Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1805/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Ronald William Brown**

1.3. Property details

Property: Mining Lease M77/1053
Local Government Area: Shire Of Kondinin
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
3.76		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
The application area has been mapped at 1:250000 scale as Beard Vegetation Type 511 - Medium woodland, Salmon Gum and Morrel. An inspection by the assessing officer identified three vegetation types. They are 1. Open Salmon Gum woodland dominated by *Eucalyptus salmonophloia* with a low understorey dominated by *Acacia* and *Melaleuca* species. 2. *Allocasuarina* Thicket dominated by *Allocasuarina* species. 3. Sandplain heath dominated by *Acacia* and *Melaleuca* species.	The applicant has applied to clear 3.76 hectares of native vegetation, within a total application area of 9.58 hectares for the purpose of expanding an existing sand mine, located 80 km east of Hyden. Vegetation will be progressively cleared then rehabilitated.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)	No flora survey conducted due to small size of application. The assessing officer inspected the site on 8th March 2007 and identified the vegetation types described under 'vegetation description'. The vegetation within the application area is undisturbed apart from an existing sand mine. Permit conditions restrict the amount of vegetation that can be cleared before rehabilitation efforts to 1 hectare.

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 falls within the Western Mallee IBRA Sub-bioregion (GIS Database). The Western Mallee Sub-bioregion lies within a transitional rainfall zone which covers most of the wheatbelt and is regarded as a focal point for speciation in woody perennial plants and also has a nationally significant concentration of endemic plants at the species level (DEWR, 2007). The Western Mallee sub-bioregion is characterised by Mallee communities occurring on a variety of substrates (CALM, 2002). Eucalyptus woodlands occur mainly on fine textured soils, with scrub-heath on sands and laterite (CALM, 2002). During an inspection of the application area by the assessing officer, it was noted that the vegetation types within the application area consist of Salmon Gum Woodland, *Allocasuarina* thicket and Sandplain heath, typical of this sub-bioregion.

The application area lies several kilometres west of the Lake Cronin Red Book Area. This area is listed on the

Register of National Estate (DEWR, 2007). The Lake Cronin Area is one of a number of areas in the wheatbelt region that are significant for rare species, due to widespread clearing in the surrounding landscape to the west, and to the high diversity and level of local endemism (DEWR, 2007). The application area contains vegetation that may support several conservation significant species, including flora species such as *Dampiera scaevolina* and fauna species such as Carnaby's White Tail Black Cockatoo, Chuditch and South West Carpet Python.

The Lake Cronin Area supports a number of species reaching the limit of their distribution range. The number of species at the edge of their range reflects the convergence in the area of the Avon, Mallee and Coolgardie biogeographic regions (DEWR, 2007). For instance, the application area would be the eastern most extremity of the Carnaby's White Tail Black Cockatoo's distribution.

However there is no evidence to suggest that the application area is an area that is higher in biodiversity values than the surrounding area. An existing disturbed area (sand mine) occurs within the application area and may have compromised the value of the vegetation in the immediate surrounds.

The Biodiversity Coordination Section of the Department of Environment and Conservation concurs with the assessing officer's findings that the proposed clearing is not likely to be at variance to this Principle (DEC, 2007).

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

Methodology

CALM (2002)
DEC (2007)
DEWR (2007)
GIS Database:
- Interim Biogeographic Regionalisation of Australia (Subregions) - EA 18/10/00

(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 available databases (GIS database) reveals no records of conservation significant fauna occurring within the application area.

A search of the Western Australian Museum online database reveals the following conservation significant species have been recorded within an area bounded by the coordinates 32 00' 00", 119 00' 00" and 33 00' 00" and 120 00' 00" (WAM, 2007): Carnaby's White-Tail Black Cockatoo (*Calyptorhynchus latirostris*), Malleefowl (*Leipoa ocellata*), Inland Western Rosella (*Platycercus icterotis xanthogenys*), Peregrine Falcon (*Falco peregrinus*), Red Tailed Phascogale (*Phascogale calura*), Heath Rat (*Pseudomys shortridgei*) and Salmon Gum Gecko (*Oedura reticulata*).

