Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2086/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **BHP Billiton Iron Ore Pty Ltd**

1.3. Property details

Property: Special Lease L3116/3687
pursuant to the Iron Ore (Mount Newman) Agreement Act 1964
Lot 65 on Deposited Plan 48920

Local Government Area: Shire Of East Pilbara & Town Of Port Hedland

Colloquial name: Turner River North Extension

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1		Mechanical Removal	Railway construction or maintenance

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard vegetation associations have been mapped at 1:250,000 scale for the whole of WA, and are a useful tool to examine the vegetation extent in a regional context. One Beard vegetation association is located within the area proposed to be cleared (GIS Database, 2007). This vegetation association is described as Beard Vegetation Association 93: Hummock grasslands, shrub steppe; kanji over soft Spinifex. A flora survey of the two application areas was completed in July 2007 by ENV Australia (hereafter referred to as ENV). The survey identified three vegetation communities as occurring in the application areas (ENV, 2007). These are: Low granite-calcrete hills with dense *Triodia lanigera* hummock grassland and little to no overstorey on rocky red sands. Small drainage with moderately dense *Grevillea wickhamii* and *Acacia tumida* var. *pilbarensis* with other mixed Acacias over moderately sparse *Triodia lanigera* and other mixed herbs and grasses, on rocky red loamy sands. Sandplains with sparse *Acacia bivenosa*, *A. ancistrocarpa* and other mixed *Acacia* spp. overstorey over *Triodia lanigera* hummock grassland and scattered grasses on rocky red loamy sands.	There are two application areas proposed to be cleared, located along the BHP Railway line immediately north of the Turner River Bridge and south of the Gilliam Siding (BHP Billiton, 2007). Clearing will be required for the purpose of railway construction and maintenance. Native vegetation will be cleared along two small sections of the BHP railway line, approximately 6.6 kilometres apart. The northern application area is approximately 400m long (approximately 3.2 ha in area) and the southern application area is approximately 500m long (approximately 4 ha in area) (BHP Billiton, 2007).	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	One introduced species namely *Cenchrus cilliaris* was recorded during the flora survey, it was found to be common throughout the application areas (ENV, 2007). Disturbance from cattle grazing, and vehicle tracks noted in both application areas (ENV, 2007). The vegetation condition was derived from the flora survey of the application areas, completed by ENV (2007).

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 clearing permit area is located within the Chichester Interim Biogeographic Regionalisation of Australia (IBRA) subregion (GIS database). The main vegetation and landform features of the region are plains composed of shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges. The vegetation identified by ENV (2007) within the application areas, is typical of those found in the Chichester Subregion (ENV, 2007). High reptile and mammal species diversity within hummock grasslands are described by Kendrick & McKenzie (2001) for the Chichester subregion. The main land use of the subregion is grazing of native pastures (Kendrick & McKenzie, 2001). None of the ecosystems at risk or refugia listed in Kendrick and McKenzie (2001) occur within or in the vicinity of the clearing permit area.

A targeted flora survey and a fauna assessment were conducted in July 2007 by ENV (2007). No Declared Rare Flora or Priority Flora were located within the application areas. A total of 82 plant species across 24 families, were recorded within the application areas. This is not indicative of a high diversity of flora species (ENV, 2007). Three Vegetation Associations/Habitat Types were identified within the application areas. ENV (2007) have stated these are all well represented within the Pilbara region.

The vegetation within the clearing permit application area has been noted as showing signs of ground disturbance, mostly associated with the existing railway line, two access roads and gravel embankments (ENV, 2007). Areas between the access road and railway line had previously been cleared and therefore had sparse, low diversity and immature vegetation in the early stages of regeneration (ENV, 2007). Other forms of disturbance in the application areas have been a result of cattle grazing. ENV (2007) noted a significant level of weed species in disturbed areas. Based on the information mentioned above the vegetation proposed to be cleared does not represent an area of outstanding biodiversity in comparison to other local and regional areas.

