



1. Application details

1.1. Permit application details

Permit application No.: 2154/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Odeum Holdings Pty Ltd

1.3. Property details

Property: LOT 6 ON PLAN 12312 (House No. 529 CHITNA NEERGABBY 6503)
LOT 6 ON PLAN 12312 (House No. 529 CHITNA NEERGABBY 6503)

Local Government Area: Shire Of Gingin

Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
33		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 types: 949: Low woodland; banksia. 1008: Medium open woodland; marri. (SAC Bio datasets 05/03/2008; Shepherd, 2006)	The area under application (33ha of vegetation within an 119ha area) is located within Lot 6, a 201.6ha property (Zoned rural). The clearing is to extend an existing 43 hectare horticultural area.	Good; Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	The condition of the native vegetation under application was sourced from the Site Inspection (2007). The area under application (119 hectares) ranged in condition from completely degraded for a majority of the area under application ~90ha, to degraded - good for ~14ha located in the north-eastern section, to good - very good for ~15ha of vegetation located in the southern section with the overall condition considered to be good.
Heddlle Vegetation Complex: Karrakatta Complex - North: Predominantly low open forest and low woodland of Banksia spp. E- E. tottiana, less consistently open forest of E. gomphocephala - E. tottiana - Banksia species. (Heddlle et al, 1980)	The vegetation under application is described as predominantly parkland cleared (~90ha area) with scattered Nuytsia floribunda, marri (Eucalyptus calophylla) and Balga (Xanthorrhoea preissii), Jacksonia sp. and scattered areas of sedges (Juncus sp.) observed with the area dominated by veldt grass. The vegetation within the north-eastern section (~14ha) included: Eucalyptus tottiana, Nuytsia floribunda, Jacksonia furcellata, Xanthorrhoea preissii and Paterosnia sp. with the area dominated by veldt grass and pigface. Melaleuca raphiophylla was observed within the western portion of this section. The vegetation within the southern section (~15ha) included: Eucalyptus calophylla, Nuytsia floribunda, Kunzea sp., Xanthorrhoea preissii, Petrophile sp.,		

Conospermum sp., Banksia illicifolia, Jacksonia sp. and Stirlingia linearis with some veldt grass in the lower storey. A small stand of Melaleuca raphiophylla was also observed in the area.

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 includes approximately 33ha of native vegetation within an 119ha area. The area under application has been subject to cattle grazing with some areas showing signs of disturbance including significant areas of veldt grass, which was grazed on by the stock (Site Inspection, 2007).

A site inspection (2007) of the area under application identified the vegetation as being predominantly parkland cleared (~90ha area with approximately 4ha of native vegetation) with scattered Nuytsia floribunda, marri (Eucalyptus calophylla) and Balga (Xanthorrhoea preissii), Jacksonia sp. and scattered areas of sedges (Juncus sp.) with the area dominated by veldt grass with the condition considered as completely degraded (Site Inspection 2007).

The vegetation within the north-eastern section (~14ha) included Eucalyptus tottiana, Nuytsia floribunda, Jacksonia furcellata, Xanthorrhoea preissii and Patersonia sp. with the area dominated by veldt grass and pigface with the condition considered as degraded to good (Site Inspection, 2007).

The vegetation within the southern section (~15ha) included Eucalyptus calophylla, Nuytsia floribunda, Kunzea sp., Xanthorrhoea preissii, Petrophile sp., Conospermum sp., Banksia illicifolia, Jacksonia sp. and Stirlingia linearis with some veldt grass in the lower storey with the condition considered as good to very good (Site Inspection, 2007). This area may provide habitat for ground dwelling fauna such as quenda and habitat for Carnaby's Black-Cockatoo (Calyptorhynchus latirostris).

Given the high level of disturbance from cattle grazing and veldt grass invasion it is considered unlikely that the majority area under application comprises a high level of biological diversity. However, the 15ha of native vegetation in the southern section in good to very good condition may comprise a high level of biological diversity.

Methodology Reference:
- Site Inspection (2007)

(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**

There are no fauna species conservation significance recorded within the local area (5km radius). The nearest record is Carnaby's Black-Cockatoo (Calyptorhynchus latirostris) located approximately 5.1km west of the area under application. This species is listed as a Schedule 1 species under the Wildlife Conservation (Specially Protected Fauna) Notice 2006. Fauna listed as Schedule 1 fauna are rare or likely to become extinct and are declared to be fauna in need of special protection.

