Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2487/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Western Areas NL**

1.3. Property details

Property: Exploration Licence 70/2148
Local Government Area: Shire of Lake Grace
Colloquial name: Lake King Project

1.4. Application

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

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 a useful tool to examine the vegetation extent in a regional context. Three Beard vegetation associations are located within the application area;

125; Bare areas; salt lakes;

511; Medium woodlands; salmon gum and morel

941; Mosaic: Medium woodland; salmon gum & morel/shrublands; mallee scrub, redwood.

The application area was surveyed in November 2005 by Armstrong and Associates (2005) who identified 8 plant communities. Armstrong and Associates divided the communities into those occurring on 'Nickel Hill' and those occurring on the shores of Nickel Hill Lake (sic) due to significant differences in their floristic composition.

NICKEL HILL

Armstrong and Associates (2005) identified four plant communities within the Nickel Hill area. These are:

1) Mallee-woodlands on the upper slopes: Upper stratum of *Eucalyptus salmonophloia* and *E. salubris*, over scrub consisting of *Melaleuca eleuterostachya*, *M. adnata*, *M. pauperiflora* and *M. uncinata*, over an understorey of *Acacia erinacea*, *Atriplex vesicaria ssp. appendiculata*, *Cryptandra myrtifolia*, *Dodonaea stenozyga*, *Grevillea huegelii* and *Olearia muelleri*.

2) Shrublands on rocky ridges: Upper stratum of *Allocasuarina acutivalvis ssp acutivalvis*, *Allocasuarina campestris* with emergent *Eucalyptus flocktoniae*, over an understorey stratum of *Cryptandra myrtifolia ssp myrtifolia*.

3) Shrublands adjacent to the lakebed: Upper stratum of Open Mallee of species unidentifiable due to recent fire history, over shrub stratum of *Acacia acuta*, *Allocasuarina campestris*, *Cryptandra myrtifolia ssp. myrtifolia*, *Dodonaea lobulata*, *Frankenia sessilis*, *Melaleuca adnata* and *M. acuminata ssp. acuminata*.

4) Low shrubs fringing the western lake edge: Dwarf scrub stratum of *Halosarcia halocnemoides ssp. halocnemoides* and *Disphyma crassifolium*, over understorey of *Disphyma crassifolium*, *Halosarcia halocnemoides ssp. halocnemoides*, *Sonchus oleraceus* and *Ursinia anthemoides*.

NICKEL HILL LAKE.

Armstrong and Associates (2005) identified four communities within the Nickel Hill Lake area. These are:

1) *Halosarcia* flats: Upper stratum of *Halosarcia halocnemoides ssp. halocnemoides* with understorey of same.

2) Low shrubs on lake fringe: Upper stratum of *Halosarcia halocnemoides ssp. halocnemoides* with undestorey of *Frankenia sessilis* and *H. halocnemoides ssp. halocnemoides* and herb layer of *Hydrocotyle hexaptera* and *Isotoma scapigera*.

3) Low shrubs on dunes: Upper stratum of low heath and dwarf scrub dominated by *Atriplex vesicaria ssp. appendiculata* with exotic *Trifolium sp.* with occasional *Pittosporum angustifolium*, over understorey of *Arctotheca calendula*, *Atriplex vesicaria ssp. appendiculata*, *Avena barbata*, *Disphyma crassifolium*, *Frankenia cinerea* and *Trifolium sp*.

4) Open Woodlands: Upper stratum of *Eucalyptus kondininensis ssp. kondininensis* over understorey of *Atriplex vesicaria ssp. appendiculata*, *Arctotheca calendula*, *Avena sp*. and *Trifolium sp*.

Clearing Description

Western Areas propose to clear 0.1 hectares of native vegetation for the "Lake King Project", situated 15 kilometres north-east of the town-site of Lake King (Western Areas, 2008). The proposed clearing is for mineral exploration on Exploration Licence 70/2148. Drilling is proposed to be undertaken with reverse circulation (RC) drilling rigs and include 9 drill holes and tracks (Western Areas, 2008). Clearing is proposed to be undertaken mechanically with a raised blade (Western Areas, 2008).

