Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4243/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Auvex Resources Limited**

1.3. Property details

Property: Mining Lease 52/1048
Local Government Area: Shire of Meekatharra
Colloquial name: Horseshoe Range Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 28 April 2011

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 in a regional context. The following Beard vegetation associations have been mapped within the application area: - 18: Low woodland; Mulga (*Acacia aneura*); and - 39: Shrublands; Mulga scrub (GIS Database). Two flora and vegetation surveys have been undertaken on the Horseshoe Range project area. Pilbara Flora and Outback Ecology Services (Outback Ecology, 2010) conducted a one season Level 2 equivalent flora and vegetation survey on 27-28 January 2010. This survey covered the areas proposed for bulk sample sites over 66.15 hectares within the application area (MBS, 2011). MBS Environmental (MBS) conducted a Level 1 (Reconnaissance) survey of the entire Exploration Licence 52/1561 on 7-11 June 2010, with a follow up visit conducted on 6-9 September 2010. In addition a desktop fauna assessment was conducted by Egernia in 2009 (MBS, 2010). The application area covers Mining Lease 52/1048 which covers the northern section of Exploration Licence 52/1561 (MBS, 2011). During the MBS (2010) flora and vegetation survey of Mining Lease 52/1048, eleven vegetation types were identified as follows: 1. Open scrub of *Acacia aneura* var. *tenuis* and *Acacia pruinocarpa* over *Eremophila jucunda* subsp*. jucunda*, *Eremophila spectabilis* subsp. *spectabilis* and *Ptilotus obovatus* on flats. 2. Very open scrub of *Acacia aneura* var. *tenuis* and *Acacia citrinoviridis* with scattered *Ptilotus obovatus*, *Senna glutinosa* subsp. *glutinosa* and Poaceae sp. on flats.	Auvex Resources Limited (Auvex Resources) has applied to clear up to 85.5 hectares of native vegetation within an application area covering approximately 796 hectares. The application area is located approximately 123 kilometres north of Meekatharra (GIS Database). The purpose of the clearing permit application is to develop five shallow open pits and associated waste rock landforms as well as processing and infrastructure facilities. (MBS, 2010).	Good: Structure significantly altered by multiple disturbances; retains basic structure/ability to regenerate (Keighery, 1994). To Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	The vegetation condition and description is based on the flora and vegetation survey conducted by MBS (2010). This was assessed utilising Trudgen's vegetation condition scale and was converted to the Keighery scale for consistency.

3. Scrub to patches of Thicket of *Grevillea berryana*, *Acacia aneura* var. *tenuis*, *Acacia pruinocarpa*, *Acacia citrinoviridis* and *Acacia marramamba* over mixed low shrubs along drainage lines.

4. Open Scrub of *Acacia aneura* var*. tenuis* and *Acacia citrinoviridis* with scattered *Acacia pruinocarpa*, *Grevillea berryana* and *Corymbia ferriticola* over mixed low shrubs on outcropping manganese rich ironstone ridge tops.

5.Open scrub of *Acacia rhodophloia* with scattered *Acacia aneura* var. *aneura*, *Acacia pruinocarpa*, *Grevillea berryana* and *Acacia aneura* var. *tenuis* over mixed low shrubs on north facing shale rich slopes.

6. Scrub of *Eucalyptus semota* (P1) over *Acacia pruinocarpa*, *Acacia aneura* var. *intermedia*, *Acacia aneura* var. *tenuis*, *Acacia wanyu* and *Acacia marramamba* over mixed low shrubs on low manganese rich hills.

7. Scattered scrub of *Acacia aneura* var. tenuis, *Acacia citrinoviridis* and *Grevillea berryana* over low shrubland of *Aluta maisonneuvei* subsp. *auriculata* with *Eremophila jucunda* subsp. *jucunda* and *Eremophila spectabilis* subsp. *spectabilis* on flats.

8. Scrub of *Acacia aneura* var*. tenuis*, *Grevillea berryana*, *Acacia citrinoviridis* and *Acacia aneura* var. *intermedia* over mixed low shrubs on outcropping quartz.

9. Open scrub of *Acacia aneura* var. *tenuis*, *Acacia pruinocarpa* and *Acacia aneura* var. *aneura* over mixed low shrubs over *Maireana* ?*georgei* on massive lateritic outcrops.

10. Scrub patches of *Grevillea berryana*, *Acacia aneura* var*. tenuis*, *Acacia pruinocarpa*, *Acacia citrinoviridis* and *Acacia marramamba* over mixed low shrubs in low-lying outwash areas.

