



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No: 5572/1
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 Goldworthy) Agreement Act 1964, Mineral Lease 235SA (AML 70/235)
Iron Ore (Mount Goldworthy) Agreement Act 1964, Mineral Lease 249SA (AML 70/249)

Local Government Authority: Shire of East Pilbara
Colloquial name: Goldsworthy Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
110		Mechanical Removal	Borrow Pits, Exploration, Hydrogeological and Geotechnical Investigations, Infrastructure Maintenance and associated activities.

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 27 June 2013

2. Background

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. Three Beard vegetation associations have been mapped within the application area (GIS Database):

93: Hummock grasslands, shrub steppe; kanji over soft spinifex;
117: Hummock grasslands, grass steppe; soft spinifex; and
175: Short bunch grassland - savanna/grass plain (Pilbara).

A flora and vegetation survey of the application area was conducted in September 2012 by Onshore Environmental (2013). Onshore Environmental (2013) identified the following 31 vegetation associations within the application area (BHP, 2013):

Terminalia Low Woodland

1. Low Woodland of *Terminalia canescens* and *Atalaya hemiglauca* over Open Hummock Grassland of *Triodia epactia* with High Open Shrubland of *Ehretia saligna*, *Ficus brachypoda* and *Acacia acradenia* in brown sandy loam on cliff lines and steep gullies *Acacia* Closed Scrub;

2. Closed Scrub of *Acacia monticola*, *Acacia acradenia* and *Grevillea wickhamii* over Hummock Grassland of *Triodia epactia* with Low Open Mallee of *Eucalyptus odontocarpa* in brown sandy loam along minor drainage lines dissecting undulating hills;

Acacia Open Scrub

3a. Open Scrub of *Acacia ancistrocarpa*, *Acacia tumida* var. *pilbarensis* and *Grevillea wickhamii* over Hummock Grassland of *Triodia schinzii* with Open Tussock Grassland of *Paraneurachne muelleri*, *Aristida holathera* and *Eragrostis eriopoda* in red loamy sand on sandplains;

3b. Open Scrub of *Acacia tumida* var. *pilbarensis* over Hummock Grassland of *Triodia epactia* with Low Open Woodland of *Corymbia hamersleyana* and *Corymbia flavescens* in red brown sand on pindan sandplains and sandy drainage zones;

Grevillea Open Scrub

4. Open Scrub of *Grevillea wickhamii* over Scattered Hummock Grasses of *Triodia epactia* in variable mine overburden on rehabilitated post-mining infrastructure areas;

Acacia Low Open Heath

5. Low Open Heath of *Acacia stellaticeps* over Open Hummock Grassland of *Triodia epactia* and *Triodia schinzii*

with High Open Shrubland of *Grevillea wickhamii*, *Acacia ancistrocarpa* and *Hakea macrocarpa* in red orange sand on stony sandplains *Triodia* Hummock Grassland;

6a. Hummock Grassland of *Triodia epactia* with High Open Shrubland of *Grevillea wickhamii*, *Acacia Inaequilatera* and *Petalostylis labicheoides* over Open Shrubland of *Acacia acradenia* in orange silty loam on sandstone hill crests and slopes;

6b. Hummock Grassland of *Triodia wiseana* with Low Open Shrubland of *Tephrosia rosea* var. *clementii* and *Corchorus parviflorus* with Scattered High Shrubs of *Grevillea wickhamii* and *Acacia inaequilatera* in brown sandy loam on dolerite rises, low hills and footslopes;

6c. Hummock Grassland of *Triodia epactia* with Scattered High Shrubs of *Acacia inaequilatera*, *Grevillea wickhamii* and *Acacia acradenia* over Scattered Low Shrubs of *Corchorus parviflorus* in orange silty loam on footslopes of sandstone hills;

6d. Hummock Grassland of *Triodia epactia* and *Triodia wiseana* with Low Mallee of *Eucalyptus odontocarpa* over Scattered High Shrubs of *Acacia acradenia*, *Grevillea wickhamii* and *Acacia inaequilatera* in brown sandy loam on steep sandstone hill slopes;

6e. Hummock Grassland of *Triodia epactia* with Scattered High Shrubs of *Petalostylis labicheoides*, *Acacia inaequilatera* and *Grevillea wickhamii* over Low Open Shrubland of *Corchorus parviflorus*, *Tephrosia rosea* var. *clementii* and *Isotropis atropurpurea* in brown loamy sand (mudstone at surface) on open valleys;

