



1. Application details

1.1. Permit application details

Permit application No.: 2249/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: BHP Billiton Iron Ore Pty Ltd

1.3. Property details

Property: Iron Ore (Mt Newman) Agreement Act 1964;
Special Lease 3116/3687 (Lot 19 on Deposited Plan 48921, Lot 65 on Deposited Plan 48920);
Other land pursuant to the Iron Ore (Marillana Creek) Agreement Act 1991.
Local Government Area: Shire of East Pilbara
Colloquial name: Cowra Siding to Kurrajurra Siding railway duplication.

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
180		Mechanical Removal	Mineral Production

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The vegetation of the application area is broadly mapped as Beard Vegetation Associations 29: Sparse low woodland; mulga, discontinuous in scattered groups; 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; 111: Hummock grasslands, shrub steppe; *Eucalyptus gamophylla* over hard spinifex; and 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* (GIS Database; Shepherd et al., 2001).

Ecologia Environment (Ecologia) conducted a flora and vegetation survey of the application area in October 2007 (Ecologia, 2007a). The survey included 21 vegetation quadrats and 13 transects, representing the main vegetation associations within the application area (Ecologia, 2007a). As a result of the flora and vegetation survey, 13 vegetation associations were identified within the application area:

Vegetation Unit 1a - Plain Vegetation: *Acacia aneura* low woodland, with mixed *Acacia* spp. tall shrubland, and mixed soft hummock grasses;

Vegetation Unit 1b - Plain Vegetation: Mixed soft grassland with mixed medium to low shrubs, and sparse low trees;

Vegetation Unit 1c - Plain Vegetation: *Acacia aneura* low woodland with mixed *Acacia* spp. medium to tall shrubs and mixed soft grasses;

Vegetation Unit 1d - Plain Vegetation: *Acacia citrinoviridis* and *Acacia xiphophylla* low to medium woodland with Chenopod dwarf shrubs and soft grasses;

Vegetation Unit 1e - Plain Vegetation: *Triodia* spp. hummock grassland with mixed medium to tall shrubs, and sparse mixed low trees;

Vegetation Unit 1f - Plain Vegetation: *Triodia* spp. hummock grassland with sparse mixed tall shrubs;

Vegetation Unit 1g - Plain Vegetation: Mixed *Acacia* spp. medium to tall shrubland with soft grasses, and sparse low trees;

Vegetation Unit 1h - Plain Vegetation: Mixed medium to tall shrubland over *Triodia basedowii* hummock grassland;

Vegetation Unit 2 - Floodplain Vegetation: Mixed tall shrubland over *Triodia pungens* hummock grassland on floodplains;

Vegetation Unit 3 - Hillslope Vegetation: Mixed medium to tall shrubland, with *Acacia spondylophylla* low shrubs, and *Triodia* spp. hummock grassland;

Vegetation Unit 4 - Minor Drainage Line: *Acacia tumida* var. *pilbarensis* and *Grevillea wickhamii* ssp. *hispidula* shrubland;

Vegetation Unit 5 - Rocky Spur: *Triodia* spp hummock grassland, with *Acacia spondylophylla* very low shrubs, and outcropping low trees; and

Vegetation Unit 6 - Broad Valley: *Triodia pungens* hummock grassland, with *Eucalyptus gamophylla* mallee, and *Grevillea wickhamii* subsp. *hispidula* tall shrubs.

Clearing Description

BHP Billiton Iron Ore Pty Ltd (BHP Billiton) have applied to clear up to 180 hectares of native vegetation within a total application area of approximately 292 hectares. The proposed clearing will allow BHP Billiton to duplicate a 36 kilometre section of the existing Newman to Port Hedland railway line from the Kurrajurra Siding (approximately 20 kilometres north of the Yandi mine site) up to approximately 4 kilometres south of Cowra Siding (approximately 100 km north of Newman (BHP Billiton, 2007). The project is part of the Rapid Growth Project 5, its purpose is to expand the capacity of BHP Billiton's existing Western Australian Iron Ore Operations (BHP Billiton, 2007).

