



1. Application details

1.1. Permit application details

Permit application No.: 2034/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Shire of Quairading

1.3. Property details

Property: ROAD RESERVE (DOODENANNING 6383)
Local Government Area: Shire Of Quairading
Colloquial name: Goldfields Road Reserve

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
5		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
<p>Beard Vegetation Associations:</p> <p>- 955: Mosaic: Shrublands; scrub-heath (SE AVON)/Shrublands; <i>Allocasuarina campestris</i> thicket.</p>	<p>The proposal is to clear up to 5ha of native vegetation within the Goldfields Road and Corrigin-Quairading Road Reserves in the Shire of Quairading, for the purpose of road widening.</p>	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)</p>	<p>The vegetation clearing description is based on information and photographs received from the Shire, the Avon-Mortlock District (DEC) (TRIM Ref. DOC39695) and Orthomosaics.</p>
<p>- 1023: Medium woodland; York gum, wandoo and salmon gum (<i>E. salmonophloia</i>) (Hopkins et al 2001, Shepherd 2006).</p>	<p>The area under application within the Corrigin-Quairading Road Reserve is ~9.2km on the eastern side of the road from ~400m north of Horsley Rd south to Simpson Street. The vegetation within this area is described as narrow <i>Allocasuarina campestris</i> shrubland, generally in good condition with minimal weeds. Some areas have been subject to disturbance by road-side grading, with disturbance species (e.g. <i>Dampiera</i> sp.) found along the road shoulder, these areas also have extensive weed invasion.</p>		
<p>Beard Vegetation Associations:</p> <p>- 1049: Medium woodland; wandoo, York gum, salmon gum, morrel and gimlet (Hopkins et al 2001, Shepherd 2006).</p>	<p>The proposal is to clear up to 5ha of native vegetation within the Goldfields Road and Corrigin-Quairading Road Reserves in the Shire of Quairading, for the purpose of road widening.</p>	<p>Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)</p>	<p>The vegetation clearing description is based on information and photographs received from the Shire, the Avon-Mortlock District (DEC) (TRIM Ref. DOC39695) and Orthomosaics.</p>
	<p>The area under application within the Goldfields Road Reserve is ~2.3km on the northern side of the road approximately halfway between Carter-</p>		

Doodenanning Rd and Maynard Rd. The vegetation within this area is described as comprising degraded to completely degraded vegetation of scattered York Gum/Jam with Salmon Gums and planted River Red Gums. Overall the vegetation within this area comprises a low level of native species.

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 may be at variance to this Principle

The two areas of vegetation under application are located within road reserves in an extensively cleared agricultural area within the Shire of Quairading, which has only 3.6% (7,307ha) pre-European vegetation extent remaining and is considered to be endangered for biodiversity conservation (Department of Natural Resources and Environment 2002; Shepherd et al. 2001).

Given the low vegetation representations within the vegetation association and within the Shire of Corrigin, it is considered that vegetation in a degraded or better condition can significantly contribute to the conservation of biodiversity. It is therefore considered that the vegetation under application may comprise a high level of biodiversity, especially in a local context.

The area under application on Corrigin-Quairading Rd, comprises narrow *Allocasuarina campestris* shrubland, generally in good condition with minimal weeds (DEC Conservation Officer 2007). The area under application on Goldfields Rd, comprises degraded to completely degraded scattered York Gum/Jam vegetation with Salmon Gums and planted River Red Gums with an overall low level of native species present (DEC Conservation Officer 2007).

The vegetation that is in a completely degraded to degraded condition lacks understorey vegetation and would therefore not be considered likely to comprise a high level of biodiversity. Vegetation in good condition contains some understorey and a higher species diversity, and although thin and linear, may represent an area of high biological diversity, especially when viewed in the context of the highly cleared landscape in the local area.

In addition, DEC declared rare flora surveys of the areas under application did not target two Priority species, *Acacia lirellata* and *Stylidium coroniforme*, which are known to occur in the local area near Goldfields Road. It is therefore considered that the applied area may be necessary for the continued existence of Priority flora.

