



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4569/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Iron Ore (Hamersley Range) Agreement Act 1963, Mineral Lease 4SA (AML 70/4)
Miscellaneous Licence 47/141
Local Government Area: Shire of Ashburton
Colloquial name: Brockman Fuel Hub Facility Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 10 November 2011

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 and are useful to look at vegetation in a regional context. One Beard vegetation association has been mapped within the application area:

Beard vegetation association 175: Short bunch grassland – savanna/grass plain (Pilbara) (GIS Database; Shepherd, 2009).

Biota Environmental Sciences (2007) conducted a flora survey of the application area and surrounding areas during late May and June 2006 and January 2007, and described 20 vegetation communities of the application area:

Vegetation of Stony Hills:

H1 – *Corymbia hamersleyana* scattered trees over *Cassia pruinosa* open shrubland over *Triodia wiseana* open hummock grassland. Other associated species: *Acacia exilis*, *A. inaequilatera*, *Amphipogon sericeus*, *Aristida contorta*, *Eriachne aristidea* and *Hibiscus sturtii* var. aff. *platychlams*;

H9 – *Eucalyptus leucophloia* scattered low trees over *Acacia inaequilatera* tall shrubland over *Triodia wiseana* hummock grassland. A low shrubland of *Gompholobium Karijini* ms. was present in places. Other associated species: *Acacia maitlandii*, *Amphipogon sericeus*, *Fimbristylis simulans*, *Goodenia stobbsiana*, *Indigofera monophylla*, *Paraneurachne muelleri* and *Ptilotus calostachyus* var. *calostachys*;

H11 – *Eucalyptus leucophloia* scattered low trees over *Gossypium robinsonii*, *Dodonaea pachyneura* (*Acacia maitlandii*) open shrubland over *Triodia epactia* hummock grassland. Other associated species: *Acacia monticola*, *A. pyrifolia*, *Cassia glutinosa*, *Corymbia ferritcola* subsp. *ferritcola*, *Cymbopogon ambiguus*, *Eriachne mucronata*, *Indigofera monophylla*, *Jasminum didymium* subsp. *lineare*, *Themeda* sp. Mt. Barricade and *T. triandra*;

H14 – *Eucalyptus leucophloia* scattered low trees over *Triodia wiseana* hummock grassland. Apart from the dominant flora, other species occurred at very low densities. Other associated species: *Acacia pruinocarpa*, *Hakea chordophylla* and *Solanum lasiophyllum*; and

H15 – *Eucalyptus leucophloia* scattered low trees over *Triodia epactia* hummock grassland. As for vegetation type H14, species other than the dominant flora occurred as only scattered individuals. Other associated species: *Acacia pruinocarpa*, *Goodenia stobbsiana*, *Indigofera monophylla* and *Ptilotus calostachyus* var. *calostachyus*.

Vegetation of Plains:

P3 – *Eucalyptus leucophloia* scattered low trees over *Acacia aneura* (various forms), *A. ayersiana* tall open shrubland over *Triodia epactia*, *T. wiseana* hummock grassland. Three forms of Mulga (*Acacia aneura*) were present as dominants in the overstorey strata: *Acacia* aff. *aneura* (narrow fine veined), *A. aff. aneura* (scythe-

shaped), and *A. aneura* var. *longicarpa*. The hummock grassland was dominated by carrying amounts of *Triodia epactia* and/or *T. wiseana*. Other associated species: *Acacia bivenosa*, *A. stowardii*, *A. synchronicia*, *Ptilotus exaltatus* var. *exaltatus* and *P. Polustachyus* var. *polystachyus*;

P6 – *Corymbia deserticola* scattered low trees over *Acacia atkinsiana*, *A. exilis* tall open shrubland over *Triodia wiseana* closed hummock grassland. The shrub overstorey was dominated by varying amounts of *Acacia atkinsiana* and *A. exilis*, sometimes with other species such as *A. inaequilatera*. Other associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *A. stowardii*, *Cassia pruinosa*, *Goodenia stobbsiana*, *Haloragis gossei*, *Ptilotus rotundifolius* and *Stackhousia intermedia*;

P7 – *Corymbia deserticola* low open woodland over *Acacia atkinsiana* shrubland to tall shrubland over *Triodia epactia*, *T. wiseana* hummock grassland. The vegetation was similar to the vegetation type P6 but had a more dense shrub overstorey and included *Triodia epactia* in the hummock grassland understorey. Other associated species: *Acacia ancistrocarpa*, *A. aneura* var. *longicarpa*, *A. exilis*, *A. tenuissima*, *Amphipogon sericeus*, *Codonocarpus cotinifolius*, *Eucalyptus gamophylla*, *Hakea lorea* subsp. *lorea*, *Paraneurachne muelleri* and *Ptilotus helipteroides* var. *helipteroides*;