The application area is immediately adjacent to the existing railway line and road. The duplication of the railway line will occur within the existing 80 metre wide rail corridor (BHP Billiton, 2007).

Vegetation Condition

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)

Comment

The vegetation condition was derived from a vegetation survey conducted by Ecologia Environment (2007a).

During the flora and vegetation survey there were five weeds recorded along the rail corridor: *Acetosa vesicaria* (Ruby Dock), *Aerva javanica* (Kapok Bush), *Cenchrus ciliaris* (Buffel Grass), *Malvastrum americanum* (Spiked Malvastrum) and *Setaria verticillata* (Whorled Pigeon Grass) (Ecologia, 2007a).

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 Fortescue and Hamersley sub-regions of the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database).

A flora and vegetation survey of the application area was conducted by Ecologia in October 2007. The flora survey recorded 206 plant taxa from 38 families, 92 genera and 188 species (Ecologia, 2007a). The most species rich plant families were Poaceae (35 taxa) and Mimosaceae (29 taxa), whilst the most species rich plant genera were *Acacia* (29 taxa) and *Senna* (11 taxa). No Declared Rare Flora (DRF) or Priority flora species were recorded in the application area (Ecologia, 2007a).

Ecologia (2007a) considered the vegetation of the application area to represent a moderate level of diversity, compared to other recent surveys in surrounding areas. No vegetation communities of conservation significance were recorded during the survey and all the vegetation types found within the application area are well represented in the Pilbara bioregion (Ecologia, 2007a; GIS Database).

A fauna survey of the application area was undertaken from September - October 2007 (Ecologia, 2007b). The fauna survey recorded a total of 61 fauna species, including 11 native and 2 introduced mammal species, 41 bird species, and 7 reptile species (Ecologia, 2007b). There was one fauna species of conservation significance (Australian Bustard) which was recorded in the application area, however, this species is not confined to habitats of the application area.

The application area is located immediately adjacent to an existing railway line, and the vegetation within the application area has suffered previous disturbance from railway construction and maintenance activities (BHP Billiton, 2007). Additionally, the application area is surrounded by the Marillana Pastoral Lease (GIS Database) and some parts of the application area have suffered disturbance from cattle grazing and weed invasion (Ecologia, 2007a). During the vegetation and flora survey there were 5 weeds identified along the existing railway line, including: *Acetosa vesicaria* (Ruby Dock), *Aerva javanica* (Kapok Bush), *Cenchrus ciliaris* (Buffel Grass), *Malvastrum americanum* (Spiked Malvastrum) and *Setaria verticillata* (Whorled Pigeon Grass). The presence of weeds lowers the biodiversity value of the proposed clearing area. Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Should a clearing permit be granted, it is recommended that a condition be imposed on the clearing permit for the purposes of weed management.

The landforms, vegetation types and fauna habitats in the application area are well represented in the Pilbara

Region, including within the Karijini National Park (BHP Billiton, 2007; Ecologia, 2007a; GIS Database). Some fauna species of conservation significance are known to occur within the application area, however these species are not expected to be significantly impacted as a consequence of the proposed clearing. The proposed clearing is unlikely to have any significant impact on the biological diversity of the region.

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

Methodology BHP Billiton (2007).
Ecologia (2007a).
Ecologia (2007b).
GIS Database:
- Pre-European Vegetation.
- Interim Biogeographic Regionalisation of Australia.

(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 of the application area undertaken by Ecologia (2007b) during September-October 2007. The survey recorded a total of 61 fauna species within the application area, including: 11 native and 2 introduced mammal species, 41 bird species, and 7 reptile species (Ecologia, 2007b).

The Australian Bustard (*Ardeotis australis*) was the only fauna species of conservation significance recorded within the application area (Ecologia, 2007b).

The Australian Bustard (Department of Environment and Conservation (DEC) - Priority 4) is limited to the arid areas of Northern and Central Australia (Caughley et al., 1986). It is found in tussock grasslands, *Triodia* hummock grassland, grassy woodland and low shrublands (Garnett & Crowley, 2000). Ecologia (2007b) have stated that the Australian Bustard was recorded during the fauna survey, however, it is unlikely that this species would be reliant on the application area for habitat, as the habitat types present are well represented in the local area (Ecologia, 2007b). The vegetation within the application area is therefore unlikely to represent significant habitat for this species.

