



1. Application details

1.1. Permit application details

Permit application No.: 1578/1
 Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Town of Kwinana

1.3. Property details

Property:

- CASUARINA ROAD RESERVE (CASUARINA 6167)
- LAVERY DRIVE ROAD RESERVE (CASUARINA 6167)
- MAGENUP DRIVE ROAD RESERVE (WANDI 6167)
- ROBINSON ROAD RESERVE (WANDI 6167)
- MORTIMER ROAD RESERVE (WELLARD 6170)
- NICOLAS DRIVE ROAD RESERVE (CASUARINA 6167)
- HOLMES CLOSE ROAD RESERVE (WANDI 6167)
- FRECKLETON COURT ROAD RESERVE (WANDI 6167)
- LESLIE ROAD RESERVE (WANDI 6167)
- DE HAER ROAD RESERVE (WANDI 6167)
- BRITON PLACE ROAD RESERVE (WANDI 6167)
- ROWLEY ROAD RESERVE (WANDI 6167)
- BROOKS PLACE ROAD RESERVE (WANDI 6167)
- WANDI DRIVE ROAD RESERVE (WANDI 6167)
- THE HORSESHOE ROAD RESERVE (WANDI 6167)
- BLACKBOY GROVE ROAD RESERVE (WANDI 6167)
- LYON ROAD RESERVE (WANDI 6167)
- FIGG RISE AND DARLING CHASE ROAD RESERVE (WANDI 6167)
- BODEMAN ROAD RESERVE (WANDI 6167)
- ANKETELL ROAD RESERVE (HOPE VALLEY 6165)
- MCLAUGHLAN ROAD RESERVE (POSTANS 6167)
- MANDOGALUP ROAD RESERVE (MANDOGALUP 6167)
- HOFFMAN ROAD RESERVE (MANDOGALUP 6167)
- NORKETT ROAD RESERVE (MANDOGALUP 6167)
- LEDA BOULEVARD ROAD RESERVE (WELLARD 6170)
- JOINT STREET ROAD RESERVE (WELLARD 6170)
- WELLARD ROAD RESERVE (WELLARD 6170)
- WOOLCOOT ROAD AND NELLA PLACE ROAD RESERVE (WELLARD 6170)

Local Government Area: Town of Kwinana
 Colloquial name: Town of Kwinana Road Reserves

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
2.2		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
Bassendean Complex Central and South - Vegetation ranges from woodland of <i>E. marginata</i> - <i>C. fraseriana</i> - <i>Banksia</i> spp. To low woodland of Melaleuca species and sedgeland which occupy the moister sites.	The vegetation under application comprises predominantly <i>Kunzea glabrescens</i> in the lower lying areas, and <i>Banksia</i> spp., <i>Adenanthos cygnorum</i> , <i>Acacia</i> spp. or <i>Allocasuarina fraseriana</i> in the upland areas. Vegetation is mainly in degraded to completely degraded condition, with the exception of the vegetation under application on Casuarina Road, and is contained on the road side within existing road reserves.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	Vegetation clearing description based on a site visit conducted by a DEC officer on 16 February 2007.
Cottesloe Complex Central and South - Mosaic of woodland of <i>E.</i>			

gomphocephala and open forest of *E. gomphocephala* - *E. marginata* - *E. calophylla*; closed heath on the Limestone outcrops.

Karrakatta Complex Central and South - Predominantly open forest of *E. gomphocephala* - *E. marginata* - *E. calophylla* and woodland of *E. marginata* - *Banksia* species.

Herdsmen Complex - Sedgeland and fringing woodland of *E. rudis* - *Melaleuca* species.

Beard Vegetation Associations:

6 - Medium woodland; tuart and jarrah

51 - Sedgeland; reed swamps, occasionally with heath

998 - Medium woodland; tuart

1001 - Medium very sparse woodland; jarrah, with low woodland; banksia and casuarina

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

The vegetation under application is located within existing road reserves and is mainly in degraded to completely degraded condition with no understorey present and low species diversity. It is therefore not considered likely that the vegetation comprises a high level of biodiversity.

