



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3567/3
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Iron Ore Holdings Ltd

1.3. Property details

Property: Iron Ore (Yandicoogina) Agreement Act 1996, Mining Lease 274SA (AM 70/274)
Mining Lease 47/1359
Mining Lease 47/1421
Miscellaneous Licence 47/336
Local Government Area: Shire of East Pilbara
Colloquial name: Phil's Creek Iron Ore Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 15 March 2012

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard Vegetation Associations have been mapped for the whole of Western Australia and are useful to look at vegetation extent in a regional context. One Beard Vegetation Association is located within the application area (GIS Database):

82: Hummock grasslands, low tree steppe; Snappy Gum over *Triodia wiseana* (Shepherd, 2009).

Mattiske Consulting Pty Ltd (2008) undertook a flora and vegetation survey of the Phil's Creek Project area between 22 and 26 September 2008. The survey encompassed an area of approximately 400 hectares and included most of the area subject to this clearing permit application, with the exception of the easternmost section of the proposed haul road route. The following ten vegetation communities were recorded in the surveyed portion of the proposed clearing area:

Flowlines (Creeklines and Drainage areas)

C1 - Open Woodland of *Eucalyptus camaldulensis* and *Eucalyptus victrix* over *Melaleuca argentea*, *Acacia coriacea* subsp. *pendens*, *Acacia holosericea* and *Acacia pyrifolia* over *Themeda triandra*, *Cymbopogon ambiguus*, *Tephrosia rosea* var. *clementii* and *Stemodia grossa* on major watercourses with sandy soils;

C2 - Shrubland of *Grevillea wickhamii*, *Acacia pyrifolia*, *Petalostylis labicheoides* and *Acacia monticola* with emergent *Corymbia hamersleyana*, *Eucalyptus leucophloia* over *Tephrosia rosea* var. *clementii* and *Acacia maitlandii* over *Themeda triandra*, *Triodia pungens* and *Triodia wiseana* on sandy to sandy loam soils in minor watercourses;

C3 - Low Shrubland of *Acacia monticola*, *Petalostylis labicheoides*, *Rulingia luteiflora*, *Acacia maitlandii* and *Grevillea wickhamii* with occasional emergent *Eucalyptus leucophloia* and *Corymbia hamersleyana* over *Acacia adoxa*, *Acacia hilliana* and *Mirbelia viminalis* over *Themeda triandra* and mixed *Triodia* species on clay-loam soils in minor gullies;

Flats and Broad Plains

S1 - Open Scrub to Scrub of *Acacia maitlandii*, *Acacia tenuissima*, *Acacia dictyophleba*, *Acacia monticola*, *Grevillea wickhamii*, *Gossypium robinsonii* and *Rulingia luteiflora* with emergent *Corymbia hamersleyana* over *Tephrosia rosea* var. *glabrior* (ms) and *Acacia adoxa* over *Cymbopogon ambiguus*, *Themeda triandra*, *Triodia pungens*, *Triodia wiseana* and *Polycarpaea longiflora* with patches of **Cenchrus ciliaris* on flats of red brown clay-loam, often associated with major watercourses;

S2 - Open Scrub to Scrub of *Acacia pruinocarpa*, *Acacia aneura* var. *aneura*, *Acacia aneura* var. *conifera*, *Codonocarpus cotinifolius* and *Psydrax latifolia* with emergent *Corymbia aspera* and *Corymbia ferriticola* over *Sarcostemma viminale*, *Eremophila galeata*, *Eremophila latrobei* subsp. *latrobei*, *Gossypium robinsonii*, *Acacia monticola*, *Senna glutinosa* subsp. *glutinosa*, *Solanum lasiophyllum*, *Senna glaucifolia* and *Corchorus lasiocarpus* subsp. *lasiocarpus* over *Ptilotus astrolasius*, *Cymbopogon ambiguus*, *Enneapogon caeruleascens*, *Triodia basedowii*, *Triodia epactia* and *Triodia wiseana* on red-brown clay soils on flats;

Hills and Hillslopes

S3 - Hummock Grassland of *Triodia wiseana* and *Triodia basedowii* with *Acacia adoxa*, *Acacia hilliana*, *Grevillea wickhamii*, *Acacia inaequilatera* and *Corchorus lasiocarpus* subsp. *lasiocarpus* with emergent *Eucalyptus leucophloia* and *Corymbia hamersleyana* on red-brown clay soils on undulating hills;

