Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3807/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Central Norseman Gold Corporation Ltd**

1.3. Property details

Property: Mining Lease 63/11
Mining Lease 63/156
Local Government Area: Shire of Dundas
Colloquial name: North Royal Open Pit Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
42.5		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	Clearing Description	Vegetation Condition	Comment
Beard Vegetation Associations have been mapped at a scale of 1:250,000 for the whole of Western Australia. One Beard Vegetation Association has been mapped within the application area (GIS Database): **Beard Vegetation Association 9:** medium woodland; Coral Gum (*Eucalyptus torquata*) and Goldfield's Blackbutt (*Eucalyptus lesouefii*). Central Norseman Gold Corporation Ltd (Norseman Gold) has conducted a desktop assessment of the flora and vegetation of the application areas and surrounding region. This survey included a review of previous floristic studies undertaken in the region as well as a review of existing environmental databases (Norseman Gold, 2010). The desktop assessment identified the following habitats and vegetation associations within the region: **Stony Plains** • *Acacia* shrublands • Halophytic shrublands **Low Hills** • Eucalypt woodland • Halophytic undershrubs **Alluvial Plains** • Eucalypt shrublands • Halophytic shrublands According to Norseman Gold (2010) Beard Vegetation mapping indicates that the majority of the North Royal site lies within an area of *Eucalyptus* woodland while the proximity of the Lake Cowan salt lake also brings an area of sedgeland into the influence zone of the application areas. The vegetation description for sedgeland consists of bare areas on salt lakes.	Norseman Gold (2010) proposes to clear up to 42.5 hectares of native vegetation. The proposed clearing is located approximately 7 kilometres north of Norseman (GIS Database). The purpose of the proposed clearing is for the extension of an existing open pit mine, additional waste dump and ROM ore pad capacity, as well as haul road construction.	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).	The vegetation condition rating was derived from a desktop survey conducted by Norseman Gold (2010) and from examining aerial imagery of the proposed clearing areas. The application areas lie adjacent to an active mining area. Aerial imagery suggests that the application areas are quite heavily degraded and modified from past and present mining activities and tracks.

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 areas are located within the Eastern Goldfields subregion of the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The Eastern Goldfields subregion is described by CALM (2002) as being rich in endemic *Acacia* species. Furthermore, CALM (2002) reports that high species and ecosystem diversity exists in *Eucalyptus* woodlands and ephemeral flora communities of tertiary sandplain shrublands and in valley floor woodlands.

Norseman Gold (2010) states that the region surrounding Norseman contains more than 40 species of *Eucalyptus* and more than 70 species of *Acacia*. Hall and McKenzie (1993) as cited by Norseman Gold (2010) describe the region as a major transition zone of the south-west flora with Low Woodlands of the Eucla Basin to the east and Goldfield Woodlands extending to the west and north of the study area. Given the degraded nature of the application areas and the long history of mining in the area, the application areas are unlikely to support high flora diversity.

Norseman Gold (2010) has conducted a desktop search for Priority Flora for the Norseman region. Norseman Gold (2010) reports that a search of the Western Australian Herbarium's Declared Rare Flora database identified 29 Priority Flora species with the potential to occur within a 50 kilometre radius of Norseman town site. The vegetation and habitat types of the application areas are quite degraded and are well represented throughout the Norseman region (Norseman Gold, 2010).

Weed species exist within the Norseman region and it is therefore likely that weed species would be present within the application areas, particularly given the disturbed nature of the application areas (Norseman Gold, 2010). The presence of introduced weed species lowers the biodiversity value of the proposed clearing areas. It is important to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. The risk of spreading weed species can be mitigated by imposing a condition for the purpose of weed management.

The vegetation and landforms within the application areas are well represented within the region (Norseman Gold, 2010). No Threatened Ecological Communities or Priority Ecological Communities (PECs) have previously been recorded within the application areas (Norseman Gold, 2010). The application areas fall within a buffer zone for a PEC, however, the PEC buffer area is approximately 3,141,588 hectares in size and the application areas are located close to the western border of the PEC buffer zone. Therefore, the proposed clearing is unlikely to impact on the PEC.

Norseman Gold (2010) has conducted a desktop fauna assessment for a 20 kilometre radius around Norseman. This desktop search consisted of a fauna database search, in addition to a literature review. A total of 136 bird species, 24 native mammal species, 10 frog and 70 reptile species could potentially occur within the search area (Norseman Gold, 2010). These results would indicate the potential for high fauna diversity within the application areas, however, given their degraded nature and proximity to active mining, they are unlikely to support high fauna diversity.

