Department of Industry and Resources

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1975/1

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 31/6
Miscellaneous Licence 31/44

Local Government Area: Shire of Menzies

Colloquial name: Porphyry minesite – Dewatering Pipeline

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
20		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 within the application area has been mapped at a 1:250,000 scale as Beard vegetation associations (GIS Database):

- 125: Bare areas; salt lakes (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 association 389, which is well represented in the Murchison Bioregion (GIS Database).

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

1. Hardpan plain mulga shrublands and mulga grassy open shrublands: Extensive nearly level plains characterised 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*.
2. Samphire low shrublands: Often highly-saline soils or sandy soils fringing lake beds, dominated by often abundant low shrubs including samphire species (*Halosarcia* spp) *Frankenia pauciflora*, *Maireana* spp. and *Cratystylis subspinescens*
3. 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*
4. Mulga drainage line shrublands/woodlands with chenopod understoreys: Broad non-incised drainage lines through alluvial plains towards lake country with shallow sandy-clay loam soils over siliceous hardpan generally dominated by scattered to moderately close tall shrubs (*Acacia aneura* and *Ac. burkittii*) with well-developed mid and low shrub strata including *Maireana* spp, *Eremophila* spp. and *Atriplex bunburyana*.
5. Sandy bank lake shrublands: Sandy banks adjacent to bare lake beds with scattered tall shrubs or trees (*Acacia aneura*, *A burkittii*, *Eremophila miniata*) over well developed low and mid-shrubs including *Jacksonia arida*, *Maireana* spp, *Dodonea* spp. and numerous perennial grasses.

Clearing Description

Saracen Gold Mines Pty Ltd (hereafter referred to as Saracen), propose to clear vegetation to lay a 13 kilometre dewatering pipeline from the Porphyry Pit south-west to Lake Rebecca. An access track will also be established parallel to the dewatering pipeline. The existing Porphyry Site Operations are located approximately 130

kilometres north-east of Kalgoorlie (Saracen, 2007).

The proponent has applied to clear a maximum area of 20 hectares within a permit application area totalling 152 hectares.

The proposed pipeline will be rolled out by hand along an ephemeral saline drainage line entering Lake Rebecca (Saracen, 2007).

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, aerial photography and a vegetation 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 some 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 have been 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).

A fauna survey of the application area was undertaken in 2002 by Bamford Consulting Ecologists (Saracen, 2007). No conservation significant fauna species or significant habitats were recorded within the application area (Saracen, 2007). Bamford Consulting Ecologists concluded that the fauna species present within the application area are likely to be typical of the eastern Goldfields (Saracen, 2007).

A flora assessment of the application area was undertaken by Saracen between 22-23 November 2006, and 28 March, 2007, which included a desktop database search and a ground survey of the proposed dewatering pipeline (Saracen, 2007). No Declared Rare Flora (DRF) or Priority flora species were recorded during the flora survey (Saracen, 2007)

The application area is within the Edjudina Pastoral Lease and has suffered long term disturbance from grazing. Vegetation within the application area, although degraded in parts, 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 may 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). No threatened fauna 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 by Saracen (2007) 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 may 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 south-west 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 Yindarlgooda 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). Given that part of the application area is located within Lake Rebecca and its fringing vegetation, it is possible that suitable habitat for this species exists within the application area. However, it should be noted that the location of Lake Rebecca is on the edge of the known range for the species (Garnett & Crowley, 2000). Furthermore, there are numerous salt lake systems surrounding the application area including Lake Raeside, Lake Lefroy, Lake Carey and Lake Yindarlgooda, which would also provide high quality habitats for this species (GIS Database). Based on the above, it is unlikely that the Hooded Plover is specifically reliant on the habitats found within the application area.

