



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5855/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Process Minerals International Pty Ltd

1.3. Property details

Property: Mining Lease 47/1359
Mining Lease 47/1421
Miscellaneous Licence 47/336
Miscellaneous Licence 47/554
Iron Ore (Yandicoogina) Agreement Act 1996, Mining Lease 274SA (AM70/274)

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 and associated activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 9 January 2014

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 entirety of Western Australia. One Beard vegetation association has been mapped in the application area (GIS Database);

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

Mattiske Consulting Pty Ltd was commissioned to undertake a flora and vegetation survey of the project area in 2008 (Mattiske Consulting Pty Ltd, 2008). A total of 10 vegetation associations were recorded in the surveyed area. These vegetation associations are detailed below.

- 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 hilliania* and *Mirbelia viminalis* over *Themeda triandra* and mixed *Triodia* species on clay-loam soils in minor gullies;
- 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 ferritcola* 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 caeruleus*, *Triodia basedowii*, *Triodia epactia* and *Triodia wiseana* on red-brown clay soils on flats;

- 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

Phil's Creek Iron Ore Project.

Process Minerals International Pty Ltd (PMI) proposes to clear up to 139 hectares of native vegetation within a total boundary of approximately 250.41 hectares to facilitate the development of the Phil's Creek Iron Ore Project. The project is located approximately 84.3 kilometres north-west of Newman, in the Shire of East Pilbara.

Vegetation Condition

Excellent: (Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species);

to

Good: (vegetation structure significantly altered).

Comment

Vegetation condition ratings for the project area were based on the condition scale created by Keighery (1994).

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

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

The project area is situated within the Hamersley subregion of the Pilbara bioregion as defined within the Interim Biogeographic Regionalisation of Australia (IBRA) (GIS Database). The Hamersley subregion is described as a mountainous area of Proterozoic sedimentary ranges and plateaux, dissected by gorges (Department of Conservation and Land Management, 2002). Mulga low woodland occurs over bunch grasses on fine textured soils in valley floors and *Eucalyptus leucophloia* occurs over *Triodia brizoides* on skeletal soils of the ranges (Department of Conservation and Land Management, 2002).

A Level 2 fauna survey was undertaken for the Phil's Creek project area in 2008 (Western Wildlife, 2008). During this survey 36 reptile, 41 bird and nine mammal species were recorded from the project area (Western Wildlife, 2008). The following conservation significant fauna species were recorded during this survey; Rainbow Bee-eater (*Merops ornatus*) (Migratory, Schedule 3), Australian Bustard (*Ardeotis australis*) (Priority 4) and Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4) (Western Wildlife, 2008). In addition, a number of conservation significant fauna species could occur in the project area (Western Wildlife, 2008). Fauna habitats of the project area consist of major and minor creek-lines, shrubs over grasslands on flats, spinifex grassland on hills and slopes and rocky breakaways and gorges (Western Wildlife, 2008). None of these habitats is considered to be uncommon in the Pilbara region of Western Australia.

A flora and vegetation survey of the project area was undertaken by Mattiske Consulting Pty Ltd in 2008. Ten vegetation communities were identified within the survey area (Mattiske Consulting Pty Ltd, 2008). The condition of these vegetation communities ranged from excellent to good (Mattiske Consulting Pty Ltd, 2008). None of these vegetation communities were representative of Threatened Ecological Communities or Priority Ecological Communities (Mattiske Consulting Pty Ltd, 2008).

A total of 185 plant taxa (including subspecies and varieties) from 64 genera and 33 families were recorded during the survey (Mattiske Consulting Pty Ltd, 2008). The families with the highest representation in the project area were *Mimosaceae*, *Poaceae*, *Malvaceae*, *Papilionaceae*, *Myrtaceae* and *Goodeniaceae* (Mattiske

Consulting Pty Ltd, 2008). No threatened plant taxa were recorded within the survey area (Mattiske Consulting Pty Ltd, 2008). One Priority Listed species was recorded within the surveyed area; a Priority 3 listed variant of *Euphorbia inappendiculata* (Mattiske Consulting Pty Ltd, 2008).

