



1. Application details

1.1. Permit application details

Permit application No.: 216/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Sons of Gwalia (Administrators Appointed)

1.3. Property details

Property: M77/745
M77/790
M77/138
M77/655
M77/775
M77/31
Local Government Area: Shire Of Yilgarn
Colloquial name: Marvel Loch - Yilgarn Mineral Field, ~15km from Marvel Loch

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
125		Mechanical Removal	Mining

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 128: Bare areas; rock outcrops.	Mattiske Consulting Pty Ltd (2004) reports that the condition of most of the vegetation under application was good to very good based on the fairly high diversity on native plant species. The number of introduced (weed) species was relatively low. The vegetation is locally disturbed to a small degree along historical and new drill lines.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The condition was assessed based on the Flora and Vegetation Survey conducted by Mattiske Consulting Pty Ltd (2004).
Beard Vegetation Association 552: Shrublands; Casuarina acutivalvus & calothamnus (also melaleuca) thicket on greenstone hills.			
Beard Vegetation Association 1068: Medium woodland; salmon gum, morrel, gimlet & Eucalyptus sheathiana.			
Beard Vegetation Association 1148: Shrublands; scrub-heath in the Coolgardie Region. (Hopkins et al. 2001, Shepherd et al. 2001)			

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 is to be at variance to this Principle**
Mattiske Consulting Pty Ltd (2004) report that the condition of most of the vegetation under application was good to very good based on the fairly high diversity on native plant species. However,
- no Declared Rare or Priority Flora or threatened ecological communities were found during a survey of the area under application and no vegetation communities recorded as being regionally or locally significant were identified.
- CALM (2005) advised that the vegetation under assessment is common and widespread in the region, therefore the impact on significant fauna would be negligible.
- Vegetation representation in the area is well above the 30% threshold advocated by the National Objectives

Targets for Biodiversity Conservation 2001-2005 (AGPS 2001): below this value, species extinction is believed to occur at an exponential rate and any further clearing may have irreversible consequences for the conservation of biodiversity and is, therefore, not supported (Department of Natural Resources and Environment 2002; EPA 2000).

Based on the above, while the clearing may be at variance to the Principle, it is not likely to have a serious impact.

Methodology Mattiske Consulting Pty Ltd (2004) (DOE TRIM Ref IN18244).
CALM (2005) (DOE TRIM Ref NI916).

(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**

CALM (2005) listed the following species known to occur within 10km radius:

Schedule 1 (Threatened) species:

Malleefowl (*Leipoa ocellate*)

Chuditch (*Dasyurus geoffroii*)

Tree Stem Trapdoor Spider (*Aganippe castellum*)

Priority Listed Fauna:

Western Brush Wallaby (*Macropus irma*)(P4)

Central Long-eared bat (*Nyctophilus timoriensis*)(P4)

White-browed Babbler (western wheatbelt) (*Pomatostomus superciliosus ashbyi*)(P1)

Daphnia jollyi (P1)

CALM (2005) advised that the vegetation under assessment is common and widespread in the region, therefore the impact on significant fauna would be negligible. Additionally, the Jilbadji and Yellowdine Nature Reserves are located on similar habitat and landform characteristics and would provide significant opportunity as fauna habitat.

Methodology Sons of Gwalia (2004) (DOE TRIM Ref IN18244).
CALM (2005) (DOE TRIM Ref ND687).
GIS Databases:
- Threatened and Priority Fauna database - CALM*.
* This citation signifies that we do not have access to this database and that our use of it is through the CALM advice provided.
[The comprehensiveness of the database is dependent on the amount of survey carried out in the area and does not necessarily represent a comprehensive listing].

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

Comments **Proposal is not likely to be at variance to this Principle**

Flora surveys conducted by Mattiske Consulting Pty Ltd (2001, 2004) have not identified any Declared Rare or Priority Flora within the project area. The 2001 survey was conducted during the months of January and February while the 2004 survey was conducted during the month of August.

CALM (2005) advise there are 29 records of Priority Flora within 10km of the Hercules mining tenement which provides a relatively high likelihood of the proposed development impacting on Priority flora populations. CALM (2005) notes that the Hercules Project Notice of Intent and Mattiske Consulting (2001) flora survey (both submitted with Clearing Permit Application) state that project planning has avoided known populations of Priority flora. Data limitations have been identified within the information provided by the proponent, specifically the inopportune time of survey and the inadequate identification or confirmation of the *Eremophila racemosa* taxon sampled in the survey. However subsequent survey work conducted during September did not identify any occurrences of DRF or Priority Flora within the proposed development area. As such there appears to be a low probability of the development being at variance with this principle.

