Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1977/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Saracen Gold Mines Pty Ltd**

1.3. Property details

Property: Mining Lease 31/3
Mining Lease 31/5
Mining Lease 31/6
Mining Lease 31/76
Miscellanous Licence 31/45

Local Government Area: Shire of Menzies

Colloquial name: Porphyry minesite - Haul Road

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 The vegetation located within the project area has been mapped at a 1:250,000 scale as Beard vegetation associations. The Beard vegetation associations located within the area proposed to be cleared are:

- **18**: Low woodland; mulga (*Acacia aneura*) (Shepherd et al., 2001).
- **389**: Succulent steppe with open low woodland; mulga over saltbush.
- **400**: Succulent steppe with open low woodland; mulga over bluebush.

The application area falls predominantly within Beard vegetation associations 389 and 400, which are well represented in the Murchison Bioregion (GIS Database).

A flora and vegetation survey of the application area was undertaken by Saracen (2007) between November 22-23 2006 and on March 28 2007. As a result of the survey, the following vegetation associations were identified:

1. Calcyphytic pearl bluebush shrublands: calcrete platforms and stony plains with generally shallow red earths, invariably highly calcareous and alkaline, dominated by *Maireana sedifolia* (pearl bluebush) shrublands with sparse *Casuarina pauper* (cristata) or *Acacia aneura*.
2. Sandplain spinifex with mallee: Sandplains with deep sands supporting a dominant hummock grassland of *Spinifex sp* with scattered *Eucalyptus oleosa* overstory and mixed low shrubs.
3. Calcareous plain eucalypt/acacia shrubland: Very gently undulating plains with deep calcareous red earths supporting moderately close tall shrublands with *Acacia aneura* and mallee (Eucalyptus spp.) over *Senna spp* and *Eremophila scorparia*.
4. *Acacia casuarina* shrubland: Very gently undulating plains to level plains with shallow calcareous red earths over calcrete supporting scattered to moderately close tall shrublands of woodlands of *Casuarina pauper* (cristata) with *Acacia aneura* and *A. burkittii*.
5. Plains mixed halophyte low shrublands: Broad alluvial plains with texture contrasting soils, often on hardpan with generally scattered low shrublands of *Acacia aneura* and other Acacia spp over mosaics of sometimes dense mid shrubs including *Cratystylis subspinescens*, *Maireana pyramidata* and other chenopods.

6. Hardpan plain mulga shrublands and mulga grassy open shrublands: Extensive nearly level plains characterized by shallow sandy clay loams over siliceous red-brown hardpan with scattered tall shrublands of *Acacia aneura* over scattered mid-shrubs of *Eremophila spp*, *Ptilotus obovatus* and *Rhagodia eremea*.

7. Sandy granitic acacia shrublands: Gently undulating plains with scattered granite outcrops and very shallow red sands with very scattered to scattered shrublands of *Acacia quadrimarginea* and *A aneura* over *Eremophila spp* and *Ptilotus obovatus*

8. Sago bush low shrublands: Alluvial plains with red earths or duplex soils on hardpan with dominant scattered low shrubs of *Maireana pyramidata* and other chenopods with scattered *Acacia aneura* and other acacia species.

9. Drainage line with *Eucalyptus oleosa* or mulga: Drainage lines through alluvial plains generally dominated by scattered to moderately close shrubs and trees (*Acacia aneura* or *Eucalyptus oleosa*) with well-developed mid and low shrub strata of *A burkittii*, *Senna spp* and *Eremophila spp*.

Clearing Description

Saracen Gold Mines Pty Ltd (hereafter referred to as Saracen) have applied to clear native vegetation for the construction of a 24 kilometre haul road from the Porphyry Pit to Safari Bore. The existing Porphyry Site Operations are located approximately 130 kilometres north-east of Kalgoorlie.

The proponent has applied to clear a maximum area of 60 hectares within a permit application area totalling approximately 255 hectares.

Vegetation Condition

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

To

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

Comment

The vegetation condition is based on the Keighery (1994) vegetation condition scale, from aerial photography and an assessment provided by Saracen (2007).

The application area is located within the Edjudina Pastoral Lease and partly within an operational minesite (GIS Database). Vegetation within the application area has been previously disturbed by grazing, mining and exploration activities, and has thus been substantially altered in areas (Saracen, 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 Eastern Murchison Subregion of the Murchison Bioregion of the Interim Biogeographic Regionalisation of Australia (IBRA) (GIS Database). The biodiversity values of the subregion were assessed by Cowan (2001). Vegetation of the subregion is dominated by Mulga Woodlands often rich in ephemerals; hummock grasslands, saltbush shrublands and Halosarcia shrublands (Cowan, 2001).

