Government of **Western Australia**
Department of **Mines and Petroleum**

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3259/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Moly Metals Australia Pty Ltd**

1.3. Property details

Property: Mining Leases 45/1095, 45/1096, 45/1097, 45/1164
Miscellaneous Licences 45/184 and 45/185
Local Government Area: Shire of East Pilbara
Colloquial name: Spinifex Ridge Iron Ore Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
80		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	Clearing Description	Vegetation Condition	Comment
Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia and are useful to look at vegetation extent in a regional context. Two Beard Vegetation Associations are located within the application area (GIS Database): 1. **Beard Vegetation Association 93** - Hummock grasslands, shrub steppe; kanji over soft spinifex; and 2. **Beard Vegetation Association 171** - Hummock grasslands, low tree steppe; Snappy Gum over soft spinifex & *Triodia brizioides*. Outback Ecology Services (2006a) undertook a dual season baseline flora and vegetation survey of the Spinifex Ridge Molybdenum Project area between 25 and 30 July 2005 and 28 April and 3 May 2006. Although the Spinifex Ridge Iron Ore Project is located within the Spinifex Ridge Molybdenum Project area surveyed by Outback Ecology Services (2006a), no specific vegetation quadrats were established within the area subject to this clearing permit application. Consequently, Moly Mines Limited (2009b) undertook a botanical survey in July 2009 where quadrats were established in the proposed clearing area. The purpose of the survey was to validate vegetation descriptions and conclusions made by Outback Ecology Services (2006a) and where necessary, revise vegetation mapping boundaries at the local scale and identify vegetation variability within the clearing footprint area (Moly Mines Limited, 2009b). Based on flora and vegetation surveys conducted by Outback Ecology Services (2006a) and Moly Mines Limited (2009b), the following ten vegetation associations were mapped for the proposed clearing area:	Moly Metals Australia Pty Ltd has applied to clear up to 80 hectares of native vegetation within a boundary of approximately 252 hectares. The proposed clearing is for the establishment of the Spinifex Ridge Iron Ore Project, located approximately 50 kilometres north-east of Marble Bar (Moly Mines Limited, 2009a). Clearing associated with the project will allow three open cut pits to be developed on top of a banded ironstone formation ridge (Spinifex Ridge or Talga Range as it is known locally). In addition, one waste rock landform and access ramp will be established on the Talga Range. Disturbance on the range itself will total approximately 45 hectares. A further 32 hectares of clearing is proposed off the Talga Range for the purposes of establishing a run-of mine pad, crushing plant, stockpile areas, access roads and minor expansion to an existing exploration camp (Moly Mines Limited, 2009a).	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994); to Pristine: No obvious signs of disturbance (Keighery, 1994).	The vegetation condition rating is derived from information provided by Outback Ecology Services (2006a) and Moly Mines Limited (2009a; 2009b).

Hills and Ridges (H)

H1 - *Acacia inaequilatera* scattered tall shrubs to high open shrubland over mixed *Corchorus parviflorus* / *Indigofera monophylla / Tephrosia* spp. */ Ptilotus calostachyus* low scattered shrubs to low open shrubland over *Triodia epactia* hummock grassland. This vegetation association covers a majority of the proposed clearing area, occurring on the flat - topped Talga Range and hills.

H2 - *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees to low open woodland with occasional *Corymbia hamersleyana* over *Acacia inaequilatera* open shrubland over *Triodia epactia* hummock grassland.This vegetation association occurs on the southern faces of the Talga Range and hills. Some small pockets also occur on top of the range, on slopes and in minor valleys.

H3 - *Ficus brachypoda / Atalaya hemiglauca* low open woodland over *Dodonaea viscosa* ssp. *mucronata* scattered shrubs to open shrubland over *Cymbopogon procerus / Eriachne mucronata* open tussock grassland. This vegetation association occurs on very steep southern cliff faces of the Talga Range where rock faces are present.

H4 - *Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Acacia inaequilatera* scattered shrubs to high open shrubland over *Acacia ptychophylla* / *Corchorus parviflorus* low open shrubland over *Triodia brizoides / T. epactia* hummock grassland. This vegetation association occurs in sections along the lower southern face of the Talga Range.

Plains (P)

P1 - *Acacia inaequilatera* high shrubland to scattered shrubs over *Triodia epactia* hummock grassland. This vegetation association occurs on plains north and south of the Talga Range, including both sandy and rocky areas.