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

Methodology

ENV (2007)
Kendrick & McKenzie (2001).
GIS Databases:
Interim Biogeographic Regionalisation of Australia - EA 18/10/00
Interim Biogeographic Regionalisation of Australia (subregions) - EA 18/10/00

(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 one fauna assessment of the application areas was completed by ENV in December 2006 (ENV, 2007). The fauna assessment involved two processes; a desktop survey to gather background information on the target area and a field survey to verify the findings of the desktop survey. The fauna survey meets the requirements of Guidance Statement No. 56.

As a result of the desktop survey there were a number of conservation significant species which potentially could be found in the application area (ENV, 2007). These include the Bilby (*Macrotis lagotis*), Mulgara (*Dasycercus cristicauda*), Northern Quoll (*Dasycercus cristicauda*), Orange Leaf-nosed Bat (*Rhinonicteris aurantius*), Ghost Bat (*Macroderma gigas*), Spectacled Hare Wallaby (*Lagorchestes conspicillatus leichardti*), Western Pebble-mound Mouse (*Pseudomys chapmani*), Lakeland Downs Mouse (*Leggadina lakedownensis*), Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventis*), Olive Python (*Liasis olivaceus barroni*), Woma (*Aspidites ramsayi*), *Ctenotus nigrilineatus*, *Ctenotus uber johnstonei*, Night Parrot (*Pezoporus occidentalis*), Peregrine Falcon (*Falco peregrinus*), Bush Stone-curlew (*Burhinus grallarius*), Grey Falcon (*Falco hypoleucos*), Australian Bustard (*Ardeotis australis*), Star Finch (*Neochmia ruficauda clarescens*), Flock Bronzewing (*Phaps histrionica*), Common Sandpiper (*Actitis hypoleucos*), Rainbow Bee-eater (*Merops ornatus*) and the Fork-tailed Swift (*Apus pacificus*).

Of the species mentioned above the most likely to be found within the application areas based on habitat preferences are the Bilby, Mulgara, Spectacled Hare-Wallaby, Woma, *Ctenotus nigrilineatus*, Australian Bustard and Rainbow Bee-Eater.

The Bilby (Schedule 1, Fauna that is rare or likely to become extinct, WC (Specially protected fauna notice 2006)) was once common throughout two thirds of Australia, but now is confined to sparse desert populations in the eastern Pilbara and south to Warburton (ENV, 2007). The preferred habitat of the Bilby is *Acacia* shrubland and hummock grasslands, both of which were found in both application areas. However this habitat type is well replicated in surrounding areas (ENV, 2007). Therefore the proposed clearing is unlikely to significantly affect the Bilby's overall habitat.

The Mulgara (Schedule 1 - Fauna that is rare or likely to become extinct, WC (Specially protected fauna notice 2006)) is found in the deserts of Central and Western Australia (Strahan, 1995). It requires areas that have

clayey sand and sandy loam soils with hummock grasses under the influence of paleodrainage or surface drainage systems (Burbidge, 2004). The habitat mentioned above was identified within the project areas (ENV, 2007). Mulgara burrows are distinctive and commonly have one large hole with several side tunnels and pop holes, however no burrows were recorded during the ground survey (ENV, 2007). The area that is proposed to be cleared is relatively small and is considered widespread in the Pilbara region (ENV, 2007). Therefore it is unlikely that the application area is significant habitat for the Mulgara.

The Spectacled Hare-Wallaby (DEC - Priority 3) has a relatively wide distribution that includes both application areas (ENV, 2007). The species occurs in hummock grasslands with sparse to dense shrub and tree cover (ENV, 2007). Given the *Triodia* species present within the application areas, the Spectacled Hare-Wallaby may be present. However the habitats mentioned have been disturbed from human and cattle interference, and are unlikely to support this species (ENV, 2007). Furthermore the habitats identified are well represented in the Pilbara region (ENV, 2007). Therefore the application areas do not represent significant habitat for the Spectacled Hare-Wallaby.

The Woma (DEC - Priority 1) is found from the Pilbara coast, north to Eighty-mile Beach area, and south-west Western Australia, from Cape Peron south and east to the eastern Goldfields (DEC, 2007). The species occurs in arid zones of Western Australia, favouring open myrtaceous heath on sandplains and dunefields dominated by spinifex, shrublands or woodlands (ENV, 2007). Based on this information it is possible that the Woma may inhabit the application areas, however given the poor quality of habitat and minute area proposed to be cleared, it is unlikely that the application areas are significant habitat for the Woma.

