum (*Malvastrum americanum*) and Purslane (*Portulaca oleracea*). According to Onshore (2012a), none of these species are listed as a 'Declared Plant' for the Pilbara region under the *Agriculture and Related Resources Protection Act 1976*. Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed

management condition.

According to available databases, the application area is located within either the buffer of or within four Priority Ecological Communities (PECs) including the Priority 1 Weeli Wolli Spring community PEC, Priority 3 Fortescue Valley Sand Dunes PEC and two Priority 1 Fortescue Marsh PECs. No Threatened Flora or Threatened Ecological Communities have been recorded within the application area (GIS Database; BHPBIO, 2012a).

The Weeli Wolli Spring feeds a permanent series of pools with unique sedge and herbfield communities fringing many of the pools (Onshore, 2012a). The associated riparian woodland and forests were mapped by Onshore (2012a) as vegetation association 1 'Open Forest of *Melaleuca argentea* and *Eucalyptus camaldulensis* over Low Woodland of *Acacia citrinoviridis*, *Acacia coriacea* subsp. *pendens* and *Acacia ampliceps* over Open Sedges of *Typha domingensis*, *Cyperus vaginatus* and *Fimbristylis sieberiana*'. Based on discussions between BHPBIO and the Department of Environment and Conservation (DEC), the Weeli Wolli Spring Community PEC is defined by the continuous occurrence of tall *Melaleuca argentea* trees upstream and downstream of the Weeli Wolli Spring (BHPBIO, 2012b). Based on this, the PEC is approximately 1.1 kilometres from the application area (BHPBIO, 2012b). The *Melaleuca argentea* forest vegetation association extends from the boundary of the PEC and at its closest distance to the application area is between approximately 50 and 75 metres over a distance of 500 metres. This is consistent with DEC (2012a) advice that there should be complete avoidance of Weeli Wolli creek and associated vegetation which is an unusual association and composition including forests, sedges and herbland that support an unusual array of fauna. Based on the above and the low impact, non contiguous nature of the works, it is unlikely the proposed clearing will have a significant impact on the PEC or *Melaleuca argentea* forest.

The Fortescue Valley Sand Dunes PEC consists of red linear sand dune communities that are regionally rare, small and fragile and highly susceptible to threatening processes such as weed invasion and erosion (DEC, 2012a). PEC mapping provided by DEC shows this PEC extends into the application area (DEC, 2012a). DEC advice states this PEC should be protected by placing a 100 metre buffer around the sand dune communities (DEC, 2012a). Potential impacts to this PEC as a result of the proposed clearing may be minimised by the implementation of an exclusion zone that incorporates a 100 metre buffer around the sand dune communities. The application area is also located within the buffer of the Fortescue Marsh PECs and is approximately 15 kilometres south of the marsh at its closest point. Based on this distance the proposed clearing is unlikely to significantly impact the Fortescue Marsh.

According to BHPBIO (2012a), two records of Priority Flora occur within the application area including one record of *Goodenia* sp. East Pilbara (Priority 3) and one record of *Goodenia nuda* (Priority 4). Priority Flora species mapping shows these species were recorded from the same location within the application area. These species have been recorded in several surveys conducted in the vicinity of the Onshore study area with *Goodenia nuda* recorded at eight locations within the larger study area (Onshore, 2012a). Given these species and suitable habitat has been recorded outside the application area, the proposed clearing is not expected to have a significant impact on these species.

Several other Priority Flora species were recorded outside the application area within the larger survey area including *Stylidium weeliwolli* (Priority 2), *Fimbristylis sieberiana* (Priority 3), *Rostellularia adscendens* var. *latifolia* (Priority 3), *Sida* sp. Barlee Range (S. van Leeuwen 1642) (Priority 3) and *Bulbostylis burbridgeae* (Priority 4) (Onshore, 2012a). With the exception of *Bulbostylis burbridgeae* these are located along Weeli Wolli Creek which does not intersect the application area (closest distance is approximately 70 metres from the application area). A portion of the application area was not covered by formal quadrats, however, Onshore (2012b) states transect walks were undertaken in this area to finalise vegetation mapping and no significant flora were recorded at this time. Onshore (2012b) adds there is a sparse distribution of significant flora and given the landforms present, and representation of these landforms within the surrounding landscape, it is unlikely that any additional Priority Flora would occur in this area.

The application area was covered as part of a larger Level 2 vertebrate fauna survey conducted by Biologic from 28 March to 10 April and 22 August to 3 September 2011. The survey recorded 89 bird, 73 reptile, four amphibian and 31 (four introduced) mammal species over a study area of approximately 39,330 hectares. Biologic (2012) identified five habitat types within the application area including gorge/gully, sand plain, crest/slope, mulga and drainage area. These are considered common in the surrounding Hamersley Ranges (Biologic, 2012).

