



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 3752/1
Permit Holder:	CBH Engineering Pty Ltd
Duration of Permit:	2 May 2011 – 2 May 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 construction and associated infrastructure and works.

2. Land on which clearing is to be done

Parker Street road reserve Carnamah (PIN 11428832).

3. Area of Clearing

The Permit Holder must not clear more than 0.16 hectares of native vegetation within the area hatched yellow on attached Plan 3752/1.

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.

PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

5. 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:

- avoid the clearing of native vegetation;
- minimise the amount of native vegetation to be cleared; and
- reduce the impact of clearing on any environmental value.

6. Offsets

If part or all of the clearing to be done is or may be at variance with one or more of the clearing principles, then the Permit Holder must implement an *offset* in accordance with conditions 6(a) and (b) of this Permit with respect to that clearing.

(a) Determination of *offsets*:

- 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 6(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 by 7 June 2011 and prior to implementing the offset;
 - (iii) the Permit Holder shall implement the offset proposal approved under condition 6(a)(ii); and
 - (iv) 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

7. Records must be kept

- (a) The Permit Holder must maintain the following records for activities done pursuant to this Permit 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 the offset of areas pursuant to condition 6:
 - (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;
 - (ii) a description of the *offset* activities undertaken; and
 - (iii) the size of the *offset* area (in hectares).

8. Reporting

- (a) The Permit Holder must provide to the CEO, on or before 30 June of each year, a written report of records required under condition 7 of this Permit and activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.
- (b) Prior to 29 May 2016, the Permit Holder must provide to the CEO a written report of records required under condition 7 of this Permit where these records have not already been provided under condition 8(a) of this Permit.

Definitions

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

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;

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;

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;

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;

offset/s means an offset required to be implemented under condition 6 of this Permit;

offset proposal means an *offset* determined by the Permit Holder in accordance with condition 6 of this Permit.



Kelly Faulkner
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

7 April 2011

Plan 3752/1

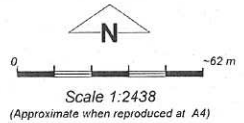


LEGEND

Cadastral
 Perth Townsite 20cm
 Orthomosaic - Landgate
 2007
 Road Centrelines
 FW
 HY
 (cont)

LRO
 LRS
 MR
 N
 TR
 Clearing Instruments
 (cont)

Areas Subject to Conditions
 Areas Approved to Clear
 Local Government
 Authorities



Geocentric Datum Australia 1994

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

[Signature] Date *7/4/11*
 K Faulkner

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 acknowledged by the agency acronym in the legend.



Department of Environment and Conservation

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* Project Data. This data has not been quality assured. Please contact map author for details.



1. Application details

1.1. Permit application details

Permit application No.: 3752/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: CBH Engineering Pty Ltd

1.3. Property details

Property: ROAD RESERVE (CARNAMAH 6517)
Local Government Area:
Colloquial name: parts of Parker

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
0.16		Mechanical Removal	Road construction or maintenance

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 7 April 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
Beard Vegetation Association: 352 - Medium woodland; York gum	The applied area is 0.16 hectares of native vegetation for the purpose of road construction and associated works. The vegetation appears to be in 'very good' to 'degraded' (Keighery 1994) condition, with some areas maintaining a relatively intact vegetation structure and other areas degraded by tracks and weeds.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The vegetation description and condition was determined from aerial imagery, photographs supplied with the application and a flora and vegetation survey report (Ecoscape 2010).
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.

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 proposal is for the clearing of 0.16 hectares of native vegetation for road construction and associated works.

The vegetation under application ranges in condition (Keighery 1994) from 'very good' to 'degraded' based on the site photos provided (CBH 2010), aerial photography (Landgate 2006) and a flora and vegetation survey report (Ecoscape 2010). The vegetation is comprised of eucalypt woodlands (*Eucalyptus loxophleba* and *Eucalyptus* spp.) and tammar scrub (*Casuarina* species), offering habitat trees and a range of niches to fauna in

the area. The applied area appears to have been fenced from stock over a long period of time which has enabled the vegetation to remain relatively intact compared to much of the native vegetation remaining within the local area.

The local area is highly cleared, with approximately 15% native vegetation remaining in a 20km radius. The flora and vegetation survey conducted for the application found 107 vascular flora including a species of declared rare flora (*Darwinia polychroma*).

