



1. Application details

1.1. Permit application details

Permit application No.: 3076/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Cliffs Asia Pacific Iron Ore Pty Ltd

1.3. Property details

Property: Mining Lease 77/607
Local Government Area: Shire Of Yilgarn
Colloquial name: Koolyanobbing B/C Pit Waste Rock Landform

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
70		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

Vegetation within the application area has been mapped at a 1:250,000 scale as Beard Vegetation Associations (GIS Database, Shepherd et al., 2001):

144: Medium woodland; wandoo, salmongum, morel, gimlet & rough fruited mallee; and

520: Shrublands; *Acacia quadrimarginea* thicket.

Western Botanical undertook a flora survey over the application area during 2007 and 2008. The botanical survey identified the following vegetation communities within the application area (Cliffs Natural Resources, 2009a):

1) *Acacia* sp. Mt Jackson Shrubland with *Grevillea zygoloba*;

2) *Acacia* sp. Mt Jackson with *Eucalyptus loxophleba* and / or *Eucalyptus longissima* emergent mallees;

3) *Banksia arborea*, *Acacia* sp. Mt Jackson Shrubland;

4) *Acacia* sp. Mt Jackson Shrubland / *Eucalyptus corrugata* Woodland;

5) *Eucalyptus corrugata* mallee Woodlands with *Atriplex* and *Eremophila* understorey with loamy soils;

6) *Eucalyptus longicornis* Woodlands with Sclerophyll and Chenopod understorey;

7) *Eucalyptus salmonophloia*, *Eucalyptus salubris*, *Eucalyptus longicornis* tall Woodlands with predominately Chenopod (*Atriplex*) understorey;

8) *Eucalyptus dendrosheath* Woodland with Sclerophyll understorey on red loam;

9) Jam (*Acacia* sp. Narrow phyllode Thickets in winter wet depressions;

10) Disturbed areas.

Clearing Description

Cliffs Asia Pacific Iron Ore has applied to clear up to 70 hectares within an application area of approximately 125.2 hectares for the purpose of mineral production.

The proposal is for the construction of a waste dump for the proposed B and C pits (Cliffs Natural Resources, 2009a). Clearing will be by mechanical means.

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

to

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).

Comment

The vegetation condition rating is based on information reported by Western Botanical (2009).

The application area has a number of weeds present and there are areas disturbed by existing mining (Cliffs Natural Resources, 2009a).

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 may be at variance to this Principle

The application area is located within the Southern Cross subregion of the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). At a broad scale, vegetation can be described as Eucalyptus woodlands rich in endemic eucalypts around chains of saline playa-lakes, *Borya constricta* with stands of *Acacia acuminata* and *Eucalyptus loxophleba* on mid-levels of granite basement outcrops with mallees and scrubheaths on the uplands (CALM, 2002).

The Koolyanobbing Range has been classified as having the highest classification for biodiversity as well as prospectivity for mining, however most conservation potential has been lost through mining operations (Government of Western Australia, 2007). The application area has been disturbed by previous activities, which has led to a reduction in biodiversity. The southern regions of the Koolyanobbing Range which have not been impacted by mining operations are far more likely to support a biologically diverse assemblage of flora and fauna species than the application area.

Western Botanical has conducted a number of flora and vegetation surveys over the central and southern Koolyanobbing Range during 2007 and 2008. The surveys identified 9 vegetation communities within the application area (Cliffs Natural Resources, 2009a). The species richness of the communities ranges from 10 – 30 species per community (Western Botanical 2009). The average species richness across the vegetation communities is 22.5, which is not regarded as high (Western Botanical, 2009). However, this is possibly due to some vegetation communities being disturbed by existing activities, as there were a number of communities with high species richness. These communities are distributed along the wider Koolyanobbing Range, and species richness is likely to be consistent along the range (Cliffs Natural Resources, 2009a). The vegetation within the application area may have less species richness and diversity than the southern end of the Koolyanobbing Range, however it is certainly more diverse than the surrounding plains.

