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

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2866/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Victor Michael Caruso**

1.3. Property details

Property: Mining Lease 21/66
Local Government Area: Shire Of Cue
Colloquial name: New Orient Gold Mine

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
10		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

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. One Beard vegetation association is located within the application area (GIS Database):

1127: Mosaic: Saltbush & bluebush/samphire. According to the State Land Information Platform (SLIP, 2009), Beard vegetation type 1127 is an open chenopod/samphire shrubland of *Atriplex sp.*, *Maireana sp.* and *Halosarcia sp.*

The Department of Agriculture has surveyed the Murchison pastoral region (Curry et al, 1994) and has mapped land systems and land units within this area. Vegetation types that occur within land units have been identified for their pastoral value. The application area occurs within the 'Saline Plains and Lake Margins' land unit within the Carnegie Land System (GIS Database). The Department of Agriculture (Curry et al, 1994) has identified the following vegetation types that occur within this land unit as either:

A. Frankenia Shrublands: Common shrubs include *Frankenia aff. pauciflora*, *Ptilotus beardii*, *F. aff. magnifica*, *Cratystylis subspinescens*, *P. polakii*, *F. aff. setosa*, *Eremophila pterocarpa* and *Cassia desolata*.

or

B. Samphire Shrublands: Common shrubs include *Halosarcia indica*, *H. pergranulata*, *H. doleiformis*, *H. pruinosa* and *H. halocnemoides*. Where this vegetation type occurs on shallow soils of stony sites, *Atriplex* and *Maireana spp.* occur.

Clearing Description

Victor Michael Caruso has applied to clear 10 ha within an application area of 19.2 ha for the purpose of expanding an existing gold mine. Vegetation will be cleared using mechanical means.

Vegetation Condition

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

Comment

The vegetation condition was assessed using photographs supplied by the applicant and aerial imagery, which shows the application area to be highly degraded by past mining operations, which make up the majority of the dune on which the mining operation takes place. Vegetation appears to comprise of saltbush and samphire fringing the lake as well as some larger shrubs higher on the dune, most likely *Acacia spp.*

3. Assessment of application against clearing principles

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

Comments

Proposal is not at variance to this Principle

The application area is located within the Eastern Murchison Interim Biogeographic Regionalisation of Australia (IBRA) sub-Bioregion (GIS Database). The Eastern Murchison IBRA sub-Bioregion is characterised by internal drainage, and extensive areas of elevated red desert sandplains with minimal dune development (CALM, 2002). Salt lake systems are associated with the occluded Paleodrainage systems. The sub-Bioregion soils

are mainly broad plains of red-brown soils and breakaway complexes as well as red sandplains. Vegetation is dominated by Mulga Woodlands often rich in ephemerals; hummock grasslands, saltbush shrublands and *Halosarcia* shrublands. The subregion is rich and diverse in both its flora and fauna however most species are wide ranging and usually occur in at least one, and often several, adjoining subregions (CALM, 2002). The application area occurs within a salt lake system (Lake Austin) and the vegetation is mainly *Halosarcia* shrubland. Biodiversity within the application area is likely to be very low due to historical degradation caused by past mining activity.

Lake Austin is listed as a Red Book Area (GIS Database). The EPA recommended that Lake Austin not be added to the State's conservation estate (EPA, 1975). Lake Austin is not a wetland of national significance (CALM, 2002).

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

Methodology CALM (2002)
EPA (1975)
GIS Database:
- Interim Biogeographic Regionalisation of Australia (subregions)

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

Comments

Proposal is not at variance to this Principle

The assessing officer conducted a desktop search of the Department of Environment and Conservation's (DEC) Nature Map database using the coordinates 117.8°E, 27.6°S and 118.2°E, 27.8°S, representing a 50 km search area surrounding the application area. This search revealed no fauna species of conservation significance as having been recorded within the application area (DEC, 2007-2009).

The assessing officer also conducted a search of the Western Australian Museum's Faunabase database using the same coordinates. This search revealed the Malleefowl (*Leipoa ocellata*) to be the only species of conservation significance to have been recorded within the search area (Western Australian Museum, 2009). The application area occurs in the middle of a salt lake system which does not provide suitable habitat for the Malleefowl.

Based on photographs supplied by the applicant and utilising aerial photography, it is clear that the application area is highly degraded and does not afford any significant fauna habitat. In fact, the application area is not likely to provide habitat for any fauna apart from common skinks and dragons.

