



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2884/1

Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: Roy Humfrey

### 1.3. Property details

Property: LOT 3489 ON PLAN 205127 (QUIN RD, MUCKENBURRA 6503)

Local Government Area: Shire Of Gingin

Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
13.8		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
Beard vegetation association: 1014- Mosaic: Low woodland; banksia/ Shrublands; tea-tree and thicket (SAC Bio datasets 08/01/2009; Shepherd 2007).	The proposal is to clear 13.8 ha of native vegetation within a property that is ~57.6 ha in size. The clearing is for the extension of an existing market garden.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)	Vegetation clearing description is based on information obtained from a site visit undertaken on the 12th January 2009.
Hedde Vegetation Complex: Bassendean Complex - North: Vegetation ranges from a low open forest and low open woodland of Banksia species- Eucalyptus tottiana to low woodland of Melaleuca species and sedgeland which occupy the moister sites. (Hedde et al. 1980)	The vegetation under application comprises of Banksia woodland in Excellent condition consisting of dense vegetation including but not limited to Banksia attenuata, Banksia menziesii, Eucalyptus species, Nuytsia floribunda, Adenanthos cygnorum, Jacksonia floribunda, Acacia pulchella, Regelia inops, shrub species, Xanthorrhoea sp, Stirlingia latifolia and Verticordia sp.		

## 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 vegetation under application comprises of Banksia Woodland in Excellent condition consisting of dense vegetation including but not limited to Banksia attenuata, Banksia menziesii, Eucalyptus spp, Nuytsia floribunda, Adenanthos cygnorum, Jacksonia floribunda, Acacia pulchella, Regelia inops, shrub species, Xanthorrhoea sp, Stirlingia latifolia and Verticordia sp (DEC 2009).

The area under application may also provide habitat for ground dwelling fauna including the Western Brush Wallaby, may provide feeding habitat for Carnaby's Black-Cockatoo and provide habitat for many other avian species. The vegetation under application is also considered to support fauna of conservation significance that use the surrounding conservation areas and support fauna movement throughout the local area.

In addition, the vegetation under application may comprise of suitable habitat for the rare flora *Drakaea elastica* and the priority flora *Grevillea evanescens* (P1) (Western Australia Herbarium 1998-).

Given the relatively large size of the area to be cleared (13.8ha), the diversity and excellent condition of the vegetation and the occurrence of habitat for conservation significant fauna species, it is considered that the proposed clearing is likely to be at variance to this Principle.

**Methodology**    **References**  
-DEC (2009a)  
-Western Australian Herbarium (1998-)  
GIS Databases  
-Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC  
-Gingin 50cm Orthomosaic - Landgate06  
-SAC Bio Datasets 08/01/2009

**(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 is at variance to this Principle**

There is one fauna species of conservation significance recorded within the local area (10km radius) being Western Brush Wallaby (*Macropus irma*) (Priority 4) located approximately 5km south-west of the area under application.

The Western Brush Wallaby occurs in open forest and woodland that supports a dense shrub layer (DEC 2007a).

The Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) is known to feed on a large variety of plants including Proteaceous species (e.g. banksia, dryandra and grevillea), marri nuts (*Corymbia calophylla*), jarrah (*Eucalyptus marginata*), tuart (*Eucalyptus gomphocephala*) and a range of introduced species, (Birds Australia WA, 2006).

A site inspection (DEC 2009) of the area under application identified the vegetation as Banksia woodland with a dense shrub layer, in an excellent condition. Therefore, the vegetation under application may provide habitat for ground dwelling fauna including the Western Brush Wallaby, and may provide feeding habitat for Carnaby's Black-Cockatoo. During the site inspection many avian species such as the New Holland Honey Eater were also observed within the Banksia woodland.

Given the relatively large size of the area to be cleared (13.8ha), the predominantly excellent condition of the vegetation, the connectivity to surrounding bushland and conservation areas and the occurrence of habitat for fauna including species of conservation significance, it is considered likely the proposed clearing will be at variance to this Principle.

**Methodology**    **References**  
- Birds Australia WA (2006)  
-DEC (2007a)  
-DEC (2008)  
- DEC (2009a)  
GIS Databases  
- SAC Bio Datasets 08/01/2009

**(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**

Two recordings of the rare flora species, *Drakaea elastica*, have been recorded in the local area (~5km radius) with the closest recording of this species being 1.3 km southwest of the area under application.

