



## 1. Application details

### 1.1. Permit application details

Permit application No.: 1113/1

Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: Minh T,Thi P, Do G, Chau B Truong, Pham, Huynh, Tran

### 1.3. Property details

Property: LOT 20 ON DIAGRAM 53488 (House No. 412 BADGERUP GNANGARA 6065)

Local Government Area: City Of Wanneroo

Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.7		Mechanical Removal	Horticulture

## 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
<p>Beard Vegetation Association: - 949: Low woodland, banksia (Shepherd 2006).</p> <p>Hedde Vegetation complexes: - Karrakatta Complex Central and South: Predominantly open forest of Eucalyptus gomphocephala, E. marginata, C. calophylla and woodland of E. marginata and Banksia species - Bassendean Complex Central and South: Vegetation ranges from woodland of Eucalyptus marginata, Casuarina fraseriana, Banksia spp. to low woodland of Melaleuca species, and sedgelands on the moister sites. This area includes the transition of E. marginata to E. todtiana in the vicinity of Perth (Hedde et al. 1980).</p>	<p>The proposal is to clear 1.7ha of native vegetation within a 3.54ha property for horticultural pursuits. An original application for the removal of 2.41ha of native vegetation was received; however this was subsequently amended to exclude vegetation in very good condition within the eastern portion of the property.</p> <p>The vegetation under application comprises of Eucalyptus marginata-Allocasuarina fraseriana-Banksia spp. woodland over an understorey of predominantly Hibbertia hypericoides (Mattiske Consulting Pty Ltd 2007). Other species observed within the understorey include Anigozanthos manglesii, Laxmannia squarrosa, Calytrix fraseri, Calytrix flavescens, Ptilotus manglesii, Macrozamia fraseri, Waltzia suaveolens, Gompholobium tomentosum, Hardenbergia comptoniana, Jacksonia sericea (Priority 4), Desmodcladus sp., Conostylis aculeata, Mesomelaena preissii, Lepidosperma sp., Hemiandra linearis and Macrozamia riedlei (DEC 2006).</p>	<p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)</p>	<p>The condition and description of vegetation was determined from a site inspection undertaken 06/12/2006 (TRIM Ref. DOC16234) and information provided in the Flora and Vegetation Survey (Mattiske Consulting Pty Ltd 2007).</p> <p>The vegetation applied to be cleared ranges in condition from very good to degraded. A condition rating of Very Good has been applied to reflect the highest value of the vegetation under application.</p>

The vegetation under

application within the eastern portion of the applied area (~0.9ha) is considered to be in very good condition with a diverse understorey. Vegetation within the western portion of the property and directly adjacent to the residence (~0.8ha) are considered to be in a degraded condition with a high level of weed invasion present (DEC 2006, Mattiske Consulting Pty Ltd 2007).

The vegetation under application is located within an extensively cleared local area (5km radius) with ~36% native vegetation cover remaining. The area under application is within a Rural zoned area, within an area of established intensive horticulture.

### 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 may be at variance to this Principle**

The vegetation under application (1.7ha) comprises a *Eucalyptus marginata*, *Allocasuarina fraseriana* and *Banksia* spp. woodland over an understorey of shrubs, herbs and sedges (Mattiske Consulting Pty Ltd 2007, Site Inspection 2006). The eastern portion of the applied area (~0.9ha) is considered to be in very good condition, whilst the western portion of the property and areas adjacent to the residence (~0.8ha) are considered to be in a degraded condition due to weed invasion and the lack of understorey present (Mattiske Consulting Pty Ltd 2007, Site Inspection 2006).

A flora and vegetation survey of the property identified 68 native flora species, including individuals of *Jacksonia sericea* (Priority 4). *Lepidosperma ?gracile* was also recorded within the survey area, with this finding a potential range extension for this species (Mattiske Consulting Pty Ltd 2007) which may make this species locally significant. Therefore, the vegetation under application is considered to comprise a high level of floral diversity.

In addition the vegetation under application has been identified as being located within a local north-south ecological linkage to areas of remnant vegetation nearby. Given this, the high floral diversity and condition of the vegetation under application, the applied area is considered likely to provide habitat and foraging opportunities for a number of local indigenous fauna species.

Therefore, given the high floral diversity and the presence of habitat and foraging plants for local indigenous fauna, the vegetation under application may comprise a high level of biological diversity.

A portion of the property along the eastern boundary was removed from the original clearing application. As this area contains a population of *Jacksonia sericea*, a weed management condition within the remaining remnant area will be imposed on the permit to maintain and protect this population.

