



1. Application details

1.1. Permit application details

Permit application No.: 638/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: LionOre Australia (Wildara)

1.3. Property details

Property: L36/158
M36/600
Local Government Area: Shire Of Leonora
Colloquial name: Thunderbox Gold Project - Mining Lease M36/600 and Miscellaneous Lease L36/158

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
2		Mechanical Removal	Road construction or maintenance

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 Association 18: Low Woodlands; mulga (Acacia aneura). (Hopkins et al 2001, Shepherd et al 2001)	The area under application occurs near the Thunderbox Gold Project, as a part of the Wildara Exploration Project. The Thunderbox Gold Project is located 45km south of Leinster township, 70km north north-west of Leonora and 2km west of the Leonora-Leinster (Kalgoorlie to Meekatharra) Road in the North-eastern Goldfields of Western Australia. The proposed clearing is required to source material for building and road foundation.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	Vegetation condition and description derived from supporting documentation accompanying application (TRIM No. IN21675).

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 flora and vegetation survey did not identify any vegetation communities of outstanding diversity (Paul Armstrong et al 2001 and 2002). Of the 206 species of flora identified in the area under application, Paul Armstrong et al (2001) report that most species are common and widespread throughout much of the arid portions of the State. The area under application has been subject to historic mining and pastoral activities and is therefore unlikely to have higher biodiversity values than the surrounding area.

The relief features of the area under application consist of level and undulating sandplains, dominated by red coarse sands. This is not conducive to the topographical provision of a diversity of habitat functions. Edaphic variation in the area is limited to one soil type, which is widespread in the local area.

The vegetation in the area under application is common and widespread, and, given the relatively small size of the area proposed to be cleared, the clearing is not considered likely to be at variance with this Principle.

Methodology LionOre correspondence (2005) (TRIM ref. EI21675)
Paul Armstrong et al (2001) (TRIM ref. EI21675)
Paul Armstrong et al (2002) (TRIM ref. EI21675)
GIS Databases:
- Topographical Contours, Statewide - DOLA 12/09/02
- Soils, Statewide - DA 11/99

(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

M.J & A.R Bamford, Consulting Ecologists (2001) advise that the area under application does not host any significant fauna.

M.J & A.R Bamford, Consulting Ecologists (2001) advises that the Wildara project area does not contain unusual habitats, and that the presence of introduced species has impacted considerably upon the fauna in the region. The resultant habitat degradation due to grazing pressure and direct predation has caused many sensitive species to now be extinct in the region (M.J & A.R Bamford, Consulting Ecologists 2001).

Given that the vegetation communities under application are common and widespread, and the area to be cleared is of a relatively small scale (in relation to the vegetation community extent), it is not likely that the clearing as proposed is at variance with this Principle.

Methodology M.J & A.R Bamford, Consulting Ecologists (2001) (TRIM ref. ED518)

(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

Paul Armstrong and Associates (2001) advise that there are no Declared Rare Flora species identified in the area under application. Three Priority species were identified within 2km of the area under application. These are a Sauropus species Woolgorong (Priority 1), and Calytrix erosipetala and Calytrix uncinata (both Priority 3). There is no identified significant flora occurring within 500m of the area under application (LionOre 2005).

LionOre (2005) advise that no Environmentally Sensitive Areas occur within the area under application, and no Priority plant species have been identified within the footprint of the proposed clearing. This notwithstanding, LionOre site policy requires the area to be surveyed for priority flora by the site Environmental Adviser prior to clearing. It is unlikely that the clearing as proposed is at variance with this Principle.

Methodology Paul Armstrong and Associates (2001) (TRIM ref. EI21675)
LionOre Correspondence (2005) (TRIM ref. EI21675)
GIS Databases:
Declared Rare and Priority Flora List - CALM 13/08/03
Clearing Regulations - Environmentally Sensitive Areas - DOE 8/03/05

(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

No threatened or significant ecological communities are recorded as occurring within the area under application. In addition, Paul Armstrong et al (2001 and 2002) report that the vegetation identified in the area under application is common in the local area, and no rare or unusual plant assemblages were identified in the surveys.

