Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2220/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Sally Malay Mining Limited**

1.3. Property details

Property: Mining Lease 80/540
Miscellaneous Licence 80/52
Local Government Area: Shire of Halls Creek
Colloquial name: Copernicus Nickel Project

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The area applied to clear has been broadly mapped at a scale of 1:250,000 as:

- Beard Vegetation Association 808: Grasslands, curly spinifex, low tree savanna; Snappy Gum over curly spinifex;
- Beard Vegetation Association 831: Hummock grasslands, sparse tree steppe; Snappy Gum over hard spinifex *Triodia intermedia* & *T. inutilis*; and
- Beard Vegetation Association 842: Mosaic: Grasslands, short bunch grass savanna, low tree, Mt House box & bloodwood over Enneapogon short grass / Hummock grasslands, open low tree-steppe; Snappy Gum over *Triodia wiseana* & *T. intermedia* (GIS Database).

Mattiske Consulting Pty Ltd (2006) undertook a four day flora and vegetation survey of the proposed mining area and associated haul road in July 2006. In August 2007, Mattiske Consulting Pty Ltd (2007) undertook a further two day flora and vegetation survey of the proposed haul road and an extension to the lease area around the proposed mine. The following 14 vegetation communities were mapped within the proposed clearing area:

Creeklines and Drainage Lines:

1. Low woodland to low forest of *Lophostemon grandiflorus subsp. riparius*, *Corymbia ?bella*, *Adansonia gregorii* and *Eucalyptus limitaris*, sometimes *Melaleuca argentea* and *Corymbia dendromerix*, over *Cyperus vaginatus* and *Heteropogon contortus* on major creeklines with sandy soils.

2. Scrub of Acacia tenuispica over Triodia wiseana with emergent Eucalyptus brevifolia and Corymbia opaca in minor drainage lines.

Hills and Hillslopes:

3. Hummock grassland of *Triodia wiseana* with emergent *Eucalyptus brevifolia* and *Corymbia opaca* on hills or hillslopes.

3a. Hummock grassland of *Triodia wiseana* with emergent *Eucalyptus brevifolia* and *Corymbia opaca* on hills or hillslopes disturbed from previous or current drilling activities and existing access tracks.

4. Open low woodland of *Corymbia opaca* and *Eucalyptus brevifolia* over a low open shrubland of *Carissa lanceolata* over a closed bunch grassland of *Triodia wiseana*, *Aristida pruinosa*, *Enneapogon purparescens* and *Sporobolus australasicus* on hillslopes.

5. Low open woodland of *Corymbia opaca*, *Eucalyptus brevifolia*, *Ficus aculeata var. orbicularis* and *Adansonia gregorii* over scrub of *Carissa lanceolata*, *Hakea arboresens*, *Grevillea pyramidalis* over a closed bunch grassland of *Sehima nervosum*, *Enneapogon purparescens*, *Aristida pruinosa* and *Sporobolus australasicus* in minor drainage channels.

6. Low woodland of *Eucalyptus brevifolia*, *Corymbia opaca*, *Lophostemon grandiflorus subsp. riparius*, *Adansonia gregorii* and *Corymbia dendromerinx* over open an scrub of *Grevillea pyramidalis* over an open bunched grassland of *Heteropogon contortus*, *Sorghum stipoideum* and *Sporobolus australasicus*.

7. Low open woodland of *Lophostemon grandiflorus subsp. riparius*, *Corymbia opaca* and *Eucalyptus brevifolia*

over a low shrubland of *Carissa lanceolata* over a closed bunch grassland of *Triodia wiseana*, *Sehima nervosum*, *Sorghum stipoideum* and *Heteropogon contortus*.

8. Low woodland of *Eucalyptus brevifolia*, *Corymbia opaca* and *Bauhinia cunninghamii* over scrub of *Carissa lanceolata* and *Hakea arborescens* over an open bunched grassland of *Enneapogon purparescens* and *Eragrostis desertorum*.

9. Low open woodland of *Eucalyptus brevifolia*, *Corymbia grandifolia* and sometimes *Corymbia opaca* over an open scrub of *Carissa lanceolata* over an open bunched grassland of *Aristida holathera var. holathera*, *Aristida pruinosa*, *Heteropogon contortus* and *Enneapogon p*urparescens.

10. Low woodland of *Eucalyptus limitaris*, *Eucalyptus pruinosa*, *Corymbia opaca*, *Bauhinia cunninghamii* and *Eucalyptus pruinosa* over scrub of *Carissa lanceolata* and *Acacia hemignosta* over an open bunch grassland of *Triodia wiseana*, *Eragrostis desertorum*, *Enneapogon purparescens*, *Heteropogon contortus*, *Eulalia aurea* and *Sorghum stipoideum*.

11. Low woodland of *Eucalyptus brevifolia* and *Corymbia opaca* over a scrub of *Acacia tenuispica*, *Acacia hemignosta*, *Hakea arborescens* and *Grevillea dimidiata* over an open bunched grassland of *Triodia wiseana*, *Sorghum stipoideum* and *Heteropogon contortus*.