Methodology CALM (2005) (DOE TRIM Ref ND687).
Mattiske Consulting Pty Ltd (2001) (DOE TRIM Ref IN18244).
Mattiske Consulting Pty Ltd (2004) (DOE TRIM Ref NI920).
GIS Databases:
- Declared Rare and Priority Flora List - CALM 13/08/03;
- Threatened Flora Data Management System - CALM (CALM 2005);
- Herbarium Specimen Collection Database - CALM (CALM 2005).

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant ecological community.

Comments Proposal is not likely to be at variance to this Principle

On the DoE GIS database, no Threatened Ecological Communities within 10km of the area under application have been identified.

The survey conducted by Matisse Consulting Pty Ltd (2004) did not identify any threatened ecological communities or vegetation communities recorded as being regionally or locally significant. The communities located within the project area did not display unusually high structural or species diversity.

CALM (2005) advised that there was a potential for the proposed mine expansion at Hercules to have a detrimental effect on the CALM Priority listed Ecological Community, Parker Range System. However, further advice (CALM pers. comm. 2005) indicated that the Parker Range System has not been identified at the Hercules Project but rather the Ecological Community is found over a widespread area that includes the Sons of Gwalia operations at Marvel Loch.

Methodology CALM (2005) (DOE TRIM Ref ND687).
 Matisse Consulting Pty Ltd (2004) (DOE TRIM Ref IN18244).
 GIS Databases:
 - Threatened Ecological Community Database - CALM 15/07/03;
 - Environmentally Sensitive Areas - DOE 22/10/04.
 [The comprehensiveness of the database is dependent on the amount of survey carried out in the area and does not necessarily represent a comprehensive listing].

(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

Vegetation representation for all categories in the area under application is well above the 30% threshold advocated by the National Objectives Targets for Biodiversity Conservation 2001-2005 (AGPS 2001): below this value, species extinction is believed to occur at an exponential rate and any further clearing may have irreversible consequences for the conservation of biodiversity and is, therefore, not supported (Department of Natural Resources and Environment 2002; EPA 2000).

	Area (ha)	Current extent (ha)	Remaining (%)*	Conservation status**	In reserves/CALM managed land(%)
IBRA Bioregion - Coolgardie	12 917 718	12,719,084	98.5	Least concern	
Shire of Yilgarn	3 067 793	2 512 436	81.9	Least concern	
Beard Vegetation Assoc 128	412 121	325 830	79.1	Least concern	16.8
Beard Vegetation Assoc 552	40 252	36 688	91.1	Least concern	1.7
Beard Vegetation Assoc 1068	293 053	137 171	46.8	Depleted	7.9
Beard Vegetation Assoc 1148	320 705	271 706	84.7	Least concern	19.6

* (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)
 EPA (2000)
 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 at variance to this Principle

There are two first order ill-defined natural drainage lines emanating within the area under application. Surface flow direction is to the north-east. Sons of Gwalia (2005) indicate that there are no defined drainage lines or creeks in the area however surface water management will likely incorporate bunding or drains to redirect surface flow into sumps or the natural watercourse. DAWA (2005a) conducted a site visit and recall the drainage lines being no more than depressions.

Methodology Sons of Gwalia (2005) (DOE TRIM Ref NI920).
 DAWA (2005a) (DOE TRIM Ref ND697).
 GIS Databases:

- Hydrography, linear - DOE 01/02/04;
- Hydrographic Catchments - Catchments DOE 3/4/03.

(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

DAWA (2005b) advise that the proposed clearing of 125 hectares for mining purposes and associated infrastructure at the Hercules Project is not likely to cause appreciable on site and off site land degradation, subject to the implementation of appropriate management strategies to address any resultant wind erosion.

Methodology DAWA (2005b) (DOE TRIM Ref ND626).

(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 CALM managed conservation areas within 10km of the proposal. CALM (2005) advise that the proposed development is unlikely to impact on the Jilbaji and Yellowdine Nature Reserves as they are extensive reserves located at a distance which would mitigate any direct or indirect impacts of the proposal.

The benchmark of 15% representation in conservation reserves (JANIS Forests Criteria 1997) has not been met for Beard Vegetation Associations 552 & 1068. However in view of the largely uncleared state of Beard Vegetation Association (91.1%) and the extent remaining of Beard Vegetation Association 1068 (137,171ha), this is not considered to be a serious conservation issue.

Methodology CALM (2005).
Hopkins et al. (2001).
Shepherd et al. (2001).
JANIS Forests Criteria (1997).
GIS Databases:
- CALM Managed Lands and Water - CALM 01/08/04.

