



1. Application details

1.1. Permit application details

Permit application No.: 1892/1
 Permit type: Area Permit

1.2. Proponent details

Proponent's name: Humich Nominees Pty Ltd and Anilia Pty Ltd

1.3. Property details

Property: LOT 10 ON DIAGRAM 93021 (NEERGABBY 6503)
 LOT 10 ON DIAGRAM 93021 (NEERGABBY 6503)
 Local Government Area: Shire Of Gingin
 Colloquial name: replaced previous

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
40		Mechanical Removal	Grazing & Pasture

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 1014: Mosaic: Low woodland; banksia / Shrublands; teatree thicket (Shepherd 2006).	The proposed clearing consists of a circular 40 ha area of native vegetation to be cleared for the establishment of Lucerne on a centre pivot irrigator.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	Description and condition of the vegetation under application was determined from the Site Inspection (2007). As vegetation ranges in condition from 'completely degraded' to 'excellent' with the majority in 'completely degraded' condition an average condition rating of the vegetation under application is deemed to be 'degraded'.
Hedde Vegetation Complex: Caladenia Complex: Mosaic of vegetation from adjacent vegetation complexes of Karrakatta, Yanga and Bassendean (Hedde et al. 1980).	The majority of the 40 ha under application is 'parkland cleared' Marri (Corymbia calophylla) woodland, with two strips of uncleared native vegetation along the northern (~1.5 ha) and south western (~0.4 ha) borders of the 40 ha circle. Within the 'parkland cleared' area are other natives including Nuytsia floribunda, Banksia illicifolia, Eucalyptus todtiana, Macrozamia riedlei and Xanthorrhoea preisii. The area is heavily invaded with pasture weeds predominantly Lupins (Lupinus angustifolius and Lupinus cosentinii) and grasses, and has a condition rating of 'completely degraded'.		
	The strip of native vegetation under application along the northern boundary (~1.5 ha) has a condition rating of 'excellent' and supports Banksia woodland with an upper storey of Banksia		

attenuata, *B. menziesii* and *Nuytsia floribunda* and an understorey of *Hibbertia hypericoides*, *Kunzea glabrescens*, *Calothamnus sanguineus*, *Eriostemon spicatus*, *Dryandra nivea*, *Hovea trisperma*, *Stirlingia latifolia*, *Petrophile linearis*, *Synaphea spinulosa*, *Patersonia occidentalis*, *Calectasia* sp., *Mesomelaena* sp. and *Conostylis* sp.

The strip of native vegetation along the south western boundary (~0.4 ha) has a condition rating of 'very good' and is also *Banksia* woodland supporting an upper storey of *Banksia attenuata*, *B. menziesii*, *B. ilicifolia* and *Eucalyptus todtiana* with an under storey of *Hibbertia hypericoides*, *Daviesia divaricata*, *D. nudiflora*, *Patersonia occidentalis*, *Petrophile linearis*, *Stirlingia latifolia*, *Synaphea spinulosa*, *Hybanthus calycinus*, *Leporella fimbriata* and *Caladenia* sp. Some weed species were observed in this area including Yellow soldier (*Lachenalia reflexa*).

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 area under application is predominantly parkland cleared Marri woodland vegetation in 'completely degraded' condition (Site Inspection 2007).

Two areas of undisturbed *Banksia* woodland (approx. 1.9 ha total) exist along the northern and south western boundary of the area under application. These areas range in condition from 'excellent' to 'very good' and support high floristic diversity with dense and structurally intact vegetation which presents high quality habitat for fauna (Site Inspection 2007).

The soils, topography, vegetation type and condition of the 1.9 ha of *Banksia* Woodland within the area under application makes these area suitable for one taxa of Priority flora (*Anigozanthos humilis* subsp. *chrysanthus*). The remainder of the area under application although on the same soils is in poor condition and supports a different vegetation type to that preferred by this subspecies making it unlikely that the subspecies would occur in this area (Western Australian Herbarium 1998).

Although the majority of the vegetation is parkland cleared and supports low biodiversity the 1.9 ha of 'very good' or better quality vegetation under application is considered likely to comprise high biodiversity and possibly support a species of priority flora, thus clearing may be at variance to this principle.

The proponent commits to fencing the areas of high quality remnant remaining on the property to protect the biodiversity of this vegetation. A condition has been placed on the permit to this effect.

