



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6508/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Lake Hillman Mining Pty Ltd

1.3. Property details

Property: Mining Lease 70/734
Local Government Area: Shire of Koorda
Colloquial name: Lake Cowcowing Gypsum Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
11.6		Mechanical Removal	Gypsum extraction and associated activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 7 May 2015

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
<p>Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation in a regional context. One Beard vegetation association has been mapped within the application area (Government of Western Australia, 2013; GIS Database):</p> <ul style="list-style-type: none"> - 125: Bare areas, salt lakes <p>Vegetation assessments have been undertaken over the application area by Landform Research (2015) in November 2007, June 2008, April 2009 and June 2014. One vegetation community was recorded in the application area by Landform Research (2015):</p> <ul style="list-style-type: none"> - <i>Casuarina obesa</i> Low Open Woodland over an understorey of <i>Chenopod</i> Low Open Shrubland. 	<p>Lake Cowcowing Gypsum Project. Lake Hillman Mining Pty Ltd (Lake Hillman) proposes to clear 11.6 hectares of native vegetation within a total boundary of approximately 12.5 hectares for the purpose of gypsum extraction and associated activities. The project is approximately 16 kilometres south-west of Koorda, in the Shire of Koorda.</p>	<p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).</p> <p>To</p> <p>Degraded; Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).</p>	<p>The vegetation condition was determined by Landform Research.</p>

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 occurs within the Merredin subregion of the Avon Wheatbelt Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). The Avon Wheatbelt can be described as an ancient peneplain with a low relief, gently undulating landscape (CALM, 2002). There is no connected drainage; salt lake chains occur as remnants of ancient drainage systems that now only function in very wet years (CALM, 2002). Proteaceous scrub-heaths, rich in endemics lie on lateritic uplands and derived sandplains, while mixed eucalypt, *Allocasuarina huegeliana* and Jam-York Gum woodlands lie on Quaternary alluvials and eluvials (CALM, 2002).

A flora survey of the application area and surrounding vegetation identified 27 flora species from 11 families (Landform Research, 2015). This is not considered to be floristically diverse. Plant density has also found to be low, with only *Casuarina obesa* contributing significantly to vegetation cover (Landform Research, 2015). The remaining species only contribute 1% – 5% of groundcover, illustrating that the gypsum ridge that is subject to this clearing permit application is mostly bare ground (Landform Research, 2015).

There were no Threatened or Priority Ecological Communities or Threatened or Priority flora species identified within the application area (Landform Research, 2015).

The proposed vegetation clearing has the potential to introduce weed species into the local area. Weeds can potentially impact on biodiversity by out competing native species for resources and increasing the fire risk. The potential spread of introduced species as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

No detailed fauna surveys have been undertaken over the application area. A search of NatureMap (DPaW, 2015) has identified 54 invertebrate, 53 bird and 4 reptile species records within 10 kilometres of the application area. Given the low density and species richness of the vegetation within the application area, it is unlikely that the area applied to clear would support a diverse range of fauna.

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

Methodology CALM (2002)
Landform Research (2015)
GIS Database:
- IBRA WA (Regions - Sub Regions)

(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 detailed fauna survey has not been undertaken over the application area, although observations were recorded during the vegetation survey undertaken by Landform Research (2015). Landform Research advises that the vegetation within the application may provide some habitat, but the quality has been reduced by previous disturbances to vegetation in the area.

Of the 111 species identified as occurring within 10 kilometres of the application area, the following are species of conservation significance (DPaW, 2015):

- Western Spiny-tailed Skink (*Egernia stokesii* subsp. *badia*) – Schedule 1 (*Wildlife Conservation Act 1950* (WC Act));
- Woma Python (*Aspidites ramsayi*) – Schedule 4 (WC Act);

Based on their habitat preferences and distribution, the above listed species are not likely to utilise vegetation within the application for habitat (DEC, 2012; Department of the Environment, 2015).

Given the vegetation condition, low density and low species richness, vegetation within the application is not likely to provide significant habitat for fauna.

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

Methodology DPaW (2015)
DEC (2012)
Department of the Environment (2015)

(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 datasets there are no known records of Threatened flora within the application area (GIS Database). The nearest record of Threatened Flora is located approximately 1.2 kilometres north west of the application area (GIS Database).

Landform Research (2015) conducted a vegetation survey over the application area and surrounding vegetation in June 2014. No Threatened flora species have been identified within the application area, although there are populations of Threatened flora species in nearby areas (GIS Database; Landform Research, 2015).