Methodology DEC site visit 16/2/07

(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 is 2.2 hectares over 28 km of road reserves and is mainly in degraded to completely degraded condition. There is a lack of understorey within the areas under application with the exception of Casuarina Road, which would limit the habitat potential for ground dwelling fauna species such as Quenda. The *Banksia spp.* under application may provide some feeding habitat for bird species such as Carnaby's Black Cockatoo, however this is not considered likely to be significant.

Given the lack of understorey and that the 2.2 hectares under application is distributed over a large area, it is not considered likely that the vegetation under application comprises significant habitat for indigenous fauna, especially when compared to the numerous conservation reserves located within the local area.

Methodology DEC site visit 16/2/07

(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

There are 12 known occurrences of the Declared Rare Flora (DRF) *Drakaea elastica*, *Drakaea micrantha*, *Diuris purdiei* and *Caladenia huegelii*, within the local area (5km radius of all the areas under application), the closest of which include the following occurrences of *C. huegelii*:

- 220m south of Rowley Road,
- 140m north of Blackboy Grove,
- 450m northeast of Anketell Road.

The known DRF occurrences are all located on the same or similar soil types to the areas under application. There are also 15 known occurrences of Priority flora within the local area.

The majority of the vegetation under application is in degraded to completely degraded condition with no understorey present, and it is not considered likely that it includes any DRF species as the clearing is restricted to individual trees. However, a portion of the vegetation on Casuarina Road is in good condition within some understorey present, and is located within the same vegetation complex and soil association as the DRF

occurrences. It is therefore considered that this vegetation may include, or be necessary for the maintenance of, rare flora.

A condition has been placed on the permit requiring that appropriately timed surveys be conducted within Casuarina Road reserve prior to clearing.

Methodology DEC site visit 16/2/07
State of Western Australia (2005)
GIS Databases:
Declared Rare and Priority Flora List - CALM 01/07/05
Hedde Vegetation Complexes - DEP 21/06/95

(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

Within a 5km radius of all the areas under application there are 9 known occurrences of Threatened Ecological Communities (TEC) the closest of which are 40m to the north of Anketell Road, 2.8km to the west of Leda Boulevard, and 2.4km to the southwest of Nella Place. A portion of the area under application on Anketell Road is located within the buffer to a TEC, which is located 40m to the north of the road.

The Bush Forever study identified the following TEC to be associated with the Bassendean Dunes:

- *Banksia attenuata* woodlands over species rich shrublands (20a)
- Eastern *Banksia attenuata* and/or *Eucalyptus marginata* woodlands (20b)
- Eastern shrublands and woodlands (20c) (Government of Western Australia 2000).

In addition the TEC identified to be associated with the Spearwood Dunes is *Melaleuca huegelii* - *Melaleuca acerosa* shrublands on Limestone ridges (26a) (Government of Western Australia 2000).

The majority of vegetation under application is in degraded to completely degraded condition, with no understorey present; and it is therefore not considered likely to be representative of a TEC. The vegetation under application located on Anketell Road within the buffer to the TEC is limited to individual *Acacia spp.* and *Banksia spp.* on the roadside, and it is not considered likely that the removal of this vegetation would impact the TEC.

The vegetation under application located on Casuarina Road is in good condition, comprises remnants of *Banksia* woodland and is located within the Bassendean Dune System. It is therefore considered that this vegetation may comprise a TEC.

While the vegetation under application located on Casuarina Road is in good condition, it is a total area of 0.06 ha and therefore is not likely to comprise a viable TEC.

Methodology DEC Site visit 16/2/07
Government of Western Australia (2000)
State of Western Australia (2005)
GIS Database: 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

The majority of the vegetation under application is identified by Hedde et al. (1980) as Bassendean Complex Central and South, of which there is 27.0% of pre-European extent remaining, with 0.7% in secure tenure (Shepherd et al. 2001).