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

Methodology BHPBIO (2012a)
BHPBIO (2012b)
Biologic (2012)
DEC (2012a)
Onshore (2012a)
Onshore (2012b)
GIS Database:
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

(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

Biologic (2012) mapped 11 fauna habitat types over the larger study area including crest/slope, drainage area, dunes, eucalypt forest, gorge/gully, introduced grassland, melaleuca forest, mulga, native grassland, road, and sand plain. These were considered common in the region with the exception of the major drainage line habitat along Weeli Wollie Creek and the sand dune habitats (Biologic, 2012). Five of the habitat types occur within the application area including gorge/gully, sand plain, crest/slope, mulga and drainage area. Of these Biologic (2012) identified the sand plain and gorge/gully habitats as important habitats, particularly for conservation significant fauna species. The sand plains provide sandy habitat for several conservation significant fauna and occurs in the northern portion of the application area and extends beyond the larger study area. The gorge/gully habitat can provide refuge for humidophiles and fire intolerant species (CALM, 2002) and can feature caves and rockpools that fauna utilise. This habitat was mapped in three areas within the study area and largely occurs outside the application area.

According to BHPBIO (2012a), the Ghost Bat (*Macroderma gigas*) (Priority 4), Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4), Australian Bustard (*Ardeotis australis*) (Priority 4), Bush Stone-curlew (*Burhinus grallarius*) (Priority 4), Rainbow Bee-eater (*Merops ornatus*) (Marine; Migratory under EPBC Act, Schedule 3), Blindsnake (*Ramphotyphlops ganei*) (Priority 1) and Pilbara Olive Python (*Liasis olivaceus barroni*) (Vulnerable; Schedule 1) have been recorded within the application area.

Ghost bat scats and the call of an individual was recorded in the southern portion of the application area in gorge/gully habitat (Biologic, 2012). Scats were found in four generally shallow caves in the survey area, two of which may be suitable feeding roosts. None of these caves were considered suitable as maternity or day roosts and suitable caves were uncommon within the study area (Biologic, 2012). Potential impacts to the Ghost Bat may be minimised by the implementation of an exclusion zone condition that incorporates a 25 metre buffer around these caves.

A Pilbara Olive Python and scats from this species were also recorded in gorge/gully habitat (Biologic, 2012). This species is often encountered in the vicinity of permanent waterholes in rocky ranges or among riverine vegetation. A recording of the locally significant species, the Chocolate Wattled Bat (*Chalinolobus morio*), was also made in gorge/gully habitat in the vicinity of Weeli Wollie Creek. This species is considered significant as its distribution in the Pilbara is currently restricted to woodland at Weeli Wollie Creek (Biologic, 2012). Although not recorded, Biologic (2012) also considered the gorge/gully habitat as potentially suitable habitat for Northern Quoll (*Dasyurus hallucatus*) (Endangered; Schedule 1) and Peregrine Falcon (*Falco peregrinus*) (Vulnerable; Schedule 4). It may also provide roost sites for the Pilbara Leaf-nosed Bat (*Rhinioncteris aurantia*) (Vulnerable; Schedule 1), however, this was considered unlikely as none of the caves recorded were deemed to be suitable roosting locations (Biologic, 2012). BHPBIO (2012b) has advised that no more than three hectares of proposed clearing will be required in the gorge/gully habitat. BHPBIO (2012b) also have a fauna management procedure for injured animals and the capture and relocation of fauna during construction work including contacting the Environmental Representative for injured animals or fauna relocation. Potential impacts to these species as a result of the proposed clearing may be minimised by the implementation of condition that restricts clearing to no more than three hectares within the gorge/gully habitat.

Several active and inactive Western Pebble-mound Mouse mounds were recorded within the application area in crest/slope habitat (Biologic, 2012). The Bush Stone-curlew and Blindsnake were recorded once during the survey in mulga and drainage area habitat, respectively, and can also utilise other habitat types within the application area (Biologic, 2012). There are several records for the Australian Bustard and Rainbow Bee-eater occurring in a variety of habitats (Biologic, 2012). Given the availability of suitable habitat in the vicinity of the application area and the intermittent nature of the proposed clearing over the application area, it is unlikely these species will be significantly impacted by the proposed clearing.

The Mulgara (either *Dasyercus blythi* (Priority 4) or *Dasyercus cristicauda* (Vulnerable; Schedule 1)), Eastern Osprey (*Pandion cristatus*) (Migratory; Schedule 3) and Star Finch (western subspecies) (*Neochmia ruficauda subclarescens*) (Priority 4) were recorded outside the application area within the larger study area during current and previous surveys (Biologic, 2012). Sand plain habitat within the application area provides suitable habitat for the Mulgara (Biologic, 2012). Mulgara individuals (observed through motion camera), tracks, scats and burrows were recorded directly adjacent to and in the vicinity of the application area, however, none were recorded within the application area. The application area is unlikely to provide significant habitat for the Eastern Osprey and Star Finch as these species were recorded in habitat along Weeli Wollie Creek.