The applied area is the western side of a contiguous block of 3.2 hectares of native vegetation and is also linked to a linear tract of vegetation to the west, which forms a corridor of vegetation into private property. The vegetation under application is likely to be contributing to the biological values of this tenuous linkage in a highly cleared landscape and assisting to maintain ecological processes within the landscape.

Therefore, whilst the application area is small in total area, the vegetation under application is significant due to its relatively high biological diversity within the local area and bioregion. The clearing as proposed is likely to further fragment the vegetated landscape, and sever a population of declared rare flora and is therefore at variance to this principle.

An offset condition will be placed on the permit, to address management and improvement of the vegetation in the areas adjacent to the applied area which will improve the condition of the remnant vegetation through management and will additionally improve the habitat of *Darwinia polychroma*.

Methodology References:

CBH Engineering Pty Ltd (2010)
Ecoscape (2010)
Keighery (1994)

GIS databases:

- Carnamah 2006 Orthomosaic - Landgate 2006
- DEC tenure - DEC 2010
- Pre European Vegetation - DA 2001
- Environmentally Sensitive Areas 30 May 2005
- DEC SAC Biodatasets - DEC 2010

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments **Proposal may be at variance to this Principle**

The applied area is 0.16 hectares of native vegetation for the purpose of road construction and associated works. The vegetation under application ranges in condition (Keighery 1994) from 'very good' to 'degraded' based on the site photos provided (CBH 2010), aerial photography (Landgate 2006) and a flora and vegetation survey report (Ecoscape 2010). The vegetation is comprised of eucalypt woodlands (*Eucalyptus loxophleba* and *Eucalyptus* spp.) and tammar scrub (*Casuarina* species), offering habitat trees and a range of niches to fauna in the area. The applied area appears to have been fenced from stock over a long period of time which has enabled the vegetation to remain relatively intact compared to much of the native vegetation remaining in the local area.

One rare (western spiny-tailed skink) and three priority or other specially protected fauna (crested bellbird, southern major Mitchell's cockatoo, and hooded plover) occur within the local area (20 km radius). The local area is highly cleared with approximately 15% native vegetation remaining, and as such available habitat is limited. A fauna survey was undertaken for the applied area and vicinity, which found that there was limited habitat potential and no indication of the presence of the western spiny-tailed skink. Given that the majority of the vegetation under application retains its integrity, the vegetation is likely to be significant for fauna in this highly cleared landscape.

Therefore, whilst the applied area is small in size, it remains intact and is part of a larger, relatively intact area and may provide locally significant habitat for indigenous fauna and as such may be at variance to this principle.

Methodology References:

CBH Engineering Pty Ltd (2010)
Cogger et al. (1993)
Ecoscape (2010)
How et al (undated)
Keighery (1994)

GIS databases:

- Carnamah 2006 Orthomosaic - Landgate 2006
- DEC estate - DEC 2010
- Pre European Vegetation - DA 2001

- DEC SAC Biodatasets - DEC 2010
- Soils, Statewide - DA 1999

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments Proposal is at variance to this Principle

Numerous records of declared rare (DRF) (12 species) and priority flora (52 species) are found in the local area (20 km radius), in particular the declared rare flora species *Chorizema humile* and *Darwinia polychroma*. A flora and vegetation survey (Ecoscape 2010) confirmed the presence of *Darwinia polychroma*, and that approximately 18 plants from this population would be potentially impacted by the proposed clearing and associated works (which includes impacts from fragmentation of the population through road construction). An application to take is being assessed by DEC in tandem with the clearing permit application.

The applied area has been fenced from stock for a long period of time and remains in a relatively intact condition with at least two different vegetation communities occurring within the applied area, based on photographs supplied with the clearing permit application (CBH Engineering Pty Ltd, 2010).

As the vegetation under application may contain rare and priority flora species, a targeted flora survey is required to determine whether the proposal is at variance to this principle. On that basis, the proposed clearing is at variance to this principle.

An offset condition will be placed on the permit, to address management and improvement of the local vegetation which contains the declared rare flora population.