Vegetation Condition

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

To

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

Comment

The condition of the vegetation surveyed by Armstrong and Associates (2005) varied from Very Good at Nickel Hill and on the shores of the Nickel Hill Lake, to Degraded on the dunes and plains away from the lake, where weed species had invaded from adjacent farmland and rubbish had been dumped.

Based on biodiversity advice received from the Department of Environment and Conservation Western Areas have agreed to halve the proposed clearing area from 0.2 hectares to 0.1 hectares.

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 is situated 15 kilometres north-east of the town-site of Lake King, within the Mallee 2 sub-region of the Mallee Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database).

The Mallee 2 sub-region forms part of one of the most botanically rich provinces in Australia. The transitional rainfall zone which covers most of the wheatbelt, is regarded as a focal point for speciation in woody perennial plants including a nationally significant concentration of endemic plants at the species level (Department of Environment, Heritage, Water and the Arts, 2008). On the continental landscape stress class assessed by the Landscape Health Report, the bioregion is listed at 3, however, Beecham and Danks (2001) state it should be 2 or worse (1 is most stressed, 6 is least stressed). The main threatening processes to the region are salinity, vegetation fragmentation, weeds, fire and feral animals (ANRA, 2008). The level of threat faced is similar to that of the Avon Wheatbelt (Beecham and Danks, 2001).

The application area occurs within the A-class Lake King Nature Reserve (GIS Database, 2008) which is listed on the Register of National Estate for its natural values (Department of Environment, Heritage, Water and the Arts, 2008). It is a large reserve at approximately 40,000 hectares and combined with Dunn Lake Nature Reserve to the south, creates an area of over 67,000 hectares of remnant vegetation. These two reserves make up an extremely important reserve for flora and fauna conservation, and for maintaining ecological functions on a regional scale (Department of Environment, Heritage, Water and the Arts, 2008), particularly given the large scale clearing that has occurred throughout the wheatbelt.

The application area is mostly free of weeds, however there are pockets of weeds in several locations (Armstrong and Associates, 2005). These locations are largely restricted to the lake edges and several areas

that had been disturbed, such as track or historic mining areas. Weed species in these areas included: *Hyporchaeris sp., Raphanus raphanistrum, Sonchus oleraceus, Spergula sp*. and *Ursinia anthemoides* (Armstrong and Associates, 2005). Although moderately widespread along the lake edge, they are not common or plentiful (Armstrong and Associates, 2005). According to a database search of the Department of Agriculture and Food (2008) declared weeds database, none of the above weeds classify as declared weeds. However, because the application area occurs within an A-class reserve and weeds appear to be most common in disturbed areas, should the permit be granted it is recommended that a condition be placed on the permit to mitigate the potential spread of weeds.

No Declared Rare Flora or Priority flora (DRF) were recorded within the application area during the vegetation survey conducted by Armstrong and Associates (2005). However, three priority species were recorded in close proximity to the application area. This proposal is not expected to have a significant impact on these species or their habitat. Based on advice received from the Department of Environment and Conservation (2008b), a number of DRF and Priority Flora taxa were not taken into consideration in the flora survey report. The following list of DRF and Priority flora taxa was compiled by the Department of Environment and Conservation. These species are known from fringing and more open woodland vegetation of Lake King and other surrounding lakes.

- *Allocasurina tortiramula* (DRF);
- *Anigozanthos bicolour subsp. Minor* (DRF);
- *Eremophila subteretifolia* (DRF);
- *Goodenia Integerrima* (DRF);
- *Roycea pycnophylloides* (DRF);
- *Drosera salina* (P2);
- *Haegiela tatei* (P2);
- *Millotia steetziana* (P2);
- *Pimelea halophila* (P2);
- *Eucalyptus microschema* (P3)
- *Melaleuca sculponeata* (P3); and
- *Stylidium pulviniforme* (P3).

If these species are identified, the Department of Environment and Conservation recommends that the individuals are flagged for avoidance.

Although potential impacts to DRF and Priority flora are of concern with this proposal, there are no planned impacts on DRF or Priority flora. The proponent has committed to avoiding any impacts on DRF and Priority flora during the proposed activities. Therefore, should the permit be granted it is recommended a condition be imposed for the purposes of flora management.

