



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2497/1  
 Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: City of Wanneroo

### 1.3. Property details

Property: LOT 3001 ON PLAN 42944 (House No. 100 KINGSWAY MADELEY 6065)  
 ROAD RESERVE ( DARCH 6065)  
 Local Government Area: City Of Wanneroo  
 Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
0.75		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
Beard: 6 - Medium Woodland; tuart & jarrah.	The proposal is to clear up to 0.75 ha of native vegetation along Kingsway Road and Skeit Road in the City of Wanneroo, for the proposed extension of Skeit Road.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The vegetation and clearing description is based on information obtained during the site inspection (2008).
Heddle: Karrakatta Complex - Central and South - predominantly open forest of <i>E. gomphocephala</i> - <i>E. marginata</i> - <i>E. calophylla</i> and woodland of <i>E. marginata</i> - Banksia species.	The native vegetation under application is an ?L? shaped remnant in Crown Reserve 28058, on the corner of Kingsway Road and Skeit Road extending ~170m x 20m west along Kingsway Road and ~320m x 20m south along Skeit Road.		
	The vegetation under application is in very good condition and best described as a Low Open Woodland of <i>Banksia attenuata</i> , <i>Banksia menziesii</i> , <i>Eucalyptus marginata</i> with the occasional <i>Allocasuarina fraseriana</i> over <i>Xanthorrhoea</i> and a dense, diverse shrub layer.		
	Weed invasion occurs along the edges of the remnant. There is a strip of large ficus trees along the road on northern and eastern edge of the area under application.		

### 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 in good to very good condition and best described as a Low Open Woodland of *Banksia attenuata*, *Banksia menziesii*, *Eucalyptus marginata* over a diverse dense shrub layer (DEC, 2008).

An Spring flora survey undertaken on in 2007 did not identify any rare or priority flora within the survey areas (Coffey Environments Pty Ltd, 2007).

The area under application is an isolated, thin strip of fragmented bushland surrounded by housing developments and is not considered likely to provide an ecological linkage to other remnants in the local area however; comprises vegetation in very good condition including *Lomandra* spp. which is a host plant used to sustain populations of the endangered Graceful Sunmoth. It is considered the vegetation under application may provide significant habitat for the endangered Graceful Sunmoth and other ground dwelling fauna.

It is considered that the vegetation may also be associated with the threatened ecological community (TEC) 'Floristic Community Type (FCT) 20a - *Banksia attenuata* woodland over species rich dense shrublands' which is listed as Endangered in Western Australia. Species and Communities Branch (2008) advise further plot based surveys, conducted at least twice during Spring, would need to be established to confirm the floristic community type and the presence/absence of FCT 20a.

Given that part of the vegetation to be cleared is considered to be in very good condition, may comprise habitat for indigenous fauna and may represent or impact on a TEC, the area under application may represent an area of high biological diversity and is therefore may be at variance to this Principle.

**Methodology**

References:

- Coffey Environments Pty Ltd (2007)
- DEC (2008)
- DEC, Species & Communities (2008)

GIS databases:

- SAC Bio datasets (13/06/2008)
- Swan Coastal Plain North 20cm Orthomosaic - DLI06

#### (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 may be at variance to this Principle**

There are 6 significant fauna have been recorded in the local area (~5km radius). The Endangered Graceful Sunmoth is the closest know recorded species of significant fauna and has recorded in Bush Forever Sites 328 and 202, ~800m south and ~2.4km south respectively. Populations of the Graceful Sunmoth have also been identified ~1km south east of the applied area in the Landsdale bushland (Williams, M. 2008). The Sunmoth is considered to be threatened by land clearing for urban development (Burbidge, A., 2004) and is only currently know from a limited number of sites between Mandurah and Neerabup (Williams, M. 2008). The majority of populations are in the northern suburbs around Warwick, Marangaroo, Koondoola, Alexander Heights, Landsdale, and Whiteman Park.

All of the populations in DEC studies have occurred in remnants greater 8 ha. Populations are typically small, and densities of adults are often very low, which makes detection of populations difficult. Populations are often localised within a bushland, occurring where the host plants are in the optimal life stage for sustaining larvae.

The two major habitat requirements for the Graceful Sunmoth are:

- A sufficient number and density of host plants to sustain a population. The Sunmoth requires *Lomandra* as host plants, in particular *Lomandra hermaphrodita*, although other *Lomandra* spp. may be used.
- Habitat in suitable condition, specifically a substantial proportion of vegetation in 'very good' or better condition. (Williams, M 2008).

