

Clearing Permit Assessment Report

1. Application details

Permit application details

Permit application No.:

2153/1

Permit type:

Area Permit

Proponent details 1.2.

Proponent's name:

Lot 1 Temple Rd Picton WA 6229

Postal address: Contacts:

Phone:

9791 4411 9791 4412

Fax: Email:

grahame@tme.net.au

Thompson McRobert Edgeloe on behalf of J & P Metal

1.3. Property details

Property:

Colloquial name:

LOT 1 ON PLAN 17429 (PICTON EAST 6229)

1.4. Application

Clearing Area (ha)

No. Trees

Method of Clearing

For the purpose of:

0.27

Mechanical Removal

Industrial

2. Background

History (including previous clearing permits, compensation paid, caveats on title deeds etc.)

Date

20 December 2007

14 December 2007

Current permit CPS 1683/1, 0.5ha Nil Conditions, is on same property directly adjacent to areas under application. The current areas under application where part of the original application to clear however where separated as DRF may have been within these areas. A flora survey has since been undertaken within these areas.

Email received from Grahame Pauli (consultant) requesting the application be amended to 0.27ha. In addition,

Grahame provided a copy of the development approval for Lot 1. TRIM Ref: DOC41680.

Lisa Parkin (DEC) notified of area change.

10 December 2007

Email received from Grahame Paull (consultant) with attached flora report on DRF on the site. The report concluded that the vegetation was degraded and no rare flora was found. Grahame requested a timeframe for completion. TRIM Ref: DOC41350.

03 December 2007

Grahame Paull (consultant) contacted Daniel Hartnup (DEC) to gather a progress update. Daniel advised that the DRF check is required to finish the assessment - Graham indicated that it was occurring at the minute and he will

forward ASAP.

22 October 2007

Application Accepted. Advertised 22 October 2007.

22 October 2007 17 October 2007 Assessment due NVP 21 December 2007 Receipt no 037333 for \$50 issued 11/10/07.

Existing environment and information

2.2.1. Description of the native vegetation under application

Vegetation Description

Beard Vegetation Association: 1000 - Mosaic: Medium forest; jarrahmarri/ Low woodland; banksia / Low forest; tea-tree (Melaleuca spp.) (Hopkins et al. 2001; Shepherd et

al. 2001).

Heddle:

- Southern River Complex: Open woodland of E. calophylla - E. marginata - Banksia species with fringing woodland of E. rudis - M. rhaphiophylla along creek beds (Heddle et al. 1980).

Clearing Description

The proposal involves clearing approximately 0.27 hectares within three isolated patches of remnant vegetation.

The applied area comprises an open low woodland of Melaleuca rhaphiophylla and Marri (Corymbia calophylla) over weed taxa (Bennett Environmental, 2007).

The area has been heavily grazed over many years, and more recently modified, through the impacts of heavy machinery (DEC Site Visit, 2007).

Vegetation Condition Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)

Comment

The description of the clearing application area is based on a flora report undertaken by Bennett Environmental (2007) and a site inspection based on a previous clearing application for the same vegetation (CPS 1683/1), undertaken by DEC officers on 1 May 2007.

2.2.2. Items of interest

2.2.2. Reffis of interest		
Theme	Value	Within meters
Acid Sulfate Soil Risk Map, Swan Coastal Plain - DEC	2	
Declared Rare and Priority Flora List - CALM 01/07/05	LFC	10000
Declared Rare and Priority Flora List - CALM 01/07/05	MRD	10000
Declared Rare and Priority Flora List - CALM 01/07/05	MWA	10000
Declared Rare and Priority Flora List - CALM 01/07/05	MWO	10000
Declared Rare and Priority Flora List - CALM 01/07/05	NON	10000
Declared Rare and Priority Flora List - CALM 01/07/05	PRI	10000

