



## 1. Application details

### 1.1. Permit application details

Permit application No.: 1896/1  
 Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: Commissioner Main Roads Western Australia

### 1.3. Property details

Property: ROAD RESERVE ( KEWDALE 6105)  
 LOT 56 ON PLAN 6907 ( KEWDALE 6105)  
 ROAD RESERVE ( FORRESTFIELD 6058)  
 Local Government Area: Shire Of Kalamunda  
 Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
0.17		Mechanical Removal	Road construction or maintenance
0.13		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
Hedde Southern River Complex: Open woodland of <i>Corymbia calophylla</i> - <i>Eucalyptus marginata</i> - <i>Banksia</i> spp on elevated areas and a fringing woodland of <i>E.rudis</i> - <i>Melaleuca raphiophylla</i> along creek beds.	A field survey shows that vegetation in the proposed clearing area is more typical of a low woodland of <i>Melaleuca</i> sp., <i>Astartea fascicularis</i> , <i>Hypocalymma angustifolium</i> , <i>Cassytha</i> sp. and a mixed sedge layer.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)	Vegetation condition was determined by a field survey done by a consultant for the proponent. The survey was conducted in October 2006.
Beard Vegetation 1018: Mosaic: medium forest; Jarrah-marri/low woodland; banksia/low forest; tea-tree/low woodland; <i>Casuarina obesa</i> .	The consultant has also mapped a small section of the proposed clearing area as low woodland of <i>Melaleuca</i> sp., <i>Astartea fascicularis</i> , <i>Hypocalymma angustifolium</i> , <i>Jascksonia</i> sp., <i>Gompholobium</i> sp., <i>Xanthorrhoea preissii</i> and <i>eremaea</i> .		
	This area is indicative of Floristic Community type SCP 4: <i>Melaleuca preissiana</i> damplands.		

## 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 at variance to this Principle

The vegetation proposed to be cleared has been identified in a consultants report (GHD, 2007) as being in 'excellent' condition (Keighery, 1994).

A flora survey undertaken by the consultant indicates that moderate species diversity exists within the notified area. There were a total of 80 taxa from 31 families recorded within the greater lot.

Part of the area proposed to be cleared falls within a Conservation Category Wetland (CCW) of which there remains only 3.8% on the swan coastal plain. The remaining section falls within a multiple use wetland.

Given the surrounding urbanisation, condition of vegetation and part inclusion of a Conservation Category Wetland it is considered that the proposed area to be cleared offers higher levels of biodiversity than that found within the local area. The proposed clearing is therefore at variance to this principle.

**Methodology** Keighery, 1994  
GHD, 2007  
GIS Databases:  
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06  
- Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC

**(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**  
The following records of threatened native fauna have been recorded within the local area: Due to metropolitan expansion only records from 1990 onwards have been included.

Carnaby's Black-Cockatoo	<i>Calyptorhynchus latirostris</i>
Quenda	<i>Isodon obesulus fusciventer</i>
Chuditch	<i>Dasyurus geoffroii</i>

During field inspections by the clients consultant (GHD, 2007), likely Quenda (*Isodon obesulus fusciventer*) markings were identified. The habitat found within the proposed clearing area appears characteristic of that preferred by Quenda. Although the proposed area is small and there is nearby disturbance from industrial activities and road networks, this does not prevent the quenda's currently utilising the area.

Habitat with excellent condition vegetation that includes a wetland and associated riparian vegetation is becoming restricted on the Swan Coastal Plain. The impact of clearing even smaller areas becomes of greater significance when viewed in a local and regional context of diminishing habitat.

Carnaby's cockatoos are known to forage on species within the Proteaceae family. Numerous of these species have been recorded within the proposed clearing area. Although foraging areas for Carnaby's are diminishing on the Swan Coastal, such a small selection of feeding habitat is not thought to be significant for this species.

The area proposed to be cleared is likely to provide some habitat values to other mobile species, such as birds. The dense understorey is also indicative of good habitat for reptile and small mammal species.