The application area is within the Edjudina Pastoral Lease and has suffered long term disturbance from grazing. Vegetation within the application area, although degraded, is consistent with vegetation found within the Eastern Murchison Subregion (Cowan, 2001).

The major land use in the region is pastoralism, and over 80% of this bioregion is pastoral leasehold (GIS Database; Saracen, 2006). Aerial imagery provided by the proponent as well as other aerial imagery available to the Department of Industry and Resources (DoIR) shows that part of the application area has also been impacted by mining activities resulting in a moderate level of disturbance (Saracen, 2007; GIS Database).

Due to the level of disturbance that has already occurred within the proposed clearing area as a result of grazing and mining activities (GIS Database; Saracen, 2007), it is unlikely that the proposal will result in the clearing of native vegetation that has higher biodiversity attributes than that of the surrounding undisturbed vegetation.

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

Methodology

Cowan (2001)
Saracen (2006)
Saracen (2007)

GIS Database:
- Interim Biogeographic Regionalisation of Australia (subregions)
- Edjudina 140cm Orthomosaic
- Pastoral Leases

(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

In 2002, Bamford Consulting Ecologists completed a field survey and a desktop analysis of fauna likely to occur in the region of the Saracen tenements and concluded that the vertebrate fauna are typical of the eastern Goldfields: moderately rich in reptiles and birds but depauperate in mammalian fauna (Saracen, 2006). Furthermore, no threatened species were observed during the field survey on the Saracen tenements (Saracen, 2007).

A search of the Department of Environment and Conservation (DEC) Threatened Fauna database was undertaken for the application area and surrounds, within the following coordinates: 28.7ºS 121.7ºE/ 31.0ºS 123ºE. As a result, there were nine species of birds, four mammals and one reptile listed as Threatened Species under the *Environmental Protection and Biodiversity Conservation Act 1999* or protected under Western Australia legislation that potentially occur in the application area (Saracen, 2006). Based on habitat type and distribution, it is possible that four bird species of conservation significance may potentially utilise the application area as habitat, including: the Malleefowl (*Leipoa ocellata*), the Peregrine Falcon (*Falco peregrinus)*, the Hooded Plover (*Thinornis rubricollis*) and the Thick-billed Grass-wren (western subspecies) (*Amytornis textilis textilis)*.

The Malleefowl (Schedule 1, fauna that is rare or likely to become extinct, *Wildlife Conservation* (*Specially Protected Fauna) Notice, 2008*) may potentially occur in the vicinity of the application area. There have been recent unconfirmed sightings of the Malleefowl in dense mulga woodland on nearby Mendelyarri station; however, no active or inactive Malleefowl mounds were found within the application area (Saracen, 2006). Furthermore, there have been no confirmed sightings of the Malleefowl on the Saracen tenements since 1908, when the species was sighted approximately 120 kilometres southwest of the application area (Saracen, 2006). Given the lack of Malleefowl mounds within the application area, it is unlikely the proposed clearing area is significant habitat for this species.

The Peregrine Falcon (Schedule 4, other specially protected fauna, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*), is a wide ranging bird that has little habitat specificity apart from an affinity with cliffs, tall trees for nesting, and water (Pizzey & Knight, 1997). Given the lack of cliffs, tall trees or perennial watercourses within the project area, the proposal is unlikely to be significant habitat for this species.

The Hooded Plover (western subspecies) (listed by the DEC as Priority 4, taxa in need of monitoring) has only been sighted once in the past 100 years in the vicinity of the Saracen tenements. A pair was sighted in 2001, near Lake Yindargooda which is located approximately 75 kilometres south of the application area (Saracen, 2006).

The Hooded Plover frequents the margins and shallows of salt lakes, and along coastal beaches, where it nests on the upper levels of the beach, in adjacent sand dunes, or on lake shores, and forages at the water's edge for small invertebrates (Garnett & Crowley, 2000). The species is non-migratory, although recent colour-band sightings have shown that birds will move several hundred kilometres (Garnet & Crowley, 2000). The nearest potential habitat for the Hooded Plover to the application area is Lake Rebecca, which is located approximately 4 kilometres west of the application area. Furthermore, the application area is on the edge of the known range for the species (Garnett & Crowley, 2000). Based on the above, it is unlikely that the application area is significant habitat for the Hooded Plover.