Specimens of the genus *Frankenia* were identified within the application area (Landform Research, 2015). As the Threatened flora species *Frankenia conferta* has been identified within close proximity to the application area, the *Frankenia* identified on site was examined extensively under microscope and found to compare to the species *Frankenia pauciflora*, which is found from the Goldfields to the Western Australian coast (Landform Research, 2015). The species was subsequently confirmed as *Frankenia pauciflora* (Landform Research, 2015).

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

Methodology Landform Research (2015)

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

According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is located approximately 133 kilometres north-west of the application area.

Landform Research (2015) did not identify any TECs in their flora and vegetation survey of the application area.

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

Methodology Landform Research (2015)
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 at variance to this Principle

The application area falls within the Avon Wheatbelt Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database) in which approximately 18.69% of pre-European vegetation remains (Government of Western Australia, 2013). This gives it a conservation status of 'Vulnerable' according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002).

The vegetation within the application area is recorded as Beard vegetation association:

- 125: Bare areas; salt lakes

Beard vegetation association 125 retains approximately 90% of its pre-European extent at the state level but only 10% at the bio-region level (Government of Western Australia, 2013). This gives vegetation association 125 a conservation status of 'Vulnerable' at the bio-region level (Department of Natural Resources and Environment, 2002). This representation is also below the 30% threshold below which species loss appears to accelerate (EPA, 2000).

Beard vegetation mapping has been done at a broad scale and the areas mapped as vegetation association 125; Bare areas; salt lakes, has been described by Landform Research (2015) as low open woodland over a low open shrubland, primarily consisting of *Casuarina obesa* and chenopod species. Therefore the area applied to be cleared is not representative of this vegetation association and will not likely result in any loss to its current extent.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Land
IBRA Bioregion - Avon Wheatbelt	9,517,110	1,778,407	~18	Vulnerable	2.37
IBRA Subregion - Merredin	6,524,180	1,368,788	~21	Vulnerable	2.50
Local Government - Koorda	283,082	40,504	~14	Vulnerable	2.30
Beard vegetation associations - State					
125	3,485,786	3,146,091	~90	Least Concern	8.95
Beard vegetation associations - Bioregion					
125	167,448	16,356	~10	Vulnerable	20.04
Beard vegetation associations - Subregion					
125	148,564	13,694	~9	Endangered	16.48

* Government of Western Australia (2013)

** Department of Natural Resources and Environment (2002)

Whilst Lake Cowcowing itself appears to remain largely uncleared the surrounding areas have been heavily

cleared for agricultural purposes (GIS Database). Lake Cowcowing covers an area in excess of 20,000 hectares, however, not all of this area will be vegetated (GIS Database). Given the relatively small scale of the clearing, it is not anticipated that the proposed clearing will significantly impact the ability of Lake Cowcowing to act as a remnant in the local area.

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

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2013)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- 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

Available databases show that the application area is located on a ridge within a non-perennial lake (Lake Cowcowing) (GIS Database; Landform Research, 2015). The ridge rises approximately four metres above the lake bed (Landform Research, 2015). Lake Cowcowing is a saline non-perennial lake that only fills with water occasionally as a result of heavy rainfall (Landform Research, 2015).

Although the subject vegetation is not growing in the lake bed of Lake Cowcowing, the vegetation does form part of a buffer to this wetland. However given the size of the lake (over 20,000 hectares), the removal of 11.6 hectares of vegetation growing in association with Lake Cowcowing is not likely to significantly impact on the environmental values of the lake.

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

Methodology Landform Research (2015)
GIS Database:
- 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 be at variance to this Principle

The soils of the application area have been broadly mapped as gently undulating terrain with some ridges and uneven slopes, and with variable presence of lateritic and granitic landforms (Schoknecht, 2002). Chief soils are hard alkaline yellow mottled soils and hard alkaline red soils either of which may be dominant locally (Schoknecht, 2002). Landform Research (2015) has undertaken local soil mapping and describes the soils as saline and alkaline gypsum crystals to depth. The proposed clearing has the potential to increase the risk of wind erosion. Impacts from erosion may be minimised by the implementation of a staged clearing condition.

The soils present within the application area are already saline to highly saline (Landform Research, 2015) and the proposed clearing is not likely to contribute to an increase in salinity.

The application area falls within a high Acid Sulphate Soils (ASS) risk area (CSIRO, 2009). Provided the proposed clearing does not expose the subsoil, the generation of acid sulphate soils is not considered likely.