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

Methodology DEC (2007-2009)
Western Australian Museum (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

The assessing officer conducted a desktop search of the DEC's Nature Map using the coordinates 117.8°E, 27.6°S and 118.2°E, 27.8°S, representing a 50 km search area surrounding the application area. This search revealed the following flora species of conservation significance as having been recorded within the search area: *Angianthus uniflorus* (P1), *Minuria tridens* (P1) and *Baeckea sp.* Melita Station (P3).

Angianthus uniflorus is known from the Lake Austin area, where it occurs on the lower margin of calcrete rise near gypseous salt lake (Western Australian Herbarium, 1998-2009). Whilst suitable habitat may occur within the application area, given the amount of degradation that has occurred within the application area, it is unlikely that this species would be present.

Minuria tridens has been collected as a single population on a roadside near Cue (Western Australian Herbarium, 1998-2009). All other populations are restricted to arid Northern Territory, where it occurs on dolomite, limestone and calcrete impregnated sandstone hills, rises and ranges. Given the species habitat preference, it is not likely to occur within the application area.

Baeckea sp. Melita Station occurs on dark-red, rocky soil over ironstone (Western Australian Herbarium, 1998-2007). Given the species habitat preference, it is not likely to occur within the application area.

Information was supplied by the applicant demonstrating that an inspection of M21/66 had been undertaken in 1996 by WG Martinick & Associates, during which no rare or priority flora were found within the tenement (Caruso, 2008).

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

Methodology Caruso (2008)

DEC (2007-2009)
Western Australian Herbarium (1998-2009)

(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) located within the application area (GIS Database). The nearest TEC is located approximately 215 km to the east (Depot Springs Stygofauna Community). At this remote distance there is little likelihood of any impact to this TEC from the proposed clearing.

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

Methodology

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

According to available databases, the application area falls within the Murchison IBRA Bioregion (GIS Database). This bioregion's vegetation extent remains at approximately 100% of its Pre-European extent (see table). Beard Vegetation Association 1127 occurs within the application area (GIS Database). According to Shepherd et al (2001), this vegetation association remains at approximately 100% of its Pre-European extent at both a state and bioregional level (see table). Whilst not represented within conservation estate, this vegetation association is under no threat from land clearing.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves (and post clearing %)*
IBRA Bioregion – Murchison	28,120,558	28,120,558	~100	Least Concern	1.1
Beard veg assoc. – State					
1127	69079	69079	~100	Least Concern	0
Beard veg assoc. – Bioregion					
1127	69079	69079	~100	Least Concern	0

* Shepherd et al. (2001)
** Department of Natural Resources and Environment (2002)

Options to select from:	Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)
Presumed extinct	Probably no longer present in the bioregion
Endangered+	<10% of pre-European extent remains
Vulnerable+	10-30% of pre-European extent exists
Depleted+	>30% and up to 50% of pre-European extent exists
Least concern+	>50% pre-European extent exists and subject to little or no degradation over a majority of this area

+ or a combination of depletion, loss of quality, current threats and rarity gives a comparable status

Therefore, the application area is not part of a remnant of native vegetation in an area that has been extensively cleared.

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:
- Pre-European Vegetation
- Interim Biogeographic Regionalisation of Australia

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

Comments

Proposal is at variance to this Principle

The application area occurs on the margins of Lake Austin, a large salt lake system. Lake Austin was considered for inclusion into Western Australia's conservation estate by the EPA as part of the Red Book Conservation Reserves review. However, the EPA recommended that Lake Austin should not be added to the State's conservation estate (EPA, 1975). This would suggest that the environmental values of Lake Austin are not of great enough significance to be afforded the protection of being gazetted as conservation estate.

The clearing of 10 ha of native vegetation on the margins of Lake Austin is not likely to significantly impact the conservation value of Lake Austin. The application area is highly degraded and the vegetation to be cleared would have little biodiversity or conservation value.

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

Methodology EPA (1975)

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

Comments

Proposal is not likely to be at variance to this Principle

The application area has been surveyed by the Department of Agriculture and Food (Curry et al, 1994). The application area is composed of the Carnegie Land System. This system is described as salt lakes with extensive fringing saline plains, dunes and sandy banks, supporting low halophytic shrublands and scattered tall *Acacia* shrublands; lake beds are highly saline, gypsiferous and mainly unvegetated (Curry et al, 1994). An analysis of aerial photography reveals the application area is most likely to consist of the 'saline plains and lake margins' land unit within this land system. These are described as flat, saline and gypsiferous alluvial lower plains adjacent to lakebeds. Soils are mostly reddish-brown clays with crystalline gypsum with thin saline crusts and fine quartz or calcrete mantles (Curry et al, 1994). This description accurately describes the site as described by the applicant (Caruso, 2008). Soils within these areas have a mild to moderate susceptibility to sheet water erosion and wind erosion if vegetation is severely degraded (Curry et al, 1994). Photographs of the areas around the current mining operations suggest little erosion to date, even in highly disturbed areas (Caruso, 2008).