S4 - Hummock Grassland of *Triodia basedowii* and *Triodia wiseana* with *Acacia pruinocarpa*, *Acacia pyrifolia*, *Grevillea wickhamii*, *Corchorus lasiocarpus* subsp. *lasiocarpus* with emergent *Eucalyptus leucophloia* and *Corymbia hamersleyana* on red-brown clay soils on lower slopes and breakaways;

S5 - Hummock Grassland of *Triodia basedowii* and *Triodia epactia* with *Acacia spondylophylla*, *Acacia adoxa*, *Acacia bivenosa*, *Acacia inaequilatera*, *Acacia hilliana*, *Senna glutinosa* subsp. *glutinosa* and *Grevillea wickhamii* with emergent *Eucalyptus gamophylla* on red-brown clay soils on lower to mid slopes;

S6 - Hummock Grassland of *Triodia wiseana* and *Triodia pungens* with *Grevillea wickhamii*, *Acacia inaequilatera*, *Acacia maitlandii*, *Gossypium robinsonii*, *Corchorus lasiocarpus* subsp. *lasiocarpus* with emergent *Eucalyptus leucophloia* and *Corymbia hamersleyana* on red-brown clay soils on lower to mid slopes; and

S7 - Shrubland of *Acacia tenuissima*, *Acacia dictyophleba*, *Acacia bivenosa*, *Acacia maitlandii*, *Acacia pruinocarpa* and *Hakea chordophylla* over *Triodia pungens* on red-brown clay-loam soils on lower slopes and flats.

Clearing Description

Iron Ore Holdings Limited has applied to clear up to 139 hectares of native vegetation to establish the Phil's Creek Iron Ore Project, located approximately 90 kilometres north-west of Newman. Vegetation clearing will be required for the excavation of an open cut pit, construction of site access roads, haul road, water pipeline, ore processing infrastructure, product stockpiles, magazine, offices and workshops, village, landfill site, flood protection structures and other associated infrastructure (URS Australia Pty Ltd, 2010).

Cleared vegetation and topsoil will be retained and stockpiled for future rehabilitation works.

Vegetation Condition

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

To

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

Comment

The application area is located within the Pilbara region of Western Australia and is situated approximately 85 kilometres north west of Newman.

Clearing permit application CPS 3567/1 was granted by the Department of Mines and Petroleum on 22 April 2010 and was valid from 22 May 2010 to 31 December 2016. On 6 January 2012, an application to amend clearing permit CPS 3567/1 was received by the Department of Mines and Petroleum. The application requested an increase in the amount of clearing authorised from 100 hectares to 139 hectares as well as changes to the clearing permit boundary.

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**

In a regional sense, the proposed clearing area lies within the northern flanks of the Hamersley Ranges, a landscape consisting of rounded hills and ranges. In a local sense, the proposed clearing area consists of low hills and plateaus surrounding Phil's Creek and various tributaries. The proposed open cut pit occurs across the top of a mesa-like formation whilst a majority of associated infrastructure occurs on broad plains and low hills and plateaus surrounding Phil's Creek (URS Australia Pty Ltd, 2010).

Mattiske Consulting Pty Ltd (2008) recorded 185 plant taxa from 64 genera and 33 families from a 400 hectare flora and vegetation survey area which included a majority of the area subject to this clearing permit application. Due to seasonal conditions, most of the plant taxa recorded were perennial, and had the survey been conducted in the mid year period it is expected that a greater number of taxa (especially annuals) would have been recorded (Mattiske Consulting Pty Ltd, 2008).

A total of ten vegetation communities were mapped from the proposed clearing area by Mattiske Consulting Pty Ltd (2008), all of which are consistent with those previously described by Beard (1990) (Mattiske Consulting Pty Ltd, 2008). No Declared Rare Flora (DRF), Priority Flora, Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's) were recorded in the proposed clearing area (Mattiske Consulting Pty Ltd, 2008). On the basis of broad scale Beard Vegetation Association mapping, the vegetation of the proposed clearing area is well represented throughout the Pilbara bioregion (GIS Database; Shepherd, 2009).

