



1. Application details

1.1. Permit application details

Permit application No.: 2507/1
 Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Public Transport Authority

1.3. Property details

Property: LOT 1 ON PLAN 11934 (House No. 820 WHITFORDS KINGSLEY 6026)
 ROAD RESERVE (GREENWOOD 6024)
 Local Government Area: City Of Joondalup
 Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.8		Mechanical Removal	Road construction or maintenance
		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 Vegetation Associations: 998 Medium woodland; Tuart	The areas under application are for the purpose of creating a car park. Aerial photography indicates that the vegetation condition is degraded (Keighery, 1994).	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	Vegetation condition was determined from aerial photos (Swan Coastal Plain North) and a site visit (2007)
Heddle Vegetation Complex: Karrakatta Complex - Central and / South Predominantly open forest of E. gomphocephala - E. marginata - E. calophylla and woodland of E. marginata - Banksia species.	The areas under application are for the purpose of creating a car park. Aerial photography indicates that the vegetation condition is degraded (Keighery, 1994). The vegetation structure consists of sections of isolated trees and shrubs and a few dense areas of vegetation. Lot 1 Plan 11934 contains numerous tracks and rubbish coming from the adjacent Whitfords Avenue.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	Vegetation condition was determined from aerial photos (Swan Coastal Plain North) and a site visit (2007)
Beard Vegetation Associations: 6 - Medium woodland; Tuart and Jarrah Heddle Vegetation Complex: Karrakatta Complex - Central and / South Predominantly open forest of E. gomphocephala - E. marginata - E. calophylla and woodland of E. marginata - Banksia species.	The areas under application are for the purpose of creating a car park. Aerial photography indicates that the vegetation condition is degraded (Keighery, 1994). The vegetation structure consists of sections of isolated trees and shrubs and a few dense areas of vegetation. Greenwood road reserve contains numerous tracks and rubbish coming from the adjacent Hepburn Avenue.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	Vegetation condition was determined from aerial photos (Swan Coastal Plain North) and a site visit (2007)

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 area under application is to be cleared for the purpose of creating a car park at Whitfords and Greenwood Train Stations. Aerial photography indicates that the vegetation condition is degraded (Keighery, 1994) with limited scope for regeneration without intensive management. The vegetation structure consists of sections of

isolated trees and shrubs and a few dense areas of vegetation. Lot 1 Plan 11934 and Greenwood road reserve contain numerous tracks and rubbish coming from the adjacent Whitfords and Hepburn Avenues respectively (Site Visit, 2007). Both sites contain a high number of introduced species (BSD, 2007).

There are two known Priority Flora within the local area (5km radius) of Lot 1 Plan 11934 and the road reserve in Greenwood. They are *Jacksonia sericea* (priority 4) and *Conostylis bracteata* (Priority 3).

The closest record of *J. sericea* is located approximately 2.5km from the application area, and occurs on the same soil type but consists of differing vegetation type as the proposed clearing area. All four sightings of *C. bracteata* occur on different soil and vegetation type as the application area.

One record of *J. sericea* 4kms from the application areas falls within the same soil and vegetation type. Given the built up area surrounding the application areas and subsequently the separation of priority flora sightings from Lot 1 Plan 11934 and road reserve Greenwood, it is unlikely that *J. sericea* would be within the application areas.

The vegetation within the application areas is relatively isolated and degraded with obvious signs of disturbance and limited scope for regeneration, and therefore is unlikely to be representative of vegetation comprised of outstanding biodiversity in the Bioregion or local area.

Methodology BSD (2007)
Site visit (2007)
Keighery (1994)
GIS Database:
- Sac biodatasets 110208
- Swan Coastal Plain North Orthomosaic

(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 5 recorded sightings of rare or endangered fauna within a 5km radius of the Greenwood road reserve and Lot 1 Plan 11934, Whitfords. They are:

- * Bush Stonecurlew - *Burhinus grallarius*;
- * Graceful Sunmoth - *Synemon gratio*;
- * Quenda - *Isodon obesulus fusciventer*;
- * Little Bittern - *Ixobrychus minutus*;
- * Black Bittern - *Ixobrychus flavicollis australis*

The Graceful Sunmoth is thought to only move up to 300 metres, which would make it unlikely to disperse between populations, or recolonise sites of local extinction (Bushland, 2007). All Graceful Sunmoth sightings were over 3km from the application areas, given the short distance travelled by the moths, it is unlikely that they would be present within the area.

Quenda, Little Bittern and Black Bittern tend to rely on wetlands and watercourses surrounded by dense vegetation (Little Bittern, 2008; Black Bittern, 2008 and Quenda, 2008). While the Bush Stonecurlew dwell in open forest woodlands (Bush Stonecurlew, 2006). Both application areas do not contain these characteristics.