In addition, based on a site inspection the assessing officer considers it likely that the vegetation within the application area may be suitable habitat for Rainbow Bee-eater (*Merops ornatus*) Western Quoll (Chuditch) (*Dasyurus geoffroii*), Carpet Python (*Morelia spilota imbricata*), and Crested Bellbird (*Oreoica gutturalis*)

Carnaby's White Tail Black Cockatoo (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice 2006*) forage in woodland and heath that is dominated by proteaceous species (DEC Naturebase website, 2007). They nest in hollows of large eucalypts, usually Salmon Gum and Wandoo (DEC Naturebase website, 2007). The species has severely declined between the 1970's and the present due mainly to extensive land clearing, shooting and nest robbing (DEC Naturebase website, 2007). The species may be an occasional visitor to the application area and may utilise the area for feeding when food is available. The vegetation is not considered by the assessing officer as important habitat for the Carnaby's White Tail Black Cockatoo and therefore, the removal of 3.76 hectares of native vegetation is not likely to significantly impact the conservation of this species.

The Malleefowl (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice 2006*) is 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 Naturebase website, 2007). They may also be found in Mulga (*Acacia aneura*), and other sclerophyllous associations (DEC Naturebase website, 2007). They require sandy soils with an abundance of leaf litter for breeding (DEC Naturebase website, 2007). The vegetation within the application area may support malleefowl, however, no active nests were observed during a site inspection by the assessing officer. The application area does not appear to be important breeding habitat for this species and therefore, the removal of 3.76 hectares of native vegetation is not likely to significantly impact the conservation status of this species.

The wheatbelt subspecies of Western Rosella (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice 2006*) lives in Eucalypt woodland and its persistence is associated with habitat remnants (Garnett et al, 2000). The main food of the western subspecies is the seeds of *Casuarina*, but it also takes seeds from grass, weedy herbs and fruit. Nesting of this subspecies is in Eucalypt hollows (Garnett et al, 2000). During the site inspection, the assessing officer noted many *Allocasuarina* plants that may provide a food source for the Western Rosella and several tall Salmon Gums that

may provide roosting habitat. However, there are vast amounts of vegetion within Eastern Mallee IBRA Region and Goldfields IBRA Region that the species can utilise for food and therefore the removal of 3.76 hectares of native vegetation is not likely to significantly impact the conservation status of this species.

Peregrine Falcon (Schedule 4 - Fauna that is in need of special protection, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) have a wide home range and utilise tall trees, cliffs, granite outcrops and quarries for nesting. Several tall Salmon gums may provide potential nesting sites, however, no nests were observed during the site inspection. The application area is not important habitat for this species and therefore the removal of 3.76 hectares of native vegetation is not likely to significantly impact the conservation status of this species.

Red Tailed Phascogale (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice 2006*) are known from several isolated nature reserves in the south-west of Western Australia, from the wheatbelt to the south coast, such as Tutanning, Boyagin, Dryandra, Dongolocking, and Parkeyerring, as well as remnant vegetation on private property (DEC Naturebase website, 2007). Red-tailed phascogales have also been recorded on the south coast near Ravensthorpe (DEC Naturebase Website, 2007). The red-tailed phascogale inhabits Wandoo (*Eucalyptus wandoo*) and Sheoak (*Allocasuarina huegeliana*) woodland associations, with populations being most dense in the latter vegetation type. They show a preference for long unburnt habitat with a continuous canopy, as well as tree hollows. Wandoo trees provide excellent nesting sites in the form of hollow logs and limbs, which they line with grass and feathers. Nest sites occur in highly flammable areas, and may often be in dead sheoaks, skirts of live (or stumps of dead) grass trees (*Xanthorrhoea sp.*) Predation by foxes and cats is thought to be this species biggest conservation threat as well as protection of *Allocasuarina* thickets from fire (DEC Naturebase Website, 2007). During the site inspection it was noted that the application area does not support suitable habitat for this species and it is unlikely that the species occurs there.

The Heath Rat is known from the Ravensthorpe Range, Fitzgerald River National Park, Dragon Rocks and Lake Magenta Nature Reserves (DEC Naturebase, 2007). It is known to occupy scrub mallee and mixed scrub with *Banksia* on loamy soils, unburnt for at least 30 years (DEC Naturebase website, 2007). The most likely cause of its decline is the extensive clearing in the wheatbelt combined with predation by introduced predators (DEC Naturebase Website, 2007). During the site inspection it was noted that the application area does not support suitable habitat for this species and it is unlikely that the species occurs here.

