Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2285/1

Permit type: Purpose Permit

1.2. Proponent details

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

1.3. Property details

Property: Mining Lease 77/911
Miscellaneous Licence 77/203
Miscellaneous Licence 77/204

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:
1.24		Mechanical Removal	Bore construction

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped at a 1:250 000 scale for the whole of Western Australia and are useful to look at vegetation extent in a regional context. One Beard vegetation association is located within the application area (GIS Database):

511- Medium woodland; salmon gum and morrel. According to the Shared Land Information Platform (SLIP, 2007), Beard vegetation association 511 is a woodland dominated by *Eucalyptus salmonophloia* with co-dominant *E. longicornis* over *E. salubris*, *E. flocktoniae*, *E. eremophila* over *Dodonaea stenozyga*, *Eremophila saligna* and *Daviesia nematophylla*.

A vegetation survey conducted over the application area identified two vegetation types (Botanica Consulting, 2006):

Eucalyptus salmonophloia woodland: Dominated by *E. salmonophloia* over *Allocasuarina corniculata*, *Acacia hemiteles*, *Melaleuca acuminata*, *M. adnata*, *M. elliptica*, *M. uncinata*, *Dodonaea viscosa*, over *Olearia muelleri*, *Wilsonia humilis*, *Goodenia viscida*, *Westringia rigida*, *Acacia deficiens*, *A. sphacelata ssp. sphacelata*, *A. intricata* and *Darwinia inconspicua*.

Acacia heath: Dominated by *Acacia assimies ssp. assimiles* and *A. multispicata*, over *A. assimiles ssp. assimiles*, *Melaleuca uncinata*, *Allocasuarina corniculata*, *Leptospermum erubescens*, *Hakea multilineata*, over *Lepidosperma drummondii*, *Lomandra effusa*, *Baeckea crispiflora*, *Darwinia inconspicua*, *Phebalium tuberculosum* and *Philotheca rhomboidea*.

Clearing Description Western Areas have applied to clear up to 1.24 hectares of native vegetation to construct groundwater monitoring bores and access tracks. These monitoring bores have been requested by the Department of Environment and Conservation as part of Western Areas NL as part of their approval to mine.

Vegetation Condition Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)

Comment Vegetation condition has been assessed by Botanica Consulting (2006). The areas have been previously cleared and rehabilitated prior to 2002.

3. Assessment of application against clearing principles

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

Comments

Proposal may be at variance to this Principle

The application area occurs within the Western Mallee Interim Biogeographic Regionalisation of Australia

(IBRA) sub-region (GIS Database). This sub-region is characterised by clays and silts underlain by kankar, exposed granite, sandplains, isolated uplands of laterite pavements and salt lake systems (on a granite basement) (CALM, 2002). Mallee communities can be found on a variety of surfaces and *Eucalyptus* woodlands occur mainly on fine-textured soils, with scrub-heath on sands and laterite. Mallee over myrtaceous-proteaceous heaths on duplex (sand over clay) soils are common. *Melaleuca* shrublands characterise alluvia, and *Halosarcia* low shrublands occur on saline alluvium. A mosaic of mixed eucalypt woodlands and mallee occur on calcareous earth plains and sandplains overlying Eocene limestone strata in the east. The subregion shows a very high degree of endemism, particularly in the Proteaceae family (632 spp, 99% endemic; 16 genera, 5 endemic) and in particular in the genera *Grevillea* and *Hakea*. *Eucalyptus*, *Acacia*, *Dryandra* and Asteraceae also contain very high numbers of endemic taxa.

Within the application area, a total of 53 species were identified from 19 Families and 31 Genera (Botanica Consulting, 2006). This is a high level of biodiversity in a small area and reflects the diverse nature of both the eucalypt woodlands and the sandplain heaths that occur within the application area. For instance, within the application area there are 16 species within the Myrtaceae family (Botanica Consulting, 2006), reflecting the diversity of these families within the subregion. A population of priority flora, *Microcorys sp*. Forrestania (P4), occurs within the application area (Botanica Consulting, 2006).

More than 75% of the Western Mallee IBRA subregion has been cleared for agriculture (CALM, 2002). However, the application area occurs within that part of the subregion that has not been extensively cleared, ie, not within the intensive land use zone (ILZ). It is an area that is important for maintaining landscape scale ecosystem functions.