11. Scrub of *Acacia aneura* var. *tenuis*, *Acacia aneura* var. *aneura* and *Acacia citrinoviridis*, *Acacia pruinocarpa* and *Grevillea berryana* over mixed low shrubs on ridges and north facing ironstone slopes (MBS, 2011).

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 application area lies within the Augustus (GAS3) sub-region of the Gascoyne Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This sub-region is characterised by rugged low Proterozoic sedimentary and granite ranges divided by broad flat valleys (CALM, 2002).

During the flora and vegetation surveys of the application area, a total of 63 flora taxa from 35 genera and 23 families were recorded (MBS, 2011). Of these no Declared Rare Flora (DRF) listed under the *Wildlife Conservation Act 1950* (*WC Act*), or Threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) were recorded. One Priority species, *Eucalyptus semota* (P1) was observed in the application area at one location with a population of twelve individuals (MBS, 2011). *Eucalyptus semota* (P1) is not widespread (Western Australian Herbarium, 1998), therefore it is recommended that potential impacts to this Priority 1 species as a result of the proposed clearing be minimised by the implementation of a flora management condition.

The application area falls within the buffer zone of the Robinson Range (Banded Ironstone Formation), Priority Ecological Community (PEC) (GIS Database). The Robinson Range PEC is located approximately 10 kilometres south of the application area (Outback Ecology, 2010). It is considered unlikely that this PEC would occur within the application area as the geology is not typically the banded ironstone formation that is a major characteristic of the Robinson Range PEC (Outback Ecology, 2010).

The vegetation communities of the application area, mapped by MBS (2010) are well represented throughout the region and are not thought to be regionally or locally significant. In addition, Shepherd (2009) reported that the Beard vegetation associations: 18 and 39 which the application area falls within are both well represented in the Gascoyne bioregion. The proposed clearing is therefore unlikely to impact on the Robinson Range PEC or the biological diversity of the vegetation communities.

No introduced species or Declared Plants as listed by the Agricultural Protection Board pursuant to the *Agriculture and Related Resources Protection Act 1976* were recorded during the flora and vegetation surveys conducted across the application area (MBS, 2010; Outback Ecology, 2010). Potential impacts from the spread of weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

From the fauna desktop assessments of the application area, based on distribution alone, eight amphibians, 64 reptiles, 140 birds and 26 mammal species have the potential to occur within the application area (MBS, 2010). Of these, it was assessed that nine conservation significant birds, three conservation significant mammals and one conservation significant reptile could occur within the application area (MBS, 2010; Outback Ecology,

2010). During the Level 1 fauna surveys of the application area, 12 reptiles, 27 birds and eight mammals were recorded (MBS, 2010). This included signs of the following three conservation significant species: Bush Stone-curlew (*Burhinus grallarius*) (Department of Environment and Conservation [DEC] listed - Priority 4), Western Pebble-mound Mouse (*Pseudomys chapmani*) (DEC listed - Priority 4); and Rainbow Bee-eater (*Merops ornatus*) (*Environment Protection, Biodiversity and Conservation Act, 1999* listed - Migratory) (MBS, 2010). The fauna surveys also recorded scats, tracks and sightings of five introduced species; cattle, goat, cat, dingo/wild dog and fox (MBS, 2011).

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

Methodology

CALM (2002)
MBS (2010)
MBS (2011)
Outback Ecology (2010)
Shepherd (2009)
Western Australian Herbarium (1998)
GIS Database:
- IBRA WA (Regions - Sub-regions)
- Pre-European Vegetation
- 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 may be at variance to this Principle

MBS (2010) reported that seven fauna habitats could occur within the application area, and that none of these represented significant fauna habitats. However, several habitats, such as the Drainage Tract Mulga Habitat and the Massive Lateritic Outcrop are likely to support conservation significant species (MBS, 2010). Outback Ecology (2010) noted that approximately ten caves were found within an area called Rocky Ironstone Ridge located in the northern section of the application area. The majority of these caves were less than two metres in depth; however several were more than three metres (Outback Ecology, 2010).

The Drainage Tract Mulga habitat areas are reasonably well vegetated and could provide good refuges for numerous birds, mammals and reptiles (MBS, 2010; Outback Ecology, 2010). This area is also likely to be utilised by the conservation significant species the Bush Stone-curlew (*Burhinus grallarius*) (Priority 4), which was recorded approximately one kilometre north of the application area (MBS, 2010). MBS (2011) advised that this species tends to remain inactive during the day, sheltering amongst tall grass or low shrubs. The upper drainage lines are not heavily vegetated; therefore the lower drainage lines with more vegetation are likely to be more important habitat for this species (MBS, 2011). MBS (2011) on behalf of Auvex Resources have stated that efforts will be taken to minimise clearing in these areas. The impact from clearing 85.5 hectares within the application area is not expected to be significant to the persistence of this species as it has home ranges of 250 to 600 hectares (Robinson and Johnson 2004) and the Drainage Tract Mulga habitat is widespread regionally (Shepherd, 2009).