P9 – *Eucalyptus socialis* low open woodland over *Triodia wiseana* open hummock grassland. Other associated species: *Goodenia microptera*, *Haloragis gossei*, *Paraneurachne muelleri*, *Ptilotus exaltatus* var. *exaltatus*, *P. clementii*, *Salsola tragus* and *Templetonia egena*; and

P14 – *Acacia inaequilatera*, *A. exilis*, *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland.

Vegetation of Drainage Areas:

C1 – *Eucalyptus victrix* scattered low trees to open woodland over *Goodenia lamprosperma*, *Pluchea dentex* very open herbland. Other associated species: *Ammannia multiflora*, *Bergia trimeria*, *Digitaria brownie*, *Gomphrena cunninghamii* and *Stemodia grossa*;

C2 – *Acacia pyrifolia*, *A. ancistrocarpa*, *Petalostylis labicheoides* shrubland over *Bonamia rosea*, *Tephrosia rosea* var. *glabrior* low open shrubland over *Triodia epactia* hummock grassland and *Themeda triandra* very open tussock grassland. Other associated species: *Acacia citrinovirdis*, *Corchorus lasiocarpus*, *Cullen lachnostachys*, *Eragrostis eriopoda*, *Eriachne mucronata*, *Indigofera monophylla*, *Jasminum didymium* subsp. *lineare*, *Ptilotus helopteroideis* var. *helipteroideis*, *P. obovatus* var. *obovatus*, *Scaevola spinescens* (broad form) and *Trichodesma zeylanicum* var. *zeylanicum*;

C5 – *Eucalyptus xerothermica*, *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa*, *A. cowleana*, *A. elachantha*, *A. exilis* tall shrubland over *Triodia epactia* open hummock grassland and *Eulalia aurea* open tussock grassland. Other associated species: *Acacia ancistrocarpa*, *A. pyrifolia*, *Alternanthera nana*, *Bonamia rosea*, *Cassia oligophylla*, *Chrysopogon fallax*, *Digitaria brownie*, *Eremophila longifolia*, *Paraneurachne muelleri*, *Ptilotus obovatus* var. *obovatus*, *Solanum sturtianum*, *Themeda triandra* and *Triodia wiseana*;

C6 – *Eucalyptus xerothermica* scattered low trees over *Gastrolobium grandiflorum* open heath over *Chrysopogon fallax*, *Eulalia aurea* tussock grassland. Other associated species: *Acacia pyrifolia*, *Alternanthera nana*, *Jasminum didymium* subsp. *lineare*, *Ptilotus obovatus* var. *obovatus* and *Themeda triandra*;

C8 – *Corymbia hamersleyana* low open woodland over *Triodia epactia* hummock grassland and *Eriachne tenuiculmis*, *E. mucronata*, *Themeda triandra* open tussock grassland. Other associated species: *Digitaria brownie*, *Gossypium robinsonii*, *Grevillea wickhamii* subsp. *aprica* and *Rulingia luteiflora*;

C9 – *Corymbia hamersleyana*, *Eucalyptus leucophloia* low woodland over *Grevillea wickhamii* tall shrubland over *Gossypium robinsonii* open shrubland over *Themeda triandra*, *Eulalia aurea* and *Paraneurachne muelleri* open tussock grassland and *Triodia epactia* open hummock grassland. Other associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *A. exilis*, *A. monticola*, *A. pyrifolia*, *Eriachne tenuiculmis*, *Gastrolobium grandiflorum* and *Jasminum didymium* subsp. *lineare*;

C10 – *Eucalyptus leucophloia*, *Corymbia deserticola* scattered low trees over *Acacia tumida* var. *pilbarensis* tall open scrub over *Triodia epactia*, *T. wiseana* open hummock grassland. Some areas also had *Acacia monticola* as a dominant. Other associated species: *Acacia atkinsiana*, *A. bivenosa*, *Corymbia hamersleyana*, *Digitaria brownie*, *Eulalia aurea* and *Themeda triandra*;

C13 – *Corymbia hamersleyana*, *Eucalyptus gamophylla* low open woodland over *Acacia monticola*, *A. ancistrocarpa*, *A. bivenosa*, *Rulingia luteiflora* tall closed scrub over *Triodia epactia* hummock grassland. Other associated species: *Acacia atkinsiana*, *A. exilis*, *Aristida contorta*, *Dysphania rhadinostachya* subsp. *rhadinostachya*, *Goodenia microptera* and *Pterocaulon sphaeranthoides*;

C17 – *Acacia aneura* low woodland to low open forest over *Chrysopogon fallax*, *Triodia epactia* open tussock/hummock grassland. Other associated species: *Alternanthera nana*, *Digitaria brownie*, *Goodenia heterochila*, *Ptilotus macrocephalus*; and

C19 – *Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana* tall shrubland over *Triodia epactia* hummock grassland. Other associated species: *Acacia kempeana*.