The Black-Cockatoo 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). Garnett and Cowley (2000) identify that while individual areas of feeding habitat can only support a number of birds for short periods of time, the progressive loss of such areas is an on-going concern for this species.

A site inspection (2007) of the area under application identified the vegetation as being predominantly parkland cleared (~90ha area) with scattered Nuytsia floribunda, marri (Eucalyptus calophylla) and Balga (Xanthorrhoea preissii), Jacksonia sp. and scattered areas of sedges (Juncus sp.) with the area dominated by veldt grass with the condition considered as completely degraded (Site Inspection 2007).

The vegetation within the north-eastern section (~14ha) included Eucalyptus tottiana, Nuytsia floribunda, Jacksonia furcellata, Xanthorrhoea preissii and Patersonia sp. with the area dominated by veldt grass and pigface with the condition considered as degraded to good (Site Inspection, 2007).

The vegetation within the southern section (~15ha) included Eucalyptus calophylla, Nuytsia floribunda, Kunzea sp., Xanthorrhoea preissii, Petrophile sp., Conospermum sp., Banksia illicifolia, Jacksonia sp. and Stirlingia linearis with some veldt grass in the lower storey with the condition considered as good to very good (Site Inspection, 2007). Given this condition, this vegetation may provide habitat for birds and ground dwelling fauna such as quenda. In addition, aerial imagery of the local area shows vegetated connectivity in a west-east

direction to the surrounding conservation areas and is therefore, this vegetation is considered likely to support fauna utilising these conservation areas and maintain fauna movement and migration across the local landscape.

Given the occurrence of approximately 15ha of native vegetation in good to very good condition with *Banksia* sp. and *Eucalyptus calophylla*, and the vegetated connectivity to the surrounding conservation areas it is considered that the vegetation under application may comprise significant habitat for fauna indigenous to Western Australia and is therefore, considered may be at variance to this Principle.

- Methodology** **References:**
- Birds Australia WA (2007)
 - Garnett and Cowley (2000)
 - Site Inspection (2007)
- GIS Databases:**
- Gingin 50cm Orthomosaic - Landgate06
 - SAC Bio Datasets 101207

(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

There are 12 known records of two species of Declared Rare Flora (DRF) in the local area (10km radius). The nearest recorded DRF are *Drakaea elastica* located approximately 6.2km south-east on the same soils and within the same vegetation complex as the area under application; and *Eucalyptus argutifolia* located approximately 7.3km south-west on different soils and different vegetation complexes as the area under application.

The DRF, *D. elastica* flowers in Oct-Nov, with a green leaf being obvious in August; is usually found in 'white or grey sand in low-lying situations adjoining winter-wet swamps' and is often found in association with thickets of *Kunzea glabrescens* (Western Australian Herbarium 1998-).

The vegetation under application is predominantly parkland cleared (~90ha area) with scattered *Nuytsia floribunda*, *marri* (*Eucalyptus calophylla*) and *Balga* (*Xanthorrhoea preissii*) with the area dominated by veldt grass (Site Inspection 2007). However, in the southern section (~15ha), adjacent to a Resource Enhancement Wetland, the vegetation includes *Eucalyptus calophylla*, *Nuytsia floribunda*, *Kunzea* sp., *Xanthorrhoea preissii*, *Petrophile* sp., *Conospermum* sp., *Banksia illicifolia*, *Jacksonia* sp. and *Stirlingia linearis* with some veldt grass in the lower storey (Site Inspection, 2007). During the site inspection there were areas of *Kunzea glabrescens* thicket on grey sand that appeared to be associated with slight depressions. The nearby population of *D. elastica* is located within the same soil association and vegetation complex as the area under application; therefore, this 15ha of native vegetation under application may provide suitable habitat for this species.

The DRF, *Eucalyptus argutifolia* grows in shallow sand on limestone ridges and slopes, where it emerges from heath and thicket of parrot bush (*Dryandra sessilis*) and chenille honey-myrtle (*Melaleuca huegelii*), and flowers in March to April (Brown et al, 1998). The site inspection (2007) of the area under application identified no limestone ridges and no *Melaleuca huegelii* and therefore this species is unlikely to within the area under application.