The majority of the vegetation under application is in very good condition and comprises *Lomandra hermaphrodita* and *Lomandra nigricans* (Coffey Environments Pty Ltd, 2007). Given the close proximity of known populations and that the vegetation under application is in very good condition comprising *Lomandra* spp., it is considered the area under application may be suitable habitat for a population of the Graceful Sunmoth.

**Methodology**

References:

- Burbidge, A (2004)
- Coffey Environments Pty Ltd (2007)

- DEC (2008A)
- DEC (2008)

GIS databases:

- Bushforever - MFP 07/01
- SAC Bio datasets (13/06/2008)
- Swan Coastal Plain North 20cm Orthomosaic - DLI06

**(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 2 known records of 2 rare flora species within the local area. Both of these rare species, *Caladenia huegelii* and *Pityrodia axillaris* are known to occur ~4km north east of the area under application.

*Caladenia huegelii* is generally found in grey or brown sand, clay loam; and *Pityrodia axillaris* grows in sandy soils (Western Australia Herbarium, 1998). These species occur in different soils or vegetation types to the vegetation under application and it is therefore not considered likely that the cleared area provides suitable habitat for these species.

In addition, there are 15 known records of 4 priority flora species within the local area. Of these species it is considered that the priority 2 species *Acacia benthamii* and the priority 4 species *Jacksonia sericea*, may occur within the area under application as they are known to occur in the same vegetation and soil types.

A flora survey undertaken on the 25th of September 2007 did not identify any rare or priority flora within the survey areas (Coffey Environments Pty Ltd, 2007). Given the appropriately timed flora survey did not identify any rare or priority flora within the area under application, the proposed clearing is not considered likely to be at variance to this principle.

**Methodology**

References:

- Brown et al. (1998)
- Coffey Environments Pty Ltd (2007)
- Western Australia Herbarium (1998)

GIS databases:

- SAC Bio datasets (13/06/2008)
- Soils, Statewide

**(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 may be at variance to this Principle**

There are 35 known occurrences of the endangered threatened ecological community (TEC) floristic community type (FCT) 20a - '*Banksia attenuata* woodland over species rich dense shrublands' in the local area. The closest record of this TEC is ~800m south in Bush Forever site 328. This FCT is known to occur in the same vegetation and soil types associated with the area under application.

The vegetation under application is in very good condition and best described as a Low Open Woodland of *Banksia attenuata*, *Banksia menziesii*, *Eucalyptus marginata* over *Xanthorrhoea* and a dense, diverse shrub layer (DEC, 2008).

Coffey Environments (2007) surveyed one quadrat within the area under application in Spring 2007. A review of the quadrat data, based on a presence/absence comparison of species recorded in the survey against Gibson et al. (1994), indicated that the vegetation under application was most likely aligned with FCT 21a and FCT 28.

Species and Communities Branch (2008a) have advised that the results from the 2007 survey were inconclusive and without a second scoring of plots and statistical analysis against the full species lists from Gibson et al. (1994) an accurate FCT could not be assigned.

Furthermore it was considered likely that the vegetation in Bush Forever Site 328 and vegetation on the corner of Skeit and Kingsway Roads and would once have been continuous pieces of bushland, therefore the area under application may be FCT 20a.

Given the vegetation under application may comprise a TEC it is considered that the clearing proposed may be at variance to this principle. Species and Communities Branch (2008a & 2008b) advise further plot based surveys would need to be established to confirm the floristic community type and determine the presence/absence of FCT 20a.

- Methodology**
- References:
- Coffey Environments Pty Ltd (2007)
  - DEC (2008)
  - DEC, Species & Communities (2008a)
  - DEC, Species & Communities (2008b)
- GIS Databases:
- Heddle Vegetation Complexes
  - SAC Bio datasets (13/06/2008)
  - Soils, Statewide

**(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 Heddle vegetation complex identified in the area under application is the Karrakatta Complex-Central and South which has a pre-European representation level of 29.5% remaining (EPA, 2006). Beard Vegetation Association 6 is identified within the applied area with a current representation level of 26.6% (Shepherd, 2006). In addition, there is ~28.9% of native vegetation remaining in the local area.

The State Government is committed to the National Objectives Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-1750 (Commonwealth of Australia, 2001).