The Salmon Gum Gecko whilst not gazetted as rare or priority listed by DEC is known to be a habitat specialist, and exposed to severe habitat fragmentation in the wheatbelt. The species is restricted to smooth barked eucalypt remnants only, therefore, probability of extinction for a given population is related to the amount of suitable habitat in the remnant (Sarre et al, 1995). The poor dispersal ability of this species between remnants means that the possibility of recolonization of a remnant following a localised extinction event is unlikely. As a result, the occupancy rate of the Salmon Gum Gecko in remnant woodland is likely to decline (Sarre, 1995). (CPS 1677 references) During the site inspection it was noted that a small area of open salmon gum woodland occurred within the application area that may provide habitat for this species. It is not likely that Salmon gums will be removed during the clearing. The removal of 3.76 hectares of vegetation is not likely to significantly impact the conservation status of this species.

The Rainbow Bee-eater (Migratory species under the Environmental Protection and Biodiversity Conservation Act 1996) is able to utilise a wide range of habitat types and nests in sandy soils. During the site inspection it was noted that the application area may provide habitat for this species. However, the removal of 3.76 hectares of native vegetation is not likely to significantly impact the conservation status of this species.

The Chuditch (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice 2006*) occupies a wide range of habitats from woodlands, dry sclerophyll (leafy) forests, riparian vegetation, beaches and deserts (DEC Naturebase website, 2007). They have large home ranges of up to 15 sq. km (males) (DEC Naturebase Website, 2007). Chuditch den in hollow logs and burrows and have also been recorded in tree hollows and cavities. Suitable hollow or burrow entrance diameters are often at least 30 centimetres in diameter. An adult female chuditch may utilise an estimated 66 logs and 110 burrows within her home range (DEC Naturebase Website, 2007). In November 2005, a single Chuditch was trapped during a fauna survey conducted over mining leases held by Western Areas NL, several kilometres to the east of the application area (Biota, 2006 - CPS 1249). The species may occur within the application area. During the site inspection, the assessing officer noted that there are no hollow logs or other suitable dens available within the application area. If Chuditch are present, the application area is only a very small fraction of its home range. The proposed clearing is therefore not likely to significantly impact the conservation of this species.

The South West Carpet Python (Schedule 4 - Fauna that is in need of special protection, *Wildlife Conservation (Specially Protected Fauna) Notice 2006*) is widespread throughout the south west from Northampton to Kalgoorlie to Esperance (DEC Naturebase website, 2007). 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 (DEC Naturebase Website, 2006). During the site inspection it was noted that the application area may provide habitat for this species, although there were no hollow logs or other suitable nesting sites were observed. The proposed clearing is not likely to significantly impact the conservation of this species.

Crested Bellbirds (P4) live in the shrub-layer of eucalypt woodland, mallee, *Acacia* shrubland, saltbush, spinifex

grasslands and heath (Garnett et al, 2000). It appears to be particularly sensitive to subsequent fragmentation, with areas of apparently suitable habitat as large as 5,000 ha now unoccupied (Garnett et al, 2000). As the application area occurs within an area that is uncleared east of the Vermin Proof Fence it is unlikely that the clearing of 3.76 hectares will lead to fragmentation of habitat. The proposed clearing is not likely to significantly impact the conservation of this species.

During a site visit to the application area the assessing officer noted that the application area does not contain vegetation that is significant as fauna habitat, as it is common and widespread throughout the biogeographic region. However, the salmon gums within the application area may provide habitat for a range of fauna species and it will be negotiated with the applicant to avoid clearing the salmon gums.

The Biodiversity Coordination Section of the Department of Environment and Conservation concur with the assessing officer's findings that the proposed clearing is not likely to be at variance to this principle (DEC, 2007).

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

Methodology

Biota (2006)
DEC (2007)
DEC Naturebase website (2007)
Garnett et al (2000)
Sarre (1995)
Sarre et al (1995)
WAM (2007)
GIS Database:
- Threatened Fauna - CALM 30/9/05

(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

According to available databases, there are no records of rare of priority flora species within the application area (GIS Database). The following rare and priority flora species are found within a 50 km radius of the application area (GIS Database): *Banksia sphaerocarpa dolichostylis* (R), *Eucalyptus steedmanii* (R), *Muelleranthus crenulatus* (R), *Dampiera scaevolina* (P1), *Stenanthemum liberum* (P1), *Haegiela tatei* (P2), *Keraudrenia adenogyna* (P2), *Microcorys lenticularis* (P2), *Stylidium sejunctum* (P2), *Davesia enlongata implexa* (P3), *Eucalyptus histophylla* (P3), *Gastrolobium tenue* (P3), *Pityrodia sp Yilgarn* (P3), *Spyridium mucronatum recurvum* (P3), *Verticordia mitodes* (P3), *Calamphoreus inflatus* (P4), *Eremophila biserata* (P4), *Eremophila racemosa* (P4), *Microcorys sp. Forrestania* (P4).

