



1. Application details

1.1. Permit application details

Permit application No.: 1934/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Shire of Sandstone

1.3. Property details

Property:
Local Government Area: Shire Of Sandstone
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
50		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
There are 28 Beard Vegetation Associations within the application area (Shire of Sandstone), being: - 18: Low woodland; mulga (Acacia aneura); - 19: Low woodland; mulga between sand ridges; - 39: Shrublands; mulga scrub; - 105: Hummock grasslands, shrub steppe; mulga over soft spinifex; - 107: Hummock grasslands, shrub steppe; mulga and Eucalyptus kingsmillii over hard spinifex; - 120: Succulent steppe with open low woodland; mulga & sheoak; - 125: Bare areas; salt lakes; - 128: Bare areas; rock outcrops; - 142: Medium woodland; York gum & salmon gum; - 188: Shrublands; mulga & Acacia sclerosperma	This 'whole of Shire' purpose permit is for clearing of up to 10 ha per annum over 5 years across the Shire whose total area is almost 3,260, 401 ha. The purpose of the clearing is for road maintenance (existing roads) and associated installation of 'vee' and 'levee' drains to control local flooding, with 'vee' drains typically installed every 300m on both sides of the road, with a width of ~12m (including batters and back cuts) and length of ~50m (TRIM Ref. DOC26460). This application applies to all land within the Shire with the exception of Environmentally Sensitive Areas (ESA). Vegetation within the Shire appears to consist primarily of low open woodlands of Acacia aneura (mulga) with sparse understorey species, and hummock grasslands. Given the remaining vegetation cover within the Shire, historical land uses and grazing activities, the vegetation under application is considered likely to be in a very good condition.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The vegetation clearing description is based on aerial imaging, remaining vegetation cover and historical and current land uses within the Shire.

scrub;

- 202: Shrublands; mulga
& *Acacia quadrimarginea*
scrub;

- 221: Succulent steppe;
saltbush;

- 385: Shrublands;
bowgada & jam scrub with
scattered York gum;

- 389: Succulent steppe
with open low woodland;
mulga over saltbush;

- 411: Succulent steppe
with open scrub; scattered
bowgada & jam over
saltbush;

- 416: Low woodland;
mulga mixed with cypress
pine & York gum;

- 420: Shrublands;
bowgada & jam scrub;

- 483: Hummock
grasslands, mixed
sandplain - open mallee
over sparse dwarf shrubs
with spinifex; red mallee
over mixed dwarf shrubs
with *Triodia basedowii*;

- 484: Shrublands; jam
thicket;

- 485: Hummock
grassland, mixed
sandplain - scattered low
trees over sparse dwarf
shrubs with spinifex; red
mallee over mixed dwarf
shrubs with *Triodia*
basedowii;

- 508: Succulent steppe
with open scrub; scattered
mulga over saltbush;

- 532: Hummock
grassland, mixed
sandplain - sparse low
trees over sparse dwarf
shrubs with spinifex;
marble gum & red mallee
mixed dwarf shrubs with
Triodia scariosa;

- 533: Low woodland;
mulga & cypress pine;

- 676: Succulent steppe;
samphire;

- 862: Hummock
grasslands, open low tree
& mallee steppe; marble
gum & mallee (*E. kinsmillii*)

over hard spinifex *Triodia basedowii*;

- 863: Hummock grassland, mixed sandplain - sparse low trees over sparse dwarf shrubs with spinifex; red mallee over mixed dwarf shrubs with *Triodia scariosa*;

- 865: Hummock grassland, mixed sandplain - scattered low trees over sparse dwarf shrubs with spinifex; red mallee over mixed dwarf shrubs with *Triodia scariosa*;

- 2121: Mosaic; Open low woodland; mulga / succulent steppe; saltbush & bluebrush on greenstone (Shepherd et al. 2001, Shepherd 2006).

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**

This Shire purpose permit is for clearing of up to 10 ha per annum over 5 years across the Shire, total area of which is ~3,260,401 ha. The Shire of Sandstone occurs within the Murchison IBRA Bioregion which has ~100% pre-European vegetation extent remaining (Shepherd 2006).

As the majority of the vegetation associations within the areas under application are well represented (at 85.2% to 100% Pre-European extent remaining) it is considered unlikely that the vegetation under application represents a higher biological diversity than that of surrounding vegetation. Therefore, the proposed clearing is not considered likely to be at variance to this Principle.