The applied vegetation is also identified as Cottesloe Complex Central and South and Karrakatta Complex Central and South, of which there is 41.1% and 29.5% respectively of pre-European extent remaining, with 8.8% and 2.5% respectively in secure tenure (Shepherd et al. 2001).

In addition, the vegetation under application within Hoffman Road reserve is identified as Herdsman Complex, of which there is 34.6% of pre-European extent remaining, with 11.5% in secure tenure (Shepherd et al. 2001).

The vegetation under application is mostly degraded to completely degraded, with a portion of the vegetation on Casuarina Road being in good condition and being part of Bassendean Complex Central and South.

The areas under application occur within the Bush Forever study area and are therefore considered as constrained in recognition of past land use planning decisions. Retention objectives in constrained areas are varied to "at least 10 per cent".

	Pre-European (ha)	Current (ha)	Remaining %	Conservation status***	% in
reserves					
Swan Coastal Plain	1,529,235	657,450	43.0*	Depleted	
Hedde vegetation complexes			**		
Bassendean Complex C&S	87,477	23,624	27.0	Vulnerable	0.7
Cottesloe Complex C&S	44,995	18,474	41.1	Depleted	8.8
Herdsmen Complex	8,309	2,875	34.6	Depleted	11.5
Karrakatta Complex C&S	49,912	14,729	29.5	Vulnerable	2.5
Beard vegetation associations					
6	79,001	18,398	23.3*	Vulnerable	14.8
51	70,336	36,354	51.7	Least concern	
998	51,094	18,320	35.9	Depleted	32.9
1001	68,475	18,907	27.6	Vulnerable	4.2

* (Shepherd et al. 2001)

** (EPA, 2003)

*** (Department of Natural Resources and Environment 2002)

Methodology DEC site visit 16/2/07
 Department of Natural Resources and Environment (2002)
 EPA (2000)
 Hedde et al. (1980)
 JANIS (1997)
 Shepherd et al. (2001)

(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

There are numerous wetlands within the local area (5km radius of the applied areas), with portions of the area under application being located within mapped Conservation Category Wetlands (CCW), Resource Enhancement Category Wetlands and Multiple Use Wetlands. The nearest watercourse is the Peel Main Drain, located 50m from Mandogalup Road.

The vegetation under application in the lower lying areas comprises mainly *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.

A portion of the vegetation under application is located within mapped wetlands and includes vegetation that grows in association with wetlands and watercourses. The majority of the vegetation under application that is located within the mapped wetlands is elevated above the level of the wetlands and is located on the roadside within the road reserve. This vegetation is not considered to be growing in the wetland but may be growing in association.

In addition, a small portion of the vegetation under application is located within mapped wetlands at the natural ground level and it is considered that this vegetation may be growing in the wetland. It is therefore considered that a portion of the vegetation under application may be growing in, or in association with, a watercourse or wetland.

An offset condition will be imposed on the permit requiring revegetation at a rate of greater than 1:1 of the vegetation growing in association with a wetland.

Methodology DEC site visit 16/2/07
 Western Australia Herbarium (1995)
 GIS Databases:
 Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
 Hydrography, linear (hierarchy)

(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 is located on the Bassendean Dune System with soils comprising a mixture of well drained grey sands and poorly drained sands. These soils have a high risk of acid sulphate soils, wind erosion and phosphorus export, with some areas being associated with a high risk of waterlogging (State of Western Australia 2005).

A portion of the area under application is also located on the Spearwood Dune System with soils comprising deep siliceous yellow-brown sands or pale sands, which have a high risk of phosphorus export (State of

Western Australia 2005).

The areas under application have a low risk of salinity, with the exception of some portions that are associated with drainage lines and wetlands. In addition, due to the high infiltration rates of the sandy soils on site, it is considered that there is a low risk of water erosion associated with the removal of the vegetation under application.

Given the soils on site, and that the areas under application are linear and spread over a large area, it is considered that the proposal is not likely to cause appreciable land degradation such as wind and water erosion, waterlogging and acid sulphate soils.