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

Methodology

CALM (2002)
Norseman Gold (2010)
GIS Database
- IBRA WA (Regions - Subregions)

(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

Norseman Gold conducted a desktop survey for fauna species that could potentially occur within a 20 kilometre radius of the Norseman town site. This survey consisted of a literature review, in addition to a search of various fauna databases (Norseman Gold, 2010).

Aerial imagery of the application areas indicates that they are degraded and modified by past and present mining activities and tracks (GIS Database). Furthermore, Norseman Gold (2010) states that the habitats of the application areas are well represented throughout the Norseman region. Whilst highly mobile fauna species would temporarily utilise the habitats within the application areas, the degraded condition of the vegetation, and proximity to active mining, would mean that these areas would most likely be avoided by fauna.

Given that the application areas have been disturbed by past and present mining activities and that larger areas of higher quality vegetation exist throughout and adjacent to the Norseman area, it is unlikely that the vegetation within the application areas would be considered as significant habitat for fauna.

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

Methodology

Norseman Gold (2010)

GIS Database
- Norseman 1.4m Orthomosaic - Landgate 2003

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments

Proposal may be at variance to this Principle

Norseman Gold (2010) has conducted a desktop search for Declared Rare Flora (DRF) for the Norseman region. Norseman Gold (2010) reports that a search of the Western Australian Herbarium's Declared Rare Flora database identified the following two DRF species with the potential to occur within a 50 kilometre radius of Norseman town site (Norseman Gold, 2010; Western Australian Herbarium, 1998-):

- *Daviesia microcarpa* - prefers weathered gravel; and
- *Eucalyptus platydisca* - prefers granitic soils, clay and stony hills.

Daviesia microcarpa has been previously recorded approximately 1.4 kilometres south of the application areas (GIS Database).

Any potential impacts to these DRF species can be mitigated with a flora management condition.

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

Methodology

Norseman Gold (2010)
Western Australian Herbarium (1998-)
GIS Database
- Declared Rare 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) within the areas applied to clear (GIS Database). There are no known TECs within 100 kilometres of the application areas (GIS Database).

Norseman Gold (2010) reports that no TECs have been identified within the application areas.

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

Methodology

Norseman Gold (2010)
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 areas fall within the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). Shepherd (2007) reports that approximately 98.4% of the pre-European vegetation still exists within this bioregion (see table below). The vegetation within the application areas is recorded as the following Beard Vegetation Association (Shepherd, 2007):

Beard Vegetation Association 9: medium woodland; Coral Gum (*Eucalyptus torquata*) and Goldfields Blackbutt (*Eucalyptus lesouefii*).

According to Shepherd (2007) approximately 99.8% of this vegetation association remains within the bioregion (see table below).

The vegetation within the application areas is not a remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Coolgardie	12,912,204	12,707,620	~98.4	Least Concern	~10.9
Beard vegetation associations - State					
9	240,509	239,895	~99.7	Least Concern	~1.3
Beard vegetation associations					

- Bioregion					
9	240,442	239,835	~99.8	Least Concern	~1.3

* Shepherd (2007)
** 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 (2007)
GIS Database
- IBRA WA (Regions - Subregions)

(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**
There are no permanent watercourses or wetlands within the application areas, however, there are two ephemeral drainage lines (GIS Database).

Furthermore, the application areas lie adjacent to Lake Cowan salt lake. This salt lake is the surface expression of ancient river systems and is a wetland of subregional significance (Norseman Gold, 2010). The Lake Cowan catchment area is approximately 446,000 hectares and comprises of numerous ephemeral creeks and adjacent salt lakes, all of which lie within the Lake Cowan watershed (Aquaterra, 2006 as cited by Norseman Gold, 2010). The majority of surface water in Norseman flows towards either Lake Cowan or Lake Dundas (Norseman Gold, 2010). The lakes are predominantly dry in the summer months and are partially covered by hypersaline brine after heavy rain (CNGC, 1998b as cited by Norseman Gold, 2010).