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

Methodology Caruso (2008)
Curry et al (1994)
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 at variance to this Principle

Lake Austin was considered for inclusion into Western Australia's conservation estate by the EPA as part of the Red Book Conservation Reserves review. However, the EPA recommended that Lake Austin should not be added to the State's conservation estate (EPA, 1975). This would suggest that the environmental values of Lake Austin are not of great enough significance to be afforded the protection of being gazetted as conservation estate

According to available databases, the nearest conservation area to the application area is Black Range Pastoral Station, located approximately 120 km east of the application area (GIS Database). Black Range Pastoral Station has been proposed for inclusion to conservation estate.

At this remote distance, the vegetation within the application area is not likely to contribute to the environmental values of this proposed conservation area.

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

Methodology EPA (1975)
GIS Database:
- CALM Managed Lands and Waters

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

Comments

Proposal is not likely to be at variance to this Principle

The application area does not occur within a Public Drinking Water Source Area (GIS Database).

The application area occurs on the margins of a salt lake. However, the small amount of clearing proposed (10 ha) and the low erodability of the soil types present (Curry et al, 1994) within the application area suggests that the possibility of turbidity or sedimentation of the lake bed is low. The lake bed is hypersaline, and groundwater in the area has been measured at 320,000 mg/L Total Dissolved Solids (Caruso, 2008). The removal of 10 ha of native vegetation is not likely to significantly alter the salinity or pH of the groundwater in the area.

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

Methodology Caruso (2008)
Curry et al (1994)
GIS Database:
- Public Drinking Water Source Areas (PDWSAs)

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

Comments

Proposal is not likely to be at variance to this Principle

The application area occurs on the margins of a salt lake (Lake Austin). This lake is likely to be dry for most of the year and may have some surface water during winter months, or occasionally following cyclonic activity. However, the salt lake is quite extensive and the removal of 10 ha of vegetation is not likely to cause significant amounts of run off such that flooding within the lake will increase in height or duration.

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

Methodology

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

Comments

There are two native title claims over the area under application, WC99_010 and WC99_046 (GIS Database). These claims have been registered with the National Native Title Tribunal. However, the mining tenement has been granted in accordance with the future act regime of the Native Title Act, 1993 and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the Native Title Act, 1993.

There are no Aboriginal sites of significance within the application area (GIS Database). It is the proponent's responsibility to comply with the Aboriginal Heritage Act, 1972 and ensure that no sites of aboriginal significance are damaged though 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 during the public comments period.

Methodology GIS Databases:
- Native Title Claims
- Aboriginal Sites of Significance

4. Assessor's comments

Comment

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

It is recommended that should a permit be granted, conditions be endorsed on the permit with regards to recording the areas cleared and submitting an annual clearing report.

5. References

CALM (2002). A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management

Caruso VM (2008). New Orient Gold Mine, Mining Lease 21/66, Clearing Permit Supporting Documentation.

Curry PJ, Payne AL, Leighton KA, Hennig P, Blood DA (1994). Technical Bulletin No. 84. An inventory and condition survey of the Murchison River catchment and surrounds, Western Australia. Department of Agriculture, Western Australia.

DEC (2007-2009). NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. URL: http://naturemap.dec.wa.gov.au/ Accessed 5/2/09.

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 (1975). Conservation Reserves For Western Australia, as recommended by the Environmental Protection Authority, 1975. Systems 4, 8, 9, 10, 11, 12.

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

Shepherd DP, Beeston GR and Hopkins AJM (2001). Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

SLIP (2009). Shared Land Information Platform http://spatial.agric.wa.gov.au/slip/products_view.asp Accessed 4/2/09

Western Australian Herbarium (1998-2009). FloraBase - The Western Australian Flora. Department of Environment and Conservation. http://florabase.calm.wa.gov.au/ (Accessed 5/2/09).

Western Australian Museum (2009). Faunabase - Western Australian Museum, Queensland Museum and Museum & Art Gallery of NT Collections Databases. http://www.museum.wa.gov.au/faunabase/prod/index.htm Accessed 5/2/09. Western Australian Museum.

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
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.