GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 4185/1
Permit Holder:	Shire of Dardanup
Duration of Permit:	27 June 2011 – 27 June 2016

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. **Purpose for which clearing may be done**
   Clearing for the purpose of road widening.

2. **Land on which clearing is to be done**
   ROAD RESERVE (VENN ROAD, DARDANUP 6236)
   ROAD RESERVE (VENN ROAD, DARDANUP WEST 6236)
   ROAD RESERVE (BANKSIA ROAD, CROOKED BROOK 6236)
   ROAD RESERVE (DEPIAZZI ROAD, DARDANUP 6236)
   ROAD RESERVE (WATERLOO ROAD, WATERLOO 6228)
   ROAD RESERVE (FERGUSON ROAD, DARDANUP 6236)
   ROAD RESERVE (FERGUSON ROAD, FERGUSON 6236)
   ROAD RESERVE (HENTY ROAD, BUREKUP 6227)

3. **Area of Clearing**
   The Permit Holder shall not clear more than 7.8 hectares of native vegetation within the combined areas shaded yellow on attached Plan 4185/1a and Plan 4185/1b and Plan 4185/1c and Plan 4185/1d.

4. **Application**
   This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

5. **Type of clearing authorised**
   This Permit authorises the Permit Holder to clear native vegetation for activities to the extent that the Permit Holder has the power to clear native vegetation for those activities under the *Local Government Act 1995* or any other written law.

6. **Compliance with Assessment Sequence and Management Procedures**
   Prior to clearing any native vegetation under conditions 1, 2 and 3 of this Permit, the Permit Holder must comply with the Assessment Sequence and the Management Procedures set out in Part II of this Permit.

PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

7. Avoid, minimise etc clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:
(a) avoid the clearing of native vegetation;
(b) minimise the amount of native vegetation to be cleared; and
(c) reduce the impact of clearing on any environmental value.

8. Dieback and weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:
(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
(b) shall only move soils in *dry conditions*;
(c) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
(d) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

9. Vegetation management

Prior to commencing clearing, the Permit Holder shall construct a temporary fence along the western side of Waterloo Road between South Western Highway and the railway line in order to prevent adverse impacts to the threatened ecological community.

10. Fauna management

(a) Prior to undertaking any clearing authorised under this Permit for Ferguson Road Reserve within the area shaded red on attached Plan 4185/1c, the area(s) shall be inspected by a *fauna specialist* who shall identify habitat/*habitat tree(s)* suitable to be utilised by Western Ringtail Possum (*Pseudocheirus occidentalis*);

(b) Prior to clearing, any habitat/*habitat tree(s)* identified by condition 10(a) shall be inspected by a *fauna specialist* for the presence of fauna listed in condition 10(a).

(c) Immediately prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna clearing person* to remove and relocate fauna identified under condition 10(b).

(d) Clearing authorised under this Permit for Venn Road Reserve, must be undertaken between the 1st December and the 31st May in any year for the term of this Permit.

11. Flora management

(a) Prior to undertaking any clearing authorised under this Permit along the western side of Waterloo Road Reserve between the railway line and St Helena Road, the Permit Holder shall engage a *botanist*, to inspect that area for the presence of the following rare flora listed in the Wildlife Conservation (Rare Flora) Notice 2010(2):
(i) *Eleocharis keigheryi.*

(b) Where rare flora are identified in relation to condition 11(a) of this Permit, the Permit Holder shall ensure that:
(i) all records of rare flora are submitted to the CEO; and
(ii) no clearing occurs within 50 metres of the identified rare flora, unless approved by the CEO.

12. Offsets

Where clearing authorised under this Permit impacts upon:

- threatened ecological community Floristic Community Type 3c – '*Corymbia calophylla – Xanthorrhoea preissii* woodlands and shrublands of the Swan Coastal Plain' within Waterloo and Henty Road Reserves; and
- vegetation within Venn, Henty and Waterloo Road Reserves,

the Permit Holder must implement an *offset* in accordance with conditions 12(a) and 12(b) of this Permit with respect to that clearing.

(a) Determination of *offsets*:
   (i) in determining the *offset* to be implemented with respect to a particular area of native vegetation proposed to be cleared under this Permit, the Permit Holder must have regard to the *offset* principles contained in condition 12(b) of this Permit;
   (ii) once the Permit Holder has developed an *offset proposal*, the Permit Holder must provide that *offset proposal* to the CEO for the CEO's approval prior to undertaking any clearing to which the *offset* relates, and prior to implementing the *offset*;
   (iii) clearing may not commence until and unless the CEO has approved the *offset proposal* to which the clearing relates;
   (iv) the Permit Holder shall implement the *offset proposal* approved under condition 12(a)(iii); and
   (v) each *offset proposal* shall include a *direct offset*, timing for implementation of the *offset proposal* and may additionally include *contributing offsets*.

(b) For the purpose of this condition, the *offset* principles are as follows:
   (i) *direct offsets* should directly counterbalance the loss of the native vegetation;
   (ii) *contributing offsets* should complement and enhance the *direct offset*;
   (iii) *offsets* are implemented only once all avenues to avoid, minimise, rectify or reduce environmental impacts have been exhausted;
   (iv) the environmental values, habitat, species, *ecological community*, physical area, ecosystem, landscape, and hydrology of the *offset* should be the same as, or better than, that of the area of native vegetation being *offset*;
   (v) a ratio greater than 1:1 should be applied to the size of the area of native vegetation that is offset to compensate for the risk that the *offset* may fail;
   (vi) *offsets* must entail a robust and consistent assessment process;
   (vii) in determining an appropriate *offset*, consideration should be given to ecosystem function, rarity and type of *ecological community*, vegetation *condition*, habitat quality and area of native vegetation cleared;
   (viii) the *offset* should either result in no net loss of native vegetation, or lead to a net gain in native vegetation and improve the *condition* of the natural environment;
   (ix) *offsets* must satisfy all statutory requirements;
   (x) *offsets* must be clearly defined, documented and audited;
   (xi) *offsets* must ensure a long-term (10-30 year) benefit; and
   (xii) an *environmental specialist* must be involved in the design, assessment and monitoring of *offsets*.

PART III - RECORD KEEPING AND REPORTING

13. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

(a) In relation to the clearing of native vegetation authorised under this Permit:
   (i) the species composition, structure and density of the cleared area;
   (ii) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
   (iii) the date that the area was cleared; and
   (iv) the size of the area cleared (in hectares).

(b) In relation to fauna management pursuant to condition 10 of this Permit:
   (i) the location of each habitat tree identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
   (ii) the location of each Pseudocheirus occidentalis (Western Ringtail Possum) drey recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees.
   (iii) the number of Western Ringtail Possum (*Pseudocheirus occidentalis*) that have been observed utilising, the habitat/habitat tree(s); and
   (iv) the location and date where relocated fauna was released, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees.