The Thick-billed Grass-wren (western subspecies) (listed by the DEC as Priority 4, taxa in need of monitoring) was last observed in 1908 approximately 120 kilometres south of the application area (Saracen, 2006). This subspecies suffered a massive decline early in the 20th century, and the current distribution of the Thick-billed Grass-wren is now restricted to areas around Shark Bay (Garnett & Crowley, 2000). Given the above, it is unlikley that the Thick-billed Grass-wren will occur within the application area.

Fauna refugia in the region of the Saracen tenements include breakaways, rock outcrops, rocky hilltops, drainage lines, dampland areas north of Lake Rebecca and salt lakes after heavy rainfall (Saracen, 2006). These habitats are locally significant in enhancing the biodiversity of the region; however, it is unlikely that the proposed clearing will impact on these fauna refugia. The application area comprises predominantly of degraded vegetation with relatively flat topography, and other than minor, non perennial drainage lines, the application area lacks other significant fauna refugia (GIS Database). Vegetation within the application area has been substantially altered during previous grazing and mining activity, and the proposed clearing is likely to have a very minor effect on faunal populations.

Additionally, the proponent's environmental management commitments include: non-disturbance of refugia for indigenous fauna, including breakaways, rocky outcrops and seasonal swamps, and protection of the integrity of drainages and seasonal habitat for migratory and nomadic birds (Saracen, 2006).

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

Methodology

Garnett & Crowley (2000)
Pizzey & Knight (1997)
Saracen (2006)
Saracen (2007)
GIS Database:
- Threatened Fauna
- Topographic Contours, Statewide

(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

The likelihood of Declared Rare Flora (DRF) occurring within the application area was determined from database searches and flora collections held by DEC (FloraBase at the Herbarium, Declared Rare and Priority Flora list and Threatened Flora Database from Species and Communities Branch) (Saracen, 2006). A flora survey of the application area was completed by walking the proposed haul road route on November 22-23, 2006 and March 28, 2007. All flora species present within each vegetation community were identified, or collected for later identification by an expert botanist (Saracen, 2007).

The results of the survey indicate that there are four species of DRF known to occur within the Murchison IBRA Bioregion. Of these, only *Conospermum toddii* has been recorded near the application area (Saracen, 2007; GIS Database).

Conospermum toddii F.Muell. is a spreading shrub commonly found on yellow sandy dunes of the Eremean, Coolgardie, Great Victorian Desert and Murchison botanical provinces (Western Australian Herbarium, 2008). The closest recording of this species to the application area is at Mt Celia (approximately 30 kilometres to the north of the application area) (Saracen, 2006). Photographs of the application area submitted to the assessing officer indicate the application area contains sandy - clayey plain type habitats (some of which have a stony mantle present) supporting Acacia and halophyte shrublands. Based on this, it is unlikely the application area is significant habitat for this species.

Over 150 Priority flora species have been recorded within the Murchison and Great Victoria Desert IBRA Regions, and 20 of these species have been collected near the application area (Saracen, 2006). Of these, *Tecticornia mellaria* K.A. Sheph, a Priority 1 species, has been collected within the Butchers Well and Mount Celia project areas (approximately 30 kilometres to the north) (Saracen, 2006). It also occurs in large numbers on the margins of Lake Minigwal (approximately 70 km north-east of the application area) (Saracen, 2006).

Tecticornia mellaria K.A. Sheph. is known to inhabit well-drained red gypseous sand, clay, gypseous dunes and the margins of playa lakes and clay pans of the Eremean and Murchison botanical provinces (Western Australian Herbarium, 2008). According to the Western Australian Herbarium (2008) the majority of recordings for this species have been on the fringes of, or close to salt lakes. Given that there are clay pans present within the application area, it is possible that suitable habitat for this species is present. However, it should be noted that there are numerous salt lake systems surrounding the application area including Lake Rebecca, Lake Raeside, Lake Lefroy, Lake Carey and Lake Yindarlgooda, which would provide higher quality habitats for this species (GIS Database). Furthermore, no specimens of *Tecticornia mellaria* K.A. Sheph. were recorded within the application area (Saracen, 2006).

None of the flora species listed in the Commonwealth Department of Environment and Heritage's database of Threatened Species and Threatened Ecological Communities, are known to occur in the application area (Saracen, 2006).