A review of the Florabase database suggests that the conservation significance of *Euphorbia inappendiculata* variants has changed since the flora survey work was undertaken for this project as no Priority 3 listed variant of *Euphorbia inappendiculata* currently exists (Western Australian Herbarium, 2013). Three variants of *Euphorbia inappendiculata* are currently listed within the Florabase database; *Euphorbia inappendiculata*, *Euphorbia inappendiculata* var. *inappendiculata* (Priority 2) and *Euphorbia inappendiculata* var. *queenslandica* (Priority 1). The proponent advises that the specimen of *Euphorbia inappendiculata* identified during the survey work was sent to the Herbarium of Western Australia, however this specimen was found to be unfit for preservation by the Herbarium and was not retained (Process Minerals International Pty Ltd, 2013b). Therefore, it is not possible to identify the *Euphorbia inappendiculata* variant recorded in the project area (Process Minerals International Pty Ltd, 2013b). The recorded occurrence of *Euphorbia inappendiculata* is situated outside the project area and therefore should not be impacted by the proposed activities (Process Minerals International Pty Ltd, 2013a). Consequently, even in the event that the recorded occurrence of *Euphorbia inappendiculata* was representative of a Priority listed variant of this species, it is unlikely the proposed activities would impact the conservation status or distribution of this variant as the occurrence of *Euphorbia inappendiculata* will remain in situ.

One introduced flora species was recorded in the survey area; Buffel Grass (*Cenchrus ciliaris*) (Mattiske Consulting Pty Ltd, 2008). This species is not listed as a declared pest under the *Biosecurity and Agriculture Management Act 2007* (Department of Agriculture and Food, 2013). To minimise the impact clearing may have on the biodiversity values of the area, a weed management condition has been placed on this permit.

The flora and vegetation and fauna survey work detailed above does not cover the entire project area. A review of aerial photography of the project area and its surrounds determined that the regions landforms are fairly continuous in nature (GIS Database), thereby similar flora and fauna habitats to those identified during the above survey work are expected to exist across the project area and consequently it is unlikely unique or rare flora and fauna habitats would occur in unsurveyed parts of the project area. Accordingly, flora and fauna species associated with unique or rare flora and fauna habitats would not be expected to occur in unsurveyed parts of the project area.

Based on the above, the proposed activities are not likely to be at variance to this Principle.

Methodology Department of Agriculture and Food (2013)
Mattiske Consulting Pty Ltd (2008)
Process Minerals International Pty Ltd (2013a)
Process Minerals International Pty Ltd (2013b)
Western Australian Herbarium (2013)
Western Wildlife (2008)
GIS Database
-Weeli Wolli 50cm Orthomosaic

(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

A level 2 fauna survey was undertaken for the project area in 2008 (Western Wildlife, 2008). This survey determined that the project area has the potential to support up to eight amphibian, 97 reptile, 108 bird and 40 mammal species, although only 36 reptile, 41 bird and nine mammal species were recorded from the project area during the fauna survey (Western Wildlife, 2008). The following conservation significant fauna species were recorded in the project area; Rainbow Bee-eater (*Merops ornatus*) (Migratory, Schedule 3), Australian Bustard (*Ardeotis australis*) (Priority 4) and Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4) (Western Wildlife, 2008). Fauna habitats of the project area consist of major and minor creek-lines, shrubs over grasslands on flats, spinifex grassland on hills and slopes and rocky breakaways and gorges (Western Wildlife, 2008). It is not anticipated that these habitats would be confined to the project area and its surrounds.