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 may be at variance to this Principle

There are a number of conservation reserves in the local area (5km radius of the application) including Wandri Nature Reserve located approximately 280m south of Magenup Drive, Leda Nature Reserve located approximately 210m south of the applied area on Wellard Road and Banksia Nature Reserve located directly adjacent to Casuarina Road. There are also numerous Bush Forever sites in the local area.

The areas of vegetation under application are thin and linear in nature, predominantly in a completely degraded to degraded condition, although a portion of Casuarina Road is in good condition and is adjacent to Banksia Nature Reserve.

Taking into account the extent of vegetation within the road reserves and the distribution of conservation reserves within the local area, the vegetation under application is not considered likely to contribute to ecological linkages, or provide habitat not well represented within conservation reserves within the Kwinana locality.

The vegetation under application on Casuarina Road is directly adjacent to Banksia Nature Reserve and may provide a buffer to the actual reserve and limit the effects of weeds. Weed species or dieback may be spread or introduced into areas adjacent to the road reserves by machinery used for vegetation clearing or 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 there is the potential for the proposed clearing to indirectly impact the environmental values of the conservation reserve adjacent to the applied area on Casuarina Road, the proposal may be at variance to this Principle. To prevent the adjacent conservation reserve from being impacted by the clearing, conditions will be placed on the permit to ensure wash down of vehicles and to ensure construction material is weed and dieback free.

Methodology DEC site visit 16/2/07
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 is not likely to be at variance to this Principle

There is a low to nil salinity risk over the majority of the applied area, with the exception of some sections of road reserve that are associated with drainage lines and wetlands. The nearest watercourse is the Peel Main Drain, located 50m from Mandogalup Road, and 10 of the areas under application have portions that dissect wetlands.

A large portion of the applied area is located within a Priority 2 Public Drinking Water Source Area (PDWSA). Priority 2 PDWSAs are managed to ensure that there is no increased risk of water source contamination/pollution (Department of Water 2004). Given that the proposed clearing is for road maintenance and is limited to thin linear sections on the roadside, it is not considered likely to cause deterioration in groundwater quality.

In addition, given the high filtration rates of the sandy soils identified within the areas under application, the proposed clearing is not likely to cause water erosion that would result in deterioration of surface water quality in the adjacent wetlands. The proposal is therefore not likely to be at variance to this Principle.

Methodology Department of Water (2004)
GIS Databases:

Acid Sulphate Soil Risk Map, SCP - DOE 04/11/04
 Groundwater Salinity, Statewide - 22/02/00
 Hydrography, linear (hierarchy)
 Public Drinking Water Source Areas (PDWSAs) - DOE 07/02/06

(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

Flooding impacts are not likely to occur as a result of the proposed clearing due to the low density of the applied vegetation in sections over a 28km total length of road. The proposed clearing is contained within existing road reserves at an elevation of between 20m and 50m. Watercourses in the area include the Peel Main Drain and numerous wetlands.

Given that the area under application is distributed over a long, thin area, it is not considered likely that the proposed clearing would have an impact on peak flood height or duration.

Methodology DEC site visit 16/2/07
 GIS Databases:
 Hydrography, linear (hierarchy) - DOW
 Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

The areas under application are located within a Native Title Claim area. The applied area 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.

Methodology GIS Database: Native Title Claims - DLI 7/11/05

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Road construction maintenance	Mechanical 2.2 cRemoval		The assessable criteria have been addressed, and the proposed clearing may be at variance to Principles c, f, and h. Conditions have been imposed to manage these issues.

5. References

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.

Department of Water (2004) Water Quality Protection Note - Land Use Compatibility in Public Drinking Water Source Areas.

EPA (2003) 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.

Hedde, 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.

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

Keighery, 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.

State of Western Australia (2005) Agmaps Land Manager CD Rom.

Western Australian Herbarium (1995) Department of Environment and Conservation. Text used with permission (<http://florabase.calm.wa.gov.au/help/copyright>). Accessed on Friday, 16 March 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)