There are 11 species of Priority flora recorded within the local area with the closest record being *Grevillea evanescens* (Priority 1) located approximately 1.9m north-west of the area under application. Of the 11 species of Priority flora one species, *Grevillea evanescens* occurs on the same soils and within the same vegetation complex as the area under application.

Given the occurrence of *Drakaea elastica* within the same vegetation complex and on the same soils as those under application, it is considered that the vegetation to be cleared may include suitable habitat for the DRF *Drakaea elastica*. Therefore, the clearing as proposed is may be at variance to this Principle.

- Methodology** **References:**
- Brown et al (1998)
 - Western Australian Herbarium (1998-)
- GIS Databases:**
- Heddl Vegetation Complexes - DEP 21/06/95
 - SAC Bio Datasets 101207
 - Soils, Statewide - DA 11/99

(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 nine occurrences of Threatened Ecological Communities (TECs) located within the local area (5km radius). The nearest recorded TEC is located approximately 4.3km south-west of the area under application.

These nine TECs have been identified as being Community type 26a - *Melaleuca huegelii*-*M. acerosa* shrublands of limestone ridges.

A site inspection (2007) of the area under application identified no limestone ridges and no *Melaleuca huegelii*-*M. acerosa*. The vegetation under application is described as predominantly parkland cleared (~90ha area) with scattered *Nuytsia floribunda*, marri (*Eucalyptus calophylla*) and Balga (*Xanthorrhoea preissii*), *Jacksonia* sp. and scattered areas of sedges (*Juncus* sp.) with the area dominated by veidt grass (Site Inspection 2007).

Given the vegetation under application does not *Melaleuca huegelii*-*M. acerosa* shrublands and the area under application does not include limestone ridges, the vegetation applied to be cleared is unlikely to comprise or is necessary for the maintenance of a Threatened Ecological Community. Therefore the clearing as proposed is unlikely to be at variance to this Principle.

Methodology Reference:
 - Site Inspection (2007)
 GIS Database:
 - SAC Bio Datasets 101207

(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 vegetation within the area under application is identified as a component of Beard vegetation types 949 and 1008, and Heddle Karakatta Complex North, of which there is 57.0%, 16.8% and 36.9% of Pre-European extent remaining respectively (Shepherd, 2006; EPA, 2006). Further, the Beard vegetation type (1008) and the Heddle vegetation complex are poorly represented in secure tenure (0.0% and 0.2%) (Shepherd, 2006; EPA, 2006).

Aerial imagery and vegetation mapping of the local area (5km radius) shows approximately 55% remnant vegetation to be remaining. In addition, aerial imagery of the local area shows vegetated connectivity in a west-east direction, which is likely to provide an ecological linkage from the 15ha of native vegetation that is within the area under application to the surrounding conservation areas.

The State Government is committed to the National Objectives and Targets for Biodiversity Conservation which includes a target that prevents the clearance of ecological communities with an extent below 30% of that present Pre-European settlement (Commonwealth of Australia, 2001). The Beard vegetation type (1008) in the area under application is below the recommended minimum of 30% representation.

Given there is 16.8% (771ha) of Pre-European extent remaining of the Beard vegetation type 1008, and the significance of the 15ha of native vegetation as an ecological linkage; the vegetation applied to be cleared is considered significant as a remnant of native vegetation. Therefore, the clearing as proposed is considered at variance to this Principle.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	In secure tenure (%)
IBRA Bioregion*				
Swan Coastal Plain^	1,501,456	571,758	38.1	
Shire of Gingin**	315,560	177,688	56.3	
Beard vegetation types				
949*	218,204	124,461	57.0	49.3
1008*	4,592	771	16.8	0.0
Heddle vegetation complex***				
Karakatta Complex North	25,579	9,444	36.9	0.2

* (Shepherd, 2006)

** (Shepherd et al, 2001)

*** (EPA, 2006)

^ Area within Intensive Land Use Zone

Methodology References:
 - Commonwealth of Australia (2001)
 - EPA (2006)
 - Heddle et al (1980)
 - Shepherd (2006)
 GIS Databases:
 - Pre-European Vegetation - DA 01/01

- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Gingin 50cm Orthomosaic - Landgate06
- NLWRA, Current Extent of Native Vegetation - DA 30/01/01
- SAC Bio datasets 05032008

(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

There is a sumpland (seasonally inundated wetland), which is classified as a Resource Enhancement Wetland (REW) (also identified as an EPP lake) located within Lot 6 (DEC, 2007). This wetland covers an area of approximately 44.7ha with approximately 18.7ha being within the area under application (DEC, 2007). REWs are priority wetlands which may have been partially modified but still support substantial ecological attributes and functions. The ultimate objective for these wetlands is for management, restoration and protection towards improving their conservation value. These wetlands have the potential to be restored to conservation category (Government of Western Australia, 1997).