12. Hummock Grassland of *Triodia wiseana* with emergent *Cochlospermum fraseri* and *Terminalia hadleyane* on rocky slopes.

13. Low Open Woodland of *Corymbia opaca* and *Eucalyptus brevifolia* over *Chyrsopogon fallax*, *Triodia wiseana*, *Eragrostis desertorum* and other bunched grasses on valley floors and minor drainage channels on sandy clay with a mantle of quartz.

Only four of the fourteen vegetation communities (1, 2, 3 and 3a) were recorded from the proposed mining area. Thirteen of the fourteen vegetation communities were mapped along the proposed haul road route (all except vegetation community 2).

Clearing Description

This clearing permit application is for a Purpose Permit to clear up to 64 hectares of native vegetation within a boundary of approximately 695 hectares (GIS Database). The proposed clearing will allow the proponent to develop the Copernicus Nickel Project, a new mining operation located 75 kilometres north east of Halls Creek (MBS Environmental, 2007). The project includes the development of an open cut pit, associated waste dump, run of mine (ROM) pad, topsoil stockpiles, offices and workshops. It is expected that approximately 34 hectares will be disturbed on Mining Lease 80/540.

A haul road approximately 23 kilometres in length is required to access the mine site from the Great Northern Highway. Construction of the haul road will involve upgrading an existing pastoral track which will minimise disturbance. Clearing for borrow pits will be required to source material to construct the haul road, whilst a water storage dam is also proposed for construction. It is expected that the clearing for the Copernicus Nickel Project will result in approximately 30 hectares of disturbance on Miscellaneous Licence 80/52 (MBS Environmental, 2007).

Vegetation Condition

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

to

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

Comment

The proposed clearing area is located on Mabel Downs Pastoral Station (GIS Database). Consequently, cattle grazing was observed to have detrimental impacts on the native vegetation, particularly along the haul road route (Mattiske Consulting Pty Ltd, 2007).

Weed invasion was significant (particularly along the existing pastoral track), with a total of 13 weed species recorded in the proposed clearing area. This included two Declared Plant species, Sida acuta and Sida cordifolia (MBS Environmental, 2007).

Disturbance from current and historical mineral exploration was noted in some areas within the Purpose Permit application boundary (Mattiske Consulting Pty Ltd, 2006; 2007).

3. Assessment of application against clearing principles

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

Comments

Proposal may be at variance to this Principle

The proposed clearing area is located approximately 75 kilometres north east of Halls Creek. The proposed haulage route lies within the Hart subregion of the Central Kimberley Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, whilst the proposed mine site lies within the Ord subregion of the Ord Victoria Plains bioregion (GIS Database).

The Hart subregion is characterised by hilly to mountainous country with skeletal sandy soils supporting Triodia hummock grasses with scattered trees (CALM, 2001). The region is fox and rabbit free according to available information, and is largely uninhabited.

The Ord subregion is characterised by level to gently undulating plains with scattered hills. Soils are skeletal

and vegetation is dominated by spinifex grasses with sparse low trees, including Snappy Gums (*Eucalyptus brevifolia*) and Bloodwoods (*Eucalyptus spp.*) (CALM, 2001).

The proposed clearing area contains 14 vegetation communities, as mapped by Mattiske Consulting Pty Ltd (2006; 2007). Four of these vegetation communities were mapped from the proposed mining area, with 13 of the 14 communities occurring along the proposed haul road route. Vegetation communities 1, 2, 3 and 3a were well represented within, and surrounding the proposed clearing area, and are not considered to be significant (MBS Environmental, 2007). Vegetation communities 4 - 13 were located along a section of the proposed haul road which has been subject to degradation from cattle grazing, fire, weed invasion and proximity to the existing station track. None of these vegetation communities are restricted to specific landforms that do not regularly occur in the Hall Botanical District. Consequently, none of these vegetation communities are deemed to be of conservation value (MBS Environmental, 2007). Overall, a majority of the vegetation subject to this clearing permit application has been subject to some form of disturbance.

Vegetation community type 1 is riparian in nature and was noted to contain large trees which provide habitat for a variety of fauna species. Dense riparian vegetation was recorded along creeklines and may provide habitat corridors through which fauna can move through the landscape (Mattiske Consulting Pty Ltd, 2006). The proposed waste dump, pit, offices and workshop locations have been designed to minimise disturbance to riparian vegetation (MBS Environmental, 2007). Similarly, there are a number of creek crossings associated with the proposed haul road, however this has been aligned to keep disturbance to a necessary minimum (Mattiske Consulting Pty Ltd; D. Swain – Environmental Manager, 2006 pers comm. 19/02/08).

