



**1. Application details**

**1.1. Permit application details**

Permit application No.: 1444/1  
 Permit type: Purpose Permit

**1.2. Proponent details**

Proponent's name: Shire of Murchison

**1.3. Property details**

Property: [Redacted]  
 Local Government Area: Shire Of Murchison  
 Colloquial name: [Redacted]

**1.4. Application**

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

**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
Some 24 Beard Vegetation Associations occur within the application area (Shire of Murchison):	This 'whole of Shire' purpose permit is for clearing of up to 25 ha over 12 months across the Shire whose total area is almost 50,000 sq km, for the purpose of 1) road construction (alignments) and maintenance (existing roads) within road reserves and 2) expansion of existing gravel and limestone pits. To apply to all land within the Shire with the exception of Environmentally Sensitive Areas. The maintenance includes clearing of re-growth on existing roads and their 'vee drains' and clearing of small bunds in road reserves to control local flooding.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	Across the Shire the native vegetation condition is likely to range from 'Good ' to 'Very Good' (Keighery B. J. 1994.) Depending on the intensity of grazing however, vegetation structure may be significantly altered with possible weed invasion within road reserves or in the vicinity of gravel pits, where vegetation condition may be 'Degraded' and not easily regenerated (Keighery 1994).
Shrublands; Acacia rostellifera thicket.			
Open low woodland; mulga.			
Sparse low woodland; mulga, discontinuous in scattered groups.			
Low woodland; mulga mixed with Allocasuarina cristata & Eucalyptus sp..			
Sparse low woodland; mulga, discontinuous in scattered groups.			
Shrublands; acacia scrub, various species.			
Low woodland; mulga on dolerite.			
Shrublands; snakewood & minnieritchie scrub.			

Hummock grasslands, low tree steppe; Eucalyptus dongarraensis & E. foecunda over Triodia plurinervata.

Shrublands; bowgada scrub with scattered red mallee & Eucalyptus sp..

Succulent steppe; saltbush & bluebush.

Succulent steppe with open woodland; eucalypts over saltbush.

Shrublands; Melaleuca uncinata thicket.

Shrublands; Melaleuca thyoides thicket with scattered Casuarina obesa.

Mosaic: Shrublands; scrub-heath on coastal association on yellow sandplain / Shrublands; acacia patchy scrub.

Low woodland; Allocasuarina cristata & eucalypts.

Low woodland; mulga & red mallee.

Succulent steppe with low woodland; mulga over saltbush.

Succulent steppe; saltbush & bluebush.

Shrublands; Melaleuca thyoides thicket with scattered Casuarina obesa.

Mosaic: Low woodland; mulga in valleys / Hummock grasslands, open low tree-steppe; snappy gum over Triodia wiseana.

Hummock grasslands, shrub steppe; scattered shrubs over Triodia basedowii.

Shrublands; casuarina & dryandra thicket with wandoo and powderbark wandoo.

Shrublands; Melaleuca uncinata thicket with scattered York gum.

### 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**

Some 20 native vegetation types occur within the Shire. The vegetation includes extensive areas of low woodland Eucalypt and mulga (*Acacia aneura*) over bowgada (*A. ramulosa* and *A. linophylla*) and mixed shrublands, and in low lying areas *Halosarcia* samphire communities in saline areas with saltbush and samphire associated with freshwater lakes. These vegetation types are well represented and all fall into the category of least concern (Department of Natural Resources and Environment, 2002)

The areas under application and surrounds have a history of grazing and mining activities, with the vegetation being predominantly sparse Eucalypt and mulga scrub (*Acacia* species) with minimal lower and upper storey vegetation, described as being in 'good' condition (Keighery, 1994).

The vegetation types in which the proposed locations of clearing occur are common and widespread. In addition, grazing, mining and proximity to existing gravel pits and roadsides have reduced the biological diversity of the areas under application. It is unlikely that the areas proposed to be cleared contain greater biological diversity than surrounding areas and is therefore unlikely to be at variance to this principle

**Methodology**      Department of Natural Resources and Environment, 2002  
Keighery, 1994  
Information provided by the proponent TRIM DOC CRN 220372  
GIS Databases:  
-Interim Biogeographic Regionalisation of Australia - EA 18/10/00  
-Pre-European Vegetation - DA 01/01  
-Western Australia ETM 25m 543 - AGO - 04  
-Mining Tenements - DOIR

#### (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**

The areas under application (up to 25 hectares over 12 months across the Shire) are within the Murchison IBRA Region, an area covering approximately 28,000,000ha of which 100% of the native vegetation remains (Shepherd et al 2001). Given the amount remaining, it is unlikely that the relatively small areas applied to be cleared within already disturbed areas will compromise the status of the vegetation associations or that habitat available to indigenous fauna.

The vegetation applied to be cleared is not likely to be necessary for the maintenance of significant habitat for fauna indigenous to Western Australia.