One introduced flora species was recorded during the flora and vegetation survey. This species, *Cenchrus ciliaris* (Buffel Grass), was associated with vegetation community type S1. The presence of this species is not unexpected given that the proposed clearing area is within the Marillana Pastoral Lease (GIS Database). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This can in turn lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. This species is not listed as a 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

From a faunal perspective, the proposed clearing area has the potential to support a diverse range of vertebrate fauna species, including up to eight amphibian, 97 reptile, 108 bird and 40 mammal species (Western Wildlife, 2009). The field survey recorded zero amphibian, 36 reptile, 41 bird and nine mammal species from the Phil's Creek Iron Ore Project area. Fauna diversity is expected to be highest in creekline habitats (Western Wildlife, 2009).

In summary, the proposed clearing area is a greenfields site and the current land use is pastoral (URS Australia Pty Ltd, 2010). Some disturbance exists in the form of access tracks, mineral exploration and grazing, but generally disturbances are minimal. The landforms proposed to clear are typical of the Eastern Pilbara with rocky hills, small gorges, seasonal watercourses and gravelly loam valleys (URS Australia Pty Ltd, 2010). Land system mapping by the Department of Agriculture Western Australia indicates that all of the land systems within the proposed clearing area are well represented throughout the Pilbara bioregion (Van Vreeswyk et al, 2004). On this basis, floristic and faunal diversity of the proposed clearing area is likely to be typical of the Pilbara bioregion.

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

Methodology Mattiske Consulting Pty Ltd (2008)
Shepherd (2009)
URS Australia Pty Ltd (2010)
Van Vreeswyk et al (2004)
Western Wildlife (2009)
GIS Database:
- Pastoral Leases
- 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 may be at variance to this Principle**

Western Wildlife (2009) conducted a vertebrate fauna survey of the Phil's Creek Iron Ore Project area between 20 and 30 October 2008. The survey involved numerous desktop database searches to produce an inventory of species potentially occurring in the project area. Desktop studies were followed by a field survey of the project area which consisted of trapping, spotlighting, bat surveys, bird surveys and opportunistic surveying (Western Wildlife, 2009). The purpose of the field survey was to inventory the fauna and fauna habitats present in the project area. The assessing officer notes that for the purposes of the fauna survey the 'project area' was an

area totalling approximately 400 hectares, including the proposed clearing area and surrounds.

Four main fauna habitats were identified during the fauna survey, all of which occur in the proposed clearing area:

1. Major and minor creeklines;
2. Shrubs over grasslands on flats;
3. Spinifex grasslands on hills and slopes; and
4. Rocky breakaways and gorges.

Western Wildlife (2009) noted that creekline habitat plays an important role as movement corridors for fauna, supports the highest species richness of reptiles and birds in comparison to other habitats, provides nesting habitat for the Rainbow Bee-eater (*Merops ornatus*) and contains large Eucalypts which provide potential nesting habitat for the Peregrine Falcon (*Falco peregrinus*), Grey Falcon (*Falco hypoleucos*), and roosting habitat for some common bat species. Western Wildlife (2009) recommends that impacts to creekline habitat be avoided wherever possible.

The 'Shrubs over grasslands on flats' habitat type was not noted as being of any particular importance.

The 'Spinifex grasslands on hills and slopes' habitat type had a very low species richness of birds (Western Wildlife, 2009). However, this habitat type is likely to be suitable for a range of reptile species, including geckoes which live in Spinifex clumps (Western Wildlife, 2009). Trapping site 3 (tall Spinifex on clay-loam) recorded the equal highest diversity of reptile species (Western Wildlife, 2009).

No trapping sites were established in the 'Rocky breakaways and gorges' habitat type, however opportunistic sampling by hand searching and spotlighting was conducted. No traps were established in this habitat type because there was no adequate road access to enable traps to be checked efficiently each morning (Western Wildlife, 2009). Rocky breakaways and gorges were identified as important habitats in that they provide shelter for a range of vertebrate fauna species, and may potentially shelter the conservation significant Northern Quoll (*Dasyurus hallucatus*). Western Wildlife (2009) recommends that impacts to rocky breakaways and gorges be avoided wherever possible.

No information has been provided to quantify the representation of the four major fauna habitats identified within the proposed clearing area by Western Wildlife (2009) on a local or regional basis. However, based on the extent of uncleared land in the surrounding region and the wider Pilbara bioregion, land system mapping by Department of Agriculture Western Australia and Beard Vegetation Association mapping, it is unlikely that the habitats within the proposed clearing area are unique, restricted or otherwise significant (GIS Database; Van Vreeswyk et al, 2004, Shepherd, 2009).

