Government of Western Australia
Department of Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8000/1
Permit type: Purpose Permit

1.2. Proponent details

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

1.3. Property details

Property: Mining Lease 28/166
Mining Lease 28/167
Mining Lease 28/245
Mining Lease 28/269
Mining Lease 31/220
Mining Lease 31/295
Local Government Area: Shire of Menzies and City of Kalgoorlie-Boulder
Colloquial name: Carosue Dam Expansion Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
375		Mechanical Removal	Mineral Production and associated activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 3 May 2018

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

The vegetation of the application area is broadly mapped as the following Beard vegetation associations:

Beard vegetation association 20: Low woodland; mulga mixed with *Allocasuarina cristata* and *Eucalyptus* sp; and
Beard vegetation association 24: Low woodland; *Allocasuarina cristata* (Government of Western Australia, 2018; GIS Database).

This application is an amalgamation of several granted and expired native vegetation clearing permits, and numerous flora and vegetation surveys have been conducted over the application area. The following vegetation associations were recorded within the application area from various vegetation surveys conducted by Alexander Holm and Associates (Holm) and Mattiske Consulting (Mattiske) between 2006 and 2012 (Saracen, 2018):

Tailings Storage Facility Expansion Project (CPS 5426/2):

2a: Low lateritic rises – Very sparse woodland (to 10 metres) of *Casuarina obesa* with very sparse mid-height shrub layers dominated by *Eremophila scoparia, Scaevola spinescens, Senna artemisioides* subsp. *filifolia* and *Acacia colletioides*.

2b: Low rises on basaltic or metamorphic rocks – Very sparse to mid-dense mixed height degraded chenopod shrublands dominated by *Dodonaea lobulata, Senna artemisioides* subsp. *filifolia, Acacia burkittii, Ptilotus obovatus* with isolated to very sparse tree layer (6 to 15 metres) of *Casuarina obesa* and occasionally *A. incurvaneura, Grevillea nematophylla* subsp. *nematophylla* and/or *Alextryon oleifolius*. Less frequently shrublands dominated by *Maireana sedifolia*;

2c: Sandy rises – Sparse woodlands dominated by *Acacia incurvaneura* and low mallees including *Eucalyptus eremicola, E. ceratocorys* and *E. oldfieldii* over a diverse sparse shrubland with spinifex (*Triodia irritans*) often dominated by myrtaceous shrubs. Shrubs include *Eremophila forrestii* subsp. *forrestii, Thryptomene kochii, Verticordia pritzelii, Prostanthera althoferi* subsp. *althoferi* and *Acacia effusifolia*;

4a: Plains supporting eucalypt or acacia shrublands – Very sparse tall *Acacia* shrublands (4 to 6 metres) dominated by *Acacia incurvaneura, A. aptaneura* or sparse mid height *Acacia* shrublands dominated by *A. burkittii* with overstoreys of isolated *Casuarina obesa* or *Eucalyptus oleosa* subsp. *oleosa* and lower shrubs including *Dodonaea lobulata, Senna artemisioides* subsp. *filifolia* and *Ptilotus obovatus*;

4b: Sand plains supporting sparse eucalypt woodlands – Very sparse eucalypt woodland (6 to 10 metres) of *Eucalyptus flocktoniae* subsp. *flocktoniae, E. yilgarnensis* and *E. oleosa* subsp. *oleosa* over mixed height, very sparse shrubs including *Eremophila caperata, Acacia colletioides* and *Westringia rigida* and mid-dense *Triodia*

irritans; and

5: Alluvial plains supporting chenopod shrublands – Very sparse to sparse mixed height chenopod shrublands dominated by *Maireana sedifolia, M. georgei, M. pyramidata, Atriplex vesicaria, Ptilotus obovatus* and others or in poor condition dominated by *Senna artemisioides* subsp. *filifolia, Eremophila scoparia, Dodonaea lobulata* and *Acacia burkittii* overtopped with isolated and clumped tree layer of *Casuarina obesa, Eucalyptus brachycorys* and *E. lesouefii* (Holm, 2012).