Methodology Paul Armstrong and Associates (2001) (TRIM ref. EI21675)
Paul Armstrong and Associates (2002) (TRIM ref. EI21675)
GIS Databases:
- Threatened Ecological Communities - CALM 15/07/03
- Clearing Regulations - Environmentally Sensitive Areas - DOE 08/03/05

(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 State Government is committed to the National Objectives and Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-European settlement (Department of Natural Resources and Environment, 2002; EPA, 2000). The Beard vegetation complexes within this application are well above the recommended minimum of 30% (Shepherd et al 2001, Hopkins et al 2001).

	Pre-European area (ha)	Current extent (ha)	Remaining %*	Conservation Status**	% in reserves/CALM-managed land
IBRA Bioregion - Murchison	28,206,195 ***	28,206,195 ***	~100	Least Concern	
Shire of Leonora	No information available				
Beard vegetation association:					
18	24,675,970	24,659,110	~99.9	Least Concern	2.5%

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002)

Methodology Shepherd et al. (2001)
Hopkins et al. (2001)
Department of Natural Resources and Environment (2002)
GIS Databases:
- Pre-European Vegetation - DA 01/01
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00

(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**
No wetlands or watercourses are mapped in the area under application. No wetland or groundwater dependant ecological communities are identified in the area under application.
Furthermore, LionOre (2005) advise that no riparian vegetation will be cleared in the area under application.

Methodology LionOre Correspondence (2005) (TRIM ref. EI21675)
GIS Databases:
- Potential Groundwater Dependant Ecosystems DOE 2004
- Topographic Contours, Statewide DOLA 12/09/02
- Evaporation Isopleths - BOM 09/98
- Isohyets - BOM 09/98
- EPP, Lakes - DEP 28/07/03
- EPP, Wetlands (draft) - DEP 21/07/04
- ANCA Wetlands - CALM 08/01
- Clearing Regulations - Environmentally Sensitive Areas DOE 08/03/05
- Hydrography, linear - DOE 01/02/04

(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 area under application is located within the Bullimore land system, which is characterised by red coarse sands with a high infiltration rate and low levels of runoff (Lionore 2005). The system is comprised of a largely coarse-grained surface cover and, as such, it is unlikely that the clearing as proposed will increase wind erosion (Lionore 2005).

Due to the nature of the parent material, the biological indicators present and the predominantly high infiltration rate of the area under application, it is unlikely that the soils in the area under application will have a significantly high or low pH (Natti Hundi pers. comm. 2005).

Given the low annual rainfall (300mm), the high infiltration rate and the high annual evaporation rate (2400-2800mm) (BOM 2003), the clearing as proposed is unlikely to result in surface water erosion or waterlogging. Appreciable land degradation in the form of salinisation is unlikely due to the high infiltration rate and the considerable depth to the water table in the area under application (Natti Hundi pers. comm. 2005).

Methodology Beureau of Meteorology (BOM), Commonwealth of Australia Website (2003)
Lionore (2005) (TRIM ref. IN21675)
GIS Databases:
- Soils, Statewide - DA 11/99
- Topographic Contours, Statewide DOLA 12/09/02
- Evaporation Isopleths - BOM 09/98
- Isohyets - BOM 09/98

(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 records of conservation areas within 50km of the area under application. Thus the clearing as proposed is not likely to be at variance with this Principle.

Methodology GIS Databases:
- CALM Managed Lands and Waters - CALM 01/08/04
- System 1 to 5 and 7 to 12 Areas - DEP 06/95
- System 6 Conservation Reserves- DEP 06/95

(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 area under application occurs in the Lake Carey and Raeside-Ponton Catchments in the Western Plateau Division of the Salt Lake Basin.

The area under application occurs in the Raeside and Lake Carey Groundwater Subareas in the Goldfields Groundwater Area. There is currently no record of groundwater-dependent ecosystems occurring within 1km of the area under application.