Several other fauna species of conservation significance have the potential to occur within the project area, based on known ranges, habitat preferences, and previous sightings in surrounding areas (Ecologia, 2007b). The following species are listed on the *Wildlife Conservation (Specially Protected Fauna) Notice 2008*: Night Parrot (*Pezoporus occidentalis*) and the Greater Bilby (*Macrotis lagotis*). The Ghost Bat (*Macodermis gigas*) and Western Pebble-mound Mouse (*Pseudomys chapmani*) are listed on the DEC Priority Fauna list (Ecologia, 2007b). The Great Egret (*Ardea alba*), Fork-tailed swift (*Apus pacificus*), and Rainbow Bee-eater (*Merops ornatus*) are migratory birds listed under the Japan-Australia Migratory Bird Agreement and China-Australia Migratory Bird Agreement (Ecologia, 2007b).

None of the above mentioned fauna species are likely to be specifically dependant on habitats found within the application area, although they may use the project area as part of a foraging ground (Ecologia, 2007b). The fauna habitats occurring within the application area are well represented within the Karijini National Park, and in the Pilbara region generally (Ecologia, 2007b). The area proposed to clear is immediately adjacent to an existing railway line and road. The application area has suffered previous disturbance from railway construction and maintenance activities, grazing, and weed invasion, and is unlikely to represent an area of significant fauna habitat in comparison to other undisturbed areas in the region.

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

Methodology Caughley et al., (1986).
Ecologia (2007b).
Garnett & Crowley (2000).

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

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

There are no known records of DRF within the proposed clearing area (GIS Database). The closest DRF species to the application area is *Lepidum catapycnon* which is located approximately 20 kilometres to the south (GIS Database).

A flora and vegetation survey of the application area was undertaken by Ecologia (2007a) in October 2007. Several other flora surveys have been undertaken within and around the Cowra to Kurrajurra project area in association with rail expansion projects in the past (Ecologia, 2007c). Based on the information from these surveys, known distributions and habitat preferences of DRF and Priority flora species, Ecologia (2007a) consider that 22 species of Priority flora had the potential to occur within the application area. However, during the reconnaissance survey there were no DRF or Priority flora recorded within the Cowra to Kurrajurra project

area.

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

Methodology Ecologia (2007a).
GIS Database:
- Declared Rare and Priority Flora List.

(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 area applied to clear (GIS Database). The nearest known ecological community of conservation significance is the Priority Ecological Community (PEC) named Coolibah-lignum Flats, which is approximately 56 kilometres to the south-west of the application area (GIS Database). Due to the distance from the application area, these ecosystems are unlikely to be affected by the proposed clearing.

Ecologia (2007a) reported that no TEC's or PEC's were identified during the flora survey of the application area.

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

Methodology Ecologia (2007a).
GIS Database:
- Threatened Ecological Communities.

(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 IBRA Pilbara Bioregion (GIS Database). Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists in this Bioregion. The vegetation in the application area is recorded as Beard Vegetation Associations 29: Sparse low woodland; mulga, discontinuous in scattered groups; 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*; 111: Hummock grasslands, shrub steppe; *Eucalyptus gamophylla* over hard spinifex; and 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* (GIS Database; Shepherd et al.). According to Shepherd et al., (2001) there is approximately 100% of each of these vegetation types remaining (see table below). The vegetation within the application area is not a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard vegetation associations - WA					
29	7,904,064	7,904,064	~100	Least Concern	0.3
82	2,565,930	2,565,930	~100	Least Concern	10.2
111	762,966	762,966	~100	Least Concern	5.5
157	502,737	501,522	~99.8	Least Concern	17.2
Beard vegetation associations - Pilbara Bioregion					
29	1,133,228	1,133,228	~100	Least Concern	1.9
82	2,563,610	2,563,610	~100	Least Concern	10.2
111	550,289	550,289	~100	Least Concern	1.3
157	198,636	198,522	~99.9	Least Concern	5.7

* Shepherd et al. (2001) updated 2005

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002).
Shepherd et al. (2001).
GIS Database:
- Pre-European Vegetation.
- Interim Biogeographic Regionalisation of Australia.