Whirling Dervish Stage 3 (CPS 4150/1):

CEAS: Scattered to mid-close acacia tall shrubland with *Casuarina pauper* and/or eucalypt overstoreys over low shrublands dominated by *Acacia burkittii,* with mixed shrubs including A. *tetragonophylla, A. hemiteles, Eremophila metallicorum, Senna artemisioides* subsp. *filifolia* and *Dodanaea rigida;*

CCAS: Scattered to mid-close acacia tall shrublands with *Casuarina pauper* and eucalypt overstoreys over mid-low shrublands dominated by *Acacia burkittii* and *Senna artemisioides* subsp. *filifolia,* with other shrubs including *Ptilotus obovatus, Scaevola spinescens, Olearia muelleri, Eremophila decipiens* and *E. metallicorum;* and

DRXT: Sparse to mid-close eucalypt and mulga woodlands and occasional thickets over open to mid-close shrublands often dominated by *Acacia burkittii* or less commonly *Bursaria occidentalis.* Other common species include A. *hemiteles, Senna artemisioides* subsp. *filifolia, Grevillea stenobotrya* and *Spartothamnella teucriiflora* (Holm, 2010).

Karari Stage 3 (CPS 3833/2):

E1: Low open woodland of *Eucalyptus oleosa* subsp. *oleosa* over an open scrub of *Acacia aneura* var. *intermedia* and *Acacia ayersiana* with occasional *Casuarina pauper* over low to open low shrubland of *Acacia burkittii, Acacia ramulosa* var. *ramulosa, Dodonaea lobulata, Senna artemisioides* subsp. *filifolia, Ptilotus obovatus, Maireana sedifolia* and *Maireana georgei* on red clay loam flats and minor drainage areas;

E2: Woodland to open woodland of *Eucalyptus salmonophloia* occasionally with *Eucalyptus lesouefii* and *Eucalyptus concinna* over low shrubland to open low shrubland of *Eremophila scoparia, Senna artemisioides* subsp. *filifolia, Acacia hemiteles, Atriplex vesicaria, Atriplex nummularia, Dodonaea lobulata, Maireana sedifolia* and *Maireana triptera* on shallow calcrete red/brown clay loams often with a fine calcrete or ironstone mantle;

E3: Low open woodland of *Eucalyptus oleosa* subsp. *oleosa* over scrub of *Acacia aneura* var. *intermedia, Acacia ayersiana* and *Grevillea nematophylla* over an open low shrubland of *Acacia burkittii, Acacia tetragonophylla, Acacia ramulosa* var. *ramulosa, Scaevola spinescens, Dodonaea lobulata, Dodonaea rigida, Spartothamnella teucriiflora, Senna artemisioides* subsp. *filifolia* and *Ptilotus obovatus* on red clay loam flats and wash plains, with a mantle of ironstone and calcrete pebbles;

C1: Open low woodland of *Casuarina pauper* over an open low shrubland of *Scaevola spinescens, Acacia nyssophylla, Eremophila scoparia, Eremophila glabra, Dodonaea lobulata, Eremophila oldfieldii* subsp. *angustifolia, Senna artemisioides* subsp. *filifolia* on slopes and flats in shallow red/brown clay loams on calcrete often with rocky calcrete, ironstone and quartz mantles;

C2: Open low woodland of *Casuarina pauper* with occasional *Acacia* and *Eucalyptus* species over an open low shrubland of *Olearia muelleri, Ptilotus obovatus* and *Senna artemisioides* subsp. *filifolia* on rocky calcrete rises with red/brown clay loam;

C3: Open low woodland of *Casuarina pauper* and occasionally *Eucalyptus concinna* over a scrub of *Acacia ayersiana, Acacia aneura* var. *intermedia* and *Grevillea nematophylla* over an open low shrubland of *Scaevola spinescens, Dodonaea rigida, Senna artemisioides* subsp. *filifolia, Acacia kempeana* and *Ptilotus obovatus* on red clay loam on flats often with a fine ironstone mantle;