Methodology

References:

- DEC (2007) (TRIM Ref: DOC34381)
- DEC Conservation Officer (2007) (TRIM Ref: DOC39695)
- Shepherd et al. (2001)

GIS Databases:

- Corrigin North 1.4m Orthomosaic - DOLA 01
- Cunderdin 50cm Orthomosaic - DLI04
- Pre-European Vegetation - DA 01/01

(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

There are three known records of two conservation significant fauna with 20km of the areas of vegetation under application, the closest known record being the vulnerable Shield-backed Trapdoor Spider (*Idiosoma nigrum*) which has been recorded ~11.5km from Corrigin-Quairading Road. *Ixalodectes flectocercus* (Priority 1 insect) is also known to occur within a 20km radius of the vegetation under application, with the closest record being located ~16km north west of Corrigin-Quairading Road.

The Shield-backed Trapdoor Spider prefers litter within acacia woodland or shrubland on granitic soils (Burbidge, 2004). Given the habitat preferences of the Shield-backed Trapdoor spider differ to the soils types and vegetation associations found in the areas under application it is not considered likely that the applied area provides significant habitat for the Spider.

The vegetation under application within the Corrigin-Quairading Road Reserve comprises of narrow *Allocasuarina campestris* shrubland, generally in good condition with minimal weeds (DEC Conservation

Officer 2007). The vegetation under application contains understorey species which have the potential to provide some habitat for ground dwelling fauna. However, the proposed clearing will occur only on the eastern side of the Corrigin-Quairading Road Reserve, thus preserving a wider vegetated remnant on the western side of the road that would be more valuable as a corridor.

Vegetation under application within Goldfields Road comprises of degraded to completely degraded scattered York Gum/Jam vegetation with Salmon Gums and planted River Red Gums with an overall low level of native species present (DEC Conservation Officer 2007). Given the presence of weeds and lack of suitable understorey species it is considered the vegetation under application does not provide suitable habitat for ground dwelling fauna.

In addition, BCS (2006) advice stated 'although (York Gum) can develop hollows, they are typically too small to offer habitat for Cockatoos from the *Calyptrorhynchus* genus and are more readily occupied by smaller and more common avian taxa.'

Given the degraded condition of the vegetation under application, the limited use of the hollows provided by the York Gum, and that the wider, vegetated side of the road reserves will be retained, it is not considered likely that the vegetation under application comprises significant habitat for indigenous fauna.

- Methodology** **References:**
- BCS (2006) (TRIM Ref: DOC12331)
 - DEC Conservation Officer (2007) (TRIM Ref: DOC39695)
 - Shepherd et al. (2001)
- GIS Databases:**
- CALM Managed Lands and Waters - CALM 1/07/05
 - Corrigin North 1.4m Orthomosaic - DOLA 01
 - Cunderdin 50cm Orthomosaic - DLI04
 - SAC Bio datasets (31/08/2007)

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

Comments Proposal may be at variance to this Principle

Declared Rare and Priority Flora mapping identifies 31 records of 7 DRF and 15 records of 10 Priority species within a 10km radius of the areas under application.

Of these species it is considered that *Banksia cuneata*, *Grevillia scapigera* which are considered DRF, *Daviesia oxylebium* (P4), *Dryandra horrida* (P3) and *Acacia arcuatilis* (P2) may be present in the area under application on Corrigin-Quairading Road reserve as they are found in similar soils and vegetation associations.

Acacia ataxiphylla subsp *magna*, *Guichenotia seorsiflora*, *Hakea aculeata*, *Thomasia glabripetala* which are DRF, *Acacia campylophylla* (P3), *Acacia lirellata* (P3) and *Stylidium coroniforme* (P1) may be present in the area under application on Goldfields Road reserve as they are found in similar soils and vegetation associations.

Threatened flora surveys were carried out by DEC Flora Conservation Officers between June and August within both areas under application targeting DRF species known to occur in the local area. The surveys did not record any DRF along the proposed road works sites although did not specifically target the DRF species *Grevillia scapigera* which is known to occur within ~3km of the Corrigin-Quairading Road (DEC 2007; DEC Conservation Officer, 2007).