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

Methodology BHPBIO (2012a)
BHPBIO (2012b)
Biologic (2012)
CALM (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 BHPBIO (2012a), there are two records of the Threatened Flora species, *Lepidium catapycnon*, within the larger survey area. These are located along and in close proximity to Weeli Wolli Creek, approximately 500 metres and 1.5 kilometres from the application area. This species is known to occur on skeletal soils and hillsides (Western Australian Herbarium, 2012). The Department of Environment and Conservation's online database, Naturemap, shows numerous records of this species in the local area (DEC, 2012b). Onshore (2012a) states that it has previously been recorded to the south and west of the study area, including the Jinidi Iron Ore Minesite, South Flank, Packsaddle East Study area and Yandi mine site.

According to available databases and the vegetation survey, there are no records of Threatened Flora within the application area (GIS Database, Onshore, 2012a). There is a portion of the application area which was not covered by formal quadrats, however, no Threatened Flora were recorded during transect walks within this area. Onshore (2012b) states this area consists of ironstone hills of the Newman land system and that *Lepidium catapycnon* is very specific to mudstone shale soils associated with the McKay land system. This land system occurs outside and to the west of the application area and Weeli Wolli Creek. *Lepidium catapycnon* has been recorded in the McKay land system on the eastern end of Packsaddle Range but does not occur on any other parts of the range further west which form part of the Newman land system (Onshore, 2012b). Onshore (2012b) adds that the historical record in Weeli Wolli Creek is likely from seed that has washed down from the Packsaddle Range. Based on the above, Onshore (2012b) states it is very unlikely that any populations of *Lepidium catapycnon* would be present in this area.

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

Methodology BHPBIO (2012a)
DEC (2012b)
Onshore (2012a)
Onshore (2012b)
Western Australian Herbarium (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

According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is approximately 65 kilometres south east of the application area (GIS Database).

No TECs were recorded during the vegetation survey (Onshore, 2012a).

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

Methodology Onshore (2012a)
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 Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.6% of the pre-European vegetation remains (see table) (GIS Database, Government of Western Australia, 2011).

The vegetation of the application area has been mapped as the following Beard vegetation associations (GIS Database):

29: Sparse low woodland; mulga, discontinuous in scattered groups;
82: Hummock grasslands, low tree steppe; snappygum over *Triodia wiseana*; and
111: Hummock grasslands, shrub steppe; *Eucalyptus gamophylla* over hard spinifex.

Approximately 99.5% of Beard vegetation association 82 and approximately 99.9% of Beard vegetation associations 29 and 111 remains at both a state and bioregional level (Government of Western Australia, 2011). Therefore the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,427	17,729,352	~99.6	Least Concern	6.3
Beard veg assoc. – State					
29	7,903,991	7,900,200	~99.9	Least Concern	0.3
82	2,565,901	2,553,217	~99.5	Least Concern	10.2
111	762,963	762,326	~99.9	Least Concern	5.5
Beard veg assoc. – Bioregion					
29	1,133,220	1,132,939	~99.9	Least Concern	1.9
82	2,563,583	2,550,899	~99.5	Least Concern	10.2
111	550,287	550,232	~99.9	Least Concern	1.3

* 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 – Sub Regions)
- 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 numerous minor, non-perennial watercourses within the application area (GIS Database). It is expected that these would only flow after heavy or prolonged rainfall, as short-duration floods with rapid peaks and slightly less rapid decline (BHPBIO, 2012a). Weeli Wolli Creek, a regionally significant creek, runs along the north western boundary of the application area and at the closest point is approximately 70 metres north west of the application area (GIS Database). Available databases show there are numerous minor, non-perennial watercourses within and in the vicinity of the application area (GIS Database). The Fortescue Marsh is also located approximately 15 kilometres north of the northern boundary of the application area (GIS Database).

Vegetation mapping within the application area indicates at least one of the vegetation associations grows in association with drainage lines. This association consists of acacia open scrub in brown sandy loam along minor drainage lines (Onshore, 2012a). According to BHPBIO (2012a), the vegetation associations within the application area are well represented across the Pilbara Biogeographic region. None of the vegetation associations associated with major drainage within the larger survey area were mapped within the application area (BHPBIO, 2012a). *Melaleuca argentea* forest (vegetation association 1) is found along Weeli Wolli Creek and at the closest point is located approximately 50 metres from the application area (BHPBIO, 2012b). This location also coincides with the gorge/gully habitat where the proposed clearing is limited to no more than three hectares. This is consistent with DEC (2012a) advice that there should be complete avoidance of Weeli Wolli creek and associated vegetation which is an unusual association and composition including forests, sedges and herbland that support an unusual array of fauna. Given the low impact, non contiguous nature of the works and minimum buffer distances mentioned above, the proposed clearing is unlikely to have a significant impact on Weeli Wolli Creek and the associated riparian vegetation.

