



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 3150/1  
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: C Pit Expansion

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
23.6		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, 2007):

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 Asia Pacific Iron Ore, 2009):

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

2) *Acacia* sp. Mount Jackson with *Eucalyptus loxophleba* and / or *Eucalyptus longissima*;

3) *Acacia* sp. Mt Jackson with *Lepidosperma ferricola* and *Beyeria rostellata*;

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

5) Banded Ironstone Formation (BIF) cliffs & outcrops with *Xerolirion divaricata* and *Melaleuca leiocarpa*; and

6) Mallee (*Eucalyptus longissima* and / or *Eucalyptus corrugata*) and *Acacia* sp. Narrow phyllode Woodland.

##### Clearing Description

Cliffs Asia Pacific Iron Ore has applied to clear up to 23.6 hectares within an application area of approximately 30.6 hectares for the purpose of mineral production (GIS Database).

The proposal is for the expansion of their C Pit (Cliffs Natural Resources, 2009a). Clearing will be by mechanical means.

##### Vegetation Condition

Pristine: No obvious signs of disturbance (Keighery, 1994).

to

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

##### Comment

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

The application area has a number of weeds present and there are areas disturbed by previous mining activities (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 6 vegetation communities within the application area (Cliffs Asia Pacific Iron Ore, 2009). The species richness of the communities ranges from 10 – 39 species per community (Western Botanical, 2009a). A number of the communities are considered to have a relatively high diversity (>20 species) and the average species diversity across the vegetation communities is 23.8 (Western Botanical, 2009a). These communities are distributed along the wider Koolyanobbing Range, and the species richness is likely to be consistent along the range (Western Botanical, 2009a). However, the area has been subject to previous disturbance and may have less diversity than other undisturbed areas at the southern end of the Koolyanobbing Range. Whilst the vegetation within the application area may have less diversity than the southern end of the Koolyanobbing Range, it is certainly more diverse than the surrounding plains.

Several weed species have been recorded in the Koolyanobbing area (Western Botanical, 2008). The species of greatest concern is Wards Weed (*Carrichtera annua*) which was the most common weed of the Koolyanobbing area (Western Botanical, 2008). 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 Koolyanobbing Range recorded a total of 51 fauna species (Cliffs Natural Resources, 2009a). There are 24 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 11 hectares of potential Tree-stem Trapdoor Spider habitat and approximately 812 active burrows. Cliffs Asia Pacific Iron Ore have acquired 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 on the range.

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 (2008)  
Western Botanical (2009a)  
GIS Database  
- Interim Biogeographic Regionalisation of Australia (subregions)

**(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, B and C 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 were recorded during the survey (Cliffs Natural Resources, 2009a). The species recorded are mobile and should be able to move away from the disturbance. These species are not restricted to the application area and 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 are invertebrate species of conservation 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 unidentified 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. This is particularly the case for the two millipede species as nearly all the species in those genera display short range endemism with small geographically restricted populations (DEC, 2009). 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 central and southern Koolyanobbing Range (Bamford Consulting Ecologists, 2008; 2009). The Tree-stem Trapdoor Spider is known from the 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 within the application area, with 7 known active 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 the central and southern 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 across the central and southern Koolyanobbing Range of approximately 44,000 individuals. Approximately 1,107 active burrows and 15 hectares of inferred habitat are present within the application area (Cliffs Asia Pacific Iron Ore, 2009). Of this, 812 individuals and 11 hectares of inferred habitat are estimated to be disturbed by the proposed clearing (Cliffs Asia Pacific Iron Ore, 2009). This represents approximately 1.8% of both the estimated Tree-stem Trapdoor Spider population and habitat on the central and southern Koolyanobbing Range. The cumulative impacts of Cliffs Asia Pacific Iron Ore's operations at Koolyanobbing are estimated to be 14.9% of the inferred spider habitats and burrows (Cliffs Natural Resources, 2009a). 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. 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 Iron Ore have acquired 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).

Cliffs Asia Pacific Iron Ore 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, Windarling Range and 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 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)  
DEC (2009)  
EPA (2009)  
Russell (2006)

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

**Comments Proposal may 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 did not record any DRF within the application area (Cliffs Natural Resources, 2009a). There was five Priority Flora species recorded within the application area (Cliffs Natural Resources, 2009a):

- *Beyeria rostellata* (P1)
- *Hibbertia lepidocalyx* subsp. *tuberculata* (P1)
- *Lepidosperma ferricola* (P1)
- *Stenanthemum newbeyi* (P3)
- *Banksia arborea* (P4)

There have been 1,042 *Beyeria rostellata* individuals recorded within the application area (Cliffs Natural Resources, 2009a). The local population at Koolyanobbing is estimated at 11,415 individuals (Cliffs Natural Resources, 2009a). Cliffs Asia Pacific Iron Ore plan to impact 737 of these individuals, which represents approximately 6.5% of the local population. The cumulative impact of approved and proposed projects is estimated to be 2,975 individuals (Cliffs Natural Resources, 2009a). This represents approximately 26% and 11.4% of the local and regional populations respectively.

There are a total of 1,120 individuals of *Hibbertia lepidocalyx* subsp. *tuberculata* recorded within the application area, and an estimated 21,809 individuals on the central and southern Koolyanobbing Range (Cliffs Natural Resources, 2009a). The proposed clearing is expected to impact 1,110 individuals which represents approximately 5.1% of the local population (Cliffs Natural Resources, 2009a). The cumulative impact of approved and proposed projects is estimated to be 1,111 individuals which represents approximately 5.1% of the local population and 3.5% of the known regional population. Based on this the proposed clearing is not likely to significantly impact on *Hibbertia lepidocalyx* subsp. *tuberculata*.