Given the DEC surveys did not target *Grevillia scapigera* or Priority species in the local area and it is therefore considered that the applied area may be necessary for the continued existence of DRF and Priority flora and may be at variance to this Principle.

- Methodology** **References:**
- DEC (2007) (TRIM Ref: DOC34381)
 - DEC Conservation Officer (2007) (TRIM Ref: DOC39695)
- GIS Databases:**
- Corrigin North 1.4m Orthomosaic - DOLA 01
 - Cunderdin 50cm Orthomosaic - DLI04
 - Pre-European Vegetation - DA 01/01
 - SAC Bio datasets (31/08/2007)
 - Soils, Statewide - DA-11/99

(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 occurrences of Threatened Ecological Communities (TEC) within a 50km radius of the area under application. Given this, and the degraded condition of the majority of the vegetation under application, it is not considered likely to comprise, or be necessary for the maintenance of, a TEC.

There are six known occurrences of a Priority Ecological Community (PEC) within a 20km radius of the areas under application. The closest PEC is located ~8km north of the vegetation under application on Corrigin-Quairading Road and described as 'Low level sandplains - *Banksia prionotes* and *Xylomelum angustifolium* low woodlands on transported yellow sands'. This PEC is also known to occur on a different soil type to the areas of vegetation under application. Given this and the vegetation description, the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Databases:
- SAC Bio datasets (15/10/2007)
- Soils, Statewide - DA 11/99

(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 area under application is located within the Intensive Land-use Zone (Shepherd et al, 2001) and is located in the area defined in EPA Position Statement No. 2 Environmental Protection of Native Vegetation in Western Australia (EPA, 2000). Significant clearing of native vegetation has already occurred within this area and 'from an environmental perspective the EPA is of a view that it is unreasonable to expect to be able to continue to clear native vegetation from land within the agricultural area'. (EPA, 2000).

Vegetation within the Corrigin-Quairading Road reserve is part of Beard vegetation Associations 955 and 1023, of which, the current representation level of pre-European extent is 7.7% and 6.4% respectively (Shepherd 2006). Vegetation within the Goldfields Road reserve is part of Beard vegetation association 1049 which has 3.6% of pre-European extent remaining (Shepherd 2006). The areas under application are within the Shire of Quairading which has a current pre-European representation of less than 3.6% vegetation remaining (Shepherd et al 2001).

Furthermore, the conservation status of vegetation within the Shire of Quairading and Beard Vegetation Associations are considered as endangered, with current representation levels of less than 10% pre-European extent remaining (EPA, 2000).

The vegetation under application within the Corrigin-Quairading Road Reserve is considered to be in good condition and representative of Beard Vegetation Association 955 of which there is less than the recommended minimum of 30% pre-European extent remaining (DEC Conservation Officer, 2007). In addition, the Shire of Quairading has been extensively cleared for agriculture, with less than the recommended 30% of pre-European vegetation remaining.

Given the above it is considered that the vegetation under application is significant as a remnant in an area that has been extensively cleared and the proposal is considered to be at variance to this Principle.

land	Pre-European (ha)	Current extent Remaining (ha)	(%)	Conservation status	% In reserves/ CALM managed
IBRA Bioregions					
Avon Wheatbelt**	9,517,117	1,468,711	15.4	Vulnerable	7.6
Shire of Quairading*	200,489	7,307	3.6	Endangered	NA
Beard Vegetation Unit:**					
955	139,326	10,682	7.7	Endangered	15.1
1023	1,601,636	103,064	6.4	Endangered	14.8
1049	833,403	30,079	3.6	Endangered	8.5

* (Shepherd et al. 2001)

** (Shepherd 2006)

Methodology References:
- Commonwealth of Australia (2001)
- DEC Conservation Officer (2007) (TRIM Ref: DOC39695)
- Department of Natural Resources and Environment (2002)

- EPA (2000)
- Shepherd et al. (2001)
- Shepherd (2006)
- GIS Databases:
 - Corrigin North 1.4m Orthomosaic - DOLA 01
 - Cunderdin 50cm Orthomosaic - DLI04
 - EPA Position Paper No 2 Agriculture Region - DEP 12/00
 - 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 may be at variance to this Principle

The applied area on Corrigin-Quairading Road intersects a minor non-perennial watercourse three times, and the applied area on Goldfields Road intersects two minor non-perennial watercourses. The closest major watercourse to the areas under application on Goldfields Road and Corrigin-Quairading Road is the Mortlock River South and Salt River which occur ~4.5km west and ~9.5km north west respectively. No wetlands are mapped within the areas of vegetation under application.