(c) In relation to flora management pursuant to condition 11 of this Permit:
   (i) the location of each rare flora species, *Eleocharis keigheryi,* recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees; and
   (ii) a copy of the botanists flora survey report.

(d) In relation to the offset of areas pursuant to condition 12 of this Permit:
   (i) the location of any area of *offsets* recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
   (ii) a description of the *offset* activities undertaken; and
   (iii) the size of the *offset* area (in hectares).

14. Reporting

(a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
   (i) of records required under condition 13 of this Permit; and
   (ii) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.

(b) Prior to 27 March 2016, the Permit Holder must provide to the CEO a written report of records required under condition 13 of this Permit where these records have not already been provided under condition 14(a) of this Permit.

Definitions
The following meanings are given to terms used in this Permit:

botanist means a person with specific training and/or experience in the ecology and taxonomy of Western Australian flora;

condition means the rating given to native vegetation using the *Keighery scale* and refers to the degree of change in the structure, density and species present in the particular vegetation in comparison to undisturbed vegetation of the same type;

contributing offset/s has the same meaning as is given to that term in the Environmental Protection Authority's *Position Statement No.9: Environmental Offsets*, January 2006;

dieback means the effect of *Phytophthora* species on native vegetation;

direct offset/s has the same meaning as is given to that term in the Environmental Protection Authority's *Position Statement No.9: Environmental Offsets*, January 2006;

dry conditions means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches;

ecological community/ies means a naturally occurring biological assemblage that occurs in a particular type of habitat (English and Blythe, 1997; 1999);

environmental specialist means a person who is engaged by the Permit Holder for the purpose of providing environmental advice, who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit;

fauna clearing person means a person who has obtained a licence from the Department, issued pursuant to the *Wildlife Conservation Regulations 1970* authorising them to take fauna;

fauna specialist means a person with training and specific work experience in fauna identification or faunal assemblage surveys of Western Australian fauna;

fill means material used to increase the ground level, or fill a hollow;

Guidance Statement No. 51 means the Environmental Protection Authority Guidance Statement No 51, Guidance for the Assessment of Environmental Factors - Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (2004);

habitat tree(s) means *Agonis flexuosa* (Peppermint trees) that have a diameter, at average adult human chest height, of greater than 10cm, healthy with evidence of possum use through scratchings, scats and/or the presence of dreys;

Keighery scale means the vegetation condition scale described in *Bushland Plant Survey: A Guide to Plant Community Survey for the Community (1994)* as developed by B.J. Keighery and published by the Wildflower Society of WA (Inc). Nedlands, Western Australia;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

offset/s means an offset required to be implemented under condition 12 of this Permit;

offset proposal means an *offset* determined by the Permit Holder in accordance with condition 12 of this Permit;

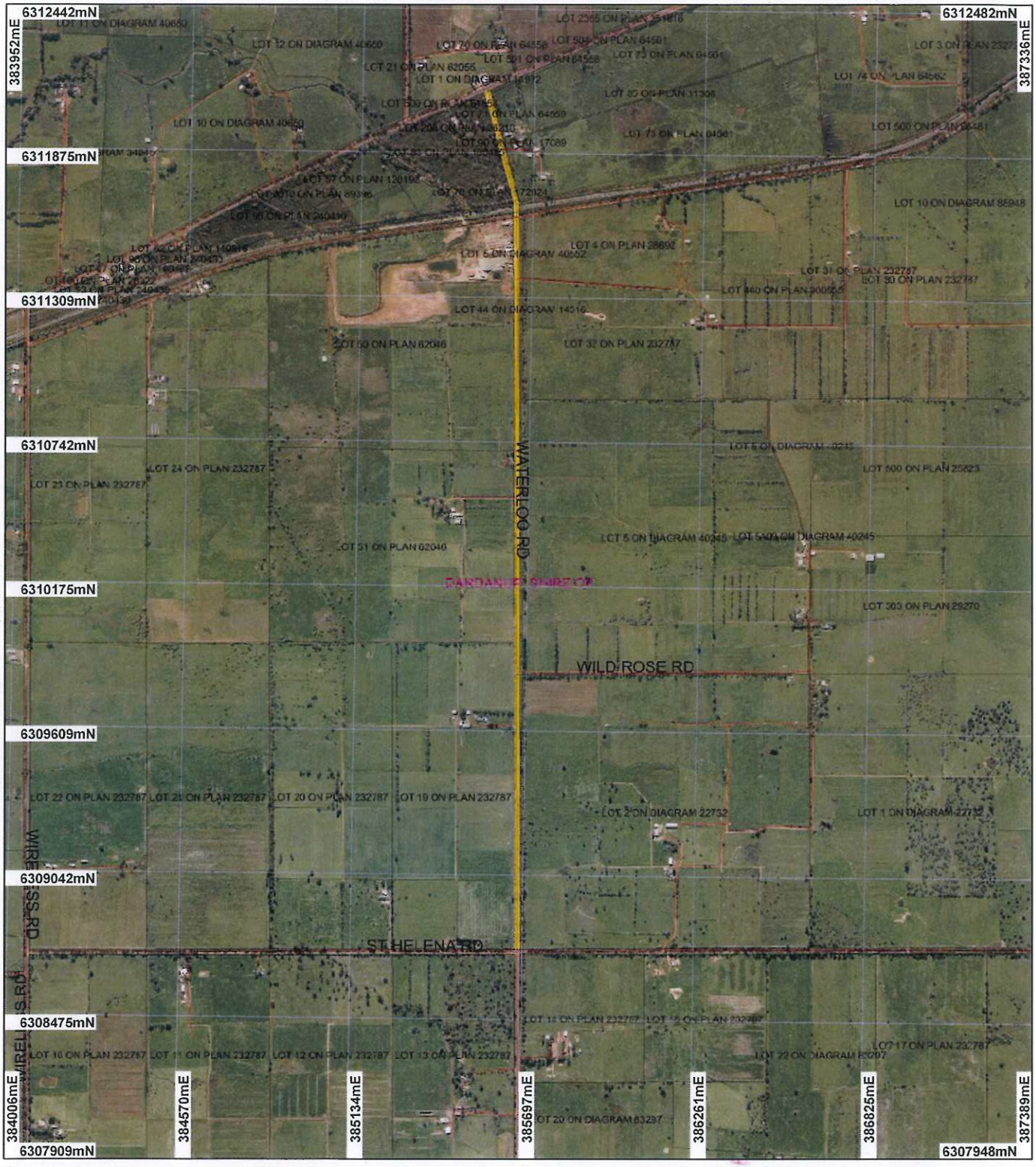
weed/s means a species listed in Appendix 3 of the "Environmental Weed Strategy" published by the Department of Conservation and Land Management (1999), and plants declared under section 37 of the *Agriculture and Related Resources Protection Act 1976*.