*D. elastica* is usually found in white or grey sand in low-lying Banksia woodlands adjoining winter-wet swamps (Brown et al. 1998) and is often found in association with thickets of *Kunzea glabrescens* (DEC 2007b).

The area under application occurs on leached grey sands (Northcote et al. 1960-68) occurs within 1 m and 60 m of two winter-wet CCWs. In addition, *Kunzea glabrescens* were identified during the site inspection (DEC 2009) within the fringing vegetation of the two wetlands.

Given that *D. elastica* in the local area occurred within the same soil type and vegetation complex as the area under application, it may provide suitable habitat for this species.

Given the presence of suitable habitat for Rare flora in the area under application, it is considered that the clearing as proposed may be at variance to this Principle.

**Methodology**    **References:**  
-DEC (2007b)  
-DEC (2009a)  
-Northcote et al. (1960-68)  
- Western Australian Herbarium (1998-)

- GIS Databases
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
- Heddle Vegetation Complexes
- SAC Bio Datasets 08/01/2009
- 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**

There is one Threatened Ecological Community (TEC) recorded in the local area (~5km radius) that being FCT07: Herb rich saline shrublands in clay pans occurring ~4.5 km to the east of the area under application.

The area under application abuts the geomorphic boundary of the northern Conservation Category Wetland occurring on Lot 3489. Fringing dryland vegetation provides a buffer between impacting land use and environmentally sensitive wetlands (DEC 2008).

However, Species and Communities Branch, DEC state that FCT07 is less likely to occur within Lot 3489 than other types of wetlands that are more common on grey Bassendean sands such as FCTs 4 and 5 (DEC 2009a). These two community types are not listed as TECs. Therefore, the proposed clearing is considered not likely to be at variance to this Principle.

**Methodology References:**

- DEC (2008)
- DEC (2009a)
- DEC (2009b)
- GIS Databases
- Heddle Vegetation Complexes
- SAC Bio Datasets 08/01/2009
- Soils, Statewide

**(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 associated with the Beard Vegetation Association 1014 which has approximately 53.2% pre-European vegetation extent remaining respectively (Shepherd 2007). The vegetation under application is also associated with Heddle Vegetation Bassendean Complex North, which has 72.0% pre-European vegetation extent remaining (EPA 2006).

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). None of the mapped vegetation complexes associated with the area under application are below the State Government's biodiversity conservation target of 30%.

In addition, the area under application is surrounded by other extensive bushland areas including the Gngangara - Moore River State Forest and remnant vegetation connected to Gingin Brook. Therefore, it is not considered likely for the area under application to be significant remnant vegetation in an area that has been extensively cleared and is not considered likely to be at variance to this Principle.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	In secure tenure (%)
IBRA Bioregion**				
Swan Coastal Plain	1,501,208	583140	38.8	
Shire of Gingin*	315,560	177,688	56.3	
Local Area (~5km radius)	7,850	6,702	85.4	
Beard vegetation type 1014**	41,064	21,856	53.2	52.2
Heddle vegetation complex*** Bassendean Complex North	74,147	53,384	72.0	27.5

\* Shepherd et al (2001)

\*\* Shepherd 2007)

\*\* (EPA 2006a)

**Methodology**    **References**  
- Commonwealth of Australia (2001)  
- EPA (2006a)  
- Shepherd et al. (2001)  
- Shepherd (2007)  
**GIS Datasets**  
- Hedde Vegetation Complexes  
- SAC Bio Datasets 08/01/2009

**(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**

The nearest wetland and watercourse to the area under application is a Conservation Category Wetland (CCW) immediately adjacent to the area under application and a CCW occurring ~60 m to the west. The closest watercourse is Quin Brook, located 200 m north of the area under application.

During the site inspection (DEC 2009a) two steep banked wetland areas containing wetland dependent vegetation in an excellent condition were identified within 60 m of the boundary of the area under application.

CCWs support a high level of ecological values and functions and are the highest priority wetlands for protection. CCWs are considered critical assets which represent the most important environmental assets in the state that must be fully protected and conserved (EPA 2006b). There should be no further loss or degradation of CCWs and their protection also requires the retention of an adequate buffer (Government of Western Australia, 1997).