P2 - *Acacia inaequilatera* high open shrubland to scattered shrubs over *Triodia wiseana* hummock grassland with some *Triodia epactia*. This vegetation association occurs on plains north of the Talga Range, often where there is a covering of quartz fragments.

Drainage Lines (D)

D1 – *Triodia longiceps* hummock grassland. This vegetation association occurs as one very shallow drainage line over flats and plains south of the Talga Range.

D5 – *Corymbia hamersleyana* low open woodland over *Acacia tumida var. pilbarensis / A. pyrifolia* open scrub to high open shrubland over *Triodia epacticia* hummock grassland. This vegetation association occurs as two rocky drainage lines south of the Talga Range.

D6 - *Eucalypyus camaldulensis* open woodland over *Corymbia hamersleyana* low open woodland over *Tephrosia rosea* shrubland over *Stemodia viscosa* open herbs over *Triodia epactia* open hummock grassland. This vegetation association occurs as one rocky drainage line between the exploration camp and proposed access ramp.

D7 - *Acacia tumida* var. *pilbarensis* open scrub to high shrubland over *Triodia epactia* open hummock grassland along drainage lines. This vegetation association occurs as four minor drainage lines that vary from having very rocky to sandy substrates north of the Talga Range.

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 50 kilometres north-east of Marble Bar in the Chichester subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). The Chichester subregion is characterised by undulating granite and basalt plains with significant areas of basalt ranges. Plains support shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, whilst *Eucalyptus leucophloia* tree steppes occur on ranges (Kendrick & McKenzie, 2002).

A total of 21 Beard Vegetation Associations in the Chichester subregion are listed by Kendrick & McKenzie (2002) as a high priority for reservation. None of these are present in the proposed clearing area (GIS Database). In general, the vegetation associations within the proposed clearing area are relatively widespread across the Pilbara and all are present within conservation reserves (Outback Ecology Services, 2006a).

The H3 vegetation association is considered to be of moderate local significance as it has a relatively limited local distribution. This vegetation association occurs in disjunct patches in the more mesic areas of the upper steep southern faces of the Talga Range (Moly Mines Limited, 2009a). However, based on vegetation mapping and the proposed mine layout, clearing is only estimated to impact upon approximately 1.5 hectares of this vegetation association. Based on vegetation mapping, the Assessing Officer notes that there is representation of the H3 vegetation community outside of the proposed clearing area.

From a more detailed floristic perspective, the proposed clearing area does not comprise a high level of biological diversity. Statistical regional floristic analysis undertaken by Griffin (2007) showed that average quadrat species richness was lower at Spinifex Ridge when compared to all other East Pilbara regional sites. An average species richness of 8.8 species per quadrat (50 metres x 50 metres) was recorded at the proposed open pit locations, whilst the average increased slightly to 11.5 species per quadrat in the plains vegetation associations where access roads will need to be established. Neither of these species averages is considered representative of a high level of biological diversity and both are typical for large areas of the Pilbara (Moly Mines Limited, 2009a).

From a faunal perspective, the habitats present within the proposed clearing area are largely undisturbed and are likely to support a diverse assemblage of vertebrate fauna, including a number of local, state and national conservation significant fauna species. A summary of vertebrate fauna diversity is given below:

Avifauna (Birds)

Outback Ecology Services (2006b) recorded 63 bird species from 28 families during the dual season survey. Importantly, none of the birds recorded are bioregional endemics and most have widespread distributions. In summary, the bird community recorded at Spinifex Ridge is comparable to that found elsewhere in the bioregion, including that documented at the BHP Goldsworthy extension sites, located approximately 50 kilometres to the north (Outback Ecology Services, 2006b).

Mammals

Outback Ecology Services (2006b) recorded 26 species of mammal from 11 families during the dual season survey. In summary, Outback Ecology Services (2006b) deem the native mammal assemblage at Spinifex Ridge comparable to the four sites surveyed as part of BHP's Goldsworthy extension.

Herpetofauna (Reptiles and Amphibians)

The Pilbara bioregion is known to support a high diversity of reptile species. A total of 30 reptile species were recorded during the dual season survey, reflecting such diversity. However, none were Pilbara endemics as identified by Kendrick and McKenzie (2002) and the number of species recorded is comparable to the 24 and 32 species recorded at the BHP Goldsworthy extension sites.

