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.: 7885/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Silver Lake Resources Limited**

1.3. Property details

Property: Mining Lease 26/94
Mining Lease 26/393
Mining Lease 26/401
Mining Lease 26/402
Local Government Area: City of Kalgoorlie-Boulder
Colloquial name: Magic Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
100		Mechanical Removal	Mineral Production and Associated Activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 1 February 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:
9: Medium woodland; coral gum (*Eucalyptus torquata*) & goldfields blackbutt (*E. lesoufii*); and
468: Medium woodland; salmon gum and goldfields blackbutt (GIS Database).

A flora and vegetation survey was conducted over the application area by Dr Eddie van Etten during November, 2009. The following vegetation associations were recorded within the application area (van Etten, 2009):

1) Woodland of *Eucalyptus torquata* and *E. lesouefii* on Greenstone hills and slopes with quartz and calcareous soils;
2) Open Woodland of Salmon Gum (*E. salmonophloia*) with mixed chenopod understorey in broad valley systems;
3) Chenopod low shrubland on broad drainage systems;
4) Woodland-mallee of *Eucalyptus griffithsii* on Greenstone rises

Clearing Description

Magic Project.
Silver Lake Resources Limited proposes to clear up to 100 hectares of native vegetation within a boundary of approximately 116.7 hectares, for the purpose of mineral production and associated activities. The project is located approximately 50 kilometres east of Kalgoorlie, within the City of Kalgoorlie-Boulder.

Vegetation Condition

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994);

To

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

Comment

The vegetation condition was derived from a vegetation survey conducted by Dr Eddie van Etten (2009).

The proposed clearing is for mineral production and associated activities.

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 Goldfields subregion of the Coolgardie Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). This subregion is characterised by gently undulating plains interrupted in the west with low hills and a series of large playa lakes in the western half (CALM, 2002). The vegetation is dominated by Mallees, *Acacia* thickets and shrub-heaths on sandplains, diverse Eucalyptus woodlands occur around salt lakes, on ranges, and in valleys, and dwarf shrublands of samphire around salt lakes (CALM, 2002).

A flora survey was undertaken over the application area by Dr Eddie van Etten during November, 2009. A total of 49 flora taxa (including subspecies and varieties) representing 13 families and 20 genera were recorded from the application area during the flora and vegetation survey (van Etten, 2009).

No Threatened Ecological Communities, Priority Ecological Communities, Threatened flora species, Priority flora or vegetation associations of restricted distribution were recorded within the application area during the flora and vegetation field survey (van Etten, 2009).

Several weed species were found during the flora survey (van Etten, 2009). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This can in turn lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

A fauna habitat assessment and field survey was conducted by Terrestrial Ecosystems over the application area in October 2009. No conservation significant fauna species were recorded within the application area during the fauna field survey (Terrestrial Ecosystems, 2009). The fauna habitats present within the application area are common and widespread in the region and are considered to be in a degraded nature due to past mining operations and goat grazing (Terrestrial Ecosystems, 2009).

The vegetation associations and fauna habitats identified during the survey are likely to extend outside the application area and are well represented within the region (Terrestrial Ecosystems, 2009; van Etten, 2009; GIS Database).

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

Methodology

CALM (2002)
Terrestrial Ecosystems (2009)
van Etten (2009)

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 is not likely to be at variance to this Principle

A fauna habitat assessment and field survey was conducted by Terrestrial Ecosystems over the application area in October 2009. The following three fauna habitats have been recorded within the application area (Terrestrial Ecosystems, 2009):

1) Eucalypt woodlands of varying densities;
2) Sparsely vegetated woodland with the understorey being damaged by goat grazing; and
3) Cleared areas including pits, waste dumps and mining infrastructure.

None of these broad fauna habitats are considered to be restricted to the application area (Terrestrial Ecosystems, 2009; GIS Database).

No conservation significant fauna species where recorded from the application area during the fauna field survey (Terrestrial Ecosystems, 2009). Two conservation significant fauna species (Malleefowl – *Leipoa ocellata* and the Rainbow Bee-eater – *Merops ornatus*) were considered to have the potential to occur in the application area (Terrestrial Ecosystems, 2009).

The Malleefowl typically prefers denser mallee habitat, and it is likely that nesting habitat would be limited to these areas, where the shrub layers are denser and provide shelter and refuge habitat for the species

(Terrestrial Ecosystems, 2009). It is considered unlikely that the habitats within the application area would support the Malleefowl, due to the application area being sparsely vegetated and there being very little leaf litter on the ground (Terrestrial Ecosystems, 2009).

It is likely that the Rainbow Bee-eater is an occasional seasonal migrant to the application area (Terrestrial Ecosystems, 2009). The Eucalypt woodlands within the application area would provide the most suitable habitat for the Rainbow Bee-eater, however, given its wide-ranging nature, the species could utilise all of the natural habitat types present (Terrestrial Ecosystems, 2009). It is unlikely however that any individual or population of Rainbow Bee-eaters would exclusively rely on the application area for all habitat resource requirements (Terrestrial Ecosystems, 2009).

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

Methodology Terrestrial Ecosystems (2009)

GIS Database:
- Imagery
- Pre-European Vegetation
- Threatened Fauna

(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 Threatened Flora species within the application area (GIS Database).

The flora and vegetation survey by Dr Eddie van Etten (2009) did not identify any Threatened Flora species within the survey area.

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

Methodology Van Etten (2009)

GIS Database:
- Pre-European Vegetation
- 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**
According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is approximately 288 kilometres south west of the application area (GIS Database).

The flora and vegetation survey by Dr Eddie van Etten (2009) did not identify any TECs within the survey area.