Ctenotus nigrilineatus (DEC - Priority 1) has been recorded at Abydos Plain in 2001 and Marble Bar in 1990 (ENV, 2007). This skink species inhabits Spinifex usually near granite outcrops (ENV, 2007). Given the information above this species may be found within the application areas. However the area proposed to be cleared is relatively small and is considered low habitat-value due to previous disturbance from human activity and cattle grazing (ENV, 2007). As a result it is unlikely that the application areas are significant overall habitat for this skink.

The Australian Bustard (DEC - Priority 4) is found in tussock grasslands, *Triodia* hummock grassland, grassy woodland and low shrublands (Garnett & Crowley, 2000). Its habitat is limited to the arid areas of Northern and Central Australia (Garnett & Crowley, 2000). Given that the habitats of the Australian Bustard are found within the application areas it is possible that this species may be found in the application areas. However, based on the fact that Australian Bustards are nomadic in nature, it is unlikely that the proposed clearing is an area of critical habitat for the Australian Bustard.

The Rainbow Bee-eater is distributed across much of mainland Australia and on several near shore islands (DEWR, 2007). It occurs in a range of habitats including open forests and woodlands, shrubland areas, grasslands, inland and coastal sand dune systems, mangroves and cleared or semi-cleared habitats (DEWR, 2007). The Rainbow bee-eater is listed as a migratory species under the *EPBC Act 1999*, however the species has a widespread distribution and is not considered to be threatened (DEWR, 2007). Therefore the application areas are unlikely to be significant habitat for this species.

A field survey of both application areas was completed from the 17th to 21st of July, 2007. None of the species of conservation significance mentioned above were identified within the areas proposed to be cleared (ENV, 2007). There were several habitat types identified within the application areas, these were:

Habitat Type 1: Low granite-calcrete hills with dense *Triodia lanigera* hummock grassland and little to no overstorey on rocky red sands.
Habitat Type 2: Small drainage with moderately dense *Grevillea wickhamii* and *Acacia tumida* var. *pilbarensis* with other mixed *Acacias* over moderately sparse *Triodia lanigera* and other mixed herbs and grasses, on rocky red loamy sands; and
Habitat Type 3: Sandplains with sparse *Acacia bivenosa*, *A. ancistrocarpa* and other mixed *Acacia* spp. overstorey over *Triodia lanigera* hummock grassland and scattered grasses on rocky red loamy sands.

The southern application area contained all three Habitat Types while the northern application area contained only Habitat Types 2 and 3 (ENV, 2007). In terms of quality of fauna habitat and potential fauna that may be supported, Habitat Type 2 was of the highest habitat value within the project areas (ENV, 2007). This was because it had the densest overstorey vegetation, with significant quantities of litter and coarse woody debris. In comparison Habitat Types 1 and 3 were considered low-value fauna habitats owing to the lack of overstorey or complex vegetation structure and due to previous or ongoing soil disturbance by human activity and cattle (ENV, 2007). Although Habitat Type 2 was of high value, all three Habitat Types are well represented in the Pilbara region and therefore the application areas do not represent significant habitat for fauna.

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

Methodology

Burbidge (2007).
DEC (2007).
DEWR (2007).
ENV (2007).
Garnett & Crowley (2000).

Strahan (1995).

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

Comments

Proposal is not likely to be at variance to this Principle

According to available databases, no DRF or Priority species are found within the application areas (GIS Database). The closest DRF species is *Lepedium catapycnon* which is located approximately 130km to the south-west of the southern most application area (GIS Database).

A DRF, Priority Flora, and introduced weed species survey of the application areas was conducted by ENV in July 2007. The survey involved a detailed database search and an on ground survey of the flora species in both application areas (ENV, 2007).

A search of DEC's Declared Rare and Priority Flora List was conducted by ENV in July 2007. As a result of this search there were no DRF species identified as occurring within the application areas. However eight priority species were identified as potentially occurring within the application areas (ENV, 2007). These include *Acacia levata* (P1), *Gonocarpus ephemerus*, *Olearia fluvialis* (P2), *Abutilon trudgenii* ms. (P3), *Cynanchum* sp. *Hammersley* (P3), *Gymnanthera cunninghamii* (P3), *Phyllanthus aridus* (P3) and *Sida* sp. *Wittenoom* (P3).