Minor non-perennial watercourses are utilised for drainage flow during significant rainfall events, and thus are generally considered unlikely to contain wetland dependant vegetation.

However, GIS mapping identifies riparian areas associated with a minor watercourse adjacent to the area under application on the Corrigin-Quairading Road. Therefore, the vegetation under application may be considered to be growing in, or in association with, an environment associated with a watercourse.

- Methodology GIS Databases:**
- Corrigin North 1.4m Orthomosaic - DOLA 01
 - Cunderdin 50cm Orthomosaic - DLI04
 - Geodata, Lakes - GA 28/06/02
 - Hydrography, linear - DOE 1/2/04

(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 majority of the area under application on the Corrigin-Quairading Road has hard alkaline yellow mottled soils and hard alkaline red soils, with less than 5% of the area under application comprising hard alkaline yellow soils underlain by acid lateritic clays below depths of from 2 to 4 ft (Northcote et al. 1960-68). Soils on Goldfields Road are comprised of hard and also sandy, yellow mottled soils containing ironstone gravels (Northcote et al. 1960-68). These soils generally have a high risk of water and wind erosion.

The majority of the applied area is associated with a low to nil risk of salinity with the exception of areas associated with drainage lines which have a high risk of salinity. Given the area under application is narrow and has a low density of trees over a length of road ~11.5km long, it is not considered likely that the proposed clearing would have a severe impact on salinity in the local area.

The main land degradation risk associated with the removal of vegetation on the identified soil type is considered to be water erosion; however the area under application is narrow, has a low density of vegetation over ~11.5km of road and occurs within a low rainfall area. It is therefore not considered likely that the proposed clearing would result in appreciable land degradation.

In addition, it is considered that the installation of appropriate roadside infrastructure (ie. table drains and culverts) in conjunction with the existing infrastructure would minimise any potential land degradation issues.

- Methodology References:**
- Northcote et al (1960-68)
- GIS Databases:**
- Corrigin North 1.4m Orthomosaic - DOLA 01
 - Cunderdin 50cm Orthomosaic - DLI04
 - Hydrography, linear - DOE 1/2/04
 - Soils, Statewide - DA-11/99
 - Salinity Risk LM 25m - DOLA 00

(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

There are five CALM-managed conservation reserves located within a 10km radius of the areas of vegetation under application, being Balkuling Nature Reserve (~3.5km west), Wamenusking Nature Reserve (~6km west), Pickaring West Nature Reserve (~10km north east) and two unnamed Nature Reserves (~5.5km and 8.2km north). Given the distance to the nearest conservation reserve, and the limited extent of the proposed clearing, it is considered unlikely that the conservation values of any conservation reserve would be impacted.

Whilst the areas under application are considered significant remnants of native vegetation, occurring in the Shire of Quairading which has only 3.6% of pre-European vegetation extent remaining (Shepherd et al. 2001), the proposed clearing will occur in the more degraded vegetation on the eastern side of the Corrigin-Quairading Road Reserve and the northern side of the Goldfields Road Reserve, thus preserving a wider vegetated remnant on the opposite sides of the road reserves that would be more valuable as wildlife corridors.

A large area of remnant vegetation (~69ha) located within Crown Reserve 23579 and Crown Reserve 11689 (zoned for Recreation) is adjacent to the area under application in the southern 650m of Corrigin-Quairading Road Reserve. The proposed clearing may indirectly impact this large remnant through the introduction of invasive weeds and dieback.

Given this, and the distance to the nearest CALM-managed conservation reserves, it is not considered likely that the environmental values of these reserves would be impacted.