S1: Scrub of *Acacia ayersiana* and *Grevillea nematophylla* with occasional *Casuarina pauper* and *Eucalyptus* species over a low to open low shrubland of *Acacia tetragonophylla, Senna artemisioides* subsp. *filifolia, Ptilotus obovatus, Dodonaea rigida* and *Scaevola spinescens* on red clay loam flats;

A1: Closed scrub of *Acacia aneura* var. *intermedia* to open scrub of *Acacia burkittii* and *Acacia tetragonophylla* over open low shrubland of *Eremophila oldfieldii* subsp. *angustifolia, Eremophila glabra*, and *Dodonaea lobulata* on red/brown clay loams and sandy loams in drainage lines and areas; and

A2: Scrub of *Acacia aneura* var. *intermedia, Acacia ayersiana* and *Grevillea nematophylla* with emergent *Eucalyptus oleosa* subsp. *oleosa* and *Casuarina pauper* over a low shrubland of *Acacia burkittii, Acacia tetragonophylla, Acacia ramulosa* var. *ramulosa, Scaevola spinescens, Dodonaea lobulata, Dodonaea rigida, Spartothamnella teucriiflora* and *Ptilotus obovatus* on red clay loam flats and wash plains sometimes with a mantle of ironstone and calcrete pebbles (Mattiske, 2010).

Whirling Dervish (CPS 2871/1)

***Acacia casuarina* shrubland (CCAS):** Very gently undulating plains to level plains with shallow calcareous red earths over calcrete supporting scattered to moderately close tall shrublands or woodlands of *Casuarina pauper* (*cristata*) with *Acacia aneura* and *A. burkittii* (Saracen, 2008).

Plains mixed halophyte low shrublands (PXHA): Broad alluvial plains with texture contrasting soils, often 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 (Saracen, 2008).

Clearing Description

Carosue Dam Expansion.
Saracen Gold Mines Pty Ltd proposes to clear up to 375 hectares of native vegetation within a boundary of approximately 1,567 hectares, for the purposes of mineral production. The project is located approximately 105 kilometres north-east of Kalgoorlie in the Shire of Menzies and City of Kalgoorlie Boulder.

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

to

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).

Comment

The vegetation condition was derived from a vegetation survey conducted by considering previous vegetation surveys done on the underlying existing native vegetation permits. It is noted that these observations were conducted before commencement of clearing so it would be reasonable to assume that the vegetation condition most likely has deteriorated since the initial surveys were undertaken.

The proposed clearing of 375 hectares is for potential growth of the Karari and Whirling Dervish mine operations and potential expansion of mining related infrastructure including the existing core farm, roads and power reticulation corridors.

Four existing clearing permits are underlying this application; CPS 2871/1, CPS 3833/2, CPS 4150/1 and CPS 5426/2. CPS 8000/1 is an amalgamation of the remaining granted clearing capacity of each underlying existing clearing permit. Tenements relevant to the application remain unchanged to the underlying existing clearing permits (Saracen, 2018).

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 East Murchison subregion of the Murchison Interim Biogeographic Regionalisation of Australia bioregion (GIS Database). This subregion is characterised by internal drainage and extensive areas of elevated red desert sandplains with minimal dune development. Vegetation is dominated by Mulga Woodlands which is often rich in ephemerals; hummock grasslands, saltbush shrublands and *Halosarcia* shrublands (CALM, 2002).

There have been numerous flora and vegetation surveys undertaken over the application area since 2006 (Saracen, 2018). A review of the surveys identified two Priority flora species have been recorded within the application area in 2012 (Holm, 2012). A single plant of *Spartothamnella* sp. Helena & Aurora Range which has now been reclassified and renamed to *Teucrium disjunctum,* and is no longer classified as a Priority flora species (WA Herbarium, 2018). Additionally, a single population of at least 100 plants of *Eremophila arachnoides* subsp. *tenera* (Priority 1) species was located in the application area during a vegetation survey carried out by Holm and Associates in 2012. Saracen (2012) stated that infrastructure has been designed to avoid the area in which the two Priority species are located. Potential impacts to Priority flora species may be minimised through the implementation of a flora management condition.

