



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4832/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: BHP Billiton Iron Ore Pty Ltd

1.3. Property details

Property: Iron Ore (Mount Newman) Agreement Act 1964, Mineral Lease 244SA (AML 70/244)
Local Government Area: Shire of East Pilbara
Colloquial name: Orebody 25 Rail Siding

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
50		Mechanical Removal	Construction and Maintenance of Rail and Service Infrastructure and Other Associated Activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 29 March 2012

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia. Three Beard vegetation associations have been mapped within the application area (GIS Database; Shepherd, 2009):

- 18: Low woodland; mulga (*Acacia aneura*);
- 29: Sparse low woodland; mulga, discontinuous in scattered groups; and
- 82: Hummock grassland, low tree steppe; snappy gum over *Triodia wiseana*.

Numerous flora and vegetation surveys have been conducted over the application area including Ecologia (2005), ENV (2007a) and ENV (2007b). The most recent vegetation survey of the application area was conducted by ENV (2007b) in May 2007. This survey identified the following 19 vegetation associations within the application area (ENV, 2007b):

Creekline

Scattered *Corymbia aspera* and *Eucalyptus victrix* over high *Acacia citrinoviridis* shrubland over *Cenchrus ciliaris* grassland;

Open *Eucalyptus victrix* woodland over scattered high *Acacia citrinoviridis* shrubs over *Cenchrus ciliaris*, *Triodia pungens* and *Enterpogon ramosus* grassland;

High *Acacia citrinoviridis* shrubland over scattered mixed low shrubs over *Cenchrus ciliaris* and *Triodia pungens* grassland;

Floodplain

Scattered *Corymbia aspera* and *Eucalyptus victrix* over scattered high *Acacia citrinoviridis* and *Hakea lorea* subsp. *lorea* shrubs over *Cenchrus ciliaris* and *Triodia pungens* grassland;

Scattered *Eucalyptus xerothermica* over scattered high *Acacia citrinoviridis*, *Acacia dictyophleba* and *Hakea lorea* subsp. *lorea* shrubs over *Triodia pungens* and *Cenchrus ciliaris* grassland;

Scattered *Corymbia deserticola* subsp. *deserticola* and *Corymbia hamersleyana* and over scattered high *Acacia citrinoviridis* shrubs over *Acacia dictyophleba*, *Acacia aneura* var. *conifera*, *Senna*

artemisioides subsp. *oligophylla* shrubland over open *Triodia pungens* and *Cenchrus ciliaris* open grassland;

Scattered *Corymbia deserticola* subsp. *deserticola* and *Corymbia hamersleyana* over mixed high *Acacia* shrubs over scattered low *Bonamia roosea* and *Tephrosia rosea* var. *glabrior* shrubs over very open *Triodia pungens* and *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) grassland; and

Scattered *Corymbia deserticola* subsp. *deserticola* and *Eucalyptus xerothermica* over high *Acacia aneura* var. *conifera*, *Amyema fitzgeraldii* and *Hakea lorea* subsp. *lorea* shrubland over scattered mixed shrubs over very open *Triodia pungens* and *Cenchrus ciliaris* grassland.

Sandplain

Scattered *Corymbia deserticola* subsp. *deserticola* over open high *Eremeophila longifolia* and *Acacia* mixed shrubland over scattered *Rhagodia eremaea* and mixed *Senna artemisioides* shrubs over *Triodia pungens* and *Cenchrus ciliaris* open grassland;

Scattered *Eucalyptus leucophloia* subsp. *leucophloia* over open high *Acacia aneura* var. *longicarpa*, *Acacia aneura* var. *pilbarana* and *Grevillea striata* shrubland over *Cenchrus ciliaris* and *Triodia pungens* very open grassland;

Scattered *Corymbia deserticola* subsp. *deserticola* over scattered high mixed *Acacia* shrubs and *Grevillea striata* shrubs over scattered low *Senna artemisioides* subsp. *oligophylla* and low mixed shrubs over *Cenchrus ciliaris* and *Triodia pungens* very open grassland;