Kelly Faulkner
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

Officer delegated under Section 20
of the Environmental Protection Act 1986

2 June 2011

Plan 4185/1a



LEGEND

Clearing Instruments

- Areas Applied to Clear
- Areas Subject to Conditions
- Areas Approved to Clear
- Road Centrelines
- Cadastre

- Towns
- Bunbury 50cm Orthomosaic - Landgate 2008
- Local Government Authorities
- Cadastre for labelling

N

0 ~500 m

Scale 1:20000

(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

K Faulkner Date 2/6/11

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

Information derived from this map should be confirmed with the data custodian acknowleged by the agency acronym in the legend.

Department of Environment and Conservation

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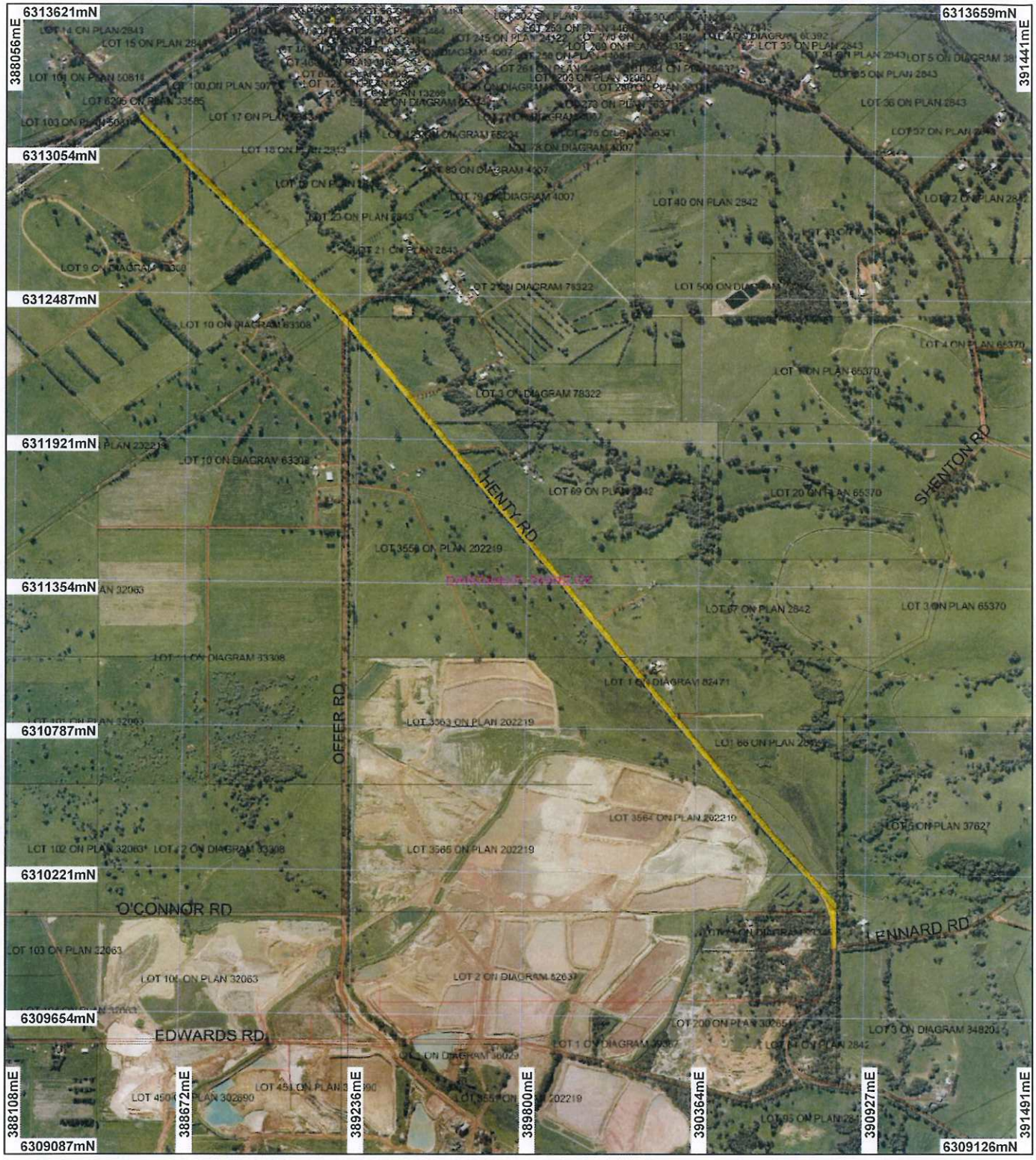
Plan 4185/1b



LEGEND

Clearing Instruments

- Areas Applied to Clear
- Areas Subject to Conditions
- Areas Approved to Clear

Road Centrelines

Cadastre

Towns

Bunbury 50cm Orthomosaic - Landgate 2008

Local Government Authorities

Cadastre for labelling

N

0 ~500 m

Scale 1:20001

(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

K Faulkner Date 2/6/11

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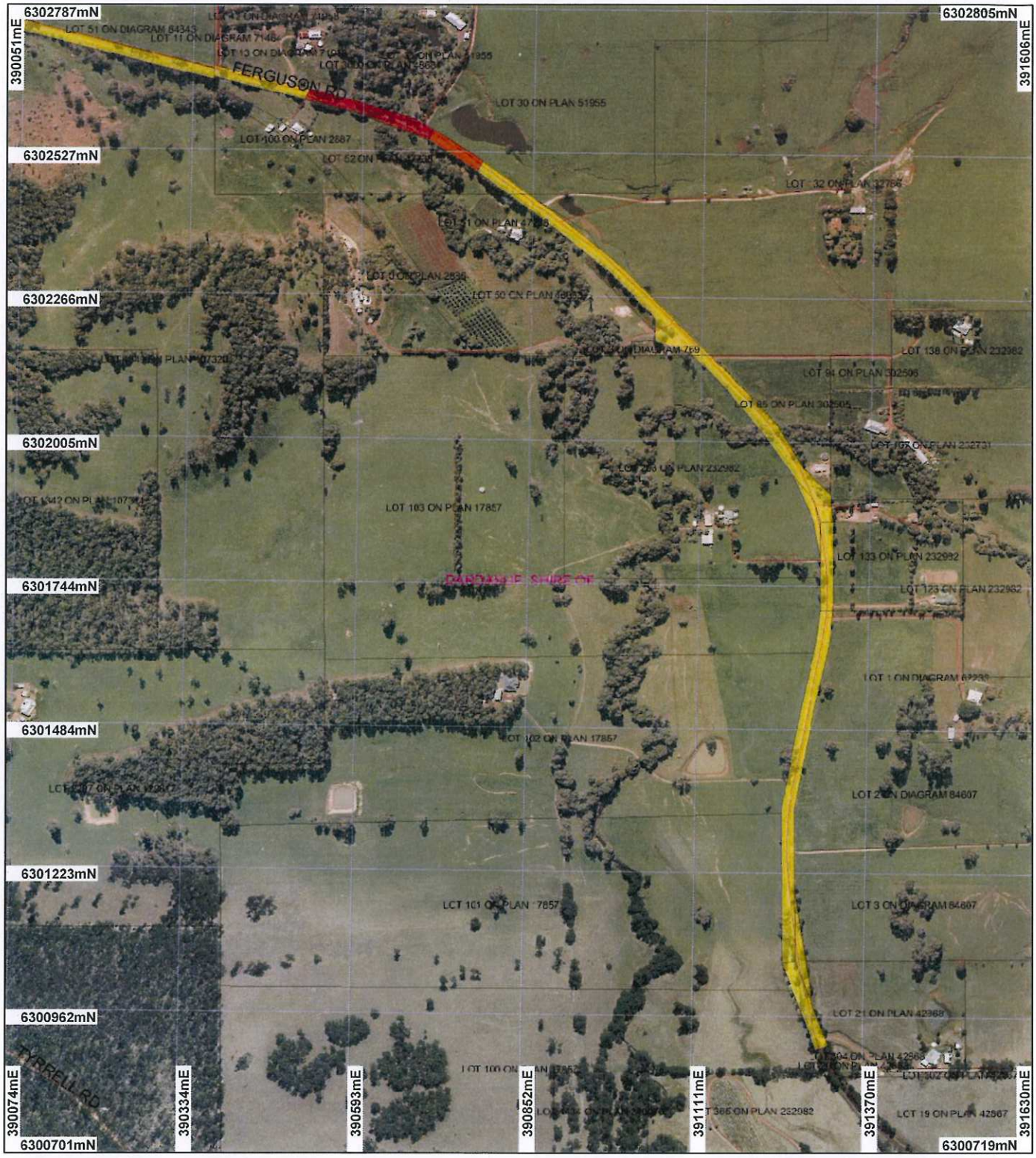