The vegetation communities of Nickel Hill as described by Armstrong and Associates (2005) are common within other areas of uncleared vegetation within the Mallee Bioregion. However, the vegetation communities described by Armstrong and Associates (2005) next to the lake margin cannot be given a value on a regional scale given the variability of Halophytic communities fringing salt lakes.

There is no information to suggest that the vegetation within the reserve is more biodiverse than other remnant vegetation within the bioregion. There is no information to suggest that the vegetation within the application area is more biodiverse than vegetation within the remainder of the reserve. However, the application area is certainly more biodiverse than the cleared agricultural land surrounding the nature reserve, given that the Shire of Lake Grace is 91.8% cleared for agriculture (Shepherd et al, 2001).

The Department of Environment and Conservation (2008b) considers that the impacts of the proposal on biodiversity values are manageable to within acceptable levels. Furthermore, in order to preserve biodiversity Western Areas have agreed to halve the proposed clearing area from 0.2 hectares to 0.1 hectares.

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

Methodology

ANRA (2008)
Armstrong and Associates (2005)
Beecham and Danks (2001)
Department of Agriculture and Food Western Australia (2008)
Department of Environment and Conservation (2008b)
Department of Environment, Heritage Water and the Arts (2008)
Shepherd et al. (2001)

GIS Database
-CALM Managed Lands
-Interim Biogeographic Regionalisation for Australia

(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

The assessing officer conducted a database search of the Western Australian Museum's Faunabase website within the co-ordinates 32.9° S, 119.1° E and 33.8° S, 119.7° E (Western Australian Museum, 2008). This search identified five species of conservation significant fauna that have the potential to occur within the application area and could potentially rely on the habitats present; Heath Rat (*Pseudomys shortridgei*), Malleefowl (*Leipoa ocellata*), Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) Peregrine Falcon (*Falco peregrinus*) and the South West Carpet Python (*Morelia spilota imbricata*)

The Heath Rat (Schedule 1 – Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) is known to occupy scrub mallee and mixed scrub with Banksia on loamy soils, unburnt for at least 30 years (Department of Environment and Conservation, 2008). The combination of the introduction of foreign predators and the extensive land clearing in the wheatbelt have been attributed to this species decline (Department of Environment and Conservation, 2008). It is unlikely that the species would be found within the application area due to the lack of predator control and the recent burn (6-8 years ago) in the only habitat it is likely to be able to utilise.

The Malleefowl (Schedule 1 – Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) is restricted to mallee Eucalypt woodland and scrub as well as dry forest dominated by other Eucalypts, mulga and other *Acacia* spp. (Garnett et al., 2000). Malleefowl require a sandy substrate with leaf litter in order to be able build nest mounds (Garnett et al., 2000). The application area does not have habitat that is likely to support Malleefowl nesting.

Carnaby's Black Cockatoo (Schedule 1 – Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) forage in woodland and heath that is dominated by proteaceous species. They nest in hollows of large Eucalypts, usually Salmon Gum and Wandoo (Department of the Environment, Heritage, Water and the Arts, 2008). The species has severely declined between the 1970's and the present due mainly to extensive land clearing, shooting and nest robbing (Department of Environment and Conservation, 2008). The species may be an occasional visitor to the application area and is likely to utilise the area for feeding when food is available. However, the vegetation within the application area is not significant habitat for this species.

The Peregrine Falcon (Schedule 4 – Other specially protected fauna, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) has a widespread distribution and is able to utilise a wide variety of habitats. It is likely to be an occasional visitor to the application area (Department of Environment and Conservation, 2008), however it is not restricted to this area. The application area is not significant habitat for this species.

The South West Carpet Python (Schedule 4 – Other specially protected fauna, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) is widespread throughout the south-west from Northampton to Kalgoorlie to Esperance (Department of Environment and Conservation, 2008). It is able to utilise a wide variety of habitats from semi-arid coastal and inland habitats, *Banksia* woodland, Eucalypt woodlands and grasslands, where it occurs at low densities (Department of Environment and Conservation, 2008). The vegetation within the application area is of a type that may support populations of the South West Carpet Python. However, given the large size of the Lake King reserve, 0.1 hectares is not likely to represent significant habitat for this species.