Although DRF and Priority flora species may occur within close proximity of the application area, databases available to DoIR indicate that no DRF or Priority flora species are known to occur within the application area (GIS Database). Similarly, no DRF or Priority flora species were found within the application area during any of the flora surveys previously conducted for the proposed clearing site on November 22-23, 2006 and March 28, 2007 (Saracen, 2007).

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

Methodology

Saracen (2006)
Saracen (2007)
GIS Database:
- Declared Rare and Priority Flora List

(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 East Murchison IBRA subregion (Cowan 2001). No known TECs are located in the vicinity of the application area, or within the application area itself (GIS database; Saracen, 2006).

Furthermore, the proposal is not located within any of the ecosystems at risk cited by Cowan (2001).

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

Methodology

Cowan (2001)
Saracen (2006)
GIS Database:
- Threatened Ecological Communities

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments

Proposal is not at variance to this Principle

The vegetation proposed to be cleared is mapped as Beard vegetation association 400 (Succulent steppe with open low woodland, mulga over bluebush), 389 (Succulent steppe with open low woodland; mulga over saltbush) and 18 (Low woodland; mulga (*Acacia aneura*)); but predominantly vegetation associations 18, 400 and 389 (GIS database). According to Shepherd et al. (2001), approximately 100% of Beard vegetation associations 400 and 389 remain within the Murchison IBRA Bioregion.

Whilst the vegetation associations within the application area are not represented in conservation estate, they remain uncleared (Shepherd et al., 2001). Therefore, the proposed clearing does not pose a threat to the conservation of these vegetation associations.

The area proposed to be cleared does not represent a significant remnant of native vegetation in an extensively cleared area.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves
IBRA Bioregion – Murchison	28,120,558	28,120,558	~100	Least Concern	1.1
Beard veg assoc. – State					
400	190,824	190,824	~100	Least Concern	0.0
389	642,358	642,358	~100	Least Concern	0.32
18	19,892,437	19,890,348	~100	Least Concern	2.1
Beard veg assoc. – Bioregion					
400	190,824	190,824	~100	Least Concern	0.0
389	493,979	493,979	~100	Least Concern	0.4
18	12,403,248	12,403,248	~100	Least Concern	0.4

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

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

Methodology

Department of Natural Resources and Environment (2002)
Shepherd et al. (2001)
GIS Database:
- Pre European Vegetation

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

Comments

Proposal is at variance to this Principle

According to available databases, the application area traverses several minor, non perennial drainage lines and several wash areas. The flow of the drainage lines is east to west towards Lake Rebecca, a non perennial lake, which is located approximately 4 kilometres west of the application area (GIS Database).

It is the proponent's responsibility to liaise with the Department of Water to determine whether Bed and Banks Permit is required for the proposed works.

Based on the above, the proposed clearing is at variance to this Principle. However, the drainage lines are minor and non perennial, and the vegetation around the drainage lines is sparse (GIS Database; Saracen, 2007). Furthermore, the haul route has been designed to minimise impacts on the drainage lines and has been diverted around potential drainage foci (Saracen, 2007).

Methodology

Saracen (2007)
GIS Database:
- Evaporation Isopleths
- Geodata, Lakes
- Hydrography, Linear
- Mean Annual Rainfall Surface (1975 - 2003) DoW
- Potential Groundwater Dependant Ecosystems
- Rivers 250K - GA

(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

The application area was surveyed by the Department of Agriculture and Food (DAFWA) (Pringle et al., 1994), and comprise of the following land systems:

- Gundockerta;
- Rainbow;
- Nubev;
- Leonora;
- Gransal;
- Deadman;
- Wyarii; and
- Carnegie.

These land systems are common and widespread in the region (Pringle et al., 1994).

Gundockerta comprises of extensive, gently undulating plains on weathered greenstone with stony mantle and lower alluvial tracts supporting bluebush shrublands (GIS Database; Saracen, 2007). Where not protected by a stony mantle, saline plains and adjacent lower alluvial tracts are susceptible to water erosion, particularly in areas where perennial shrub cover is substantially reduced and/or the soil surface is disturbed (Pringle et al., 1994).

Rainbow is characterised by cemented quaternary alluvium (hardpan) plains supporting mulga shrublands (Pringle et al., 1994). Impedance of sheet flow can initiate soil erosion and cause water starvation and consequent loss of vigour in vegetation downslope; however, this system is generally not susceptible to soil erosion (Pringle et al., 1994).