6f. Hummock Grassland of *Triodia epactia* with High Open Shrubland of *Grevillea wickhamii*, *Acacia orthocarpa* and *Acacia monticola* over Low Open Shrubland of *Acacia adoxa* var. *adoxo*, *Acacia hilliana* and *Acacia stellaticeps* in brown sandy loam on low hills;

6g. Hummock Grassland of *Triodia epactia* with High Open Shrubland of *Acacia ancistrocarpa*, *Acacia tumida* var. *pilbarensis* and *Grevillea wickhamii* over Low Open Shrubland of *Ptilotus astrolasius*, *Corchorus* cf. *elachocarpus* and *Bonamia rosea* in red orange sand on sandplains;

6h. Hummock Grassland of *Triodia epactia* with Low Open Shrubland of *Pluchea tetranthera* and Scattered High Shrubs of *Acacia inaequilatera*, *Acacia ancistrocarpa* and *Acacia tumida* var. *pilbarensis* in orange sandy loam on plains;

6i. Hummock Grassland of *Triodia epactia* and *Triodia longiceps* with Open Tussock Grassland of *Chrysopogon fallax* and **Cenchrus ciliaris* with Low Open Woodland of *Corymbia flavescens*, *Bauhinia cunninghamii* and *Eucalyptus victrix* in orange loamy sand on floodplains and drainage zones;

6j. Hummock Grassland of *Triodia wiseana* with High Open Shrubland of *Grevillea wickhamii*, *Acacia inaequilatera* and *Acacia sclerosperma* over Low Open Shrubland of *Acacia stellaticeps* in light brown sandy loam on low calcrete rises;

6k. Hummock Grassland of *Triodia epactia* in orange loam on plains *Triodia* Open Hummock Grassland;

7a. Open Hummock Grassland of *Triodia epactia* with Very Open Tussock Grassland of *Eragrostis xerophila*, *Eriachne benthamii* and *Eriachne flaccida* over Very Open Annual Grassland of *Eragrostis cumingii* and *Sporobolus australasicus* in brown silty clay loam on plains;

7b. Open Hummock Grassland of *Triodia epactia* with Open Scrub of *Acacia ancistrocarpa*, *Acacia acradenia* and *Acacia tumida* var. *pilbarensis* and Scattered Low Trees of *Eucalyptus camaldulensis* var. *obtus* in orange clay loam on rehabilitated townsite area;

***Eragrostis* Tussock Grassland**

8. Tussock Grassland of *Eragrostis xerophila* with Very Open Hummock Grassland of *Triodia epactia* and Very Open Herbs of *Ptilotus murrayi* in orange medium clay on stony cracking clay plains;

***Eriachne* Tussock Grassland**

9a. Tussock Grassland of *Eriachne benthamii* with Low Open Woodland of *Eucalyptus victrix* over Open Herbland of *Marsilea hirsuta* and *Centipeda minima* subsp. *macrocephala* in brown sandy clay on plains and drainage lines;

9b. Tussock Grassland of *Eriachne* cf. *glauca*, *Eriachne benthamii* and *Elytrophorus spicatus* over Very Open Herbland of *Marsilea hirsuta*, *Centipeda minima* subsp. *macrocephala* and *Alternanthera nodiflora* in orange light medium clay on gilgai plains;

9c. Tussock Grassland of *Eriachne benthamii* and *Sporobolus mitchellii* in orange light medium clay on gilgai plains;

****Cenchrus* Tussock Grassland**

10. Tussock Grassland of **Cenchrus ciliaris* with Open Shrubland of *Acacia ancistrocarpa* and *Acacia tumida* var. *pilbarensis* and Open Hummock Grassland of *Triodia angusta* and *Triodia epactia* in orange clay loam on rehabilitated post-mining infrastructure areas;

***Eriachne* Open Tussock Grassland**

11. Open Tussock Grassland of *Eriachne benthamii*, *Cynodon dactylon* and *Eragrostis xerophila* over Very Open Herbland of *Centipeda minima* subsp. *macrocephala*, *Glinus lotoides* and *Marsilea hirsuta* with Scattered Tall Shrubs of **Vachellia farnesiana* in brown medium heavy clay on drainage ponds, depressions and borrow pits;