With specific reference to conservation significant vertebrate fauna, the following three species were recorded in the Phil's Creek Iron Ore Project area by Western Wildlife (2009) during the fauna survey:

1. Rainbow Bee-eater - listed as 'Migratory' under the *Environment Protection and Biodiversity Conservation Act (EPBC) Act 1999*;
2. Western Pebble-mound Mouse (*Pseudomys chapmani*) - listed as 'Priority 4' on the DEC's Priority Fauna List; and
3. Australian Bustard (*Ardeotis australis*) - listed as 'Priority 4' on the DEC's Priority Fauna List.

Whilst the proposed clearing will result in a localised loss of some habitat for these three species, the proposed clearing area is unlikely to constitute significant habitat given the distribution of these species (Western Wildlife, 2009) and the extent of uncleared land in the surrounding region and the wider Pilbara bioregion (GIS Database).

Based on the results of database searches and the fauna habitat types identified by Western Wildlife's field reconnaissance, a further 10 conservation significant species may potentially utilise habitat in the proposed clearing area (URS Australia Pty Ltd, 2010).

The Northern Quoll is one such species which warrants further discussion. On 28 October 2009 the Department of the Environment, Water, Heritage and the Arts (DEWHA) advised that the Phil's Creek Iron Ore Project is a 'Controlled Action' under the *EPBC Act 1999* in that it is likely to have a significant impact on listed threatened species and communities. In particular, DEWHA advised that the project is likely to have a significant impact because it involves disturbance of up to 100 hectares of habitat likely to support a population of the Northern Quoll, listed as Endangered under the *EPBC Act 1999* (URS Australia Pty Ltd, 2010).

The Northern Quoll is a medium-sized marsupial which has undergone a significant range contraction across northern Australia in recent years. The species is restricted to six main areas across northern Australia, two of

which occur in Western Australia (the north-west Kimberley and the Pilbara). Key threatening processes for the species have been identified as inappropriate fire regimes, predation following fire and lethal toxic ingestion of Cane Toad toxin (Biota Environmental Sciences, 2009).

No Northern Quolls were trapped in the Phil's Creek Iron Ore Project area, nor was any secondary evidence recorded that would suggest Northern Quolls to be present (Western Wildlife, 2009). However, Western Wildlife (2009) note that the Northern Quoll is a difficult species to detect and preferred habitat such as rocky areas and gorges along drainage lines is present in the project area. Further trapping in winter may confirm the presence of the Northern Quoll in the area (Western Wildlife, 2009).

Iron Ore Holdings Ltd (2009) considers that the Phil's Creek Iron Ore Project is unlikely to have a significant impact on the Northern Quoll based on the following:

- No Northern Quolls or evidence of Northern Quolls has been recorded in the project area;
- The nearest Northern Quoll record is 50 kilometres north of the Phil's Creek Iron Ore Project area. This is despite extensive trapping for the species in the south-eastern Pilbara with Elliot trapping completed at nearby Hope Downs I and II, Yandicoogina, Weeli Wolli Creek, West Angelas, Mt Whaleback, Orebody 18 and Ophthalmia Dam. None of this trapping yielded any Northern Quoll records suggesting that it is unlikely that a stable population of Northern Quolls exists in, or near, the project area (Biota Environmental Sciences, 2009);
- Less than 5 hectares of the 100 hectares proposed for disturbance constitutes prospective Northern Quoll habitat (inclusive of both breeding and foraging habitat). The majority of the proposed clearing area occurs on the top of hills and plateaus/mesas which have shallow stony red earth dominated by Spinifex grasslands. These areas provide poor habitat for Northern Quoll prey and provide the Northern Quoll with minimal protection from predators; and
- The Northern Quoll prefers rocky areas in association with permanent water. There are no permanent water sources in or nearby the project area.

On the basis of information made available with respect to the Northern Quoll, the assessing officer considers that the proposed clearing area does contain some suitable habitat for the Northern Quoll and may potentially support Northern Quolls.