**Methodology** References:  
- Mattiske Consulting Pty Ltd (2007)  
- Site Inspection (2006)  
GIS Databases:  
- Remnant Vegetation, Metropolitan Area  
- Swan Coastal Plain North 20cm Orthomosaic - DLI06

#### (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 vegetation under application (1.7ha) comprises a *Eucalyptus marginata*, *Allocasuarina fraseriana* and *Banksia* spp. woodland over an understorey of shrubs, herbs and sedges with an overall high level of floral diversity (Mattiske Consulting Pty Ltd 2007, Site Inspection 2006).

Four conservation significant fauna species are known to occur within the local area (5km radius), being:

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) (Endangered);
- Crested Shrike-tit (*Falcunculus frontatus leucogaster*) (Priority 4);
- Little Bittern (*Ixobrychus minutus*) (Priority 4); and
- Quenda (*Isodon obesulus fusciventer*) (Priority 5).

Of these species Carnaby's Black Cockatoo and Quenda are considered likely to utilise parts of the vegetation under application given the presence of suitable foraging plants, diverse understorey and proximity to wetlands (~400m). In particular, Carnaby's Cockatoos are known to feed on *Corymbia calophylla*, *Eucalyptus marginata*, *Eucalyptus gomphocephala* and *Banksia* sp. (Birds Australia WA 2006), with the Northern Region of the Swan Coastal Plain considered to be an important area throughout the season for this species (Shah 2006).

Whilst the area of vegetation comprises vegetation in a degraded condition (~0.8ha) given the high floral diversity and presence of vegetation in very good condition (~0.9ha) (Mattiske Consulting 2007, Site Inspection 2006) the vegetation under application is considered likely to provide habitat for a number of local indigenous fauna species, including ground dwelling and avian fauna. In addition a number of large eucalypts with hollows considered suitable for fauna habitat and local native bird nesting were observed along the southern boundary of the property (Site Inspection (2006a).

The vegetation under application is also located within a local north-south ecological linkage to areas of remnant vegetation nearby and Jandabup Lake (Bush Forever Site 324) in the north. Given this and extensive local clearing, the vegetation under application is considered likely to be used as a stepping stone and corridor by fauna migrating across the landscape to adjacent wetland and remnant vegetation areas.

Due to the presence of suitable habitat for local indigenous fauna including Carnaby's Black Cockatoo and Quenda, high level of clearing on a local scale and the vegetation's connectivity to nearby remnant vegetation and wetland areas, the proposed clearing may be at variance to this Principle.

Permit conditions in relation to fauna management will reduce the impact of the proposed clearing on local native fauna species.

#### Methodology

##### References:

- Mattiske Consulting Pty Ltd (2007)
- Shah (2006)
- Site Inspection (2006)
- Site Inspection (2006a)

##### GIS Databases:

- Bushforever
- Geomorphic Wetlands (Classification), Swan Coastal Plain
- Remnant Vegetation, Metropolitan Area
- SAC Bio Dataset, Accessed 08/04/2008
- Swan Coastal Plain North 20cm Orthomosaic - DLI06

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

#### Comments

##### **Proposal is not likely to be at variance to this Principle**

There are two known occurrences of Declared Rare Flora (DRF) within a 5km radius of the vegetation under application. These occurrences of *Caladenia huegelii* and *Pityrodia axillaris* are located ~2.2km from the vegetation under application within the same soils and vegetation complex.

A flora and vegetation survey of the area under application did not locate any Declared Rare Flora species (Mattiske Consulting Pty Ltd). Therefore, the proposed clearing is not considered likely to include, or be necessary for the continued existence of, rare flora.

#### Methodology

##### References:

- Mattiske Consulting Pty Ltd (2007)
- Western Australian Herbarium (1998-)

##### GIS Databases:

- Hedde Vegetation Complexes
- Pre-European\_Vegetation
- SAC Bio Dataset, Accessed 08/04/2008
- Soils, Statewide

#### (d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

#### Comments

##### **Proposal is not likely to be at variance to this Principle**

One Threatened Ecological Community (TEC) is known to occur within the area local to the vegetation under application, being Floristic Community Type (FCT) 20a known as *Banksia attenuata* woodlands over species

rich dense shrublands (Gibson et al. 1994). The closest known occurrence of this community is 3.2km from the vegetation under application. Given the distance to the closest known occurrence, the vegetation under application is not considered to be necessary for the maintenance of this TEC.

