Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2171/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Nickelore Ltd**

1.3. Property details

Property: M24/39
M24/290

Local Government Area: City Of Kalgoorlie-Boulder

Colloquial name: Canegrass Project

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard vegetation associations have been mapped at a 1:250,000 scale for the whole of Western Australia. One Beard vegetation association has been mapped over the area proposed to be cleared (GIS Database). This association is: **468:** Medium woodland; salmon gum & goldfields Blackbutt (GIS Database, Shepherd *et al*., 2001). Two surveys have been conducted over the area under application (MBS Environmental, 2007). The Outback Ecology (2003) survey was carried out in September 2003, covering some of the application area, and areas west of that area. The aim of the survey was to map the vegetation, and record any rare flora or fauna within that survey area (Outback Ecology, 2003). Outback Ecology (2003) described the vegetation of the application area as being either Eucalypt woodland, Acacia shrubland / woodland or Casuarina woodland, with the majority being Eucalypt woodland. The Tucker (2007) survey was carried out in June 2007, and aimed to cover the remaining section of the application area, and ensure consistency with the Outback Ecology (2003) survey. During these two surveys, vegetation units of the application area were mapped. The vegetation units mapped were: - Community 1b: Open Woodland of *Eucalyptus lesouefii* and *Casuarina pauper* over an Open Shrubland of *Acacia tetragonophylla* and *Dodonaea lobulata*; - Community 1c: Open Woodland of *Eucalyptus griffithsii* over Open Shrubland of *Acacia burkittii* and *Acacia hemiteles* over a Mixed Shrubland understorey;	The project area is referred to as Canegrass Project area. It is located approximately 75 kilometres north-west of Kalgoorlie, adjacent to the unoccupied Siberia Townsite, on the Davyhurst-Ora Banda Road (GIS Database; MBS Environmental, 2007). On 21 December 2007, the applicant advised the assessor that the company has changed name from Halcyon Group Ltd to Nickelore Ltd (from this point forward referred to as Nickelore). Nickelore have applied to clear up to 60 hectares of native vegetation within approximately 266 hectares, falling within Mining Leases 24/39 and 24/290. Clearing is required to develop an open cut pit, waste rock landform, a run-of-mine (ROM) pad, product stockpiles, an office complex with toilets and first aid room, contractor's workshop, hardstand and wash down area, turkeys nest dam, magazine and haul roads (MBS Environmental, 2007). Nickelore have committed to minimise clearing and its impact and to progressively rehabilitate disturbed areas, so that impacts to the biological diversity of the Canegrass project area are minimised (MBS Environmental, 2007). Management strategies to achieve this include: - Use of existing tracks and disturbed areas; - Clearing of earthmoving equipment prior to entering site, therefore minimising weed spread; - Clearly delineating clearing areas with	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994) to Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994)	The vegetation of the project area has been subject to historical mining activities, as well as historical and recent exploration activities (MBS Environmental, 2007). The proposed clearing is adjacent to the townsite boundary of the Siberia townsite (GIS Database). However, this townsite is unoccupied. The proposed clearing is within a common reserve, and thus excluded from the Mt Burgess pastoral lease (Department of Industry and Resources, 2008).

- Community 1e: Open Woodland of *Eucalyptus salmonophloia* and *Eucalyptus griffithsii* over an Open Shrubland of *Eremophila interstans* subsp. *virgata* and *Acacia erinacea*;

- Community 3a: Open Woodland of *Casuarina pauper* over an Open Shrubland of *Acacia murrayana* and *Dodonaea lobulata*; and

- DA: Disturbed areas. Areas of historical and ongoing disturbance (Outback Ecology, 2003; MBS Environmental, 2007; Tucker, 2007).

A majority of the clearing (31.6%) will occur within the already disturbed areas (MBS Environmental, 2007). A further 30% (18 hectares) will take place within community 1e, which is typically very sparse (MBS Environmental, 2007).

survey pegs and flagging;

- Stockpiling vegetation and respreading where possible to provide habitat for fauna and to assist revegetation by providing a local seed source; and

- Containing saline water in sumps to prevent soil contamination and plant death (MBS Environmental, 2007).

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion, and the Eastern Goldfields IBRA subregion (GIS Database). The biodiversity values of the Eastern Goldfields subregion was assessed by Cowan (2001). Cowan (2001) outlines a number of known special values in relation to landscape, ecosystem, species and genetic values, however, none of these are known as occurring within or surrounding the application area. Cowan (2001) stated that the area is known for its diverse Eucalypt woodlands and numerous endemic Acacias.