Four amphibian species were recorded, none of which are bioregional endemics or of conservation significance (Outback Ecology, 2006b).

Given that the proposed clearing area supports a diverse faunal assemblage, the proposed clearing may be at variance to this Principle.

However, approximately half of the proposed clearing will occur within the H1 vegetation association, corresponding with rocky slope fauna habitat (Moly Mines Limited, 2009a). Regional habitat assessment undertaken by Outback Ecology Services (2008) reports this habitat type to be widespread in the region with potentially 130,000 hectares present within an 80 kilometre radius of Spinifex Ridge.

Methodology

Griffin (2007).
Kendrick & McKenzie (2002).

Moly Mines Limited (2009a).
Outback Ecology Services (2006a).
Outback Ecology Services (2006b).
Outback Ecology Services (2008).
GIS Database:
- Pre Europrean Vegetation.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments

Proposal is at variance to this Principle

Outback Ecology Services (2006b) undertook a Level 2 dual season terrestrial vertebrate fauna survey of the Spinifex Ridge Project area during August 2005 and April 2006. Findings are detailed below:

The following five fauna habitat types occur in the proposed clearing area:

1. Rocky slopes
2. Basalt ridges
3. Rock gullies
4. Spinifex plains
5. Minor drainage lines

All broad habitat types within the project area are well represented elsewhere in the bioregion, including in conservation reserves such as Meentheena Conservation Park (approximately 23 kilometres to the south) and Millstream-Chichester National Park (approximately 240 kilometres west south-west of the application area). In addition, all land systems present in the project area are widespread in the region (Outback Ecology Services, 2006b).

The Talga Range on which clearing is proposed spans approximately 90 kilometres and regional habitat assessment undertaken by Outback Ecology Services (2008) indicates that the rocky slope habitat type is widespread within an 80 kilometre radius of the project area, with up to 130,000 hectares present.

Kitty's Gap (a rocky gorge area with natural watering points) occurs in the proposed clearing area and is probably the most significant feature in terms of fauna habitat (Outback Ecology Services, 2006b). However, an existing access track runs through Kitty's Gap and only minor clearing associated with upgrading this track is proposed.

Rocky scree slopes, ridge tops and massive ranges in the proposed clearing area provide refuge from wildfires which are common in the area. Boulders and scree also provide important local niches for species such as the Northern Quoll (*Dasyurus hallucatus*) and Rothschild's Rock-wallaby (*Petrogale rothschildii*) (Outback Ecology Services, 2006b).

Riparian zones are important conduits for fauna dispersal, particularly in the arid zone. Disturbance of creeklines should be minimised wherever practicable (Outback Ecology Services, 2006b). There are no significant riparian zones in the proposed clearing area and Moly Mines Limited (2009a) have indicated that disturbance to drainage areas will total approximately 1.5 hectares.

Conservation significant species recorded at Spinifex Ridge by Outback Ecology Services (2006b) included the Northern Quoll, listed as 'Endangered' under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* and Schedule 1 'Fauna that is rare or is likely to become extinct' under the *Wildlife Conservation (Specially Protected Fauna) Notice 2008,* Rainbow Bee-eater (*Merops ornatus*) listed as 'Migratory' under the *EPBC Act 1999*, Australian Bustard (*Ardeotis australis*), Western Pebble-mound Mouse (*Pseudomys chapmani*); both listed as Priority 4 on the Department of Environment and Conservation's (DEC's) Priority Fauna List and Rothschild's Rock Wallaby, listed as locally significant and a priority species for off reserve conservation by Kendrick and McKenzie (2002).

In addition, a number of bioregional endemic mammals were recorded during the survey, including: *Ningaui timealeyi*, *Dasykaluta rosamondae* and *Planigale sp*.

With respect to the Northern Quoll, the Environmental Protection Authority (EPA) assessed the proposed Spinifex Ridge Molybdenum Project and deemed that the clearing of 1,600 hectares of land would result in a small part of Northern Quoll habitat being cleared, but would not significantly affect local habitats of the species due to the preservation of the riparian linkage from the project area downstream to the De Grey River. The EPA (2008) concluded that the Northern Quoll was unlikely to be substantially affected by the implementation of the Spinifex Ridge Molybdenum Project. Given the disturbance footprint for this clearing permit application is 20 times smaller than the proposed Spinifex Ridge Molybdenum Project considered by the EPA, it is considered unlikely that there will be significant impacts to the Northern Quoll as a result of this clearing proposal.