The vegetation under application (1.7ha) comprises a *Eucalyptus marginata*, *Allocasuarina fraseriana* and *Banksia* spp. woodland over an understorey of shrubs, herbs and sedges (Mattiske Consulting Pty Ltd 2007, Site Inspection 2006). A flora and vegetation survey of the vegetation under application identified the vegetation proposed to be cleared as closely resembling Floristic Community Type 21a known as Central *Banksia attenuata*-*Eucalyptus marginata* woodlands (Gibson et al. 1994, Mattiske Consulting Pty Ltd 2007). This FCT is not a listed Threatened Ecological Community. Therefore, the vegetation under application is not considered likely to comprise the whole or part of a TEC.

**Methodology**    **References:**  
 - Gibson et al. (1994)  
 - Mattiske Consulting Pty Ltd (2007)  
 - Site Inspection (2006)  
**GIS Database:**  
 - SAC Bio Datasets, Accessed 09/04/2008

**(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.**

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

The vegetation under application is mapped as a component of Beard Vegetation Association 949 which has 57.0% pre-European vegetation extent remaining (Shepherd 2006). The vegetation under application is also associated with Heddle Vegetation Complexes Bassendean Central and South (~0.03ha) and Karrakatta Central and South (~1.67ha). Bassendean Central and South complex is recognised as having current representation levels of 27.0% within the System 6 region and Swan Coastal Plain portion of the System 1 Region (EPA 2006), and 24.0% within Swan Coastal Plain portion of the Perth Metropolitan Region (Government of Western Australia 2000). Karrakatta Central and South complex is recognised as having current representation levels of 29.5% within the System 6 region and Swan Coastal Plain portion of the System 1 Region (EPA 2006), and 18.0% within Swan Coastal Plain portion of the Perth Metropolitan Region (Government of Western Australia 2000).

The State Government is committed to the National Objectives and Targets for Biodiversity Conservation which includes a target that prevents a clearance of ecological communities with an extent below 30% of that present pre-European settlement (Commonwealth of Australia 2001). Notwithstanding, the EPA (2006) recognises the Perth Metropolitan Region as a 'constrained area', providing for the reduction of vegetation complexes to a minimum of 10% of the Pre-European extent.

Beard Vegetation Association 949 is well represented with 57.0% pre-European extent remaining and 49.3% reserved in secure tenure (Shepherd 2006). However both Heddle vegetation communities associated with the proposal are poorly represented with less than 30% pre-European extent remaining, and less than 3.0% of the current extent reserved or protected in secure tenure (EPA 2006, Government of Western Australia 2000).

The vegetation under application contains areas of highly diverse vegetation in very good condition (Site Inspection 2006). In addition the vegetation under application is located within an extensively cleared local area (~36% native vegetation remaining in the local area) within a local north-south ecological linkage to areas of remnant vegetation nearby and Jandabup Lake (Bush Forever Site 324) in the north.

Notwithstanding the area under application is located within the 'constrained area', and given that the vegetation communities are above the 10% minimum level recommended by the EPA (2006) and the relatively small area applied to be cleared (1.7ha), the proposed clearing is considered not likely to be at variance to this Principle.

Pre-European	Current extent	Remaining	% In reserves/	
		(ha)	(ha)	(%)
CALM managed land				
IBRA Bioregion:				
- Swan Coastal Plain*		1,501,456	571,758	38.1
Local Government:				
- City of Wanneroo**		68,070	64,057	50.0
Local area (5km radius)		2,750	7,850	36.0
Beard Vegetation Association:				
- 949*		218,208	124,461	57.0
				49.3
Heddle Vegetation Complexes:				
Swan Coastal Plain***				
- Bassendean Central and South			87,477	23,624
				27.0
				0.7

- Karrakatta Central and South 2.5	49,912	14,729	29.5
Perth Metropolitan Region****			
- Bassendean Central and South	46,220	10,919	24.0
- Karrakatta Central and South	34,532	6,275	18.0

- \* (Shepherd 2006)
- \*\* (Del Marco et al. 2004)
- \*\*\* (EPA 2006)
- \*\*\* (Government of Western Australia 2000)

**Methodology**    **References:**

- Commonwealth of Australia (2001)
- Del Marco et al. (2004)
- EPA (2006)
- Government of Western Australia (2000)
- Heddle et al. (1980)
- Hopkins et al. (2001)
- Shepherd (2006)
- Site Inspection (2006)

**GIS Databases:**

- Pre-European\_Vegetation
- Heddle Vegetation Complexes
- Interim Biogeographic Regionalisation of Australia
- Local Government Authorities
- Remnant Vegetation, Metropolitan Area
- Swan Coastal Plain North 20cm Orthomosaic - DLI06

**(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**

There are no wetlands or watercourses mapped within the area of vegetation under application, with the closest surface hydrological feature being a multiple use sumpland ~220m from the vegetation under application.