The flora and vegetation survey by Holm (2012) identified that the collections of *Daviesia benthamii* subsp. *acanthoclona*, *Eucalyptus flocktoniae* subsp. *flocktoniae*, *E. oleosa* subsp. *cylindroidea*, *Marianthus bicolour*, *Spartothamnella* subsp. Helena & Aurora Range and *Thryptomene kochii* within the application area represent significant extension of their known distribution range (Holm, 2012).

The flora and vegetation surveys identified no Threatened flora, Threatened or Priority Ecological Communities within the application area (Saracen, 2018).

There were no weed species recorded within the application area (Saracen, 2018). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

All faunal habitats within the application area are considered to be common and widespread within the subregion and faunal assemblages are unlikely to be different to those found in similar habitat located elsewhere in the region (GIS Database). The clearing of 375 hectares of native vegetation within the 1,567 hectare application area is unlikely to have a significant impact on faunal diversity in a regional and local context.

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

Methodology

CALM (2002)
Holm (2012)
Saracen (2012)
Saracen (2018)
Western Australian Herbarium (2018)

GIS Database:
- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered
- Threatened Fauna

(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

The application area has not been comprehensively covered by fauna surveys however two surveys have been conducted over portions of the area. The following four fauna habitats have been recorded within the application area as part of the Karari Stage 3 Project clearing permit (CPS 3833/2) application (Coffey, 2010):

1. *Acacia* (mulga) Shrubland on clay soils - this contains dense stands of *Acacia aneura* shrubs and was the dominant habitat on site;
2. *Acacia* Shrubland on rocky soils - this contains *Acacia* shrubs and predominantly contains a gravelly or rocky understorey;
3. *Eucalyptus* Woodland - this contains mixed *Eucalyptus* trees including mallees and includes mixed shrublands. Larger *Eucalyptus* trees were located towards the southern edge of the eastern side of the project area and also in the south eastern section; and
4. Drainage Lines - this habitat is fairly typical in the Goldfields and contains eucalypt trees and shrubs, and water after significant rainfall events (Coffey, 2010).

The following six fauna habitats have been recorded within the application area as part of the TSF Expansion Project clearing permit (CPS 5426/2) application (Holm, 2012):

1. Calcareous *Casuarina acacia* shrubland or woodland;
2. Calcareous plain *eucalypt mallee/acacia* woodlands/shrublands;
3. Calcyphytic peal bluebush shrublands;
4. Plain eucalypt chenopod woodland;
5. Plain mixed halophyte low shrublands; and
6. Sandplain spinifex hummock grassland.

Metcalf and Bamford (2002) conducted a desktop study and a fauna survey of the Carosue Dam and Safari Bore area, as part of the Whirling Dervish Stage 3 clearing permit (CPS 4150/1) application. The survey was conducted between 6 and 10 May 2002. According to the survey and aerial photography (Coffey, 2010, Metcalf and Bamford, 2002), the Whirling Dervish survey area contains no breakaways, rocky outcrops, rocky hilltops or other fauna habitat which may be considered to be significant. Coffey (2010) suggest that the habitats recorded during the surveys are considered to be typical to those found in the Goldfields region, that is, moderately rich in reptiles and birds.

There are nine species of birds, four mammals and one reptile listed as Threatened under the *Environmental Protection and Biodiversity Conservation Act* (EPBC) *1999* or protected under Western Australian legislation that are likely to occur within the area covered by all Saracen tenements. Four bird species and one crustacean were identified within the Department of Biodiversity Conservation and Attractions, Parks and Wildlife Service Threatened Fauna database (Saracen, 2018).

Evidence of the Malleefowl (*Leipoa ocellata* - Threatened) has been recorded within the application area. Holm (2012) conducted a targeted Malleefowl survey in November 2012, which covered 680 hectares to the north-west of the Carosue Dam processing plant. The survey identified three active and three moribund nests within the survey area, tracks were observed and two birds were sighted. There was no clear habitat preference for the Malleefowls, although Malleefowl appeared to avoid areas with dense spinifex (Holm, 2012). Potential impacts to conservation significant fauna as a result of the proposed clearing may be minimised by the implementation of a fauna management condition.