More than 35% of the Mallee bioregion's original mammal fauna is now regionally extinct (CALM, 2002). This is mainly due to the extensive land clearing that has occurred. The application area is suitable habitat for many conservation significant fauna species, including Malleefowl (*Leipoa ocellata*) and Chuditch (*Dasyurus geoffroii*) (Biota, 2007).

It is noted that the majority of the area (1.24 hectares) subject to the application has already been disturbed from previous mining activity, including some rehabilitated areas. An analysis of photographs of the area to be cleared suggests the disturbed area is already substantially cleared and biodiversity in these areas is substantially reduced. One weed species has been identified within the application area. Clearing tracks into native vegetation has the potential to spread weeds into otherwise weed-free vegetation, which can impact negatively on biodiversity.

Based on the above, the proposed clearing may be at variance to this principle. The assessing officer recommends that should a permit be granted, conditions be placed on the permit regarding weed hygiene.

Methodology

Biota (2007)
Botanica Consulting (2006)
CALM (2002)
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

Biota Environmental Sciences (hereafter referred to as Biota) have completed four fauna monitoring surveys over the application area and surrounding locality in February/March 2005, November 2005 (Phase I and II), May 2006 and November 2006 (Phase III and IV) (Biota, 2007). These four surveys have resulted in a comprehensive list of fauna species that occur within the application area. The fauna surveys and their subsequent reports adequately meet the requirements of EPA Guidance Statement 56 'Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia' (EPA, 2004). Biota has stated that considerable sampling effort would be required to add a small number of extra species to the survey records (Biota, 2007).

As a result of the fauna surveys, the following conservation significant fauna species have been identified within the application area and surrounding vegetation: Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Malleefowl (*Leipoa ocellata*), Chuditch (*Dasyurus geoffroi*), Western Rosella (*Platycercus icterotis xanthogenys*), Peregrine Falcon (*Falco peregrinus*), South West Carpet Python (*Morelia spilota imbricata*), Shy Groundwren (*Hylacola cauta whitlocki*), Rufous Fieldwren (*Calamanthus campestris montanellus*), Crested Bellbird (*Oreoica gutturalis gutturalis*), White Browed Babbler (*Pomatostomus superciliosis ashbyi*), Western Brush Wallaby (*Macropus irma*), Western Mouse (*Pseudomys occidentalis*) and Rainbow Bee-eater (*Merops ornatus*).

The Carnaby's White-tailed Black Cockatoo (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) forage in woodland and heath that is dominated by proteaceous species (DEC, 2006a). They nest in hollows of large eucalypts, usually Salmon Gum and Wandoo. The species has severely declined in numbers between the 1970's and the present due mainly to extensive land clearing, shooting and nest robbing. The Lake Cronin - Forrestania area is the eastern-most extent of its distribution and it would occur there occasionally (Biota, 2007). The vegetation within the

application area is not likely to be significant habitat for this species unless large, hollow bearing Salmon Gum Trees are present.

The Malleefowl (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice 2008*) 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, 2006b). They may also be found in Mulga (*Acacia aneura*), and other sclerophyllous associations. They require sandy soils with an abundance of leaf litter for breeding. Biota recorded a disused mound at Diggers South mine approximately 30 km south of the application area and an active mound was located near the Flying Fox de-watering pipeline, within 3 km of the application area (Biota, 2007). Western Areas NL staff regularly record the species within the Flying Fox/Cosmic Boy/Diggers South mine areas (Biota, 2007). The assessing officer observed a bird several kilometres north of the Digger Rocks mine in November 2006 (Phase IV). It is likely that the species occurs within the application area at low densities, although it was not recorded by Biota during their 2005 survey efforts. Given the large amount of suitable vegetation that surrounds the application area, it is unlikely that the vegetation within the application area is significant habitat for this species.

The Chuditch (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice 2008*) occupies a wide range of habitats from woodlands, dry sclerophyll (leafy) forests, riparian vegetation, beaches and deserts (DEC, 2006c). They have large home ranges of up to 15 square kilometres (males). Chuditch make dens 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. Two individual Chuditch were recorded west of the application area in 2006 by Biota (Biota, 2007). The species may occur within the application area, particularly given the feral animal control currently conducted by Western Areas NL and the availability of suitable habitat within the application area. The full extent of the Chuditch population in this area cannot be quantified. However, given the small amount of vegetation to be cleared, and its degraded nature, the vegetation within the application area is not likely to be significant habitat for 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 2008*) 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. This species was recorded from within the application area (Biota, 2007). Biota has stated that the species requires small tree hollows to breed, suggesting the species is not reliant on mature trees. However, given the extent of suitable habitat surrounding the application area, the vegetation within the application area is not likely to be significant habitat for this species.