Numerous caves and fissures of various shapes, sizes and depths are present throughout the Talga Range which provide roosting habitat for bat species. Three conservation significant bat species may roost in the project area, including the 'Priority Four' Ghost Bat (*Macroderma gigas*), 'Vulnerable' Orange Leaf-nosed Bat (*Rhinonicteris aurantius*) and IUCN 'Lower Risk' Yellow-bellied Sheathtail Bat (*Saccolaimus flaviventris*). All

three species have been recorded at Coppin Gap, located approximately 1.6 kilometres east of the proposed clearing area (Outback Ecology Services, 2006b).

Rocky gullies and standing water are likely to be the most important habitats for bat species, particularly for species such as the Orange Leaf-nosed Bat which has very restrictive habitat requirements (Outback Ecology Services, 2006b). Kitty's Gap is the only location in the proposed clearing area which features both habitats. The proposed clearing at Kitty's Gap will involve minor upgrades to an existing track and will not involve mining or destruction of the gorge itself (Moly Mines Limited, 2009a).

Suitable habitat exists in the proposed clearing area for the Pilbara Olive Python (*Liasis olivaceus barroni*), listed as 'Vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999* and Schedule 1 'Fauna that is rare or is likely to become extinct' on the *Wildlife Conservation (Specially Protected Fauna) Notice 2008*. However, 450 minutes of targeted searching failed to record this species. Similarly, targeted searches for the Mulgara (*Dasycercus cristicauda*) failed to record this species despite the presence of suitable habitat.

Invertebrate fauna studies conducted at Spinifex Ridge by Outback Ecology Services (2007) revealed three taxa potentially exhibiting short range endemism (Moly Mines Limited, 2009a). However, a regional short range endemic survey was undertaken by Outback Ecology Services in November 2008 confirming that two of these species are widespread regionally and inhabit a broader array of habitats than was previously assumed (Moly Mines Limited 2009a). The other species, a pseudoscorpion, has not been found in the proposed clearing area and has only been found in Crown Reserve 31047 (Coppin Gap), located approximately 1.6 kilometres east of the proposed clearing area (Moly Mines Limited, 2009a; Outback Ecology Services, 2009).

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

Whilst the proposed clearing is likely to result in habitat fragmentation and habitat loss for a wide range of vertebrate fauna species on a local scale, the proposed clearing is unlikely to result in unacceptable regional impacts to indigenous fauna.

Methodology EPA (2008).
Kendrick & McKenzie (2001).
Moly Mines Limited (2009a).
Outback Ecology Services (2006b).
Outback Ecology Services (2007).
Outback Ecology Services (2008).
Outback Ecology Services (2009).

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

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

According to available GIS databases, there are no known records of Declared Rare Flora (DRF) or Priority Flora within or in close proximity to the proposed clearing area (GIS Database).

Outback Ecology Services (2006a) did not record any DRF or Priority Flora during a dual season vegetation and flora survey of the Spinifex Ridge Molybdenum Project area.

Moly Mines Limited (2009b) did not record any DRF or Priority Flora during a vegetation and flora survey of the Spinifex Ridge Iron Ore Project area.

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

Methodology Moly Mines Limited (2009b).
Outback Ecology Services (2006a).
GIS Database:
- Declared Rare and Priority Flora list.

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

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

According to available GIS databases, there are no known Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's) within the proposed clearing area or the general vicinity (GIS Database). Kendrick & McKenzie (2001) report that there are no known TEC's in the Chichester subregion.

Outback Ecology Services (2006a) and Moly Mines Limited (2009b) did not record any TEC's or PEC's during vegetation and flora surveys at Spinifex Ridge.

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

Methodology Kendrick & McKenzie (2001).

Moly Mines Limited (2009b).
Outback Ecology Services (2006a).
GIS Database:
- Threatened Ecological Communities.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments

Proposal is not at variance to this Principle

The area applied to clear is within the Interim Biogeographic Regionalisation of Australia (IBRA) Pilbara bioregion (GIS Database). According to Shepherd (2007) there is approximately 99.9% of the pre-European vegetation remaining in the Pilbara bioregion. The vegetation of the application area is classified as Beard Vegetation Association 93: Hummock grasslands, shrub steppe; kanji over soft Spinifex and Beard Vegetation Association 171: Hummock grasslands, low tree steppe; Snappy Gum over soft spinifex & *Triodia brizioides*. (GIS Database). There is approximately 100% of the pre-European vegetation remaining of Beard Vegetation Associations 93 and 171 in the Pilbara bioregion (Shepherd, 2007).