Environmental Impact Assessments Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC Heddle Vegetation Complexes - DEP 21/06/95 Hydrographic Catchments - Catchments - DOW Interim Biogeographic Regionalisation of Australia - EA 18/10/00 Local Government Authorities - DLI Native Title Claims - DLI Native Title Claims - DL OJ 01/01 Pre-European Vegetation - DA 01/01 Pre-European Vegetation - DA 01/01 Pre-European Vegetation - DA 01/01 Threatened Ecological Communities - CALM Threatened Ecologi	Declared Rare and Priority Flora List - CALM 01/07/05 Declared Rare and Priority Flora List - CALM 01/07/05 Declared Rare and Priority Flora List - CALM 01/07/05 Declared Rare and Priority Flora List - CALM 01/07/05 EPP, Lakes - DEP 1/12/92 Environmental Impact Assessments	RAI SHI UNK WAT 1017 s16 - Section 16 Report	10000 10000 10000 10000 5000
Heddle Vegetation Complexes - DEP 21/06/95 Hydrographic Catchments - Catchments - DOW Interim Biogeographic Regionalisation of Australia - EA 18/10/00 Local Government Authorities - DLI Native Title Claims - DLI Pre-European Vegetation - DA 01/01 Pre-European V		Basin	
Pre-European Vegetation - DA 01/01 968 Threatened Ecological Communities - CALM 1153 10000 Threatened Ecological Communities - CALM 179 10000 Threatened Ecological Communities - CALM 330 10000 Threatened Ecological Communities - CALM 331 10000 Threatened Ecological Communities - CALM 340 10000 Threatened Ecological Communities - CALM 947 10000 Threatened Ecological Communities - CALM 948 10000 Threatened Ecological Communities - CALM 957 10000 Threatened Ecological Communities - CALM 958 10000 Threatened Ecological Communities - CALM 959 10000 Threatened Ecological Communities - CALM 960 10000 Threatened Ecological Communities - CALM 961 10000 Threatened Ecological Communities - CALM 962 10000 Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 968 10000	Heddle Vegetation Complexes - DEP 21/06/95 Hydrographic Catchments - Catchments - DOW Interim Biogeographic Regionalisation of Australia - EA 18/10/00 Local Government Authorities - DLI Native Title Claims - DLI	Southern River Complex Leschenault Estuary_Lower Collie Swan Coastal Plain SHIRE OF DARDANUP GNAALA KARLA BOOJA	1000
Threatened Ecological Communities - CALM Threatened Ecological Communities - C	Pre-European Vegetation - DA 01/01	968	
Threatened Ecological Communities - CALM Threatened Ecological Communities - C	•		
Threatened Ecological Communities - CALM Threatened Ecological Communities - C			
Threatened Ecological Communities - CALM Threatened Ecological Communities - C	<u> </u>		
Threatened Ecological Communities - CALM 947 10000 Threatened Ecological Communities - CALM 948 10000 Threatened Ecological Communities - CALM 957 10000 Threatened Ecological Communities - CALM 958 10000 Threatened Ecological Communities - CALM 959 10000 Threatened Ecological Communities - CALM 960 10000 Threatened Ecological Communities - CALM 961 10000 Threatened Ecological Communities - CALM 962 10000 Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000			
Threatened Ecological Communities - CALM 948 10000 Threatened Ecological Communities - CALM 957 10000 Threatened Ecological Communities - CALM 958 10000 Threatened Ecological Communities - CALM 959 10000 Threatened Ecological Communities - CALM 960 10000 Threatened Ecological Communities - CALM 961 10000 Threatened Ecological Communities - CALM 962 10000 Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000			
Threatened Ecological Communities - CALM 957 10000 Threatened Ecological Communities - CALM 958 10000 Threatened Ecological Communities - CALM 959 10000 Threatened Ecological Communities - CALM 960 10000 Threatened Ecological Communities - CALM 961 10000 Threatened Ecological Communities - CALM 962 10000 Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000	•	948	10000
Threatened Ecological Communities - CALM 959 10000 Threatened Ecological Communities - CALM 960 10000 Threatened Ecological Communities - CALM 961 10000 Threatened Ecological Communities - CALM 962 10000 Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000	Threatened Ecological Communities - CALM	957	10000
Threatened Ecological Communities - CALM 960 10000 Threatened Ecological Communities - CALM 961 10000 Threatened Ecological Communities - CALM 962 10000 Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000	Threatened Ecological Communities - CALM	958	10000
Threatened Ecological Communities - CALM 961 10000 Threatened Ecological Communities - CALM 962 10000 Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000	Threatened Ecological Communities - CALM	959	10000
Threatened Ecological Communities - CALM 962 10000 Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000			
Threatened Ecological Communities - CALM 963 10000 Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000			
Threatened Ecological Communities - CALM 964 10000 Threatened Ecological Communities - CALM 967 10000 Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000			
Threatened Ecological Communities - CALM Threatened Ecological Communities - CALM Threatened Plant Communities - DEP 06/95 164 10000	•		
Threatened Ecological Communities - CALM 968 10000 Threatened Plant Communities - DEP 06/95 164 10000	•		
Threatened Plant Communities - DEP 06/95 164 10000			