(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

With an average annual rainfall of 300mm and an annual evaporation rate of 2.6m there is little surface flow during normal seasonal rains. It is only during major rainfall events that there is any significant surface flow. Surface flow during these events, after an initial flush of accumulated salts, tends to be relatively fresh. The saline lake system of the Yilgarn sub-catchment becomes a medium for the collection and transportation of major flows.

With high annual evaporation rates and low annual rainfall there is little recharge into the regional groundwater table which, at this site is between 7,000 mg/l and 14,000 mg/l and is considered to be saline. The proposed clearing of native vegetation is unlikely to have an impact on regional groundwater considering the magnitude of the regional groundwater province (approx 250,000 sq km) and the extent of native vegetation remaining in the bioregion (98.5%).

Methodology Shepherd et al. (2001).
GIS Databases:
- Evaporation Isopleths - BOM 09/98;
- Isohyets - BOM 09/98;
- Groundwater Salinity, Statewide - 22/02/00;
- Hydrography, linear - DOE 01/02/04;
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00;
- Groundwater Provinces - WRC 98.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

Comments Proposal is not likely to be at variance to this Principle

With an average annual rainfall of 300mm and an annual evaporation rate of 2.6m there is little surface flow during normal seasonal rains. It is only during major rainfall events that there is a likelihood of flooding for which the broad valleys and lake systems of the region are designed to compensate and sustain floodwaters.

Sons of Gwalia (2004) advise that more intense rainfall events may result in sheet flow in a north easterly direction towards the banker chain of salt lakes. In an extremely significant rainfall event these lakes link up with flow to the north north-east.

Methodology Sons of Gwalia (2004) (DOE TRIM Ref IN18244).
 GIS Databases:
 - Evaporation Isoleths - BOM 09/98;
 - Isohyets - BOM 09/98;
 - Hydrography, linear - DOE 01/02/04.

Planning instrument or other matter.

Comments

DOIR have no objection to the proposal but advise that standard environmental conditions must be applied as part of the Mining Act approval.

No response has been received from the Shire of Yilgarn or the Yilgarn LCDC.

Methodology DOIR (2004) submission (DOE TRIM Ref ND549).

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mining	Mechanical Removal	125	Grant	<p>Assessable criteria have been addressed and the proposal is at variance with Principle f and may be at variance with Principle a.</p> <p>With reference to Principle f, the watercourses that emanate within the proposal are ill-defined. Surface water will be redirected either into the natural watercourse or into a sump.</p> <p>For Principle a, the CEO should consider granting the permit given the absence of significant flora and the large amount of vegetation associations remaining.</p> <p>DoIR advise that in relation to the application, standard environmental conditions must be applied as part of the Mining Act approval.</p> <p>There are two native title claims on the land in the area under application. The proponent should be advised to contact the Department of Indigenous Affairs with respect to this issue.</p> <p>The proponent is advised that although they have a Licence to Take Water from several locations in close proximity to the current proposal, any changes pertinent to the license such as a change in purpose (eg. from dewatering to dust suppression or mine processing etc), a change in mining tenement for which the water is used or a change in water needs requires a new application for a Licence to Take Water.</p>

5. References

AGPS (2001) The national objective and targets for biodiversity conservation 2001-2005. Commonwealth of Australia, Canberra.

CALM (2005) Land clearing proposal advice. Advice to A/Director General, Department of Environment (DoE). Department of Conservation and Land Management, Western Australia. DoE TRIM ref ND687.

DAWA (2005a) Correspondence. DOE TRIM Ref ND697.

DAWA (2005b) Land degradation advice. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture Western Australia. DoE TRIM ref ND626.

Department of Industry and Resources (2004) Submission. DOE TRIM Ref ND549.

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.

EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority.

Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.

JANIS Forests Criteria (1997) Nationally agreed criteria for the establishment of a comprehensive, Adequate and Representative reserve System for Forests in Australia. A report by the Joint ANZECC/MCFFA National Forest Policy Statement Implementation Sub-committee. Regional Forests Agreement process. Commonwealth of Australia, Canberra.

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

Mattiske Consulting Pty Ltd (2001) Declared Rare and Priority Flora Search of Hercules Prospect. Marvel Loch. Accompanied the application for a Clearing Permit. DOE TRIM Ref IN18244.

Mattiske Consulting Pty Ltd (2004) Flora and Vegetation Survey for the Proposed Disturbance Areas at Hercules Mine, Marvel Loch. DOE TRIM Ref NI920.

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.

Sons of Gwalia (2004) Hercules Notice of Intent. Accompanied the application for a Clearing Permit. DOE TRIM Ref IN18244.
Sons of Gwalia (2005) Correspondence. DOE TRIM Ref NI920.