LEGEND

Clearing Instruments

- Areas Applied to Clear
- Areas Subject to Conditions
- Areas Approved to Clear
- Road Centrelines
- Cadastre

- Towns
- Bunbury 50cm Orthomosaic - Landgate 2008
- Local Government Authorities
- Cadastre for labelling

N

0 ~250 m

Scale 1:9200

(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

K Faulkner Date 2/6/11

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

Information derived from this map should be confirmed with the data custodian acknowleged by the agency acronym in the legend.

Department of Environment and Conservation

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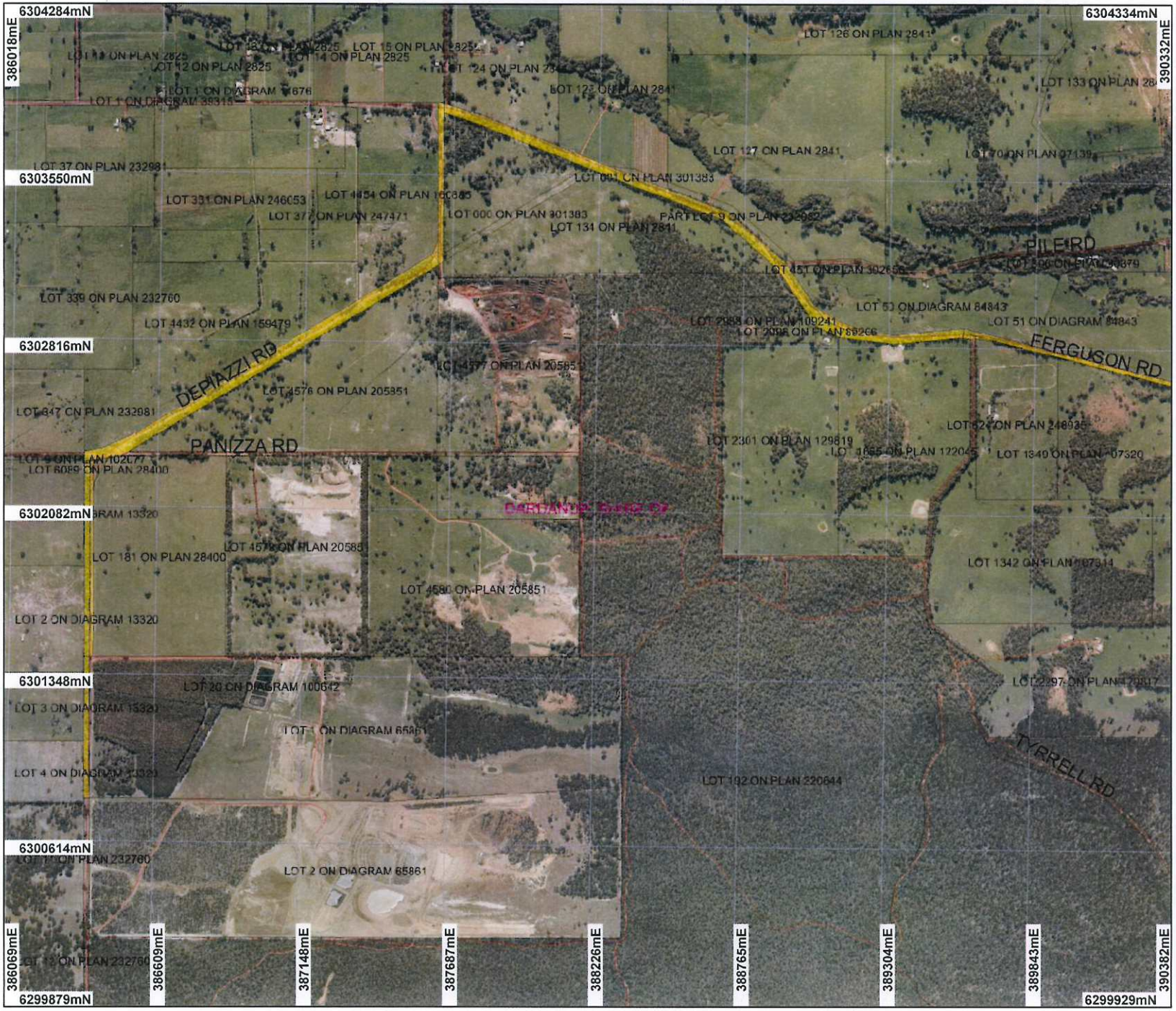
Plan 4185/1d



LEGEND

Clearing Instruments

- Areas Applied to Clear
- Areas Subject to Conditions
- Areas Approved to Clear

- Road Centrelines
- Cadastre
- Towns
- Bunbury 50cm Orthomosaic - Landgate 2008
- Local Government Authorities Cadastre for labelling

N

0 ~625 m

Scale 1:21000
(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

K Faulkner Date 2/4/11

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

Information derived from this map should be confirmed with the data custodian acknowleged by the agency acronym in the legend.