(2000)	anang arang 📑	 Fey, Skun Provessor 		reactive regions are	Committee of the state of the s
	21 111	ace.	eemp	m erc	tivities

Date 08 October 2007	Activity Application received	Comment	Trim Ref.
22 October 2007	Accepted for assessment		
14 November 2007	Direct Interest Letter Sent	Letter sent to Shire of Dardanup.	DOC39565
14 November 2007	Direct Interest Letter Sent	Letter sent to Dardanup LCDC.	DOC39566
05 December 2007	Under assessment		
10 December 2007	Other	Email received from Grahame Paull (consultant) with attached flora report on DRF on the site. The report concluded that the vegetation was degraded and no rare flora was found.	DOC41350
14 December 2007	Other	Email received from Grahame Paull (consultant) requesting the application be amended to 0.27ha. In addition, Grahame provided a copy of the development approval for Lot 1.	DOC41680

4. 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 at variance to this Principle

The proposal is for the clearing of 3 isolated patches of remnant vegetation (0.27 ha) for the purpose of constructing an industrial pad. The vegetation under application is completely degraded (Keighery, 1994).

Given the scale (0.27 ha) and completely degraded condition of the area, the proposed clearing does not hold a high level of biodiversity and is not at variance to this Principle.

Methodology

Keighery (1994);

DEC Site Visit (2007);

GIS Databases:

- Bunbury 50cm ORTHOMOSAIC - DLI04

Officer

(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 Proposa

Proposal may be at variance to this Principle

The proposal is for the clearing of 3 isolated patches of remnant vegetation (0.27 ha) for the purpose of constructing an industrial pad. The vegetation under application is completely degraded (Keighery, 1994).

Within the local area (10km radius from the proposed area for clearing) there are several records of threatened and priority fauna, including Calyptorhynchus baudinii (Baudins Black Cockatoo; Threatened), Pseudocheirus occidentalis (Western Ringtail Possum; Threatened), Calyptorhynchus banksii naso (Naso Cockatoo; P3) and Macropus irma (Western Brush Wallaby; P4).

The applied area is mapped within the Maidens / Preston River ecological linkage, as recognised by the EPA (2003); clearing may reduce the values associated with this linkage.

Aerial photography shows that there are areas of remnant native vegetation remaining within the 10km local area that appear to be in similar or better condition than the application area. Therefore, fauna species within the 10km local area are likely to find habitat of equal or better condition within nearby remnants.

Given the small scale (0.27ha), recognise ecological linkage and the completely degraded condition of the application area, this proposal may be at variance to this Principle.

Methodology

Keighery (1994);

EPA (2003);

GIS Databases:

- Threatened Fauna, SAC Bio Dataset 22/8/07;
- Bunbury 50cm ORTHOMOSAIC DLI04

Officer

(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

Several populations of Diuris drummondii (DRF) surround the applied area, with populations located 2.8 km north and 3 km south west.

Diuris drummondii is a tuberous, perennial herb that flowers in November to January and occurs in low-lying swamps (DEC, Flora Base, 2007).

A flora survey undertaken by Bennett Environmental (2007) during flowering time for this species (November) did not identify any occurrences of this species; given this and the completely degraded (Keighery, 1994) condition of the applied area, it is not likely to be sustaining flora species of conservation significance, and is therefore not likely to be at variance to this Principle.