This fauna survey determined that the following conservation significant fauna species could occur in the project area; Pilbara Olive Python (*Liasis olivaceus barroni*) (Vulnerable, Schedule 1), *Ramphotyphlops ganeii* (Priority 1), Night Parrot (*Pezoporus occidentalis*) (Endangered, Schedule 1), Peregrine Falcon (*Falco peregrinus*) (Schedule 4), Grey Falcon (*Falco hypoleucos*) (Schedule 1), Fork-tailed Swift (*Apus pacificus*) (Migratory, Schedule 3), Australian Bustard (*Ardeotis australis*) (Priority 4), Bush Stone-Curlew (*Burhinus grallarius*) (Priority 4), Northern Quoll (*Dasyurus hallucatus*) (Endangered, Schedule 1), Mulgara (*Dasyercus cristicauda*) (Vulnerable, Schedule 1) or (*Dasyercus blythi*) (Priority 4)), Pilbara Orange Leaf-nosed Bat (*Rhinonictes aurantius*) (Vulnerable, Schedule 1), Ghost Bat (*Macroderma gigas*) (Priority 4), Long-tailed Dunnart (*Sminthopsis longicaudata*) (Priority 4) and Lakeland Downs Mouse (*Leggadina lakedownensis*) (Priority 4).

The Pilbara Olive Python may occur in the gorges along the major drainage line within the project area (Western Wildlife, 2008). However, no permanent waterholes, which this species uses to hunt, exist in the project area and therefore it is considered unlikely that this species will be present in this area (Western Wildlife, 2008).

Ramphotyphlops ganei may occur in drainage lines within the project area (Western Wildlife, 2008). Should this species occur in the project area, it is unlikely the proposed activities would result in adverse impacts to the conservation status or distribution of this species. The project areas fauna habitats are unlikely to be confined to this area and occurrences of *Ramphotyphlops ganei* have been recorded over a wide range in the Pilbara region (Department of Environment and Conservation, 2007), suggesting this species is not confined to the disturbance area and its surrounds.

The Night Parrot is thought to inhabit open spinifex grasslands near water (Western Wildlife, 2008). Although the Night Parrot could potentially occur in the project area, the likelihood of it being present is considered to be extremely low (Western Wildlife, 2008). Much of the spinifex on the site is very small and not considered suitable shelter for this species (Western Wildlife, 2008). In addition, the project area does not appear to have water sources present in the dry season (Western Wildlife, 2008). As this species is unlikely to be present in the project area, the proposed activities are not anticipated to result in adverse impacts to this species conservation status or distribution.

Both the Peregrine Falcon and Grey Falcon could forage and nest in the project area (Western Wildlife, 2008). However, as both species are highly mobile in nature and suitable habitat for both species exists outside the project area, it is unlikely the proposed activities would result in adverse impacts to the conservation status or distribution of these species.

Both the Fork-tailed Swift and the Rainbow Bee-eater are unlikely to be adversely impacted by the proposed activities as it is expected that these species, due to their highly mobile nature, will leave areas undergoing disturbance and move to areas of suitable habitat in the surrounding environment.

Both the Bush Stone-Curlew and the Australian Bustard are capable of leaving areas undergoing disturbance. In addition, occurrences of both species have been recorded over large portions of Western Australia (Department of Environment and Conservation, 2007) and large areas of suitable habitat for both species remain undisturbed. Therefore, it is unlikely the proposed activities will result in adverse impacts to the conservation status or distribution of both species.

The Northern Quoll may occur in areas of suitable habitat within the project area (Western Wildlife, 2008). Although this species was not recorded during the fauna survey, this species can be difficult to detect as most adults die after breeding (Western Wildlife, 2008). No Northern Quoll scats were observed in rocky habitats during opportunistic searches (Western Wildlife, 2008). Therefore, this species may not be present or may be uncommon within the project area (Western Wildlife, 2008).

During July 2013 Astron Environmental Services conducted a reconnaissance survey to identify any evidence of the Northern Quoll along the Phil's Creek zone near the mine site (Astron Environmental Services, 2013). During this survey the survey area was comprehensively traversed on foot and photographs and GPS coordinates were also recorded whenever potential habitat, scats and tracks of the Northern Quoll were identified. No physical evidence of the Northern Quoll was recorded during this survey (Astron Environmental Services, 2013). There were a number of rock crevices present within the rocky areas and gorges of the creek, but these appeared to have not been occupied by any fauna species for some time (Astron Environmental Services, 2013).