Clearing Description

Hamersley Iron Pty Ltd is proposing to clear up to 63 hectares of native vegetation within a 461 hectare application area for the Brockman Fuel Hub Facility Project. The clearing of vegetation is required for railway siding, infrastructure, associated works, and power system upgrade.

The vegetation will be cleared using a dozer, blade down, and excavator. The vegetation and topsoil will be stockpiled separately for use in rehabilitation.

Vegetation Condition

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, Page 2)

1994);

To:

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

Comment

The application area is located in the Hamersley subregion of Western Australia and is situated approximately 60 kilometres north-west of the Tom Price town site (GIS Database).

The vegetation condition was derived from a vegetation survey conducted by Biota Environmental Services (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 application area occurs within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by mountainous areas of Proterozoic ranges and plateaux with Mulga (*Acacia aneura*) low woodland over bunch grasses on fine textured soils, and Snappy Gum low trees over *Triodia brizoides* hummock grasslands on the skeletal sandy soils of the ranges (CALM, 2002). The vegetation within the application area consists of Beard vegetation association 175, which is common and widespread throughout the Pilbara bioregion with approximately 99% of the pre-European vegetation extent remaining (Shepherd, 2009; GIS Database).

A vegetation survey of the application area by Biota Environmental Sciences (2007) during late May and early June 2006 and January 2007 identified 337 species of flora taxa belonging to 129 Genera and 49 Families. This is typical of the floristics of the Pilbara during this time. Biota Environmental Sciences (2007) identified 20 vegetation communities within the application area. The condition of the vegetation types were classified between 'good' and 'very good' (Keighery, 1994; GIS Database).

A search of the Department of Environment and Conservation Declared Rare and Priority Flora databases revealed three Priority Flora species which may potentially occur within a 20 kilometre radius of the application area (DEC, 2011). No Declared Rare Flora (DRF) species were identified (DEC, 2011) and Biota Environmental Sciences (2007) identified no DRF within the application area. The Priority Flora species *Abutilon trudgenii* (P3), *Eremophila magnifica* subsp. *velutina* (P3), *Goodenia nuda* (P3) and *Sida* sp. Wittenoom (P3) were surveyed within the application area. There were numerous populations and individuals found of all Priority species except *Goodenia nuda*, where there were only nine records, each sighting one individual. The clearing of 63 hectares of native vegetation is not likely to significantly influence the conservation status of these flora species as their habitat type is well represented in a local and regional context within the Hamersley subregion (Shepherd, 2009; GIS Database).

No Threatened Ecological Communities or Priority Ecological Communities were recorded or identified within the application area (GIS Database).

Seven species of weed were identified during the survey: Ruby Dock (*Acetosa vesicaria*), Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*), Whorled Pigeon Grass (*Setaria verticillata*), Beggars Ticks (*Bidens bipinnata*), Spiked Malvastrum (*Malvastrum americanum*) and Indian Weed (*Sigesbeckia orientalis*) (Biota Environmental Sciences, 2007). None of these species are listed by the Western Australian Department of Agriculture and Food as Declared Plants. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There were four faunal habitats identified within the application area, two of which were considered to be of 'high significance' due to their potential to support conservation significant fauna (Biota Environmental Sciences, 2005; 2010). All of the habitats within the application area are considered to be common and widespread within the subregion and faunal assemblages are unlikely to be different to that found in similar habitat located elsewhere in the region (Biota Environmental Sciences, 2005; 2010). The clearing of 63 hectares of native vegetation within a 461 hectare application area is unlikely to have a significant impact on a regional and local context.