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

Aerial imagery of the application areas indicates that the application areas and watercourses within them are highly degraded and modified due to current and past mining activities and tracks (GIS Database). The vegetation that remains appears to be low lying and quite sparse across the landscape and the vegetation does not appear to be significantly different or denser around the drainage lines. Given the degraded and modified nature of the ephemeral watercourses within the application areas, the proposed clearing is unlikely to have any further significant impact on any watercourse or wetland.

Methodology Norseman Gold (2010)
GIS Database
- Hydrography, linear
- Norseman 1.4m Orthomosaic - Landgate 2003

(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**
Norseman Gold (2010) reports that the application areas are located within the Kambalda Zone of the Kalgoorlie Province of the Goldfields region of Western Australia. This zone consists of flat to undulating plains with hills, ranges, salt lakes and stony plains on greenstone and granitic rocks of the Yilgarn Craton (DEC, 2006 as cited by Norseman Gold, 2010). Past mining activities within the zone have resulted in a number of man-made landforms and considerable surface disturbance (Norseman Gold, 2010).

Given the low relief and disturbed nature of the application areas (Norseman Gold, 2010), the proposed clearing is unlikely to cause further significant land degradation.

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

Methodology Norseman Gold (2010)

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

Comments **Proposal is not likely to be at variance to this Principle**
The proposed clearing is not located within any conservation areas (GIS Database). The nearest Department of Environment and Conservation managed land is the Dundas Nature Reserve located approximately 20 kilometres south-east of the application areas (GIS Database).

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

Methodology GIS Database

- DEC 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

There are no permanent watercourses or wetlands within the application areas, however, there are two ephemeral drainage line (GIS Database).

Furthermore, the application areas lie adjacent to Lake Cowan salt lake. The majority of surface water in Norseman flows towards either Lake Cowan or Lake Dundas (Norseman Gold, 2010). These lakes are predominantly dry in the summer months and are partially covered by hypersaline brine after heavy rain (CNGC, 1998b as cited by Norseman Gold, 2010). Given the dry climate, degraded nature and flat topography of the application areas, the clearing of 42.5 hectares of native vegetation is unlikely to cause a significant deterioration in the quality of surface water.

Norseman Gold (2010) reports that the groundwater around Norseman is typically hypersaline, with salinities of up to 296,000 milligrams / litre Total Dissolved Solids. According to Croesus (2005) as cited by Norseman Gold (2010) this is well above the acceptable limit for irrigation water (>5,500 milligrams / Litre) and livestock watering (3,000 milligrams / litre). Given the degraded nature of the application areas and the long history of mining in the area, the proposed clearing is unlikely to cause a significant deterioration in the quality of underground water.

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

Methodology

Norseman Gold (2010)
GIS Database
- Hydrography, linear

(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

According to available databases there are two ephemeral drainage lines within the application areas and the application areas are located in close proximity to Lake Cowan (GIS Database). These drainage lines and Lake Cowan would be dry for the majority of the year, with Lake Cowan being partially covered by hypersaline brine following heavy rainfall (Norseman Gold, 2010).

Aerial imagery indicates that these drainage lines are heavily degraded and modified. Therefore, the removal of a further 42.5 hectares of native vegetation is unlikely to exacerbate the incidence or intensity of flooding.

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

Methodology

Norseman Gold (2010)
GIS Database
- Hydrography, linear

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

Comments

There is one Native Title claim (WC 99/02) over the areas under application (GIS Database). This claim has been registered with the Native Title Tribunal on behalf of the claimant group. However, the tenements have 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*.

According to available databases there are no registered Aboriginal Sites of Significance within the application areas (GIS Database). 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 Environment and Conservation and the Department of Water to determine whether a Works Approval, Water Licence, Bed and Banks permit or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 5 July 2010 by the Department of Mines and Petroleum, inviting submissions from the public. There was one submission received stating no objection to the proposed clearing.

Methodology

GIS Database
- Aboriginal Sites of Significance
- Native Title Claims

4. Assessor's comments

Comment

The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s.51O of the Environmental Protection Act 1986, and the proposed clearing is at variance to Principle (f), may be at variance to Principle (c), is not likely to be at variance to Principles (a), (b), (d), (g), (h), (i) and (j) and is not at variance to Principle (e).

5. References

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

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

Norseman Gold (2010) Clearing Permit Application Supporting Documentation. Central Norseman Gold Corporation Ltd, Western Australia.

Shepherd, D.P. (2007) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.

Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Environment and Conservation. http://florabase.dec.wa.gov.au/.

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.
DMP	Department of Mines and Petroleum, 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.