



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6924/1
Permit type: Purpose

1.2. Proponent details

Proponent's name: BHP Billiton Iron Ore Pty Ltd

1.3. Property details

Property: Mining Lease 244SA (AML 70/244)
Local Government Area: Shire of East Pilbara
Colloquial name: Ophthalmia Dam Maintenance Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
35		Mechanical Removal	Maintenance to Ophthalmia Dam and all associated activities

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 24 March 2016

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

The application area has been mapped as the following Beard vegetation association:

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

A Level 2 Flora and Vegetation Survey of the application area was undertaken by Syrinx Environmental PL during the period 16 March and 19 – 27 March 2012. The vegetation survey identified the following ten vegetation associations of the application area:

1. *Acacia* High Shrubland - High Shrubland of *Acacia aptaneura*, *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia ancistrocarpa* over Very Open Hummock Grassland of *Triodia pungens* on red brown sandy loam on floodplains and drainage lines.
2. *Acacia* Low Open Woodland - Low Open Woodland of *Acacia aptaneura*, *Acacia citrinoviridis* and *Acacia pruinocarpa* over Open Shrubland of *Acacia synchronicia*, *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia bivenosa* over Very Open Hummock Grassland of *Triodia pungens* on red brown clay loam on floodplains and medium drainage lines.
3. *Acacia* Low Woodland - Low Woodland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Dodonaea petiolaris* and *Sida ectogama* over Open Tussock Grassland of *Aristida contorta*, *Digitaria ammophila* and *Aristida inaequiglumis* on red orange clay loam on floodplains.
4. *Eucalyptus* Woodland - Woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix* over High Open Shrubland of *Acacia citrinoviridis*, *Acacia pyrifolia* var. *pyrifolia* and *Melaleuca glomerata* over Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown clay loam on banks of major drainage lines.
5. *Eucalyptus* Woodland - Woodland of *Eucalyptus victrix*, *Acacia citrinoviridis* and *Eucalyptus camaldulensis* subsp. *refulgens* over Low Open Shrubland of *Tephrosia rosea* var. *clementii*, *Corchorus crozophorifolius* and *Acacia pyrifolia* var. *pyrifolia* over Very Open Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown loamy sand on channels of major drainage lines.
6. *Frankenia* Low Open Shrubland - Low Open Shrubland of *Frankenia setosa* with Scattered Tussock Grasses of **Cenchrus ciliaris* on red brown clay loam on saline flats.
7. *Triodia* Hummock Grassland - Hummock Grassland of *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Hakea chordophylla* and Open Shrubland of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia aptaneura* on red sandy loam on hill slopes.
8. *Triodia* Hummock- Grassland - Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen3835) with High Open Shrubland of *Acacia inaequilatera* on red brown loamy sand on hill slopes and stony plains.
9. *Triodia* Hummock- Grassland - Hummock Grassland of *Triodia wiseana* and *Triodia angusta* with Open Mallee of *Eucalyptus socialis* subsp. *eucentrica* and Open Shrubland of *Acacia bivenosa*, *Petalostylis labicheoides* and *Acacia pyrifolia* var. *pyrifolia* on light brown clay loam on calcrete plains and rises.
10. *Typha* Sedges - Sedges of *Typha domingensis* and *Cyperus vaginatus* with Open Woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix* over Low Open Woodland of *Acacia citrinoviridis* and *Acacia coriacea* subsp. *pendens* on brown clayey sand on permanent pools along

major drainage lines.

Clearing Description

Ophthalmia Dam Maintenance Project.
BHP Billiton Iron Ore Pty Ltd (BHP Billiton) proposes to clear 35 hectares of native vegetation within a boundary of 189.4 hectares for the purposes of mineral production. The project is located approximately 8 kilometres east of Newman in the Shire of East Pilbara.

Vegetation Condition

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

to

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

Comment

Where possible existing cleared tracks will be used to cross surface water features. Where it is necessary for new crossings to be installed, clearing will be kept to a minimum and will be constructed flat level to the surface to maintain the natural surface water flow (BHP Billiton (2016)).