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 93 or 171 below the current recognised threshold level of 30% of the pre-clearing extent of the vegetation type (below which species loss accelerates exponentially at an ecosystem level) (EPA, 2000).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,187	17,894,646	~99.9	Least concern	6.3
Beard vegetation associations - State					
93	3,044,308	3,044,249	~100	Least concern	0.4
171	331,952	331,952	~100	Least concern	No data available
Beard vegetation associations - Bioregion					
93	3,042,113	3,042,064	~100	Least concern	0.4
171	331,308	331,308	~100	Least concern	No data available

* Shepherd (2007)
** 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).
EPA (2000).
Shepherd (2007).
GIS Databases:
- Interim Biogeographic Regionalisation of Australia.
- Pre-European Vegetation.

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments

Proposal is at variance to this Principle

No significant watercourses or wetlands occur in the proposed clearing area (Moly Mines Limited, 2009a; GIS Database). A number of minor ephemeral drainage lines are present (Moly Mines Limited, 2009a; GIS Database).

The proposed clearing will involve the establishment of access roads (some of which include minor creek crossings). Inevitably, there will be some clearing of vegetation growing in, or in association with, watercourses.

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

However, the Spinifex Ridge Iron Ore Project has been designed to minimise impacts to drainage lines wherever possible. It is estimated that only 1.5 hectares of the 80 hectares of clearing proposed will be associated with drainage lines (see table below):

Table 1: Proposed disturbance to native vegetation associated with watercourses

Vegetation Association	Clearing Proposed (ha)	Clearing Description
D1	0.4	One minor creek crossing along proposed southern access road.
D5	0.4	Two minor creek crossings along proposed southern access road. D5 also runs through the centre of the proposed run-of mine pad.
D6	0.3	One minor rocky creek between the exploration camp and access ramp may require crossing in a number of areas.
D7	0.4	Four minor creek crossings along proposed northern access road.

On this basis, it is unlikely that the clearing proposal will result in significant impacts to native vegetation growing in, or in association with, an environment associated with a watercourse or wetland.

Methodology Moly Mines Limited (2009a).
GIS Database:
- ANCA Wetlands.
- Hydrography, linear.
- RAMSAR Wetlands. - Wild Rivers (Priority).

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

Comments

Proposal is not likely to be at variance to this Principle

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

Capricorn Land System - This land system is characterised by hills and ridges supporting hard and soft spinifex grasslands. Land units include rocky upper slopes, sloping stony footslopes, stony lower plains and valleys and narrow drainage floors. Stony soils confer resistance to erosion. Approximately 54.6 hectares of clearing is proposed within this land system (Moly Mines Limited, 2009).

Macroy Land System – This land system is characterised by stony plains and occasional tor fields based on granite supporting hard and soft spinifex grasslands. This land system has low or very low erosion hazard (Van Vreeswyk et al, 2004). Approximately 16.8 hectares of clearing is proposed within this land system (Moly Mines Limited, 2009).

Rocklea Land System - This land system is characterised by basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands). The Rocklea land system has a very low erosion hazard. Approximately 4.2 hectares of clearing is proposed within this land system (Moly Mines Limited, 2009).

On the basis of land system descriptions, the proposed native vegetation clearing is unlikely to cause appreciable land degradation. Material most likely to erode (topsoil) is scarce or non-existent over most of the rocky range (Moly Mines Limited, 2009a). Where topsoil is present (on the plains for example) it will be stockpiled for use in rehabilitation.

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

Methodology Moly Mines Limited (2009a).
Van Vreeswyk et al (2004).

(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 proposed clearing area is not located within a conservation reserve (GIS Database). Crown Reserve 31047 (Coppin Gap) is located approximately 1.6 kilometres east of the application area and has been established for the purposes of conserving natural formations (GIS Database).

The nearest known Department of Environment and Conservation (DEC) managed estate is the Meentheena Conservation Park, located approximately 23 kilometres to the south at its closest point (Moly Mines Limited, 2009a).

