Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5247/1
Permit type: Purpose Permit

1.2. Proponent details

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

1.3. Property details

Property: Mining Lease 77/219
Local Government Area: Shire of Kondinin
Colloquial name: Forrestania Nickel Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 31 January 2013

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 in a regional context. The following Beard vegetation associations are located within the application area (GIS Database):

511: Medium woodland; salmon gum and morel; and
1413: Shrublands; acacia, casuarina and melaleuca thicket.

A Level 1 flora and vegetation survey conducted by Botanica Consulting (Botanica) on 23 September 2011 identified the following seven vegetation communities within the application area:

1. Heath of *Allocasuarina campestris/Melaleuca hamata/Acacia eremophila* over low grass of *Borya constricta*. The upper storey species included *Allocasuarina campestris, Melaleuca hamata, Acacia eremophila* and *Santalum acuminatum.* The mid-storey species included *Lepidosperma* sp. A2 Inland Flat (G.J. Keighery 7000), *Melaleuca laxiflora, Schoenus calcatus, Baeckea crispiflora* and *Goodenia pinifolia.* The understorey only comprised of the species *Borya constricta.*

2. Forest of *Eucalyptus melanoxylon* and *Eucalyptus urna* over thicket of *Melaleuca pauperiflora subsp. fastigiata*. The upper storey included *Eucalyptus melanoxylon* and *Eucalyptus urna.* The mid-storey species included *Melaleuca pauperiflora subsp. fastigiata* and *Acacia hemiteles.* The understorey species included *Exocarpos aphyllus, Olearia muelleri, Templetonia sulcata, Sclerolaena uniflora, Eremophila ionantha* and *Acacia merrallii*.

3. Low woodland of *Eucalyptus salmonophloia* over mallee of *Eucalyptus cylindrocarpa/ Eucalyptus cylindriflora/ Eucalyptus pileata*. The species in the upper storey included *Eucalyptus salmonophloia, Eucalyptus salubris, Eucalyptus urna* and *Eucalyptus melanoxylon.* The mid-storey included *Eucalyptus cylindrocarpa, Eucalyptus cylindriflora, Eucalyptus pileata, Melaleuca pauperiflora* subsp. *fastigiata, Melaleuca adnata* and *Atriplex vesicaria.* The understorey species included *Daviesia benthamii, Acacia erinacea, Wilsonia humilis, Eremophila Ionantha, Acacia deficiens, Dodonaea stenozyga, Exocarpos aphyllus* and *Grevillea huegelii*.

4. Open low scrub of *Acacia hemiteles* over very open low grass of *Aristida contorta*. The upper storey species included *Acacia hemiteles, Allocasuarina helmsii* and *Santalum acuminatum.* The mid-storey included *Calytrix* sp. (sterile) and *Acacia erinacea.* The understorey species included *Aristida contorta, Daucus glochidiatus* and *Thryptomene kochii*.

5. Open mallee of *Eucalyptus livida* over heath of *Allocasuarina acutivalvis*. The upper storey species included *Eucalyptus livida, Grevillea pterosperma, Eucalyptus eremophila* and *Acacia lasiocalyx.* The mid-storey species included *Allocasuarina acutivalvis, Acacia sulcata, Melaleuca cordata, Santalum acuminatum, Banksia sphaerocarpa* var. *dolichostyla* (DRF) and *Allocasuarina corniculata.* The understorey species included *Lepidosperma* sp. North Ironcap (Russell Barrett), *Drummondita hassellii*, *Caladenia flava*, *Schoenus calcatus* and *Waitzia acuminata*.

6. Mallee of *Eucalyptus eremophila* and *Eucalyptus urna* over heath of *Daviesia nematophylla* and *Melaleuca adnata*. The upper storey species included *Eucalyptus gracilis, Eucalyptus cylindrocarpa and Eucalyptus*

celastroides. The mid-storey species included *Daviesia nematophylla, Melaleuca adnata, Melaleuca hamata and Melaleuca pauperiflora* subsp. *fastigiata*. The understorey species included *Acacia erinacea, Sclerolaena uniflora* and *Wilsonia humilis*.