There is a large Bush forever site (no. 303) of approximately 160 hectares 200 metres from the road reserve Greenwood and 140 metres from Lot 1 Plan 11934 on the opposite side of Mitchell Freeway. This site has vegetation in much better condition than the proposed clearing areas.

The clearing of 1.8 ha of native vegetation will not remove any ecological linkages for the endangered fauna within the area; furthermore the vegetation condition of the proposed clearing area is classified as degraded (Keighery, 1994), with much evidence of human disturbance.

A tree containing a small hollow was observed within the Greenwood Train station road reserve, though no mammal species sighted (BSD, 2007).

Given the isolated and degraded condition of the proposed clearing it is unlikely that it is necessary for the maintenance of, a significant habitat for indigenous fauna.

Methodology Bush Stonecurlew (2008)
BSD (2007)
Black Bittern (2008)
Bushland (2007)
Quenda (2008)
Little Bittern (2008)

GIS Database:
 - Swan Coastal Plain North Orthomosaic (image)
 - Sac Bio datasets 110208

(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 were no rare flora species recorded within the local area (5km radius). Furthermore, no rare or priority flora were found during a site visit (2007).

In addition, given the disturbed and isolated location of the vegetation under application, it is unlikely to be necessary for the continued existence of flora.

Methodology Site Visit (2007)
 WA Herbarium (2007)
 GIS Layer:
 - Swan Coastal Plain North (image)
 - Sac Bio datasets 110108
 - Heddl 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**
 One threatened ecological community has been recorded within 5km radius of the proposed clearing areas. It is:

SCP20a - Banksia attenuata woodland over species rich dense Shrublands

The application area is within the Spearwood dunes vegetation complex (Heddl: Karrakatta complex central and south; Bush forever, 2000, pg 26) which is outlined as floristic community type SUPERGROUP 4 (Bush forever, 2000, pg 30). There are three sightings of SCP20a all falling within SUPERGROUP 3, that is, uplands centred on Bassendean Dune and Dandaragan Plateau (Bush forever, 2000, pg 30).

Given the isolated and degraded condition of the application areas, and differing floristic community types of the area and the threatened ecological community, it is unlikely that the vegetation under application is necessary for the maintenance of a threatened ecological community.

Methodology Bush Forever (2000, pg 26 & 30)
 GIS Layer:
 - Busselton 50cm Orthomosaic - DLI 03 (image)
 - Sac biodatasets 110208

(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**
 Pre-European (ha)* Current Extent Remaining% Pre-European Extent in IUCN 1 - 4

	(ha)*	(%)*
IBRA Bioregion: Swan Coastal Plain 1,501,211		
	579,227	
38.6		24.1
Shire: Joondalup**		
9,649		
1,350		
14.0		4.7

Beard Unit:

6

998

Heddle

Complex:

Karrakatta Complex - Central +/- South

56,343

51,015

49,912

14,756

21,346

14,729

26.2

41.8

29.5

12.7

27.3

2.5

*Shepherd et al. 2006

**Within the Intensive Land Use Zone (Inside the Clearing Line)

The proposed clearing area is within the Swan Coastal Plain IBRA Region, where the area of vegetation remaining 38.6%. This percentage is higher than 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 (EPA 2000).

Within the Town of Joondalup 14.0% of pre-European vegetation remains (Shepherd 2006). Beard Unit 6 and the Heddle Complex have a remaining percentage of 27.5% and 15.6% respectively.

The application is on the Swan Coastal Plain within the constrained area of the Perth metropolitan area. In constrained areas a benchmark of 10% retention is applied. The native vegetation associations under assessment are all greater than 10%.

Given the above, and that the vegetation within the application areas is in a degraded condition (site visit, 2007), the application is not likely to be at variance to this principle.

Methodology

EPA (2000)

Shepherd et al. (2006)

Site visit (2007)

GIS Database:

- Pre-European Vegetation - DA 10/01

- Interim Biogeographic Regionalisation of Australia - EA 18/10/00

- Heddle vegetation complexes - DEP 21/06/95

(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

The application involves the clearing of native vegetation for the purpose of constructing car parks. The application areas are located over 1.5kms from the nearest perennial lake and 2km from the nearest perennial swamp.

There are no Environmental Protection Policy (EPP) wetlands or watercourses within the local area (5kms radius)

Given the degraded condition of the native vegetation, the distance from the closest wetland or watercourse, and the small application areas, it is not likely that the clearing of native vegetation within the application area may be within an environment associated with a watercourse or wetland.

Methodology GIS Layer:

- Swan Coastal Plains North - DLI 04 (image)
- Hydrography, linear - DOE 1/2/04 (Hyd-type)
- EPP. Lakes - DEP 1/12/92
- Geomorphic wetlands (classification) Swan Coastal Plain - DEC (Classification)

(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 topography of the region is relatively flat with an elevation rising from 10-25 AHD, and has a mean annual rainfall of 800mm. Groundwater salinity has been mapped between 500-1000mg/L TDS (Total Dissolved Solids) giving it a low rating.