Methodology Reference:
- Shepherd (2006)
GIS Databases:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Local Government Authorities - DLI

(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**

This Shire purpose permit is for clearing of up to 10 ha per annum over 5 years across the Shire, the total area of which is ~3,260,401 ha. The Shire of Sandstone occurs within the Murchison IBRA Bioregion which has ~100% pre-European vegetation extent remaining (Shepherd 2006).

Five conservation significant fauna species have been recorded within the Shire of Sandstone, being the Bilby (*Macrotis lagotis*) (Vulnerable), Malleefowl (*Leipoa ocellata*) (Vulnerable), Shield-backed Trapdoor Spider (*Idiosoma nigrum*) (Vulnerable), Hooded Plover (*Charadrius rubricollis*) (Priority 4) and Australian Bustard (*Ardeotis australis*) (Priority 4).

Whilst it is likely that these species utilise the area of vegetation proposed to be cleared, given the extensive vegetation cover remaining within the Shire and the location of the proposed clearing adjacent to transport routes, it is unlikely that the vegetation proposed to be cleared is significant habitat for these and other indigenous fauna species.

Methodology Reference:
- Shepherd (2006)
GIS Databases:
- DEC SAC Bio Datasets, Date accessed 31/08/2007
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Local Government Authorities - DLI

(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

There are no mapped occurrences of Declared Rare Flora (DRF) within the Shire of Sandstone.

There are fourteen mapped occurrences of four Priority Flora populations within the Shire, being *Pityrodia canaliculata* (Priority 1), *Labichea eremaea* (Priority 1), *Stenanthemum mediale* (Priority 1) and *Grevillea inconspicua* (Priority 4). These areas and their associated buffers are specifically excluded from this permit.

There are no mapped occurrences of Declared Rare Flora (DRF) within the Shire of Sandstone.

There are fourteen mapped occurrences of four Priority Flora populations within the Shire, being *Pityrodia canaliculata* (Priority 1), *Labichea eremaea* (Priority 1), *Stenanthemum mediale* (Priority 1) and *Grevillea inconspicua* (Priority 4). These areas and their associated buffers are specifically excluded from this permit.

Given no DRF have been identified within the Shire and the mapped Priority species will be excluded from this permit, the proposed clearing it is not likely to be at variance with this Principle.

Methodology GIS Databases:

- DEC SAC Bio Datasets, Date accessed 31/08/2007
- Local Government Authorities - DLI

(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 three known occurrences of a Threatened Ecological Community (TEC), Depot Springs stygofauna community, within the Shire of Sandstone. These areas and their associated buffers have been specifically excluded from this permit.

Given the thin, linear nature of the proposed clearing and exclusion of mapped TEC in this permit, the proposal is considered unlikely to impact on stygofauna populations. Therefore, the proposed clearing is considered not likely to be at variance to this Principle.

Methodology GIS Databases:

- DEC SAC Bio Datasets, Date accessed 23/08/2007
- Local Government Authorities - DLI

(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 Shire of Sandstone occurs within the Murchison IBRA Bioregion which has ~100% pre-European vegetation extent remaining (Shepherd 2006).

The State Government is committed to the National Objective Targets for Biodiversity Conservation, which includes targets that prevent the clearing of ecological communities with an extent below 30% of that present pre-1750 (Commonwealth of Australia 2001).

There are 28 Beard vegetation associations mapped within the Shire. Of these only one association is under represented, being Beard Vegetation Association 142 which has 26.5% (188,532ha) pre-European extent remaining. The remaining vegetation associations are well represented with 85.2-100% pre-European vegetation extent remaining.

Given the relatively small area proposed to be cleared (total of 50ha) compared to the extensive vegetation cover within the Shire (3,260,401ha), the vegetation under application would be unlikely to be a significant remnant in an extensively cleared area.

Methodology References:

- Commonwealth of Australia (2001)
 - Shepherd (2006)
- GIS Databases:**
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
 - Local Government Authorities - DLI
 - 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

There are several wetlands and watercourses mapped within the Shire of Sandstone, the most prominent being the Hope and Warne Rivers and Lakes Noondie, Mason and Barlee. Lake Barlee is listed as an ANCA wetland, defined as wetlands of national importance, listed in A Directory of Important Wetlands in Australia (Australian Nature Conservation Agency 1996). Therefore this area and its associated buffer have been specifically excluded from this permit. A large number of minor non-perennial watercourses and lakes, wash areas and land subject to inundation also traverse the Shire.