7. Heath of *Allocasuarina campestris* and *Hakea kippistiana*. The upper storey species included *Eucalyptus eremophila and Eucalyptus livida.* The mid-storey species included *Allocasuarina acutivalvis, Melaleuca adnata* and *Hakea kippistiana.* The understorey species included *Hibbertia eatoniae, Acacia sulcata, Grevillea oncogyne* and *Trymalium myrtillus* subsp. *myrtillus.*

Clearing Description

Western Areas NL (Western Areas) has applied to clear 10 hectares within an application area of approximately 220 hectares (GIS Database). The application area is located near the existing Forrestania Nickel Project and is located approximately 75 kilometres east, north east of Hyden (GIS Database).

The purpose of the application is for mineral exploration and includes access tracks and drill pads. Clearing will be by mechanical means. Vegetation and topsoil will be stockpiled for use in rehabilitation.

Vegetation Condition

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

Comment

Vegetation condition was determined by Botanica (2011).

The survey area was in very good condition with the only disturbance from historic exploration tracks and drilling (Botanica, 2011). According to Western Areas (2012b), there are many old grid lines that have been rehabilitated.

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 at variance to this Principle

The application area occurs within the Lake Cronin Region which has been identified as having significant environmental values. It has high levels of species richness and a concentration of rare and endemic flora and restricted ecological communities, particularly on ironstones (Environmental Protection Authority (EPA), 2009). The Lake Cronin Area is also listed on the Register of National Estate for its high level of floral and faunal diversity and endemism. The region supports extensive shrubland, sandplain and woodland environments including an excellent representation of a range of vegetation types that are now extensively cleared in the Wheatbelt (EPA, 2009). It provides habitat for a rich and diverse vertebrate fauna including species that are now largely absent or suffering declining populations in the Wheatbelt (EPA, 2009). It also has high conservation value due to the transitional nature of the region which represents geological, climatic and biological characteristics of surrounding botanical and biogeographical regions (EPA, 2009). Based on its high biodiversity conservation significance and competing land use interests, various forms of conservation reservation and management are proposed for the area (EPA, 2009). The application area is located within an area proposed to be managed under section 33 (2) of the Conservation and Land Management Act 1984 (EPA, 2009).

No Threatened Ecological Communities have been recorded within the application area (GIS Database; Botanica, 2011). The application area is located in the North Ironcap Hill area and is within the Priority 3 Ironcap Hills vegetation complexes (Mt Holland, Middle, North and South Ironcap Hills, Digger Rock and Hatter Hill) Priority Ecological Communities (PECs) (GIS Database). The North Ironcaps area is very significant from a biodiversity perspective including a suite of endemic and restricted flora and vegetation units (Department of Environment and Conservation (DEC), 2012). A small 'A' Class Nature Reserve is proposed for this area to protect the core area of highest conservation priority being the North Ironcap Banded Ironstone Formation (BIF) (EPA, 2009). This proposed reserve is immediately adjacent to the application area along its western boundary.

The flora and vegetation survey identified seven vegetation communities within the application area (Botanica, 2011). The survey also covered the majority of the proposed 'A' Class North Ironcap Nature Reserve. Four of the vegetation communities mapped within the application area extend into the proposed reserve. According to Botanica (2012), the majority of the proposed 'A' Class Nature Reserve (approximately 60%) is comprised of the Open mallee of Eucalyptus livida over heath of Allocasuarina acutivalvis vegetation community. This community has previously been mapped in the region as a BIF complex and is considered unique to the Lake Johnston-Hyden area (Botanica, 2012). Approximately 17.9 hectares of this vegetation type has been mapped within the application area and is located in the north western portion of the application area where it continues into the proposed 'A' Class Nature Reserve (Botanica, 2012). Potential impacts to this vegetation community may be minimised by the implementation of a condition that restricts clearing of this vegetation community.