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

Methodology

Biota Environmental Sciences (2005)
Biota Environmental Sciences (2007)
Biota Environmental Sciences (2010)
CALM (2002)
DEC (2011)
Keighery (1994)
Shepherd (2009)
GIS Database:
- IBRA WA (regions - subregions)
- Pre-European Vegetation

(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

There were four broad fauna habitat types recorded within the survey area by Biota Environmental Sciences (2005; 2010);

1. Creepline – comprising minor drainage lines to wide flood channels with *Acacia* shrubland over *Triodia epactia* hummock grasslands;
2. Mulga – Dense *Acacia aneura* tall shrublands over *Triodia epactia* and *T. Wiseana* hummock grasslands in drainage areas within plains;
3. *Acacia* over *Triodia* – situated on stony soils and on soft soil in a wide valley; and
4. *Triodia* hilltop - crests of the Brockman 4 range.

Biota Environmental Sciences (2005; 2010) identified the vegetation condition to be 'good' to 'very good' (Keighery, 1994). The landforms and habitat found within the application area is considered as being well represented in the Pilbara bioregion (Biota Environmental Sciences, 2005; 2010). The application area contains two habitats or faunal assemblages that are ecologically significant: the creeklines and hilltops, however, it is unlikely that any species of conservation significance will be significantly impacted by the clearing of native vegetation in the application areas. The 63 hectares of native vegetation proposed for clearing is not likely to contain significant habitat for fauna

There is approximately 99% of the pre-European vegetation remaining within the Pilbara bioregion (Shepherd, 2009; GIS Database). The vegetation communities and associated fauna habitats are considered common and widespread in the local area, and throughout the Pilbara IBRA bioregion. Analysis of aerial imagery demonstrates that the local area remains largely uncleared, however clearing of native vegetation is evident on a regional scale.

There was one conservation significant fauna species listed as either a Threatened Species under the *Environment Protection and Biodiversity Conservation Act 1999* or protected under Western Australian legislation (*Wildlife Conservation Act, 1950*), that may potentially occur within a 20 kilometre radius of the application area (DEC, 2011).

Biota Environmental Sciences (2005) conducted a level one fauna survey of the application area between 18 and 30 October 2004 and recorded two species of conservation significance within the application area. These species; the Australian Bustard (*Ardeotis australis*) and Lined Soil-crevice Skink (*Notoscincus butleri*) are highly mobile and have a wide distribution. The proposed clearing is unlikely to have a significant impact on these species as the habitat present within the application area is not considered critical habitat for these species and is well represented within the local area (Biota Environmental Sciences, 2005).

Biota Environmental Sciences (2010) conducted a targeted survey for Northern Quoll (*Dasyurus hallucatus*), Ghost Bat (*Macroderma gigas*) and Pilbara Orange Leaf-nosed Bat (*Rhinonictis aurantius*) of the application area between 27 April 2010 and 6 May 2010. No targeted species were recorded during the survey (Biota Environmental Sciences, 2010).

The proposed clearing of 63 hectares of native vegetation within a 461 hectare application area is not likely to impact critical feeding or breeding habitat for any conservation significant fauna species as the application area does not contain significant habitat for the potential species. The recorded conservation significant species are considered highly mobile and/or have a wide distribution; therefore the proposed clearing is unlikely to significantly impact these species (Biota Environmental Sciences, 2005; 2010).

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

Methodology Biota Environmental Sciences (2005)
Biota Environmental Sciences (2010)
DEC (2011)
Keighery (1994)
Shepherd (2009)
GIS Database:
- IBRA WA (regions - subregions)
- Pre-European Vegetation
- Jeerinah 50cm Orthomosaic - Landgate 2004

(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, there are no records of Declared Rare Flora (DRF) within the application area (GIS Database). A search of the Department of Environment and Conservation Declared Rare and Priority Flora databases identified no DRF species as occurring within a 20 kilometre radius of the application area (DEC, 2011).

Biota Environmental Sciences (2007) conducted a vegetation and flora survey of the application area during late May and June 2006, and again during January 2007. No DRF were recorded within the survey area.

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

Methodology Biota Environmental Sciences (2007)
DEC (2011)
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

A search of the available databases shows that there are no Threatened Ecological Communities (TEC) situated within the application area (GIS Database). The nearest TEC is located approximately 30 kilometres east of the application area.

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

Methodology GIS Database:
- Threatened Ecological Sites Buffered

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is not at variance to this Principle

The application area falls within the Pilbara IBRA bioregion (GIS Database). The vegetation within the application area is recorded as Beard vegetation association 175: Short bunch grassland – savanna/grass plain (Pilbara) (GIS Database; Shepherd, 2009).