Several weed species have been recorded in the Koolyanobbing area (Cliffs Natural Resources, 2009a). The weed species of greatest concern was Wards Weed (*Carrichtera annua*) which was the most common weed within the application area (Western Botanical, 2009). Wards Weed is a serious weed in Victoria and is becoming of higher concern to the semi-arid rangelands of Australia (rangelands with average rainfall between 250 – 350 millimetres) (Department of Primary Industries, 2009). The presence of these introduced species lowers the biodiversity value of the application area, and their control is necessary for the maintenance of biological function on the Koolyanobbing Range. Should a permit be granted, it is recommended a condition be imposed for weed management.

The Koolyanobbing Range has the potential to support a faunal diversity of 217 species (Cliffs Natural Resources, 2009a). A targeted survey of the northern Koolyanobbing Range recorded a total of 51 fauna species (Cliffs Natural Resources, 2009a). There are 22 species of conservation significance that have the potential to occur within the application area (Cliffs Natural Resources, 2009a). The species of most concern is the Tree-stem Trapdoor Spider (*Aganippe castellum*) (Schedule 1 - fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*). Cliffs Asia Pacific Iron Ore (2009) estimate removing 60 hectares of potential Tree-stem Trapdoor Spider habitat and approximately 10% of the estimated population of the Koolyanobbing Range. Cliffs Asia Pacific Iron Ore will require a permit to take Tree-stem Trapdoor Spider burrows and individuals from the Species and Communities Branch of the Department of Environment and Conservation (DEC).

Although the application area is within an area noted for having a high biodiversity, its biodiversity value has been lowered by existing mining activities and the presence of weeds.

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

Methodology

CALM (2002)
Cliffs Asia Pacific Iron Ore (2009)
Cliffs Natural Resources (2009a)
Department of Primary Industries (2009)
Government of Western Australia (2007)
Western Botanical (2009)
GIS Database
- 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 at variance to this Principle

Several fauna surveys have been conducted over the application area including two targeted surveys for the Tree-stem Trapdoor Spider (*Aganippe castellum*) along the Koolyanobbing Range (Cliffs Natural Resources, 2009a).

A desktop search by the applicant revealed that 217 vertebrate fauna species could potentially occur within the

application area (Cliffs Natural Resources, 2009a). A targeted field survey of the A and B Pits recorded a total of 51 vertebrate fauna species (Cliffs Natural Resources, 2009a).

There are 22 vertebrate fauna species of conservation significance that have the potential to occur within the application area (Cliffs Natural Resources, 2009a). Five of these have been recorded within the application area (Cliffs Natural Resources, 2009a). The habitat within the application area is well represented along the Koolyanobbing Range and is in better condition at the southern end of the range where there has been no historic mining (Cliffs Natural Resources, 2009a).

There is a recorded Malleefowl (*Leipoa ocellata*) (Schedule 1 - fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008* and Vulnerable under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*) mound within the application area (Bamford Consulting Ecologists, 2008). This mound is estimated to have not been used for over 20 – 30 years (Sustainability, 2009). There has been one record of Malleefowl on the Koolyanobbing Range in recent years (Sustainability, 2009). This species may still be present on the Koolyanobbing Range, however, the recorded mound has not been active in over a decade so the proposed clearing area is not likely to represent significant habitat for this species. Cliffs Asia Pacific Iron Ore plans to relocate this mound to another area on the range in order to gain information on the feasibility of Malleefowl mound translocation at other projects (Sustainability, 2009).

There are invertebrate species of significance present within the application area (Cliffs Natural Resources, 2009a). Several short range endemic (SRE) species were recorded within the application area: two undescribed millipede species; *Atelomastix sp. 'Koolyanobbing'* and *Antichiropus sp. 'Koolyanobbing'*, a land snail; *Bothreimbryon sp.*, and an identified isopod (Cliffs Natural Resources, 2009a). These SRE species are not formally protected under legislation, however, endemic species are equally important to a specific region as those species that are more broadly listed as specially protected fauna (CALM, 2002). SRE's are given special consideration as they are especially vulnerable to the effects of human activity due to their limited dispersal abilities and specific habitat requirements (EPA, 2009). There have not been any regional searches for these species along the Koolyanobbing Range. Given the cryptic nature of SRE species it cannot be assumed that they are present within similar habitat down the range. Given their unknown abundance and distribution, the proposed clearing has potential to cause significant impact to these species.