While the minimum recommended buffer distance for wetlands is 50m which is designed to protect wetlands from deleterious impacts while helping safeguard and maintain ecological processes and functions (Water and Rivers Commission, 2001), the required buffer distance for wetlands depends on the land use proposed. To protect wetlands within Lot 3489 from nutrient inputs and other deleterious impacts from the market garden and given the transmissive soils of the area under application, a 200 m buffer is required (Water and Rivers Commission, 2001).

Given that the area under application is within the 200 m buffer for the wetlands on Lot 3489, the proposed clearing is considered to be at variance to this Principle.

**Methodology**    **References:**  
-EPA (2006b)  
- Government of Western Australia (1997)  
-Waters and Rivers Commission (2001)  
**GIS Databases:**  
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain  
- Hydrography, linear

**(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 area under application occurs on subdued dune-swale terrain with chief soils of leached sands and occurs within the Bassendean Dune System (Northcote et al. 1960-68). These soils have a high to very high risk of wind erosion and phosphorus export (Department of Agriculture, 2005).

Bassendean sands have a very low capacity to retain phosphorous which can readily leach into the low water table under these soils and flow into adjacent water bodies or into rivers many kilometres away (McPharlin et al. 1990). The proposed clearing of deep-rooted native vegetation and replacement with vegetable crops is likely to result in increased nutrient loss from the soil profile (McPharlin et al, 1990).

The high wind erosion potential is due to the sandy nature of the topsoil. If appropriate management measures such as ground cover, windbreaks or adequate dust suppression on exposed surfaces are put in place then it is likely that the environmental impacts caused by wind erosion can be managed.

Given the sandy soils present within the areas under application, it is considered that the proposed clearing of 13.8 ha of native vegetation may cause appreciable land degradation in the form of wind erosion and increased nutrient loss from the soil profile. Therefore, it is considered that the proposed clearing may be at variance to this principle.

**Methodology**    **References:**  
- Department of Agriculture (2005)  
- McPharlin et al (1990)  
- Northcote et al (1960)  
**GIS Database:**  
-Soils, Statewide  
- Hydrography, linear

**(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 two conservation reserves within the local area (5km radius), being State Forest 65 (Gnangara-Moore River State Forest) located ~22m south and Yeal Nature Reserve (also identified as a System 6 Conservation Reserve) located 3.5km south-east of the area under application.

Aerial photography of the local area indicates connectivity between the vegetation under application and the surrounding conservation areas. The site inspection (DEC 2009) identified the vegetation as Banksia woodland with a dense shrub layer, in an excellent condition. The vegetation under application is considered to support fauna of conservation significance that use the surrounding conservation areas and support fauna movement throughout the local area.

Therefore, it is considered the proposed clearing may impact on the environmental values of the nearby conservation areas by limiting fauna movement throughout the local area.

**Methodology**    **Reference:**  
- DEC (2009a)  
**GIS databases:**  
- DEC Managed Lands and Waters  
- Gingin 50cm Orthomosaic - Landgate06  
- System 6 Conservation Reserves

**(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 at variance to this Principle**

The nearest wetlands and watercourse to the area under application are a Conservation Category Wetland (CCW) occurring less than 1m south of the area under application and a CCW occurring ~60 m west of the area under application. The closest watercourse is Quin Brook, a minor river, located 200 m north of the area under application.

A minimum wetland buffer of 50 m is required for all proposed developments to protect wetland values and functions (Water and Rivers Commission 2001). Due to the transmissive soils, to protect the wetlands from nutrient inputs from the market gardens a 200m buffer is required (Water and Rivers Commission, 2001). Given that the area under application occurs on transmissive soils and therefore, within the recommended buffer, the proposed clearing is considered likely to cause deterioration to the quality of surface water in these two wetlands.

In addition, Quin Brook is located 200 m north of the area under application and it is considered likely that the proposed clearing will result in increased nutrient loss from the soil profile (McPharlin et al 1990) and may result in deterioration in water quality of the watercourse. It is considered likely that this will also cause deterioration to the quality of groundwater in the local area. Therefore, the proposed clearing is considered likely to be at variance to this Principle.