Whilst some areas proposed to be cleared are likely to comprise vegetation within mapped watercourse and wetland areas, given that the areas under application are associated with an arid environment, it is considered that minor non-perennial watercourses are utilised for drainage flow during significant rainfall events and thus are not likely to contain wetland dependant vegetation.

Therefore, the proposed clearing is considered not likely to be at variance to this Principle.

Methodology Reference:
- Australian Nature Conservation Agency (1996)
GIS Databases:
- ANCA, Wetlands - CALM 08/01
- Geodata, Lakes - GA 28/06/02
- Hydrography, linear - DOE 1/2/04
- Local Government Authorities - DLI
- Rivers, DoW

(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 geology within the Shire of Sandstone transitions between numerous soils types, with soil mapping of the area identifying soils as primarily shallow earthy loams and shallow soils, sometimes containing ironstone gravel, with gneissic granites and allied rocks, being underlain by a red-brown hardpan (Northcote et al. 1960-68). Overall the relief between landforms within the Shire is low, with a high gradient present in areas of breakaways and ridges.

Groundwater salinity across the Shire generally ranges from brackish (1000-3000 TDS mg/L) to moderately saline (3000-7000 TDS mg/L), with localised areas of very high groundwater salinity (14000 TDS mg/L to >35000 TDS mg/L) associated with Lakes Mason, Noondie and Barlee. Given the extensive vegetation cover remaining within the Shire and relatively small area proposed to be cleared (total of 50ha over a total Shire area of 3,260,401ha), the proposed clearing is not considered likely to lead to appreciable land degradation through land salinisation.

Given this and the overall low relief of the landscape, water erosion is considered unlikely during normal seasonal rains. Furthermore, any water erosion associated with the proposed clearing is considered likely to be controlled through the proposed installation of 'vee' and 'levee' drains, which are designed to prevent and reduce sheet flow across the landscape.

Wind erosion resulting from the proposed clearing is not considered likely to lead to appreciable land degradation given the geology of the area, extensive vegetation cover and relatively small areas proposed to be cleared (total of 50ha over a total area of 3,260,401ha).

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

Methodology References:
- Northcote et al. (1960-68)
- Shepherd (2006)
GIS Databases:
- Evaporation Isopleths - BOM 09/98
- Geodata, Lakes - GA 28/06/02
- Groundwater Salinity, Statewide - DOW
- Pre-European Vegetation - DA 01/01
- Rainfall, Mean Annual - BOM 30/09/01
- Soils, Statewide - DA 11/99
- Topographic Contours, Statewide - DOLA 12/09/02

(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 ANCA-listed wetland, Lake Barlee (175,829ha), is located in the south eastern portion of the Shire. This area and its associated buffer have been excluded from this permit.

The Department currently manages three former stations to the north of the Sandstone townsite for conservation, being Black Range (~80 ha), Lake Mason (~150ha), and part of Kaluwiri station (~104ha) (DEC Goldfields Regional Manager 2007).

Given the extensive vegetation representation within the Shire (mostly between 85.2-100% for the present Beard Vegetation Associations (Shepherd 2006)) and relatively small amounts of vegetation proposed to be cleared (total of 50ha over 3,260,401ha), the proposed clearing is not considered likely to impact on the environmental values of any adjacent or nearby conservation area.

Methodology References:

- DEC Goldfields Regional Manager (2007) (TRIM Ref. DOC31965)
- Shepherd (2006)
- GIS Databases:
 - ANCA, Wetlands - CALM 08/01
 - CALM Managed Lands and Waters - CALM 1/07/05
 - Clearing Regulations - Environmentally Sensitive Areas - DOE 30/5/05
 - Local Government Authorities - DLI
 - Pastoral Leases -DOLA 10/01
 - Pre-European Vegetation - DA 01/01

(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

A large number of minor non-perennial watercourses and lakes, wash areas and land subject to inundation traverse the Shire. Two Public Drinking Water Source Areas (PDWSA) are mapped within the Shire, being the Sandstone Water Reserve and the Depot Springs Water Reserve. These reserves have not yet been prioritised.