The proposed clearing activities may result in the loss of some suitable habitat for the Northern Quoll. However, occurrences of the Northern Quoll have been recorded over large areas of the Kimberley and Pilbara regions of Western Australia (Department of Environment and Conservation, 2007), indicating that suitable habitat for this species is not confined to the local area. A review of aerial photography of the project area and its surrounds determined that the regions landforms appear to be continuous in nature and thereby similar fauna habitats to those found in the project area are likely to exist outside the disturbance area (GIS Database). In addition, of the 139 hectares of clearing applied for in this application, approximately 60 hectares has previously been disturbed. The clearing of the remaining 79 hectares is not anticipated to adversely impact the occurrence of Northern Quoll habitat when the aforementioned distribution of this habitat is considered.

The Mulgara, Pilbara Orange Leaf-nosed Bat and Ghost Bat are not expected to shelter in the project area due to the lack of suitable habitat available for these species (Western Wildlife, 2008). Whilst both bat species may forage in the project area (Western Wildlife, 2008), the habitat types present in the project area are not uncommon in the region and therefore clearing activities are not expected to result in a significant loss of foraging habitat for both bat species.

Both the Long-tailed Dunnart and Lakeland Downs Mouse could occur in the project area, however the project area is unlikely to constitute significant habitat for either species (Western Wildlife, 2008). Occurrences of both species have been recorded over large areas of Western Australia, indicating that large areas of suitable habitat for both species exist outside the project area (Department of Environment and Conservation, 2007). Therefore, the proposed activities are unlikely to adversely impact the conservation status or distribution of these species.

The Western Pebble-mound Mouse was recorded in the project area via the presence of its characteristic mounds (Western Wildlife, 2008). The locations of some, but not all, of these mounds were recorded by the proponent (Western Wildlife, 2008). Whilst the proponent has committed to avoid these mounds were

practicable, a number of Western Pebble-mound Mouse mounds have been disturbed by the project and it is likely more will be impacted by the proposal as they are located within mine site infrastructure areas (Process Minerals International Pty Ltd, 2013a). Occurrences of this species have been recorded over a wide area of the Pilbara region (Department of Environment and Conservation, 2007) and suitable habitat for this species is not uncommon within the Pilbara region. Therefore, whilst the project will result in the loss of suitable habitat for this species and may result in the loss of individuals of this species, the conservation status and distribution of the Western Pebble-mound Mouse is not anticipated to be adversely impacted by the proposed activities.

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

Methodology Astron Environmental Services (2013)
 Department of Environment and Conservation (2007)
 Process Minerals International Pty Ltd (2013a)
 Western Wildlife (2008)
 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

There are three threatened flora species which occur within the Pilbara region of Western Australia; *Lepidium catapycnon*, *Aluta quadrata* and *Thryptomene wittveri* (Western Australian Herbarium, 2013). A flora and vegetation survey of the project area was undertaken by Matiske Consulting Pty Ltd in 2008. No occurrences of the above species were recorded during this survey (Matiske Consulting Pty Ltd, 2008). Therefore, the clearing activities are not expected to result in adverse impacts to the conservation status or distribution of threatened flora species.

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

Methodology Matiske Consulting Pty Ltd (2008)
 Western Australian Herbarium (2013)

(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

The project area is situated approximately 84 kilometres to the northeast of the nearest Threatened Ecological Community (TEC), the Ethel Gorge aquifer stygobiont community (GIS database). Due to the distances which exist between the project area and known TEC's, no impacts to TEC's are expected to result from the proposed activities.

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

Methodology GIS Database
 -Threatened Ecological Community 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 not at variance to this Principle

The project area is situated within the Hamersley sub-region of the Pilbara bioregion as described in the IBRA and contained within Beard Vegetation association 82 (GIS Database). This Beard vegetation association retains almost 100% of its pre-European extent for the Hamersley sub-region (see table below). Hence, the project areas vegetation does not represent a significant remnant of vegetation within an extensively cleared area.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DEC Managed Land
IBRA Bioregion – Hamersley	5,634,726.83	5,610,205.04	~99.6	Least Concern	~12.9
Beard veg assoc. – State					
82	2,565,901.27	2,553,217.02	~99.5	Least Concern	~10.3
Beard veg assoc. – Bioregion					
82	2,177,573.9	2,165,235.04	~99.4	Least Concern	~12

* Government of Western Australia (2013)
** Department of Natural Resources and Environment (2002).