The Massive Lateritic Outcrop habitat is located within the middle of the application area which covers 33.59 hectares and consists of approximately two metre high *Acacia incurvaneura* over a mixed shrub layer with some leaf litter and coarse woody debris over gravel (MBS, 2010; Outback Ecology, 2010). Caves and hollows were recorded on the northern side where the outcrop is described as eroded with a slight gradient into a minor drainage line (MBS, 2010). Within one cave, observations of an unidentified reptile and bird scats were recorded (MBS, 2010). Other observations in this habitat included several old nests from the conservation significant Stick-nest Rat (species not known), unidentified reptile burrows, remains of dead Euros in caves and dog/dingo scats (MBS, 2010). It is not known how common this habitat is in the local area and exactly which species could utilise the area. As a precaution it is recommended that impacts to this potentially significant fauna habitat be minimised by implementing a condition which prevents clearing in this area until further studies of this area have been conducted.

The Rocky Ironstone Ridge habitat consists of an open canopy of *Acacia* spp. scrub over gravel and is considered moderate to excellent habitat for reptiles and may also provide suitable habitat for the Long-tailed Dunnart (*Sminthopsis longicaudata*) (Department of Environment and Conservation [DEC] listed - Priority 4) and the Bush Stone-curlew (Priority 4) (MBS, 2010; Outback Ecology, 2010). The caves recorded in the Rocky Ironstone Ridge habitat could provide shelter and habitat for mammals as evidenced by scats and tracks from the Short-beaked Echidna (*Tachyglossus aculeatus*) and several types of wallabies (Outback Ecology, 2010). The conservation significant species, the Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (*Environment Protection and Biodiversity Conservation Act 1999* listed and *Wildlife Conservation Act 1950*, Schedule 1) has the potential to occur in the area (MBS, 2010), however it is unlikely that it would utilise these caves as this species needs deep, moist/humid caves (Department of Sustainability, Environment, Water, Population and Communities, 2011).

The Rocky Ironstone Ridge extends for 50 kilometres and the proposed clearing is for up to 4.5 kilometres and the western section of this habitat has already been subject to extensive exploration disturbance (MBS, 2011), It is likely that suitable habitat exists outside of the application area and it is unlikely that the Rocky Ironstone

Ridge habitat is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia.

The Mixed Acacia Shrubland is widespread across the application area covering approximately 697 hectares (MBS, 2010). Inactive mounds of the Western Pebble-mound Mouse (*Pseudomys chapmani)* have been recorded in this type of habitat in the north eastern vicinity of the application area (MBS, 2010). MBS (2010) determined during the fauna survey that the mounds have been inactive for a long period of time and it is unlikely that this species currently resides in the application area. The proposed clearing is therefore unlikely to impact upon habitat significant to the Western Pebble-mound Mouse.

Two inactive Rainbow Bee-eater (*Merops ornatus*) (*Environment Protection, Biodiversity and Conservation Act, 1999* listed - Migratory) nesting burrows were recorded in a disturbed area located in the north eastern section of the application area (MBS, 2010). The Department of Sustainability, Environment, Water, Population and Communities (2011) report that nesting areas are often re-used, however, it is also stated that pairs usually excavate a new nesting burrow for each breeding season. Rainbow Bee-eaters are known to create nests in flat or sloping ground, in the banks of rivers, creeks or dams, in roadside cuttings, in the walls of gravel pits or quarries, in mounds of gravel, or in cliff-faces (Department of Sustainability, Environment, Water, Population and Communities, 2011). The vegetation associations mapped for the application area are represented widely in the local area (Shepherd, 2009), therefore should the Rainbow Bee-eater occur in the vicinity of the application area, it is likely that it could utilise undisturbed habitat outside of the application area.

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

Department of Sustainability, Environment, Water, Population and Communities (2011)
MBS (2010)
MBS (2011)
Outback Ecology (2010)
Robinson and Johnson (2004)
Shepherd (2009)
- Threatened Fauna

(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 following databases have been interrogated to determine if any Declared Rare Flora (DRF) species occur within the application area:

- 40 kilometre radial search of the application area utilising the Department of Environment and Conservation's NatureMap; and
- 20 kilometre radial search using the Environmental Protected Matters Search Tool of the application area (MBS, 2010).