Methodology

DEC, Flora Base (2007);

Bennett Environmental (2007);

Keighery (1994);

GIS Databases:

- DEFL, SAC Bio Datasets 22/8/07;
- Bunbury 50cm ORTHOMOSAIC DLI04

Officer

(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 are 17 occurrences of 6 Threatened Ecological Communities (TEC's) within the local area (10 km radius); however given the application consists of 0.27 ha within three isolated patches in a grazed area (DEC Site Visit, 2007), the proposal is unlikely to comprise the whole or part of, or be necessary for the maintenance of a TEC, and is therefore not likely to be at variance to this Principle.

Methodology

DEC Site Visit (2007):

GIS Databases:

- Threatened Ecological Communities CALM 12/04/05;
- Threatened Plant Communities DEP 06/95;
- Environmentally Sensitive Areas DoE 30/05/05

(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 may be at variance to this Principle

The State government is committed to the National Objective Targets for Biodiversity Conservation, which includes targets that prevent the clearing of ecological communities with an extent below 30% of that present pre-1750 (Department of National Resources and Environment, 2002; EPA, 2000).

Vegetation within the area under application is identified as a component of Beard Vegetation Association 1000 and Heddle Vegetation Complex Southern River Complex. These vegetation communities are identified as having 28.7% and 19.8% respectively remaining of their pre-European extent (Shepherd, 2006; EPA, 2006).

	Pre-European area (ha)	Current extent (ha)	Remaining %	Conservation status***	% in reserves/DEC- managed land
Swan Coastal Plain Shire of Dardanup	1,501,211 52.860	579,227 25.677	38.6* 48.6*	Depleted Depleted	32.5 34.8
Beard vegetation association	,				
1000 Heddle vegetation complex	99,836	28,636	28.7*	Vuinerable	7.1
Southern River Complex	57,979	11,501	19.8**	Depleted	1.5

^{* (}Shepherd, 2006)

The proposed clearing of 0.27 ha is zoned Industrial under the Greater Bunbury Region Scheme (WAPC, 2000). The area is also within the Maidens / Preston River ecological linkage, as recognised by the EPA (2003).

Approximately 30% of native vegetation remains within the local area (10 km radius). Given the area is recognised within a regionally significant ecological linkage the vegetation proposed for clearing is considered to be a significant as a remnant within the Greater Bunbury Regional Area, and therefore clearing is at variance to this Principle.

Given the small scale (0.27ha), highly modified and completely degraded condition and recognise ecological linkage the proposed clearing may represents a 'significant' remnant of native vegetation. Therefore, the application may be at variance to this principle.

Methodology

WAPC (2000);

Department of Natural Resources and Environment (2002);

EPA (2000);

EPA (2003);

EPA (2006);

Shepherd (2006);

Heddle et al. (1980);

GIS databases:

- Heddle Vegetation Complexes DEP 21/06/95
- Pre-European Vegetation DA 01/01

Officer

(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

GIS Database analysis indicates that the application area is associated with a dampland and a palusplain.

A major drain runs through the northern section of the application area. The closest record of a wetland is an EPP wetland approximately 800m west, north-west of the application area.

Sections of the application are associated with a dampland and a palusplain. The native vegetation within the application is completely degraded (Keighery, 1994). The vegetation understorey has been highly modified and consists mainly of introduced pastoral grasses and annual weeds. The property appears to have been heavily grazed over many years, and more recently modified, through the impacts of heavy machinery working on the northern half of the property (Site Visit, DEC, 2007).

Given the above, the proposal is at variance to this principle as the application is associated with a dampland and a palusplain, however, the completely degraded (Keighery, 1994) condition of the application has

^{** (}EPA, 2006)

^{*** (}Department of Natural Resources and Environment, 2002)

significantly modified the value of the native vegetation and therefore the association with these geomorphic wetlands.

Methodology

DEC Site Visit (2007);

GIS Databases:

- EPP Lakes DEP 28/07/03;
- Geomorphic Wetlands (Mgt Categories) Swan Coastal Plain DoE 15/9/04;
- Bunbury 50cm ORTHOMOSAIC DLI04

Officer

(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 soils of the area under application are described as sandy acidic yellow mottled soils, some of which contain ironstone gravel (Northcote et al. 1960-68).