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Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4185/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Shire of Dardanup

1.3. Property details

Property:
ROAD RESERVE (VENN ROAD, DARDANUP 6236)
ROAD RESERVE (DEPIAZZI ROAD, DARDANUP 6236)
ROAD RESERVE (FERGUSON ROAD, DARDANUP 6236)
ROAD RESERVE (FERGUSON ROAD, FERGUSON 6236)
ROAD RESERVE (WATERLOO ROAD, WATERLOO 6228)
ROAD RESERVE (VENN ROAD, DARDANUP WEST 6236)
ROAD RESERVE (HENTY ROAD, BUREKUP 6227)

Local Government Area: SHIRE OF DARDANUP

1.4. Application

Clearing Area (ha)	Method of Clearing	For the purpose of:
7.8	Mechanical Removal	Road construction or maintenance

1.5. Decision on application

Decision on Permit Application: Grant

Decision Date: 3 June 2011

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
Shepherd (2009) describes Beard vegetation 4 as Medium woodland; marri & wandoo 27 as Low woodland; paperbark (Melaleuca sp.) 968 as Medium woodland; jarrah, marri & wandoo 1182 as Medium woodland; Eucalyptus rudis & Melaleuca rhaphiophylla Heddle vegetation complexes (Heddle 1980) GUILDFORD COMPLEX : A mixture of open forest to tall open forest of Corymbia calophylla (Marri) - Eucalyptus wandoo (Wandoo) - Eucalyptus marginata (Jarrah) and woodland of Eucalyptus wandoo (Wandoo) (with rare occurrences of Eucalyptus lane-poolei (Salmon White Gum)). Minor components include Eucalyptus rudis (Flooded Gum) - Melaleuca rhaphiophylla (Swamp Paperbark). DARDANUP COMPLEX : Mosaic of vegetation types	Waterloo Road Vegetation under application on the western side of the road between the South-West Highway and the rail-line, adjacent to the Waterloo Crown Reserve 2806, is described as wandoo, marri open forest over a Xanthorrhoea preissii open low heath in a 'good' (Keighery, 1994) condition (DEC, 2011a). On the eastern side of the road the vegetation is in a 'completely degraded' to 'degraded' (Keighery, 1994) condition (DEC, 2011c). The vegetation between the rail way line and Wild-Rose Road has been impacted considerably by past clearing with vegetation mainly retained within the roadside drain on the western side of the road, including regrowth Viminaria juncea and M. pauciflora, and scattered trees (mostly wandoo, Melaleuca rhaphiophylla and M. viminea) and shrubs on the east side of the road (DEC, 2011a). Vegetation under application between Wild-Rose Road and St. Helena Road on both sides of the road is generally in 'good' (Keighery 1994) condition. The eastern side of the road, within this area, comprises a narrow remnant of marri (Corymbia calophylla), Flooded Gum (Eucalyptus rudis), Melaleuca rhaphiophylla and M. viminea over mixed shrub, sedges and herbs in a 'degraded' to 'good' condition (DEC, 2011c). Henty Road Sections of Henty Road, from Lennard Road junction to approximately 300m north and from 700 to 1500m north of Lennard Road junction, have already been widened to the required road width and therefore no further clearing within these areas will be required.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	Vegetation type and condition confirmed during DEC site visits undertaken in February and May 2011 (DEC, 2011a & DEC, 2011c).

characteristic of adjacent vegetation complexes such as Serpentine River, Southern River and Guildford. DARLING SCARP COMPLEX : Vegetation ranges from low open woodland to lichens according to depth of soils. Woodland components chiefly Eucalyptus wandoo (Wandoo) with Eucalyptus laeliae (Darling Range Ghost Gum) in the north, Corymbia haematoxylon (Mountain Marri) in the south, and Corymbia calophylla (Marri) throughout the region. Dominant vegetation types R. R. Mattiske vegetation complexes - Preston (PR) - Woodland of Eucalyptus rudis-Agonis flexuosa-Banksia seminuda along streams, open forest of Corymbia calophylla-Eucalyptus patens on slopes in the humid zone.	Approximately 300 - 700m north of Lennard Road junction comprises open forest of marri in a 'degraded' condition (DEC, 2011a). The most impact to vegetation within the Henty Road reserve is within a section of road approximately 1.5km to 2.4km north of the Lennard road junction. Much of the impact within this section is contained within the road maintenance zone however, an approximate 100m stretch between 2.2 and 2.3km south of the South West Highway junction on the western side of the road is proposed to require 2m of vegetation into the road reserve to be removed. The western side of the road in this area is in 'good' to 'very good' (Keighery, 1994) condition comprising mostly marri, wandoo open forest with Agonis flexuosa and Melaleuca rhaphiophylla and an intact understorey while the eastern side is in a 'degraded' (Keighery, 1994) condition (DEC, 2011a and DEC, 2011c). The section of road north of this to the South West Highway junction is also marri - wandoo open forest is in a 'degraded' (Keighery, 1994) condition (DEC, 2011a). Ferguson Road The area under application consists of upland vegetation of marri - jarrah open forest over a mostly intact understorey and is in 'very good' (Keighery 1994) condition along much of the western side of the road while most of the eastern road reserve is in 'degraded' (Keighery, 1994) condition (DEC, 2011a). The lowland areas have a closed to open Agonis flexuosa forest in a 'degraded' (Keighery, 1994) condition (DEC, 2011a). Depiazzi Road The vegetation under application is mostly a jarrah - marri open forest in 'degraded' (Keighery 1994) condition adjacent to the existing road and 'very good' (Keighery, 1994) condition approximately 1-2m into the road reserve (DEC, 2011a). However, on the sandier soils the vegetation becomes a jarrah, Banksia attenuata, marri open forest of 'degraded' to 'good' (Keighery 1994) condition (DEC, 2011a). The western side of the road reserve supports the best condition vegetation along Depiazzi Road while the eastern side of the road reserve supports limited native vegetation (DEC, 2011a). Venn Road The vegetation within the road reserve is Eucalyptus rudis (flooded gum) low open forest with emergent Melaleuca rhaphiophylla and Agonis flexuosa, the entire length is in 'degraded' (Keighery 1994) condition (DEC, 2011a).		
As above.	As above.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	As above.
As above.	As above.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	As above.
As above.	As above.	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)	As above.

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 application is for the clearing of 7.8ha of native vegetation along Banksia, Depiazzi, Ferguson, Venn, Waterloo and Henty Road Reserves for the purpose of road widening.

The applied areas are predominantly within the Guildford vegetation complex (Heddle et al 1980), but also impacts on vegetation of the Swan, Dardanup and Curtis vegetation complexes as mapped by Heddle et al (1980) and the Preston and Darling Scarp complexes as mapped by Mattiske and Havel (1998). With the exception of the Preston complex, all complexes are below nationally recommended levels of retention and/or reservation and as such any remnant vegetation within the road reserves is considered to be regionally significant (DEC, 2011a). The vegetation within Venn, Henty and Waterloo Road Reserves are also considered to be significant as remnants within an extensively cleared landscape in the local area.