Beard vegetation association is extensive within the Coolgardie IBRA Bioregion, totalling 583,361 hectares (GIS Database; Shepherd *et al*., 2001). The Outback Ecology (2003) survey indicates that the vegetation associations found within the application area are widespread in the adjacent areas. Due to the previous mining and exploration impacts visible from aerial photography, and the impacts from surrounding Pastoral leases (GIS Database), it is unlikely that the application area would be of higher biodiversity than the surrounding areas.

The application area is not within a pastoral lease, however is wholly surrounded by Mt Burgess pastoral lease (GIS Database). The land surrounding the application area has also been classified as 'Production from Native Environments' (GIS Database). Destructive grazing of native shrubs, consistent with the habits of feral goats (Capra hircus) was noted sporadically throughout the survey area (Tucker, 2007). It is likely that the grazing impacts were not confined within the Mt Burgess pastoral lease area, and that grazing has had an impact on the application area.

Despite substantial previous disturbance in parts of the survey area, the entire area is considerably weed free (Tucker, 2007). Tucker (2007) suggests that vehicle hygiene and other controls should be incorporated in the standard operating procedures. The assessing officer recommends that conditions relating to the introduction and/or spread weeds be included on any permit granted.

Tucker (2007) noted that some of the species close to old workings appeared to be part of previous rehabilitation efforts, and may not be optimum choices for future rehabilitation seed mixes. The applicant has stated that they will use best practice rehabilitation management (MBS Environmental, 2007).

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

Methodology

Cowan (2001).
Shepherd *et al.* (2001).
Tucker (2007).
GIS Database:
- Davyhurst 1.4m Orthomosaic - DLI02
- Interim Biogeographic Regionalisation of Australia (subregions) - EA 18/10/00.
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00.- Pre-European Vegetation - DA 01/01.
- Pastoral Leases.
- Pre-European Vegetation - DA 01/01.

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

Comments

Proposal is not likely to be at variance to this Principle

A search of Department of Environment and Conservation (DEC) Threatened Fauna Database and the *Environmental Protection and Biodiversity Act 1999* Protected Matters Database was conducted for the project area (MBS Environmental, 2007). The following species were returned from those searches:

- Slender-billed Thornbill (western) (*Acanthiza iredalei iredalei*) - Vulnerable (Commonwealth)
- Malleefowl (*Leipoa ocellata*) - Schedule 1 (WA)
- Woma (southwest population) (*Aspidites ramsayi*) - Schedule 4 (WA)
- Rainbow Bee-eater (*Merops ornatus*) - Migratory (JAMBA)
- Great Egret, White Egret (*Ardea alba*) - Migratory (CAMBA, JAMBA)
- Cattle Erget (*Ardea ibis*) - Migratory (CAMBA, JAMBA)
- Fork-tailed Swift (*Apus pacificus*) - Migratory (CAMBA, JAMBA)
- *Branchinella denticulata* - Priority 1 (WA)
- *Jamenus aridus* - Priority 1 (WA)
- *Ogyris subterrestris petrina* - Priority 1 (WA)
- Australian Bustard (*Ardeotis australis*) - Priority 4 (WA)
- Hooded Plover (*Charadrius rubicollis*) - Priority 4 (WA)
- Shy Heathwren (western) (*Hylacola cauta whitlocki*) - Priority 4 (WA)
- Crested Bellbird (southern) (*Oreoica gutteralis gutteralis*) - Priority 4 (WA)
- White-browed Babbler (western wheatbelt) (*Pomatostomus superciliosus ashbyi*) - Priority 4 (WA) (MBS Environmental, 2007).

MBS Environmental (2007) examined the habitats present within the application area and compared them with the habitat requirements of the species identified above. Species which had a low likelihood of occurrence due to habitat not being present in application area were the Slender-billed Thornbill, Great and Cattle Egret, *Branchinella denticulata*, *Jamenus aridus*, *Ogyris subterrestris petrina*, Australian Bustard and the Hooded Plover (MBS Environmental, 2007).