**Methodology**      Biodiversity Coordination Section advice  
Shepherd et al (2001)  
GIS Databases:  
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00  
- Pre-European Vegetation - DA 01/01

#### (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**

No Declared rare flora have been recorded within the Shire of Murchison, however the following priority species have been recorded within the Shire of Murchison.

Priority 1:

- \* *Philothea citrina*
- \* *Prosthanthera petrophila*
- \* *Gunniopsis divisa*
- \* *Eremophila flaccida* subsp. *attenuata*
- \* *Hemigenia* sp. Glenburgh

Priority 2:

- \* *Bergia auriculata*
- \* *Frankenia confusa*

Priority 3:  
\* *Verticordia jamiesoni*

None of these areas are within the proposed clearing areas of road re-alignment and gravel extractions sites. As the permit allows for vee drains and bunds across the shire a condition will be imposed that can clear these priority species.

**Methodology** Biodiversity Co-ordination section advice  
GIS Databases:  
- Declared Rare and Priority Flora List - CALM 01/07/05;  
- Threatened Plant Communities - DEP 06/95

**(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 recordings of Threatened Ecological Communities within the Shire, with the nearest occurrence 60 kilometres from the southern Shire boundary. The proposal is unlikely to be at variance with this Principle.

**Methodology** GIS Databases:  
- Threatened Ecological Communities - CALM 12/4/05;  
- Threatened Plant Communities - DEP 06/95

**(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 likely to be at variance to this Principle**  
The proposed clearing occurs mostly within the IBRA Murchison Region, where 100% of native vegetation remains (Shepherd et al 2001). Small pockets exist of IBRA Regions Gascoyne (north west in Shire, 100% remaining), Carnarvon (west, 100% remaining) and Yalgoo (south and west, 98.9% remaining).

A large number of Beard Vegetation Association types occur within the application area (approximately 25) and include low and sparse woodlands, shrublands and samphire flats. All are considered of 'least concern' (Department of Natural Resources and Environment 2002).

Given the size of the proposed clearing compared to the area of remnant vegetation remaining within the region, the proposed clearing will not be significant as remnants of native vegetation and therefore not likely to be at variance to this principle.

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

**(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**  
This large area of almost 50,000 square kilometres is traversed by three major watercourses (from north to south the Wooramel, Murchison and Greenough Rivers and their tributaries (notably the Sanford and Roderick Rivers and Yarra Yarra and Whela Creeks), and a large number of minor non-perennial watercourses and lakes, wash areas and land subject to inundation.

Numerous roads in the application area cross watercourses or land subject to inundation, however the proposed maintenance and construction of 'vee drains' and bunds are measures appropriate for containing localised runoff.

Two ANCA wetlands occur within the Shire of Murchison, Breberle and Wooleen Lakes. Due to this, these areas and associated buffers have been specifically excluded from the permit.

Due to the exclusion of wetlands, small scale of wetlands and proposed revegetation condition it is unlikely the clearing will be at variance to this principle.

**Methodology** GIS Databases:  
- Hydrography, Linear - DOE 1/2/04;  
- Hydrography, Linear (hierarchy) - DOW (LEVEL\_EST);

- Road Centrelines - DLI 1/5/04;
- Lakes, 1M - GA 01/06/00
- Lakes, 1M - GA 01/06/00
- Natmap Landsat ETM + Mosaic - GA 8/03 (Image)

**(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**

Topography and soil types are generally extensive flats and gently sloping plains with scatterings of surface gravels; shallow red earths and hardpans and flanking dunes of red sands; interspersed with rocky granitic hills and breakaways; shallow earthy loams underlain by a red-brown hardpan at shallow depth; some calcareous earths; plains with extensive playa and red brown hardpans often exposed in eroded sites; alluvial flats that are frequently saline flanking river courses. There is a low risk that clearing of sites underlain by hardpan at shallow depth or where exposed may be subject to localised waterlogging, water and wind erosion.

With an average annual rainfall of 225 millimetres and an average annual evaporation rate of 3,400 millimetres per year, there is little surface flow during normal seasonal rains, reducing the likelihood of water erosion.

The proposed clearing on the roadsides and in expansion of extraction pits may cause some short term impacts such as localised waterlogging and soil erosion if works are undertaken in a rainfall event.

Given the small size of the area under application in context with the regional surroundings, the previous history of disturbance in the area it is unlikely that the proposed clearing will cause any further significant land degradation, and the overall risk of the proposed clearing causing soil erosion, water logging and flooding is low.

To reduce the likelihood of soil erosion and to aid rehabilitation a condition will be imposed to remove and retain the overburden and progressively revegetate these areas.

- Methodology** GIS Databases:
- Salinity Mapping
  - Topographic contours, Statewide - DOLA 12/09/02
  - Evaporation Isopleths - BOM 09/98
  - Isohyets - BOM 09/98
  - Soils, Statewide - DA 11/99

**(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 Shire of Murchison does not contain any listed conservation areas, however some neighbouring shires do contain conservation areas. There are no conservation areas within 50km of any of the proposed gravel pits and road re-alignments. The vee drains and earth bunds are going to be placed throughout the shire however the small scale of clearing required for these works will not impact on any nearby conservation areas.