***Eragrostis* Very Open Tussock Grassland**

12. Very Open Tussock Grassland of *Eragrostis xerophila* and *Eriachne benthamii* with Very Open Herbs of *Ptilotus murrayi*, *Sida fibulifera* and *Trianthema triquetra* over Very Open Annual Grassland of *Sporobolus australasicus*, *Eragrostis cumingii* and *Dactyloctenium radulans* in brown light clay on plains;

Disturbance

- 13a. Bare – Mine drainage areas
- 13b. Regrowth – Gas pipeline (pindan sand plain)
- 13c. Bare – Disturbed ground (no rehabilitation)
- 13d. Bare – BHPBIO Rail
- 13e. Bare – Mine void

Clearing Description	BHP Billiton Iron Ore Pty Ltd is proposing to clear up to 110 hectares of native vegetation within a broader boundary of approximately 6760 hectares for the purpose of borrow pits, exploration, hydrogeological and geotechnical investigations, infrastructure maintenance and associated activities.
Vegetation Condition	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994); To Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).
Comment	The application area is located within the Pilbara region of Western Australia and is situated approximately 95 kilometres east of Port Hedland.

3. Assessment of application against Clearing Principles

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

Comments	<p>Proposal is not likely to be at variance to this Principle</p> <p>The proposed clearing is located approximately 95 kilometres east of Port Hedland in the Chichester and Roebourne subregions of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). At a broad scale the vegetation of the Chichester subregion can be described as shrub steppe characterised by <i>Acacia inaequilatera</i> over <i>Triodia wiseana</i> hummock grasslands on plains, while <i>Eucalyptus leucophloia</i> tree steppes occur on ranges (CALM, 2002). The Roebourne subregion is characterised by quaternary alluvial and older colluvial coastal and sub-coastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of <i>Acacia stellaticeps</i> or <i>Acacia pyrifolia</i> and <i>Acacia inaequilatera</i>. Uplands are dominated by <i>Triodia</i> hummock grasslands. Ephemeral drainage lines support <i>Eucalyptus victrix</i> or <i>Corymbia hamersleyana</i> woodlands (CALM, 2002).</p> <p>A flora and vegetation survey of the application area was conducted by Onshore Environmental (2013) in September 2012. This survey identified 286 flora taxa from 44 families and 136 genera within the application area (Onshore Environmental, 2013). Vegetation within the application area ranges from excellent to completely degraded condition (Keighery, 1994).</p> <p>According to available databases there are no Threatened or Priority Ecological Communities within the application area (GIS Database).</p> <p>The flora and vegetation survey conducted by (Onshore Environmental, 2013) identified one Priority Flora species listed by the DEC within Mineral Lease 235SA, <i>Phyllanthus aridus</i> (P3). This population and the sandstone ridge with which it is associated have been excluded from the application area.</p> <p>Eight introduced flora species were recorded within the application area during the flora survey conducted by (Onshore Environmental, 2013). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.</p> <p>A survey conducted by Biologic (2013) identified 8 fauna habitat types within the application area. Eighteen conservation significant fauna species have either been recorded in or adjacent to, or have the potential to occur within the application area. Significant gorge gully habitat types and potential feeding/ day roost caves have been excluded from the application area (BHP, 2013). The proposal is to clear 110 hectares within a larger 6766 hectare area and as such only a small percentage of each habitat type within the application area will be impacted with large areas remaining untouched. All fauna habitat types included in the application area are well represented outside of the application area.</p> <p>Based on the above, the proposed clearing is not likely to be at variance to this Principle.</p>
Methodology	BHP (2013) CALM (2002) Keighery (1994) Onshore Environmental (2013)

Biologic (2013)
GIS Database:
- IBRA WA (regions – subregions)
- 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

A survey conducted by Biologic (2013) identified 8 fauna habitat types within the application area:

1. Gorge / Gully Systems;
2. Major Drainage Line;
3. Crests and Slopes;
4. Gibber Plain;
5. Sand Plain with Pindan;
6. Sand Plain with Hummock Grass;
7. Gilgai with Tussock Grass; and
8. Disturbed Areas (including the old pit, waste dumps and town site).

Eighteen conservation significant fauna species have either been recorded in or adjacent to, or have the potential to occur within the application area (BHP, 2013; Biologic, 2013).