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

Methodology

Coffey (2010)
Holm (2012)
Metcalf and Bamford (2002)
Saracen (2018)

(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, there are no known records of Threatened Flora within the application area (GIS Database). A search of the available databases identified no Threatened Flora species as occurring within a 5 kilometre radius of the application area (DPaW, 2018; GIS Database).

Numerous flora surveys conducted within the application area did not record any Threatened flora species (Saracen, 2018).

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

Methodology

DPaW (2018)
Saracen (2018)

GIS Database:
- Threatened and Priority Flora

(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) located within or in close proximity to the application area (GIS Database).

Several flora and vegetation surveys conducted on portions of the application area did not identify any TECs (Saracen, 2018).

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

Methodology

Saracen (2018)

GIS Database:
- Threatened Ecological Sites Buffered

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

Comments

Proposal is not at variance to this Principle

The application area falls within the Murchison Bioregion of the Interim Biogeographic Regionalisation for Australia (GIS Database). The application area is broadly mapped as:

20: Low woodland; mulga mixed with *Allocasuarina cristata* and *Eucalyptus* sp; and
24: Low woodland; *Allocasuarina cristata* (GIS Database).

The above Beard vegetation associations retain approximately 99**%** or above of their pre-European extent at both the state and bioregion level (Government of Western Australia, 2018). The areas proposed to be cleared are not a significant remnant of native vegetation.

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

Methodology

Government of Western Australia (2018)

GIS Database:
- IBRA Australia
- 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 GIS Databases, there are no permanent wetlands or watercourses within the application area, however Lake Rebecca is located approximately 10.5 kilometres north-east of the application area (GIS Database).

There are several ephemeral watercourses that traverse through the application area, with numerous riparian vegetation types mapped in association with these watercourses (Holm, 2010, 2012; Mattiske, 2010; Saracen, 2010, 2011). These riparian vegetation types are widespread in the region (Holm, 2012). The clearing of riparian vegetation has the potential to cause localised erosion and degrade faunal habitats. These vegetation

types are likely to provide important habitat for fauna, as the vegetation can provide faunal habitat of a moderate range of microhabitats with logs, leaf litter and tree hollows (GIS Database).

However, given the proposed clearing is spread over a large area, it is not anticipated that it will have a significant impact on minor drainage lines within the application area. Provided disturbance to riparian habitats is avoided or minimised where possible, and weed hygiene procedures are followed, the proposed works are not expected to substantially impact these vegetation units. Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management and staged clearing condition.

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

Methodology

Holm (2010)
Holm (2012)
Mattiske (2010)
Saracen (2010)
Saracen (2011)

GIS Database:
- Hydrography, Lakes
- Hydrography, linear

(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

The application area lies within the Deadman, Moriarty, Kirgella and Campsite land systems (GIS Database). These land systems have been mapped and described in technical bulletins produced by the former Department of Agriculture (now the Department of Primary Industries and Regional Development).

The Deadman land system is described as calcareous plains adjacent to salt lake systems, supporting acacia shrublands with black oak overstoreys (Pringle et al., 1994).

The Moriarty land system is described as low greenstone rises and stony plains supporting halophytic and acacia shrublands with patchy eucalypt overstoreys (Pringle et al., 1994).

The Kirgella land system is described as extensive sandplain, with scattered granite outcrop and fringing drainage foci and very sparse drainage tracts, supporting mainly spinifex hummock grasslands and mulga and mallee shrublands (Pringle et al., 1994).

The Campsite land system is described as alluvial plains supporting eucalypt woodlands with saltbush understoreys and eucalypt-acacia shrublands.

The Campsite, Deadman and Kirgella land systems are generally not prone to erosion, while the Moriarty land system is moderately susceptible to erosion (Pringle et al., 1994).

Due to the large area of native vegetation proposed to be cleared (375 hectares), potential land degradation impacts as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

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

Methodology

Pringle et al. (1994)
Saracen (2012)

GIS Database:
- Landsystem Rangelands

(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

There are no conservation areas in the vicinity of the application area. The nearest Department of Biodiversity Conservation and Attractions (formerly Department of Parks and Wildlife) managed land is the Goongarrie National Park which is located approximately 60 kilometres south-west of the application area (GIS Database).