Given the low annual rainfall (300mm) and the high annual evaporation rate (2400-2800mm) (BOM 2003), the clearing as proposed is unlikely to significantly alter groundwater quality, or increase sedimentation, erosion, turbidity or eutrophication of surface waterbodies on or off site.

Methodology Beureau of Meteorology (BOM), Commonwealth of Australia Website (2003)

GIS Databases:

- Evaporation Isopleths - BOM 09/98
- Isophyets - BOM 09/98
- Groundwater Salinity, Statewide / 22/02/00
- Hydrography, Linear - DOE 01/02/04
- Hydrographic Catchments - Catchments - DOE 01/07/03
- Hydrographic Catchments - Basins - DOE 01/07/03
- Rainfall, Mean Annual - BOM 30/09/01
- EPP, Lakes - DEP 1/12/92
- Groundwater Subareas - WRC 10/10/08

(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 area under application is characterised by a Mediterranean-Desert climate with a highly variable average rainfall of 300mm and an annual evaporation rate of approximately 2400 - 2800mm (BOM 2003). The area under application is not in a low-lying area and the proposed clearing is over a small area relative to the total catchment area.

It is not likely that the clearing as proposed will lead to a significant increase in peak flood height or duration.

Methodology Beureau of Meteorology (BOM), Commonwealth of Australia Website (2003)

GIS Databases:

- Rainfall, Mean Annual - BOM 30/09/01
- Evaporation Isopleths - BOM 09/98
- Hydrography, linear - DOE 01/02/04
- Hydrography, linear (Hierarchy) - DOE 13/04/05
- Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

The area under application occurs within the Wongatha (ref. WAG.6005_98) and Wutha (ref. WAG.6064_98) Native Title Claims. The area under application is held on a mining lease, and therefore the clearing is not considered to be a future act that affects Native Title.

Two Aboriginal Sites of Significance are recorded as occurring in proximity to the area under application. The Warlawuru site, occurring 60m to the south of the area under application, is nominated on the interim register. The Katampul site, occurring to 1.5km to the east, is nominated on the permanent roster. Both sites are held under Section 38 of the State's Aboriginal Heritage Act 1972.

Methodology GIS Databases:

- Native Title Claims - DLI 19/12/04
- Aboriginal Sites of Significance - DIA 04/07/02

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Road construction or maintenance	Mechanical Removal	2	Grant	All the assessable criteria have been addressed and the proposal is not likely to be at variance to the Clearing Principles. Therefore the assessing officer recommends that the permit be granted.

The applicant may be required to liaise with the Department of Indigenous Affairs, and possibly address native title interests.

5. References

- Armstrong, P. and Associates Consultant Botanist - Native Flora Specialist and Ecologist (2001) Rare Flora Search, Vegetation and Flora Survey on the Exploration and Mine Lease of Thunderbox - Draft. Unpublished report prepared for LionOre Australia Limited, 18 April 2001.
- Armstrong, P. and Associates Consultant Botanist - Native Flora Specialist and Ecologist (2001) Rare Flora Search, Vegetation and Flora Survey on the Exploration and Mine Lease of Thunderbox - Supplementary Notes. Unpublished report prepared for LionOre Australia Limited, November 2001.
- Armstrong, P. and Associates Consultant Botanist - Native Flora Specialist and Ecologist (2002) Updated Species List for Thunderbox. Unpublished report prepared for LionOre Australia Limited, 28 March 2002.
- Bamford, M. J. and Bamford, A. R. (2001) Vertebrate Fauna of the Wildara (Thunderbox) Project Area. Unpublished report prepared for Keith Lindbeck and Associates, March 2001.
- Commonwealth of Australia Bureau of Meteorology (BOM) (2003) Australian Average Evaporation Map - Annual. Available Online: http://www.bom.gov.au/climate/map/evaporation/evap_ann.shtml
- DEP (2002) Remnant vegetation of the Swan Coastal Plain Bioregion within the System 6 and System 1. Department of Environmental Protection, 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.
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALM Science after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

6. Glossary

Term	Meaning
CALM	Department of Conservation and Land Management
DAWA	Department of Agriculture
DEP	Department of Environmental Protection (now DoE)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DoE)