During a site inspection on the 8th March 2007, the assessing officer noted three distinct vegetation types being Open Salmon Gum Woodland on brown/red sandy earth, *Allocasuarina* Thicket on pale yellow sands and Sandplain Heath on pale yellow sands.

Based on these vegetation and soil types, the assessing officer considers that of the species listed above *Dampiera scaevolina*, *Microcorys lenticularis*, *Pityrodia sp Yilgarn*, *Spyridium mucronatum recurvum*, *Verticordia mitodes*, and *Microcorys sp. Forrestania* may occur within the application area.

A ground search for these species was not conducted due to the time of year. However, the assessing officer does not consider it necessary to conduct a spring flora survey given the small area under application (3.76 hectares).

The Biodiversity Coordination Section of the Department of Environment and Conservation concurs with the findings of the assessing officer that the proposed clearing may be at variance to this principle (DEC, 2007).

Based on the above, the proposed clearing may be at variance to this Principle. A condition has been placed on the permit requiring the permit holder to stockpile topsoil and vegetative material and progressively rehabilitate those areas cleared. This should ensure that if any of the above species are present they have every opportunity to return through rehabilitation efforts. Furthermore, based on descriptions provided for each species (DEC Florabase, 2007) the species identified above as possibly occuring in the application area could be considered 'disturbance opportunists' and often need some type of disturbance, such as soil movement, for seed to germinate.

Methodology

DEC (2007)
DEC Florabase (2007)
GIS databases:
- Declared Rare and Priority Flora List - CALM 1/7/05

(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

A search of available databases reveals that there are no recorded threatened ecological databases within the application area (GIS Database). None of the vegetation types observed by the assessing officer are considered to be ecological communities at risk as identified in 'Bioregional Summary of the 2002 Biodiversity Audit for Western Australia (CALM, 2002).

The Biodiversity Coordination Section of the Department of Environment and Conservation concur with the findings of the assessing officer that the proposed clearing is not likely to be at variance to this principle (DEC, 2007).

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

Methodology

CALM (2002)
DEC (2007)
GIS Database:
- Threatened Ecological Communities - CALM 12/4/05

(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

	Pre-European area (ha)	Current extent (ha)	Remaining	Conservation Status	Pre-european ha in IUCN Class I-IV Reserves (and current ha)
IBRA Bioregion – Mallee	7395902*	4017869*	54.3*	Least Concern**	17.9 (31.3)*
Shire of Kondinin	737192***	369708***	50.1***	Depleted**	n/a
Beard veg assoc. (state)					
511	700414*	493992*	70.5*	Least Concern**	14.1 (18.9)*
Beard veg assoc. (bioregion)					
511	139593*	46665*	33.4*	Depleted**	10.5 (19.5)*

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

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)

Presumed extinct	Probably no longer present in the bioregion
Endangered*	<10% of pre-European extent remains
Vulnerable*	10-30% of pre-European extent exists
Depleted*	>30% and up to 50% of pre-European extent exists
Least concern	>50% pre-European extent exists and subject to little or no degradation over a majority of this area

* or a combination of depletion, loss of quality, current threats and rarity gives a comparable status

Explanation:

At a regional level, the Mallee IBRA Region remains at approximately 54.3% of its pre-european vegetation extent (Shepherd et al, 2001a). According to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002), this value gives the region a Conservation Status of 'Least Concern', although it should be noted that the Bioregion has experienced extensive clearing in its western half. This is demonstrated by the amount of vegetation within conservation reserves rising from approximately 18% to approximately 31% since European settlement (Shepherd et al, 2001a).

The proposed clearing area falls within the Shire of Kondinin. The Shire straddles the divide between the Intensive Land Use Zone (ILZ), extensively cleared for agriculture and the Extensive Land Use Zone (ELZ), which remains largely uncleared. Although 50.1% of the Shire remains uncleared (Shepherd 2001), the vegetation remaining within the ILZ (55651 ha, Shepherd et al, 2001) is mostly within conservation reserve. The condition of the

vegetation within these reserves can vary. Therefore the assessing officer has given the Shire a conservation status of 'Depleted' according to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002).