Western Wildlife (2007a) concluded that the Copernicus Project area is likely to support a diverse array of vertebrate fauna species, including the Gouldian Finch (*Erythrura gouldiae*). This species is listed as 'Endangered' under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* and Schedule 1 'Fauna that is rare or likely to become extinct' under the *Wildlife Conservation (Specially Protected Fauna) Notice 2006*. The presence of this species within the proposed clearing area increases the biodiversity value of the site. However, most vertebrate fauna species in the project area are likely to be common and widespread throughout their range, and their conservation status is unlikely to be affected by the proposed clearing.

The Feral Cat (*Felis catus*) was recorded during the vertebrate fauna survey of the proposed clearing area (Western Wildlife, 2007a). Cats are becoming an increasing problem in the Kimberley (a region where the fox is absent). Feral cats pose a significant risk to the biodiversity of the Kimberley region. It is recommended that the proponent liaise with the DEC to develop and implement a feral predator management plan for the Copernicus project area (Western Wildlife, 2007a).

Thirteen weed species were recorded within the proposed clearing area by Mattiske Consulting Pty Ltd (2006; 2007). This included two Declared Weeds, pursuant to section 35 of the *Agriculture and Related Resources Protection Act 1976*. *Sida acuta* and *Sida cordifolia* are both Declared Weeds which have been assigned Priority 1 control codes. The movement of these plants or their seeds is prohibited within Western Australia (MBS Environmental, 2008a). Other weeds recorded within the proposed clearing area included: Calotrope (*Calotropis procera*), Starburr (*Acanthospermum hispidum*), Purpletop Chloris (*Chloris barbata*), Couch Grass (*Cynodon dactylon*), Spiked Malvastrum (*Malvastrum americanum*), Kapok bush (*Aerva javanica*), Asthma plant (*Euphorbia hirta*), Hyptis (*Hyptis suaveolens*), Coffee Senna (*Senna occidentalis*), Sunnhemp (*Crotalaria juncea*) and Ulcardo Melon (*Cucumis melo subsp. agrestis*).

The presence of weed species within the proposed clearing area diminishes the biodiversity value of the site. Weeds were largely recorded along the proposed haul road alignment (immediately adjacent to the existing station track). It is acknowledged that the proponent has a weed management plan in place. However, should a clearing permit be granted, it is recommended that a condition be imposed to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas.

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

Methodology

CALM (2001).
Mattiske Consulting Pty Ltd (2006).
Mattiske Consulting Pty Ltd (2007).
MBS Environmental (2007).
MBS Environmental (2008a).
Western Wildlife (2007a).
GIS Database:
- Interim Biogeographic Regionalisation for Australia (Subregions) - EA - 18/10/00.

(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 (2007a) undertook a dual season vertebrate fauna survey of the proposed clearing area between 13 and 21 May and 27 October and 3 November 2006. The purpose of the survey was to identify the fauna habitats of the area, list the vertebrate fauna species that have the potential to occur (including species of conservation significance), and to provide recommendations on protecting fauna values of the project area (Western Wildlife, 2007a).

The fauna survey consisted of the following methods:

1. Desktop study - Prior to undertaking any fieldwork, a list was prepared of vertebrate fauna species previously recorded or likely to occur in the project area. In order to compile the list, a number of fauna database searches were conducted for the project area and surrounds. This included the Western Australian Museum's 'Faunabase', the Department of Environment and Conservation's (DEC's) Threatened and Priority Fauna Database, the Birds Australia Atlas Database and the *EPBC Act 1999* Protected Matters Search Tool. The search area was the same for all database searches (Zone 52, 364000 to 404000mE, 8035000 to 8065000mN);

2. Field survey - Following the desktop survey, the proposed clearing area was visited in Autumn and Spring 2006. The following survey techniques were used to trap, observe and detect vertebrate fauna species within the project area:

2.1 -Trapping for reptiles, amphibians and small mammals - Seven trapping grids were installed for the Spring survey whilst eight were installed for the Autumn survey. Each trapping grid in Spring consisted of ten pitfall traps, ten funnel traps, ten Elliot traps and three cage traps. Trapping grids in Autumn were the same, except only two cage traps were used;

2.2 - Spotlighting and head-torching - This survey technique took place during both the Autumn and Spring surveys over a total of seven nights. All spotlighting was undertaken from a vehicle (using a combination of vehicle headlights and hand- held spotlights). Head- torching was undertaken opportunistically at a number of sites and was concurrently undertaken by 3-4 persons;

2.3 - Bat surveys - The Anabat II ultrasonic bat detector (a device that records and transforms ultrasonic bat echolocation calls for analysis and identification with computer software) was used over a total of five nights during the dual season fauna survey. Bat detection was carried out along the proposed haul road route in addition to the proposed mining area;

2.4 - Bird surveys - At each trapping grid a 20 minute bird survey was undertaken. This involved recording all bird species observed or heard calling. All bird surveys were undertaken between 06:30 and 10:00, and in the late afternoon from 16:00;

2.5 - Opportunistic Records - Any vertebrate fauna species observed whilst travelling between survey sites were recorded. Opportunistic surveying also involved hand-foraging for reptiles in logs, rocks, bark and leaf litter.