Scattered high *Acacia aneura* var. *longicarpa* and *Acacia synchronica* shrubs over open *Grevillea striata*, *Rhagodia eremaea* and *Senna artemisioides* subsp. *oligophylla* x *helmsii* over very open *Aristida inaequiglumis*, *Triodia pungens* and *Cenchrus ciliaris* grassland;

Scattered *Corymbia deserticola* subsp. *deserticola* and *Corymbia hamersleyana* over open high *Hakea lorea* subsp. *lorea*, *Acacia aneura* var. *longicarpa* shrubland over open *Triodia pungens* and *Aristida inaequiglumis* grassland;

Scattered high *Acacia pachyacra* and *Hakea lorea* subsp. *lorea* shrubs over scattered *Acacia synchronica* and *Acacia dictyophleba* shrubs over scattered low mixed shrubs over *Triodia pungens*, *Cenchrus ciliaris* and *Eragostis setifolia* grassland; and

Scattered *Corymbia deserticola* subsp. *deserticola* and *Eucalyptus gamophylla* over scattered high *Hakea lorea* subsp. *lorea* and mixed *Acacia* shrubs over scattered low mixed shrubs over open *Triodia pungens* grassland.

Breakaway

Scattered *Eucalyptus leucophloia* subsp. *leucophloia* over scattered high *Acacia bivenosa*, *Acacia pruinocarpa* and *Petalostylis labicheoides* shrubs over *Triodia pungens* and *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) grassland.

Hill slope

Scattered high *Acacia inaequilatera*, *Acacia pachyacra* and *Hakea lorea* subsp. *lorea* shrubs over low scattered mixed shrubs over *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* grassland.

Major Drainage Line

Scattered *Corymbia hamersleyana* over high open *Hakea lorea* subsp. *lorea*, *Acacia citrinovirdis* and *Acacia* aff. *catenulata* shrubland over an open mixed shrubland over a *Cenchrus ciliaris*, *Themeda triandra* and *Triodia pungens* open grassland.

Drainage Line

Scattered *Eucalyptus gamophylla* over a high *Acacia bivenosa*, *Acacia tenuissima*, *Acacia inaequilatera* shrubland over scattered mixed shrubs over *Triodia pungens* open grassland.

Clearing Description

BHP Billiton Iron Ore Pty Ltd is proposing to clear up to 50 hectares of native vegetation within a broader boundary of approximately 333 hectares. Clearing will be undertaken for the purpose of construction and maintenance of rail and service infrastructure and other associated activities.

Vegetation will be cleared using mechanical means.

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

Comment The application area is located immediately to the south of the existing Orebody 25 open cut iron ore mine, which is located approximately 4 kilometres north east of the town of Newman, in the Pilbara region (GIS Database).

The application is to replace clearing permit CPS 2024/3 which expired in December 2011. The application area and amount of clearing remain the same. No clearing was undertaken under clearing permit CPS 2024/3.

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 proposed clearing is located approximately 4 kilometres north east of Newman in the Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). At a broad scale, vegetation can be described as Mulga low woodlands over bunch grasses on fine textured soils in valley floors and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (CALM, 2002). Rare features of the subregion include gorges of the Hamersley Ranges (particularly those within Karijini National Park), Palm Spring, Duck Creek and Themeda grasslands (CALM, 2002). Permanent spring systems such as Weeli Wolli are also listed for their importance as refugia (CALM, 2002).

Ecologia (2005) undertook a flora and vegetation survey of the area surrounding the existing Orebody 25 rail siding and the then proposed alignment of the Orebody 25 rail spur between 21 and 24 March 2005. The survey recorded a total of 64 taxa from 22 families and 40 genera from the area then proposed for the Orebody 25 rail spur.

Ecologia (2005) reported that the majority of the proposed rail spur alignment consisted of mature rehabilitated vegetation along an old access track, which had been previously ripped and planted with mixed shrubs and grasses. The rehabilitated vegetation comprised a diverse shrubland community (Ecologia, 2005). The eastern end of the proposed alignment consisted of natural vegetation, comprising moderately dense mulga woodland over moderately dense *Triodia pungens* (Ecologia, 2005).