In addition, there are four Conservation Category Wetlands (CCWs) located approximately 30m north, 160m north, 200m north and 360m west. CCWs 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 CCWs and their protection also requires the retention of an adequate buffer (Government of Western Australia, 1997). There is also one REW located approximately 120m south-west of the area under application (DEC, 2007). Further, the Gingin Brook, a minor river, is located approximately 500m north of the area under application.

A site inspection (2007) of the area under application identified the vegetation as predominantly parkland cleared (~90ha area) with scattered *Nuytsia floribunda*, marri (*Eucalyptus calophylla*) and Balga (*Xanthorrhoea preissii*), *Jacksonia* sp. and scattered areas of sedges (*Juncus* sp.) with the area dominated by veldt grass (Site Inspection 2007). In addition, a few small stands of *Melaleuca raphiophylla* were observed on site.

Given approximately 18.7 hectares of a Resource Enhancement Wetland occurs within the area under application; areas of sedges and *Melaleuca raphiophylla*, which are wetland dependant species, were observed on site; and that the northern corner (approximately 0.3ha) is within the 50m buffer to a Conservation Category Wetland, the vegetation under application is considered to be growing in an environment associated with a wetland. Therefore, the clearing as proposed is at variance to this Principle.

Methodology

Reference:

- DEC (2007)
 - Government of Western Australia (1997)
- GIS Databases:**
- EPP, Lakes - DEP 1/12/92
 - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
 - Hydrology, linear - DOE 01/02/04

(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 landscape of the areas under application and surrounds can be described as subdued dune-swale terrain (Northcote et al, 1960). The chief soils are leached sands on the low dunes and small areas of other sandy soils (Northcote et al, 1960). These soils are known to have a low Phosphorus Retention Index (PRI), and it is considered that the proposed clearing of deep-rooted perennial vegetation, in particular the 15 hectares of native vegetation in good to very good condition that is situated in the southern section of the area under application, is likely to result in increased nutrient loss from the soil profile (McPharlin et al, 1990).

Soils within the applied area are part of the Spearwood Dune System, which are described as well drained deep yellow sands. These soils have a high risk of wind erosion and phosphorus export and low risk of surface water runoff (State of Western Australia, 2005).

Given the sandy soils present within the area under application, it is considered that the proposed clearing of approximately 33ha of native vegetation within an 119ha area is likely to cause appreciable land degradation in the form of wind erosion and increased nutrient loss from the soil profile. Therefore, it is considered that clearing as proposed may cause appreciable land degradation.

Methodology

References:

- McPharlin et al (1990)
 - Northcote et al (1960)
 - Site Inspection (2007)
 - State of Western Australia (2005)
- GIS Databases:**

- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
- Soils, Statewide - DA 11/99

(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 at variance to this Principle

There are three conservation reserves within the local area (5km radius), being State Forest 65 (Gnangara-Moore River State Forest) located 0.6m south south-west, Gingin Stock Route Nature Reserve located 1.2km west and Bush Forever Site 406 (also identified as State Forest 65) located 3.5km south-west of the area under application.

A site inspection (2007) of the area under application identified the vegetation as predominantly parkland cleared (~90ha area) with scattered *Nuytsia floribunda*, *marri* (*Eucalyptus calophylla*) and *Balga* (*Xanthorrhoea preissii*), *Jacksonia* sp. and scattered areas of sedges (*Juncus* sp.) with the area dominated by veldt grass (Site Inspection 2007). However, in the southern section, adjacent to a Resource Enhancement Wetland, there is approximately 15ha native vegetation in good to very good condition (Site Inspection, 2007). Aerial imagery of the local area shows vegetated connectivity in a west-east direction, which is likely to provide an ecological linkage from the 15ha of native vegetation to the surrounding conservation areas. This vegetation, being approximately 180m wide and 830m long, is considered likely to support fauna utilising these conservation areas and maintain fauna movement and migration across the local landscape.