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Gascoyne Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.95% of the pre-European extent of vegetation remains in Western Australia (Government of Western Australia, 2014; GIS Database). This region is described as rugged, low Proterozoic sedimentary and granite ranges divided by broad flat valleys (CALM, 2002). Although the Gascoyne River System provides the main drainage of this sub-region, it is also the headwaters of the Ashburton and Fortescue Rivers. The area also contains extensive areas of alluvial valley-fill deposits. Mulga woodland with *Triodia* occurs on shallow stony loams on rises, while the shallow earthy loams over hardpan on the plains are covered by Mulga parkland (CALM, 2002). The vegetation of the Gascoyne bioregion is well represented in Western Australia and is considered to be of least concern with regards to conservation status (Department of Natural Resources and Environment, 2002).

A flora survey was undertaken by Syrinx (2012) of the broader Orebody 37 study area (comprising the western portion of the application area) which identified a total of 13 vegetation associations (survey area 2,862 hectares) (Syrinx, 2012). A total of 310 species were identified, representing 46 families and 139 genera in the Orebody 37 study area (Syrinx, 2012). An earlier and broader flora survey (survey area 1,549.36 hectares) was also undertaken in November 2010 by ENV Australia Pty Ltd (ENV) (which comprised the eastern portion of the application area). This survey recorded a total of 145 taxa, representing 70 genera and 31 families (ENV, 2011). However, within the Ophthalmia Dam application area (189.4 hectares) a reduced number of taxa would be present. No species of Threatened or Priority flora were recorded in the application area during either of the flora surveys (Syrinx, 2012; ENV, 2011; BHP Billiton, 2016).

There were 11 weed species recorded within the application area (BHP Billiton, 2011). Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

One Threatened Ecological Community (TEC) occurs within the application area (BHP Billiton, 2016; GIS Database). The boundary of the 'Ethel Gorge Aquifer Stygobiont Community' TEC is located over the majority of the application area. The TEC covers a large area (3, 743.19 hectares) and is associated with subterranean biota occurring in the groundwater aquifer. The proposed clearing is not likely to impact on groundwater ecosystems or subterranean biota associated with the TEC (BHP Billiton, 2016). No Priority Ecological Communities (PEC's) were identified in either of the flora surveys undertaken of the application area (BHP Billiton, 2016).

In the past, several fauna surveys were undertaken of the application area and surrounding areas. The most recent and crucial being the '*Ophthalmia Dam Avian Fauna Survey*' undertaken by MWH in 2015. This survey was completed over a broad area, approximately 4,316 hectares in size. A total of 124 avifauna species were recorded during the field survey (MWH, 2015). The majority of fauna habitat located within the application area was major drainage line habitat which accounts for the large number of avifauna species recorded. No Threatened fauna were recorded in the application area as part of the fauna survey (BHP Billiton, 2016).

BHP Billiton (2016) report that the vegetation within the application area has experienced disturbance and some areas have been previously cleared of vegetation. Clearing for the proposal is relatively small, the application area is considered to be low in biodiversity and the vegetation in the surrounding area is well represented (Government of Western Australia, 2014). For these reasons, it is unlikely the proposal will result in the clearing of native vegetation that comprises a high level of biodiversity.

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

Methodology

BHP Billiton (2016)
CALM (2002)
Department of Natural Resources and Environment (2002)

ENV (2011)
Government of Western Australia (2014)
MWH (2015)
Syrinx (2012)

GIS Database:
- Threatened Fauna
- Threatened and Priority Flora
- TEC/PEC – Buffer
- TEC/PEC – Boundaries

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

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

A Level 1 fauna survey was conducted over the application area. Based on the results of this survey the following five broad habitat types have been identified in the application area (BHP Billiton, 2016; MWH, 2015):

1. Crest/slope;
2. Drainage Area;
3. Major Drainage Line;
4. Mulga; and
5. Stony Plains.

The most widespread fauna habitat type of the application area was major drainage line habitat and the least widespread fauna habitat was crest/slope (BHP Billiton, 2016). The major drainage line habitat provides for a large number of avifauna species in the application area. No Threatened fauna were recorded in the application area as part of the fauna survey (BHP Billiton, 2016).