ENV (2007a) conducted a flora and vegetation survey over the majority of the application area (which includes the 2005 survey area) between 27 November and 1 December, 2006. The full length of the proposed rail corridor was surveyed on foot, using transects and opportunistic collections (ENV, 2007a). ENV (2007b) conducted a further survey between 7 and 9 May 2007 of four additional areas adjacent to the rail corridor, which were not included in any of the previous surveys. This survey included 28, 50 metre x 50 metre quadrats, transects and opportunistic collections (ENV, 2007b).

The vegetation of the application area was classified as five broad vegetation associations (BHP Billiton, 2007). ENV (2007a, 2007b) described the vegetation condition of the majority of the application area as Poor, due to the high incidence of the invasive weed Buffel Grass, *Cenchrus ciliaris*, and substantial previous disturbance from grazing and mining related activities. A low rocky calcrete rise at the eastern end of the rail corridor was largely undisturbed and weed free, and the vegetation of this area was described as Very Good (ENV, 2007a).

According to available databases there are no Declared Rare Flora (DRF) or Priority Flora species within the application area (GIS Database). Flora and vegetation surveys of the application area were conducted by Ecologia in 2005, and by ENV in 2006 and 2007 (Ecologia, 2005; ENV, 2007a; ENV 2007b). No species of Declared Rare or Priority Flora were recorded during any of these surveys (Ecologia, 2005; ENV, 2007a; ENV 2007b).

According to available databases there are no Threatened Ecological Communities or Priority Ecological Communities within the application area (GIS Database).

Numerous flora and vegetation surveys conducted over the Orebody 25 area have identified eleven weed species, *Acetosa vesicaria*, *Bidens bipinnata*, *Cenchrus ciliaris*, *Cenchrus setigerus*, *Conyza bonariensis*, *Cynodon dactylon*, *Malvastrum americanum*, *Helichrysum luteoalbum*, *Sisymbrium erylsmoides*, *Solanum nigrum* and *Sonchus oleraceus*, within and adjacent to the application area. Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This can in turn lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. None of these species are listed as 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Vegetation surveys of the application area conducted in 2006 and 2007 identified four fauna habitat types within the application area (BHP Billiton, 2007). All the fauna habitat types found within the application area were considered to be typical of the East Pilbara and well represented within the region (ENV, 2007a; ENV 2007b). No fauna habitat types of particular conservation significance or restricted distribution were identified within the application area (Ecologia, 2005; ENV, 2007a; ENV 2007b).

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

Methodology BHP Billiton (2007)
CALM (2002)
Ecologia (2005)
ENV (2007a)
ENV (2007b)
GIS Database:
- IBRA WA (regions – subregions)
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

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

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

The area proposed to clear is immediately adjacent to an existing railway line, an operational mine site, mine roads and infrastructure (BHP Billiton, 2007). The application area has suffered substantial previous disturbance and is unlikely to support significant habitat for fauna.

The application area is immediately adjacent to the existing Orebody 25 minesite. A fauna survey of the Orebody 25 minesite and surrounding areas conducted by Ecologia in June 1995 recorded a total of 52 fauna species (three mammals, 40 birds and nine reptiles) (BHP Billiton, 2007). Two fauna species of conservation significance were recorded in the area surrounding the Orebody 25 minesite: the Western Pebble-mound Mouse, *Pseudomys chapmani* (P4), and the Peregrine Falcon, *Falco peregrinus* (Schedule 4) (Ecologia, 1995, as cited by BHP Billiton, 2005).

One active mound of the Western Pebble-mound Mouse was recorded within the Orebody 25 survey area (Ecologia, 1995, as cited by BHP Billiton, 2005). This species is relatively widespread in the Pilbara, and is well represented in areas outside the minesite. The Peregrine Falcon has been recorded in areas adjacent to the minesite, however this species is highly mobile (Ecologia, 1995, as cited by BHP Billiton, 2005), and is unlikely to be affected by the proposed clearing.

The area proposed to clear is within close proximity of the Homestead Creek and crosses the creekline in two places. This area is considered to be suitable habitat for the Desert Mouse *Pseudomys desertor* (Ecologia, 1995, as cited by BHP Billiton, 2005). However the additional clearing along the existing rail corridor is unlikely to impact upon this species, which has a wide distribution throughout the arid regions of Western Australia.