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

Methodology Government of Western Australia (2013)
Department of Natural Resources and Environment (2002)
GIS Database:
-Pre-European vegetation
-IBRA WA (Regions – Sub-regions).

(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**

The project area does not contain any permanent watercourses or wetlands, although a number of ephemeral watercourses traverse through the project area (GIS Database). As it is likely clearing activities will intercept these watercourses and in turn the vegetation communities associated with these watercourses, this proposal is at variance to this Principle. In addition, some minor drainage lines will be filled in to allow construction of infrastructure areas (Process Minerals International Pty Ltd, 2013a). The proponent has committed to undertake minor diversions of surface water flows where required, with stabilised drainage outfalls to be utilised to decrease the likelihood of lower surface water quality resulting from the erosion of drainage areas if necessary (Process Minerals International Pty Ltd, 2013a). Three of the vegetation communities recorded within the project area are associated with watercourses: C1, C2 and S1 (Mattiske Consulting Pty Ltd, 2008). The vegetation communities identified in the project area during the flora and vegetation survey were consistent with vegetation communities previously recorded in the Pilbara region (Mattiske Consulting Pty Ltd, 2008), indicating that the vegetation communities identified in the project area are not confined to the project area. Therefore, the proposed clearing activities are unlikely to result in adverse impacts to the conservation status or distribution of riparian vegetation communities.

Traversing through the project area is Phil's Creek, a small ephemeral tributary of Marillana Creek (Process Minerals International Pty Ltd, 2013a). The mine site pit area is located on a mesa-like formation, the base of which is adjacent to Phil's Creek (Process Minerals International Pty Ltd, 2013a). Where the pit approaches the edge of the mesa, a buffer of undisturbed land will be retained as a clearing exclusion zone (Process Minerals International Pty Ltd, 2013a). This clearing exclusion zone has been established in the project area to retain habitat areas pursuant to the requirements of approved EPBC Act controlled action [EPBC2009/5107] (Process Minerals International Pty Ltd, 2013a). The clearing exclusion zone will consequently retain the integrity of the mesa face and prevent runoff and erosion into Phil's Creek (Process Minerals International Pty Ltd, 2013a). Mine infrastructure will be located predominantly to the west of the mine pit and will not interfere with Phil's Creek (Process Minerals International Pty Ltd, 2013a). Hydrological modelling has determined that the Phil's Creek Iron Ore project is likely to have a limited impact on the existing baseline hydrological regime of Phil's Creek, primarily due to its small size, location and the projects short lifespan. Potential impacts to surface water flows in Phil's Creek were identified in the projects surface water assessment and the proponent has devised management techniques to reduce these impacts which are detailed in the Mining Proposal relevant to this project.

Despite the clearing exclusion zone created to protect Phil's Creek, some clearing within Phil's Creek will be required to facilitate the construction of additional haul road and access track crossings across Phil's Creek (Process Minerals International Pty Ltd, 2013a). Depending on the characteristics of each crossings, either culverts or floodways will be installed at the Phil's Creek creek crossings to minimise the impact of these crossings on surface water flows (Process Minerals International Pty Ltd, 2013a). These creek crossings have been designed to a 1:5 year Average Recurrence Interval (ARI) event which will allow access to the Phil's Creek Iron Ore mine to be maintained during smaller flow events and culvert design capacities have an 18% chance of being exceeded in any given year (Process Minerals International Pty Ltd, 2013a). The proposed floodways have a design capacity to accommodate a 1:100 year ARI rainfall event (Process Minerals International Pty Ltd, 2013a).