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 unlikely 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). Given that the application area intersects a small portion of Lake Rebecca and fringing dampland areas to the north-east, it is possible that fauna refugia may be impacted from the proposed clearing. However, it should be noted that the proposed clearing in these areas is small (3.5 hectares) and linear in nature (3.5 kilometres long and up to 12 metres wide), and is therefore unlikely to have a significant impact on fauna refugia (Saracen, 2007; GIS Database). Furthermore, there are numerous salt lake systems and associated dampland areas surrounding the application area including Lake Raeside, Lake Lefroy, Lake Carey and Lake Yindarlgooda, which would also provide comparable habitat for fauna species (GIS Database).

Based on the above, the proposed clearing may 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 dewatering pipeline route on 22-23 November, 2006 and 28 March, 2007. All flora species present within each vegetation community were identified, or collected for later identification by an expert botanist (Saracen, 2007). As a result of the database search, It was determined that several DRF and Priority flora species may occur within close proximity of the application area. However, 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 between 22-23 November, 2006 and 28 March, 2007 (Saracen, 2007).

The results of the database search 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 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 having a stony mantle present) supporting Acacia and halophyte shrublands (associated with salt lakes). 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*, 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 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 the application area intersects Lake Rebecca and its fringing vegetation, it is possible that suitable habitat for this species is present, however, no specimens of *Tecticornia mellaria* were recorded within the application area during the flora survey (Saracen, 2006). Furthermore, it should be noted that there are numerous salt lake systems surrounding the application area which would also provide comparable habitats for this species (GIS Database).

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).

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

Methodology

Saracen (2006)
Saracen (2007)
Western Australian Herbarium (2008)
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 Eastern 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 mentioned in 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 125, 389 and 400, but predominantly comprises vegetation association 389 (GIS database). According to Shepherd et al. (2001), these Beard vegetation associations all remain at approximately 100% of their pre-European extent in the Murchison IBRA Bioregion.

Although the amount of these vegetation associations held in reserves or DEC managed land is relatively low on a Bioregional scale, all Beard vegetation associations found in the application area are well represented on a Bioregional and State level.

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 (and post clearing %)
IBRA Bioregion – Murchison	28,120,558	28,120,558	~100	Least Concern	1.1
Beard veg assoc. – State					
125	3,491,834	3,287,864	~94.2	Least Concern	6.87
389	642,358	642,358	~100	Least Concern	0.32
400	190,824	190,824	~100	Least Concern	0.0
Beard veg assoc. – Bioregion					
125	711, 486	711, 486	~100	Least Concern	0.5
389	493,979	493,979	~100	Least Concern	0.4
400	190,824	190,824	~100	Least Concern	0.0

* 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 pipeline route traverses two minor, non-perennial drainage lines, as well as areas subject to inundation, and flows into a non-perennial lake; Lake Rebecca (GIS Database).

A minor, non perennial drainage line will be traversed close to Porphyry Pit, which has been substantially impacted by pastoral activity and previous mining activity. Clearing around this drainage line is therefore likely to have a negligible effect on the integrity of this watercourse. The proposed pipeline will be rolled out by hand along an ephemeral saline drainage line entering Lake Rebecca, and it is unlikely that drainage line or lake fringe vegetation will be significantly disturbed in the process (Saracen, 2007).

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

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

Methodology Saracen (2007)
GIS Database:
- Geodata, Lakes
- Hydrography, Linear
- 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) and has been found to pass through the Gundockerta, Rainbow and Carnegie land systems, but predominantly falls within the Rainbow and Carnegie land systems (GIS Database). These land systems are common and widespread in the region (Pringle et al., 1994). The majority of the application area is on an undulating plain, apart from the final three kilometres of land adjoing Lake Rebecca which is more heavily sloped toward the lake (GIS Database).

The Gundockerta land system 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).

The Rainbow land system 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).

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).

The main land systems located within the application area are generally not susceptible to soil erosion (Pringle et al., 1994). However, land in the application area adjoing Lake Rebecca (listed as the Carnegie land system) is on a slope and is susceptable to erosion if shrub cover is removed (GIS Database; Pringle et al., 1994). As a result, it is possible that the removal of vegetation in this area for the dewatering pipeline and access track may intitiate some soil erosion. However, Saracen (2007) have advised of the following commitments to mitigate the potential for land degradation:

- the proposed pipeline and access track 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
- 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.