The assessing officer notes that Iron Ore Holdings Ltd has taken the recommendations made by Western Wildlife (2009) into consideration during the project planning phase and has designed the Phil's Creek Iron Ore Project to minimise impacts to fauna (especially the Northern Quoll) as far as practicable. Such measures include (URS Australia Pty Ltd, 2010):

- Re-design of the pit location to include a buffer of undisturbed land between Phil's Creek and the pit, which retains the gorge and rocky areas of the mesa face along Phil's Creek that may be suitable for Northern Quolls and SRE's;
- Relocation of the proposed magazine site 50 metres to the west to move away from breakaways that may contain potential Northern Quoll den sites;
- Relocation of the site access track away from Phil's Creek, which will reduce disturbance to potential Northern Quoll and SRE habitat; and
- No external waste rock dumps are included in the project footprint, thereby minimising the loss of vegetation and fauna habitat. Waste rock will be used in road construction and other hard stand areas. Remaining waste rock will be deposited into the pit.

With respect to Short Range Endemic (SRE) invertebrates, Ecologia Environment (2009) undertook a SRE invertebrate survey of the Phil's Creek Iron Ore Project area and surrounding area in April 2009. A total of 21 species representing six orders of invertebrate groups were recorded from more than 300 specimen collections. No SRE species were positively identified, however six species were recorded with an undetermined SRE status. Of those species with an undetermined SRE status, two have an 'undetermined but likely' SRE status whilst four have an 'undetermined but unlikely' SRE status.

All of the invertebrate species collected (except the pseudoscorpion *Austrochthonius sp.*) were located both inside and outside of the main impact area. *Austrochthonius sp* has an 'undetermined but unlikely' SRE status, and based on habitat assessment it was recorded in a non-specialised habitat with no island-like characteristics associated with short-range endemism. The habitat within which *Austrochthonius sp* was recorded was an undulating plain with scattered Eucalypts - a common landscape throughout the project area. Ecologia Environment (2009) conclude that sampling inefficiency is the most likely reason *Austrochthonius sp* was not recorded outside of the proposed impact zone, rather than it not being present elsewhere.

Notwithstanding, the current state of knowledge on short-range endemism of particular invertebrates in

Australia and the Hamersley Ranges is relatively poor, and the assessment of likely occurrence and distribution of short range endemic fauna is very difficult given the paucity of targeted collections (Ecologia Environment, 2009).

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

Methodology Biota Environmental Sciences (2009)
Ecologia Environment (2009)
Iron Ore Holdings Ltd (2009)
URS Australia Pty Ltd (2010)
Shepherd (2009)
Van Vreeswyk et al (2004)
Western Wildlife (2009)
GIS Database:
- Weeli Wolli 50cm Orthomosaic

(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 GIS databases, there are no known records of Declared Rare Flora (DRF) or Priority Flora within the proposed clearing area (GIS Database). However, there are three records of the DRF species *Lepidium catapycnon* within 5 kilometres of the proposed clearing area (GIS Database).

Mattiske Consulting Pty Ltd (2008) undertook a flora and vegetation survey of the Phil's Creek Project area in September 2008. Neither *Lepidium catapycnon* nor any other DRF taxa were recorded (Mattiske Consulting Pty Ltd, 2008).

A single specimen of *Euphorbia inappendiculata* (P3) was recorded during Mattiske Consulting Pty Ltd's flora and vegetation survey in 2008, although this specimen is located outside of the proposed clearing area and will not be impacted by this clearing proposal. No other Priority Flora taxa were recorded (Mattiske Consulting Pty Ltd, 2008).

Mattiske and Associates (1995) did not record any DRF or Priority Flora species during a flora and vegetation survey which encompassed part of the area subject to this clearing permit application.

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

Methodology Mattiske and Associates (1995)
Mattiske Consulting Pty Ltd (2008)
GIS Database:
- Threatened and Priority Flora

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

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

According to available GIS databases, there are no known Threatened Ecological Communities (TEC) in the proposed clearing area. The nearest TEC is located approximately 78 kilometres south east of the application area (GIS Database).

Mattiske Consulting Pty Ltd (2008) undertook a flora and vegetation survey of the Phil's Creek Project area in September 2008. No TEC's or Priority Ecological Communities (PEC) were recorded.

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

Methodology Mattiske Consulting Pty Ltd (2008)
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 is located within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). Shepherd (2009) reports that approximately 99.89% of the pre-European vegetation remains within the Pilbara bioregion.

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

82: Hummock grassland, low tree steppe; snappy gum over *Triodia wiseana*.