A search of available biological databases was undertaken and no Threatened fauna have been recorded in the application area (GIS Database). A desktop survey of fauna species potentially occurring in the region was undertaken prior to the fauna survey (BHP Billiton, 2016). The desktop survey identified 16 fauna species of conservation significance potentially occurring within the application area. The majority of these conservation fauna species were migratory bird species (BHP Billiton, 2016). While suitable habitat is located in the application area for these migratory species, none of the species are dependent on the area and large areas of preferred habitat are located in surrounding areas. For these reasons the potential impact on each species was considered to be low or negligible (BHP Billiton, 2016).

Seven fauna species of conservation significance were recorded from the application area (BHP Billiton, 2016; MWH, 2015). All of these were migratory avifauna species and include the Common Greenshank (*Tringa nebularia*), Common Sandpiper (*Tringa hypoleucos*), Eastern Great Egret (*Ardea modesta*), Marsh Sandpiper (*Tringa stagnatilis*), Rainbow Bee-eater (*Merops omatus*), Sharp-tailed Sandpiper (*Calidris acuminata*) and Wood Sandpiper (*Tringa glareola*). Habitat for these species occurs in the major drainage line and drainage areas located in the application area (BHP Billiton, 2016). Ophthalmia Dam is a seasonal water body which contains areas of standing water and therefore seasonal habitat for migratory avifauna (BHP Billiton, 2016). Seasonal variation of avian fauna assemblages is a feature of arid wetland environments, which includes the application area. The extent of open water and shoreline habitat at Ophthalmia Dam at different periods of the year is reflected in the avian fauna assemblages present in the application area (MWH, 2015). The size of Ophthalmia Dam also varies greatly throughout the year from 1,500 hectares during peak flow (following summer rains) to less than 100 hectares during the late dry season (MWH, 2015). None of the habitat types are considered to be core habitats for any of the fauna species and none of the species would rely solely on the area (BHP Billiton, 2016). Therefore, it is unlikely that the habitat is significant for these fauna species.

The fauna survey undertaken by MWH (2015) recorded the Rainbow Bee-eater within the application area (MWH, 2015). MWH (2015) also reported suitable breeding habitat (major drainage line habitat) for the species in the application area (MWH, 2015). However, the potential impact on the Rainbow Bee-eater species was considered to be low as no evidence of breeding was recorded in the application area and large areas of suitable breeding and foraging habitat are widespread in surrounding areas (BHP Billiton, 2016). Although, semi-permanent areas of standing water are located in the application area, suitable foraging habitat (shrublands and woodland) is not located within the application area (DotE, 2016). Rainbow Bee-Eaters are also highly mobile, common in the Pilbara region and widely distributed around Australia. It is unlikely Rainbow Bee-eater individuals would solely rely on the application area, therefore the application area is not considered to be significant habitat for the species (BHP Billiton, 2016; DotE, 2016).

One mammal species, Western Pebble-mound Mouse (*Pseudomys chapmani* – Priority 4) could potentially occur in the application area. However, no Western Pebble-mound Mouse individuals were recorded as part of the fauna survey. The application area contains only a small area of suitable crest/slope and stony plain habitat which could be used by the species. Given the small amount of suitable habitat for the Western Pebble-mound Mouse located in the application area and large amount of suitable habitat for this species located adjacent to the application area the potential impact on the species was considered to be low (BHP Billiton, 2016).

The area proposed to be cleared does not contain significant habitat for fauna species indigenous to Western

Australia.

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

Methodology BHP Billiton (2016)
DotE (2016)
MWH (2015)

GIS Database:
- Threatened Fauna

(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**

A search of available databases was undertaken and no Threatened flora were located in the application area (GIS Database). Flora surveys were also undertaken by Syrinx in 2012 and ENV in 2010 which did not record species of Threatened flora in the application area (BHP Billiton, 2016; ENV, 2011; Syrinx, 2012). The native vegetation proposed to be cleared is not likely to contain or is not necessary for the continued existence of rare flora.