Vegetation surveys of the application area conducted in 2006 and 2007 identified four fauna habitat types within the application area (BHP Billiton, 2007). All the fauna habitat types found within the application area were considered to be typical of the East Pilbara and well represented within the region (ENV, 2007a; ENV 2007b). No fauna habitat types of particular conservation significance or restricted distribution were identified within the application area (Ecologia, 2005; ENV, 2007a; ENV 2007b).

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

Methodology BHP Billiton (2005)
BHP Billiton (2007)
Ecologia (2005)
ENV (2007a)
ENV (2007b)

(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 Declared Rare Flora (DRF) within the application area (GIS Database).

Flora and vegetation surveys of the application area were conducted by Ecologia in 2005, and by ENV in 2006 and 2007 (Ecologia, 2005; ENV, 2007a; ENV 2007b). No DRF or Priority Flora species were recorded during any of these surveys (Ecologia, 2005; ENV, 2007a; ENV 2007b).

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

Methodology Ecologia (2005)
 ENV (2007a)
 ENV (2007b)
 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

There are no known Threatened Ecological Communities (TEC's) within the application area (GIS Database). The nearest known TEC is the Ethel Gorge aquifer stygobiont community which is located approximately 1.8 kilometres north east of the application area at it's closest point (GIS Database). Groundwater drawdown is listed as a threatening process for the Ethel Gorge stygofauna (CALM, 2002), however the proposed clearing is not expected to have any effect on groundwater levels.

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

Methodology CALM (2002).
 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 is located within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). Shepherd (2009) reports that approximately 99.89% of the pre-European vegetation remains within the Pilbara bioregion.

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

- 18: Low woodland; mulga (*Acacia aneura*);
- 29: Sparse low woodland; mulga, discontinuous in scattered groups; and
- 82: Hummock grassland, low tree steppe; snappy gum over *Triodia wiseana*.

According to Shepherd (2009) approximately 100% of Beard vegetation associations 18, 29 and 82 remain within the Pilbara bioregion (see table on next page).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,193	17,785,001	~99.89	Least Concern	~6.32
Beard vegetation associations - State					
18	19,892,305	19,890,275	~99.99	Least Concern	~2.13
29	7,903,991	7,903,911	~100	Least Concern	~0.29
82	2,565,901	2,565,901	~100	Least Concern	~10.24
Beard vegetation associations - Bioregion					
18	676,557	676,557	~100	Least Concern	~16.80
29	1,133,220	1,133,220	~100	Least Concern	~1.91
82	2,563,583	2,563,583	~100	Least Concern	~10.25

* Shepherd (2009)

** 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)
Shepherd (2009)
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**

There are no permanent wetlands or watercourses within the application area, however there are numerous minor non-perennial watercourses and one major non-perennial watercourse (GIS Database). The proposed railway siding crosses the major non-perennial watercourse, Homestead Creek, in two places. Homestead Creek is dry for most of the year, only flowing briefly immediately following significant rainfall (BHP Billiton, 2005).

Culverts will be installed where the rail line crosses the creek, which will maintain normal water flows and minimise disturbance of the creekline (BHP Billiton, 2007). The Department of Water (DoW) has issued the proponent with a Permit to Obstruct or Interfere with a Proclaimed Watercourse, for the proposed creek crossings, under s.17 of the *Rights in Water and Irrigation Act 1914* (DoW, 2007). The proposed clearing will impact on a small amount of riparian vegetation where the rail line crosses Homestead Creek, and this disturbance has been assessed and approved as part of the abovementioned permit issued by DoW (BHP Billiton, 2007; DoW, 2007).

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

Methodology BHP Billiton (2005)
BHP Billiton (2007)
DoW (2007)
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 is not likely to be at variance to this Principle**

The soils within the adjacent Orebody 25 Mine area are mainly stony, shallow loams (Ecologia, 2005). The application area is located on the northern edge of the Homestead Creek flood-plain, on gently rising slopes (BHP, 2005). The proponent has made a commitment to minimise erosion and implement sediment control measures as required (BHP Billiton, 2007).