Table 1 below shows the number of vertebrate fauna species recorded during the dual season survey in comparison to the number of species with the potential to occur:

Table 1: Vertebrate fauna species in the Copernicus Nickel project area: species recorded/expected to occur

	Frogs	Reptiles	Birds	Mammals	Total
Potential to occur	21	103	158	49	331
Recorded during survey	6	41	96	19	162

It is acknowledged that several survey limitations impacted upon the number of species recorded during the field survey. For example, cool temperatures were experienced during May 2006 which would have limited animal activity (particularly reptiles). In addition, not all sites within the project area were accessible (Western Wildlife, 2007a).

Western Wildlife (2007a) concluded that the project area has the potential to support a diverse array of vertebrate fauna species, however the impact of the proposed clearing on vertebrate fauna populations in the region is likely to be relatively low given the small size of the clearing on a regional basis.

Notwithstanding this, the proposed clearing area does contain a number of creeklines and associated dense riparian vegetation which offers shelter, roost sites and breeding sites for a number of bird species and provides habitat for frog species. Creeklines also provide a source of drinking water for fauna species. Importantly, the dense riparian vegetation associated with creeklines has the potential to act as a corridor through which fauna can move through the landscape (Western Wildlife, 2007a). However, creeklines are likely to be too small and seasonal to support turtles, and do not represent significant waterbird habitat (Western Wildlife, 2007a).

A number of conservation significant vertebrate fauna species were recorded within the project area during the dual season fauna survey conducted by Western Wildlife (2007a). Of these, the most significant was the Gouldian Finch (*Erythrura gouldiae*). This species is listed as 'Endangered' under the *EPBC Act 1999* and Schedule 1 'Fauna that is rare or likely to become extinct' under the *Wildlife Conservation (Specially Protected Fauna) Notice 2006.*

The Gouldian Finch was once common across northern Australia in savanna woodlands. This species is now patchily distributed across its former range, with Mornington Station being the only location in the Kimberley known to support a population of more than 150 adult birds (Western Wildlife, 2007b). The Gouldian Finch has a specialised diet, comprising grass seed of a select few native grass species. The decline of the Gouldian Finch is believed to be linked to a significant reduction in food availability due to pastoralism and changed fire regimes (Western Wildlife, 2007b).

Gouldian Finches are known to breed in rocky hills, and the presence of hollow-bearing Snappy Gums (Eucalyptus brevifolia) is crucial. Gouldian Finches avoid hollows which have been charred by fire. The presence of water is another important habitat requirement for the Gouldian Finch. Current knowledge suggests that this species travels between 6-14 kilometres to water in the dry season and 3 - 17 kilometres in the wet season. Open waterholes are preferred drinking habitats to densely vegetated areas (Western Wildlife, 2007b).

During the Spring fauna survey, Western Wildlife (2007a) observed a flock of approximately 60 Gouldian Finches along the proposed haul road route, where the route passes through rocky hills. Most of the flock was comprised of juvenile birds, suggesting that breeding had taken place nearby.

Given the conservation significance of the Gouldian Finch, the proponent commissioned Western Wildlife to undertake a targeted Gouldian Finch survey in July 2007 to further assess the status of the Gouldian Finch in the Copernicus project area. A flock of 30 birds (including only 8 adults) was recorded along a section of the proposed haul road route during this survey. The location of hollow-bearing Snappy Gums was also recorded during this survey.

Western Wildlife (2007b) concluded that a small population of Gouldian Finches may be resident in the local area. No direct evidence of breeding was recorded during the survey, however 138 hollow-bearing Snappy Gums were recorded within 200 metres either side of the proposed haul road route and juvenile birds were observed (Western Wildlife, 2007b). Importantly, only 7 hollow- bearing Snappy Gums were recorded within 30 metres of the proposed haul road alignment (Western Wildlife, 2007b; D. Swain – Environmental Manager, 2006 pers comm. 02/04/08). Key grass species that provide an important food source for the Gouldian Finch are present in the proposed clearing area (Mattiske Consulting Pty Ltd, 2006; 2007). Similarly, creeklines in the proposed clearing area may provide a source of drinking water for Gouldian Finches, however during the July survey Gouldian Finches were only observed drinking from a waterhole on Boab Creek (located outside of the proposed clearing area). It is not known whether there are other pools in the area that retain water during the dry season, within the distance that the birds are known to fly (Western Wildlife, 2007b).

It is acknowledged that breeding habitat (rocky hills) is largely avoided by the proposed haul road alignment, with most of the rocky hills located to the west of the Miscellaneous Licence (outside of the proposed clearing area). The proposed haul road occurs on relatively flat land and passes through several small valleys, avoiding ridge tops and steep areas. The proposed alignment has also ensured that the haul road will be more than 100 metres away from the sites where the Gouldian Finch was recorded by Western Wildlife (2007a; 2007b). Nesting habitat (Snappy Gums) is avoided and is unlikely to be significantly impacted by the proposed clearing. The vegetation and landforms present in the proposed clearing area are widespread in the region and are therefore unlikely to represent significant habitat for the Gouldian Finch.