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

Comments Proposal is at variance to this Principle

There are 4 watercourses within the area proposed to clear, which intersect the existing railway line. These watercourses are dry for most of the year, only flowing briefly immediately following significant rainfall (BHP Billiton, 2007).

The Fortescue Marshes are located approximately 1.5 kilometres from the northern end of the application area, at the nearest point. The Fortescue Marshes are listed in "A Directory of Important Wetlands in Australia" (formerly known as ANCA Wetlands) (GIS Database). The wetland area meets the following four criteria (out of a possible six) for inclusion in the Directory of Important Wetlands:

1. It is a good example of a wetland type occurring within a biogeographic region in Australia;
2. It plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex;
3. It is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail; and
6. It is of outstanding historical or cultural significance (DEH, 2001).

The defined wetland area covers approximately 100,000 hectares and comprises an area of floodplains, lakes, marshes and pools associated with the Fortescue River (DEH, 2001).

The northern end of the proposed clearing disturbance area is located approximately 1.5 kilometres away from the Fortescue Marshes (GIS Database), and the proposed clearing is located within the existing rail corridor. The additional clearing with the existing rail corridor is unlikely to have any significant impact on the conservation values of the Fortescue Marshes. BHP Billiton (2005) have stated that the following measures (as listed in their Rail Construction Environmental Management Plan) will be implemented to reduce potential impacts to the Fortescue Marsh and River:

- The Project construction will commence at the end of the wet season, therefore limiting any impacts upon surface water flows to the surrounding floodplain and nearby Fortescue River;
- Scour protection will be provided to prevent erosion;
- Cleared vegetation will be stockpiled away from watercourses;
- All construction materials will be completely removed from creek beds on the completion of the construction; and
- Weather will be constantly monitored via the Bureau of Meteorology and local flood warnings to ensure that construction is only undertaken during dry weather conditions.

Based on the above, the proposal is at variance to this Principle. However, should adequate management measures be implemented, the proposed clearing is unlikely to result in any significant impact to vegetation associated with significant watercourses or wetlands.

Methodology BHP Billiton (2005).
BHP Billiton (2007).
DEH (2001).
GIS Database:
- ANCA, Wetlands.
- Clearing Regulations - Environmentally Sensitive Areas.
- Hydrography, linear.
- Geodata, Lakes.
- Rivers.

(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 is located along a 36 kilometre length of an existing railway line; as a result there are up to 6 land systems that intersect the application area, including: Adrian, Boolgeeda, Cowra, Divide, Jamindie and Newman land systems (GIS Database). The majority of the application area is made up of the Jamindie,

Boolgeeda and Divide land systems which cover approximately 33 kilometres of the existing railway line in the central region of the application area. The Adrian and Cowra land systems cover approximately 2 kilometres along the railway line in the north of the application area, while the Newman land system covers an area of approximately 1 kilometre along the existing railway line in the south of the application area (GIS Database).

The Adrian land system is described as stony plains and low silcrete hills supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). This land system has a low risk of erosion, due to the stony mantle which provides protection from erosional forces.

The Boolgeeda land system is described as stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). This land system has a low erosion potential, due to the stony mantle present.

The Cowra land system is described as plains fringing the March land system and supporting snakewood and mulga shrublands with some halophytic undershrubs (Van Vreeswyk et al., 2004). Surface mantles of gravel protect the system from erosion, however, if the mantle is removed or disturbed erosion can occur.