Malleefowl are large ground dwelling birds, which rarely fly unless alarmed (Naturebase, 2007). They are found across most of southern Australia, however, the range is highly fragmented. The species prefers woodland or shrubland habitats, with an abundant litter layer, that provides essential material for the construction of its nest mounds. It is unlikely that the Malleefowl will be nesting within the application area as the vegetation is generally sparse with little leaf litter (MBS Environmental, 2007). No signs were found of activity or presence of this species (i.e. no nesting mounds, active or inactive) (Tucker, 2007). They may nest in adjacent areas of denser vegetation and may range through the project area while foraging (MBS Environmental, 2007). However, it is unlikely that the proposed clearing area would provide significant habitat for the Malleefowl.

Woma (southwest population) are narrow headed, grey-brown or golden brown pythons (Naturebase, 2007). The Woma occurs in the arid zones of Western Australia, favouring open myrtaceous heath on sandplains, and dunefields dominate by spinifex. Womas are carnivores and eat small mammals, ground birds and reptiles (Naturebase, 2007; Perth Zoo, 2007). Due to the lack of preferred habitats, and lack of prey, it is unlikely that the species would inhibit the areas proposed to be cleared.

The Rainbow Bee-eater generally inhabits open woodlands and shrublands with sandy, loamy soils, and is often seen in disturbed or cleared areas (Pizzey and Knight, 1997). Rainbow Bee-eaters are generally summer breeding migrants in the south west of Western Australia, spending September to April in the southwest and returning to northern Australia from May to August. The Rainbow Bee-eater is an opportunistic species known to inhabit a wide range of habitats, where it prefers to nest in sandy grounds, banks and cuttings. This species is an aerial feeder, and is often seen in disturbed or cleared areas. The Rainbow Bee-eater may be present at the project area during summer breeding months, although there are no records of this species from the area (MBS Environmental, 2007).

The Fork Tailed Swift is reported to roost on cliffs and large trees, but it prefers open country where it is an aerial feeder, rarely landing (Pizzey and Knight, 1997). The species is known to spend nights without landing. The species may forage or pass over the application area, however, the area is unlikely to represent significant habitat for this species.

The Shy Heathwren is usually found in dense mallee and banksia/tea-tree heath, and builds domed nests of grass, bark and moss on the ground, or in low shrubs (Pizzey and Knight, 1997). Preferred habitat for this species is not present in the project area, but can be found in the region (MBS Environmental, 2007). The Shy Heathwren may be a foraging vagrant, but is unlikely to breed or be resident in the application. Therefore, it is unlikely that the area under application would represent a significant habitat for the Shy Heathwren.

The Crested Bellbird is relatively widespread over most of inland Australia (WA Museum, 2007). The Crested Bellbird favours the shrub-layer of eucalypt woodland, mallee, acacia shrubland, Triodia hummock grassland, saltbush and heath (Garnett and Crowley, 2000). One individual was recorded in the vicinity of the application area during the Outback Ecology (2003) survey. It is unlikely that the species will occur in the application area due to the sparse nature of the shrub layer, however, it may occur in adjacent, denser area (MBS

Environmental, 2007).

The White-browed Babbler is found in arid eucalypt forests, and woodlands, and forages for seeds and insects on or near the ground (Garnet and Crowley, 2000). This species was frequently recorded during the 2003 Outback Ecology survey in flocks of up to six birds (MBS Environmental, 2007). It is likely that this species would be found within the application area, however, it is unlikely that the application area would provide significant habitat for this species.

The habitats present in the Canegrass project area are well represented on both local and regional scales (MBS Environmental, 2007). Clearing of 60 hectares of native vegetation which is required for the Canegrass project is unlikely to have a significant impact on the environmental values of the region (MBS Environmental, 2007), and is therefore unlikely to significantly impact on the fauna of the region.

The following management measures will be adopted to minimise clearing and to progressively rehabilitate the area, where possible so that the habitats at the Nickelore site are not adversely impacted upon:
- Utilising existing tracks, firebreaks, fence lines or pipeline/power corridors for access wherever possible;
- Locating tracks to avoid large trees and shrubs and their root zones;
- Cleaning of earthmoving and drilling equipment prior to entering site, therefore minimising weed spread;
- Clearly delineating the clearing area with survey pegs and flagging to ensure only the minimum area required for safe work is cleared;
- Stockpiling vegetation and respreading where possible to provide habitat for fauna and to assist revegetation by providing a local seed source;
- Containing saline water in sumps to prevent soil contamination and plant death;
- Retaining trees (especially those with hollows) for bird, bat and reptile habitat where possible; and
- All personnel will be instructed to notify the Environmental Manager if a mound or Malleefowl is sighted (MBS Environmental, 2007).