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

Methodology BHP Billiton (2016)
ENV (2011)
Syrinx (2012)

GIS Database:
- Threatened and Priority Flora

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

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

According to available databases, there is one Threatened Ecological Community (TEC) occurring within the application area (BHP Billiton, 2016; GIS Database). The boundary of the 'Ethel Gorge Aquifer Stygobiont Community' TEC is located over the majority of the application area. The TEC is associated with subterranean biota occurring in the groundwater aquifer. This TEC covers a large area (3,743.19 hectares) and it is unlikely that the small scale clearing of 35 hectares required as part of the proposal will impact on groundwater ecosystems or subterranean biota (BHP Billiton, 2016). The clearing of 35 hectares will not impact on the maintenance of the TEC.

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

Methodology BHP Billiton (2016)

GIS Database:
- TEC/PEC - Buffers
- TEC/PEC – Boundaries

(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 Gascoyne Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.96% of the pre-European extent of vegetation remains in Western Australia (refer table below) (Government of Western Australia, 2014; GIS Database). As large areas of the pre-European extent of native vegetation remain within the Gascoyne IBRA region, the vegetation is considered to be of least concern with regards to conservation status (Department of Natural Resources and Environment, 2002).

The native vegetation located in the application area has been mapped as Beard vegetation association 29: sparse low woodland; mulga, discontinuous in scattered groups (GIS Database). This vegetation association has not been extensively cleared as over 99% of the vegetation association remains at the State level and bioregional levels (refer table below) (Government of Western Australia, 2014).

The clearing of vegetation as part of the proposal is not part of a significant ecological linkage. The area proposed to be cleared is also not considered to be significant as a remnant in an area that has been extensively cleared (BHP Billiton, 2016; GIS Database). The vegetation of the application area is considered to be completed degraded to very good in condition and for these reasons the clearing of native vegetation is not at variance to this Principle (Onshore Environmental, 2014).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in All DPaW Managed Land
IBRA Bioregion – Gascoyne	18,075,219.48	18,067,441.43	99.96	Least Concern	10.30
Beard veg assoc. – State					
29	7,903,991.47	7,900,200.44	99.95	Least Concern	5.22
Beard veg assoc. – Bioregion					
29	3,802,459.63	3,799,635.88	99.93	Least Concern	7.81

* Government of Western Australia (2014).

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

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

Methodology BHP Billiton (2016)
Department of Natural Resources and Environment (2002)
Government of Western Australia (2014)
Onshore Environmental (2014)

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

The proposal is located at Ophthalmia Dam, a man-made, water body constructed in 1981 by the Mt Newman Mining Company (BHP Billiton, 2016; MWH, 2015). The dam was constructed on the Fortescue River, upstream of Ethel Gorge for the purpose of town water supply and mining water supply. The Fortescue River (major, non-perennial watercourse) and several creeks including Warrawanda and Shovelanna Creeks flow into the dam following seasonal rainfall (MWH, 2015; GIS Database).

The proposal requires the clearing of riparian vegetation within the Fortescue River, Ophthalmia Dam and major creekline habitats for the purpose of maintenance activities to the Dam (BHP Billiton, 2016). The application area supports riparian vegetation that is growing in, or in association with a watercourse including the flora species; *Acacia ancistrocarpa*, *Acacia citrinoviridis*, *Acacia synchronicia*, *Eucalyptus camaldulensis* subsp. *refulgens*, *Eucalyptus victrix*, *Acacia pyrifolia* var. *pyrifolia*, *Melaleuca glomerata*, *Eulalia aurea*, *Themeda triandra*, *Corchorus crozophorifolius*, *Frankenia setosa*, *Triodia wiseana*, *Corymbia hamersleyana*, *Triodia angusta*, *Petalostylis labicheoides*, *Typha domingensis*, *Cyperus vaginatus* and *Acacia coriacea* subsp. *pendens* (BHP Billiton 2016; DPaW, 2016). These species occur along creeks, riverbeds, river banks, lakes, swamps, watercourses, billabongs, lagoons, drainage lines or floodplains (DPaW, 2016). The potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition.

The majority of the vegetation to be cleared for the proposal is associated with Ophthalmia Dam, the Fortescue River and major creek line habitats. BHP Billiton (2016) report that disturbance to these watercourses will be kept to a bare minimum and project activities will utilise previously disturbed areas, where practicable (BHP Billiton, 2016). However, in order to undertake maintenance of the Dam and associated infrastructure, clearing of riparian vegetation is needed.