The local area consists of undulating dune landscape with some steep dune slopes and underlain by aeolianite at depth: chief soils are brown sands (Northcote et al., 1960-68). Although the application areas contain sandy soils, they are surrounded by built up areas, a large Bush Forever site, and within an area of low topography, reducing wind and water erosion during construction of the car parks.

Adequate drainage systems are already in place within surrounding infrastructure and will be installed in the proposed car parks. This will minimise the likelihood of water logging.

Given the small application areas proposed to be cleared relative to the above information, the proposed clearing is unlikely to cause appreciated land degradation in the form of wind or water erosion, water logging or salinisation.

Methodology Northcote et al. (1960-68)

- GIS Layer:**
- Swan Coastal Plains North - DLI 04 (image)
 - Groundwater Salinity, Statewide - DOW
 - Topography contours, statewide - DOLA 12/09/02
 - Rainfall, Mean Annual - BOM 30/09/01

(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

Within the local area (5km radius) of the proposed clearing area, there are four conservation reserves, being two Class A reserves (Marmion Marine Park and Lake Joondalup Nature Reserve) and two Class C reserves (Woodvale Nature Reserve and a reserve vested in the Conservation Commission).

The closest reserve is Woodvale Reserve 1.3km north of the application areas. There are no vegetative linkages between the conservation areas and the application area.

There is a large Bush forever site (no. 303) of approximately 160 hectares 140 metres from Lot 1 on Plan 11934. This site has vegetation in much better condition than the proposed clearing area. The Bush Forever site is located on the opposite side of Mitchell Freeway to the application area which acts as a buffer between the reserve and Lot 1 on Plan 11934.

Given the small application size, degraded condition and distance from conservation reserves it is unlikely that the clearing will have an impact on the environmental values of any adjacent or nearby conservation area.

Methodology GIS Layer:

- Swan Coastal Plain North - DLI 04 (image)
- CALM managed lands and waters - CALM 1/07/08 (category)

(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 proposed clearing sites lie within the Swan Coastal catchment area. The region is of low relief (20-25m AHD) and has an annual rainfall of 800mm. The closest surface water is located 2kms from the application area. As the topography is relatively flat and the application area is in a built up area away from any surface water it is unlikely that the proposed clearing would cause deterioration of the surface water.

Groundwater salinity is marginal within the local area (500-1000mg/L). As the application area is quite small it is unlikely to cause deterioration to groundwater.

Given the above, the clearing of native vegetation within the application areas is not likely to be at variance to this principle.

Methodology GIS Layer:
- Swan Coastal Plain North - DLI 04 (image)
- Hydrography catchments - catchment DOE 23/03/05
- Rainfall, Mean Annual - BOM 30/09/01
- Topography contours, statewide - DOLA 12/09/02

(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 hydrogeology of the area is predominately surficial sediments - shallow aquifers, (with a lithology of limestone and calccrete), which can assist in intensifying flooding if an abundance of vegetation is cleared. Given though, the small scale of clearing, it is unlikely it will cause or exacerbate flooding within the local area. Furthermore, adequate drainage systems are already in place within surrounding infrastructure and will be installed in the proposed car parks.

The clearing of native vegetation within the application areas is not likely to cause, or exacerbate, the incident or intensity of flooding.

Methodology GIS Layer:
- Hydrogeology, statewide - DOW

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

Comments

There are no native title claims within the application areas.

The land is vested within Main Roads who have given permission for the proponent to apply to clear native vegetation within its road reserves.

The City of Joondalup has no objections with the application.

Methodology

4. Assessor's comments

Comment

The application has been assessed and is at variance to principle (e) and not likely to be at variance to all other principles.

5. References

- Black Bittern. 2008. Department of Environment and Climate Change NSW. Sited on 14/02/08 at www.threatenedspecies.environment.nsw.gov.au
- BSD. 2007. Whitfords, Greenwood and Edgewater Stations Flora and Vegetation survey. Cardno BSD Pty Ltd. October 2007.
- Bush Stone-curlew 2006. Recovery Plan for the Bush Stone-curlew *Burhinus grallarius*. Department of Environment and Conservation NSW.
- Bushland News, 2007. Department of Environment and Conservation WA. Bushland News, Issue 62, Winter 2007.
- 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.
- Government of Western Australia (2000) Bush Forever Volumes 1 and 2. Western Australian Planning Commission, 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.
- Little Bittern. 2008. Department of Environment, Water, Heritage and the Arts. Australian Government. Sited 14/02/08 at www.environment.gov.au

Mattiske Consulting (1998) Mapping of vegetation complexes in the South West forest region of Western Australia, CALM. Quenda, 2008. Department of Environment and Conservation WA. Sited on 14/2/08 at www.naturebase.net

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.

Site Visit, 2007. Department of Environment and Conservation WA. DEC Trim Ref: DOC55344

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)