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

Methodology Moly Mines Limited (2009a).
GIS Database:

- Cadastre
- CALM Managed Lands and Waters.

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

Comments

Proposal is not likely to be at variance to this Principle

No significant watercourses or wetlands occur in the proposed clearing area (Moly Mines Limited, 2009a; GIS Database). A number of minor ephemeral drainage lines are present (Moly Mines Limited, 2009a; GIS Database).

The proposed clearing will involve the construction of access tracks (some of which include minor creek crossings). Standard engineering controls will be implemented to maintain surface water flows.

The proposed clearing is not located within a Public Drinking Water Source Area (GIS Database). It is unlikely that the proposed clearing will impact upon groundwater levels or quality.

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

Methodology

Moly Mines Limited (2009a).
GIS Database:
- Hydrography, linear.
- Public Drinking Water Source Areas.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments

Proposal is not likely to be at variance to this Principle

The proposed clearing is located in the De Grey River Catchment, the main drainage system in the north-east Pilbara (EPA, 2008). Within the proposed clearing area Spinifex Ridge is the dominant feature in the landscape, rising some 100 to 150 metres above the surrounding plain. Two breaks in Spinifex Ridge (Kitty's Gap and Coppin Gap) concentrate surface water flows from the upstream catchment, allowing water to pass through the ridge (EPA, 2008).

The proposed native vegetation clearing will not impede surface water flows through Kitty's Gap or Coppin Gap. Native vegetation clearing is likely to increase surface water run-off but it is unlikely that there will be an increase in the incidence or intensity of natural flood events.

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

Methodology

EPA (2008).

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 (WC99/008) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). However, the mining tenements have been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

According to available GIS databases, there are no known registered Aboriginal Sites of Significance within the proposed clearing area or the immediate vicinity (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 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.

No submissions were received from direct interest parties or members of the public when the clearing permit application was advertised for comment.

In October 2006, Moly Metals Australia Pty Limited referred the Spinifex Ridge Molybdenum Project to the EPA under section 38 of the *Environmental Protection Act 1986*. A formal level of assessment was set as a Public Environmental Review, with a six week public review period commencing on 20 August 2007 (EPA, 2008). The proposal was also referred to the Department of Environment, Water Heritage and the Arts (DEWHA) under the commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and was considered a controlled action.

On 5 August 2008, the Spinifex Ridge Molybdenum Project was given formal Part IV approval under the *Environmental Protection Act 1986* through the publication of Ministerial Statement 772. On 1 September 2008 conditional approval was also granted from the DEWHA under the commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Moly Mines Limited, 2009a).

Subsequent to the approvals obtained for the Spinifex Ridge Molybdenum Project, falling commodity prices have affected the viability of the project and it is yet to commence. Instead, Moly Mines Limited is now pursuing the Spinifex Ridge Iron Ore Project. The iron ore resource is located within the same project area as that approved for the Ridge Molybdenum Project, albeit on a much smaller scale. The proposed Spinifex Ridge Molybdenum Project involved disturbance of up to 1,600 hectares of land, as opposed to the 80 hectares being sought to implement the Spinifex Ridge Iron Ore Project (EPA, 2008; Moly Mines Limited, 2009a).

Methodology

EPA (2008).
Moly Mines Limited (2009a).
GIS Database:
- Aboriginal Sites of Significance.
- Native Title Claims.

4. Assessor's comments

Comment

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

Should a clearing permit be granted, it is recommended that conditions be imposed on the permit for the purposes of retaining topsoil and vegetation, weed management, record keeping and permit reporting.

5. References

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.

EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority, Western Australia.

EPA (2008) Spinifex Ridge Molybdenum Project: Moly Metals Australia Pty Ltd. Report and Recommendations of the Environmental Protection Authority. Bulletin 1285. Environmental Protection Authority, Perth, Western Australia. April 2008.

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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.
DMP	Department of Mines and Petroleum, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
DoW	Department of Water
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
IBRA	Interim Biogeographic Regionalisation for Australia.
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

Definitions:

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

P1	**Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P2	**Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P3	**Priority Three - Poorly Known taxa**: taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
P4	**Priority Four – Rare taxa**: taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
R	**Declared Rare Flora – Extant taxa** *(= Threatened Flora = Endangered + Vulnerable)*: taxa which have been

adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

EX(W) **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

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

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

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

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