Department of Environment and Conservation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1711/1

Permit type: Area Permit

1.2. Proponent details

Proponent's name: Town of Kwinana

1.3. Property details

Property: PROPOSED SULPHUR ROAD RESERVE (ORELIA 6167)
PROPOSED SULPHUR ROAD RESERVE (BERTRAM 6167)
PROPOSED MOOMBAKI AVENUE ROAD RESERVE (BERTRAM 6167)

Local Government Area: Town Of Kwinana

Colloquial name: Road reserves

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
2.46		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
Heddle Vegetation Complex: Bassendean Complex - Central and South - Vegetation ranges from woodland of *E. marginata - A. fraseriana - Banksia spp.* to low woodland of Melaleuca species, and sedgelands on the moister sites. Karrakatta Complex - Central and South - Predominantly open forest of *E. gomphocephala - E. marginata - E. calophylla* and woodland of *E. marginata - Banksia* species. Beard Vegetation Association: 6 - Medium woodland; tuart and jarrah 1001 - Medium very sparse woodland; jarrah, with low woodland; banksia and casuarina	The proposal includes the clearing of 2.46 hectares for the purpose of constructing roads to service the Perth to Mandurah train line and a new subdivision. The north-western applied area (extension to Sulphur Road) comprises vegetation in very good condition of *Jarrah/Banksia/Allocasuarina* woodland with understorey comprising *Jacksonia spp., Macrozamia riedlei, Xanthorrhoea preissii*, and *Adenanthos spp.* Vegetation in the north-eastern applied area (extension to Sulphur Road) comprises *Kunzea glabrescens, Banksia spp., Adenanthos spp.* and ranges in condition from very good in the areas surrounding the Peel Main Drain, to completely degraded. Vegetation in the southern portion (extension to Moombaki Avenue) comprises *Acacia spp., Allocasuarina fraseriana, Kunzea spp.* and weed species, and is considered to be in very good condition.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	Vegetation clearing description based on a site visit conducted by DEC officers on 20 February 2007. Vegetation ranges in condition from completely degraded to very good, however is considered to have an average condition of very good.

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 vegetation under application is considered to be in very good condition (Keighery, 1994) and is located within the boundaries of a Bush Forever site. The vegetation may include habitat suitable for Declared Rare Flora (DRF), that have been recorded in the local area.

Given that the vegetation under application is located within the boundaries of a Bush Forever site and may include habitat suitable for DRF, it is considered that it may represent an area of high biodiversity.

Methodology DEC site visit 20/2/07

(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 vegetation under application includes an understorey that has the potential to provide habitat for ground-dwelling fauna such as the Quenda, and includes *Banksia spp.* that may be utilised for feeding habitat by avian fauna such as Carnaby's Black Cockatoo. The areas under application are linear and situated within the boundaries of a Bush Forever site.

Although the vegetation under application may provide some habitat for native fauna, habitat of comparable quality exists immediately adjacent in nearby conservation areas.

Methodology DEC site visit 20/2/07

(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

Within the local area (5km radius of the application) there are eight known populations of Declared Rare Flora, with the closest being *Caladenia huegelii* located approximately 300m north and *Diuris micrantha* located approximately 480m south of the eastern area under application. These populations are all located within the same vegetation complex and soil association as the vegetation under application.

C. huegelii is a tuberous, perennial, herb that grows in grey or brown sand, clay loam. *D. micrantha* is a tuberous, perennial, herb, that grows in brown loamy clay in winter-wet swamps (Western Australia Herbarium 1994). The area under application contains both wetland and upland habitats and provides suitable habitat for both these species.

Biodiversity Coordination Section (2007) advised that given these DRF species are located nearby in the same vegetation complexes and soil association as the area under application, it is possible that they may occur on this site.

Methodology Biodiversity Coordination Section (2007)
Western Australia Herbarium (1994)
GIS Database:
Declared Rare and Priority Flora List - CALM 01/07/05

(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

There is one known occurrence of a Threatened Ecological Community (TEC) within the local area (5km radius of the application) located 3.5km to the northwest of the northern area under application.

The Bush Forever study identified the following TECs to be associated with the Bassendean Dune system and the Spearwood Dune system:

- *Banksia attenuata* woodlands over species rich dense shrublands (20a)
- Eastern *Banksia attenuata* and/or *Eucalyptus marginata* woodlands (20b)
- Eastern shrublands and woodlands (20c)
- *Melaleuca huegelii - Melaleuca acerosa* shrublands on Limestone ridges (26a) (Government of Western Australia 2000).

The study also identified the Floristic Community Types (FCT) present within Bush Forever site 272, including the areas under application, to be 5, 11 and 28, which are not identified as TECs (Government of Western Australia 2000).

Given that the areas under application are located within a Bush Forever site with inferred Floristic Community Types that are not listed as TECs, it is not considered likely that the vegetation under application comprises, or is necessary for the maintenance of, a TEC.