GHD, 2007  
GIS Databases:  
- SAC biodatasets - 05/07/07  
- Swan Coastal Plain Central 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**  
Declared Rare Flora (DRF) species known to have been recorded within the local area (5km radius) include:

*Conospermum undulatum* R  
*Dryandra mimica* R  
*Acacia anomala* R  
*Calytrix breviseta* subsp. *breviseta* R  
*Caladenia huegelii* R  
*Eleocharis keigheryi* R  
*Lepidosperma rostratum* R  
*Macarthuria keigheryi* R  
*Darwinia apiculata* R  
*Andersonia gracilis* R  
*Astroloma foliosum* R

Numerous Priority Species have also been recorded within the local area.

A flora survey undertaken in October 2006 found no records of Priority or Declared Rare Flora. The species *Lepidosperma rostratum* does not flower during this time (Brown et al, 1998) and is known to prefer habitat similar to that found within the proposed clearing area. However, other species known to be associated with this species of DRF were not recorded during the survey. Additionally, the vegetation complex and soil type of the known record of *Lepidosperma rostratum* differs to that found within the proposed clearing area.

*Acacia anomala* and *Dryandra mimica* also flower outside of the October survey time (Brown et al, 1998), however the soil characteristics within the proposed clearing area are not indicative of the expected habitat of these species.

Given the above it is not likely that the clearing be at variance to this proposal.

**Methodology** Brown et al 1998  
GIS Databases:  
- SAC Biodatasets - 05/07/07  
- Soils, Statewide - DA 11/99  
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06  
- Heddle Vegetation Complexes - DEP 21/06/95  
- Pre-European Vegetation - DA 01/01

**(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 the local area (5km radius) the following Threatened Ecological Communities (TEC) are recorded.

SCP 02 - Southern wet shrublands, Swan Coastal Plain  
SCP 3a - Eucalyptus calophylla - Kingia australis woodlands on heavy soils, Swan Coastal Plain  
SCP 3b - Eucalyptus calophylla - Eucalyptus marginata woodlands on sandy clay soils of the southern Swan Coastal Plain  
SCP 3c - Eucalyptus calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain  
SCP 07 - Herb rich saline shrublands in clay pans  
SCP 10a - Shrublands on dry clay flats  
SCP 20a - Banksia attenuata woodland over species rich dense shrublands

The floristic survey carried out by the consultant did not identify any TECs within the proposed clearing area, however they noted that it was within the buffer of two TEC areas. As the proposed clearing is small in size it is unlikely to impact upon local TEC's. It does not provide any direct buffering support to the nearest TEC and clearing vegetation is not likely to affect groundwater tables in the local area.

**Methodology** GIS Databases  
- Swan Coastal Plain Central 20cm Orthomosaic - DLI 06  
- SAC Biodatasets 05/07/07

**(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 may be at variance to this Principle**  
The area proposed to be cleared lies within the mapped Heddle - Southern River Complex. Latest mapping suggests that approximately 18.5% of this vegetation remains. The area of proposed clearing also falls within the Beard Vegetation type of 1018, of which approximately 21.3% is suggested to be remaining.

Although these percentages are below the recommended 30% retention for vegetation complexes, the area proposed to be cleared falls within the Bush Forever Study Area. The bush forever study area recognises constrained areas, where a target of 10% is thought to be realistic and achievable.

The condition of the vegetation has been described as 'excellent' (Keighery, 1994) by the environmental consultant (GHD, 2007).

Habitat with excellent condition vegetation that includes a wetland and associated riparian vegetation is becoming restricted on the Swan Coastal Plain. The impact of clearing even smaller areas becomes of greater significance when viewed in a local and regional context of diminishing vegetation.

Despite the small clearing size and remaining figures of vegetation complexes, the area proposed to be cleared represents a unique area of remnant vegetation in a highly cleared. For this reason the proposed clearing may be at variance to this principle.

**Methodology** Keighery, 1994  
Bush Forever, 2000  
GHD, 2007  
GIS Databases:  
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06  
- 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**

The area proposed to be cleared lies within a multiple use wetland and partly within a Conservation Category Wetland (CCW).

The area to be cleared within the CCW has been reduced by the proponent and is now approximately 100m<sup>2</sup>. Although this area is small it is part of the 3.8% of Palusplain CCW on the Swan Coastal Plain. As there is such a small amount remaining, any further losses are considered to be significant to that community as a whole.