The database searches of the application area showed that no Declared Rare Flora (DRF) as listed under the *WA Wildlife Conservation Act, 1950* (*WC Act*), or threatened flora species as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (*EPBC Act*) were recorded within 20 kilometres of the application area (GIS Database; MBS, 2010).

In addition, no DRF listed pursuant to the *WC Act*, or as Threatened species under the *EPBC Act* were recorded during the survey (MBS, 2010).

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

Methodology

MBS (2010)
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

There are no records of Threatened Ecological Communities (TECs) located within the application area (GIS Database), or within 40 kilometres of the survey area (MBS, 2011). In addition, MBS (2011) reported that all the flora and vegetation surveys conducted within the application area did not identify any habitats representative of TECs or of conservation significance.

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

Methodology MBS (2011)
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 Augustus sub-region of the Gascoyne Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). According to Shepherd (2009) 100% of the Pre-European vegetation remains within the Gascoyne bioregion (see table).

The vegetation of the application area has been broadly mapped as Beard vegetation associations:
-18: Low woodland; Mulga (Acacia aneura); and
-39: Shrublands; Mulga scrub (GIS Database).

According to Shepherd (2009) approximately 100% of these Beard vegetation associations remain 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 Gascoyne	18,075,219	18,075,219	~100	Least Concern	1.93
Beard vegetation associations - WA					
18	19,890,302	19,890,275	~99.9	Least Concern	2.13
39	6,613,569	6,613,469	~100	Least Concern	7.25
Beard vegetation associations - Gascoyne Bioregion					
18	3,273,579	3,273,579	~100	Least Concern	2.49
39	2,338,128	2,338,128	~100	Least Concern	2.37

* Shepherd (2009)
** Department of Natural Resources and Environment (2002)

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

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

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

Comments

Proposal is not likely to be at variance to this Principle

There are nine minor ephemeral watercourses that pass through the application area (GIS Database). It is expected that these watercourses will only flow during significant rainfall. These areas correspond with the Drainage Tract Mulga habitat described by MBS (2010). MBS (2011) on behalf of Auvex Resources have outlined the following management strategies to ensure that the natural flow of drainage lines within the application area is maintained to prevent impacts to the habitat:

- use of existing haul roads, tracks and disturbed areas;
- clearly delineating clearing areas with survey pegs and flagging tape;
- ensuring clearing activities do not alter the natural flow of drainage lines unless diversions are required around operational areas;
- locating infrastructure outside of drainage lines and associated vegetation communities where possible;
- constructing roads at right angles to drainage lines; and
- installing culverts, flood ways or otherwise ensuring road construction does not alter or impede the natural flow of water.

The vegetation community recorded along the drainage lines consisted of *Grevillea berryana*, *Acacia incurvaneura*, *Acacia pruinocarpa*, *Acacia citrinoviridis* and *Acacia marramamba* over mixed low shrubs (MBS, 2010). Approximately 66 hectares of this vegetation community occurs within Mining Lease 52/1048 (MBS, 2010) and it is also common throughout the Gascoyne bioregion (Shepherd, 2009). The proposed clearing is unlikely to cause a significant impact on the environment associated with these drainage lines.

There are no permanent watercourses or wetlands within or in close proximity to the application area (GIS Database). The nearest significant water body is the Yarlarweelor Creek which is located 1.8 kilometres south of the application area.

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

Methodology
MBS (2010)
MBS (2011)
Shepherd (2009)
GIS Database:
- Hydrography, linear
- Hydrography, linear (Hierarchy)
- Ramsar Wetlands
- Rivers

(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 falls within the Horseshoe, Beasley and Peak Hill land systems of the Murchison River Catchment (GIS Database; Curry *et al*., 1994). These systems occupy approximately 0.24%, 0.16% and 0.59% of the Murchison River Catchment respectively (Curry *et al*., 1994).

The Beasley Land system is described as low ridges, hills and laterised residuals above stony footslopes and broad, stony lower plains supporting scattered Mulga and Snakewood dominated shrubland (Curry *et al*., 1994). This land system is mostly resistant to erosion, however drainage tracts are susceptible to minor erosion (Curry *et al*., 1994).

The Horseshoe land system is described as undulating stony plains and low rounded hills based on Proterozoic metamorphic rocks, with somewhat saline drainage foci and alluvial tracts; supports scattered Mulga and Wait-a-while shrublands with halophytes (Curry *et al*., 1994). This land system is generally not susceptible to erosion (Curry *et al*., 1994).