Beard Vegetation Association 6 has a remaining extent of 26.6% and the Heddle Complex has 29.5% remaining. Although these vegetation associations and complexes have less than the recommended 30% minimum of Pre-European extent remaining, the applied area is considered to be within a constrained area. The EPA (2006) recognises the Perth Metropolitan Region as a 'constrained area', providing for the reduction of vegetation complexes to a minimum of 10% of the Pre-European extent.

Given the extent of vegetation remaining in the local area (~28.9%) and the current representation levels of the Heddle complex and Beard vegetation associations, it is not considered likely that the vegetation under application is significant as a remnant in an area that has been extensively cleared.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	% In reserves DEC Managed Land
IBRA Bioregions*				
Swan Coastal Plain <sup>^</sup>	1,501,456	571,758	38.1	32.7
LGA**				
City of Wanneroo	68,070	34,057	50.0	N/A
Vegetation in the Local Area (~5km radius)	~7,854	~2,270	~28.9	
Heddle Vegetation Complex***				
Karrakatta Complex-Central and South	49,912	14,729	29.5	2.5
Beard Vegetation Type 6*	56,345	15,013	26.6	33.6

\* (Shepherd 2006)

\*\* (Del Marco et al. 2004)

\*\*\* (EPA 2006)

<sup>^</sup> Area within Intensive Land Use Zone

- Methodology**
- References:
- EPA (2006)
  - Commonwealth of Australia (2001)
  - Del Marco et al (2004)
  - Heddle et al (1980)
  - Shepherd (2006)

- GIS Databases:
- Heddle Vegetation Complexes

- Interim Biogeographic Regionalisation of Australia
- SAC Bio datasets (13/06/2008)
- NLWRA, Current Extent of Native Vegetation

**(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 no watercourses within the area under application (DEC, 2008). There are 6 lakes within the local area. The closest being Lake Goolelal, a Conservation Category Wetland ~1.6km west of the applied area.

The vegetation under application consists of Low Open Woodland of *Banksia attenuata*, *Banksia menziesii*, *Eucalyptus marginata* (DEC, 2008). The flora survey (2007) did not identify any wetland dependant vegetation and given the distance to the nearest watercourse or wetland, the vegetation under application is not considered likely to be associated with a watercourse or wetland.

**Methodology**

References:

- Coffey Environments Pty Ltd (2007)
- DEC (2008)

GIS databases:

- EPP, Lakes - DEP 1/12/92
- EPP, Wetlands 2004 (DRAFT)
- Hydrography, linear
- 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 may be at variance to this Principle**

The area under application is associated with an undulating dune landscape underlain by aeolianite at depth. Chief soils are brown sands (Northcote et al. 1968). Generally, these soils have a high risk of wind erosion and a low risk of water erosion due to the high infiltration rates associated with sands.

The area under application has a low to nil risk of salinity. The salinity risk increases in low lying areas and lakes nearby. The area under application is associated with a Class 3 Acid Sulphate Soils (ASS) risk. A Class 3 ASS risk is defined as having no known risk of ASS occurring within 3m of natural surface (or deeper) that could be disturbed by most land development activities.

The proposed clearing has a high risk of wind erosion given the sandy associated with the area under application, and without appropriate management for exposed surfaces the proposal may cause appreciable land degradation.

It is noted that appropriate management practices such as dust suppression and the installation of a bituminised surface would likely limit land degradation caused by wind erosion.

**Methodology**

References:

- Northcote et al. (1968)

GIS Databases:

- Acid Sulfate Soil Risk Map, Swan Coastal Plain
- Salinity Risk LM 25m
- Soils, Statewide
- Topographic Contours, Statewide

**(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 vegetation under application is ~800m north of Bush Forever Site 328, known as 'Decourcey Way Bushland, Marangaroo' and ~900m west of Bush Forever Site 199 known as 'Landsdale Road Bushland, Landsdale'. The Ngarangara-Moore River State Forest is ~4km north east of the applied area and a further 14 Bush Forever sites occur in the local area. Given the distance to the nearest conservation areas it is considered the proposed clearing is unlikely to directly impact the environmental values of these areas.

The area under application is an isolated, thin strip of fragmented bushland surrounded by housing developments and is not considered likely to provide an ecological linkage to other remnants in the local

area.

Given the lack of ecological linkages and the distance to the conservation reserves, it is considered unlikely that the proposed clearing will be at variance to this principle.