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

Methodology CSIRO (2009)
Landform Research (2015)
Schoknecht (2002)
GIS Database:
- Rangeland Land Systems

(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 may be at variance to this Principle

The proposed clearing is not located within a conservation reserve (GIS Database). The nearest conservation area is the Dukin Nature Reserve, which is located approximately 1.5 kilometres east of the application area (GIS Database).

Due to the close proximity of the proposed clearing to the nature reserve, the application area may form part of an ecological linkage between Dukin Nature Reserve and other DPaW managed lands in the local area (GIS Database). Therefore the proposed clearing may have an indirect impact on this conservation area.

Based on the above, the proposed clearing may 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

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The application area is located on the fringe of Lake Cowcowing, which is a non-perennial salt lake (GIS Database). In wet conditions water fills the lake from precipitation but is saline, becoming more saline as the water evaporates (Landform Research, 2015). The proposed clearing activities may cause sedimentation in the adjacent lake, however given the infrequency of the lake filling; the level of sedimentation is not likely to be significant.

The groundwater salinity of the application area is mapped as being in excess of 35,000 milligrams per litre dissolved solids (GIS Database), which is considered saline. The removal of deep rooted perennial vegetation from this highly cleared landscape may potential lead to an increase in secondary salinity in the local area.

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

Methodology Landform Research (2015)
GIS Database:
- Groundwater Salinity, Statewide
- PDWSAs

(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 proposed clearing is located along the ridge of Lake Cowcowing (GIS Database). The proposed clearing activities will result in the final surface being close to that of the existing lake bed (Landform Research, 2009). Lake Cowcowing is an ephemeral saline lake that only fills after heavy rainfall events (Landform Research, 2009). The scale of the proposed clearing (11.6 hectares) in relation to the size of Lake Cowcowing (over 20,000 hectares) is unlikely to increase the potential for flooding (GIS Database).

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

Methodology Landform Research (2015)
GIS Database:
- Hydrography, Linear

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

There is one Native Title Claims (WC2000/007) over the area under application (GIS Database). This claim has been filed in Federal Court of Australia. 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 (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 Regulation, the Department of Water, and the Department of Parks and Wildlife, 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 30 March 2015 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received requesting the engagement of monitors at the commencement of clearance works. This request has been forwarded to the proponent.

Methodology GIS Database:

- Aboriginal Sites of Significance
- Native Title Claims – Filed in the Federal Court

4. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management, Western Australia.
- CSIRO (2015) Australian Soil Resource Information System. http://www.asris.csiro.au/index_ie.html. Accessed on April 2015.
- DEC (2012) Fauna Profiles: Woma Python. Department of Environment and Conservation, Perth.
- 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.
- Department of the Environment (2015). *Egernia stokesii badia* in Species Profile and Threats Database, Department of the Environment, Canberra. <http://www.environment.gov.au/sprat>. Accessed April 2015.
- DPaW (2015) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. <http://naturemap.dec.wa.gov.au/>. Accessed April 2015.
- Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, 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.
- Landform Research (2015) Flora and Vegetation Assessment M70/734 - Lake Cowcowing. Lake Hillman Mining Pty Ltd. Prepared by Landform Research, January 2015.
- Schoknecht N. (2002) Soil Groups of Western Australia. A simple guide to the main soils of Western Australia. Resource Management Technical Report 246. Edition 3.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPaW and DER)
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DotE	Department of the Environment, Australian Government
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (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	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
s.17	Section 17 of the <i>Environment Protection Act 1986</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2013) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

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

Threatened Fauna and Flora are further recognised by DPaW according to their level of threat using IUCN Red List criteria. For example Carnaby's Cockatoo *Calyptorhynchus latirostris* is specially protected under the *Wildlife Conservation Act 1950* as a threatened species with a ranking of Endangered.

Rankings:

CR: Critically Endangered - considered to be facing an extremely high risk of extinction in the wild.

EN: Endangered - considered to be facing a very high risk of extinction in the wild.

VU: Vulnerable - considered to be facing a high risk of extinction in the wild.

- X Presumed Extinct species:**
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora (which may also be referred to as Declared Rare Flora).
- IA Migratory birds protected under an international agreement:**
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice.
Birds that are subject to an agreement between governments of Australia and Japan, China and The Republic of Korea relating to the protection of migratory birds and birds in danger of extinction.
- S Other specially protected fauna:**
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P1 Priority One - Poorly-known species:**
Species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, rail reserves and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.
- P2 Priority Two - Poorly-known species:**
Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.
- P3 Priority Three - Poorly-known species:**
Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities 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 localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.
- 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 do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.
 - c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.
- P5 Priority Five - Conservation Dependent species:**
Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare 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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.