The Peak Hill land system is described as rugged, sinuous ranges and rounded hills of Proterozoic banded ironstone and hematitic shale, supporting stunted Mulga and Cottonbush shrublands. This land system is generally not susceptible to erosion as it has dense stony mantles and skeletal soils (Curry *et al*., 1994).

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

Methodology
Curry *et al*. (1994)
GIS Database:
- Rangeland Land System Mapping

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is not located within any conservation areas or Department of Environment and Conservation (DEC) managed lands (GIS Database).

The application area is located approximately 20 kilometres north east of the former Doolgunna Leasehold which is now proposed for conservation reserve (GIS Database). This area is currently managed by the DEC for conservation purposes.

At this distance, it is not likely that the vegetation within the application area would act as a buffer or be important as an ecological linkage to this conservation area.

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

Methodology
GIS Database:
- DEC Tenure

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is not located within a Public Drinking Water Source Area (GIS Database). Generally, groundwater in the area is near neutral and fresh to brackish (the aquifers are saline-free and have a minimal content of Total Dissolved Solids (TDS) (MBS, 2011). The application area has low salinity levels of between 500-1,000 milligrams per litre of TDS (GIS Database). Salinity within this range is considered acceptable for most uses with acceptable drinking water between 500 to 750 milligrams per litre TDS and acceptable irrigation water between 500 to 1,200 milligrams per litre TDS.

The application area contains no permanent water bodies (GIS Database), however there are several minor, ephemeral drainage lines located within the application area (GIS Database). With an average annual rainfall of approximately 233 millimetres (BoM, 2011) and an annual evaporation rate of 3,800 millimetres (GIS Database) it is expected that there would be little surface flow during normal seasonal rains. It is only during major rainfall events (summer and autumn) that there is any significant surface flow and during these events it tends to be relatively fresh (MBS, 2011).

With high annual evaporation rates and low annual rainfall there is little recharge into regional groundwater, (GIS database). Considering the magnitude of the Glengarry Groundwater Province (approximately 19,000,000 square kilometres) (GIS Database), it is unlikely that the proposed clearing of 85.5 hectares of native vegetation will have any significant impact on the quality of the regional groundwater.

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

Methodology

BoM (2011)
GIS Database:
- Evaporation Isopleths
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas
- Rivers

(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 is located within the Gascoyne River catchment which covers an area of approximately 2,000,000 hectares (GIS Database). Aquifer recharge generally takes place during the first half of the year (January to July) when seasonal thunderstorms, occasional cyclones and strong cold fronts pass through the area (MBS, 2011).

There are several minor, ephemeral drainage lines located within the application area (GIS Database) which are expected to be dry throughout the summer months. Also during normal seasonal rains there is little surface flow, as surface runoff occurs during and immediately following significant rainfall events (MBS, 2011). To mitigate any potential flooding event, MBS (2011) reported that Auvex Resources propose that the open pits will be located along the ridge, while the waste rock landforms and proposed infrastructure are to be located on the gently sloping plains, away from local drainage lines.

There are two large rivers, the Murchison and Gascoyne rivers that are located north and south of the application area. The Gascoyne River is closest at approximately 25 kilometres north of the application area (GIS Database). These rivers flood during brief high rainfall summer storm or cyclonic events (MBS, 2011). At this distance away from the application area, the proposed vegetation clearing will not cause flooding.

Based on the above, the proposed clearing is not likely to be at variance to this Principle. Clearing of 85.5 hectares is not likely to exacerbate the incidence or intensity of flooding.

Methodology

MBS (2011)
GIS Database:
- Hydrographic Catchments-Subcatchments
- Hydrography, linear
- Rivers

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

Comments

The clearing permit application was advertised on 7 March 2011 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received in relation to this application regarding flora and Aboriginal heritage issues. A written response was provided on the matters raised.

There are no registered Aboriginal Sites of Significance within the application area (GIS Database). It is the

proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

There is one Native Title Claim (WC99/13) over the area under application (GIS Database). This claim has been determined by the Federal Court 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*.

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:
- Native Title Determined
- Native Title Federal
- Native Title NNTT
- Sites of Aboriginal Significance

4. References

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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia

DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	*Environmental Protection Act 1986*, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI Act	*Rights in Water and Irrigation Act 1914*, Western Australia
s.17	Section 17 of the *Environment Protection Act 1986*, Western Australia
TEC	Threatened Ecological Community

Definitions:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

P3 **Priority Three: Taxa with several, poorly known populations, some on conservation lands**: Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under

immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

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

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

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

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

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

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

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

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

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