The plant community supported within Waterloo (between South West Hwy and the railway line and between Wild Rose Road and St Helena Road) and Henty Road (between 1.5km to 2.4km north of Lennard Road Junction) reserves is considered to be an inferred example of the threatened ecological community floristic community type 3c 'Corymbia calophylla (Eucalyptus calophylla) - Xanthorrhoea preissii woodlands and shrublands of the Swan Coastal Plain' (DEC, 2011a, DEC, 2011c & DEC, 2011d). The best representations of the vegetation type along these roads are on the western side of the road reserves (DEC, 2011c). These road reserves while although narrow are generally in better condition than other representations of this community which, in the South West Region, is restricted to the Waterloo reserves and a small reserve near Yarloop town site (DEC, 2011c). These road reserves are therefore important as a seed bank for revegetation and as a reference of the species composition of this community type (DEC, 2011c).

The vegetated areas along the roadside drain on the western side of Waterloo Road between the railway line and St. Helena Roads provides suitable habitat for declared rare flora species Eleocharis keigheryi (DEC, 2011a & DEC, 2011c). These areas require an appropriately timed and targeted flora survey to confirm the presence or absence of this species prior to clearing.

The vegetation within the reserves provides habitat and wildlife corridors for indigenous fauna species including threatened species such as Western Ringtail Possum, Carnaby's black cockatoo and Chudtich which have been recorded within the local area (10km radius) as well as tree hollows within Venn Road reserve that may be significant breeding habitat for duck species in the area (DEC, 2011c).

The vegetation within the application areas may be providing significant biodiversity corridors and fauna habitat as they occur within highly cleared landscapes. Where possible, vegetation should only be cleared to one side of these roads in order to maintain ecological linkages and minimise environmental impacts to the remaining vegetation.

Given that the vegetation under application includes vegetation within a significantly cleared landscape, represents vegetation communities which are threatened and/or poorly represented and provides habitat for rare and threatened indigenous flora and fauna species, the vegetation is considered to comprise a high level of biological diversity.

Methodology

Reference:
- DEC (2011a)
- DEC (2011c)
- DEC (2011d)
- Heddle et al (1980)
- Mattiske and Havel (1998)

GIS Databases:
- Bunbury 50cm Orthomosaic - Landgate 2008
- Heddle Vegetation Complexes - DEP
- Mattiske Vegetation - CALM
- Pre-European Vegetation - DA
- SAC Biodatasets - Accessed March 2011

(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

Seven threatened and priority fauna species have been recorded near the areas under application. As the surrounding landscape is extensively cleared the vegetation connects larger remnants of bushland and therefore acts as a biological corridor, particularly for native fauna in a highly cleared landscape (approximately 30% remaining vegetation within the local area).

According to the South West Regional Ecological Linkages project (EPA 2009), Depiazzi and Ferguson Roads are just south of the Ferguson River Ecological Linkage and were given a rating of '1c: with an edge touching or <100 m from a natural area selected in 1b' which is the third highest value for a linkage.

Western Ringtail Possums (Pseudocheirus occidentalis, listed as Vulnerable under the Environment Protection and Biodiversity Conservation Act 1999 and Threatened under the Wildlife Conservation Act 1950) have been recorded as close as 300m from areas under application. The vegetation within Ferguson Road reserve contains suitable habitat for the Western Ringtail Possum (DEC 2011a), and there are multiple records of this species within 500m of the areas under application.

DEC site visits confirmed that a number of mature Peppermint trees along Ferguson Road in the vicinity of where Ferguson Road crosses the Ferguson River will need to be cleared particularly for the widening of the existing bridge (DEC, 2011a & DEC, 2011c). These trees comprise part of a significant habitat linkage for this species as it leads to the Ferguson River Ecological Linkage and into an area that has been recognised as supporting habitat along the Preston and Ferguson Rivers as well as south-west through to Boyanup State Forest and Dardanup Conservation Park (DEC, 2011a, DEWHA, 2009 & EPA, 2003)

Measures to avoid and minimise clearing in this area will help to reduce the impact to Western Ringtail Possum habitat and where possible the applicant is encouraged to prune trees rather than clearing. In addition, where clearing of habitat trees is unavoidable a qualified fauna clearing person will be required to check the trees immediately prior to clearing to ensure that any possums inhabiting the trees are appropriately removed and relocated. The permit holder will also need to ensure that any neighbouring habitat trees are not disturbed during the clearing process to limit impact to the surrounding habitat.

A number of hollows were identified within trees along Venn Road during the May site visit. These hollows could provide breeding habitat for indigenous fauna including duck species known to inhabit the local area. In order to ensure that ducks are not disturbed during breeding season, trees with hollows should only be cleared during the summer months from early December to late May (DEC, 2011c).

Given the suitable habitat identified within the areas under application, particularly in Ferguson and Venn Road reserves, for indigenous fauna species the proposal is considered to be may be at variance to this principle.

Methodology

References:
- DEC (2011a)
- DEC (2011c)
- DEWHA (2009)
- EPA (2003)
- EPA (2009)

GIS Databases:
- Bunbury 50cm Orthomosaic - Landgate 2008
- DEC Tenure - DEC
- Ringtailed Possum Areas - DEWHA

(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

Declared rare flora species, Eleocharis keigheryi, has been recorded approximately 1km from Waterloo road reserve within similar vegetation and soil types to areas under application. Eleocharis keigheryi inhabits clay and sandy loam soils associated with winter-wet claypans, creeks and freshwater (Brown et al (1998) & WA Herbarium (1998-2011)). The road side drain on the western side of the section of Waterloo Road between Wild-Rose and St. Helena Roads is considered to be habitat for this species.

An appropriately timed (late winter) and targeted flora survey of the vegetated areas along the western side of Waterloo Road reserve would be required to determine the presence or absence of this species within these road reserves.

Synaphea sp. Fairbridge farm (ranked Critically Endangered), is known to occur within Ferguson road reserve. The western side of Ferguson road reserve is in a 'very good' (Keighery 1994) condition (DEC 2011a), and all areas of very good vegetation along this road reserve may be suitable habitat for this species.

Synaphea sp. Fairbridge farm is known from 5 populations from Serpentine to Dardanup and a total of 543 plants (DEC, 2011b). The majority of these populations occur on road and rail reserves, while only one is within a conservation estate. The population at Ferguson road represents 6% of the total number of plants for this species however it is the most southern of its range with the nearest population approximately 70km north. Therefore the loss of this population would result in a 60% reduction of its range (DEC 2011b). A site visit undertaken by DEC in May 2011 confirmed that the proposed road widening along Ferguson Road will not impact the known population of this species or areas previously identified as potential habitat (DEC, 2011c).

Due to the proposed clearing along Waterloo Road impacting upon habitat suitable for Eleocharis keigheryi and possibly a population of this species, the proposal is considered to be may be at variance to this principle.