Furthermore, the proponent has developed a Gouldian Finch Management Plan to ensure that all aspects of the proposed mining operation are managed to minimise the impact to the Gouldian Finch. Key actions outlined in this management plan include:

- the haul road will be aligned downstream of Gouldian Finch sites to avoid disturbance to potential water sources;
- all employees will be educated on how to identify the Gouldian Finch as part of the site induction. All Gouldian Finch sightings will be reported to the Environmental Department immediately;
- once a sighting of the Gouldian Finch has been reported, all clearing activities must stop. A suitably qualified person will be engaged to undertake a survey at the location of the sighting and surrounding areas to confirm the sighting. The survey will be undertaken during the morning and evening over a period of four days;
- all Gouldian Finch sightings will be recorded in the Annual Environmental Report; and
- haul road and mine access road speeds will be restricted to minimise fauna related incidents (MBS Environmental, 2008b).

It is acknowledged that on the 27th July 2007, the proponent referred the Copernicus Nickel Project to the Commonwealth Department of Environment and Water Resources (DEWR) as the proposal triggers two matters protected under the *EPBC Act 1999*. These two matters are:

1. Listed Threatened species; and
2. Listed Migratory species.

On the 7th of September 2007, the DEWR advised that the proposal is not a 'Controlled Action', therefore

assessment of the proposal at a federal level is not required (MBS Environmental, 2007).

On the 20th of November 2007, Copernicus Joint Venture referred the Copernicus Nickel Project to the Environmental Protection Authority (EPA) under section 38 Part IV of the *Environmental Protection Act 1986* to set a level of assessment. On 11 December 2007, the EPA advertised its determination on the Copernicus Nickel Project as "Not Assessed - No Advice Given". The EPA will not formally assess this project but expects the proponent and relevant agencies to ensure that it is environmentally acceptable.

A number of other conservation significant fauna species were recorded during the dual season fauna survey of the Copernicus Project area. This included two species listed as 'Migratory' under the *EPBC Act 1999*: Rainbow Bee-eater (*Merops ornatus*) and Brolga (*Grus rubicunda*). Species listed as 'Priority 4' on the DEC's Threatened and Priority fauna list included: Grey Falcon (*Falco hypoleucos*), Australian Bustard (*Ardeotis australis*), Bush Stone-Curlew (*Burhinus grallarius*), Pictorella Mannikin (*Heteromunia pectoralis*) and Lakeland Downs Mouse (*Leggadina lakedownensis*). It is unlikely that the proposed clearing will result in a loss of significant habitat for any of the above listed species given the abundance of similar vegetation and landform units in the local and regional area.

It is relevant to note that much of the proposed haul road route was classified as 'degraded' according to Mattiske Consulting Pty Ltd (2006; 2007) due to disturbances such as cattle grazing, fire, weed invasion and proximity to the existing station track. The proposed open pit and waste dump locations (which will account for 21 hectares of the total clearance area) were also identified as being highly disturbed from exploration drilling activities. The value of such areas for indigenous fauna is low.

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

Methodology

Mattiske Consulting Pty Ltd (2006).
Mattiske Consulting Pty Ltd (2007).
MBS Environmental (2008b).
Western Wildlife (2007a).
Western Wildlife (2007b).

(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 no known records of Declared Rare Flora (DRF) within the proposed clearing area (GIS Database). Mattiske Consulting Pty Ltd (2006; 2007) did not locate any DRF species within the proposed clearing area, despite two flora and vegetation surveys undertaken in July 2006 and August 2007. The nearest known record of DRF to the proposed clearing area is a population of *Eucalyptus mooreana*, located approximately 195 kilometres to the west (GIS Database).

There are no known records of Priority Flora within the proposed clearing area (GIS Database). Mattiske Consulting Pty Ltd (2006; 2007) did not locate any Priority Flora within the proposed clearing area, despite two flora and vegetation surveys undertaken in July 2006 and August 2007. The nearest known record of Priority Flora to the proposed clearing area is a population of *Echinochloa kimberleyensis* (P1), located approximately 215 kilometres north-north east (GIS Database).

Mattiske Consulting Pty Ltd (2007) noted that a number of species recorded in the proposed clearing area may be of regional significance. These species included: *Eriachne aristidea*, *Fimbristylis leucocolea*, *Acacia tenuispica*, *Solanum lasiophyllum*, *Spermacoce brachystema* and *Isotoma armstrongii*.

Eriachne aristidea is a common grass species in the Pilbara bioregion, however it has only been recorded twice in the Kimberley provinces. The collection within the proposed clearing area represents an approximately 150 kilometre range extension to the north (Mattiske Consulting Pty Ltd, 2007).