Given the distance of the application area from Goongarrie National Park, the proposed clearing is not likely to provide a significant ecological linkage or fauna movement corridor and is not likely to impact the environmental values of the conservation area.

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

Methodology GIS Database:
- DPaW Tenure

(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 application area is not located within a Public Drinking Water Source Area (GIS Database). The application areas are located within the proclaimed Goldfields groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for purposes other than domestic and/or stock watering is subject to licence by the Department of Water.

There are no permanent watercourses or water bodies within the application area (GIS Database). Several ephemeral drainage tracts transect the application area (GIS Database). These drainage tracts are dry for most of the year and only flow and hold surface water for short durations following significant rainfall events, where turbid water from intense rainfall events will flow to Lake Rebecca which is nearby the application area (Saracen, 2012; GIS Database).

The groundwater salinity within the application area is approximately 14,000-35,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). Groundwater salinity increases with depth, with field values between 50,000 and 100,000 milligrams/Litre TDS at 50-70 metres depth and 80,000 to 200,000 milligrams/Litre TDS down to 150 metres (Saracen, 2010). This is considered to be hypersaline. The proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

The proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.

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

Methodology Saracen (2010)
Saracen (2012)

GIS Database:
- Hydrography, Linear
- Public Drinking Water Source Areas

(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 climate of the region is semi-arid, with mainly winter rainfall of an annual average rainfall of approximately 266.9 millimetres per year (BoM, 2018). Based on an average annual evaporation rate of 2,400 - 2,800 millimetres (BoM, 2018), any surface water resulting from rainfall events is likely to be relatively short lived.

There are no permanent water courses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.

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

Methodology BoM (2018)

GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, linear

Planning Instrument, Native Title, previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 5 March 2018 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. A submission was received advising no objections to the clearing permit application.

There is one Native Title Claim (WC2017/001) over the area under application (DPLH, 2018). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are four registered Aboriginal Sites of Significance within the application area (DPLH, 2018). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity Conservation and Attractions, 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 DPLH (2018)

4. References

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DPaW (2018) NatureMap. Department of Parks and Wildlife, http://naturemap.dec.wa.gov.au (Accessed 17 April 2018).

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Government of Western Australia (2018) 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity, Conservation and Attractions, Perth. https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Holm (2010) Proposed Expansion of Whirling Dervish Mine, Report prepared for Saracen Gold Mine Pty Ltd, by Alexander Holm & Associates, 2010.

Holm (2012) Environmental Assessment: Tailings Storage Facility Expansion. Report prepared for Saracen Gold Mine by Alexander Holm & Associates, December 2012.

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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DBCA	Department of Biodiversity Conservation and Attractions, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DBCA and DWER)
DEE	Department of the Environment and Energy, Australian Government
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
DWER	Department of Water and Environmental Regulation, Western Australia
EPA	Environmental Protection Authority, Western Australia
EP Act	*Environmental Protection Act 1986*, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	*Rights in Water and Irrigation Act 1914*, Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2017) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

T **Threatened species:**
Published as Specially Protected under the *Wildlife Conservation Act 1950,* listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the *Wildlife Conservation Act 1950*.

Threatened flora is flora that has been declared to be 'likely to become extinct or is rare, or otherwise in need of special protection', pursuant to section 23F(2) of the *Wildlife Conservation Act 1950*.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**
Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EN **Endangered species**
Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

VU **Vulnerable species**
Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EX **Presumed extinct species**
Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.

IA **Migratory birds protected under an international agreement**
Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.

CD **Conservation dependent fauna**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.

OS **Other specially protected fauna**
Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950,* in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.

P **Priority species**
Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 **Priority One - Poorly-known species:**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 **Priority Two - Poorly-known species:**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 **Priority Three - Poorly-known species:**
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4 **Priority Four - Rare, Near Threatened and other species in need of monitoring:**
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.