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

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3852/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **AQL Mining Pty Ltd**

1.3. Property details

Property: Mining Lease 47/450
Local Government Area: Shire of Roebourne
Colloquial name: Karratha Gravel Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
62		Mechanical Removal	Sand and gravel extraction

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 17 March 2011

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description
Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation extent in a regional context. The following Beard vegetation association is located within the application area:

589: Mosaic: Short bunch grassland – savanna/grass plain (Pilbara)/Hummock grasslands, grass steppe; soft spinifex.

A flora and vegetation survey was undertaken over the application area by Keith Lindbeck and Associates on 28 January 2010. The following vegetation communities were recorded within the application area (Keith Lindbeck and Associates, 2010a):

Abc – *Ehretia saligna* scattered stands over *Acacia bivenosa, Acacia coriacea* shrubland/tall shrubland over *Corchorus ?walcottii* low open shrubland over *Diplopeltis eriocarpa* open herbland;

Ax – *Acacia xiphophylla* shrubland over *Triodia ?wiseana* (on low stony rises)/*Eragrostis sp.* (in sandy swales) scattered stands;

Axc – *Trianthema turgidifolia, Acacia xiphophylla, Rhagodia eremaea* low shrubland;

Wg – *Eragrostis sp.* grassland;

Dr – *Eucalyptus victrix, Corymbia hamersleyana* scattered low trees over *Acacia bivenosa, Acacia coriacea, Senna glutinosa subsp. glutinosa* scattered shrubs over *Triodia ?wiseana* grassland; and

Gp – *Acacia bivenosa, Acacia coriacea, Acacia saligna, Acacia ?colei, *Tamarix aphylla* and **Aerva javanica.*

Clearing Description
AQL Mining Pty Ltd has applied to clear up to 62 hectares within an application area of approximately 62.5 hectares (GIS Database). The application area is located approximately 2 kilometres west of Karratha (GIS Database).

The purpose of the application is to develop a borrow pit extraction operation (Keith Lindbeck and Associates, 2010a). Clearing will be by mechanical means.

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

to

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

Comment
The vegetation condition was assessed by a botanist from Keith Lindbeck and Associates (2010a).

No evidence of domesticated stock, feral goats or rabbits was observed during the survey (Keith Lindbeck and Associates, 2010a).

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

A vegetation survey of the application area identified six vegetation communities (Keith Lindbeck and Associates, 2010a). The majority of the application area was in 'very good' condition with a small part in 'excellent' condition (Keith Lindbeck and Associates, 2010a).

The flora survey recorded a total of 26 flora species from 21 genera and 16 families (Keith Linbeck and Associates, 2010a). There were four weed species identified: Kapok Bush (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*), Mimosa Bush (*Vachellia farnesiana*) and Athel Pine (*Tamarix aphylla*) (Keith Lindbeck and Associates, 2010a). No Declared Rare Flora or Priority Flora was recorded during the survey (Keith Lindbeck and Associates, 2010a).

The application area is within the buffer zone of the Priority Ecological Community (PEC) Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands) (GIS Database). Whilst the vegetation unit Wg (*Eragostis sp.* grassland) is similar to the description of the PEC, it has been assessed that the proposed clearing is not impacting upon the PEC itself (Keith Lindbeck and Associates, 2010b).

The fauna habitat within the application area is not restricted, and it is likely that similar quality habitat would exist throughout the surrounding area and the Pilbara bioregion (Keith Lindbeck and Associates, 2010c). Given this, it is not expected to comprise a higher level of faunal diversity than nearby areas.

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

Methodology

Keith Lindbeck and Associates (2010a)
Keith Lindbeck and Associates (2010b)
Keith Lindbeck and Associates (2010c)
GIS Database:
- Threatened Ecological Sites Buffered

(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 likely to be at variance to this Principle

A Level 1 fauna survey over the application area has identified three broad habitats; *Acacia* low shrubland, grassland and riparian vegetation including scattered low Eucalypt trees (Keith Lindbeck and Associates, 2010c). Many tracks traverse the application area causing some fragmentation of habitat (Keith Lindbeck and Associates, 2010c). This fauna habitat is not restricted, and it is likely that similar quality habitat would exist throughout the surrounding area and the Pilbara bioregion.