The vegetation under application (1.7ha) comprises a *Eucalyptus marginata*, *Allocasuarina fraseriana* and *Banksia* spp. woodland over an understorey of shrubs, herbs and sedges (Mattiske Consulting Pty Ltd 2007, Site Inspection 2006). A flora and vegetation survey of the vegetation under application identified the vegetation proposed to be cleared as closely resembling Floristic Community Type 21a known as Central *Banksia attenuata*-*Eucalyptus marginata* woodlands (Gibson et al. 1994, Mattiske Consulting Pty Ltd 2007).

Given the description of the vegetation and the distance to the nearest surface hydrological feature (~220m), the vegetation under application is considered to be more representative of an upland vegetation community and is therefore considered not likely to be growing in, or in association with, an environment associated with a watercourse or wetland.

**Methodology**    **References:**

- Gibson et al. (1994)
- Mattiske Consulting Pty Ltd (2007)
- Site Inspection (2006)

**GIS Databases:**

- Geomorphic wetlands (Mgt Categories) - Swan Coastal Plain
- Hydrography, linear (hierarchy)

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

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

The vegetation under application is located on the transition of the Bassendean and Spearwood dune systems, and is associated with a subdued dune-swale terrain with chief soils of leached sands (Northcote et al. 1960-68).

Bassendean and Spearwood sands are associated with predominantly highly porous loose, dry sands. Due to the high infiltration rates of the sandy soils combined with the low gradient on site, the proposed clearing is not considered likely to result in water erosion.

Soils within the Bassendean and Spearwood Dune systems are, however, known to be susceptible to wind

erosion. Therefore, given the sandy soils present on site it is considered that there is the potential for the proposed clearing to result in wind erosion, and without appropriate ground cover, windbreaks or adequate dust suppression on exposed surfaces the proposed clearing may cause appreciable land degradation.

- Methodology** Reference:
- Northcote et al. (1960-68)
- GIS Databases:
- Remnant Vegetation, Metropolitan Area
  - Soils, Statewide
  - Swan Coastal Plain North 20cm Orthomosaic - DLI06

**(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**

There are several conservation areas within the local area including DEC-managed reserves, Bush Forever sites and the ANCA listed Joondalup Lake. The closest conservation area to the vegetation under application is Bush Forever Site 327, Badgerup Lake and Adjacent Bushland, Wanneroo located ~800m to the west.

The vegetation under application is located centrally to seven Bush Forever sites, with the furthestmost site being ~2km from the applied area. Whilst relatively small in size (1.7ha), the vegetation under application comprises an area of highly diverse vegetation in very good condition (Site Inspection 2006). In addition, the vegetation under application has been identified as being located within a local north-south ecological linkage (City of Wanneroo 2006) to Jandabup Lake (Bush Forever Site 324).

Subsequent to the initial clearing application the applicant has amended the application area to exclude a 50m wide area of diverse and dense vegetation on the eastern end of the property. Whilst the retention of this vegetation is considered likely to reduce the impacts of the clearing proposal on nearby reserves, given the extensive level of local clearing, connectivity and central location, the vegetation under application is considered likely to be utilised as a corridor and stepping stone for fauna migrating between local conservation and wetland areas. Therefore, the proposed clearing may impact on the environmental values of nearby conservation areas by preventing fauna movement between this area and nearby conservation reserves.

- Methodology** References:
- City of Wanneroo (2006)
  - Site Inspection (2006)
- GIS Databases:
- ANCA, Wetlands
  - Bushforever
  - CALM Managed Lands and Waters
  - Remnant Vegetation, Metropolitan Area
  - Soils, Statewide
  - Swan Coastal Plain North 20cm Orthomosaic - DLI06

**(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**

There are no wetlands or watercourses mapped within the area of vegetation under application, with the closest surface hydrological feature being a multiple use sumpland ~220m from the vegetation under application. The vegetation under application is not located within a Public Drinking Water Source Area (PDWSA), with the closest PDWSA being 2km east of the area under application.