Fimbristylis leucocolea is known from only six records in the Western Australian Herbarium. The collection within the proposed clearing area does not represent a range extension, however it does indicate that the species is distributed between the two extremes of current collections (Mattiske Consulting Pty Ltd, 2007).

The collection of *Acacia tenuispica* within the proposed clearing area represents a 300 kilometre range extension south of the known distribution (Mattiske Consulting Pty Ltd, 2007).

Solanum lasiophyllum is a common species in other parts of the state, however has only been recorded at one location in the Kimberley near Halls Creek (Mattiske Consulting Pty Ltd, 2007).

The collection of *Spermacoce brachystema* within the proposed clearing area represents a range extension approximately 300 kilometres south of the known distribution (Mattiske Consulting Pty Ltd, 2007).

The collection of *Isotoma armstrongii* within the proposed clearing area represents a range extension approximately 300 kilometres south east of the known distribution (Mattiske Consulting Pty Ltd, 2007).

It is likely that these species are under-represented at the Western Australian Herbarium due to a lack of

regional flora surveys as opposed to having regional significance (Mattiske Consulting Pty Ltd, 2007).

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

Methodology Mattiske Consulting Pty Ltd (2006).
Mattiske Consulting Pty Ltd (2007).
GIS Database:
- Declared Rare and Priority Flora List - CALM 01/07/05.

(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

There are no known Threatened Ecological Communities (TEC's) within the proposed clearing area (GIS Database). None of the vegetation communities recorded within the proposed clearing area by Mattiske Consulting Pty Ltd (2006; 2007) are considered TEC's pursuant to Schedule 2 of the *EPBC Act 1999* or according to the Western Australian DEC. The nearest known TEC to the proposed clearing area is located approximately 195 kilometres north west (GIS Database).

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

Methodology Mattiske Consulting Pty Ltd (2006).
Mattiske Consulting Pty Ltd (2007).
GIS Database:
- Threatened Ecological Communities - CALM 12/04/05.

(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 area applied to clear falls within the boundaries of the Interim Biogeographic Regionalisation for Australia (IBRA) Central Kimberley and Ord Victoria Plains bioregions (GIS Database). According to Shepherd et al (2001) there is approximately 100% of the pre-European vegetation remaining in both of these bioregions.

The vegetation of the application area is classified as Beard Vegetation Association 808: Grasslands, curly spinifex, low tree savanna; Snappy Gum over curly spinifex, Beard Vegetation Association 831: Hummock grasslands, sparse tree steppe; Snappy Gum over hard spinifex *Triodia intermedia* & *T. inutilis*; and Beard Vegetation Association 842: Mosaic: Grasslands, short bunch grass savanna, low tree, Mt House box & bloodwood over Enneapogon short grass / Hummock grasslands, open low tree-steppe; Snappy Gum over *Triodia wiseana* & *T. intermedia* (GIS Database). There is approximately 100% of the pre-European vegetation remaining of Beard Vegetation Associations 808, 831 and 842 in the Central Kimberley and Ord Victoria Plains bioregions (Shepherd et al, 2001). Whilst Beard Vegetation Associations 808, 831 and 842 are poorly represented in conservation reserves, the area proposed to clear does not represent a significant remnant of vegetation in the wider regional area. The proposed clearing will not reduce the extent of Beard Vegetation Associations 808, 831 or 842 below current recognised threshold levels, below which species loss increases significantly.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Central Kimberley	7,675,477	7,675,287	~100	least concern	4.4
IBRA Bioregion – Ord Victoria Plains	5,497,882	5,497,188	~100	least concern	5.9
Beard veg assoc. – State					
808	1,168,949	1,168,577	~100	least concern	0.9
831	381,765	381,765	~100	least concern	3.3
842	348,357	347,965	~99.9	least concern	3.5
Beard veg assoc. - Central Kimberley					
808	1,128,244	1,128,244	~100	least concern	0.9
842	98,272	98,272	~100	least concern	0
Beard veg assoc. -Ord Victoria Plains					
831	380,911	380,911	~100	Least concern	3.3

* Shepherd et al. (2001) updated 2005

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002).
Shepherd et al (2001).
GIS Databases:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00.
- Pre-European Vegetation - DA 01/01.

(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

Two ephemeral watercourses, draining westwards, pass to the north and the south of the proposed open pit and waste dump. These watercourses feed into Wills Creek which flows northeast from the project area, discharging into the Ord River approximately 22 kilometres from the project area. The proposed haul road intersects another ephemeral watercourse, Reedy Creek, which drains north into the Ord River (MBS Environmental, 2007). A number of other ephemeral watercourses cross the proposed haul road route (GIS Database).

Mattiske Consulting Pty Ltd (2006; 2007) undertook vegetation and flora surveys over the proposed clearing area and noted dense riparian vegetation to be present. Based on the above, the proposed clearing is at variance to this Principle.