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

Methodology

Garret and Crowley (2000).
Outback Ecology (2003).
MBS Environmental (2007).
NatureBase (2007).
Perth Zoo (2008).
Tucker (2007).
WA Museum (2007).

(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

A total of 77 species were recorded during the flora survey conducted by Tucker (2007).

No Declared Rare Flora (DRF) or priority flora have been previously recorded within the proposed clearing area (GIS Database). The nearest recorded DRF is the *Myriophyllum lapidicola*, located approximately 76 kilometres north-west of the application area (GIS Database).

No priority or declared rare flora were identified during the Tucker (2007) (conducted in June 2007) and Outback Ecology (2003) (conducted in September 2003) surveys, either during the ground survey or from subsequent identification of specimens taken (MBS Environmental, 2007).

Five species of priority flora have been recorded from areas adjacent to the Canegrass project area (MBS Environmental, 2007). These are:
- *Gastrolobium graniticum* (Endangered - Commonwealth, DRF - WA);
- *Alyxia tetanifolia* (Priority 3 - WA);
- *Eremophila* sp *Mt Jackson* (Priority 1 - WA);
- *Eucalyptus justonii* (Priority 2 - WA); and
- *Rumex crystallinus* (Priority 2 - WA) (MBS Environmental, 2007).

Gastrolobium graniticum is unlikely to occur within the application area, as the recorded habitat for this species are sandy soils, granite, drainage lines and margins of rock outcrops (FloraBase, 2008), and none of these habitats are present within the application area.

Alyxia tetanifolia is unlikely to occur within the application area, as the habitat recorded for this species is sandy clays, loam, concretionary gravel, drainage lines and adjacent to lakes (FloraBase, 2008), and none of these habitats are present within the application area.

Eremophila sp. *Mt Jackson* may occur within the application area, as the habitat recorded for that species (greenstone gravel (FloraBase, 2008)) does occur. However, the species was not recorded from surveys, and is

therefore not likely to occur (MBS Environmental, 2007).

Eucalyptus jutsonii is unlikely to occur within the application area, as the habitat recorded for this species is red sand, sandplains and sandhills (FloraBase, 2008), and none of these habitats are present within the application area.

Rumex crystallinus is unlikely to occur within the application area, as the habitat recorded for that species is in temporarily flooded inland localities (PlantNET, 2008). This species was also not recorded during the surveys within the application area (MBS Environmental, 2007).

The following management measures will be adopted to minimise clearing and to progressively rehabilitate the area, so that the habitats at the Nickelore site are not adversely impacted upon:
- Utilising existing tracks, firebreaks, fence lines or pipeline/power corridors for access wherever possible;
- Locating tracks to avoid large trees and shrubs and their root zones;
- Cleaning of earthmoving and drilling equipment prior to entering site, therefore minimising weed spread;
- Clearly delineating clearing area with survey pegs and flagging to ensure only the minimum required for a safe working area is cleared; and
- Stockpiling vegetation and respreading where possible to provide habitat for fauna and to assist revegetation by providing a local seed source (MBS Environmental, 2007).

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

Methodology FloraBase (2008).
MBS Environmental (2007).
Outback Ecology (2003).
PlantNET (2008).
Tucker (2007).
GIS Database:
- Declared Rare and Priority Flora List - CALM 01/07/05.

(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 (TECs) within the area under application (GIS Database). The nearest known TEC is located approximately 120 kilometres west of the application area (GIS Database). No TECs have been recorded within or adjacent to the application area (MBS Environmental, 2007).

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

Methodology MBS Environmental (2007).
GIS Database:
- Threatened Ecological Communities - CALM.

(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 falls within the Coolgardie IBRA subregion (GIS Database). The proposed clearing is not located within the Intensive Land-use Zone (GIS Database, Shepherd *et al.,* 2001). The vegetation proposed to be cleared is classified as Beard vegetation association 468: Medium woodland; salmon gum & goldfields Blackbutt (GIS Database; Shepherd *et al.,* 2001).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Coolgardie	12,912,208	12,707,623	98.4	Least concern	12.2 (12.4)
Beard veg assoc. – State					
468	592,024	592,023	100	Least concern	4.3 (4.3)
Beard veg assoc. – Bioregion					
468	583,361	583,361	100	Least concern	4.3 (4.3)

* Shepherd *et al.* (2001) updated 2005
** Department of Natural Resources and Environment (2002)

Although the percentage of land in conservation reserves is fairly low for the Coolgardie IBRA regions and subregions, as well as the Beard Vegetation Association 468, the regional extent is approximately 100% uncleared, and therefore the proposed clearing does not pose a threat to the conservation of this vegetation association.