The fauna survey identified that four conservation significant fauna species are likely to be found within the application area:

- Australian Bustard (*Ardeotis australis*) – Priority 4;
- Rainbow Bee-eater (*Merops ornatus*) - migratory and marine species under the *EPBC Act 1999*;
- Barn Swallow (*Hirundo rustica*) - migratory and marine species under the *EPBC Act 1999*; and
- White-bellied Sea Eagle (*Haliaeetus leucogaster*) - migratory and marine species under the *EPBC Act 1999.*

Whilst these species may occur within the application area, given their ecology, behaviour and distribution, the proposed clearing is not likely to significantly impact these species.

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

Methodology

Keith Lindbeck and Associates (2010c)

(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 databases, there are no records of Declared Rare Flora (DRF) within the application area (GIS Database). A Level 1 flora survey was conducted within the application area by Keith Lindbeck and Associates on 28 January 2010 (Keith Lindbeck and Associates, 2010d). No DRF was recorded during this survey.

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

Methodology Keith Lindbeck and Associates (2010d)
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 databases, there are no Threatened Ecological Communities (TEC's) within the application area (GIS Database). The flora and vegetation survey did not identify any vegetation communities described as a TEC (Keith Lindbeck and Associates, 2010a).

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

Methodology Keith Lindbeck and Associates (2010a)
GIS Database:
- Threatened Ecological Sites Buffered

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

Comments

Proposal is not at variance to this Principle

The application area falls within the Pilbara Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.9% of the Pre-European vegetation remains (see table) (GIS Database, Shepherd, 2009).

The vegetation of the application area has been mapped as the following Beard vegetation association (GIS Database):

589: Mosaic: Short bunch grassland – savanna/grass plain (Pilbara)/Hummock grasslands, grass steppe; soft spinifex.

According to Shepherd (2009) approximately 100% of this Beard vegetation association remains at both a state and bioregional level. Therefore the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,193	17,785,000	~99.9	Least Concern	6.3
Beard veg assoc. – State					
589	809,754	809,637	~100	Least Concern	1.6
Beard veg assoc. – Bioregion					
589	730,718	730,683	~100	Least Concern	1.8

* Shepherd (2009)
** 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

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd (2009)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- 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

According to available databases, there is an ephemeral watercourse that passes through the north-west corner of the application area (GIS Database). There is also an ephemeral watercourse that runs immediately adjacent to the western boundary of the application area (GIS Database). During surveys of the application area it was noted that this area supports pools of water and riparian vegetation (Keith Lindbeck and Associates, 2010a). This watercourse is not expected to be impacted by the proposed clearing.

There will be some clearing of vegetation associated with the watercourse located within the application area. This watercourse was not observed to support pools of water. The vegetation unit associated with this watercourse was restricted to creeklines and showed a greater diversity of species than other vegetation units (Keith Lindbeck and Associates, 2010a). Whilst the watercourse within the application area may not support pools of water like the one outside the western boundary, the vegetation associated with it appears to form a buffer to the watercourse outside the application area (GIS Database).

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

Methodology

Keith Lindbeck and Associates (2010a)
GIS Database:
- Hydrography, linear
- Karrtha townsite 20cm Orthomosaic

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

Comments

Proposal may be at variance to this Principle

According to available databases, the application area is comprised of the Horseflat and Cheerawarra land systems (GIS Database). The application area is almost entirely comprised of the Horseflat system and onsite observations indicate that the application area is representative of this land system (Keith Lindbeck and Associates, 2010a; GIS Database). Parts of this land system are prone to erosion, especially gullying on the sloping margins to major watercourses (Payne and Tille, 1992). The application area is made up of the alluvial plains unit of the Horseflat land system (GIS Database). This unit is highly susceptible to degradation, in particular wind erosion (Payne and Tille, 1992). Impacts of erosion may be minimised with the implementation of a staged clearing condition.