The application area intersects the following two land systems (GIS Database):

The Elimunna land system is characterised by stony plains on basalt supporting sparse acacia and cassia shrublands and patchy tussock grasslands (Van Vreeswyk et al., 2004). Some drainage floors are slightly susceptible to erosion but most of the system is inherently resistant (Van Vreeswyk et al., 2004).

The Newman land system is characterised by rugged jaspilite plateaux, ridges and mountains supporting hard Spinifex grasslands (Van Vreeswyk et al., 2004). This land system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The construction of drains, culverts and levees will maintain surface water flows across the application area and minimise any potential erosion (BHP Billiton, 2007).

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

Methodology BHP Billiton (2005)
BHP Billiton (2007)
Ecologia (2005)
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 application area is not located within a conservation reserve (GIS Database). The nearest conservation reserve is Karijini National Park, located approximately 122 kilometres west of the application area (GIS

Database). At this distance it is considered unlikely that the proposed clearing will impact on the environmental values of any conservation area.

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

Methodology GIS Database:
- DEC Tenure

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

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

According to available databases the application area is located within the Newman Water Reserve (GIS Database). Advice from the Department of Water (DoW) (2012) noted that BHP Billiton is the water service provider for this water source and that for the benefit of the community, planning decisions on proposed land uses in the reserve need to be carefully considered. It was also noted by DoW (2012) that the Newman Water Reserve is listed as Priority 1 which is compatible with the proposed activities. DoW (2012) advised that potential impacts to the Newman Water Reserve may be minimised by following DoW's water quality protection guidelines and notes.

The groundwater salinity within the application area is approximately 500 - 1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). It is considered unlikely that the proposed clearing of 50 hectares of native vegetation within the Hamersley Groundwater Province (10,166,832 hectares) (GIS Database) will cause salinity levels within the application area to alter significantly.

There are no permanent water bodies within the application area (GIS Database). The application area experiences a semi-desert tropical climate with an average annual rainfall of approximately 322 millimetres recorded at Newman Aero weather station (BoM, 2012; CALM, 2002). The average annual evaporation rate within the application area is approximately 3,400 – 3,600 millimetres (GIS Database). It is therefore considered unlikely that water will pool in the application area for long periods of time.

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

Methodology BoM (2012)
CALM (2002)
DoW (2012)
GIS Database:
- Evaporation Isopleths
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSA)

(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 322 millimetres recorded at Newman Aero weather station (BoM, 2012; CALM, 2002). The majority of rainfall in this area usually falls in summer cyclonic and thunderstorm events (CALM, 2002). Large runoff as well as localised and regional flooding can occur following intense rainfall events. It is therefore considered unlikely that the proposed clearing will 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 (2012)
CALM (2002)

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

Comments

There is one Native Title Claim (WC05/6) 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 23 January 2012 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received in relation to this application raising concern as to the amount of clearing being conducted within the Shire of East Pilbara. This submission is currently being addressed through the Office of the Minister for Mines and Petroleum.

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

4. References

- BHP Billiton (2005) Orebody 25 Rail Siding Vegetation Clearing Permit Supporting Documentation. BHP Billiton Iron Ore Pty Ltd, Western Australia.
- BHP Billiton (2007) Orebody 25 Rail Siding Clearing (Purpose) Permit Application Supporting Documentation. August 2007. BHP Billiton Iron Ore Pty Ltd, Western Australia.
- BoM (2012) BoM Website - Climate Averages by Number, Averages for NEWMAN AERO. www.bom.gov.au/climate/averages/tables.shtml (Accessed 17 February 2012).
- 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.
- DoW (2007) Public Drinking Water Source Area (PDWSA) Advice. Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR). Department of Water, Western Australia.
- DoW (2012) Advice Regarding Application to Clear Native Vegetation under the *Environmental Protection Act 1986*.
- Ecologia (2005) BHPBIO Rail Sidings Flora and Vegetation Assessment. Ecologia Environment, Western Australia.
- ENV (2007a) RGP4 Orebody 25 Rail Spur Siding Declared Rare and Priority Flora Survey. ENV Australia Pty Ltd, Western Australia, February 2007.
- ENV (2007b) RGP4 NJV Orebody 25 Rail Alignment Flora and Vegetation Assessment. ENV Australia Pty Ltd, Western Australia, June 2007.
- 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. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- 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

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.