The clearing is considered to be at variance to this Principle, however, although the clearing is not likely to significantly impact the ecological or hydrological functions of the Fortescue River, Ophthalmia Dam, Warrawanda and Shovelanna Creeks or creek line habitats. The proposed clearing will not have a detrimental impact on vegetation associations located in the area.

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

Methodology BHP Billiton (2016)
DPaW (2016)
MWH (2015)
Syrinx (2012)

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 majority of the application area is mapped as the River land system, while small portions of the application area are located in the Elimunna, Newman and McKay land systems (BHP Billiton, 2016; Van Vreeswyk, et al., 2004; GIS Database). The River land system consists of active flood plains and major rivers supporting grassy Eucalypt woodlands, tussock grasslands and soft spinifex grasslands (Van Vreeswyk, et al., 2004). Flood plains and river terraces located in this area are subject to regular overbank flooding from major channels, watercourses, sandy banks and poorly defined levees. The River system is mostly stabilised by buffel grass and spinifex and erosion is uncommon. However, when vegetation is removed the susceptibility to erosion is high-very high (Van Vreeswyk, et al., 2004). The Elimunna, Newman and McKay land systems are resilient and not prone to degradation or erosion (Van Vreeswyk, et al., 2004). The relatively small amount of native vegetation clearing required for the proposal is not likely to cause soil or wind erosion. Potential land degradation impacts may be minimised by the implementation of a staged clearing condition.

Northcote, et al. (1960-68) describe the landforms and soils in the application area as extensive flat and gently sloping plains, which sometimes have a surface cover of gravels and on which red brown hardpan frequently outcrops. The dominant soils are shallow, earthy loams which are not susceptible to erosion (Northcote, et al., 1960-68).

The relatively small amount of native vegetation required for the proposal is not likely to change salinity levels, impact nutrient export or soil acidification (BHP Billiton, 2016). The majority of native vegetation required to be cleared is also located in the creek line habitat (drainage area). This area has been previously disturbed and some of the vegetation has been cleared. BHP Billiton (2016) also report that areas subject to clearing that are no longer required will be revegetated (BHP Billiton, 2016)

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

Methodology BHP Billiton (2016)
Northcote, et al. (1960-68)
Van Vreeswyk et al. (2004)

GIS Database:
- Hydrography, linear
- 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 application area does not lie within any conservation areas or Department of Parks and Wildlife managed lands (BHP Billiton, 2016; GIS Database). The nearest conservation area is Karijini National Park which is located approximately 130 kilometres north-east of the application area (GIS Database). As this conservation area is located a considerable distance from the application area, the proposed clearing is not likely to have any impacts on the environmental values of adjacent or nearby conservation areas.

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

Methodology BHP Billiton (2016)

GIS Database:
- DPaW 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

A small portion of the application area is located within the Newman Water Reserve Public Drinking Water Source Area (PDWSA) (BHP Billiton, 2016; GIS Database). This PDWSA has been assigned a Priority 1 rating under the Water Source Protection Classification system. Advice from the Department of Water (DoW) (2016) noted that BHP Billiton is the water service provider for this water source and that for the benefit of the community, planning decisions on proposed land uses in the reserve need to be carefully considered. It was noted that that clearing activities associated with mineral production are compatible with conditions within a Priority 1 PDWSA (DoW, 2016). The DoW advise that provided activities are carried out in accordance with DoW advice and guidelines, the proposed clearing is not likely to have a significant impact on the quality or quantity of groundwater (DoW, 2016).

The groundwater within the application area is between 500 – 1,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. It would not be expected that the proposed clearing of 35 hectares within a permit boundary of 189.4 hectares would cause salinity levels within

the application or surrounding area to alter. No changes to the pH of groundwater are expected as a result of the clearing.

The proposed clearing is unlikely to cause deterioration in the quality of surface water including erosion or eutrophication of water bodies on-site or off-site. Clearing within drainage lines, the Fortescue River and Warrawanda Creek may lead to a short term increase in sedimentation or turbidity. However, these impacts are considered to be temporary and are not expected to result in the deterioration of surface water quality. BHP Billiton (2016) report any disturbance to existing surface water areas will be kept to a minimum and previously disturbed areas will be used, where practicable. Impacts to surface water within the Fortescue River and Warrawanda Creek may be minimised by the implementation of a watercourse management condition.