- Methodology** GIS Datasets:
- CALM Managed Lands and Waters - CALM 1.07.05;
  - Proposed National Parks, FMP CALM 19/03/03;
  - Register of National Estate - EA 28/01/03 (Status);
  - Register of Heritage Places - DPI\_1;
  - Clearing Regulations - Ecologically Sensitive Areas - DOE 30/5/05;
  - Road Centrelines - DLI 1/5/04

**(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**

No groundwater allocation or surface water area plan has been prepared for this area.

With high annual evaporation rates and low annual rainfall there is little groundwater recharge. Groundwater salinity (measured as Total Dissolved Solids) across the application area ranges between 500 mg/L and 7,000 mg/L and is considered to be marginal to low saline. The proposed clearing of native vegetation for this proposal is unlikely to have an impact on regional groundwater considering the magnitude of the Yilgarn-Goldfields Groundwater Province (~300,000 sq km).

High salinity levels occur in lower lying areas however potential impacts of the proposed activities on surface water quality are likely to be localised.

The proposed clearing on existing roadsides for maintenance of 'vee drains' and creation of bunds may cause some short term localised surface water sedimentation during works. The proponent's application noted the importance of allowing native vegetation to regenerate on bunds for bank stabilisation, and that the proposed roadside maintenance activities are designed to prevent on-going erosion and sedimentation.

Where proposed new clearing is to occur such as in localised road re-alignments and expansion of existing gravel pits, a condition placed on the permit to undertake revegetation on completion of the extraction works will minimise water quality issues associated with clearing.

**Methodology** GIS Datasets:  
- RIWI Act, Groundwater Areas - WRC 13/06/00  
- RIWI Act, Surface Water Areas - WRC 18/10/02  
- Groundwater Salinity, Statewide - 22/02/00  
- WIN Groundwater Sites, Monitoring - DEWCP (Current)

**(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**  
With an average annual rainfall of 225mm and an annual evaporation rate of 3,400mm there is little surface flow during normal seasonal rains. However the Murchison area is known for periods of flooding intensity. Due to this history and the scale of the proposed clearing, impacts from clearing are not likely to exacerbate flooding in the region.

The proposed clearing and earthworks on the roadsides may cause some short term water pooling. However, the 'vee drains' and bunds submitted in the application are designed to remove the risk of water ponding on a sustained basis.

**Methodology** GIS Datasets:  
- Topographic Contours, Statewide - DOLA 12/09/02;  
- Shaded Relief - GA (image);  
- Hydrography , Linear - DOE 1/2/04  
- Groundwater SalinityStatewdie - 22/02/00

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

**Comments**  
The area under application is within the Proclaimed Groundwater Area of East Murchison. Therefore any abstraction of groundwater would require a licence. However, considering this application is only for gravel extraction, no licence will be necessary.

There is no other RIWI Act Licence, Works Approval or EPA Act Licence that affects the area under application.

There are Title Claims over the area under application. The Department of Environment and Conservation's advertising of the application in the West Australian newspaper constitutes legal notification of the native title representative body for the purpose of the future act procedures under the Native Title Act 1993. No response was received from the representative body.

There are a large number of sites of Aboriginal Significance on the Permanent Register, Interim Register and Archived Data, with site type attributes including Ceremonial, Artefacts, Painting, Engraving, man-made structures, etc. several with Closed Access.

The Department advises that the proponent contact the relevant authorities to seek advice on whether or not the road works will impact upon the Aboriginal Sites of Significance listed within the area under application.

There are no records of Heritage Sites within the application area.

There are no sites subject to previous EPA decisions.

**Methodology** GIS datasets:  
- Native Title Claims - DLI 7/11/05  
- Aboriginal Sites of Significance - DIA 28/02/03  
- Register of Heritage Places - DPI  
- RIWI Act, Groundwater Areas - WRC 13/06/00  
- RIWI Act, Surface Water Areas - WRC 18/10/02  
  
- Environmental Impact Assessments - DOE 24/02/06

**4. Assessor's recommendations**

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Extractive Industry	Mechanical Removal			
Extractive Industry	Mechanical Removal			
Extractive Industry	Mechanical Removal			
Extractive Industry	Mechanical Removal			North eastern ESA
Road construction or maintenance	Mechanical Removal	25		
Road construction or maintenance	Mechanical Removal			southern ESA
Road construction or maintenance	Mechanical Removal			
Road construction or maintenance	Mechanical Removal			

## 5. References

- Clearing Assessment Unit's biodiversity advice for land clearing application. Advice to Director General, Department of Environment and Conservation (DEC), Western Australia. TRIM ref DOC 6051
- 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. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press. Information provided by the proponent TRIM Reference DOC CRN 220372
- 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)