Within the Mallee IBRA Region, Beard vegetation association 511, located within the application area remains at approximately 33.4% of its pre-european vegetation extent (Shepherd et al 2001a). According to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002), these values give the vegetation types a Conservation Status of 'Depleted'. However, statewide, vegetation association 511 remains at 70.1% of its pre-european vegetation extent (Shepherd et al, 2001a), suggesting that there is large amounts of this vegetation association outside the ILZ that remains uncleared.

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)
Shepherd et al (2001) updated 2005

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

Comments **Proposal is not likely to be at variance to this Principle**
According to available databases there are no watercourses or wetlands within the application area (GIS Database).

During a site inspection by the assessing officer, a very faint and indistinct drainage line was observed bisecting the application area in a north west - south east direction. This area is a natural collection point for surface run off and is unlikely to flow at any time as the soil type is free draining. There is no vegetation within this low point that could be considered to be riparian in nature. As the area does collect water it is host to several salmon gum trees, although it could not be considered to be Salmon Gum woodland.

This area is likely to be cleared during mining operations, however, it will not lead to drainage problems upstream or downstream of the application area as no surface flows are experienced in this area.

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

Methodology GIS Database:
- Hydrography, Linear - DOE 1/2/04

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

Comments **Proposal may be at variance to this Principle**
According to available databases, the application area soil type is described as JJ16 with small areas of units Ms8 included.

The Digital Atlas of Australian Soils (BRS, 2007) describes soil type JJ16 as broken terrain characterized by rock outcrops (granitic bosses and tors) which may cover very large areas within the unit. Shallow and often stony or gritty sandy soils form a soil scree around the areas of bare rock.

The Australian Atlas of Australian Soils describe soil type Ms8 as gently sloping to gently undulating plateau areas or uplands with long and very gentle slopes and, in places, abrupt erosional scarps: chief soils are (i) on depositional slopes, sandy yellow earths containing some ironstone gravels, and yellow earthy sands often with ironstone gravels at depths below 6-7ft; and (ii) on erosional ridges and slopes, ironstone gravels, all underlain by hardened mottled-zone material by depths of 12-24 in. Soil dominance tends to vary locally between (i) and (ii) but overall the soils of (i) seem to have a slight dominance over the soils of (ii) or gritty sandy soils. As mapped, small areas of units JJ16, are included (BRS, 2007).

The description for soil type Ms8 (i) more accurately describes the soil type encountered during the site visit.

Sandy earths are described as having moderate to rapid permeability and moderate wind erodability (Schoknecht, 2002). Removal of vegetation may cause some wind erosion but is not likely to lead to water erosion. Gritty sands are described as having rapid permeability but high wind erodability (Schoknecht, 2002).

As the soil types present are free draining, there is little likelihood of waterlogging.

Ground water levels are approximately 30-40 m below ground level (de Rosario, 1996). At these levels, the clearing of 3.76 hectares of native vegetation is not likely to cause a rise in water table levels.

During the site visit the assessing office did not observe any weed species. The movement of soil material in

and out of an area can lead to the introduction of weed species.

Based on the above, the proposed clearing may be at variance to this Principle due to the risk of introducing weed species. However, a condition has been placed on the permit to require the permit holder to clean down vehicles of soil and plant material prior to entering the application area.

Methodology BRS (2007)
de Rosario (1996)
GIS Database: Soils, Statewide - DA 11/99
Schoknecht (2002)

(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 at variance to this Principle**
The nearest conservation reserve to the application area is Lake Cronin Nature Reserve, approximately 8.5 km to the east. The Lake Cronin Red Book Area is approximately 2km to the east of the application area (GIS databases). At this distance, there will not be any impact to these conservation areas.

The Biodiversity Coordination Section of the Department of Environment and Conservation concur with the finidings of the assessing officer that the proposed clearing is not at variance to this Principle (DEC, 2007).

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

Methodology DEC (2007)
GIS database:
- Clearing Regulations, Environmentally Sensitive Areas - DoE30/5/05
- CALM Managed Lands and Waters - CALM 1/7/05

(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 experiences a hypersaline ground water of approximately 14000 - 35000 mg/L Total Dissolved Solids (GIS database). Within the area, groundwater is approximately 30 - 40 m below ground level (de Rosario, 1996). The removal of 3.76 hectares of native vegetation is unlikely to cause ground water levels to rise or increase in salinity. Due to its hypersaline nature and its depth, native vegetation is not likely to be dependant on groundwater.