The topography of the application area has a low relief (GIS Database). Soils generally consist of sandy clays overlying gravelly clayey sand (Keith Lindbeck and Associates, 2010a). The removal of vegetation is not likely to cause an increase in water run-off or water logging.

A portion of the western side of the application area has been identified as having a moderate to low acid sulphate soil risk (GIS Database). Provided the proposed clearing does not expose the subsoil, then environmental acidity is not expected to rise.

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

Methodology

Keith Lindbeck and Associates (2010a)
Payne and Tille (1992)
GIS Database:
- Acid Sulphate Soil Risk Map, Pilbara Coastline
- Rangeland Land System Mapping
- Topographic Contours, Statewide

(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

According to available databases, the application area is not located within any conservation areas (GIS Database). The nearest conservation reserves are several offshore nature reserves 20-30 kilometres north-west of the application area (GIS Database). The nearest onshore conservation area is Millstream- Chichester National Park, approximately 53 kilometres south-east of the application area (GIS Database).

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

Methodology

GIS Database:
- DEC Tenure

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

Comments

Proposal is not likely to be at variance to this Principle

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There are no permanent watercourses within the application area, however there is one ephemeral drainage line that passes through the north-west of the application area (GIS Database).

The average annual evaporation rate for the application area is 3,400 millimetres and the average annual rainfall is 276.1 millimetres (BoM, 2010; GIS Database). Therefore, during normal rainfall events water in the application area is likely to evaporate quickly. However, substantial rainfall events create surface sheet flow which is likely to have a higher level of sediments. During normal rainfall events, the proposed clearing would be unlikely to lead to an increase in sedimentation of watercourses within the application area.

The groundwater salinity within the application area is between 1,000 – 3,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). This is considered to be brackish. The proposed clearing is not likely to cause salinity levels within the application area to alter.

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

Methodology

BoM (2010)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrography, linear
- 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

With an average annual rainfall of 276.1 millimetres and an average annual evaporation rate of 3,400 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2010; GIS Database). Whilst large rainfall events may result in the flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology

BoM (2010)
GIS Database:
- Evaporation Isopleths

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

Comments

The clearing permit was advertised on the 2 August 2010 by the Department of Mines and Petroleum inviting submissions from the public. There was one submission received raising issues regarding the post mining land use.

There is one native title claim over the application area under application; WC99/014 (GIS Database). This claim has been registered with the Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993.*

According to available databases, 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 Aboriginal sites of significance are damaged through the clearing process.

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

Methodology

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

4. References

Bureau of Meteorology (2010) BOM Website - Climate statistics for Australian locations, Averages for Karratha Aero. Available online at: http://www.bom.gov.au/climate/averages/tables/cw_004083.shtml Accessed on 22 August 2010.

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.

Keith Lindbeck and Associates (2010a) Karratha Gravel Project - Borrow Pit: Supporting Document for Clearing Permit Application. Unpublished report for Carr Civil Contracting Pty Ltd.

Keith Lindbeck and Associates (2010b) Additional information supplied to Assessing Officer for clearing permit application CPS 3852/1. Received on 1 October 2010.

Keith Lindbeck and Associates (2010c) Karratha Gravel Project - Borrow Pit: Flora and Vegetation Survey. Unpublished report for Carr Civil Contracting Pty Ltd.

Keith Lindbeck and Associates (2010d) Karratha Gravel Project - Borrow Pit: Fauna Survey. Unpublished report for Carr Civil Contracting Pty Ltd.

Payne, A.L and Tille, P.J (1992) Technical Bulletin No. 83: An inventory and condition survey of the Roebourne Plains and Surrounds, Western Australia. Department of Agriculture, South Perth, Western Australia.

Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.

5. Glossary

Acronyms:

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

Definitions:

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

P1	**Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
P2	**Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at

least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

VU **Vulnerable:** A native species which:

(a) is not critically endangered or endangered; and

(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

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