Methodology

References:

CBH Engineering Pty Ltd (2010)
Ecoscape (2010)
Keighery (1994)

GIS databases:

- Carnamah 2006 Orthomosaic - Landgate 2006
- Pre European Vegetation - DA 2001
- DEC SAC Biodatasets - DEC 2010
- Soils, Statewide - DA 1999

(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 42 occurrences of threatened ecological community (TEC) 'Plant assemblages of the Inering System' within the local area (20 km radius) of the proposed clearing. The closest is located 1 km due west of the area under application and although part of the applied area falls within the mapped boundary of the vegetation unit described as the Inering system the landform and topography are not consistent with other occurrences of this TEC. The vegetation survey for the applied area supports this (Ecoscape 2010).

The proposed clearing is not likely to be at variance to this principle.

Methodology

References:

CBH Engineering Pty Ltd (2010)
Ecoscape (2010)
Keighery (1994)
DEC TEC Database (DEC 2010)

GIS databases:

- Carnamah 2006 Orthomosaic - Landgate 2006
- Pre European Vegetation - DA 2001
- DEC SAC Biodatasets - DEC 2010
- Soils, Statewide - DA 1999

(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 is located in the Avon Wheatbelt Bioregion, within which 15.2% of the pre-European vegetation remains (Shepherd 2007). The proposal also falls within the Shire of Carnamah, of which there is 37.4% remaining of pre-European vegetation (Shepherd 2007).

The Beard Vegetation Association (352 - Medium woodland; York gum) of the area under application retain 16.6%

of the remaining pre-European vegetation but within the Avon Wheatbelt Bioregion only 14.0% is retained (Hopkins et al., 2001).

	Pre-European (ha)	Current extent (ha)	Remaining (%)	% In reserves DEC Managed Land
IBRA Bioregions*				
Avon Wheatbelt^	9,518,411	1,444,595	15.2	11.1
Shire*				
Carnamah	287,239	113,090	37.4	42.3
Beard Vegetation Association*				
352	724,273	120,436	16.6	10.2
Beard Vegetation Association with Bioregion*				
352	630,582	88,397	14.0	11.5

* (Shepherd et al. 2007)

^ Area within Intensive Land Use Zone

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. Within constrained areas (i.e. areas of urban development in cities and major towns) on the Swan Coastal Plain and within the Greater Bunbury Region Scheme and Peel Region Scheme the target for representation of the pre-clearing extent of a particular native vegetation complex is 10 % (Commonwealth of Australia 2001). The applied area is not within a constrained area thus the objective is to retain at least 30% of the pre-clearing extent and therefore this clearing is at variance to the principle.

Additionally, the local area is highly cleared, with approximately 15% native vegetation remaining within a 20 km radius. Therefore the proposed clearing is at variance to this principle. An offset condition will be placed on the permit which aims to manage and improve the condition of vegetation adjacent to the applied area and mitigate for the loss of the 0.16 hectares cleared.

Methodology References:
Commonwealth of Australia (2001)
Shepherd 2007

GIS databases:
- Carnamah 2006 Orthomosaic - Landgate 2006
- Pre European Vegetation - DA 2001
- Pre-European Vegetation - DA 2001
- Interim Biogeographic Regionalisation of Australia - EA 2000
- Local Government Authorities - DLI 2004

(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**

Within the local area (20 km radius) of the area under application there are no EPP Lakes, Ramsar Wetlands or ANCA wetlands. The Yarra Yarra chain of lakes exists 3 km due west of the proposed clearing but the small amount of proposed clearing (0.16 hectares) is not likely to have a significant effect on the lakes.

Within the local area there are four major rivers (Coonderoo, Yarramonger, Arrowsmith Rivers and Sandplain Creek) and numerous minor rivers and tributaries. The small amount of clearing proposed and the distance between these rivers and the applied areas means that the proposed clearing is not likely to have a significant effect on any of these watercourses.

The proposed clearing is therefore not likely to be at variance to this principle.

Methodology GIS databases:
- Hydrography, Linear - DOE 2004
- ANCA Wetlands - CALM 1995
- EPP Area - DEP 1995
- EPP Lakes - DEP 1992
- RAMSAR, Wetlands - CALM 2003

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments Proposal is not likely to be at variance to this Principle

The area proposed to be cleared is 0.16 hectares which is not likely to cause appreciable land degradation issues. Therefore the proposed clearing is not likely to be at variance to this principle.