BHPBIO (2012a) state that the Contractor shall maintain a minimum set back of 50 metres from drainage lines unless otherwise approved and that the boundary approved prior to site access will be reduced as far as practicable as to minimise disturbance within identified watercourses within the application area.

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

Methodology BHPBIO (2012a)
BHPBIO (2012b)
DEC (2012a)
Onshore (2012a)
GIS Database:
- Hydrography, linear

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

Comments Proposal may be at variance to this Principle

The application area has been mapped as occurring on the Boolgeeda, Divide, Fan, Newman, Rocklea and Urandy land systems (GIS Database). Most of these land systems are generally not susceptible to erosion, however, some susceptibility has been identified for the Divide and Fan land systems. The Divide land system consists of sandplains and occasional dunes supporting shrubby hard spinifex grasslands (Van Vreeswyk et al., 2004). There is some susceptibility to wind erosion immediately following burning but stabilisation occurs rapidly after rain. The Fan land system consists of washplains and gilgai plains supporting groved mulga shrublands and minor tussock grasslands. The washplains and drainage tracts are moderately susceptible to soil erosion if vegetative cover is depleted (Van Vreeswyk et al., 2004). Potential impacts from erosion as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

The average annual evaporation rate is over 11 times the average annual rainfall, so it is unlikely the proposed clearing will result in increased groundwater recharge causing raised saline water tables (GIS Database; BoM, 2012).

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

Methodology BoM (2012)
Van Vreeswyk et al. (2004)
GIS Database:
- Evaporation Isopleths
- 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 does not lie within any conservation areas or Department of Environment and Conservation (DEC) managed lands (GIS Database). The nearest conservation reserve is Karijini National Park, located approximately 60 kilometres west of the application area (GIS Database). Based on the distance between the application area and Karijini National Park, the proposed clearing is not likely to impact the environmental values of any 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

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There are no permanent waterbodies or watercourses within the application area, however, there are numerous minor, non-perennial watercourses that occur within the application area (GIS Database). It is expected that these would only flow after heavy or prolonged rainfall, as short-duration floods with rapid peaks and slightly less rapid decline (BHPBIO, 2012a).

The annual average rainfall for Newman is 315.8 millimetres and the average annual evaporation rate for the application area is between 3,400 and 3,600 millimetres (BoM, 2012; GIS Database). Based on these averages, surface water is likely to evaporate quickly with surface sheet flow and higher sediment levels generally occurring during larger rainfall events. Therefore, during normal rainfall events, the proposed clearing would not likely lead to an increase in sedimentation of watercourses within the application area.

According to available databases, groundwater salinity within the application area is between 500 and 1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered fresh to marginal. The proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

BHPBIO (2012a) state that the Contractor shall maintain a minimum set back of 50 metres from drainage lines unless otherwise approved and that the boundary approved prior to site access will be reduced as far as practicable as to minimise disturbance within identified watercourses within the application area. BHPBIO (2012a) adds that clearing of slopes leading to watercourses will be delayed until construction of the crossing is imminent, thus minimising erosion and sedimentation risk.

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

Methodology BHPBIO (2012a)

BoM (2012)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

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

The application area is located within the Fortescue River catchment area (GIS Database). Given the size of the area to be cleared (160 hectares) in relation to the size of the catchment area (2,975,192 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

With an average annual rainfall of 315.8 millimetres and an average annual evaporation rate of between 3,400 and 3,600 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2012; GIS Database). Whilst large rainfall events may result in flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology BoM (2012)
GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments – Catchments

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

Comments The clearing permit application was advertised on 27 August 2012 by the Department of Mines and Petroleum (DMP) inviting submissions from the public. One submission was received stating the clearing permit application will not be supported. This relates to concerns over the amount of clearing in the Shire of East Pilbara and a request for further information about the clearing permit process. DMP has responded to this submission and addresses the cumulative impacts of clearing under Principle (e).

There is one native title claim over the area under application: WC05/6 (GIS Database). This claim has been registered with the Native Title Tribunal on behalf of the claimant groups. 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 databases, there are several registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

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

4. References

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- Onshore (2012b) Jinidi to Mainline Flora and Vegetation Survey CPS 5163/1 (BHP Billiton Iron Ore Pty Ltd Jinidi Rail Project). Letters from Onshore Environmental to BHP Billiton Iron Ore dated 11 September and 3 October 2012.
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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

Definitions:

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

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified,

over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU** **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.