According to Mattiske Consulting Pty Ltd (2007) eight significant creek crossings occur along the proposed haul road route. Of these, five of the proposed crossings are already in best position to minimise damage to surrounding riparian vegetation (Mattiske Consulting Pty Ltd, 2007). It is recommended that the proponent re-align the proposed haulage route through the other three creeklines to maximise the amount of riparian vegetation protected (Mattiske Consulting Pty Ltd, 2007). Large habitat trees should be avoided, as should other significant species such as the Boab (*Adansonia gregorii*).

In line with recommendations made by Mattiske Consulting Pty Ltd (2007), the proponent has re-aligned the proposed haul road route to minimise the impact to riparian vegetation.

Given the above, it is unlikely that the proposed clearing will have a significant impact upon riparian vegetation communities, wetlands or watercourses of environmental value.

Methodology MBS Environmental (2007).
Mattiske Consulting Pty Ltd (2006).
Mattiske Consulting Pty Ltd (2007).
GIS Database:
- Hydrography, linear - DOE 01/02/04.

(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

No land system mapping has been undertaken over the proposed clearing area (GIS Database). Based on the vegetation and flora surveys conducted over the proposed clearing area by Mattiske Consulting Pty Ltd (2006; 2007), the topography and soils of the Copernicus project area are variable. Drainage lines exist in the area which are characterised by sandy soils and/or sandy clay with a mantle of quartz. Rocky hills and hillslopes are also present throughout the proposed clearing area.

All vegetation clearing for the Copernicus Nickel Project is planned to take place over a period of three months during the dry season. Mining is scheduled to proceed immediately following clearing. Bare surfaces may be susceptible to wind and water erosion should adequate management measures not be put in place. Water erosion is likely to be of concern during the wet season, when intense rainfall events occur and surface water run off takes place.

In accordance with the Copernicus Nickel Project Environmental Management Plan, the proponent will implement the following management measures to minimise the risk of land degradation:

- topsoil will be stripped to a depth of approximately 150 millimetres for use in rehabilitation;
- topsoil will be stockpiled in windrows of a height not exceeding two metres to minimise the loss of seed viability and soil biota;
- progressive rehabilitation will be undertaken wherever practicable;
- diversion bunds and drains will be installed as necessary to control local surface water runoff to

minimise overland flow and consequential erosion;

- rehabilitated and disturbed areas will be routinely inspected for erosion, particularly after significant rainfall. If soil erosion is observed, appropriate remediation measures will be implemented (MBS Environmental, 2008a).

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

Methodology Mattiske Consulting Pty Ltd (2006).
Mattiske Consulting Pty Ltd (2007).
MBS Environmental (2008a).
GIS Database:
- Rangeland Land System Mapping - DA.

(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

There are no areas managed for conservation in close proximity to the proposed clearing area (GIS Database). Approximately 8.5 kilometres east of the proposed clearing area is the eastern boundary of a 500,000 hectare area listed on the Register of the National Estate (GIS Database). This area is named the 'Middle Ord Region (Purnululu)' and is classified as an Environmentally Sensitive Area (ESA) for its significant natural and indigenous heritage values (Australian Heritage Database, 2008).

Within the Middle Ord Region there are a number of areas which are managed for the purposes of conservation. The Purnululu Conservation Reserve, located approximately 30 kilometres east of the proposed clearing area, is the nearest of these (GIS Database). The Purnululu National Park is located approximately 37 kilometres east of the proposed clearing area (GIS Database). It is unlikely that the proposed clearing will have a significant impact upon the environmental values of the Middle Ord Region or its associated conservation reserves.

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

Methodology Australian Heritage Database (2008).
GIS Database:
- CALM Managed Lands and Waters - CALM 01/07/05.
- Register of National Estate - EA 28/01/03 (STATUS).

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

The proposed haul road route intersects a number of ephemeral creeklines, whilst two creeklines exist in the vicinity of the proposed open pit and waste rock landform (MBS Environmental, 2007). Without adequate management measures, there is potential for vegetation clearing to lead to an increase in sediment loads into local creeklines.

The proponent will implement the following management measures to minimise the impact of vegetation clearing on surface water quality:

- clearing will take place during the dry season;
- culvert drains will be constructed where the haul road crosses minor creeklines to ensure natural surface drainage is maintained;
- low level causeways will be constructed where the proposed haul road crosses major creeklines such as Wills Creek and Reedy Creek;
- sediment sumps and bunds will be constructed in areas where there is a potential for rainfall runoff to cause migration of fine particles. This will include bunding at the base of the proposed waste rock landform to prevent sediment transportation into creeklines; and
- haul roads will be elevated and contoured to prevent surface water inflows (MBS Environmental, 2007).

No studies have been undertaken to model the impact of vegetation clearing on groundwater levels or quality. However, it is expected that the proposed clearing will have a negligible impact upon groundwater. As per groundwater licence conditions, the proponent will undertake monthly monitoring of standing water levels of production and monitoring bores for the life of the mining operation (MBS Environmental, 2007).