Methodology **References:**
- Site Inspection (2007)
GIS Databases:
- Ledge Point Gingin 50cm Orthomosaic - Landgate03

(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**

Two indigenous fauna taxa of significance are recorded within a 10 km radius of the area under application.

These taxa include one Schedule 1 species the Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) and one Priority 5 species the Southern Brown Bandicoot (*Isodon obesulus* subsp. *fusciventer*).

Site Inspection (2007) identified strips of native vegetation along the northern (~1.5 ha) and south western (~0.4 ha) boundaries of the area under application which support healthy and structurally intact *Banksia* woodland vegetation with small amounts of *Banksia menziesii* and a dense understorey. These habitat features are conducive to its use by both of the above mentioned taxa of significance. It is considered that the area under application is not likely to constitute significant habitat for these two species of fauna as the majority of the area under application is 'parkland cleared' Marri woodland in 'completely degraded' condition and habitat suitable for these two taxa is limited to 1.9 ha with the area being surrounded by large tracts of intact native vegetation.

The Site Inspection (2007) does however show the Marri stands comprise mature trees some of which support medium sized hollows suitable for native fauna. In addition satellite imagery shows the area under application supports the largest stand of Marri in a 5 km radius of the site, with this species being locally uncommon and the majority of local vegetation being *Banksia* woodland. Considering the area may include habitat for hollow depended fauna clearing may be at variance to this principle.

Methodology References:
- Site Inspection (2007)
- DEC Fauna habitat notes.xls February 2007
GIS Databases:
- SAC Bio datasets 09/08/2007
- Ledge Point Gingin 50cm Orthomosaic - Landgate03

(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**
No Declared Rare Flora (DRF), two species of Priority 2, three species of Priority 3, and two species of Priority 4, occur within a 10 km radius of the area under application, with the closest Priority species *Dillwynia dillwynioides* being 6.2 km north from the area under application (Atkins 2006; Western Australian Herbarium 1998).

During Site Inspection (2007) areas along the northern and south western borders of the area under application were observed to contain pale yellow sandy soils with underlying yellow sands, supporting *Banksia* woodland vegetation in 'excellent' to 'very good' condition.

These characteristics make the site suitable for one taxa of Priority flora (*Anigozanthos humilis* subsp. *chrysanthus*). The remainder of the area under application although on the same soils is in 'completely degraded' condition and supports 'parkland cleared' Marri woodland making it unlikely that this subspecies would be present in this area (Western Australian Herbarium 1998).

Despite a subspecies of priority flora possibly being present in the area under application there are no DRF likely to occur in the area under application and clearing is thus considered unlikely to be at variance to this principle.

Methodology References:
- Site Inspection (2007)
- Western Australian Herbarium (1998)
- Atkins (2006)
GIS Databases:
- SAC Bio datasets 09/08/2007

(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**
Within a 10 km radius of the area under application there are occurrences of three Threatened Ecological Communities (TECs). These being: Herb rich saline shrublands in clay pans; Shrublands and woodlands on Muechea limestone, and; *Melaleuca huegelii* - *Melaleuca acerosa* shrublands on limestone ridges.

All TECs within a 10 km radius of the area under application have a different species composition and occur on different soils and landform types to the area under application (Gibson et al. 1994; Site Inspection 2007), thus the area under application is not likely to represent an occurrence of any of these TECs.

Methodology References:
- Gibson et al. (1994)
- Site Inspection (2007)
GIS Databases:
- SAC Bio datasets 09/08/2007

(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 at variance to this Principle

Neither Beard vegetation association 1014 (52.9% remaining) or Heddle vegetation complex Caladenia Complex (55.0% remaining) are below the 30% threshold for the conservation of biodiversity and both vegetation associations are well represented within the reserve system with Beard vegetation association 1014 having 28.3% reserved and Caladenia Complex having 12.6% reserved (Commonwealth of Australia 2001; EPA 2006; Shepherd 2006).

There is also significant remnant vegetation remaining in the local area.

Given the vegetation associations present within the area under application are above the 30% threshold, are well represented in the reserve system and there is significant remnant vegetation remaining in the local area, the area under application is not considered to be significant as a remnant and is therefore not considered to be at variance to this principle.