Methodology

References:
- Brown et al (1998)

- DEC (2011a)
- DEC (2011b)
- WA Herbarium (1998-2011)

GIS Databases:
- Heddle Vegetation Complexes - DEP
- Mattiske Vegetation Complexes - CALM
- Pre-European Vegetation - DA
- SAC Biodatasets - Accessed February 2011
- Soils, Statewide - DA

(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 at variance to this Principle

Floristic Community Type 3c 'Eucalyptus (Corymbia) calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain' was recorded 200m and 1.2km west of Waterloo road reserve and FCT 08 ' Herb rich shrublands in clay pans' was recorded as two occurrences 1.2km west of waterloo road reserve, both were on the same soil and vegetation types as the areas under application.

The vegetation under application within the Waterloo and Henty Road reserve is consistent with the threatened ecological community (TEC) (FCT 3c - Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands of the Swan Coastal Plain) (DEC 2011a, DEC, 2011c & DEC, 2011d). This community occurs on the heavy soils on the eastern side of the Swan Coastal Plain between Pearce (Bullsbrook) and Capel (DEC, 2011d & DSEWPC, 2007), is classed as Critically Endangered and listed under the Commonwealth EPBC Act 1999 and is both regionally and locally significant (DEC, 2011a & DEC, 2011d).

The western side of Waterloo Road reserve between South West Hwy and the railway line abuts the Waterloo Reserve which contains a mapped occurrence of this TEC (DEC, 2011d). The amount of vegetation to be cleared along the western side of this road will be minimal and the vegetation is considered to be in a mostly 'degraded' (Keighery, 1994) condition, with the majority of the vegetation being within the maintenance zone of the existing road. However, the vegetation is likely to be a part of or is supporting this community as a buffer (DEC, 2011d).

The area of vegetation within the western side of the Waterloo Road reserve between Wild-Rose Road and St Helena Road is in 'good' (Keighery, 1994) condition (DEC, 2011c). While this remnant is small, it is still of considerable value as a seed bank for revegetation and as a reference of the species composition of this community type (DEC, 2011c). It would be preferable that this remnant is managed and protected from further clearing as it is important as a remnant representative of this 3c floristic community type (DEC, 2011c & DEC, 2011d).

The portion of the western side of Henty Road reserve, approximately 1.5km to 2.4km north of the junction with Lennard Road, is in a 'good' to 'very good' (Keighery, 1994) condition (DEC, 2011c & DEC, 2011d) and although relatively small and narrow, the ecological integrity and condition of this vegetation has been maintained (DEC, 2011c) despite being within a road reserve and susceptible to impacts. Approximately 0.03ha of this vegetation is likely to be impacted by the road widening. The clearing of this area is required to be undertaken in a way as to avoid and minimise the amount of clearing.

Due to the vegetation under application along Waterloo and Henty Roads being inferred examples of the threatened ecological community FCT 3c and the potential impacts to the known mapped occurrence of this TEC within Waterloo Reserve, this proposal is considered to be at variance to this principle. An offset to mitigate the loss of the vegetation with be required to be implemented prior to clearing along these two road reserves.

Methodology

References;
- DEC (2011a)
- DEC (2011c)
- DEC (2011d)
- DSEWPC (2007)

GIS Databases:
- Heddle Vegetation Complexes - DEP
- Mattiske Vegetation Complexes - CALM
- Pre-European Vegetation - DA
- SAC Biodatasets - Accessed March 2011
- Soils, Statewide - DA

(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 at variance to this Principle

The area under application falls within the Jarrah Forest and Swan Coastal Plains IBRA bioregions which have approximately 55.80% and 39.16% of their pre-European extent of vegetation coverage remaining. Aerial photography indicates the local (10km radius) area is approximately 30% vegetated with native vegetation.

The application includes areas of Heddle Vegetation Complexes which exist below the 30% threshold level, including Guildford complex (5.26%), and Dardanup complex (6.81%) (Heddle et al, 1980).

Of the four mapped Beard vegetation associations within the area under application, two that occur within the Swan Coastal Plain have less than 30% of their pre-European extent remaining, and are therefore considered to be below threshold levels for maintaining biodiversity. In addition, Beard association 968 has less than 10% remaining within the Swan Coastal Plain bioregion.

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001, EPA 2000).

Venn, Henty and Waterloo Road reserves are considered to be significant as remnants within their local areas (10km radius) as there is minimal vegetation remaining in these areas and all of the roadside vegetation has considerable value as vegetated linkages across a landscape that has been significantly cleared for agricultural purposes. In addition, a site visit undertaken by DEC in May 2011 confirmed that the vegetation under application within Waterloo and Henty Road reserves are considered to be inferred examples of the threatened ecological community floristic community type 3c, while although narrow are significant as remnants of this community type within a significantly cleared landscape. This community type is only known from the Waterloo Reserves and a small reserve near the townsite of Yarloop within the South West Region and therefore are important as reference communities to demonstrate the species composition of vegetation in this area prior to clearing and weed invasion and as seed banks for revegetation (DEC, 2011c).

Although every effort will be been made to reduce the impact of the proposed road widening on native vegetation by ensuring that the most degraded vegetation is removed in order to retain other vegetation in better condition, the proposal will result in the clearing of native vegetation in an extensively cleared landscape. Therefore the proposed clearing is at variance to this principle.

Methodology

References:
- Shepherd (2009)
- Havel et al (1998)
- Mattiske and Havel (2002)

GIS Databases:
- Bunbury 50cm Orthomosaic - Landgate 2008
- Heddle Vegetation Complexes - DEP
- Mattiske Vegetation - CALM
- Pre-European Vegetation - DA

(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

A palusplain wetland classed as 'Resource Enhancement' occurs within the northern section of the applied clearing area along Waterloo Road reserve and extends west into the neighbouring Lots 77, 78, 83 and 200 Waterloo. DEC site visit (2011c) confirmed that the clearing proposed within this section of the Waterloo Road reserve and within the mapped 'Resource Enhancement' wetland is restricted mostly to regrowth within the road maintenance zone with some small areas of Corymbia calophylla and Xanthorrhoea preissii being new clearing. It is unlikely that the clearing will cause any significant additional impact to this palusplain wetland.

The Ferguson River intersects the application area and as such sections of vegetation to be cleared are growing in association with a watercourse.

Existing infrastructure including culverts and bridges occur within the applied clearing area however, a site visit undertaken in May 2011 confirmed that riparian vegetation will be required to be cleared as the bridge along Ferguson Road will need widening to accommodate for the increased road width either side (DEC, 2011c) and other infrastructure may also require upgrades.

Although the clearing is at variance to this principle, the amount of vegetation that is to be disturbed along the watercourses is minimal and mostly in a 'degraded' (Keighery, 1994) condition (DEC, 2011a). Measures to avoid and minimise the clearing along the watercourses, as well as the upgrade of infrastructure such as culverts and bridges, will assist in preventing any long term impacts to the waterways from the road widening.