Methodology Government of Western Australia (2000)
GIS Database:
Bushforever - MFP 07/01
Threatened Ecological Communities - CALM 12/4/05

(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 likely to be at variance to this Principle

Heddle et al. (1980) defines the vegetation under application within the northwestern area under application as 'Bassendean Complex -Central and South' of which there is 27.0% of pre-European extent remaining and which is considered to be 'vulnerable'. The remaining vegetation under application is part of 'Karrakatta Complex - Central and South'of which there is 29.5% of pre-European vegetation remaining and is also considered to be of 'vulnerable' (Department of Natural Resources and Environment 2002; Shepherd et al. 2001).

The vegetation under application is also classified as vegetation association 998, of which there is 35.9% of pre-European extent remaining and which is considered to be 'depleted' (Shepherd et al. 2001; Department of Natural Resources and Environment).

The identified vegetation complexes have less than the recommended 30% minimum of Pre-European extent remaining, however the applied area is considered to be within a constrained area. The EPA (2003) recognises the Perth Metropolitan Region as a 'constrained area', providing for the variation of the minimum % of vegetation complexes remaining to 10% of the pre-European extent. Therefore the proposal is not considered likely to be at variance to this Principle.

	Pre-European (ha)	Current (ha)	Remaining %	Conservation status***	% in reserves
Swan Coastal Plain	1,529,235	657,450	43.0*	Depleted	
Heddle vegetation complex					
Bassendean Complex –Central and south	87,477	23,624	27.0**		0.7
Karrakatta Complex –Central and south	49,912	14,729	29.5**		2.5
Beard vegetation associations					
6	56,345	15,013	26.6*		21.1
1001	57,412	15,241	26.5		4.5

* (Shepherd et al. 2001)
**(EPA, 2003)
***(Department of Natural Resources and Environment 2002)

Methodology Heddle et al. (1980)
Shepherd et al. (2001)
Department of Natural Resource and Environment (2002)
EPA (2003)
GIS Databases:
Heddle Vegetation Complexes - DEP 21/06/95
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 at variance to this Principle

There is a Resource Enhancement Wetland located 150m to the north of the southern area under application and a Conservation Category Wetland located 370m to the northeast of the northern applied area. The Peel Main Drain dissects the eastern area under application and is located 100m north of the southern applied area.

Within the eastern area under application *Eucalyptus rudis* was observed growing adjacent to the Peel Main Drain. This species is generally found in wetter areas and is therefore considered to grow in association with watercourses or wetlands.

Vegetation within the southern and eastern applied areas also includes *Kunzea glabrescens*, which is found in sandy soils at the 'edges of swamps, lakes, rivers, moist depressions' (Western Australian Herbarium 1995) and therefore may be considered to grow in association with watercourses and wetlands.

Given that *E. rudis* and *K. glabrescens* were observed within the eastern and southern areas under application,

it is considered that a portion of the vegetation under application is growing in, or in association with a watercourse or wetland.

As part of the approved Bertram Structure Plan the Town of Kwinana will be protecting and revegetating the nearby Resource Enhancement Wetland.

Methodology Western Australian Herbarium (1995)
GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
Hydrography, linear (hierarchy) - 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**
Soils within the northern area under application are part of the Spearwood S4a Phase, which comprise deep, pale and sometimes bleached, sands with yellow-brown subsoils. Soils within the southern and eastern areas under application are part of the Bassendean B6 and B1 phases, which comprise imperfectly drained deep or very deep grey siliceous sands, sometimes with a pale yellow B horizon or a weak iron-organic hardpan (State of Western Australia 2005). These soils are all associated with a high risk of phosphorus export, Acid Sulphate Soils and wind erosion (State of Western Australia 2005). There is also a moderate to high risk of salinity occurring within southern and eastern applied areas.

The proposed clearing is not considered likely to disturb Acid Sulphate Soils, which are at a depth of approximately 3m. In addition the proposed clearing is limited to linear areas that amount to 2.46 hectares within 95 hectares and it is not considered likely that it would result in salinity or increased phosphorus export.

The main land degradation risk associated with the sandy soil types present on site is considered to be wind erosion, however given that the proposal clearing is for road construction and the road surface will be sealed it is not considered likely that it would result in wind erosion causing appreciable land degradation.

Methodology State of Western Australia (2005)
GIS Databases:
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 is at variance to this Principle**
The area under application is located within the boundaries of Bush Forever site 272, and Leda Nature Reserve is located 4km to the southwest. The proposal would remove vegetation from within the boundaries of Bush Forever Site 272 thereby impacting directly on the environmental values of this conservation reserve through fragmentation.

The proposed clearing may also have indirect impacts on the Bush Forever site through the spread or introduction of dieback or weed species by machinery or the importation of fill required for road construction. There are serious consequences associated with the spread of such diseases and exotic species into an area reserved for conservation, including the potential local extinction of species.

Given that the areas under application are located within the boundaries of a Bush Forever site it is considered that the proposed clearing will have direct and may have indirect impacts on its environmental values. The proposal therefore is considered to be at variance to this Principle.