	Pre-European area (ha)	Current extent (ha)	Remaining % % in managed land	reserves/DEC-
Swan Coastal Plain **	1,501,456	571,758	38.1	-
Shire of Gingin *	315,560	177,688	56.3	-
Heddle vegetation complex ***				
Caladenia Complex	9,660	5,309	55.0	12.6
Beard vegetation associations **				
1014	41,066	21,730	52.9	28.3

* (Shepherd et al. 2001)

** (Shepherd, 2006)

*** (EPA, 2006)

Methodology

References:

- Shepherd et al. (2001)
 - Shepherd (2006)
 - EPA (2006)
 - Commonwealth of Australia (2001)
- GIS Databases:
- Ledge Point Gingin 50cm Orthomosaic - Landgate03
 - Pre-European Vegetation - DA 01/01
 - Heddle Vegetation Complexes - DEP 21/06/95
 - Interim Biogeographic Regionalisation of Australia - EA 18/10/00

(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

Several Conservation Category Wetlands (CCW) area located in close proximity to the area under application. The nearest CCW is located less than 180 m south of the application site, with other CCWs located 300 m north and 500 m east of the application site. A Resource Enhancement Wetland is also located approximately 620 m south of the application site. CCWs located 180m and 500m from the area under application are also identified under the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 as EPP lakes. A major watercourse, Gingin Brook, is located 5.5 km south of the area under application.

Conservation Category Wetlands (CCW) are recognised as wetlands with high ecological values and are the highest priority wetlands for protection. There should be no further loss or degradation of CCW's and their protection also requires the retention of an adequate buffer (Government of Western Australia 1997). Water and Rivers Commission (2001) Position Statement: Wetlands, recommends a buffer of 200 m to protect wetlands on transmissive soils, such as those present within the area under application, from the negative effects of nutrient enrichment and chemical drift and protect habitat for wetland dependent flora and fauna.

DEC Wetlands Program (2007) states that there is potential for the clearing of 40 ha composed mainly of Marri Woodland to impact on the hydrological regime of the nearest CCW (approx. 180m south) and thus impact on wetland values by: reducing vegetation condition; reducing biodiversity; impacting fauna habitat, and; disrupting fauna life cycles.

DAFWA (2007) advise that post clearing wind erosion of soils will occur within the area under application if

management is not implemented. Submission (2007) states that considering DAFWA advice the nearest CCW wetland (approx. 180m south) may be impacted by soil erosion (i.e. dust smothering vegetation and having water quality impacts) if not managed.

Although Site Inspection (2007) showed the area does not support wetland dependent vegetation it is within the recommended 200m buffer for the protection of a CCW, may alter hydrology within the nearest CCW and wind erosion of soils from within the applied area post clearing may have adverse impacts on this same CCW. Thus clearing is considered to be at variance to this principle.

If a permit is granted a condition would be placed on it to fence and revegetate the wetland located 180m south of the area under application. DEC Wetlands Program (2007) considered fencing of the CCW 50m from its boundary will mitigate some impact such as cattle grazing and potentially assist in the natural regeneration of the wetland vegetation. It is also considered that revegetating the wetland buffer may also mitigate some of the potential impacts associated with the increased transport of nutrients and pollutants. It is however acknowledged that it will take time for the new revegetation to become established and during this time the wetland may be impacted.

- Methodology** References:
- Water and Rivers Commission (2001) Position Statement: Wetlands
 - Site Inspection (2007)
 - Government of Western Australia (1997)
 - DAFWA (2007)
 - DEC Wetlands Program (2007)
- GIS Databases:
- Topographic Contours, Statewide - DOLA 12/09/02
 - Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC
 - Hydrography, linear - DOE 1/2/04
 - 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 may be at variance to this Principle

Vegetation under application occurs on two soil types. To the west soils are described as being associated with an undulating dune landscape with some steep dune slopes and chief soils being brown sands. To the east soils are described as being associated with subdued dune-swale terrain and chief soils being leached sands (Northcote et al. 1960-68).

During Site Inspection (2007) the area under application was observed to support pale yellow sandy soils with underlying yellow sands of the Spearwood dune system.

Soils of the Spearwood dune system have a high wind erosion risk (State of Western Australia 2005) and DAFWA (2007) advise that post clearing wind erosion of soils will occur within the area under application. However DAFWA also advise that the sowing of Lucerne and irrigation with a centre pivot will reduce the erosion risk and thus clearing is unlikely to cause appreciable land degradation.

In addition phosphorous loss is high in sands of the Spearwood dune system due to the low Phosphorous Retention Index (State of Western Australia 2005).

The area under application is located on soils with a Class 2 and 3 Acid Sulphate Soil risk. These soils are defined as having Moderate to no known risk of ASS occurring within three metres of the natural soil surface that could be disturbed by the proposed development activities.