Caves within the application area may provide feeding and/or day roosts for the Ghost Bat (*Macrodermia gigas* - P4). The Gorge Gully habitat type may provide significant denning habitat for the Northern Quoll (*Dasyurus hallucatus* - Endangered/ Schedule 1) and may provide significant habitat for the Pilbara Olive Python (*Liasis olivaceus barroni* - Vulnerable/ Schedule 1). The Gorge Gully habitat type and caves which may be suitable as feeding/ day roosts for the Ghost Bat have been excluded from the application area.

No caves were identified as suitable roosting sites for the Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* - Vulnerable/ Schedule 1) in the application area. The Biologic (2013) survey made one record of this species within the application area. While there is no suitable habitat for this species within the application area, it is likely that there is an unknown roost in the vicinity of Goldsworthy, outside of the application area (Biologic, 2013).

The Sand Plains of the application area provide suitable habitat for the Greater Bilby (*Macrotis lagotis* - Vulnerable/ Schedule 1) and Mulgara (*Dasyercus* sp.- Vulnerable/ Schedule 1). Fresh diggings and scats were identified within the application area for both species and Mulgara burrows were also recorded on a sand plain in the west of the application area (BHP, 2013; Biologic, 2013). Impacts to these species may be minimised through the implementation of a fauna management condition.

Although suitable crest/ slope habitat exists over most of the application area which may be utilised by the Western Pebble-mound mouse (*Pseudomys chapmani* - P4), all records of this species were of inactive mounds and suitable habitat for this species is common in the surrounding area and throughout the Pilbara region (BHP, 2013). The remaining conservation significant bird species identified by Biologic (2013) are either wide ranging or in-frequent visitors to the application area for which large areas of significant suitable habitat remain outside of the application area (BHP, 2013).

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

Methodology BHP (2013)
Biologic (2013)

(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 records of Threatened Flora species within the application area (GIS Database). A flora survey of the application area conducted by Onshore Environmental (2013) did not locate any Threatened Flora species within the application area.

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

Methodology Onshore Environmental (2013)
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 Threatened Ecological Communities (TEC) within the application area (GIS database). The nearest known TEC is approximately 195 kilometres east-north-east of the application area (GIS Database). At this distance there is little likelihood of any impacts to the TEC as a result of the proposed clearing.

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

Methodology 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 is located within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). The Government of Western Australia (2013) reports that approximately 99.58% of the pre-European vegetation remains within the Pilbara bioregion.

The vegetation in the application area has been broadly mapped as Beard vegetation associations:

93: Hummock grasslands, shrub steppe; kanji over soft spinifex;
117: Hummock grasslands, grass steppe; soft spinifex; and
175: Short bunch grassland - savanna/grass plain (Pilbara).

According to the Government of Western Australia (2013) approximately 99.88%, 94.65% and 99.92% of Beard vegetation associations 93, 117 and 175, respectively, remain within the Pilbara bioregion (see table below).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,427	17,729,352	~99.58	Least Concern	~6.32
Beard vegetation associations - State					
93	3,044,310	3,040,641	~99.88	Least Concern	~0.42
117	919,519	879,981	~95.70	Least Concern	~12.69
175	526,203	523,800	~99.54	Least Concern	~4.22
Beard vegetation associations - Bioregion					
93	3,042,114	3,038,472	~99.88	Least Concern	~0.42
117	76,104	72,036	~94.65	Least Concern	~11.34
175	507,033	506,626	~99.92	Least Concern	~4.38

* Government of Western Australia (2013)

** Department of Natural Resources and Environment (2002)

The vegetation within the application area is not considered to be a remnant of native vegetation in an area that has been extensively cleared.

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 (2013)
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

According to available databases there are no permanent wetlands or watercourses within the application area (GIS Database). The application area contains three non-perennial creeklines: Pardoo Creek a non-perennial major creekline and two un-named non-perennial minor creeklines. Several vegetation communities associated with drainage lines were recorded within the application area (BHP, 2013). Minor non-perennial drainage lines are common throughout the Pilbara and the vegetation communities identified growing in association with the drainage lines of the application area are not considered to be unusual. Additionally the relatively small area of clearing proposed within the much larger clearing permit boundary is not likely to significantly impact on vegetation associated with drainage lines.