In order to determine the local extent of the vegetation communities identified within the application area, Botanica (2012) referred to a survey conducted within the Greater North Ironcap area over a 1,635 hectare area (Exploration Licence 77/1764 and Mining Leases 77/543, 77/219, 77/544, 77/582 and 77/99). Based on this, four of the vegetation communities are represented by less than 20 hectares within the Greater North Ironcap area (Botanica, 2012). These communities may, therefore, be locally uncommon. Potential impacts to these vegetation communities may be minimised by the implementation of a condition that restricts clearing of these vegetation communities. The remaining two vegetation communities comprise 91.4 and 91.6 hectares within the application area and 219.4 and 728.5 hectares within the Greater North Ironcap area (Botanica, 2012). The clearing of 10 hectares is therefore unlikely to significantly impact these two vegetation communities.

Western Areas (2012a) state that previously disturbed grid lines will be utilised where possible and vegetation

clearing will be kept to a minimum. Raised blade grader technique and rubber tyred loaders (as opposed to tracked vehicles) will be used during clearing and progressive rehabilitation will be undertaken where areas are no longer required (Western Areas, 2012a, 2012b).

A total of 108 flora species (including subspecies and variants) from 61 genera and 32 families were recorded during the flora and vegetation survey (Botanica, 2011). Four introduced species, Angular Pigface (Carpobrotus aequilaterus), Cape Weed (Arctotheca calendula), Ursinia (Ursinia anthemoides) and Stinkwort (Dittrichia graveolens) were identified within the survey area. Dieback disease has been identified as a potential concern (DEC, 2012). Western Areas (2012a) state that all vehicles, tools and machinery will be cleaned of all soil and plant material when entering or exiting the area of the proposed clearing. Potential impacts from weeds and dieback as a result of the proposed clearing may be minimised by the implementation of a weed and dieback management condition.

One Threatened Flora species, Banksia sphaerocarpa var. dolichostyla, and two Priority Flora species, Stylidium sejunctum (Priority 2) and Eremophila biserrata (Priority 4), were recorded during the vegetation survey.

Stylidium sejunctum was recorded at two locations during the vegetation survey, none of which occur within the application area. This species was recorded within the 'Open mallee of Eucalyptus livida over heath of Allocasuarina acutivalvis' vegetation community (Botanica, 2011).

Eremophila biserrata was recorded from four locations within the application area in the 'Mallee of Eucalyptus eremophila and Eucalyptus urna over heath of Daviesia nematophylla and Melaleuca adnata' vegetation community. A fifth record from 1990 is also known from the application area, however, this could not be relocated during the survey (Botanica, 2011).

Another Priority 4 flora species, Eremophila racemosa, has been recorded within the application area from the base of North Ironcap (GIS Database, Botanica, 2011). However, this record could not be relocated by Botanica during the flora survey.

Several Threatened Flora and Priority Flora species have been recorded within 15 kilometres of the survey area. According to Botanica (2011), three Threatened Flora species and 24 Priority Flora species have the potential to occur within the survey area as they occur in similar habitats and vegetation communities to those identified within the survey area.

Western Areas has advised that several drilling programs are likely to be conducted within the application area and that the location of all these are unknown at this stage. Based on current survey coverage (i.e. a level 1 survey that covered some parts of the application area) and the high number of Threatened and Priority Flora species in the area, further populations of conservation significant species could occur within the application area. Western Areas (2012b) has committed to liaising with DEC prior to removing any Priority Flora species. DEC (2012) recommended that targeted surveys for conservation significant flora be undertaken. Potential impacts to conservation significant flora as a result of the proposed clearing may be minimised by the implementation of flora management conditions.

A fauna survey has not been conducted over the application area. However, a four phase fauna survey surrounding the nearby Flying Fox mine recorded a total of 125 fauna species comprising 71 bird, 20 native mammals and 34 herpetofauna species (Biota, 2006; Biota, 2007). Several habitat types including mallee, woodland, shrubland, tall heath and heath were identified (Biota, 2007). The Lake Cronin Region is known to have high faunal diversity.