According to Shepherd (2009) approximately 100% of Beard vegetation association 82 remains within the Pilbara bioregion (see table below).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,193	17,785,001	~99.89	Least concern	~6.32
Beard vegetation Associations - State					
82	2,565,901	2,565,901	~100	Least concern	~10.4
Beard vegetation Associations - Pilbara					
82	2,563,583	2,563,583	~100	Least concern	~10.25

* Shepherd (2009)

** Department of Natural Resources and Environment (2002)

The area proposed to clear does not represent a significant remnant of native vegetation in the wider regional area. The proposed clearing will not reduce the extent of Beard Vegetation Association 82 below the current recognised threshold level of 30% of the pre-clearing extent of the vegetation type (below which species loss accelerates exponentially at an ecosystem level) (EPA, 2000).

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

Methodology Department of Natural Resources and Environment (2002)
EPA (2000)
Shepherd (2009)
GIS Databases:
- 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 at variance to this Principle

There are no permanent wetlands or watercourses in the proposed clearing area (URS Australia Pty Ltd, 2010; GIS Database).

The proposed clearing will involve seven crossings of ephemeral drainage lines (including Phil's Creek) where the proposed access road and haul road intersect drainage areas. In addition, some minor drainage lines will be filled in to construct infrastructure areas (URS Australia Pty Ltd, 2010).

None of the watercourses to be impacted by this clearing proposal are wetlands listed on the Directory of Important Wetlands in Australia (GIS Database).

The Phil's Creek Iron Ore Project has been planned and designed to minimise impacts to watercourses and their associated vegetation wherever possible. No mining will occur within Phil's Creek, nor will any infrastructure be placed within Phil's Creek (URS Australia Pty Ltd, 2010). On this basis, it is considered that the proposed clearing is unlikely to present unacceptable environmental risks to watercourses, wetlands or their associated vegetation communities. Potential impacts to the vegetation associated with Phil's Creek may be minimised by the implementation of a condition limiting clearing within this vegetation association to that only for the purpose of constructing haul roads.

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

Methodology URS Australia Pty Ltd (2010)
GIS Database:
- ANCA Wetlands
- 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

Land system mapping by the Department of Agriculture Western Australia has mapped a variety of land systems for the Pilbara bioregion. Land systems are mapped based on biophysical features such as soil and landform type, geology, geomorphology and vegetation type (Van Vreeswyk et al., 2004). The proposed clearing area includes four land systems (GIS Database). A broad description of each is given below:

Boolgeeda - The Boolgeeda land system is characterised by stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and Mulga shrublands. Vegetation is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al., 2004).

McKay - The McKay land system is characterised by hills, ridges, plateaux remnants and breakaways supporting hard spinifex grasslands. The McKay land system is not prone to degradation or soil erosion (Van Vreeswyk et al., 2004).

Newman - The Newman land system is characterised by hills and ranges, supporting hard spinifex grasslands. Relief can be up to 450 metres. The Newman land system is generally not prone to erosion (Van Vreeswyk et al., 2004).

Robe - The Robe land system is characterised by low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands (Van Vreeswyk et al., 2004). Van Vreeswyk et al. (2004) report that the Robe land system is generally not susceptible to vegetation degradation or erosion.

On the basis of land system mapping, the proposed vegetation clearing is unlikely to cause appreciable land degradation. In addition, the proponent will implement a number of measures to minimise the potential for land degradation, including:

- Retention of vegetative material, topsoil and subsoil for use in progressive rehabilitation; and
- Maintaining a buffer of undisturbed land where the proposed pit approaches the edge of the mesa (URS Australia Pty Ltd, 2010).

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

Methodology URS Australia Pty Ltd (2010)
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 at variance to this Principle

The proposed clearing area is not located within or in close proximity to any conservation reserves (GIS Database). The nearest conservation reserve is the Karijini National Park, located approximately 60 kilometres to the west. At this distance it is unlikely that the proposed clearing will impact on the environmental values of any conservation areas.

Based on the above, the proposed clearing is not 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

There are no permanent wetlands or watercourses in the proposed clearing area (URS Australia Pty Ltd, 2010; GIS Database).

The proposed clearing will involve seven crossings of ephemeral drainage lines (including Phil's Creek) where the proposed access road and haul road intersect drainage areas. In addition, some minor drainage lines will be filled in to construct infrastructure areas (URS Australia Pty Ltd, 2010). Engineering controls such as culverts and floodways will be used to maintain natural surface water flows as far as practicable at creek crossings, whilst some minor diversions may be necessary where drainage is filled in (URS Australia Pty Ltd, 2010).