Whilst the application area contains habitat that may be utilised by species of conservation significance, and is a refuge for wildlife in general, it is not expected that the proposed clearing will have a significant impact on the habitats of the species listed above.

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

Methodology

Department of Environment and Conservation (2008)
Department of the Environment, Heritage, Water and the Arts (2008)
Garnett et al. (2000)
Western Australian Museum (2008)

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

Comments

Proposal may be at variance to this Principle

In November 2005, Armstrong and Associates (2005) were commissioned by Western Areas to conduct a botanical survey and rare flora search within the application area. This survey was conducted to determine the floral assemblage of the area and to ascertain whether the native vegetation in the application area is significant habitat for rare flora (Armstrong and Associates, 2005). This survey revealed no occurrences of Declared Rare Flora (DRF) within the application area, however, three species of Priority flora were located in close proximity to the application area; *Frankenia drummondii* (Priority 3), *Gyrostemon sessilis* (Priority 2) and *Hydrocotyle hexaptera* (Priority 1) (Armstrong and Associates, 2005). Priority and Declared Rare Flora are listed under the Department of Environment and Conservation's 'Declared Rare and Priority flora list 2008'. This proposal is not expected to have a significant impact on these species or their habitat.

Although the three species of Priority flora listed above were not located in the application area, they were located sporadically around the margins of the application area. This may indicate that vegetation within the application area may be suitable habitat for these flora species. Nevertheless the clearing of 0.1 hectares of native vegetation in this proposal is a relatively small area and is unlikely to be necessary for the continued existence of these flora species.

Based on advice received from the Department of Environment and Conservation (2008b), Armstrong and Associates did not take into consideration a number of Declared Rare Flora and Priority flora taxa that may potentially occur within the application area. The following list of DRF and Priority flora taxa was complied by the DEC. These species are known from fringing and more open woodland vegetation of Lake King and other surrounding lakes (Department of Environment and Conservation, 2008b).

- *Allocasuarina tortiramula* (DRF);
- *Anigozanthos bicolour subsp. Minor* (DRF);
- *Eremophila subteretifolia* (DRF);
- *Goodenia Integerrima* (DRF);
- *Roycea pycnophylloides* (DRF);
- *Drosera salina* (P2);
- *Haegiela tatei* (P2);
- *Millotia steetziana* (P2);
- *Pimelea halophila* (P2);
- *Eucalyptus microschema* (P3)
- *Melaleuca sculponeata* (P3); and
- *Stylidium pulviniforme* (P3).

Although potential impacts to DRF and Priority flora are of concern with this proposal, there are no planned impacts on DRF or Priority flora. The proponent has committed to avoiding any impacts on DRF and Priority flora during the proposed activities. Therefore, should the permit be granted it is recommended a condition be imposed for the purposes of flora management.

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

Methodology Armstrong and Associates (2005)
Department of Environment and Conservation (2008b)

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

Comments

Proposal is not likely to be at variance to this Principle

There are no known Threatened Ecological Communities (TEC's) within 50 kilometres of the application area (GIS Database).

A flora survey conducted by Armstrong and Associates (2005) over the application area did not identify any Threatened Ecological Communities. This survey involved a desktop analysis of available databases and literature, as well as a vegetation survey and rare flora search in the field.

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

Methodology Armstrong and Associates (2005)

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 likely to be at variance to this Principle

The application area is within the Mallee Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). According to Shepherd et al. (2001) there is approximately 54.3% of the pre-European vegetation remaining in the Mallee bioregion, which places it as 'least concern' according to the Department of Natural Resources and Environment (2002).

The application area falls within the Shire of Lake Grace. The Shire of Lake Grace is within the Intensive Land Use Zone of the south-west of Western Australia which has been extensively cleared for agriculture. Consiquently, only ~8.8% of its pre-European vegetation extent remains within the shire. This places the Shire at 'Endangered' according to the Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002).