Two surveys investigating the abundance and distribution of the Tree-stem Trapdoor Spider (Schedule 1 - fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) have been conducted at the Koolyanobbing Range (Bamford Consulting Ecologists, 2008; 2009). The Tree-stem Trapdoor Spider is known from the eastern wheatbelt, and has a distinct above ground burrow structure with a webbed tube extending up against the base of a tree or shrub (Russell, 2006). Targeted searches recorded the spider throughout the application area, with 101 known burrows expected to be disturbed (Cliffs Asia Pacific Iron Ore, 2009). These searches revealed that the spiders were found from the lower slopes to the top of the ridge in a variety of vegetation types (Bamford Consulting Ecologists, 2009). The soils it was found to inhabit were gravelly loam and sometimes soils that were quite rocky (Bamford Consulting Ecologists, 2009). The spiders were absent from surrounding loam plains where the soil was a heavy loam or clay supporting eucalypt woodland over saltbush (Bamford Consulting Ecologists, 2009). Based on the vegetation and soil types present there is an estimated 602.8 hectares of Tree-stem Trapdoor Spider habitat along Koolyanobbing Range (Bamford Consulting Ecologists, 2009).

Following their survey of the range, Bamford Consulting Ecologists (2009) estimated the average density of the population to be 73.8 spiders/hectare, giving an estimated total population at Koolyanobbing Range of approximately 44,000 individuals. Approximately 4,400 individuals and 60 hectares of habitat are estimated to be disturbed by the proposed clearing (Cliffs Asia Pacific Iron Ore, 2009). This represents approximately 10% of both the estimated Tree-stem Trapdoor Spider population and habitat on the Koolyanobbing Range. It must be taken into account that most of the figures provided are based on estimations and may not represent the actual population density and distribution along the Koolyanobbing Range. If the estimations are indeed accurate it is still difficult to assess the impacts the proposed clearing will have on the Tree-stem Trapdoor Spider as there is limited knowledge about this species. Based on information provided by Cliffs Asia Pacific Iron Ore it would appear that the proposed clearing is not likely to have a significant impact on the Koolyanobbing Range Tree-stem trapdoor Spider population, but will still result in the direct loss of habitat and individuals (Cliffs Natural Resources, 2009a).

Cliffs Asia Pacific has commissioned studies into the wider distribution of the Tree-stem Trapdoor Spider. Along with the Koolyanobbing Range, the spider has also been recorded at Mount Jackson, Helena and Aurora Range and at the Die Hardy Range (Cliffs Natural Resources, 2009b). Preliminary results confirm through genetic sequencing that individuals collected from Mount Jackson and Merredin are the same species, and suggest that populations are not genetically isolated across its range (Cliffs Natural Resources, 2009b). A future report will provide further detail on the wider distribution of the Tree-stem Trapdoor Spider.

Given that the habitat present within the application area is well represented along the Koolyanobbing Range, the application area is not likely to represent significant habitat for vertebrate fauna species. However, there are several invertebrate fauna species that could potentially be impacted by the proposed clearing through the loss of significant habitat.

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

Methodology Bamford Consulting Ecologists (2008)
Bamford Consulting Ecologists (2009)
CALM (2002)
Cliffs Asia Pacific Iron Ore (2009)
Cliffs Natural Resources (2009a)
Cliffs Natural Resources (2009b)
EPA (2009)
Russell (2006)
Sustainability (2009)

(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 flora survey carried out by Western Botanical during 2007 and 2008 recorded one species of Priority Flora within the application area (Cliffs Natural Resources, 2009a). The species recorded is *Stenanthemum newbeyi* (Priority 3). A total of 77 individuals of *Stenanthemum newbeyi* have been recorded within the application area (Cliffs Natural Resources, 2009a).