To minimise the risk of vegetation clearing affecting the quality of Phil's Creek (the major watercourse in the project area), Iron Ore Holdings Ltd has designed the proposed open pit so that where the pit approaches the

edge of the mesa, a buffer of undisturbed land will be retained. This buffer will retain the integrity of the mesa face and also prevent erosion into Phil's Creek (URS Australia Pty Ltd, 2010).

The proposed clearing area is not located within a Public Drinking Water Source Area (GIS Database). The proposed vegetation clearing is not expected to have a significant impact upon groundwater quality.

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

Methodology URS Australia Pty Ltd (2010)
GIS Database:
- 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 proposed vegetation clearing will involve seven minor creek crossings and infilling of some minor drainage areas for construction of infrastructure (URS Australia Pty Ltd, 2010). Phil's Creek (the major drainage feature in the project area) will not be disturbed by mining or infrastructure placement (URS Australia Pty Ltd, 2010). Diversion of minor surface water flows and the implementation of culverts and floodways (with a design capacity to accommodate a 1:100 year rainfall event) will ensure that the proposed clearing is unlikely to cause or exacerbate the incidence or intensity of flooding (URS Australia Pty Ltd, 2010).

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

Methodology URS Australia Pty Ltd (2010)

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

Comments

There is one Native Title Claim (WC11/6) over the area under application (GIS Database). This claim has been registered with the Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are two registered Aboriginal Site 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.

On 3 September 2009 Iron Ore Holdings Ltd referred the Phil's Creek Iron Ore Project to the Environmental Protection Authority (EPA) under section 38 of the *Environmental Protection Act 1986*. On 28 September 2009, the EPA advised that the project would be 'Not assessed - No advice given - Managed under Part V of the EP Act (Clearing)'. The EPA will not formally assess the project but expects the proponent and relevant agencies to ensure that it is environmentally acceptable.

On 25 September 2009 Iron Ore Holdings Ltd referred the Phil's Creek Iron Ore Project to the Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. On 28 October 2009 DEWHA advised that the project is a 'Controlled Action' under the *EPBC Act 1999* in that it is likely to have a significant impact on listed threatened species and communities. In particular, DEWHA advised that the project is likely to have a significant impact because it involves disturbance of up to 100 hectares of habitat likely to support a population of the Northern Quoll, listed as 'Endangered' under the *EPBC Act 1999*. The Phil's Creek Iron Ore Project will be assessed via the Preliminary Documentation process (URS Australia Pty Ltd, 2010).

Clearing permit application CPS 3567/1 was granted by the Department of Mines and Petroleum on 22 April 2010 and was valid from 22 May 2010 to 31 December 2016. On 6 January 2012, an application to amend clearing permit CPS 3567/1 was received by the Department of Mines and Petroleum. The application requested an increase in the amount of clearing authorised from 100 hectares to 139 hectares as well as changes to the clearing permit boundary.

Methodology URS Australia Pty Ltd (2010)
GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims

4. References

- Biota Environmental Sciences (2009) Hope Downs IV Northern Quoll Position Paper: Prepared for Rio Tinto Iron Ore on behalf of Hamersley HMS. April 2009.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Ecologia Environment (2009) Phil's Creek Short-Range Endemic Invertebrate Survey. December 2009.
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority, Western Australia.
- Iron Ore Holdings Ltd (2009) Phil's Creek Iron Ore Project, Pilbara, WA. EPBC Ref: 2009/5107. Preliminary Documentation Additional Information. 22 December 2009.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske Consulting Pty Ltd (2008) Flora and Vegetation Survey of Exploration Tenement E47/1237: Phil's Creek Project Area. Prepared for URS Australia Pty Ltd on behalf of Iron Ore Holdings Ltd. November 2008.
- 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.
- URS Australia Pty Ltd (2010) Supporting Documentation for the Clearing Permit Application: Phil's Creek Iron Ore Project. Prepared for Iron Ore Holdings Ltd. 25 January 2010.
- Van Vreeswyk, A.M, Payne, A.L, Leighton, K.A & Hennig, P (2004) Technical Bulletin No. 92: An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture, South Perth, Western Australia.
- Western Wildlife (2009) Phil's Creek Project Area: Fauna Survey 2008. Prepared for URS Australia Pty Ltd. 3 May 2009.

5. 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.
DMP	Department of Mines and Petroleum, 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.