Based on habitat preferences the species most likely to be found within the application areas are *Acacia Levata* and *Gymnanthera cunninghamii*. *Acacia Levata* is typically found in sand or sandy loam over granite, on hillslopes (Florabase, 2007). While *Gymnanthera cunninghamii* is found on the sandy plains of the Pilbara (Florabase, 2007). The sandy loams over granite and sandy plains mentioned above were a common characteristic of the application areas. However there were no DRF or Priority species recorded during the ground survey completed by ENV (2007).

There was one introduced weed species recorded during the ground survey; this was *Cenchrus ciliaris* (Buffel Grass), which was particularly widespread within the application areas (ENV, 2007). Based on the small size of the proposal and the lack of DRF or Priority species recorded, the proposed clearing is unlikely to have any significant impact on the flora and vegetation of the region.

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

Methodology

ENV (2007).
GIS Database:
Declared Rare and Priority Flora List - CALM 01/07/05

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

Comments

Proposal is not likely to be at variance to this Principle

There are no known Threatened Ecological Communities (TEC's) within the application areas (GIS Database). The nearest endorsed TEC is the Themeda Grassland Community found on the cracking clay soils of Hammersly Station approximately 160 kilometres from the application areas (GIS Database). The flora survey conducted by ENV (2007) did not identify any significant ecological communities within the areas proposed to clear.

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

Methodology

ENV (2007).
GIS Database
Threatened Ecological Communities CALM 12/04/2005

(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 areas lie within the Pilbara Bioregion (GIS Database). According to Shepherd (2001) approximately 99.9% of pre-European vegetation remains in the bioregion. The vegetation of the application area is described as Vegetation Association 93: Hummock grasslands, shrub steppe; kanji over soft spinifex. Based on current information there is approximately 100% of Vegetation Association 93 remaining in the state and the Pilbara IBRA Bioregion (Shepherd, 2001). As a result of this information, the conservation status of Vegetation Association 93 is classed as least concern. Therefore the proposed clearing area cannot be considered to be a significant remnant of native vegetation within an extensively cleared area.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Pilbara	17,804,163	17,794,650*	99.9	Least Concern	6.3
Beard veg assoc. – State					
93	3,044,325	3,044,266	100	Least Concern	0.4
Beard veg assoc. – Bioregion					
93	3,042,130	3,042,081	100	Least Concern	1.9

* Shepherd et al. (2001)
** Department of Natural Resources and Environment (2002)

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

Methodology Shepherd et al., (2001).
Department of Natural Resources and Environment (2002).
GIS Database:
Pre-European Vegetation - DA 01/01

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

Comments

Proposal may be at variance to this Principle

There are two minor non-perennial drainage lines that partly intersect each of the application areas (ENV, 2007). According to ENV (2007) both of these areas are minor and do not contain vegetation that is riparian in nature (ENV, 2007).

There is a significant tributary named Turner River found approximately one kilometre west of the application areas (GIS Database). This tributary is a significant watercourse in the area, however the proposed clearing will not impact riparian vegetation of this system. Based on the small size of the clearing and the lack of riparian vegetation in the application areas, the proposed clearing is unlikely to have any impact on any significant watercourses or wetlands.

Based on the above, the proposed clearing may be at variance to this Principle. However, the watercourses impacted are minor and do not host riparian vegetation.

Methodology ENV (2007).
GIS Database:
Hydrography, linear (medium scale, 250k GA)
Hydrography, linear - DOE 1/2/04
Geodata, Lakes - GA 28/06/02

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

Comments

Proposal is not likely to be at variance to this Principle

The two application areas lie within the Macroy Land System (GIS Database), which is described as stony plains and occasional tor fields based on granite supporting hard and soft spinifex grasslands (Van Vreeswyk et al., 2004).

Both of the application areas are partly located within the stony plains and interfluves landform, which are described as level to gently undulating plains and interfluves extending up to four kilometres between drainage lines. The surface of these areas is described as mantles of few to very abundant grit and pebbles of quartz and granite, and occasional outcrops of granite (Van Vreeswyk et al., 2004). According to Van Vreeswyk et al., (2004) this land system has a low or very low erosion hazard. This is likely to be because of the stony mantle which provides protection against erosional forces.