Methodology References:
- DEC (2011a)
- DEC (2011c)
- Keighery (1994)

GIS Databases:
- Bunbury 50cm Orthomosaic - Landgate 2008
- Geomorphic wetlands (Mgmt Categories), Swan Coastal Plain - DEC
- Hydrography, linear - DoW
- Hydrography, linear (hierarchy) - DoW

(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**

Given the nature of the application, localised land degradation is likely to occur during the works, however this is likely to be only short term. However, these issues should be minimal as the existing roads already have roadside infrastructure in place to prevent land degradation associated with roads.

Given the linear nature of the application area, it is unlikely that the proposed clearing of native vegetation would cause appreciable land degradation. Therefore the proposed clearing is not likely to be at variance to this principle.

Methodology GIS database:
- Soils, Statewide - DA
- Hydrogeology, 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 may be at variance to this Principle**

Boyanup State Forest is south of Ferguson and Depiazzi Road reserves and Dardanup Conservation Park is located 1km south of Ferguson Road reserve. The clearing may impact on environmental values and could increase the spread of dieback or weed species into these conservation areas. Therefore, the proposal may be at variance to this principle. Weed and dieback management conditions will mitigate and minimise the potential for introduction or spread of dieback and invasive weed species.

Methodology GIS Databases:
- Bunbury 50cm Orthomosaic - Landgate 2008
- DEC Tenure - 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 not likely to be at variance to this Principle**

The area under application falls within the Bunbury groundwater area, the Collie River Irrigation District and the Ferguson River & Tributaries managed under the Rights in Water and Irrigation Act 1914 administered by the Department of Water.

Groundwater salinity is mapped as ranging from 500 to 7000 mg/L total dissolved solids. Significant clearing of native vegetation has already occurred within the local area for agricultural purposes, the clearing of 7.8ha across six road reserves is not likely to further increase groundwater salinity.

The proposed road widening and maintenance will result in the clearing of some riparian vegetation and as such may result in temporary localised sedimentation within the watercourses during the clearing process however, this is unlikely to cause long term deterioration to the quality of surface water in the local area. Therefore, this proposal is considered not likely to be at variance to this principle.

Methodology GIS Databases:
- Groundwater Salinity, Statewide - DoW
- Hydrography, linear (hierarchy) - DoW
- RiWI Act, Groundwater Areas - DoW
- RiWI Act, Rivers - DoW
- RiWI Act, Surface Water Areas, Irrigation Districts - DoW
- Topographic Contours, Statewide - DOLA and ARMY

(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

As the proposal is for the clearing of 7.8ha along six road reserves, the clearing will be linear and given the small scale of the proposed clearing is unlikely to cause or exacerbate the incidence or intensity of flooding. The proposal is not likely to be at variance to this principle.

Methodology

GIS Databases
- Soils, Statewide - DA
- Hydrography, linear - DoW
- Hydrography, linear (hierarchy) - DoW

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

Comments

The areas under application are all within designated road reserves.

Venn and Waterloo Road reserves fall within the Bunbury groundwater area and Venn, Henty and Waterloo Roads all lie within the Collie River Irrigation District proclaimed under the Rights in Water and Irrigation Act 1914 and managed by the Department of Water (DoW). Ferguson River & Tributaries is a proclaimed watercourse and crosses the applied clearing area along Ferguson road. Approvals from DoW may be required within these areas. Clearing and works along the banks of the Ferguson River is going to be required in order to increase the width of the existing bridge. A permit to obstruct or interfere is likely to be required from DoW prior to any works that will interfere with the beds and banks of this watercourse.

There is an aboriginal site adjacent to Waterloo road reserve; Waterloo Brickworks camp & hunting grounds is a man-made structure and two registered Aboriginal sites of significance intersect Ferguson road (DIA, 2011). The applicant is advised that advice should be sought from the Department of Indigenous Affairs prior to undertaking any clearing or works that may interfere with these sites of significance.

Methodology

References:
- DIA (2011)

GIS Databases:
- Aboriginal Sites of Significance - DIA
- RIWI Act, Groundwater areas - DoW
- RIWI Act, Surface Water areas, Irrigation districts - DoW
- RIWI Act, Rivers - DoW
- Town Planning Scheme Zones - DLI

4. References

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

DEC (2011a) Site Inspection Report for Clearing Permit Application CPS 4185/1, Depiazzi, Venn, Freguson, Waterloo and Henty Roads, Shire of Dardanuo. Site inspection undertaken 28/02/2011. Department of Environment and Conservation, Western Australia (DEC Ref. A379594).

DEC (2011b) Species and Communities Advice on Synaphea sp. Fairbridge Farm (D. Papenfus 696), Department of Environment and Conservation, Western Australia (DEC Ref. A383946).

DEC (2011c) Site Inspection Report for Clearing Permit Application CPS 4185/1, Depiazzi, Venn, Ferguson, Waterloo and Henty Roads, Shire of Dardanup. Site inspection undertaken 12/05/2011. Department of Environment and Conservation, Western Australia (DEC Ref. A401486).

DEC (2011d) Species and Communities Advice on Threatened Ecological Community Floristic Community Type 3c - 'Eucalyptus (Corymbia) Calophylla - Xanthorrhoea preissii woodlands and shrublands of the Swan Coastal Plain.' Species and Communities Branch, Department of Environment and Conservation, Western Australia (DEC ref A401493)

DEWHA (2009) Significant impact guidelines for the vulnerable western ringtail possum (Pseudocheirus occidentalis) in the southern Swan Coastal Plain, Western Austraila. Nationally threatened species and ecological communities EPBC Act policy statement 3.10. Department of Environment, Water, Heritage and the Arts, Commonwealth of Australia, Canberra, ACT.

DIA (2011) Aboriginal Heritage Inquiry System, Aboriginal Sites Database Search for Waterloo and Ferguson Road Reserves, Shire of Dardanup. Department of Indigenous Affairs, Western Australia (DEC ref A410502).

DSEWPC (2007) Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands of the Swan Coastal Plain, Advice to the Minister for the Environment and Water Resources from the Endangered Species Scientific Subcommittee (ESSS) on a proposal to add an ecological community to Schedule 2 of the Endangered Species Protection Act 1992 (ESP Act). Department of Sustainability, Environment, Water, Population and Communities, Commonwealth of Australia, Canberra, ACT. (DEC ref A401488)

Havel, J.J. (2002); Review of management options for poorly represented vegetation complexes. Prepared for Conservation Commission

Havel, J.J. and Mattiske Consulting Pty Ltd (2002) Review of management options for poorly represented vegetation complexes, Conservation Commission.

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.

Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment 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. (2009) 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.

Western Australian Herbarium (1998-2011) FloraBase - The Western Australian Flora. Department of Environment and Conservation. http://florabase.dec.wa.gov.au/ (Accessed 30/05/2011).

5. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now DEC)
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 DoW)