This species is not restricted to the application area with 5,825 individuals of *Stenanthemum newbeyi* having been counted along the Koolyanobbing Range (Western Botanical, 2009). The population of *Stenanthemum newbeyi* is estimated at over 30,000 (Western Botanical, 2009). Cliffs Asia Pacific Iron Ore has stated that they do not plan to remove any of these plants within the application area, however, the potential removal of 77 individuals of this species is not likely to have a significant impact on its population or conservation status.

The vegetation communities in which this species was recorded are distributed along the wider Koolyanobbing Range (Cliffs Natural Resources, 2009a), therefore, the proposed clearing area does not comprise vegetation necessary for the continued existence of *Stenanthemum newbeyi*.

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

Methodology Cliffs Natural Resources (2009a)
Western Botanical (2009)
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 may be at variance to this Principle**

According to available databases, there are no Threatened Ecological Communities (TEC's) within the application area (GIS Database). The botanical survey did not identify any vegetation communities listed as TEC's within the application area (Cliffs Natural Resources, 2009a). The nearest known TEC is located approximately 48 kilometres north-east of the application area (GIS Database).

There is one Priority Ecological Community (PEC) known as 'Koolyanobbing Vegetation Complex (Banded Ironstone Formation)' identified within the application area (Cliffs Natural Resources, 2009a). This PEC is listed as being Priority One. Priority One PEC's are defined as ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (DEC, 2007). These communities are typically under threat from known threatening processes across their range but have not been adequately surveyed for classification as TEC's (DEC, 2007). PEC's are not formally protected under the *Environmental Protection and Biodiversity Act 1999* or the *Wildlife Conservation Act 1950*. Approximately 27.5 hectares of this PEC will be cleared for the proposal (Cliffs Natural Resources, 2009a). This represents 2.03% of this PEC on the Koolyanobbing Range (Cliffs Natural Resources, 2009a). However, this does not take into account the cumulative impact of previous clearing of this PEC.

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

Methodology Cliffs Natural Resources (2009a)
DEC (2007)
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 Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) region within which approximately 98.4% of the Pre-European vegetation remains (see table) (GIS Database; Shepherd et al., 2001).

The vegetation of the application area has been mapped as (Shepherd et al., 2001);

- Beard Vegetation Association 144: Medium woodland; wandoo, salmon gum, morel, gimlet & rough fruited mallee; and
- Beard Vegetation Association 520: Shrublands; *Acacia quadrimarginea* thicket.

According to Shepherd et al., (2001) approximately 100% of Beard Vegetation Associations 144 and 520 remains at both the state and bioregional level. Therefore the area proposed does not represent a remnant of native vegetation within an area that has been extensively cleared.

While a small percentage of the vegetation types within the Coolgardie bioregion are adequately protected within conservation reserves, the bioregion remains largely uncleared. As a result, the conservation of vegetation associations within the bioregion is not likely to be impacted by this proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves (and post clearing %)*
IBRA Bioregion – Coolgardie	12,912,208	12,707,623	~98.4	Least Concern	9.7 (9.9)
Beard veg assoc. – State					
144	3988	3988	~100	Least Concern	0 (0)
520	37,922	37,907	~100	Least Concern	12 (12)
Beard veg assoc. – Bioregion					
144	3988	3988	~100	Least Concern	0 (0)
520	37,129	37,112	~100	Least Concern	12.2 (12.2)

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002)

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)

Presumed extinct	Probably no longer present in the bioregion
Endangered+	<10% of pre-European extent remains
Vulnerable+	10-30% of pre-European extent exists
Depleted+	>30% and up to 50% of pre-European extent exists
Least concern+	>50% pre-European extent exists and subject to little or no degradation over a majority of this area

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

Methodology Department of Natural Resources and Environment (2002)
 Shepherd et al. (2001)
 GIS Database
 - Interim Biogeographic Regionalisation of Australia
 - 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 not at variance to this Principle**
 According to available databases, there are no permanent or ephemeral watercourses or wetlands within the application area (GIS Database). The vegetation proposed to be cleared is not associated with any watercourses, wetlands or wetland dependant vegetation (Cliffs Natural Resources, 2009a). The nearest significant waterbody is Lake Deborah, a non-perennial salt lake located approximately 5 kilometres north-west of the application area (GIS Database). The proposed clearing is unlikely to impact on Lake Deborah.