The Biologic (2013) fauna survey identified four water bodies within the application area. Two of the water bodies were small rock pools in gorges, and two were river pools in the Pardoo Creek. The survey was not able to ascertain whether these water bodies are permanent (Biologic, 2013). These four pools have been excluded from the application area (BHP, 2013).

BHP (2013) has identified that where possible existing cleared tracks will be used to cross the surface water features located within the application area. Where it is necessary for new crossings to be installed clearing will be minimised.

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

Methodology BHP (2013)
Biologic (2013)
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 intersects the following four land systems (GIS Database):

The Capricorn land system is characterised by hills and ridges of sandstone and dolomite supporting shrubby hard and soft spinifex grasslands (Van Vreeswyk et al., 2004). This land system is resistant to erosion due to its stony nature (Van Vreeswyk et al., 2004).

The Boolgeeda land system is characterised by stony lower slopes, level stony plains and narrow sub-parallel drainage floors and is generally not susceptible to erosion (Van Vreeswyk et al., 2004).

The Horseflat land system is characterised by extensive level plains with clay soils and Gilgai microrelief, also stony plains and very gently inclined slopes. Some parts of this system have a moderate to high risk of erosion (Van Vreeswyk et al., 2004).

The Nita land system is characterised by sandplains supporting shrubby soft spinifex grasslands with occasional trees (Van Vreeswyk et al., 2004). Wind erosion is known to occur after fires, however it is usually stabilised rapidly following rain and consequent regeneration of vegetation (Van Vreeswyk et al., 2004). Therefore, should the land be left cleared for a prolonged period of time, wind erosion may occur.

Potential erosion impacts as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition and a rehabilitation condition.

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

Methodology 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 application area is not located within a conservation reserve (GIS Database). The nearest conservation reserve is the Meentheena Former Leasehold located approximately 100 kilometres south east of the application area (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**

Part of the application area is located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The De Grey River Water Reserve is managed as a Priority 1 area. Advice provided by the Department of Water (2013) identifies that the proposed clearing is unlikely to have any major impacts upon groundwater within this reserve provided all clearing activities are conducted in accordance with Department of Water guidelines.

The groundwater salinity within the application area is between 1,000 – 3,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). Given the proposed clearing is for 110 hectares within the Pilbara Groundwater Province (5,557,665 hectares), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

There are no permanent watercourses within the application area (GIS Database). Four water bodies identified within the application area by Biologic (2013) have been excluded from the application area. It is therefore considered unlikely that the proposed clearing will impact on the quality of any surface water.

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

Methodology Biologic (2013)
Department of Water (2013)
GIS Database:
- Groundwater Provinces
- 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 experiences a semi-desert-tropical climate with an average annual rainfall of approximately 317 millimetres recorded at nearby Port Hedland weather station (CALM, 2002; BoM, 2013). The relatively small area of proposed clearing (110 hectares) within the much larger clearing permit boundary is not likely to cause, or exacerbate, the incidence or intensity of flooding.

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

Methodology BoM (2013)
CALM (2002)

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

There is one Native Title Claim (WC99/26) over the area under application (GIS Database). This claim has been registered with the Native Title Tribunal on behalf of the claimant group. 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*.

There are no 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.

The clearing permit application was advertised on 22 April 2013 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received in relation to the application stating that the proposed clearing is not supported. A presentation on the clearing permit process has been given to the submission party.

Methodology GIS Database:

- Aboriginal Sites of Significance
- Native Title Claims – Determined by the Federal Court

4. References

- BHP (2013) Goldsworthy Project - Supporting Documentation for Vegetation Clearing Permit Application. Unpublished report dated March 2013. BHP Billiton Iron Ore Pty Ltd.
- Biologic (2013) Goldsworthy Fauna Assessment. Unpublished report prepared for BHP Billiton Iron Ore Pty Ltd.
- BoM (2013) BoM Website - Climate Averages by Number, Averages for PORT HEDLAND AIRPORT.
www.bom.gov.au/climate/averages/tables.shtml (Accessed 25 June 2013)
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management
- 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 (2013) Advice provided to Department of Mines and Petroleum for CPS 5572/1. 1 May 2013.
- Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Onshore Environmental (2013) Goldsworthy Flora and Vegetation Survey. Unpublished report prepared for BHP Billiton Iron Ore Pty Ltd.
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture, Western Australia.

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.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare 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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.