**Methodology**    **Reference**  
- McPharlin et al (1990)  
- Waters and Rivers Commission (2001)  
**GIS Databases:**  
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain  
- Hydrography, linear

**(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**

The nearest wetlands and watercourse to the area under application are a Conservation Category Wetland (CCW) occurring less than 1m south of the area under application and a CCW occurring ~60 m west of the area under application. The closest watercourse is Quin Brook, a minor river, located 200 m north of the area under application.

The proposal to clear in the buffer of two Conservation Category Wetlands (CCW) within the area under application may increase the incidence or intensity of flooding within these two wetlands by altering their hydrological regimes and increasing waterlogging (DEC 2008). Therefore, it is considered that the clearing as proposed may be at variance to this Principle.

**Methodology** GIS Databases:  
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain  
- Hydrography, linear

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

#### **Comments**

The applicant was sent correspondence dated 5th February 2009 that outlined a number of issues that were raised during the assessment of the initial proposal. A response was received from the applicant dated 12th February 2009. The applicant has modified the cleared area from 20 ha to 13.8 ha and has excluded the wetland areas. However, the proposed area still occurs within the wetland buffer. The applicant also detailed sustainable best practices that he uses to control wind erosion and round water quality.

The area under application is zoned rural under the Shire of Gingin's Town Planning Scheme.

Planning approval is outstanding from the Shire of Gingin (Shire of Gingin 2009).

The landowner has a Groundwater extraction licence for an existing market garden on Lot 3489. An amendment to the water licence is not required as the landowner will be using the applied area for rotation of crops and will not be using additional water resources or more than 24 hectares at one time (as per condition of the water licence).

The area under application has a moderate to low risk of Acid Sulphate Soils (ASS).

**Methodology** References  
- Shire of Gingin (2009)  
GIS Databases  
- Acid Sulfate Soil Risk Map, Swan Coastal Plain  
-Town Planning Scheme Zones

#### **4. Assessor's comments**

#### **Comment**

The assessable criteria have been addressed and the clearing as proposed is at variance to Principles (a), (b), (f) and (i) and may be at variance to Principles (c), (g), (h) and (j).

#### **5. References**

DEC (2007b) Species and Communities DEC, Advice received on *Drakaea elastica* habitat.

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

DEC (2007a) DEC Fauna Habitat Notes.xls. February 2007. Department of Environment and Conservation, Western Australia.

DEC (2008) Memo re Standard Wetlands Advice for Native Vegetation Conservation Branch. Dated 17/07/2008. Species and Communities Branch, Department of Environment and Conservation, Western Australia (TRIM Ref. DOC59490).

DEC (2009a) Site Inspection Report for Clearing Permit Application CPS 2884/1, Lot 3489 Quin Road, Muckenburra. Site inspection undertaken 12/01/2009. Department of Environment and Conservation, Western Australia (TRIM Ref. DOC74123).

DEC (2009b) Species and Communities Branch DEC advice on Clearing Application CPS 2884/1. TRIM Ref. DOC75096  
Department of Agriculture (2005) AgMaps Land Manager CD-rom for the Shires of Serpentine-Jarrahdale, Kwinana, Rockingham, Mandurah, Murray, Boddington, Waroona and Harvey. Department of Agriculture, Western Australia. ISSN: 1448-235X.

EPA (2006a) Guidance for the Assessment of Environmental Factors - Level of Assessment for Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region. Guidance Statement No 10. Environmental Protection Authority, Western Australia.

EPA (2006b) Environmental Offsets, Position Statement No.9, Environmental Protection Authority, Perth.

Government of Western Australia (1997) Wetlands Conservation Policy for Western Australia, Department of Conservation and Land Management and the Water and Rivers Commission, Perth WA.

Hedde, 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.

McPharlin, I., Delroy, N., Jeffrey, B., Dellar, G. and Eales, M. (1990) Phosphorous retention of sandy horticultural soils on the Swan Coastal Plain, W.A. Journal of Agriculture, Volume 31, 1990.

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. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Shire of Gingin (2009) Direct Interest Submission. TRIM Ref. DOC 74539

Water and Rivers Commission (2001). Position Statement: Wetlands, Water and Rivers Commission, Perth.

Western Australian Herbarium (1998?). FloraBase -The Western Australian Flora. Department of Environment and Conservation. <http://florabase.dec.wa.gov.au/> (Accessed 12/01/2009).

## 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)