Three Beard vegetation associations were located within the application area; 125, 511 and 941 (GIS

Database). Within the bioregion, there is approximately 51.4% of the pre-European vegetation extent remaining of Beard vegetation association 125; ~33.4% of Beard vegetation association 511; and ~15.9% of Beard vegetation association 941. All three vegetation types are represented in IUCN Class I-IV Reserves within both the bioregion and the State (refer to Table below).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Mallee	7,395,902	4,017,868	~54.3	-Least Concern	~17.9 (31.3)
IBRA Subregion – Mallee 2	3,981,720	1,307,541	~32.8	-Depleted	~9.8 (25.4)
Local Government – Lake Grace	167,411	14,725	~8.8	-Endangered	N/A
Beard veg assoc. – State					
125	3,491,834	328,764	~94.2	-Least Concern	~6.9 (5.2)
511	700,414	493,992	~70.5	-Least Concern	~14.1 (18.9)
941	34,248	14,536	~42.4	-Depleted	~8.3 (12.5)
Beard veg assoc. – Bioregion					
125	166,780	85,720	~51.4	-Least Concern	~29.3 (12.1)
511	139,592	46,665	~33.4	-Depleted	~10.5 (19.5)
941	23,425	3,713	~15.9	-Vulnerable	~12.1 (48.7)
Beard veg assoc. – Subregion					
125	88,058	9,739	~11.1	-Vulnerable	~47.4 (37.9)
511	139,593	46,665	~33.4	-Depleted	~10.5 (19.5)
941	23,425	3,713	~15.9	-Vulnerable	~12.1 (48.7)

* Shepherd et al. (2001) updated 2005

Whilst the sub-region has been significantly cleared, the proposed clearing of 0.1 hectares is unlikely to significantly reduce the extent of Beard vegetation associations 125, 511 or 541 below current levels. Whilst the vegetation within the application area occurs within a significant remnant, in an area that has been extensively cleared, the temporary loss of 0.1 hectares of native vegetation is not likely to affect the remnant vegetation's biological function.

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

Methodology

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

GIS Databases:
- the Interim Biogeographic Regionalisation for Australia
- Pre-European Vegetation

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

Comments

Proposal is at variance to this Principle

The eastern quarter of the application area overlaps the margins of Lake King. This area comprises four floristic community types as described by Armstrong and Associates (2008).

- *Halosarcia* flats in inundated areas;
- low shrubs forming fringing vegetation between the inundated areas and the dunes;
- low shrubs on dunes; and
- Open woodland on the plains.

Areas that were frequently inundated or where the water level was too deep, no plants could survive, had high plant mortality, which resulted in portions of the lakebed comprising bare soil.

Maps provided by Armstrong and Associates (2005) indicate a small proportion of the clearing is proposed to be undertaken on the margins of Lake King. In addition Armstrong and Associates (2005) states that these

community types cover extensive areas within the local area.

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

Methodology Armstrong and Associates (2005)

GIS Database
-Hydrology Linear

(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**
Soil sampling within the application area was undertaken by Western Areas in 2006 (Western Areas, 2008).This information has been used to determine the potential impacts of land degradation of this proposal.

The north-west slope of Nickel Hill is characterised by a residual laterite duricrust overlayed by thin latosols (iron, aluminium or silica rich soils). On the south-east and south slopes, soils are dark brown skeletal lithosols (shallow soils lacking well-defined horizons) which have minor pedogenic carbonate development over the rock fragments (Western Areas, 2008). This type of soil is prone to water erosion. Should the permit be granted It is recommended a condition be placed on the permit to limit the vegetation removal to dry weather conditions and to rehabilitate the cleared area within 6 months of clearing.

Soils rapidly thicken as distance is increased away from Nickel Hill and exhibit yellow brown aeolian (wind driven) sand mixing. The salt lake shores are bordered by coarse yellow sands, usually gypsiferous (Western Areas, 2008). These soils are not prone to erosion.

Due to the small size of the proposed clearing, the likelihood of increased waterlogging is very minimal. Furthermore the area close to the lake shore is already hypersaline and the proposed clearing is not likely to increase salinity levels.

Based on the above, the proposed clearing may be at variance to this Principle as erosion may occur if vegetation is cleared during wet weather conditions. Should the permit be granted it is recommended a condition be placed on the permit for erosion management.