Due to the location and category of the wetland the proposed clearing is considered to be at variance to this principle.

**Methodology** GIS Databases:  
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC

**(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 area proposed to be cleared is mapped as having none and low to moderate risk of acid sulfate soils. Excavation below three metres is not expected within this site and acid sulfate soils should not be a concern.

There are no salinity concerns for this area and the proposed clearing is too small to impact on waterlogging issues.

Soil on site is known to be white/grey sand and clearing of vegetation may induce some erosion by wind. This is thought to be minimal and short term due to the planned construction activities for the site.

The area to be cleared is small and there are no land degradation issues associated with this area. Surrounding land use encompasses light and heavy industrial which do not appear to have had a significant impact on surrounding vegetation. It is not likely that the proposed clearing be at variance to this principle.

**Methodology** GHD, 2007  
GIS Databases:  
- Acid Sulfate Soil Risk Map, Swan Coastal Plain - DEC  
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06  
- Soils, Statewide - DA 11/99  
- Groundwater Salinity, Statewide - DOW

**(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**

There are numerous Bushforever sites (319, 282, 386 and 440) within the local area (5km radius) with the closest being approximately 200m to the east. There is a nature reserve, with the purpose of conserving flora and fauna located 1km to the north east. Lesmurdie Falls National Park lies 4.5km to the east and Pickering Brook National Park lies 5km to the south east.

The area proposed to be cleared forms a small part of the corridor linking the above bush forever sites. These areas of remnant vegetation provide a strong ecological linkage in an urban environment.

The proposed clearing does not lie adjacent to any of these Bush Forever sites and buffering capacities will not be affected by the clearing.

Part of the area proposed to be cleared lies within the boundaries of a palusplain conservation category wetland (CCW). Species and Communities Branch (SACB), DEC advised that only 3.8% of palusplain CCW remain on the Swan Coastal Plain. A vegetation survey by the consultant (GHD, 2007) found that vegetation within the proposed clearing area is in 'excellent' condition (Keighery, 1994). Clearing of vegetation within the CCW will impact on the environmental values of that wetland and induce an increase in the edge effects and disturbance on the wetland.

The proposed clearing is at variance to this principle.

**Methodology** Keighery, 1994  
GHD, 2007  
Bushforever, 2000  
GIS Databases:  
- CALM Managed Lands and Waters - CALM 1/07/05  
- Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC

**(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 at variance to this Principle**

As the clearing area falls within a multiple use wetland and partly within a conservation category wetland (CCW) there will be some deterioration of surface water quality within the wetland. The clearing will remove part of the wetland and possibly impact on the surface water quality within some of the remaining wetland. Additionally, as the proposed clearing is in an urban environment, a road network passing within a CCW is likely to increase the edge effects, disturbance, litter and pollution impacts on the wetland.

As the proposed clearing is a small area there are no associated risks of salinity due to the clearing.

**Methodology** GHD, 2007  
GIS Databases:  
- Geomorphic Wetlands (Classification) Swan Coastal Plain - DEC  
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06

**(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 due to the size of the proposed clearing.

**Methodology**

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

**Comments**

Part of the area proposed to be cleared falls within an aboriginal site of significance.

As the land use after clearing is for the construction of a road, impacts associated with this may affect the wetland and habitat values of the area. The environmental management plan put forward by the consultant proposed activities to mitigate these impacts.

**Methodology**

**4. Assessor's comments**

Purpose	Method	Applied area (ha)/ trees	Comment
Road construction or maintenance	Mechanical Removal	0.13	The area to be cleared has been assessed and the assessing officer finds that principles (f), (a), (i) and (h) are at variance and principle's (b) and (e) maybe at variance. The remaining principles are not likely to be at variance.

**5. References**

Brown, A, Thomsan-Dans, C and Marchant, N, 1998, Western Australia's Threatened Flora, Department of Conservation and Land Management.

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.

GHD, 2007, Environmental Impact Assessment and Environmental Management Plan, Report for Daddow Road realignment.

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.

Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMSscience 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., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

## 6. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)