The Divide land system is described as sandplains and occasional dunes supporting shrubby hard spinifex grasslands (Van Vreeswyk et al., 2004). According to Van Vreeswyk et al., (2004) this land system has some susceptibility to wind erosion following the removal of vegetation, but stabilisation occurs rapidly after rain. In regards to this, BHP Billiton (2005) have stated that during the railway duplication project progressive clearing will occur, meaning that large areas will not be left open to erosional forces at any given time. The construction of the railway line and adjacent vehicle track will also be implemented in a progressive manner, with work scheduled to occur from one end of the project to the other (BHP Billiton, 2007).

The Newman land system is described as rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). This system has a low risk of erosion, due to the surface mantle of gravel, which provides protection from erosional forces.

The Jamindie land system is described as stony hardpan plains and rises supporting groved mulga shrublands, occasionally with spinifex understorey (Van Vreeswyk et al., 2004). The drainage tracts within this system are moderately susceptible to erosion, while some hardpan plains are slightly susceptible to erosion (Van Vreeswyk et al., 2004). The application area contains some drainage tracts and hardpan plain areas, meaning that clearing within this land system may initiate some erosion. However, BHP Billiton will implement the following measures listed in their Rail Construction Environmental Management Plan (BHP Billiton, 2005), which will reduce the potential for erosion:

- The Project construction will commence at the end of the wet season, therefore limiting any impact upon surface water flows to the surrounding floodplains and nearby Fortescue River;
- Scour protection will be provided to prevent erosion;
- 165 culverts, varying in diameter from 750 millimetres to 3,300 millimetres will be installed in order to reduce localised impact on the streambed and to reduce the velocity of water flow;
- Where the potential for erosion is high appropriate methods such as rip rap rock and reno mattresses will be installed;
- Cleared vegetation will be stockpiled away from watercourses;
- Chemicals and hydrocarbons will be stored appropriately and used only in designated laydown areas that are greater than 50 metres from creeks and floodplains;
- All construction materials (i.e. ballast or rock material, sand etc) will be completely removed from creek beds on the completion of the construction;
- Erosion on access tracks is to be prevented by careful and erosion proof construction;
- Regular inspections of drainage structures and erosion control measures are to be carried out as soon as possible after periods of heavy rainfall to ensure they are maintained and remain effective; and
- Weather will be constantly monitored via the Bureau of Meteorology and local flood warnings, to ensure that construction is only undertaken during dry weather conditions.

Although the proposed clearing may be at variance to this Principle, it is considered that potential land degradation risks associated with vegetation clearing can be mitigated by implementing the appropriate measures, as listed in BHP Billiton's (2005) Rail Construction Environmental Management Plan.

Methodology BHP Billiton (2005).
BHP Billiton (2007).
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 likely to be at variance to this Principle

The nearest DEC managed land is the Karijini National Park, approximately 25 kilometres west of the application area (GIS Database).

When the Newman to Port Hedland railway line was constructed in the 1970s, the rail corridor was excised from the surrounding pastoral stations. The current clearing permit application area is surrounded by the Marillana pastoral lease (GIS Database). A large section of this pastoral station has been selected by DEC for addition to the conservation estate in 2015 when the pastoral lease expires (GIS Database). However, the rail corridor itself will remain separate from the conservation area. The Marillana proposed conservation area is immediately adjacent to the clearing permit application area, on both sides of the rail corridor (GIS Database).

The proposed additional clearing in previously disturbed areas and immediately adjacent to the existing road and rail corridor is unlikely to result in any significant impact to the environmental values of this future conservation area.

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

Methodology GIS Database:

- CALM Managed Lands and Waters.
- Pastoral Leases.
- CALM proposed 2015 pastoral lease exclusions.

(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 may be at variance to this Principle

The proposed clearing is for the duplication of a 36 kilometre long section of the existing Newman to Port Hedland railway line, between Cowra Siding and Kurrajurra Siding, north of Newman (BHP Billiton, 2007). The depth of groundwater within the application area varies from 6 to 15 metres below the surface (BHP Billiton, 2005). Groundwater within the application area will not be intersected during the railway duplication; as a result, impacts to groundwater are likely to be minimal.

The Fortescue Marshes are located approximately 1.5 kilometres from the northern end of the application area, at the nearest point (GIS Database). There are no permanent watercourses or wetlands within the area proposed to clear (GIS Database).