The vegetation under application is located on the transition of the Bassendean and Spearwood dune systems, and is associated with a subdued dune-swale terrain with chief soils of leached sands (Northcote et al. 1960-68).

Whilst Bassendean and Spearwood sands are known to possess a low Phosphorus Retention Index (PRI), given the distance to nearby watercourses and wetlands the proposed clearing is not considered likely to cause deterioration in the quality of surface or underground water.

- Methodology** Reference:
- Northcote et al. (1960-68)
- GIS Databases:
- Hydrography, Linear (hierarchy)
  - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
  - Public Drinking Water Source Areas (PDWSAs)
  - Soils, Statewide

**(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**

Groundwater contour mapping indicates that groundwater levels are an average depth of approximately 11.5 metres below the soil surface (Department of Environment 2004).

The vegetation under application is located on the transition of the Bassendean and Spearwood dune systems, and is associated with a subdued dune-swale terrain with chief soils of leached sands (Northcote et al. 1960-68).

Bassendean and Spearwood sands are associated with predominantly highly porous loose, dry sands. Given the depth to groundwater and sandy, porous nature of the soils on site, the proposed clearing is not considered likely to cause or exacerbate the incidence or intensity of flooding.

**Methodology References:**

- Department of Environment (2004)
- Northcote et al. (1960-68)

**GIS Databases:**

- Topographic Contours, Statewide
- Soils, Statewide - DA 11/99

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

**Comments**

The proposal is to clear 1.7ha of native vegetation for horticulture. An application for 2.43ha was originally received; however the area was subsequently amended to the reduced 1.7ha area following issues raised during the initial application for approval to commence development, and subsequent reduced approved development area from the City of Wanneroo.

The original application for an approval to commence development was refused by the City of Wanneroo as

- The proposal would be contrary to the preservation of the existing Local Ecological Linkage, identified by the Perth Diversity Project, and would have a detrimental affect on the biodiversity linkage existing in the area; and
- The site constitutes a viable natural area deemed to be in fairly good condition and its clearing would indirectly impact on the Local Natural Area adjacent (City of Wanneroo 2006).

The applicants subsequently reduced their proposed development area to retain a 50m wide strip of remnant vegetation on the eastern portion of the property. An Approval to Commence Development within the applied area was granted on 21/11/2006 by the City of Wanneroo.

A public submission (2007) was received objecting to the clearing of native vegetation on Lot 20 Badgerup rd, Gnangara. The following issues were raised:

- Lot 20 supports some of the oldest and largest trees in the neighbourhood which harbour hollows that are suitable breeding sites for native bird species;
- It is the last block of virgin land before future urbanization, and the only buffer zone between urban and rural that could be saved;
- With the current water shortage over the Gnangara mound, it is 'hard to believe that pristine vegetation will be removed to extract even more water'; and
- A buffer strip along the southern boundary of Lot 20 would include and save some of the oldest trees.

The presence of habitat trees with hollows suitable for local native species, and the local of the vegetation within a local ecological linkage in an extensively cleared area have been addressed within the assessment of this application. However the functions and role of water allocation and licensing are the responsibility of the Department of Water and therefore are not addressed specifically within this assessment.

There is a current Groundwater licence for this property, which includes the irrigation of 3.4ha of vegetables.

There are no Aboriginal Sites of Significance recorded within the area of vegetation under application.

There is no other Works Approval or EP Act Licence required for the proposed development.

**Methodology**

**References:**

- City of Wanneroo (2006)
- Public submission (2007)

**GIS Database:**

- Aboriginal Sites of Significance

**4. Assessor's comments**

Purpose	Method	Applied area (ha)/ trees	Comment
Horticulture	Mechanical	1.7	The assessable criteria have been addressed and the clearing as proposed may be at variance to

## 5. References

- City of Wanneroo (2006) Correspondence to the Swan Goldfields Agricultural Region native Vegetation protection section re the proposed development of intensive horticulture on 412 Badgerup Rd, Gngangara. Received 04/07/2006 (TRIM Ref. DOC1262).
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- Public Submission (2007) Direct Interest Submission in relation to clearing permit application CPS 1113/1. Received 07/06/2007 (TRIM Ref. DOC24794).
- Shah, B. (2006) Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.
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- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Site inspection (2006) Department of Environment and Conservation Site Inspection Report. (TRIM Ref: DOC16234).
- Site Inspection (2006a) Department of Environment and Conservation. Site Inspection Report (TRIM Ref. DOC50918).
- Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 08/04/2008).

## 6. Glossary

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