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

Methodology Van Etten (2009)

GIS Database:
- Threatened and Priority Ecological Communities boundaries
- Threatened and Priority Ecological Communities 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 Coolgardie Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 97.96% of the pre-European vegetation still exists in the IBRA Coolgardie Bioregion (Government of Western Australia, 2016). The application area is broadly mapped as Beard vegetation associations:

9: Medium woodland; coral gum (*Eucalyptus torquata*) & goldfields blackbutt (*E. lesoufii*); and
468: Medium woodland; salmon gum and goldfields blackbutt (GIS Database) (GIS Database).

Over approximately 97% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2016).

Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA managed lands
IBRA Bioregion – Coolgardie	12,912,204	12,648,491	~97.96	Least Concern	16.39
Beard vegetation associations – WA					
9	240,509	235,162	~97.78	Least Concern	7.97
468	592,022	583,903	~98.63	Least Concern	22.86
Beard vegetation associations – Xxxxxx Bioregion					
9	240,442	235,101	~97.78	Least Concern	7.97
468	583,358	575,361	~98.63	Least Concern	22.43

* Government of Western Australia (2016)
** 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)
Government of Western Australia (2016)

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 not likely to be at variance to this Principle**

There are no permanent watercourses or wetlands within the area proposed to clear (GIS Database). One seasonal creek line lies approximately 1.2 kilometres north-east of the application area (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall events (BoM, 2018; GIS Database). Given the distance between the seasonal creek line and the application area, it is considered unlikely that the proposed clearing will impact on this watercourse.

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

Methodology BoM (2018)

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 may at variance to this Principle**

There is one soil unit identified within the application area described by Northcote et al. (1960-68) as Mx43, and is described as gently undulating valley plains and pediments with some outcrop of basic rock. The chief soils are alkaline red earths with limestone at shallow depth with low gentle rises of soils. This soil type is susceptible to wind erosion and soil erosion, particularly in drainage tracts, and without appropriate management strategies the proposed clearing of 100 hectares may result in appreciable land degradation. 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 may be at variance to this Principle.

Methodology Northcote et al. (1960-68)

GIS Database:
- Landsystem Rangelands
- Soils, 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

The application area is not located within any conservation areas (GIS Database). The nearest conservation area is the Majestic Timber Reserve, located approximately 10 kilometres north of the application area (GIS Database). Given the distance separating the proposed Majestic Timber Reserve and the application area, the proposed clearing 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

According to available databases the application area is not located within a Public Drinking Water Source Area (GIS Database). There are no waterbodies or watercourses within the application area, however, the ephemeral watercourse Salt Creek lies immediately adjacent to the western boundary of the application area (GIS Database). Clearing in the vicinity of this watercourse is likely to result in localised erosion and sedimentation, particularly following heavy rainfall. Potential impacts to the surface water quality as a result of the proposed clearing may be minimised by the implementation of a soil erosion management condition.

The climate of the area is arid to semi-arid with 200 to 300 millimetres of rainfall that usually occurs in winter but sometimes occurs in summer (CALM, 2002). The application area receives an average annual rainfall of approximately 270 millimetres with an average annual evaporation rate of 2,600 millimetres (BoM, 2018; GIS Database). Any surface flows are therefore likely to be short lived.

According to available databases, groundwater salinity within the application area is between 14,000 and 35,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be saline. Given the groundwater is already saline, any clearing within the application area is not likely to alter the existing groundwater quality.

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

Methodology

BoM (2018)
CALM (2002)

GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- 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 application area is located within the Lake Lefroy catchment area (GIS Database). Given the size of the area to be cleared (100 hectares) in relation to the size of the catchment area (2,488,251 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

With an average annual rainfall of 300 millimetres and an average annual evaporation rate of 2,600 millimetres there is likely to be little surface flow during normal seasonal rains (GIS Database). Whilst large rainfall events may result in flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology

GIS Database:
- Evaporation Isopleths

- Hydrographic Catchments - Catchments
- Hydrography, linear

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

Comments

The clearing permit application was advertised on 18 December 2017 by the Department of Mines, Industry Regulation and Safety (DMIRS) inviting submissions from the public. No submissions were received in relation to this application.

There are no native title claims over the area under application (DPLH, 2018). 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 no 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

BoM (2018) Climate Statistics for Australian Locations. A Search for Climate Statistics for Kalgoorlie, Australian Government Bureau of Meteorology. http://www.bom.gov.au/climate/averages/tables/cw_012038.shtml (Accessed 29 January 2018).

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.

DPLH (2018) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. http://maps.daa.wa.gov.au/AHIS/ (Accessed 29 January 2018).

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.

Government of Western Australia (2016) 2016 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2016. WA Department of Parks and Wildlife, Perth.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Northcote, K. H. with Beckmann, G. G., Bettenay, E., Churchward, H. M., Van Dijk, D. C., Dimmock, G. M., Hubble, G. D., Isbell, R. F., McArthur, W. M., Murtha, G. G., Nicolls, K. D., Paton, T. R., Thompson, C. H., Webb, A. A. and Wright, M. J. (1960-1968). Atlas of Australian Soils, Sheets 1 to 10. With explanatory data (CSIRO Aust. and Melbourne University Press: Melbourne).

Terrestrial Ecosystems (2009) Level 1 Fauna Risk Assessment for Silver Lake Resources Ltd Daisy Milano Operations. Unpublished report prepared for Silver Lake Resources Ltd, Mount Monger Operations, Ocotber 2009.

van Etten (2009) Flora & Vegetation of Silverlake Resource's Daisy Milano Project Area, near Kalgoorlie, Western Australia. Unpublished report prepared for Minesite Environmental Pty Ltd, November 2009.

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.