There are 4 drainage lines which run through the application area, crossing the railway line (GIS Database). These drainage lines are dry for most of the year, only flowing briefly immediately following significant rainfall (BHP Billiton, 2007). Given that there is clearing required within these watercourses it is possible that surface water quality may be impacted through increased sediment loads which may result from soil erosion. It is the proponent's responsibility to liaise with the Department of Water to determine whether a Bed and Banks permit is required for the proposed works, in accordance with Section 17 of the *Rights in Water and Irrigation Act 1914*.

Based on the above, the proposed clearing may be at variance to this Principle. However, BHP Billiton (2005) have made a list of commitments in their Environmental Management Plan which will reduce impacts to surface water quality within the application area. Should adequate management measures be implemented, it is unlikely there will be significant impacts to the surface water quality of the application area as a result of the proposed clearing.

Methodology BHP Billiton (2005).

BHP Billiton (2007).

GIS Database:

- Hydrography, linear.
- Mount George 50cm Orthomosaic - Landgate04.

(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

There are no permanent watercourses within the application area. There are several minor ephemeral drainage lines which run through the application area. These drainage lines are dry for most of the year, only flowing briefly immediately following significant rainfall (BHP Billiton, 2007).

The application area drains into both the Fortescue River and Fortescue River Upper catchment areas (GIS Database). Natural flooding occurs occasionally within these catchment areas during the wet season (November to March) following significant rainfall (BHP Billiton, 2007). However, the relatively small area to be cleared (180 hectares) in relation to the size of the two catchment areas (1,860,784 hectares and 2,975,192

hectares respectively) (GIS Database) is unlikely 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 BHP Billiton (2007).
GIS Database:
- Hydrographic Catchments – Catchments.

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

Comments

There is one native title claim (WC98-062) over the area under application. This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (ie. 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 3 known Aboriginal site of significance (Site ID 6835, Site ID 6834 and Site ID 6885) partly overlapping the southern end of the application area (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.

According to BHP Billiton (2007), mining and infrastructure plans will be modified where possible to avoid impacts to these sites mentioned above. If disturbance is unavoidable, further consultation with representatives from the claimant group (WC98-062), and applications under the provisions of Section 18 of the *Aboriginal Heritage Act 1972* would be made. The project would not proceed unless the appropriate consent is granted by representatives of the claimant group and the Minister for Indigenous Affairs.

The proponent is committed to the management and protection of Aboriginal heritage sites (BHP Billiton, 2005). BHP Billiton 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).

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

Methodology BHP Billiton (2005).
BHP Billiton (2007).
GIS Database:
- Aboriginal Sites of Significance.
- Native Title Claims.

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles, and the proposal is at variance to Principle (f), may be at variance to Principles (g) and (i), is not at variance to Principle (e), and is not likely to be at variance to Principles (a), (b), (c), (d), (h) and (j).

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) Rail Operations - Rail Construction Environmental Management Plan. BHP Billiton Iron Ore, Western Australia.
- BHP Billiton (2007) Cowra Siding to Kurrajura Siding: Application to Clear Native Vegetation (Purpose Permit) Supporting Documentation. BHP Billiton Iron Ore Pty Ltd, Western Australia.
- Caughley G, Grice D, and Short J (1986) Density and Distribution of the Australian Bustard *Ardeotis australis*. *Biological Conservation* 35: 259-267.
- DEH (2001) A Directory of Important Wetlands in Australia. Third Edition. Environment Australia. Department of the Environment and Heritage, ACT.
- 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.
- Ecologia (2007a) Kurrajura to Cowra Sidings and Cowra Camp Site Flora and Vegetation Survey. Prepared for BHP Billiton Iron Ore, December 2007.
- Ecologia (2007b) RGP5 Kurrajura to Cowra Fauna Survey. Prepared for BHP Billiton Iron Ore, 21 December 2007.

- 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.
- 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.
- Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A., and Hennig, P. (2004) Technical Bulletin No 92 an inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, Government of 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.