According to Shepherd (2009), Beard vegetation association 175 retains approximately 99% of its pre-European extent. Therefore, the area proposed to be cleared is not a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,193.01	17,785,000.82	~99.98	Least Concern	6.32
Beard vegetation associations - State					
175	526,206.13	524,861.08	~99.74	Least Concern	4.22
Beard vegetation associations - Bioregion					
175	507,035.80	507,006.36	~99.99	Least Concern	4.38

* Shepherd (2009)

** Department of Natural Resources and Environment (2002)

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

According to available databases there are several minor ephemeral drainage lines which intersect the application area. These drainage lines only flow after major rainfall events (Biota Environmental Sciences, 2007). Based on vegetation mapping by Biota Environmental Sciences (2007), the vegetation types C1, C2, C5, C6, C8, C9, C10, C13, C17 and C19 are riparian vegetation types associated with drainage lines.

The condition of the riparian vegetation type is classified as 'very good' (Keighery, 1994; GIS Database). The riparian vegetation is well represented in the local area and there is no phreatophyte species associated with the riparian vegetation (Biota Environmental Sciences, 2005). The clearing of riparian vegetation is unlikely to result in any significant impact to the vegetation types growing in association with watercourses (Biota Environmental Sciences, 2007; GIS Database).

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

Methodology Biota Environmental Sciences (2005)
Biota Environmental Sciences (2007)
Keighery (1994)
GIS Database:
- Geodata, Lakes
- 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

According to available databases, the application area is comprised of the Boolgeeda land system (GIS Database). 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). The vegetation is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al., 2004).

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

Methodology Van Vreeswyk et al. (2004)
GIS Database
- Rangeland Land System Mapping

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

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

The application area is not located within any conservation area (GIS Database). The nearest conservation area is Karijini National Park, located approximately 70 kilometres east of the application area (GIS Database).

Given the distance of the application area from Karijini National Park, the proposed clearing is not likely to provide a significant ecological linkage or fauna movement corridor and is not likely to impact the environmental values of the 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

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The application area experiences a semi-desert tropical climate where the annual evaporation rate (3,200 - 3,600 millimetres) substantially exceeds the annual rainfall (311.6 millimetres) (BoM, 2011; CALM, 2002). There are no permanent watercourses within the application areas; however there are drainage tracts within the proposed clearing area (Biota Environmental Sciences, 2007; GIS Database). Due to the high evaporation rate and low rainfall, it is unlikely that the drainage lines would carry water under normal rainfall events. Any surface water resulting from the summer rainfall is expected to be short lived and evaporate, or be quickly utilised by the existing vegetation (Biota Environmental Sciences, 2007).

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

Methodology Biota Environmental Sciences (2007)
BoM (2011)
CALM (2002)
GIS Database:
- Geodata, Lakes
- Hydrographic Catchments - Catchments
- Hydrography, Linear
- Public Drinking Water Source Areas

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments **Proposal is not likely to be at variance to this Principle**
The application areas experience a semi-desert tropical climate with summer cyclonic or thunderstorm events, where the annual evaporation rate exceeds the annual rainfall (CALM, 2002; BoM, 2011).

Given the size of the area to be cleared (63 hectares) compared to the size of the Ashburton catchment area (7,877,743 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently 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 (2011)
CALM (2002)
GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, Linear

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

Comments
There is one Native Title claim (WC97/89) over the area under application. 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 29 August 2011 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received in relation to the proposed clearing, stating no objection to the application.

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

4. References

Biota Environmental Sciences (2005) Fauna Habitats and Fauna Assemblage of the Brockman No. 4 Project Area. Prepared for Pilbara Iron Pty Ltd, January 2005.
Biota Environmental Sciences (2007) A Flora Survey of the Brockman Syncline 4 Rail and Infrastructure Corridor. Prepared for Pilbara Iron Pty Ltd, February 2007.
Biota Environmental Sciences (2010) Brockman 2 Sustaining Tonnes Targeted Fauna Survey. Prepared for Pilbara Iron Pty Ltd, June 2010.
BoM (2011) Climate Statistics for Australian Locations. A Search for Climate Statistics for Paraburdoo Aero, Australian Government Bureau of Meteorology, viewed 18 October 2011, <http://reg.bom.gov.au/climate/averages/tables/cw_007185.shtml>.
CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3 - Hamersley subregion) Department of Conservation and Land Management, Western Australia.
DEC (2011) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation, viewed 30 September 2011, <<http://naturemap.dec.wa.gov.au>>.

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.

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., Leighton, K.A & Hennig, P. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

Definitions:

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

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

Schedule 1 **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become

extinct, are declared to be fauna that is need of special protection.

- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU** **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.