Given the soils poor nutrient retention ability and the risk of wind erosion following clearing, clearing may be at variance to this principle.

- Methodology** References:
- DAFWA (2007)
 - Northcote et al. (1960-68)
 - Site Inspection (2007)
 - State of Western Australia (2005)
- GIS Databases:
- Soils, Statewide - DA 11/99
 - Acid Sulphate Soil risk map, Swan Coastal Plain, DEC

(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 nearest conservation area to the site under application is the Gingin Stock Route Nature Reserve located 5.3 km south west of the area under application. Other conservation areas include: Moore River Nature Reserve located 6 km north; Gnangara Moore River State Forest located 6.7 km west and south, and; Bootine Nature Reserve located 9 km east of the area under application.

The nearest Bush Forever Site to the area under application is Bush Forever site 406: Wilbinga-Caraban Bushland, located 8.8 km south west of the application site.

Given the distance of the area under application from nearby conservation areas and that the area does not form part of an ecologically significant linkage, clearing is considered not likely to have an impact on the environmental values of the above mentioned conservation areas and is not likely to be at variance to this principle.

Methodology GIS Databases:
- CALM Managed Lands and Waters - CALM 1/07/05
- Bushforever - MFP 07/01
- Ledge Point Gingin 50cm Orthomosaic - Landgate03

(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 nearest wetland is located approximately 180 m south and the nearest watercourse, being Gingin Brook, is approximately 5.5 km south of the area under application.

No evidence of salinity was observed during Site Inspection (2007), however the southern boundary of the area under application is located within an area at high risk of developing salinity.

Soils on site have a poor nutrient retention ability and the removal of vegetation from the site may result in increased water run-off and nutrient loss off-site through groundwater that has the potential to contain elevated levels of nutrients. The removal of vegetation, as proposed, has the potential to increase infiltration of rainwater and further elevate the rate of nutrient infiltration into groundwater.

Given this, and the close proximity (approx. 180m) to a nearby Conservation Category Wetland (CCW), it is considered likely that the proposal may result in an increase in the discharge of nutrients, including nitrogen and phosphorus, and the transport of pollutants into this wetland. Nutrients and pollutants have the potential to impact the wetlands values by: reducing vegetation condition; impacting fauna habitat; impacting water quality; causing eutrophication and algal blooms, and; causing fauna mortality (Submission 2007). It is also possible that the clearing of 40 ha, the majority of which is deep rooted Marri Woodland, may impact on hydrology within the nearby CCW (Submission 2007).

Clearing as proposed may result in an altered hydrological regime in the nearest CCW and nutrients and pollutants may be exported from the site through groundwater into the nearby wetland thus reducing the wetlands values. Thus, clearing as proposed may be at variance to this principle.

If a permit is granted a condition would be placed on it to fence and revegetate the wetland located 180m south of the area under application. It is considered that revegetating the wetland buffer may mitigate some of the potential impacts associated with the increased transport of nutrients and pollutants, however it will take time for the new revegetation to become established and during this time the wetland may still be impacted.

Methodology References:
- Site Inspection (2007)
- Submission (2007)
GIS Databases:
- Groundwater Salinity, Statewide - DOW
- Salinity Risk LM 25m - DOLA 00
- Hydrography, linear - DOE 1/2/04
- Hydrography, linear (hierarchy) - DOW
- Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC
- Ledge Point Gingin 50cm Orthomosaic - Landgate03

(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 may be at variance to this Principle

Vegetation under application occurs on two soil types, both being associated with dune landscapes and sandy

soils (Northcote et al. 1960-68). A Site Inspection (2007) of the area under application revealed the soils on site to be pale yellow sandy soils with underlying yellow sands of the Spearwood dune system which have a high infiltration rate (State of Western Australia 2005).

The nearest wetland is located 180 m south of the area under application, with the area under application being up slope of this wetland. The nearest watercourse is Gingin Brook located 5.5 km south of the application site.

The majority of the area under application supports mature Marri woodland in a parkland cleared state. It is considered that given the proximity of the area under application to the nearby wetland clearing may increase the incidence of flooding in this area and thus may be at variance to this principle.