The area proposed to be cleared does not form a significant remnant of native vegetation.

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

Methodology Department of Natural Resources and Environment (2002).
Shepherd *et al.* (2001).
GIS Database:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00.
- Pre-European Vegetation - DA 01/01.

(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 may be at variance to this Principle

There are no permanent watercourses in the vicinity of the application area, but a number of minor, non perennial watercourses do traverse the application area (GIS Database).

MBS Environmental (2007) stated that there are no creeks or water bodies located in the application area. The closest creek is approximately 1.2 kilometres south of the application area, and flows away from the site in an east-south easterly direction. The closest water bodies, Lake Owen and Wangine Lake are approximately 9.5 kilometres north east, and 11.5 kilometres north west of the project area respectively. Overland surface water flows from the project area immediately run to the north east before being directed east - south east about six kilometres to an ephemeral creek line (GIS Database; MBS Environmental, 2007).

Drainage will be engineered to prevent drainage shadow effects on vegetation, water erosion and management of sediments (MBS Environmental, 2007).

Based on the above, the proposed clearing may be at variance to this Principle. However, the proposed clearing is unlikely to result in any significant impact on these drainage lines, or any other watercourse or wetlands.

Methodology MBS Environmental (2007).
GIS Database:
- Geodata, Lakes - GA 28/06/02.
- Hydrography, linear - DOE 1/2/04.
- Hydrography, linear (hierarchy) - DOW.
- Rivers, DoW.

(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

Advice received from the Department of Agriculture and Food Western Australia (DAFWA) (2007) suggests that the land system under the application area can be broadly described as alluvial plains draining greenstone hills and supporting mixed halophytic shrubland, occasionally with a black oak, mulga or eucalypt over storey. It is likely that red duplex and clay soils will be encountered on several of the land units likely to be cleared. These may erode if their protective stony mantles are disturbed or removed in the clearing process, and run off from the site is not carefully managed (DAFWA, 2007).

Despite substantial previous disturbance in parts of the survey area, the entire area is considerably weed free (Tucker, 2007). The assessing officer recommends that conditions relating to the introduction and/or spread weeds be included on any permit granted.

MBS Environmental (2007) outlines the steps to be taken to minimise land degradation. The management strategies include:
- Utilising existing tracks, firebreaks, fence lines or pipelines/power corridors for access wherever possible;
- Minimising the area requiring vegetation removal;
- Progressive rehabilitation of completed surfaces to minimise active areas exposed;
- Confining vehicle movements to clearly defined tracks;
- Conducting topsoil-stripping activities during periods of low wind;

- Establishing vegetation on bare surfaces on completion of construction activities;
- Containing saline water in sumps to prevent soil contamination and plant death;
- Stockpiling topsoil for use in rehabilitation;
- Minimising the amount of heavy vehicle movement on tracks to limit soil compaction;
- Minimising travel on roads during wet conditions; and
- Compacted tracks will be scarified prior to rehabilitation of site (MBS Environmental, 2007).

Based on the above, the proposed clearing may be at variance to this Principle. However, based on the management strategies outlined above, the proposed clearing is unlikely to cause appreciable land degradation in the long term.

Methodology

DAFWA (2007).
Tucker (2007).
MBS Environmental (2007).
GIS Database:
- Evapotranspiration, Point Potential
- NLWRA, Land Use
- Pastoral Leases
- Rainfall, Mean Annual - BOM 30/09/01.
- Rangeland Land System Mapping - DA.

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

Comments

Proposal is not likely to be at variance to this Principle

The proposed clearing area is not within a conservation estate (GIS Database). The nearest conservation estate is the proposed 2015 pastoral lease exclusion Mt. Burgess Station. The station is located approximately 7 kilometres north of the application area (GIS Database). The nearest Red Book area is located approximately 46 kilometres north-east of the application area (System 11.05 - Goongarrie) (GIS Database).

The application area is not likely to act as a significant remnant, buffer or ecological linkage to the proposed pastoral lease, given that the area is relatively far from the Nature Reserve, and has been historically disturbed by mining and grazing activities, and that the surrounding landscape has not been extensively cleared.