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

Methodology

Biota (2006)
Biota (2007)
Botanica (2011)
Botanica (2012)
DEC (2012)
EPA (2009)
Western Areas (2012a)
Western Areas (2012b)
GIS Database:
- Threatened and Priority Flora
- 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

Western Areas commissioned Biota to undertake an ongoing fauna assemblage monitoring survey within the Forrestania project area, specifically surrounding the Flying Fox Mine. A four phase fauna survey was

undertaken by Biota during February/March 2005, November 2005, May 2006 and November 2006 (Biota, 2006; Biota, 2007). While the fauna survey did not cover the application area, it was undertaken in the nearby Forrestania area so the results are applicable. Western Areas (2012a) states that there are no rock outcrops/ledges, caves or different fauna habitats from those identified during the Biota surveys within the application area.

A total of 125 fauna species comprising 71 bird, 20 native mammals and 34 herpetofauna species were recorded across the four phases (Biota, 2007). Several habitat types including *Eucalyptus* mallee, *Eucalyptus* woodland, shrubland, tall heath and heath were identified (Biota, 2007). Vegetation communities corresponding to these fauna habitat types have been identified within the application area (Botanica, 2011). The *Eucalyptus* mallee and woodland habitats recorded the highest herpetofauna diversity (Biota, 2007). These habitats contain an abundance of leaf litter providing microhabitats for litter inhabiting species, as well as habitat for arboreal species (Biota, 2007). Salmon Gum woodland exhibited the highest avifauna diversity with *Eucalyptus* mallee also displaying high diversity (Biota, 2007). These habitats offer significant vertical stratification providing a variety of habitat niches (Biota, 2007). The broad range of habitat types also provided a variety of roosting and foraging niches for bats (Biota, 2006). While the application area may provide important fauna habitat, the surrounding area is largely vegetated (Government of Western Australia, 2011) and also provides suitable fauna habitat.

Several Schedule or Priority fauna species were recorded across the four phases of the fauna survey. These were Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Western Quoll (Chuditch) (*Dasyurus geoffroii*), Rainbow Bee-eater (*Merops ornatus*), Western Rosella (*Platycercus icterotis*), Carpet Python (*Morelia spilota* subsp. *imbricata*), Peregrine Falcon (*Falco peregrines*), Western Brush Wallaby (*Macropus Irma*), Crested Bellbird (*Oreoica gutturalis*), White-browed Babbler (*Pomatostomus superciliosus ashbyi*), Shy Heathwren (*Hylacola cauta* subsp. *whitlocki*) and Rufous Fieldwren (*Calamanthus campestris montanellus*). A further nine Schedule or Priority fauna species were also identified as having the potential to occur within the area including the Numbat (*Myrmecobious fasciatus*), Malleefowl (*Leipoa ocellata*), Red-tailed Phascogale (*Phascogale calura*), Heath Mouse (*Pseudomys shortridgei*), Western Whipbird (*Psophodes nigrogularis*), Western Mouse (*Pseudomys occidentalis*), Australian Bustard (*Ardeotis australis*), Western Shrike-tit (*Falcunculus frontatus leucogaster*) and Fork-tailed Swift (*Apus pacificus*) (Biota, 2006; Biota 2007).

Carnaby's Cockatoos (Schedule 1) forage in woodland and heath that is dominated by proteaceous species and nest in hollows of large eucalypts, usually Salmon Gum and Wandoo (DEC, 2006a). One vegetation community within the application area consists of open low woodland of Salmon Gum (Botanica, 2011) and large trees may provide hollows of a suitable size (Biota, 2007). To minimise impacts to this species and the Western Rosella, DEC (2012) recommends avoiding impacts to potential habitat trees.

The Chuditch (Schedule 1) occupies a wide range of habitats from woodlands, dry sclerophyll (leafy) forests, riparian vegetation, beaches and deserts (DEC, 2006b). According to Biota (2007), this species has a large home range occurring at very low densities and probably utilises all habitats within the survey area. The full extent of the Chuditch population in this area cannot be quantified. However, given this population's isolation from other populations in the state's south-west, the vegetation within the application area may be significant habitat for this species.

DEC (2012) also recommends targeted surveys for conservation significant fauna be undertaken. Potential impacts to the Carnaby's Cockatoo, Western Rosella, Chuditch and other Schedule fauna species may be minimised by the implementation of a fauna management condition.