There have been 4,669 individuals of *Lepidosperma ferricola* recorded within the application area (Cliffs Natural Resources, 2009a). Cliffs Asia Pacific Iron Ore estimate that only 2,710 of these will be impacted by the proposed clearing (Cliffs Natural Resources, 2009a). This represents approximately 5.3% of the population on the central and southern Koolyanobbing Range. The regional population of this species is estimated to be over 58,852 (Cliffs Natural Resources, 2009a). The clearing of 2,710 individuals within a regional population of >58,852 is not likely to significant impact this species, however, this will result in the cumulative impact on this species being approximately 16.4% of the central and southern range population (Cliffs Natural Resources, 2009a).

A total of 143 individuals of *Stenanthemum newbeyi* have been recorded within the application area (Cliffs Natural Resources, 2009a). The proposed clearing will impact on 141 individuals (Cliffs Natural Resources, 2009a). The recorded population on the central and southern Koolyanobbing Range is 5,825 and the regional population is in excess of 35,825 (Cliffs Natural Resources, 2009a). The clearing of 141 individuals of *Stenanthemum newbeyi* is not likely to have a significant impact on this species.

The species *Banksia arborea* was recently listed as being a Priority 4 species. Because of this the majority of recorded population sizes have not been estimated (Western Botanical, 2009b). Western Botanical (2009b) have recorded 19 populations of *Banksia arborea*. A total of 1,281 plants have been counted to date with an estimation population size of 5,900 from 6 of the 19 populations (Western Botanical, 2009b). The overall population size would be expected to be much larger. *Banksia arborea* occurs on the hill tops and ridges of the Koolyanobbing Range and is quite abundant in suitable habitats (Western Botanical, 2009b). Within the application area *Banksia arborea* is found within the vegetation community '*Banksia arborea*, *Acacia* sp. Mt Jackson shrubland' (Cliffs Natural Resources, 2009a). There is 9.1 hectares of this vegetation community within the application area, however, only 8.8 hectares will be impacted by the proposed clearing (Cliffs Asia Pacific Iron Ore, 2009). This represents 14.6% of this community mapped to date on the central and southern Koolyanobbing Range, however, the mapping is incomplete and substantially larger areas of this community are known to exist along the range (Western Botanical, 2009b). Given this species is expected to occur in much larger numbers than currently counted, the proposed clearing is not likely to have a significant impact on this species.

Whilst the proposed clearing is not likely to significantly impact on Priority Flora it is important to consider the cumulative impacts that Cliffs Asia Pacific Iron's operations are having on these species. Management of these cumulative impacts will need to be addressed for future projects.

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

**Methodology** Cliffs Natural Resources (2009a)  
Western Botanical (2009b)  
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 database, 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 285 kilometres south west 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 adequately surveyed for classification as TEC's (DEC, 2007). PEC's are not formally protected under the *Environment Protection and Biodiversity Act 1999* or the *Wildlife Conservation Act 1950*. Approximately 22 hectares of this PEC will be cleared under the proposal (Cliffs Natural Resources, 2009a). This represents approximately 1.6% of this PEC on the central and southern Koolyanobbing Range (Cliffs Natural Resources, 2009a). The cumulative impact is estimated will be approximately 20.5% of the PEC on the central and southern Koolyanobbing Range.

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 Bioregionalisation of Australia (IBRA) region within which approximately 98.42% of the Pre-European vegetation remains (see table) (GIS Database; Shepherd, 2007).

The vegetation of the application area has been mapped as (Shepherd., 2007);

- 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 (2007) approximately 100% of Beard Vegetation Associations 144 and 520 remains at both the state and bioregional level. Therefore the area proposed to be cleared does not represent a significant 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	12,912,204	12,707,619	~98.42	Least Concern	10.87 (11.04)
Beard veg assoc. – State					
144	3,988	3,988	~100	Least Concern	7.6 (7.6)
520	37,923	37,906	~100	Least Concern	26.6 (26.6)
Beard veg assoc. – Bioregion					
144	3,988	3,988	~100	Least Concern	7.6 (7.6)
520	37,129	37,113	~100	Least Concern	27.1 (27.1)

\* Shepherd (2007)

\*\* 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 proposed clearing is not at variance to this Principle.

**Methodology** Department of Natural Resources and Environment (2002)  
Shepherd (2007)  
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 soil within the application area ranges from 7.5 in the subsoil to 5.5 in the surface soil (CSIRO, 2009). There has been no known occurrence of acid sulphate soils within the application area (CSIRO, 2009). The application area has an annual 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 Department

of Environment and Conservation 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 the 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 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 (23.6) 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 proponents' 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 proponents' 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), (c) and (d), is not likely to be at variance to Principles (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 3150/1. Received by the assessing officer on 16 June 2009.
- Cliffs Natural Resources (2009a) Koolyanobbing C Pit Expansion Project - Purpose Permit Clearing Application. Unpublished report for Cliffs Asia Pacific Iron Ore Pty Ltd, 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](http://www.asris.csiro.au/index_ie.html) Accessed on 6 August, 2009.
- Department of Conservation and Land Management (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions.
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## 6. Glossary

### Acronyms:

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