**Methodology**

GIS Databases:

- Bushforever
- CALM Managed Lands and Waters
- EPP, Areas
- Swan Coastal Plain North 20cm Orthomosaic - DLI06

**(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 area under application is ~3km from the proclaimed groundwater area, Gnangara Underground Water Pollution Control Area (a Priority 1 Public Drinking Water Source Area (PDWSA)) and ~2.8km from the Gwellup Underground Pollution Control Area (a Priority 3 PDWSA). Groundwater generally flows south west and depth varies from ~25-30m within the applied area. Given the relatively small amount of clearing (0.75ha), depth to groundwater and distance to the nearest PDWSA the proposed clearing is not considered likely to cause a deterioration in the quality of groundwater.

There are 6 lakes within the local area and a series of 7 perennial swamps ~4km north east of the applied area. The closest being Lake Goolelal, a Conservation Category Wetland ~1.6km west of the applied area. It is considered any development within 50m the boundary of a wetland can critically influence the wetland and any development within 200m of the wetland boundary would have a secondary influence on the wetland (Hill et al. 1996). Given that the vegetation under application is outside the 200m zone of influence (Hill et al. 1996), the proposed clearing is not considered likely to impact the surface water quality of the Lakes in the local area.

Given the depth to groundwater and distance to closest wetland, the vegetation under application is not considered likely to cause deterioration in surface water or groundwater.

**Methodology**

References:

- Hill et al. (1996)

GIS Databases:

- EPP, Lakes
- EPP, Wetlands 2004 (DRAFT)
- Groundwater Contours, Historic Maximum
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)
- Topographic Contours, Statewide

**(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 watercourse or wetland is Lake Goolelal ~1.6km from the area under application. There are no watercourses within the local area.

Given the distance to the nearest water body and high infiltration rates associated with sandy soils, the clearing as proposed is not considered likely to cause or exacerbate the incidence of flooding.

**Methodology**

GIS Databases:

- EPP, Lakes
- EPP, Wetlands 2004 (DRAFT)
- Hydrography, linear (hierarchy)
- Soils, Statewide - DA 11/99

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

**Comments**

The area under application is within Crown Reserve 28058 (Lot 3001 on Plan 42944) which is vested with the City of Wanneroo for the purpose of recreation. The applied area is zoned Other Regional Roads under the Metropolitan Regional Scheme.

There are no Native Title Claims or Aboriginal sites of Significance associated with the area under application.

**Methodology**  
There is no other RIWI Act Licence or EP Act Licence that affects the area under application  
GIS Databases:  
- Aboriginal Sites of Significance - DIA  
- Metropolitan Regional Scheme - DPI 07/10/05  
- Native Title Claims - DLI  
- Town Planning Scheme Zones - MFP 8/98

#### 4. Assessor's comments

**Comment**

#### 5. References

- Burbidge, A. (2004) Threatened Animals of Western Australia, Department of Conservation and Land Management, Perth, Western Australia.
- Coffey Environments Pty Ltd (2007). Flora and Vegetation Survey of Remnant Bushland Affected by the Proposed Extension of Skeit Road, Darch. Prepared for the City of Wanneroo.
- Commonwealth of Australia (2001) National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.
- DEC (2008) Site Inspection Report for Clearing Permit Application CPS 2497/1, Lot 3001 Cnr Skeit and Kingsway Roads, Madeley. Site inspection undertaken 16/06/2008. Department of Environment and Conservation, Western Australia (TRIM Ref. DOC55527).
- DEC (2008A) Graceful Sunmoth habitat preferences, Department of Environment and Conservation. (TRIM Ref: DOC 57572)
- DEC Fauna habitat notes.xls February 2007.
- DEC Species & Communities (2008a). Advice received on the likelihood of FCT 20a occurring in the applied area. (TRIM Ref: DOC57549)
- DEC Species & Communities (2008b). Advice received on the likelihood of FCT 20a occurring in the applied area. (TRIM Ref: DOC58801)
- Del Marco, A., Miles, C., Taylor, R., Clarke, K. and Savage, K. (2004) Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region - Edition 1. Western Australian Local Government Association, West Perth.
- 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.
- 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.
- Hill, A.L., Semenuik, C. A, Semenuik, V. Del Marco, A. (1996) Wetlands of the Swan Coastal Plain. Volume 2b, Wetland mapping, classification and evaluation. Wetland Atlas. WRC and DEP. Perth WA.
- 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.
- Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 13/06/2008).
- Williams, M. (2008). Graceful Sunmoth habitat preferences. Senior Research Scientist - Department of Environment and Conservation. (TRIM Ref: DOC 57572)

## 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)