Malleefowl (Schedule 1) are largely confined to arid and semi-arid woodland that is dominated by mallee eucalypts on sandy soils, with less than 430 millimetres of rainfall annually (DEC, 2006c). A disused mound was recorded near Diggers South and an active mound near a Flying Fox water disposal pipeline (Biota, 2007). In regards to the Forrestania project, Biota (2007) recommended searches be undertaken in new project disturbance footprints to determine if active Malleefowl mounds are present. To minimise impacts to this species, DEC (2012) recommends avoiding impacts to their mounds. Potential impacts to Malleefowl as a result of the proposed clearing may be minimised by the implementation of a fauna management condition.

Some of the remaining conservation significant species listed above are considered highly mobile, have a wide distribution and/or are able to utilise a wide range of habitat types so the clearing is unlikely to significantly impact on the species (Biota, 2007). Other species are known mostly from historical records and based on their current distribution these species are not expected to be found in the surrounding area (Biota, 2007). Western Areas (2012b) state that clearing will be kept to the minimum necessary and that potential habitat logs will be avoided or removed prior to clearing.

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

Methodology

Biota (2006)
Biota (2007)
Botanica (2011)
DEC (2006a)
DEC (2006b)
DEC (2006c)
Government of Western Australia (2011)

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

Comments

Proposal is at variance to this Principle

One Threatened Flora species, *Banksia sphaerocarpa* var. *dolichostyla,* was recorded during the flora and vegetation survey (Botanica, 2011). This species occurs between Mt Holland and South Ironcap, within the Forrestania region (Brown et al., 1998) (cited in Botanica, 2011) and is known from 38 records within the Avon Wheatbelt, Coolgardie and Mallee bioregions (Western Australian Herbarium, 2012). It grows on iron-capped hills and rises on ironstone (lateritic) soil profiles within low woodland and low shrubland (Botanica, 2011). Botanica (2011) recorded this species at 168 locations on the slopes of and in close proximity to North Ironcap Hill and have therefore been mostly excluded from the application area. It was recorded in the Open mallee of *Eucalyptus livida* over heath of *Allocasuarina acutivalvis* vegetation community. One record occurs within the application area and some records are less than 50 metres from the boundary of the application area (Botanica, 2011).

Western Areas (2012b) proposes to avoid these individuals and maintain a 50 metre buffer around existing and any future records of this species. The Open mallee of *Eucalyptus livida* over heath of *Allocasuarina acutivalvis* vegetation community will also be avoided during the proposed clearing. Based on current survey coverage (i.e. a level 1 survey that covered some parts of the application area), further populations could occur within the application area. Potential impacts to the species as a result of the proposed clearing may be minimised by the implementation of vegetation and flora management conditions.

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

Methodology

Botanica (2011)
Western Areas (2012b)
Western Australian Herbarium (2012)
GIS Database:
- Threatened and Priority Flora

(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 known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is located approximately 130 kilometres south west of the application area (GIS Database).

No TECs were recorded during the vegetation survey undertaken on 23 September 2011 (Botanica, 2011).

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

Methodology

Botanica (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 majority of the application area falls within the Coolgardie Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). A small portion (approximately 16 hectares) falls within the Mallee IBRA bioregion (GIS Database). Approximately 98.2% of the pre-European vegetation remains in the Coolgardie bioregion and approximately 55.6% of the pre-European vegetation remains in the Mallee bioregion (see table) (GIS Database, Government of Western Australia, 2011). This gives it a conservation status of 'Least Concern' according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002).

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

511: Medium woodland; salmon gum and morel; and
1413: Shrublands; acacia, casuarina and melaleuca thicket.