Peregrine Falcon (Schedule 4 - Fauna that is in need of special protection, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) have a wide home range and utilise tall trees, cliffs, granite outcrops and quarries for nesting. This species was observed over the application area in 2005 (Biota, 2007) and is likely to be present sporadically within the application area. Given the ability of this species to utilise many different habitat types for hunting prey, the vegetation within the application area is not likely to be significant habitat for this species.

The South West Carpet Python (Schedule 4 - Fauna that is in need of special protection, *Wildlife Conservation (Specially Protected Fauna) Notice 2008*) is widespread throughout the south west from Northampton to Kalgoorlie to Esperance (DEC, 2006d). 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. This species has been recorded near the Flying Fox mine in 2005 (Biota, 2007). It is likely to be present within the application area at low densities. Given the large amount of vegetation surrounding the application area, the vegetation within the application area is not likely to be significant habitat for this species.

Shy Groundwrens (DEC - Priority 4) are known to inhabit dense mallee woodland (Garnett et al, 2000). Shy Groundwrens were recorded during the fauna surveys in 2006 and have been recorded previously within the local area (Biota, 2007). They are likely to be widespread within the application area and surrounds. Therefore, the vegetation within the application area is not likely to be significant habitat for this species.

Rufous Fieldwren (DEC - Priority 4) live in low, sparse heath, saltmarsh or samphire, with or without emergent trees (Garnett et al, 2000). Although declining within the wheatbelt, the species persists in the continuous habitat that surrounds the wheatbelt. This species was recorded west of the application area during the 2006 survey and is likely to occur within the application area (Biota, 2007). Given the large amount of suitable vegetation surrounding the application area, the vegetation within the application area is not likely to be significant habitat for this species.

Crested Bellbirds (DEC - Priority 4) live in the shrub-layer of eucalypt woodland, mallee, Acacia shrubland, saltbush, spinifex grasslands and heath (Garnett et al, 2000). The species 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). This species was recorded during all four survey phases and is likely to occur within the application area (Biota, 2007). Given the large amount of suitable vegetation surrounding the application area, the vegetation within the application area is not likely to be significant habitat for this species.

The White-browed Babbler (DEC - Priority 4) utilises Eucalypt forest and woodlands within the wheatbelt and Southern Goldfields/Great Southern region. It has declined severely in the agricultural region but persists in the uncleared continuous habitat surrounding the wheatbelt (Garnett et al, 2000). This species was recorded during phase I, II an IV of the fauna survey (Biota, 2007). Given the large amount of suitable vegetation surrounding the application area, the vegetation within the application area is not likely to be significant habitat for this species.

The Western Brush Wallaby (DEC - Priority 4) prefers open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland (DEC, 2006e). Tracks of this species were recorded in the 2006 survey and during phase I and II of the fauna survey (Biota, 2007). Given the large amount of suitable vegetation surrounding the application area, the vegetation within the application area is not likely to be significant habitat for 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. It was recorded during the phase II survey (Biota, 2007). It is likely that this species occurs within the application area whilst feeding. Given the large amount of suitable vegetation surrounding the application area, the vegetation within the application area is not likely to be significant habitat for this species.

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

Methodology

Biota (2007)
DEC (2006a)
DEC (2006b)
DEC (2006c)
DEC (2006d)
DEC (2006e)
Garnett et al (2000)

(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

According to available databases, no Declared Rare or Priority flora species occur within the application area (GIS Database).

A survey was conducted over the application area by Botanica Consulting on 10th August 2007. This survey involved a desktop assessment of the conservation significant species that may occur within the application area, utilising the DEC's threatened flora database, and a site visit to identify vegetation types, search for conservation significant flora taxa and assess vegetation condition.

As a result of the survey, Botanica Consulting identified one population of *Microcorys sp*. Forrestania (Priority 4), located within the Eucalyptus Mallee woodland vegetation type (Botanica Consulting, 2006). A total of 6 plants were located within the application area. This species has been recorded from many locations within Western Areas' Forrestania Nickel Project, and it is likely that the species is very common in the Ironcaps area. Furthermore, the species appears to respond well to disturbance. It is likely to return post clearing.

Therefore, the vegetation within the application area is not significant habitat for this priority species.