Nubev is characterised by gently undulating stony plains, minor low rises and drainage floors supporting mulga and halophytic shrublands (Pringle et al., 1994). Drainage zones are moderately susceptible to soil erosion, particularly where perennial shrub cover is substantially reduced or the soil surface is disturbed (Pringle et al., 1994).

Leonora is characterised by low greenstone hills and stony plains supporting mixed stony chenopod shrublands (Pringle et al., 1994). Drainage tracts are highly susceptible to water erosion, particularly in areas where perennial shrub cover has been substantially reduced or the soil surface is disturbed. Stony lower footslopes rely on mantles for soil protection against erosion (Pringle et al., 1994).

Gransal is characterised by stony plain and low rises on granite supporting mainly halophytic shrublands (Pringle et al., 1994). Breakaway footslopes and alluvial plains are respectively highly and moderately susceptible to water erosion in areas where perennial shrub cover is substantially reduced (Pringle et al., 1994).

Deadman is characterised by calcareous plains supporting Acacia, black oak and mallee shrublands/

woodlands adjacent to salt lake systems (Pringle et al., 1994). This land system is generally not susceptible to soil erosion (Pringle et al., 1994).

Wyarri is characterised by granite domes, hills and tor fields with gritty-surfaced fringing plains supporting mulga and granite wattle shrublands (Pringle et al., 1994). This land system is generally not susceptible to soil erosion, partly as a consequence of heavy, protective soil mantles (Pringle et al., 1994).

The Carnegie Land System is characterised by Quaternary sediments associated with salt lakes with fringing saline flats and dunes (Pringle et al., 1994). Minor areas receiving concentrated run-on are susceptible to rilling when shrub cover is substantially reduced or run-on is accelerated due to increased run-off from degraded areas upslope; however, lack of slope renders most of this system generally not susceptible to soil erosion (Pringle et al., 1994).

Given the above descriptions of the various land systems that the application area traverses, soil erosion may occur as a result of the clearing of native vegetation. However, Saracen (2007) have advised of the following commitments to mitigate potential for land degradation:

- the proposed haul road will be constructed to minimise impacts on water flows;
- road works will follow existing contours of beds and banks, thereby ensuring water flows are not impeded and removal of vegetation kept at a minimum (Saracen, 2007);
- the haul route has been designed to minimise impacts on creek lines (Saracen, 2007);
- topsoil and vegetation will also be harvested and stockpiled in low heaps for re-spreading to assist in rehabilitation of the route when it is no longer required (Saracen, 2007).

Based on the above, the proposed clearing may be at variance to this Principle (DAFWA, 2007). However, Saracen (2007) have committed to install culverts where the haul road intersects drainage lines, thus reducing the potential for soil erosion. Additionally, no windrows or mounds of soil will be left adjacent to the haul road post construction phase (Saracen, 2007). This action will ensure that in sheet flow areas, surface flows will be maintained and vegetation in downstream areas will not be starved of surface water. As a result, it is recommended that should the permit be granted, conditions be placed on the permit for land degradation.

Methodology

DAFWA (2007)
Pringle et al. (1994)
Saracen (2006)
Saracen (2007)
GIS Database:
- Evaporation Isopleths
- Mean Annual Rainfall Surface
- Topographic Contours, Statewide

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

Comments

Proposal is not likely to be at variance to this Principle

A Crown Reserve 8642 (vested with the Water and Rivers Commission for the purpose of a waterway) is located within 2 kilometres of the application area (GIS Database). Advice received from the Department of Water (DoW) dated 10 August 2007 to the Assessing Officer indicates that DoW has no objection to the proposed clearing as the Reserve is up gradient of the proposed clearing and therefore there is a low risk of any sedimentation or erosion from the drilling activities (DoW, 2007).

Another conservation area, the Goongarrie National Park, is located approximately 54 kilometres west of the application area (GIS Database). Given the distance between the conservation reserve and the application area, it is unlikely that the values of the conservation area will be compromised.

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

Methodology

DoW (2007)
GIS Database:
- CALM Managed Lands and Waters
- Clearing Regulations - Schedule One Areas
- Geodata, Lakes

(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

There are no permanent creeks in the application area; however, the haul route traverses several minor, non perennial drainage lines and several wash areas (GIS Database). The road will be constructed to minimise impacts on water flows, and road works will follow existing contours of beds and banks, thereby ensuring water

flows are not impeded (Saracen, 2007). It is therefore unlikely that the proposed clearing would cause significant sedimentation or turbidity of waterbodies near the application area.