Methodology GIS databases:

- Acid Sulfate Soil Risk Map, Swan coastal Plain - DEC 07/08/06
- Average Annual Rainfall Isohyets - WRC 1998
- Annual Evaporation Contours (Isopleths) - WRC 11998
- Hydrogeology, statewide - DOW 2006
- Hydrography, linear - DOW 13/7/06
- Salinity Risk LM 25m - DOLA 2000
- Soils, Statewide DA 1999
- Topographic contours statewide - DOLA and ARMY 2002

(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 applied area does not lie adjacent to, or within close proximity to formal conservation areas. Additionally, the small amount of clearing proposed (0.16 ha) is not likely to have a significant effect on any conservation area within the local area (20 km radius).

The proposed clearing is not likely to be at variance to this principle.

Methodology GIS databases:

- Carnamah 2006 Orthomosaic- Landgate 2006
- DEC tenure - DEC 2010

(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 may be at variance to this Principle

The proposed clearing is within the Yarra Monger Catchment, which is mapped as a groundwater salinity area that represents a high salinity risk. There may be some risk of increased salinity with the removal of deep rooted perennial native vegetation and therefore the proposed clearing may be at variance to this principle.

Methodology GIS databases:

- Average Annual Rainfall Isohyets - WRC 1998
- Annual Evaporation Contours (Isopleths) - WRC 11998
- Hydrogeology, statewide - DOW 2006
- Hydrography, linear - DOW 13/7/06
- Salinity Risk LM 25m - DOLA 2000
- Soils, Statewide DA 1999
- Topographic contours statewide - DOLA and ARMY 2002

(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 proposed clearing is not likely to increase the risk of waterlogging or flooding due to the permeability of the soils present locally. Therefore, the proposed clearing is not likely to be at variance to this principle.

Methodology GIS databases:

- Average Annual Rainfall Isohyets - WRC 1998
- Annual Evaporation Contours (Isopleths) - WRC 11998
- Hydrogeology, statewide - DOW 2006
- Hydrography, linear - DOW 13/7/06
- Soils, Statewide DA 1999
- Topographic contours statewide - DOLA and ARMY 2002

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

Comments

The Shire of Carnamah has no objections to the proposed clearing or the use of the unmade road reserve (Parker Street) Shire of Carnamah (2010a). A further letter of support from the Shire of Carnamah was received for the proposed use of unallocated Crown Land Lot 50 Inja Street Carnamah, for use as a conservation area as proposed by CBH as an offset area (Shire of Carnamah 2010b).

An application to take declared rare flora (*Darwinia polychroma*) has been lodged with DEC's Species and Communities Branch to cover the taking of up to 18 plants which may be directly or indirectly affected by the proposed clearing.

The applied area is within EPA position statement No. 2 agricultural area although the purpose of the clearing is not for agricultural activities.

Methodology

References:

EPA (2000)

Shire of Carnamah (2010a)

Shire of Carnamah (2010b)

GIS databases:

-RIWI Act, Areas - DOW

-RIWI Act, Groundwater Areas - DOW

4. References

- CBH Engineering Pty Ltd (2010). Clearing permit application and supporting documentation. (DEC Ref: A304496).
- Cogger, H.G., E.E. Cameron, R.A. Sadler & P. Egglar (1993). The Action Plan for Australian Reptiles. [Online]. Canberra, ACT: Australian Nature Conservation Agency.
- Commonwealth of Australia (2001) National objectives and targets for biodiversity conservation 2001-2005. Commonwealth of Australia, Canberra, ACT.
- DEC (2010) Regional advice for Clearing Permit Application CPS 3752/1, Parker Street road reserve, Carnamah. Department of Environment and Conservation, Western Australia (DEC Ref. A310724).
- Ecoscape (2010). Parker Street Carnamah flora and fauna survey. Unpublished report to CBH Group, WA (DEC Ref: A353009).
- 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, Western Australia.
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- How, R.A., J. Dell & K. Aplin (undated). Assessment of the central wheatbelt populations of the endangered skink *Egernia stokesii badia*. Western Australian Museum. Unpublished.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Shepherd, D.P. (2007) 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.
- Shire of Carnamah (2010a). Letter of 'no objection' to CBH Engineering Pty Ltd for the development of Parker Street road reserve, Carnamah (DEC Ref: A304501).
- Shire of Carnamah (2010b). Letter of support to DEC for CBH Engineering Pty Ltd for the use of Lot 510 Inja Street , Carnamah to be used for conservation purposes (DEC Ref: A378034).

5. 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)