Approximately 71.2% and 74.5% of Beard vegetation association 511 and Beard vegetation association 1413 remains at a state level, respectively (Government of Western Australia, 2011). On a bioregional and subregion level over 90% of these Beard vegetation associations remain (Government of Western Australia, 2011). Therefore, in a bioregional and subregional context, the vegetation under application is not a remnant of vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DEC Managed Lands (and post clearing %)
IBRA bioregion – Coolgardie	12,912,205	12,677,932	~98.19	Least Concern	~15.52 (~15.80)
IBRA bioregion – Mallee	7,395,897	4,114,885	~55.64	Least Concern	~18.00 (~30.74)
Coolgardie IBRA Subregion - Southern Cross	6,010,833	5,803,345	~96.55	Least Concern	~22.46 (~23.25)
Mallee IBRA Subregion - Western Mallee	3,981,718	1,412,716	~35.48	Depleted	~9.99 (~24.17)
Local Government – Shire of Kondinin	741,967	389,345	~52.47	Least Concern	~3.87 (~6.26)
Beard vegetation associations - State					
511	700,693	499,117	~71.23	Least Concern	~14.57 (~19.37)
1413	1,679,882	1,252,223	~74.54	Least Concern	~13.01 (~17.37)
Beard vegetation associations – Coolgardie Bioregion					
511	464,424	435,238	~93.72	Least Concern	~18.14 (~19.35)
1413	1,061,213	1,041,319	~98.13	Least Concern	~18.18 (~18.52)
Beard vegetation associations – Mallee Bioregion					
1413	42,068	40,271	~95.73	Least Concern	~4.65 (~4.85)
Beard vegetation associations – Southern Cross Subregion					
511	464,424	435,238	~93.72	Least Concern	~18.14 (~19.35)
1413	953,238	933,599	~97.94	Least Concern	~19.39 (~19.79)
Beard vegetation associations – Western Mallee Subregion					
1413	16,603	15,974	~96.21	Least Concern	~5.80 (~6.03)

* Government of Western Australia (2011)
** 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)
Government of Western Australia (2011)
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

Available databases show there is one minor, non-perennial watercourse that intersects the top most part of the application area and flows into a major tributary approximately one kilometre north west of the application area (GIS Database). These watercourses can be seen on aerial imagery (GIS Database). Vegetation mapping does not show any of the vegetation communities as being associated with the minor, non-perennial watercourse (Botanica, 2011). Potential impacts to this watercourse as a result of the proposed clearing may be minimised by the implementation of a vegetation management condition.

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

Methodology Botanica (2011)
GIS Database:
- Holland 2833 Mar 2011 Mosaic
- Hydrography, 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

According to available databases, there are two soil types (Ms8 and X17) within the application area (GIS Database). These soil types are described as:

Ms8
(i) on depositional slopes, sandy yellow earths containing some ironstone gravels at depths below 6-7 feet;
(ii) on erosional ridges and slopes, ironstone gravels all underlain by hardened mottled-zone material by depths of 12-24 inches;

X17
Slopes and valleys with chief soils being sandy neutral and alkaline yellow mottled soils (Bureau of Rural Sciences, 1992).

Sandy earths have a moderate to high risk of wind erosion while ironstone gravels have a low to moderate risk of wind erosion (Schoknecht, 2002). The topography of the application area and surrounds indicates there is a slope in the vicinity of North Ironcap Hill (GIS Database). This indicates a potential for water erosion during and following periods of rainfall. Potential impacts from erosion as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

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

Methodology

Bureau of Rural Sciences (1992)
Schoknecht (2002)
GIS Database:
- Soils, Statewide
- 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 may be at variance to this Principle

The application area occurs within the Lake Cronin Area which is listed on the Register of National Estate (GIS Database). At over 31,000 hectares, the Lake Cronin Area is a significant area in maintaining existing processes at a regional scale and therefore is a potentially important contemporary refugia for many species (Australian Heritage Database, 2012). At its closest point, the application area is approximately 7.5 kilometres west, north west of Lake Cronin and 5 kilometres west of the Lake Cronin Nature Reserve boundary (GIS Database). Lake Cronin Nature Reserve is surrounded by extensive vegetation and the clearing of up to 10 hectares of vegetation at a distance of approximately 5 kilometres or greater from the reserve will not significantly affect ecological linkages to the reserve.

Various forms of conservation reservation and management are also proposed for the Lake Cronin Region as detailed in the Environmental Protection Authority's (EPA's) report 'Advice on Conservation Values and Review of Nature Reserve Proposals in the Lake Cronin Region' (Report 1329). The application area is located within an area proposed to be managed under section 33 (2) of the *Conservation and Land Management Act 1984* and is adjacent to the proposed 'A' Class North Ironcap Nature Reserve (EPA, 2009).