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

Methodology

Botanica Consulting (2006)
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

A search of available databases reveals that there are no Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest TEC is located approximately 80km to the north (Parker Range System).

None of the vegetation types identified by Botanica Consulting (2006) are threatened ecological communities or ecological communities at risk.

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

Methodology Botanica Consulting (2006)
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

According to available GIS databases, the application area occurs within the Mallee IBRA Bioregion and Western Mallee IBRA sub-region (GIS Databases). The Mallee IBRA Bioregion remains at 54% of its pre-European vegetation extent (See table below). This gives the IBRA Bioregion a conservation status of "least concern" according to "Bioregional Conservation Status of Ecological Vegetation Classes" (Department of Natural Resources and Environment, 2002).

The bioregion straddles that area of the state subject to intensive land clearing (Intensive Land-use Zone - ILZ) and that area of the state that is largely uncleared (Extensive Land-use Zone - ELZ). The Western Mallee IBRA Sub-region falls largely within the ILZ and remains at 33% of its pre-European vegetation extent. This gives the Western Mallee IBRA Sub-region a conservation status of "depleted" according to "Bioregional Conservation Status of Ecological Vegetation Classes" (Department of Natural Resources and Environment, 2002). However, the application area falls within the ELZ. The proposed clearing will not cause the vegetation extent to fall below threshold levels within either the bioregion or sub-bioregion.

Vegetation within the Shire of Kondinin remains at 50% of its pre-European extent. The majority of the remaining vegetation is located within the ELZ. The assessing officer suggests that the conservation status of the remaining vegetation should be given a rating of "depleted" as much of the vegetation remaining within the ILZ is of varying condition and occurs in small isolated remnants whose condition is likely to be in decline.

Within the Bioregion, the Beard vegetation association located within the application area has a conservation status of "depleted" according to "Bioregional Conservation Status of Ecological Vegetation Classes" (Department of Natural Resources and Environment, 2002). This is largely due to the bioregion extending into the ILZ. However, it is not likely that the clearing of 15 hectares of vegetation will significantly impact the conservation of this vegetation type.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves (and post clearing %)
IBRA Bioregion – Mallee	7,395,902	4,017,869	54	Least Concern	18 (31)
IBRA Subregion – Western Mallee	3,981,720	1,307,541	33	Depleted	10 (25)
Local Government – Kondinin	737,192	369,708	50	Depleted	n/a
Beard veg assoc. – State					
511	700,414	493,991	70.5	Least Concern	14 (19)
Beard veg assoc. – Bioregion					
511	139,592	46,665	33	Depleted	10.5 (19.5)
Beard veg assoc. - subregion					
511	139,592	46,665	33	Depleted	10.5 (19.5)

Analysis of aerial photography provided by the applicant (Western Areas, 2007) suggests much of the application area appears to be previously disturbed and surrounded by largely undisturbed vegetation. Therefore the application area is not likely to be a significant remnant of vegetation in an area that is extensively cleared.

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)
Western Areas (2007)
GIS Databases:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Interim Biogeographic Regionalisation of Australia (subregions) - EA 18/10/00

(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 at variance to this Principle

According to available databases, there are no watercourses or wetlands within the application area.

The vegetation types identified by Botanica Consulting (2007) are not examples of riparian vegetation.

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

Methodology Botanica Consulting (2007)

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

Comments

Proposal is not likely to be at variance to this Principle

Soil types within the application are either brown/red clay loams in areas of lower elevation or light sand over lateritic soil in areas of higher elevation (Western Areas, 2007). The brown/red clay loam soils located in the lower undulating plains within the application area have low wind erodability (Schoknecht, 2002). The light sands over laterite in the elevated areas within the application are may be prone to wind erosion and may become seasonally waterlogged.

Ground water levels at the existing Flying Fox mine are in the order of 50 - 200 metres below ground level (Western Areas, 2007). At these depths, the clearing of native vegetation is not likely to lead to a rise in groundwater, causing salinisation. Furthermore, groundwater pumping associated with the Flying Fox mine is likely to maintain groundwater levels in this area.

Western Areas NL have advised that they intend to utilise previously disturbed ground if possible and will be installing surface water management earthworks to prevent accelerated erosion (Western Areas, 2007).

Given the small amount of clearing to take place (1.24 ha) it is unlikely that the clearing will cause significant land degradation in the form of wind or water erosion, or water-logging.