Given the extensive vegetation cover remaining within the Shire and relatively small areas proposed to be cleared (total of 50ha over 3,260,401ha), the proposed clearing is not considered likely to cause deterioration in the quality of surface or underground water.

Methodology Reference:

- Shepherd (2006)
- GIS Databases:
 - Evaporation Isopleths - BOM 09/98
 - Geodata, Lakes - GA 28/06/02
 - Groundwater Salinity, Statewide - DOW
 - Hydrography, linear - DOE 1/2/04
 - Local Government Authorities - DLI
 - Pre-European Vegetation - DA 01/01
 - Public Drinking Water Source Areas (PDWSAs) - DOW
 - Rainfall, Mean Annual - BOM 30/09/01
 - RIWI Act, Groundwater Areas - DOW

(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 Shire of Sandstone receives an average annual rainfall of approximately 300mm, with an annual evaporation of approximately 3000-3800mm. The geology within the Shire of Sandstone transitions between numerous soils types, with soil mapping of the area identifying soils as primarily shallow earthy loams, sometimes containing ironstone gravel, with gneissic granites and allied rocks, being underlain by a red-brown hardpan (Northcote et al. 1960-68). Overall the relief between landforms within the Shire is low, with a high gradient present in areas of breakaways and ridges.

There are several wetlands and watercourses mapped within the Shire of Sandstone, with a large number of minor non-perennial watercourses and lakes, wash areas and land subject to inundation also traversing the Shire.

Given the low rainfall, high evaporation rate, geology and extensive vegetation cover remaining within the Shire, the proposed clearing is not considered likely to cause or exacerbate the incidence of flooding.

Any flooding associated with the proposed clearing is considered likely to be controlled through the proposed installation of 'vee' and 'levee' drains, which are designed to prevent and reduce sheet flow across the landscape and gently distribute water into vegetated areas.

- Methodology** **References:**
- Northcote et al. (1960-68)
 - Shepherd (2006)
- GIS Databases:**
- ANCA, Wetlands - CALM 08/01
 - Evaporation Isopleths - BOM 09/98
 - Geodata, Lakes - GA 28/06/02
 - Hydrography, linear - DOE 1/2/04
 - Local Government Authorities - DLI
 - Pre-European Vegetation - DA 01/01
 - Rainfall, Mean Annual - BOM 30/09/01
 - Soils, Statewide - DA 11/99
 - Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

The Shire of Sandstone is located within the Goldfields and East Murchison Rights in Water and Irrigation (RIWI) Act Groundwater areas. Therefore any abstraction of groundwater would require a licence. However, considering this application is only for the construction of drainage channels, no licence will be necessary.

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 proposed works will impact upon the Aboriginal Sites of Significance listed within the Shire.

A portion of the Shire is associated with an Environmental Impact Assessment (EIA), Mt Margaret Nickel-Cobalt Project, near Leinster. The EPA formally assessed this proposal and concluded that identified environmental issues could be managed with conditions to meet the EPA's objectives (EPA 2001).

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

There is no required Works Approval or EPA Act Licence that affects the proposed clearing.

- Methodology** **Reference:**
- EPA (2001)
- GIS Databases:**
- Aboriginal Sites of Significance - DIA
 - Environmental Impact Assessments
 - Native Title Claims - DLI
 - Register of Heritage Places - DPI
 - RIWI Act, Groundwater Areas - DOW

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Road construction or maintenance	Mechanical Removal	50	The clearing application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986. The clearing as proposed is considered not likely to be at variance to any of the Principles.

5. References

Australian Nature Conservation Agency (1996). "A Directory of Important Wetlands in Australia." Second Edition, ANCA, Canberra. ISBN 0 642 21378.

Commonwealth of Australia (2001). National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.

DEC Goldfields Regional Manager (2007) Advice in relation to clearing permit CPS 1803/1 - Shire of Sandstone. Date received

24/05/2007 (TRIM Ref. DOC31965).

- 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 (2001) Mt Margaret Nickel-Cobalt Project, Anaconda Nickel Limited. Report and recommendations of the Environmental Protection Authority. Bulletin 1025. August 2001. 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.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
- Shepherd, D.P. (2006). 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. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- 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
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
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 DEC)