The majority of the proposed 'A' Class North Ironcap Nature Reserve was mapped by Botanica (2011) during the vegetation survey. Four of the vegetation communities mapped within the proposed reserve extend into the application area (Botanica, 2012). A review of the local extent of these communities indicates two of the communities are uncommon in the local area (Botanica, 2012). These two communities will be avoided during the proposed clearing and will provide a buffer around a portion of the proposed 'A' Class Nature Reserve. Western Areas (2012a) will utilise previously disturbed grid lines where possible and will also use a raised blade grader technique and rubber tyred loaders. Western Area's environmental management of exploration activities is detailed in the 'Western Areas NL Exploration Environmental Management Plan (Western Australia) Rev-2 January 2012'. This details environmental management and procedures including management of conservation significant flora, fauna, vehicle hygiene and weeds, ground disturbance, rehabilitation, auditing and induction and awareness.

Potential impacts to the proposed 'A' Class Nature Reserve as a result of the proposed clearing may be minimised by the implementation of vegetation, flora, fauna and dieback and weed management conditions.

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

Methodology

Australian Heritage Database (2012)
Botanica (2011)
Botanica (2012)
EPA (2009)
Western Areas (2012a)

GIS Database:
- DEC Tenure
- Geodata, Lakes
- Register of National Estate

(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). The nearest PDWSA is Ravensthorpe Catchment Area, which is approximately 140 kilometres to the south, south west (GIS Database).

The application area is located within a semi arid, warm Mediterranean environment with an average annual rainfall of 342 millimetres recorded at Hyden approximately 75 kilometres west, south west of the application area (CALM, 2002; BoM, 2013). The small size of the proposed clearing area within this climate is unlikely to result in significant changes to surface water flows.

According to available databases, groundwater salinity within the application area is between 14,000 and 35,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be hyper saline. Given the size of the area to be cleared (10 hectares) compared to the size of the Yilgarn-Southwest Groundwater Province (24,601,260 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

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

Methodology

BoM (2013)
CALM (2002)
GIS Database:
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Public Drinking Water Source Areas (PDWSAs)

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Swan-Avon Lockhart catchment area (GIS Database). Given the size of the area to be cleared (10 hectares) in relation to the size of the catchment area (2,839,268 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

The application area experiences a semi arid, warm Mediterranean climate with an average annual rainfall of 342 millimetres recorded at Hyden located approximately 75 kilometres west, south west of the application area (CALM, 2002; BoM, 2013). Rainfall is usually experienced during winter months and it is likely that during times of intense rainfall there may be some localised flooding in the area (CALM, 2002; GIS Database).

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

Methodology

BoM (2013)
CALM (2002)
GIS Database:
- Geodata, Lakes
- Hydrographic Catchments - Catchments

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

Comments

The clearing permit application was advertised on 1 October 2012 by the Department of Mines and Petroleum inviting submissions from the public. Two submissions were received. One of these objected to the proposed clearing due to the high environmental values of the Lake Cronin Area, particularly North Ironcap Hill. This submission referred to the Environmental Protection Authority's (EPA's) report 'Advice on Conservation Values and Review of Nature Reserve Proposals in the Lake Cronin Region' (Report 1329) and its recommendations and considered the proposed clearing as not meeting Clearing Principles (a), (c), (f), (h) and (i). This submission was considered in the assessment of the clearing principles and the implementation of the permit conditions. A response was provided to the interested party.

A second submission regarding Aboriginal heritage issues was received. A response was sent to the interested party.

There are two native title claims over the area under application: WC03/6 and WC00/7 (GIS Database). One

claim has been filed at the federal court and the other claim has been registered with the Native Title Tribunal on behalf of the claimant groups. 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 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.

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.

It is noted that the proposed clearing may impact on a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) for environmental impact assessment under the EPBC Act. The proponent is advised to contact the SEWPAC for further information regarding notification and referral responsibilities under the EPBC Act.

Methodology

GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims – Filed at the Federal Court
- Native Title Claims – Registered with the NNTT

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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.