The application areas are also partly located within the drainage floors and channels landform, which is described as level to very gently inclined linear drainage tracts up to 500m wide as slight depressions, within stony plains and interfluves becoming much narrower, more incised and dendritic in upper parts (Van Vreeswyk

et al., 2004). Due to the stony mantle present this area has a low or very low erosion hazard (Van Vreeswyk et al., 2004). Based on the information above and the small size of clearing proposed (one hectare) it is unlikely significant land degradation would result from the proposed clearing.

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

Methodology Van Vreeswyk et al. (2007).
GIS Database:
Rangeland Land System Mapping - DA

(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 closest conservation area to the application areas is the Mungaroona Range Nature Reserve, which is located approximately 64 kilometres to the south west (GIS Database). There is unlikely to be unbroken vegetation linkage between the application area and the national park. However, at this distance the likelihood that there will be movement of genetic information between the two areas is small. As a result the environmental values of the national park mentioned above are unlikely to be impacted by the proposed clearing.

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

Methodology GIS Database:
CALM Managed Lands and Waters - CALM 1/07/05

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

Comments **Proposal is not likely to be at variance to this Principle**
The proposal is not located within a Public Drinking Water Source Area (GIS Database).

The application areas lie within the Turner River catchment, which is situated approximately one kilometre to the west (GIS Database). The clearing of such as small area (one hectare) is unlikely to have a significant impact on surface water drainage or quality within this catchment.

Environmental management requirements relating specifically to surface water and drainage are included under the BHPBIO Asset Development Project's Environmental Management Plan (Section 16) (BHPBIO, 2007). The main objectives of these management procedures are to minimise impacts on the quality of surface water, contain any contaminated water on site and to avoid unnecessary disturbance to natural surface water drainage (BHPBIO, 2007).

The proposed clearing and subsequent railway works will not require groundwater to be intersected, as a result it is unlikely there will be any significant effects on groundwater from the proposal. To ensure groundwater quality is ensured within the project area, BHP Billiton have included management measures in the BHPBIO Asset Development Project's Environmental Management Plan (Section 17) (BHPBIO, 2007).

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

Methodology BHPBIO (2007).
GIS Database:
Public Drinking Water Source Areas (PDWSAs) - DOW

(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 areas are characterised by a semi-arid to subtropical climate with two distinct seasons, a hot summer from October to April and a milder winter from May to September (BoM, 2007). Rainfall events within the Pilbara are sporadic and can occur within both summer and winter months. The mean rainfall for the region is 361.7mm per year, often the yearly rainfall can occur in a small time frame resulting in flooding (BoM, 2007).

The application areas are located within the Turner River Catchment, which covers an area of approximately 480,100ha (GIS Database). The clearing of 1ha in such a large catchment is not likely to lead to an incremental increase in flood height or duration.

The application areas are located on a relatively flat to undulating plain, rainfall is likely to move towards tributaries in the west in the form of sheetflows (GIS Database). Rainfall is unlikely to collect in the application areas as it will be moving down gradient. There are also very high evaporation levels in the region, these are in the order of 3600mm per year (BoM, 2007). This is almost ten times the average rainfall of the region, as a

result it is unlikely water will collect for long as it will be evaporated very quickly. Based on this information and the small size of the clearing (one hectare), there is unlikely to be an increase in flooding from the proposal.

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

Methodology BoM (2007).
GIS Database:
Evaporation Isopleths - BOM 09/98
Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

There is one native title claim in the application area, WC99008 (GIS Database). The mining tenement 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 is one registered Site of Aboriginal Significance located approximately one kilometre south of the area applied to clear (Dambara Yambara, Site ID P03491) (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

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

The clearing permit application was advertised by DoIR on the 21st of September, inviting submissions from the public. One public submission was received on the 8th of October, raising concerns regarding the potential impacts of the proposed vegetation clearing on flora and fauna, Sites of Aboriginal Significance, and Native Title rights. The concerns of the direct interest party have since been adressed in this assessment.