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

Methodology MBS Environmental (2007).
GIS Database:
- Public Drinking Water Source Areas (PDWSAs) - DOE 28/04/05.

(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 clearing area is characterised by a seasonal monsoon climate, with a distinct wet season from November to March and a dry season from March to October. Average annual rainfall is 557 millimetres, whilst average annual evaporation is 3,125 millimetres (MBS Environmental, 2007).

A number of ephemeral watercourses traverse the proposed haul road route, whilst two ephemeral watercourses pass to the north and the south of the proposed open pit and waste rock landform (MBS Environmental, 2007). These watercourses only carry water during the wet season and may occasionally flood following extreme rainfall events.

The potential for flooding in the project area is limited by the site topography. Natural contours allow for surface water to runoff into the creeklines of the area, thereby dispersing surface water. Mining infrastructure will be elevated above the level of the two drainage lines located in close proximity to the open pit and waste rock landform (MBS Environmental, 2007).

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

Methodology MBS Environmental (2007).

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

Comments

There is one native title claim over the area under application (GIS Database). This claim (WC99/044) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). However, the mining tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Sites of Aboriginal Significance within the area applied to clear (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the DEC 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 the 27th July 2007, the proponent referred the Copernicus Nickel Project to the Commonwealth Department of Environment and Water Resources (DEWR) as the proposal triggers two matters protected under the *EPBC Act 1999*. These two matters are:

1. Listed Threatened species; and
2. Listed Migratory species.

On the 7th of September 2007, the DEWR advised that the proposal is not a 'Controlled Action', therefore assessment of the proposal at a federal level is not required (MBS Environmental, 2007).

On the 20th of November 2007, Copernicus Joint Venture referred the Copernicus Nickel Project to the EPA under section 38 Part IV of the *Environmental Protection Act 1986* to set a level of assessment. On 11 December 2007, the EPA advertised its determination on the Copernicus Nickel Project as "Not Assessed - No Advice Given". The EPA will not formally assess this project but expects the proponent and relevant agencies to ensure that it is environmentally acceptable.

Methodology MBS Environmental (2007).
GIS Databases:
- Aboriginal Sites of Significance - DIA 04/07/02.
- Native Title Claims - DLI 19/12/04.

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment

Mineral Production	Mechanical Removal	64	The Clearing Principles have been addressed and the proposed clearing is at variance to Principle (f) is not likely to be at variance to Principles (a), (b), (c), (d), (g), (h), (i) or (j), and is not at variance to Principle (e). Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, rehabilitation, record keeping and permit reporting.

5. References

Australian Heritage Database (2008) Middle Ord Region (Purnululu), Great Northern Hwy, Argyle Village via Halls Creek, WA, Australia. URL: http://www.environment.gov.au

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Mattiske Consulting Pty Ltd (2006) Flora and Vegetation Survey of the Copernicus Project Area, Sally Malay Mines. Prepared for Kimberley Nickel Mines Pty Ltd. August 2006.

Mattiske Consulting Pty Ltd (2007) Flora and Vegetation Survey of the Copernicus Project Access Track. Prepared for MBS Environmental Pty Ltd. October 2007.

MBS Environmental (2007) Purpose Permit Application: Copernicus Nickel Project and Haul Road. Assessment of Clearing Principles. Prepared for Copernicus Joint Venture. November 2007.

MBS Environmental (2008a) Environmental Management Plan, Copernicus Nickel Project. Prepared for: Copernicus Joint Venture. March 2008.

MBS Environmental (2008b) Gouldian Finch Management Plan: Copernicus Nickel Project. Prepared for: Copernicus Joint Venture. March 2008.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia (updated 2005).

Western Wildlife (2007a) Copernicus Exploration Area: 2006 fauna survey. Prepared for Kimberley Nickel Mines.

Western Wildlife (2007b) Gouldian Finch Survey at Copernicus: Preliminary dry-season survey 2007. Prepared for Kimberley Nickel Mines.

6. Glossary

Acronyms:

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

Definitions:

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

P1 **Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations

which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

P2 **Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

P3 **Priority Three - Poorly Known taxa**: taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.

P4 **Priority Four – Rare taxa**: taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.

R **Declared Rare Flora – Extant taxa** *(= Threatened Flora = Endangered + Vulnerable)*: taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

X **Declared Rare Flora - Presumed Extinct taxa**: taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

Schedule 1 **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.

Schedule 2 **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.

Schedule 3 **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.

Schedule 4 **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

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

P1 **Priority One: Taxa with few, poorly known populations on threatened lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P2 **Priority Two: Taxa with few, poorly known populations on conservation lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P3 **Priority Three: Taxa with several, poorly known populations, some on conservation lands**: Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P4 **Priority Four: Taxa in need of monitoring**: Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

P5 **Priority Five: Taxa in need of monitoring**: Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

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

EX **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.

EX(W) **Extinct in the wild:** A native species which:

(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or

(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CR **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

EN **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.