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

Methodology Cliffs Natural Resources (2009a)
 GIS Database
 - Hydrology, 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 application area is located within the Southern Cross Soil-Landscape Zone (Tille, 2006). This zone is characterised by undulating plains and uplands (with some salt lake and low hills) on deeply weathered mantle, colluvium and alluvium over greenstone and granitic rocks of the Yilgarn Craton (Tille, 2006).

The Koolyanobbing Range is similar to most Banded Ironstone Formations (BIF's) of the Yilgarn Craton which are characterised by a stony surface mantle which provides effective protection against soil erosion (Government of Western Australia, 2007). The disturbance or removal of this stony mantle may initiate soil erosion. However, given the poor soil coverage on BIF's there is likely to be a minimal amount of erodible material within the application area (Government of Western Australia, 2007).

The pH of the application area is 5.5 – 6.0 and there is an extremely low probability of acid sulphate soil occurrence (CSIRO, 2009). The application area has an annual average evaporation rate of approximately 9 times the annual average rainfall (GIS Database). Based on this information, recharge to groundwater would be minimal, thereby reducing the likelihood of salinity increasing as a result of the proposed clearing.

Being located on a range, the topography within the application area facilitates surface water runoff as opposed to ponding, hereby mitigating the potential for water logging. The vegetation within the application area is not growing nearby or in association with any watercourses, which if cleared could potentially result in water erosion.

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

Methodology CSIRO (2009)
Government of Western Australia (2007)
Tille (2006)
GIS Database
- Evaporation Isopleths
- Rainfall, Mean Annual

(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

According to available databases, the application area is not located within a conservation area or DEC managed land (GIS Database). The nearest known conservation area is an un-named nature reserve located approximately 11 kilometres west of the application area (GIS Database). Based on the distance between the application area and the nature reserve, the proposed clearing is not likely to impact on the environmental values of any conservation areas.

There are several areas around the application area that have been proposed to be included in the Mount Manning A-Class Nature Reserve (EPA, 2007). The nearest of these is the southern part of the Koolyanobbing Range located over 3.5 kilometres from the application area (Cliffs Natural Resources, 2009a). The proposed clearing is not likely to have an impact on the environmental values of this proposed conservation area.

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

Methodology Cliffs Natural Resources (2009a)
EPA (2007)
GIS Database
- CALM Managed Lands and Waters

(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 not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

Groundwater within the application area is saline, between 14,000 – 35,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). Given the groundwater is already saline and the application area is situated on elevated land on the Koolyanobbing Range, any clearing is unlikely to alter existing groundwater quality.

There are no permanent or ephemeral waterbodies located within the application area (GIS Database). Lake Deborah is the closest waterbody to the application area, located approximately 5 kilometres north-west (GIS Database). Given that there is a low average annual rainfall in the Koolyanobbing area (300 millimetres) and there are no watercourses within the application area, the proposed clearing is not likely to cause sedimentation or deteriorate the quality of surface water in nearby areas.

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

- Methodology** GIS Database
- Groundwater Salinity
 - Rainfall, Mean Annual
 - Public Drinking Water Source Areas (PDWSA's)
 - Hydrography, linear

(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 receives an average annual rainfall of approximately 300 millimetres (GIS Database). Based on an average annual evaporation rate of 2600 – 2800 millimetres (GIS Database), any surface water resulting from rainfall events is likely to be relatively short lived.

There are no watercourses or wetlands within the application area (GIS Database). Occasional small, poorly defined creeklines exist in runoff areas from the Koolyanobbing Range (Cliffs Natural Resources, 2009a). These terminate in broad outwash zones upon reaching flat ground and only ever flow following heavy rainfall events (Cliffs Natural Resources, 2009a). The majority of the runoff from the application area would occur as sheet flow.