The application area is not located within a Public Drinking Water Source Area (GIS Database).

Lake Rebecca, a non perennial lake is located 4 kilometres west/south-west of the application area (GIS Database). Surface water flows from east of the application area westwards to Lake Rebecca; however, surface flow only occurs after major, but infrequent, rainfall events (Saracen, 2006). Increased runoff and sedimentation of Lake Rebecca is unlikely to result from the proposed clearing.

Groundwater within the area under application is saline at between 3,000 – 7,000 milligrams per litre of Total Dissolved Solids and approximately 35 metres below the surface (GIS Database; Saracen, 2007).

With an average annual rainfall of approximately 200 - 250 millimetres, and high annual evaporation rates of approximately 3,000 millimetres (GIS Database), there is likely to be little surface water within the application area or surrounds, and recharge to groundwater would be low. The proposed clearing of native vegetation is not likely to decrease the quality of groundwater.

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

Methodology

Saracen (2006)
Saracen (2007)
GIS Database:
- Geodata, Lakes
- Groundwater Salinity, Statewide – DoW Properties
- Hydrography, Linear
- Public Drinking Water Source Areas
- Rivers 250K - GA

(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 region is classified as semi-desert and characterised by hot summers and cool winters, with an average annual rainfall of 200 - 250 millimetres and average annual evaporation rates of 3,000 millimetres (GIS Database; Saracen, 2006). There are no major watercourses within the proposed clearing site, however the application area traverses several minor, non perennial drainage lines and several wash areas (GIS Database).

The clearing of 60 hectares within the Raeside-Ponton, Salt Lake Basin catchment, which has a total area of more than 11 million hectares (GIS Database), is unlikely to result in an increase in flooding incidence or intensity.

The drainage systems of the region have very low gradients and contain playa lakes (round depressions in the surface of the ground). Lakes form local depocentres with poorly developed radial drainage systems. During occasional intense rainfall events lakes may fill, and in very rare events some may overflow, link-up and discharge to the Nullarbor Plain through Ponton Creek (Pringle et al. 1994).

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

Methodology

Pringle et al. (1994)
Saracen (2007)
GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments - Catchments
- Hydrography, Linear
- Rainfall, Mean Annual
- Rivers 250K - GA

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

Comments

There are no known Native Title claims over the area under application (GIS Database).

Advice received from the Department of Indigenous Affairs (DIA) dated 6 August 2007 to the Assessing Officer indicates that there are two registered Aboriginal Sites of Significance contained wholly or partly within the proposed clearing area on Mining Leases 31/3, 31/5, 31/6, 31/76 and Miscellaneous Lease 31/45: DIA sites 19142 and 2327 (DIA, 2007). However, on June 13, 2000, the Aboriginal Cultural Material Committee (ACMC) determined that on the basis of the information submitted, DIA site 2327 did not meet the criteria of section 5 of the *Aboriginal Heritage Act 1972* (AHA) and thus, at this time, is not a site under the AHA (DIA, 2007). DIA site 2327 is maintained on the register as 'stored data' only (DIA, 2007).

DIA site 19142 was determined by the ACMC to be a site under section 5 of the AHA and thus is protected under the AHA (DIA, 2007). CPS 1977/1 will not impact any places known to the DIA that meet the terms of section 5 of the AHA (DIA, 2007).

It is possible that there are sites that have not yet been reported to the DIA and entered on the Register of Aboriginal Sites. The AHA protects all Aboriginal sites in Western Australia, whether they are known to the DIA or not. 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.

Crown Reserve 8642 (vested with the Water and Rivers Commission for the purpose of a waterway) is located 2 kilometres west of the application area (GIS Database). Advice received from the DoW dated 10 August 2007 to the Assessing Officer indicates that DoW has no objection to the proposed clearing as the Reserve is up gradient of the application area, and therefore, there is a low risk of the proposed clearing impacting the reserve (DoW, 2007).

The proposed haul road for Saracen Gold Mines Pty Ltd is subject to the *Mining Act 1978* approval process. A mining proposal must be approved by DoIR prior to the commencement of the proposed works.

It is the proponent's responsibility to liaise with DEC and the DoW 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

DIA (2007)
DoW (2007)
GIS Database:
- Clearing Regulations - Schedule One Areas
- Native Title Claims
- Sites of Aboriginal Significance DIA

4. Assessor's comments

Comment

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

Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of land degradation management and permit reporting.

5. References

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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.