The application area occurs within the Swan/Avon - Lockhart catchment, which is not a Public Drinking Water Source Area (GIS Database). The application area experiences a yearly rainfall of approximately 344 mm/year (BOM, 2007). Most of this rainfall occurs during the winter months. The application area experiences a pan evaporation rate of approximately 2200 mm/year (Luke et al, 1987). Due to the relatively low rainfall and high evaporation rate there is likely to be little surface water within the application area or surrounds. Therefore the proposed clearing is not likely to reduce the quality of surface water.

There are no waterbodies or watercourses within the application area or immediate surrounds. It is unlikely that the proposed clearing will lead to sedimentation or turbidity of waterbodies on or off site.

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

Methodology BOM (2007)
de Rosario (1996)
Luke et al (1987)
GIS Database:
- Groundwater Salinity, Statewide - DOW
- Public Drinking Water Source Areas (PDWSAs) - DOW
- Hydrographic Catchments - Catchments - DOW

(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 receives approximately 344 mm rainfall per year (BOM, 2007) mostly during the winter months, and has an annual evaporation rate of approximately 2200 mm/year (Luke et al, 1987). There is therefore likely to be little surface water within the application area at any time.

The soil within the application area is free draining sand and it is unlikely that water would remain on the surface.

Therefore, there is little chance of the application area being subject to flood.

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

Methodology BOM (2007)
Luke et al (1987)

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

Comments

The application area is not subject to Native Title Claim (GIS Database).

There are no known 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.

A submission was received from a Direct Interest Party requesting copies of Aboriginal Heritage Surveys and that a native title claimant representative be present during clearing. The party was advised that copies of any heritage surveys should be sought from the applicant. The party was also advised that the applicant should be contacted to allow access by native title claimants during clearing.

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

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Comment / recommendation
Mineral Production	Mechanical Clearing	3.76	The proposal has been assessed against the clearing principles and the proposal has been found to be not at variance to principle h, not likely to be at variance to principles a, b, d, e, f, i and j, may be at variance to principles c and g. However, the assessing officer concludes that potential impacts to the environment can be mitigated by conditions endorsed on the permit. Therefore, the assessing officer recommends that permit be granted subject to the following conditions: 1. The Permit Holder shall record the following for each instance of clearing: a) the coordinates of areas cleared using Goecentric Datum Australia 1994; b) the size of the areas cleared in hectares; and c) the dates on which the area was cleared. 2. The Permit Holder shall record the following for each instance of clearing: a) the coordinates of areas rehabilitated using Geocentric Datum Australia 1994; b) the size of the areas rehabilitated in hectares; c) the dates on which the area was rehabilitated. 3. When undertaking any clearing, revegetation and rehabilitation, or other activity pursuant to this Permit the Permit Holder must take the following steps to minimise the risk of the introduction and spread of weeds: a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared; b) ensure that no weed-affected road building materials, mulch, fill or other material is brought into the area to be cleared; and c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared. 4. The Permit Holder shall ensure that areas cleared under this permit will not exceed 1 hectare in total at any one time within the area cross-hatched yellow on attached Plan 1805/1. 5. The Permit Holder must stockpile all topsoil and native vegetation cleared under this permit for use in rehabilitation in accordance with Condition 6. Cleared topsoil and native vegetation must be stockpiled in an area that has already been cleared. 6. For each instance of clearing recorded under Condition 1, the Permit Holder must rehabilitate all cleared areas by re-shaping the surface so that it is consistent with the surrounding 5 metres of uncleared land, and re-spreading the topsoil and vegetative material stockpiled under Condition 5 over each cleared area. 7. The Permit holder shall complete rehabilitation required under condition 6 within 12 months of clearing.

8. The Permit Holder shall provide an Annual Clearing Report to the Director, Environment, Departmen of Industry and Resources by 30th September each year for the life of the permit, demonstrating adherence to all the conditions of this permit, and setting out the records required under conditions 1and 2 of this permit in relation to clearing carried out between 1st July and 30th June the previous year. This report can be included as an addendum to the Annual Environmental Report submitted to DoIR.

Definitions

In this permit:

Annual Environmental Report means a report produced as a requirement of tenement conditions under the Mining Act 1978.

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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.