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

Methodology Western Areas (2007)
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 likely to be at variance to this Principle

The proposed clearing area occurs within an ESA (red book area) which is a buffer zone surrounding Lake Cronin (GIS Database). At its closest point, the clearing is approximately 100 metres from the Lake Cronin Nature Reserve boundary, although clearing is spread over three discontinuous locations, with the furthermost clearing taking place well over 1 kilometre from the Nature Reserve.

According to the Australian Heritage Database (DEWR, 2008) the Lake Cronin Nature Reserve is dominated by mallee and woodland associations. This is one of the three vegetation types described by Botanica Consulting in their 2007 vegetation survey as occurring within the proposed clearing area (Botanica Consulting, 2007). The habitat to be cleared is therefore represented within conservation estate. The other, sandplain heath, is very common in the Mallee bioregion east of the Intensive Land Use Zone (that part of the state extensively cleared for agriculture) and is likely to also occur within Lake Cronin Nature Reserve.

Lake Cronin Nature Reserve is surrounded by extensive vegetation and the clearing of up to 1.24 hectares of vegetation at a distance of approximately 100 metres or greater from the reserve will not affect ecological linkages to the reserve.

Therefore despite the area being on the Register of National Estate for natural values it is considered that the clearing to take place will not significantly impact on the environmental values of a conservation area, or its buffer.

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

Methodology Botanica Consulting (2007)
DEWR (2008)
GIS Database:
- Clearing Regulations - Environmentally Sensitive Areas

(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 area receives rainfall of approximately 344.6 millimetres per year (BoM, 2007) and experiences a pan evaporation rate of 2200 millimetres per year (Luke et al, 1987). Therefore, there is likely to be little surface water flow during normal seasonal rains. Sedimentation or turbidity of water-bodies is unlikely as there are no permanent water bodies in the application area or near vicinity, and the area to be cleared is surrounded by vegetation, which will act as a filter to trap any sediment.

Groundwater in the area has been measured at between 30,000- 50,000 Total Dissolved Solids (TDS) (Western Areas, 2007). This groundwater is located 50 metres below the surface. Vegetation is not dependant on groundwater at this depth and at such hypersaline levels.

The low rainfall and high evaporation rates mentioned above suggest that the clearing of 1.24 hectares of vegetation is not likely to increase groundwater levels in the area.

It is noted by the assessing officer that Western Areas pump saline groundwater from the Flying Fox pit. Therefore, groundwater levels will in the application area are likely to be lower than normal levels.

The Department of Water have advised that the area is not within the Avon River System Proclaimed Surface Water Management Area and therefore there is no requirement under the *Rights in Water and Irrigation Act 1914* (RIWI Act) for a license to take surface water or for the requirement for a permit to interfere with the bed or bank of a watercourse (DoW, 2008). The area is proclaimed under the RIWI Act as a groundwater management area and therefore a license is required to take groundwater (DoW, 2008).

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

Methodology

BoM (2008)
DoW (2008)
Luke et al (1987)
Western Areas (2007)

(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 occurs within the Swan/Avon - Yilgarn catchment (GIS Database). The Swan/Avon - Yilgarn catchment has an area of 28,392.6 square kilometres. The removal of 1.24 hectares within this catchment is not likely to lead to an increase in flood height or duration.

Average rainfall in the vicinity of the application area is approximately 344.6 millimetres per year (BoM, 2007). Rain falls mostly in winter with some summer falls associated with tropical depressions. The application area experiences a pan evaporation rate of 2,200 millimetres per year (Luke et al, 1987). This suggests that water that pools on the ground is likely to evaporate quickly.

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

Methodology

BoM (2007)
Luke et al (1987)
GIS Databases:
- Hydrographic Catchments - Catchments.

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

Comments

There is no native title claim over the area under application (GIS Database).

There are no Aboriginal sites of significance that intersect with the application area. It is the proponent's responsibility to comply with the *Aboriginal Heritage Act, 1972* and ensure that no sites of aboriginal significance are damaged though the clearing process.

There were no public comments received during the public comments period.

Methodology

GIS Database:
- Native Title Claims
- Aboriginal Sites of Significance (STATUS)

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Bore construction	Mechanical Removal	1.24	The proposal has been assessed against the Clearing Principles and may be at variance to Principles (a), not likely to be at variance to Principles (b), (c), (d), (e), (g), (h) and (j) and is not at variance to Principle (f). It is recommended that should a permit be granted, conditions be imposed on the permit with regards to weed hygiene, recording areas cleared and permit reporting.

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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.