The proponent has stated that it is committed to the management and protection of Aboriginal heritage sites (BHP Billiton, 2005). BHP Billiton has a heritage protocol agreement with the Njamal people (traditional owners of the area), and regularly consult with the Njamal people to undertake Aboriginal heritage surveys in and around Port Headland (BHP Billiton, 2005). BHP Billiton also has an internal process; the Project Environment and Aboriginal Heritage Review (PEAHR), which is designed to prevent inadvertent disturbance of Aboriginal heritage sites within BHP Billiton operations. Prior to the commencement of any land disturbance activity, a PEAHR must be completed and submitted to BHP Billiton's Aboriginal Affairs Department, for assessment. All land disturbance activities must be approved by BHP Billiton's Environment and Aboriginal Heritage staff (BHP Billiton, 2005).

The submission also mentioned that native vegetation is used by Aboriginal people and that the assessment of the clearing of that vegetation should consider impacts on that use on the basis that cultural and social use falls with the definition of environment under section 3 (2) of the *Environmental Protection Act 1984* (sic) (WA). The submission further stated that "the *Environmental Protection Act 1984* (sic) can give attention to matters of social nature, including traditional hunting activities, by providing for the retention of habitat for native fauna to enable such activities to continue".

Such potential impacts are not considered in the decision to grant, refuse or set conditions for a clearing permit as they are not part of the criteria listed under schedule 5 of the *Environmental Protection Act 1986*.

Methodology BHP Billiton (2005).
GIS Database:
Aboriginal Sites of Significance - DIA
Native Title Claims - DLI

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Railway construction o maintenance	Mechanical Removal	1	The proposal has been assessed against the Clearing Principles and the proposal has been found not at variance to Principle e and h, not likely to be at variance to Principles a, b, c, d, g, i and j, and may be at variance to Principle f. Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, record keeping and permit reporting.

5. References

BHP Billiton (2005) Aboriginal Heritage Induction Handbook. BHP Billiton Iron Ore Pty Ltd, Western Australia.

BHPBIO (2007) BHPBIO Asset Development Project's Environmental Management Plan. Unpublished Management Plan produced by BHP Billiton dated 12/03/2007.

BoM (2007) Port Headland Area Climate and History. URL: http://www.bom.gov.au/weather/wa/portheadland/climate_and_history.shtml

Burbidge, A (2004) Threatened animals of Western Australia. Department of Conservation and Land Management. Kensington, Western Australia.

DEC (2007) Woma Python. URL: http://www.naturebase.net/component/option,com_docman/task,cat_view/Itemid,1288/gid,374/orderby,dmdatecounter/ascdesc,DESC/

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.

DEWR (2007) *Merops ornatus* - Rainbow Bee-eater. URL: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=670 Department of Environment and Water Resources

ENV (2007) Turner River Bridge Extension Chainage 98.8 - 110.9km, Declared Rare and Priority Flora, and Introduced Species Survey. Prepared for BHP Billiton Iron Ore Pty, Ltd., 17 August 2007.

ENV Australia (2007) Turner River Bridge Extension Chainage 98.8 - 110.9km, Fauna Assessment level 1. Unpublished report produced by ENV Australia for BHPBIO, dated 9 March 2007.

FloraBase (2007) *Acacia Levata*. URL: http://florabase.calm.wa.gov.au/browse/profile/15289

FloraBase (2007) *Gymnanthera cunninghamii*. URL: http://florabase.calm.wa.gov.au/browse/profile/12832

Garnett, S.T., & Crowley, G.M. (2000) The Action Plan for Australian Birds. Department of the Environment and Water Resources, URL: http://www.environment.gov.au/biodiversity/threatened/publications/action/birds2000/pubs/australian-bustard.pdf

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Kendrick, P & McKenzie, N (2001) Pilbara 1 (PIL 1 Chichester Subregion) Subregional description and biodiversity values in "A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002" published by the Department of Conservation and Land management Western Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Strahan, R. (1995) The Mammals of Australia, Reed Books, New South Wales.

Van Vreeswyk, A.M.E., & Payne, A.L. & Leighton, K.A. &. Hennig, P (1994) An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, Western Australia.

6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
DoW	Department of Water
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
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	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

Definitions:

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

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.