While the construction of creek crossings across Phil's Creek could result in moderate areas of riparian vegetation being removed from the banks of the creek, particularly in instances where haul road crossings are constructed, the impact of this loss of vegetation on the creek system will be mitigated by the proponents commitment to locate mine site infrastructure away from Phil's Creek. Therefore, as clearing activities along Phil's Creek will be limited to clearing required to establish creek crossings, it is not anticipated that these clearing activities will result in adverse impacts to Phil's Creek or its associated riparian vegetation communities. To minimise the impact of vegetation clearing on Phil's Creek, a vegetation management condition requiring clearing within Phil's Creek to be limited to haul roads and access tracks has been placed on the permit.

Based on the above, the proposed activities are at variance to this Principle.

Methodology Process Minerals International Pty Ltd (2013a)

GIS Database
-Hydrography, Linear.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

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

The project area is situated within the Mckay, Newman, Robe and Boolgeeda land systems (GIS Database). These land systems are not susceptible to erosion (Van Vreeswyk et al, 2004). Therefore, the clearing activities are not expected to increase the incidence of soil erosion within the project area.

In addition, the proposed clearing activities will be undertaken to facilitate mining operations which are temporary in nature. At the completion of mining operations the proponent will be required to rehabilitate the cleared areas. The rehabilitation of the cleared areas at the completion of the mining operations should minimise the impact of any erosion which occurred during the mining operations and prevent long-term erosion impacts resulting from the clearing activities.

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

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

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

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

The project area is situated approximately 62 kilometres to the east of the nearest conservation area, Karijini National Park (GIS Database). Due to the distances which exist between the project area and conservation areas, the proposed clearing activities are not anticipated to result in adverse impacts to conservation areas.

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

Methodology GIS Database
-DEC Tenure

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

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

The project area is situated approximately 63 kilometres to the north northwest of the nearest Public Drinking Water Source Area (PDWSA), the Priority 1 Newman Water Reserve (GIS Database). The clearing activities will be surficial in nature and it is unlikely the proposed activities will intercept groundwater sources underlying the project area. Therefore, the proposed activities are unlikely to result in adverse impacts to groundwater quality.

The project area intercepts a number of ephemeral watercourses including Phil's Creek. The main impact to surface water quality which would be expected to result from the proposed clearing would be potential contribution of additional sediment to surface water flows during periods of significant rainfall. The contribution of additional sediment to surface water flows would not be anticipated to adversely impact surface water quality.

In addition, the proponent has committed to creating a buffer of undisturbed land where the mine pit approaches the edge of the mesa it is situated within. This clearing exclusion zone will retain the integrity of the mesa face and prevent runoff and erosion into Phil's Creek, which could adversely impact surface water quality in this creek system (Process Minerals International Pty Ltd, 2013a). Clearing within Phil's Creek will be limited to the creation of crossings to facilitate access from one side of the creek to the other (Process Minerals International Pty Ltd, 2013a). The contribution of additional sediment to Phil's Creek resulting from the construction of these crossings will be limited by the comparatively small size of these disturbed areas.

At the completion of mining operations, the proponent will be required to rehabilitate cleared areas. The rehabilitation of the cleared areas will minimise the potential for any additional sediment contribution to surface water flows to occur once mining operations are complete. Consequently, long-term impacts to surface water quality are not expected to result from the clearing activities.

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

Methodology Process Minerals International Pty Ltd (2013a)
GIS Database

(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 project area is situated within the Fortescue River Catchment area, which has an area of approximately 297,519,212 square kilometres (GIS Database). When this catchment areas natural propensity for flooding is considered alongside its size, it is unlikely the clearing of a 139 hectare area will cause or exacerbate the incidence or intensity of flooding.

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

Methodology GIS Database
-Hydrographic Catchments

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

Comments There is one Native Title Claim (WC2011/006) 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 seven registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation (formerly Department of Environment and Conservation) and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 28 October 2013 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received regarding this application.

Methodology GIS Database
-Aboriginal Sites of Significance
-Native Title Claims - Determined by the Federal Court

4. References

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5. Glossary

Acronyms:

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

Definitions:

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

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

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

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

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

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

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

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