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

Methodology BHP Billiton (2016)

GIS Database:

- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas

(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**

Annual total rainfall for the nearest weather station located at Newman Aero recorded 448.8 millimetres in 2015 and total average annual evaporation for the area is 3,200 millimetres (BoM, 2016). As the application area receives low rainfall and annual evaporation is high, there is likely to be little surface flow during normal seasonal rains (BoM, 2016). The Fortescue River, Ophthalmia Dam and Warrawanda Creek are located within the application area and are subject to seasonal flooding. However, it is unlikely that the proposed clearing will cause or exacerbate the incidence or intensity of flooding.

BHP Billiton (2016) report clearing activities will be minimised by using previously disturbed vegetation and cleared areas, where practicable. Where new crossings are needed, vegetation clearing will be minimised and natural surface water flows will be maintained (BHP Billiton, 2016).

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

Methodology BHP Billiton (2016)
BoM (2016)

GIS Database:

- Hydrography, linear

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

Comments There is one native title claim (WC2005/006) over the application area (DAA, 2016). This claim has been registered with the National Native Title Tribunal on behalf of the claimant groups (DAA, 2016). However, the 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 (DAA, 2016). 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 Regulation, Department of Parks and Wildlife and the Department of Water to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 22 February 2016 by the Department of Mines and Petroleum inviting submissions from the public. One submission letter was received advising no objections to the proposed clearing application.

Methodology DAA (2016)

4. References

BoM (2016) Bureau of Meteorology Website - Climate Data Online, Newman Aero. Bureau of Meteorology.
<http://www.bom.gov.au/climate/data/index.shtml>. (Accessed 29 February 2016).

BoM (2016) Bureau of Meteorology - Climate Data Online, Evaporation.
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BHP Billiton (2016) Ophthalmia Dam Native Vegetation Clearing Permit Application Supporting Document for Ophthalmia Dam Maintenance, January 2016. BHP Billiton Iron Ore Pty Ltd, Perth, Western Australia.

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Gascoyne (GAS3 – Augustus subregion) Department of Conservation and Land Management, Perth, Western Australia.
- DAA (2016) Aboriginal Heritage Inquiry System. Department of Aboriginal Affairs. <http://maps.dia.wa.gov.au/AHIS2> (Accessed 17 February 2016).
- DotE (2016) *Merops ornatus* in Species Profile and Threats Database. Department of the Environment. <http://www.environment.gov.au/sprat>. Department of the Environment, Canberra. (Accessed 25 February 2016).
- DoW (2016) Advice received in relation to Clearing Permit Application CPS6924/1 Land Use Planning/Approvals, Department of Water, Department of Water, Western Australia, March 2016.
- 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.
- ENV (2011) Orebody 42/43 Flora, Vegetation and Fauna Assessment, Prepared for BHP Billiton Iron Ore, by ENV Australia Pty Ltd, Perth, Western Australia, 24 June 2011.
- Government of Western Australia (2014) 2014 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Western Australian Department of Parks and Wildlife, Perth, Western Australia.
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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPaW and DER)
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DotE	Department of the Environment, Australian Government
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (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
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2015) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

T

Threatened species:

Published as Specially Protected under the *Wildlife Conservation Act 1950*, listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the Wildlife Conservation Act.

Threatened flora is flora that has been declared to be 'likely to become extinct or is rare, or otherwise in need of special protection', pursuant to section 23F(2) of the Wildlife Conservation Act.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

- CR Critically endangered species**
Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EN Endangered species**
Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- VU Vulnerable species**
Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EX Presumed extinct species**
Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.
- IA Migratory birds protected under an international agreement**
Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- CD Conservation dependent fauna**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- OS Other specially protected fauna**
Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P Priority species**
Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
- P1 Priority One - Poorly-known species:**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
- P2 Priority Two - Poorly-known species:**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
- P3 Priority Three - Poorly-known species:**
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if

they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4

Priority Four - Rare, Near Threatened and other species in need of monitoring:

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.