The application area is within the Swan Avon/Yilgarn River catchment area which covers 5,836,045 hectares (GIS Database). Given the size of the area to be cleared (70 hectares) in relation to the size of the catchment area, the proposed clearing is not likely to increase the incidence or intensity of flooding.

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

- Methodology** Cliffs Natural Resources (2009a)
GIS Database
- Evaporation Isopleths
 - Hydrographic Catchments - catchments
 - Hydrography, linear
 - Rainfall, Mean Annual

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

Comments

The clearing permit application was advertised by the Department of Mines and Petroleum, inviting submissions from the public. There were no submissions received.

There is one native title claim over the area under application; WC99/029 (GIS Database). This claim has been registered with the National Native Title Tribunal. However, the mining tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act, 1993*.

According to available databases, there is one Aboriginal Site of Significance (Site ID 16721) 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 throughout 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.

- Methodology** GIS Database
- Aboriginal Sites of Significance
 - Native Title Claims

4. Assessor's comments

Comment

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

Should the permit be granted it is recommended that conditions be imposed on the permit for the purpose of weed management, retention of vegetative material and topsoil, record keeping and permit reporting.

5. References

- Bamford Consulting Ecologists (2008) Investigations into the distribution and abundance of the Tree-stem Trapdoor Spider in the Koolyanobbing Area. Unpublished report for Portman Iron Ore (Now Cliffs Asia Pacific Iron Ore), Western Australia.
- Bamford Consulting Ecologists (2009) Investigations into the distribution and abundance of the Tree-stem Trapdoor Spider in the Koolyanobbing Area, December 2008. Unpublished report for Cliffs Asia Pacific Iron Ore, Western Australia.
- Cliffs Asia Pacific Iron Ore (2009) Additional Information provided for clearing permit application CPS 3076/1.
- Cliffs Natural Resources (2009a) Koolyanobbing B Pit Expansion Project - Purpose Permit Clearing Application (Tenement M77/607). Unpublished Report for Cliffs Asia Pacific Iron Ore, Western Australia.
- Cliffs Natural Resources (2009b) Summary of Works Undertaken in Relation to the Tree-stem Trapdoor Spider *Aganippe castellum*. Unpublished report for Cliffs Asia Pacific Iron Ore, Western Australia.
- Commonwealth Scientific and Industrial Research Organisation (2009) Australian Soil Resource Information System. Available online at: http://www.asris.csiro.au/index_ie.html Accessed on 6 May, 2009.
- Department of Conservation and Land Management (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions.
- Department of Environment and Conservation (2007) Definitions, Categories and Criteria for Threatened and Priority Ecological Communities. Department of Environment and Conservation, Western Australia.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Department of Primary Industries (2009) Wards Weed (*Carrichtera annua*). Available online at http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/weeds_herbs_annual_wards_weed Accessed on 6 May 2009.
- EPA (2007) Advice on Areas of the Highest Conservation Value in the Proposed Extensions to Mount Manning Nature Reserve. Environmental Protection Authority, Perth, Western Australia.
- EPA (2009) Guidance for the Assessment of Environmental Factors - Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia. Guidance No. 20. Environmental Protection Authority, Western Australia.
- Government of Western Australia (2007) Strategic Review of the Conservation and Resource Values of the Banded Iron Formations of the Yilgarn Craton. Published jointly by the Department of Environment and Conservation and the Department of Industry and Resources, Perth, Western Australia.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Russell, M.G. (2006) Abundance and distribution of the Tree-stem Trapdoor Spider, *Aganippe castellum* in the Eastern West Australian wheatbelt. Australasian Arachnology No. 73, January 2006.
- 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.
- Sustainability (2009) Additional information supplied for clearing permit application CPS 3076/1.
- Tille, P. (2006) Soil-landscapes of Western Australia's Rangelands and Arid Interior. Technical Report 313. Department of Agriculture and Food, Western Australia. ISSN 1039-7205.
- Western Botanical (2009) Flora and Vegetation of the proposed C Pit and B/C Overburden Landform, Koolyanobbing. Unpublished Report for Cliffs Asia Pacific Iron Ore, 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.