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

Methodology

GIS Database:
- CALM Managed Lands and Waters - CALM 1/07/05.
- CALM proposed 2015 pastoral lease exclusions.
- CALM Regional Parks - CALM 12/04/02.
- Register of National Estate - EA 28/01/03.
- System 1 to 5 and 7 to 12 Areas - DEP 06/95.

(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 proposed clearing area is not located with a Public Drinking Water Source Area (PDWSA) (GIS Database). However, the area under application is a surface and groundwater management area (GIS Database).

The groundwater within the area under application is saline to super-saline at between 14,000 - 35,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). Given the relatively small size of clearing (60 hectares) and the size of the groundwater province (Yilgarn-Goldfields) (GIS Database), the quality of groundwater is unlikely to be impacted by the proposed activity.

There are no Potential Groundwater Dependent Ecosystems in the area (GIS Database).

MBS Environmental (2007) outlines the following management measures, which will be implemented to ensure surface and groundwater quality is not impacted upon:
- Constructing diversion bunds where necessary to ensure clean surface runoff is directed away from the pits. Clean water will be kept separate from potentially contaminated areas and be directed into natural flow areas;
- Directing runoff from potentially contaminated areas to specific collection ponds where contaminants will be removed. Water will be re-used wherever practicable;
- Minimising the area requiring vegetation removal;
- Progressive rehabilitation of completed surfaces to minimise active areas exposed;
- Establishing vegetation on bare surfaces on completion of construction activities; and
- Any groundwater ingress into the pit will be pumped to the turkeys nest dam and used in dust suppression.

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

Methodology MBS Environmental (2007).
GIS Database:
- Groundwater Salinity, Statewide - DOW.
- Potential Groundwater Dependant Ecosystems - DOE 2004.
- Public Drinking Water Source Areas (PDWSAs) - DOW.
- RIWI Act, Surface Water Areas.
- RIWI Act, Groundwater Areas.
- Topographic Contours, Statewide - DOLA 12/09/02.

(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 project area is located within the arid zone of Western Australia and experiences hot summers and cool winters (MBS Environmental, 2007). The nearest operating meteorological station is located at Menzies, 60 kilometres north (MBS Environmental, 2007). The average annual rainfall recorded at Menzies for the period of 1896 to 2007 is 249.8 millimetres (BOM, 2007). Heavy downpours are experienced during summer months, and are generally associated with cyclonic depressions. The point potential evapotranspiration of the area is approximately 2200 millimetres (GIS Database).

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

Methodology BOM (2007).
MBS Environmental (2007).
GIS Database:
- Hydrographic Catchments - Catchments - DOW.
- Hydrographic Catchments - Subcatchments - DOW.
- Rainfall, Mean Annual - BOM 30/09/01.
- Evapotranspiration, Point Potential

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

Comments

There area two Native Title claims (WC98_027 and WC99_029) over the application area (GIS Database). These claims have been registered with the National Native Title Tribunal. However, the mining tenements have 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 occurring within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972*, and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

There were no relevant Environmental Impact Assessments conducted over the area under application (GIS Database).

The application area is within a *Rights in Water and Irrigation Act 1914* groundwater management area (GIS Database). The applicant would require approval from Department of Water to extract groundwater.

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

Methodology GIS Database:
- Aboriginal Sites of Significance - DIA.
- Environmental Impact Assessments.
- Native Title Claims - DLI 7/11/05.

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Mineral Production	Mechanical Removal	60	The proposal has been assessed against the Clearing Principles, and is considered to be may be at variance with principles (f) and (g), not likely to be at variance with principles (a), (b), (c), (d), (h), (i) and (j), and not at variance with principle (e). It is recommended that conditions be placed on any permit granted regarding weeds, recording areas cleared and reporting on clearing activities on an annual basis.

5. References

BOM (Bureau of Meteorology) (2007) *Climate Statistics for Australian Locations – Menzies*, [online] http://www.bom.gov.au/climate/averages/tables/cw_012052.shtml [Last Accessed 07/01/2008].

Cowan, M. (2001) *Coolgardie 3 (COO3 - Eastern Goldfields subregion),* in A Biodiversity Audit for Western Australia, Department of Conservation and Land Management, Perth, Western Australia.

DAFWA (Department of Agriculture and Food Western Australia) (2007) *Advice provided for CPS2171/1*, email from Andrew Watson to assessing officer, received 21/12/2007.

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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.