Methodology Western Areas (2008)

(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 may be at variance to this Principle**
The application area is within the Lake King Nature Reserve (A-class) which occurs within a region that has been extensively cleared and is therefore important for the conservation of flora and fauna. It is listed on the Register of National Estate for its 'natural values' (Department of Environment, Heritage, Water and the Arts, 2008). At 40,000 hectares it is a substantial nature reserve in terms of size (although approximately half of this area is salt lake) and is important to maintain ecological function on a regional scale (Department of Environment, Heritage, Water and the Arts, 2008). Lake King is also listed in 'A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002' (Conservation and Land Management (formerly Department of Environment and Conservation), 2002) as a wetland of regional significance.

However, the clearing of 0.1 hectares represents an extremely small fraction of the vegetation within the reserve, and provided adequate rehabilitation should occur, it is unlikely to impact on the environmental values of the reserve.

Based on the above the proposed clearing may be at variance to this Principle. Should the permit be granted it is recommended that a rehabilitation condition be imposed to mitigate any potential impacts on the environmental values of the Lake King Nature Reserve.

Methodology Department of Environment, Heritage, Water and the Arts (2008)
Department of Conservation and Land Management (formerly Department of Environment and Conservation) (2002)

(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 may be at variance to this Principle**
According to available databases, groundwater in the application area is hypersaline with Total Dissolved Salts ranging from 35,000 – 100,000 milligrams per-litre (GIS Database).

As the application area overlaps the margins of Lake King, groundwater is at the surface at the margins of the lake and gets progressively deeper higher in the landscape (Western Areas, 2008). The removal of 0.1 hectares

of vegetation is not likely to cause groundwater levels to rise or deteriorate. As clearing will take place close to the lake edge, run off during rainfall events may cause small amounts of sediments to be deposited into the lake.

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

Should the permit be granted it is recommended conditions be placed on the permit for the purposes of surface water runnoff managemnt, rehabilitation and to limit clearing to dry weather conditions.

Methodology Western Areas (2008)

GIS Database
-Ground Water Salinity

(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

According to the nearest Bureau of Meteorology recording station at Hyden, the application area has a winter predominant rainfall pattern of 340 millimetres per annum (Bureau of Meteorology, 2008). The application area is situated both on raised ground near a salt lake and on the margins of a salt lake (Western Areas, 2008). The salt lake is likely to be inundated during the winter months and mostly dry during the summer months. However, the clearing of 0.1 hectares is not likely to lead to an increase in flood peak height or duration.

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

Methodology Bureau of Meteorology (2008)
Western Areas (2008)

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

Comments

There are no native title claims over the application area (GIS Database). 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 known Aboriginal Sites of Significance located within the clearing permit 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.

Under a Memorandum of Understanding between the Department of Industry and Resources (DoIR) and Environmental Protection Authority (EPA), where a proposal falls within Department of Environment and Conservation (DEC) managed areas, the DEC will advise the DoIR if an EPA referral is required. The DEC (2008b) has advised that after discussions between the DEC and Western Areas, the project is acceptable as commitments have been made to avoid disturbance to significant flora species and the applicant has agreed to reduce the application area from 0.2 hectares to 0.1 hectares. For this reason, the assessing officer has not referred the proposal to the EPA.

The current clearing permit application is immediately south of a previous clearing permit CPS 1506/2. This was a similar exploration clearing proposal from Western Areas, where 0.1 hectares of native vegetation was approved to be cleared. The proponent has since cleared this area.

Methodology Department of Environment and Conservation (2008b)

GIS Database:
-Aboriginal Sites of Significance
-Native Title Claims

4. Assessor's comments

Comment

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

Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of record keeping, permit reporting, weed management, surface water runoff management, flora management and erosion control.

5. References

Australian Natural Resource Atlas (ANRA) (2008), Biodiversity Assessment Mallee Bioregion, www.anra.gov.au. Published by the Department of the Environment and Water Resources.

Armstrong, P and Associates. (2005). Botanical Survey and Rare Flora Search at Lake King, Conducted November 2005. Unpublished report prepared for joint venture between Western Areas NL and Swan Oak Holding.

Beecham B and Danks A (2001), 'Mallee 2 (MAL 2 - Western Mallee subregion)', in a Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002. Report Published by CALM, Perth, Western

Bureau of Meteorology, (2008). BOM Website - Climate Averages by Number, Averages for HYDEN. www.bom.gov.au/climate/averages/tables/cw_

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6. Glossary

Acronyms:

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