Methodology References:

- Shepherd et al. (2001)
- GIS Databases:
 - CALM Managed Lands and Waters - CALM 1/07/05
 - Corrigin North 1.4m Orthomosaic - DOLA 01
 - Cunderdin 50cm Orthomosaic - DLI04

(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 closest major watercourse to the areas under application on Goldfields Road and Corrigin-Quairading Road is the Mortlock River South and Salt River which occur ~4.5km west and ~9.5km north west respectively. No wetlands are mapped within the areas of vegetation under application.

The applied area on Corrigin-Quairading Road intersects a minor non-perennial watercourse three times, and the applied area on Goldfields Road intersects two minor non-perennial watercourses.

The areas of vegetation under application are associated with a low rainfall area and with an associated groundwater salinity of between 7,000-35,000mg/L (brackish to extremely saline). A high risk of salinity is associated with watercourses within the local area.

Given the narrow areas of vegetation under application are limited to one side of the road reserves, occur in a low rainfall area and the considerable distances to major watercourses, it is considered unlikely the proposed clearing would cause deterioration in the quality of local surface or groundwater.

In addition, given the extent of clearing in the local area for agriculture, it is considered unlikely that the proposed clearing will contribute to a significant increase in nutrients, sediment and turbidity in the local waterways, and thus a deterioration in surface or underground water quality.

Methodology GIS Databases:

- Corrigin North 1.4m Orthomosaic - DOLA 01
- Cunderdin 50cm Orthomosaic - DLI04
- Groundwater Salinity, Statewide - DOW
- Hydrography, linear - DOE 1/2/04
- Rainfall, Mean Annual - BOM 30/09/01
- Salinity Risk LM 25m - DOLA 00

(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 closest major watercourses to the areas under application on Goldfields Road and Corrigin-Quairading Road are the Mortlock River South and Salt River which occur ~4.5km west and ~9.5km north west respectively.

Both Goldfields Road and Corrigin-Quairading Road occur within a low rainfall area and intersect minor non-perennial watercourses. Generally, minor non-perennial watercourses are utilised for drainage flow during significant rainfall events. The existing roads have adequate culverts/table drains to manage surface water flows and divert water during major rainfall events. Given the narrow areas under application within the road reserves, distributed over ~11.5km, it is not considered likely that the proposed clearing would have an impact on peak flood height or duration.

Methodology GIS Databases:
 - Hydrography, linear - DOE 1/2/04
 - Rainfall, Mean Annual - BOM 30/09/01

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

Comments

There are no Aboriginal Sites of Significance or Native Title Claims associated with the two areas of vegetation under application.

The Shire has advised that both roads are recognised as "Regionally Significant" in the Main Roads 2025 Network Strategy. Road widening is necessary to achieve the Main Roads recommended seal and gravel shoulder width to cater for heavy vehicles and reduce the risk of motor vehicle accidents (TRIM Ref: DOC39967).

The Shire has advised they transplant any grass trees that need to be removed from the areas under application (TRIM Ref: DOC33524).

There is no other RIWI Act Licence, Works Approval, or EP Act Licence at variance to this principle.

Methodology GIS Databases:
 - Aboriginal Sites of Significance - DIA
 - Native Title Claims - DLI

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Road construction or Removal maintenance	Mechanical	5		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 at variance to Principle (e), may be at variance to Principles (a), (c), (f), (h) and not likely to be at variance to the remaining Principles.

5. References

Burbidge, A. (2004). Threatened Fauna of Western Australia. Department of Conservation and Land Management, Western Australia.

Clearing Assessment Unit's biodiversity advice for land clearing application (BSC, 2006). Advice to Director General, Department of Environment and Conservation (DEC), Western Australia. (TRIM Ref: DOC12331)

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

DEC (2007) Letter to the Shire of Quairading Chief Executive Officer regarding Threatened Flora Survey of Goldfields Road, Shire of Quairading. Department of Environment and Conservation (DEC) (TRIM Ref. DOC34381).

DEC Conservation Officer (2007) Biodiversity advice for vegetation clearing application. Advice to the Assessing Officer, Department of Environment and Conservation (DEC), Western Australia (TRIM Ref. DOC39695).

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.

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
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)