Based on the above, the proposed clearing may be at variance to this Principle. However, Saracen (2007) have committed to the measures listed above, which will reduce the potential for erosion. It is recommended that should the permit be granted, conditions be placed on the permit to mitigate the potential for land degradation.

Methodology 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). DoW (2007) have advised that they have 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.

Another conservation area, the Goongarrie National Park, is located approximately 42 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 watercourses within the application area, however, the pipeline route traverses two minor, non-perennial drainage lines as well as areas subject to inundation and flows into a non-perennial lake, Lake Rebecca (GIS Database).

Saracen (2007) have advised that pipeline bunds will not be installed within the minor drainage line south of the Porphyry Pit to ensure through-flow is not impeded. Elsewhere, the pipeline will follow a route that has a gradual fall towards the lake. Surface flow will therefore not be obstructed by clearing or pipeline bunds (Saracen, 2007). It is therefore unlikely that the proposed clearing would exacerbate sedimentation or turbidity of waterbodies near the application area.

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

Groundwater within the area under application is saline at between 3000 - 7000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database).

Groundwater recharge in the area occurs from major, but infrequent, rainfall events, mainly on drainage divides, and locally at site specific intake areas such as drainage lines or sand plains and dune fields (Saracen, 2007).

The average annual rainfall of the application area is approximately 200 – 250 millimetres (GIS Database). Given the high annual evaporation rates present (3,000 millimetres), in comparison to the low annual rainfall, It is unlikely the removal of 20 hectares of native vegetation will increase recharge as to significantly affect the quality or depth of groundwater.

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

Methodology Saracen (2007)
GIS Database:
- Geodata, Lakes
- Groundwater Salinity, Statewide
- 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, 2007). There are no major watercourses within the proposed clearing site, however, the application area traverses areas subject to inundation, two minor, non-perennial drainage lines, and enters Lake Rebecca at its western extent (GIS Database).

The application is for the installation of a dewatering pipeline that will transfer water from the Porphyry Pit into Lake Rebecca. Although, there will be an increase in the amount of water discharged into the lake, it is unlikely to result in flooding of the salt lake.

Pipeline bunds will not be installed within the minor drainage line south of the Porphyry Pit to ensure through-flow is not impeded (Saracen, 2007). Elsewhere, the pipeline will follow a route that has a gradual fall towards the lake. Surface flows will not be impeded by clearing or pipeline bunds (Saracen, 2007).

The clearing of 20 hectares within the Raeside-Ponton 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 - BOM 09/98
- Hydrographic Catchments - Catchments - DoE 23/3/05
- Hydrography, Linear - DoE 1/2/04
- Rainfall, Mean Annual - BOM 30/09/01
- 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 specified tenements M31/3, M31/6 and L31/44: DIA sites 19142 (Lake Rebecca) and 2327 (Porphyry Gold 6) (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 (Porphyry Gold 6) 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 (Porphyry Gold 6) is maintained on the register as 'stored data' only (DIA, 2007).

DIA site 19142 (Lake Rebecca) 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 1975/1 will impact DIA site 19142, and Saracen will therefore need to submit a notice under section 18 of the AHA to the ACMC (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 within 2 kilometres of the application area. 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 proposed clearing and therefore there is a low risk of the proposed clearing impacting the reserve (DoW, 2007).

The proposed pipeline 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 - DOE 10/03/05
- Native Title Claims - DLI 7/11/05
- 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), (c), (d), (h), (i) and (j), is at variance to Principle (f) and may be at variance to Principles (b) and (g).

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

Cowan, M (2001) Murchison 1 (MUR 1 East Murchison subregion) Subregional description and biodiversity values, dated September 2001. In: "A biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002". Report published by the Department of Conservation and Land Management, Perth, Western Australia.

Department of Conservation and Land Management (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions.

Department of Indigenous Affairs (2007) Sites of Aboriginal Significance advice for land clearing application. Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Industry and Resources, received 6 August 2007. Department of Indigenous Affairs Western Australia.
Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
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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.