The groundwater salinity is 500-1000mg/L and the hydrogeology consists of surficial sediments, shallow aquifers.

Given the application consists of 0.27 ha within three isolated patches in a grazed area; the level of groundwater salinity; and the hydrogeology of the area, the proposed clearing is unlikely to cause appreciable land degradation, and is therefore unlikely to be at variance to this Principle.

Methodology

Northcote et al. (1960-68);

GIS Databases:

- Salinity Risk LM 25m DOLA 00;
- Hydrogeology, Statewide DoW;
- Groundwater salinity, Statewide DoW

Officer

(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 area proposed for clearing does not lie within or adjacent to areas set aside for conservation.

Given the application consists of isolated stands of trees in a grazed area, the proposed clearing is unlikely to impact on the environmental values of any nearby conservation areas in the local area.

Methodology

GIS Databases:

- CALM Managed Lands and Waters CALM 1/6/04;
- System 6 Conservation Reserves DEP 6/95;
- Bunbury 50cm ORTHOMOSAIC DLI04

Officer

(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 soils of the area under application are described as sandy acidic yellow mottled soils, some of which contain ironstone gravel (Northcote et al. 1960-68).

The groundwater salinity is 500-1000mg/L and the hydrogeology consists of surficial sediments, shallow aquifers.

The slope of the property under application is 15 metres AHD (Australian Height Datum) over 500 m. The nearest watercourse is a minor tributary of the Brunswick River, approximately 2 km north east of the applied area.

Given the application consists of 0.27 ha within three isolated patches in a grazed area, the proposed clearing is unlikely to cause appreciable land degradation and is not likely to be at variance to this Principle.

Methodology

GIS Databases:

- Hydrography, linear DoE 1/2/04;
- Topographic Contours, Statewide DOLA 12/9/02;
- Hydrogeology, Statewide DoW;

- Groundwater Salinity, Statewide - DoW

Officer

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

Given the application consists of 0.27 ha within three isolated patches in a grazed area, the proposed clearing is unlikely to cause or exacerbate the incidence or intensity of flooding and is therefore not likely to be at variance to this Principle.

Methodology

GIS Databases:

- Topographic Contours, Statewide - DOLA 12/9/02

Officer

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

The land is zoned General Industry under the Shire of Dardanup TPS and Industrial under the Greater Bunbury Region Scheme (WAPC, 2000). The applicant has provided an extract of the development approval on Lot 1 from the shire, approving the filling of undeveloped portions of the site for future development potential.

There is one Native Title claim over the area under application, as the property is privately owned the granting of the clearing permit is a secondary approval and does not constitute a future act under the Native Title Act 1993.

There is no required RiWI Act Licence, Works Approval or EP Act Licence that affects the area under application.

Methodology

WAPC (2000);

GIS Databases:

- Town Planning Scheme Zones MFP 08/98;
- Native Title Claims DLI 07/11/05

Officer

5. Assessor's recommendations

Purpose

Method Applied area (ha)/ trees Decision

Comment / recommendation

Industrial

Mechanical 0.27

Removal

Grant

The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s510 of the Environmental Protection Act 1986, and the proposed clearing:

- is at variance to Principles (f);
- may be at variance to Principle (b) and (e); and
- is not or is not likely to be at variance to the remaining clearing Principles.

6. References

Bennett Environmental Consulting Pty Ltd (2007). Flora and Vegetation Survey of CPS1683/1, South Western Highway Bunbury, Kalamunda. TRIM Ref. DOC41350.

DEC Site Visit (2007). Site Inspection Report, Department of Environment and Conservation (DEC). Bunbury, Western Australia. TRIM Ref: DOC38922.

DEC, Flora Base (2007). http://florabase.calm.wa.gov.au/browse/profile/10796. (Retrieved 12 December 2007).

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,

Environmental Protection Authority (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.

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.

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.

SAC Bio Datasets (22/8/07). Department of Environment and Conservation, SAC Bio Datasets, Kensington, Western Australia. 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 Planning Commission (WAPC) (2000). Greater Bunbury Regional Scheme - Scheme Report, August 2000.