As a result of negotiations with Bush Forever, the Town of Kwinana has accepted vesting through a management order of the portion of the portion of Bush Forever site 272 occurring north of the proposed Moombaki Ave extension and south of the Resource Enhancement Wetland. The Town of Kwinana will also be protecting and revegetating the Resource Enhancement Wetland. In addition, conditions relating to dieback and weed prevention, weed management and fencing will be imposed in order to mitigate the impact on the Bush Forever site.

Methodology GIS Databases:
Bushforever - MFP 07/01
CALM Managed Lands and Waters - CALM 1/07/05

(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 may be at variance to this Principle**
There is a Resource Enhancement Wetland located 150m to the north of the southern area under application and a Conservation Category Wetland located 370m from the northern applied area. The Peel Main Drain dissects the eastern area under application and is also located 100m from the southern applied area.

There is a high risk of Acid Sulphate Soils, however these are not likely to be disturbed by the proposed clearing. There is also a moderate to high risk of salinity within the areas under application, however given that the proposed clearing is limited to a linear area of 2.46 hectares within a Bush Forever site of approximately 95 hectares it is not considered likely that it would contribute to salinity in the area.

The proposed clearing will be conducted on steep slopes adjacent to the Peel Main Drain and run off may cause water erosion resulting in sedimentation of the surface water. Given this, it is considered that the proposal may be at variance to this Principle. However, the risk of surface water quality deterioration can be minimised through stormwater and drainage components within new road construction.

Methodology State of Western Australia (2005)
GIS Databases:
Acid Sulfate Soil Risk Map, Swan Coastal Plain - DEC
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
Hydrography, linear (hierarchy) - DOW
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**
There is a Resource Enhancement Wetland located 150m to the north of the southern area under application and a Conservation Category Wetland located 370m to the northeast of the northern applied area. The area under application is located on sandy soils that have a high infiltration rate and therefore it is not considered likely that the proposal would have an impact on peak flood height or duration.

Methodology State of Western Australia (2005)
GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain

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

Comments

The area under application is located within a Native Title Claim area; however it is contained within existing road reserves that are vested in the Town of Kwinana. Therefore the clearing as proposed should not fall under the future acts process under the Native Title Act 1993.

Bush Forever supports the proposed extension of Sulphur Road as it is primarily going through cleared areas. The original proposed extension to Moombaki Ave was not supported as it would fragment the Bush Forever site. A revised proposal was supported subject to the Town of Kwinana agreeing to take vesting through a Management Order of the portion of Bush Forever site 272 occurring west of Price Parkway between the Resource Enhancement Wetland and Moombaki Avenue (Bush Forever 2007).

The proposed extension to Sulphur Road will be constructed through the Peel Main Drain, which will likely result in temporary sedimentation and deterioration in quality of the surface water. In addition, if the fill associated with the road is not adequately managed, continuing sedimentation of surface water may occur with the flow of water.

Methodology Bush Forever (2007)
GIS Database: Native Title Claims - DLI 7/11/05

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Road construction & maintenance	Mechanical Removal	2.46	The assessable criteria have been addressed, and the proposed clearing is at variance to Principles f, h and i, and may be at variance to Principles a and c. Principle (a): The vegetation under application is in very good condition, is located within the boundary of a Bush Forever site and may include rare flora, and therefore may comprise high biodiversity. Principle (c): The Biodiversity Coordination Section has advised that the vegetation under application has the potential to include two DRF species that are found nearby given the condition of the vegetation and the suitable habitat that may be present. Principle (f): Some wetland vegetation was observed to be included in the eastern and southern areas under application. As part of the approved Bertram Structure Plan the Town of Kwinana will be protecting and revegetating the nearby Resource Enhancement Wetland and this should offset the loss of wetland dependent vegetation. Principle (h): The areas under application are located within the boundary of Bush Forever site 272 and

the proposed clearing will have a direct impact, and may have an indirect impact, on its environmental values. To mitigate the impact on the Bush Forever site conditions relating to weed and dieback prevention, weed management and fencing will be considered.

Principle (i): The area under application dissects the Peel Main Drain and the proposed clearing may cause water erosion on the steep slopes resulting in sedimentation and deterioration in quality of the surface water. Conditions relating to stormwater and drainage management will be considered to minimise the risk of surface water quality deterioration.

5. References

Bush Forever (2007) Direct interest submission. TRIM ref. DOC17431.

Clearing Assessment Unit's biodiversity advice for land clearing application. Advice to Director General, Department of Environment and Conservation (DEC), Western Australia. TRIM ref DOC18961.

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 (2006) Guidance for the Assessment of Environmental Factors -level of assessment of proposals affecting natural areas within the System 6 region and Swan Coastal Plain portion of the System 1 Region. Report by the EPA under the Environmental Protection Act 1986. No 10 WA.

Government of Western Australia (2000) Bush Forever Volumes 1 and 2. Western Australian Planning Commission, Perth WA.

Heddle, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

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.

Site Visit 20/2/2007, Department of Environment and Conservation (DEC), Western Australia. TRIM ref DOC19310.

Western Australian Herbarium (1994) Department of Environment and Conservation. Text used with permission (http://florabase.calm.wa.gov.au/help/copyright). Accessed on Tuesday, 10 April 2007.

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)