Methodology

References:

- Site Inspection (2007)
- State of Western Australia (2005)
- Northcote et al. (1960-68)
- Submission (2007)

GIS Databases:

- Soils, Statewide - DA 11/99
- Ledge Point Gingin 50cm Orthomosaic - Landgate03
- Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC
- Hydrography, linear - DOE 1/2/04
- Hydrography, linear (hierarchy) - DOW

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

Comments

The Shire of Gingin (2007) raises no objection to the proposed development as such land clearing is to facilitate a land use which is 'as of right' under the Council's Town Planning Scheme No. 8, however Council requests a vegetation buffer be retained around wetlands in accordance with Department of Environment and Conservation requirements. The Shire has not received an application for Development Approval of the irrigation of 40 ha of pasture on Lot 10 on Diagram 93021.

Humich Nominees have a current water licence for the irrigation of 40 ha of Lucerne and 40 ha of pasture for the subject property which is currently unused (TRIM Ref. DOC28471). Condition 4 of this licence stipulates that the licensee shall comply with the operating strategy as prepared by the licensee and approved by the Water and Rivers Commission on the 13 December 2006, including any modifications to the strategy as approved during the term of the licence.

DAFWA (2007) advise that wind protection measures will be required to reduce wind erosion prior to the establishment of a crop. However the risk of land degradation is unlikely to be appreciable as the sowing of lucerne and irrigation with a centre pivot will protect the soil from blowing. Cropping will require the application of fertilisers which could result in some contamination of wetlands off site and that fertiliser application will need to be closely monitored and regulated to prevent contamination and that herbicide drift may affect native vegetation abutting the area under application.

Submission (2007) advise that the transport of nutrients and pollutants (such as herbicides and insecticides) has the potential to impact the values of a nearby Conservation Category Wetland, approximately 180m south of the area under application, by: reducing vegetation condition; impacting fauna habitat; impacting water quality; causing eutrophication and algal blooms, and; resulting in fauna mortality.

An Irrigation Management Plan has been received from the proponent for the irrigation of the 40 ha area under application. The Management Plan states:

- Lucerne is a deep-rooted perennial capable of accessing soil moisture to a depth of 2-3 m reducing the risk of groundwater contamination by fertilizer leaching past the root zone.
- The area will be irrigated using a centre pivot irrigator which is the most efficient form of irrigation as uniform application and scheduling is more easily achieved and irrigation water is more accurately delivered, minimising overspray and the potential for surface run off.
- Centre pivot irrigation can also be used to apply fertiliser, herbicides and insecticides thus minimising run off.
- Lucerne is very susceptible to root rot from being over irrigated so requirements and soil types have been factored in to the irrigation evaporation, crop water schedule to determine monthly requirements and pumping times/days.
- Mechanisms to measure soil moisture, such as tensiometers, are currently being investigated to measure crop moisture demand and irrigation requirement thus reducing leaching below the root zone.

Public Submission (2007) are opposed to clearing on Lot 10 Cowalla Road, Neergabby stating that

- soils within the area under application have a low capacity for moisture

retention and are unsuitable for pasture;
 likelihood of ground and - soils have a low capacity for phosphorous retention increasing the
 surface water eutrophication;
 pasture cover; - currently the area under application is incapable of supporting 100%
 grazing, and; - clear felling is poor management practice for pasture production and
 - soils are subject to a high risk of wind erosion.

There are no Registered Sites of Aboriginal Significance recorded within the area under application (Department of Indigenous Affairs 2007).

There is no required Works Approval or EPA Act Licence that affects the areas under application.

Methodology

References:

- Shire of Gingin (2007)
- Department of Indigenous Affairs (2007)
- Department of Agriculture and Foods Western Australia (2007)
- Public Submission (2007)
- Department of Water (2007)
- Submission (2007)

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Grazing & Pasture	Mechanical Removal	40	The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986, and the proposed clearing may be at variance to principles (a), (b), (g), (i) and (j), and is at variance principle (f).

5. References

Atkins. (2006). Declared Rare and Priority Flora List. Department of Conservation and Land Management, Western Australia Commonwealth of Australia (2001). National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.

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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.

Shire of Gingin. (2007). Advice: Application to clear native vegetation - Lot 10 on Diagram 93021, Neergabby - Humich Nominees Pty Ltd. TRIM Ref. DOC31901.

Site Inspection. (2007). Site Inspection Report, Department of Environment and Conservation (DEC). Perth, Western Australia. TRIM Ref. DOC31972.

State of Western Australia. (2005). Agmaps Land Manager CD ROM.

Submission. (2007). CPS 1982 Lot 10 Cowalla Road, Neergabby: DEC Wetlands Program advice. TRIM Ref. DOC42890.

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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)