Given the occurrence of 15ha of native vegetation in good to very good condition and the connectivity to the nearby conservation areas, it is considered likely that the clearing as proposed will have a direct impact on the environmental values of nearby conservation areas through restricting fauna movement.

Methodology GIS databases:

- Bushforever - MFP 07/01
- DEC Managed Lands and Waters - CALM 1/06/04
- Gingin 50cm Orthomosaic - Landgate06
- System 6 Conservation Reserves - DEP 06/95

(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

There is a sumpland (seasonally inundated wetland), which is classified as a Resource Enhancement Wetland (REW) (also identified as an EPP lake) located within Lot 6 (DEC, 2007). This wetland covers an area of approximately 44.7ha with approximately 18.7ha being within the northern section of the area under application (DEC, 2007). In addition, there are four Conservation Category Wetlands (CCWs) located approximately 30m north, 160m north, 200m north and 360m west; and one REW located approximately 120m south-west of the area under application (DEC, 2007). Further, the Gingin Brook, a minor river, is located approximately 500m north of the area under application.

An REW is a priority wetland which may have been partially modified but still support substantial ecological attributes and functions (WRC, 2001). The ultimate objective for these wetlands is for management, restoration and protection towards improving their conservation value (WRC, 2001). These wetlands have the potential to be restored to conservation category (WRC, 2001).

The minimum recommended buffer distance for wetlands is 50m and this is designed to protect wetlands from potential deleterious impacts while helping safeguard and maintain ecological processes and functions within the wetland and, whenever possible, in the buffer (WRC, 2001). The area under application includes approximately 15ha of native vegetation in the southern section, adjacent to the Resource Enhancement Wetland that is within the 50m buffer and the vegetation is in good to very condition. The clearing of this vegetation may impact the water quality of the nearby REW.

Wetlands Program (DEC, 2007) advises that given the area of wetland under application has already been largely cleared; the removal of any remaining vegetation, in itself, is unlikely to result in significant impact to the wetland; however, the method of clearing may impact the wetland. A site inspection (2007) of the area under application identified the vegetation as predominantly parkland cleared (~90ha area) with scattered *Nuytsia floribunda*, *marri* (*Eucalyptus calophylla*) and *Balga* (*Xanthorrhoea preissii*), *Jacksonia* sp. and scattered areas of sedges (*Juncus* sp.) with the area dominated by veldt grass (Site Inspection 2007).

The area under application is not located in a Public Drinking Water Source Area. The area under application immediately adjacent to the REW boundary is considered to have a low salinity risk (~28ha) and the north-west and central sections of the area under application are considered to have a high salinity risk (~20ha).

The area under application is predominantly in a completely degraded condition (~90ha) with limited vegetation; however, there is approximately 15ha of native vegetation in good to very condition within the recommended 50m buffer and 20ha within the area under application that is considered to have a high salinity risk. Therefore, the clearing as proposed is considered to may be cause deterioration in the quality of surface or ground water.

Methodology**References:**

- DEC (2007)
- Site Inspection (2007)
- WRC (2001)

GIS Databases:

- EPP, Lakes - DEP 1/12/92
- Rivers - DOW
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain DEC
- Public Drinking Water Source Areas (PDWSAs) - DOW
- Salinity Risk LM 25m - DOLA 00

(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**

There is a Resource Enhancement Wetland (REW) located within Lot 6 (DEC, 2007). This wetland covers an area of approximately 44.7ha with approximately 18.7ha being within the area under application (DEC, 2007). Given the nearby REW extends to within the area under application, it is considered that the clearing as proposed (33ha of native vegetation within an 119ha area) to may be cause or increase the incidence or intensity of localised flooding.

Methodology**Reference:**

- DEC (2007)

GIS Database:

- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain DEC

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

A submission (2007) for the area under application was received. The submission considered land degradation issues including moisture availability and phosphate eutrophication risk. These issues were noted. The vegetation proposed to be cleared varies from thinly scattered vegetation on failed pasture land to high conservation corridor linking vegetation. The submission stated that the vegetation proposed to be cleared within the corridor is an important buffer situated immediately below extensive proposed market garden activity and should remain intact; the corridor plays an important role for fauna. Further, if any land clearing application is successful, it would have to include a condition that the proponents have received an additional bore licence from the Department of Environment [currently known as Department of Water] prior to land clearing occurring and a Nutrient and Irrigation Management Plan (NIMP) of how the very risk of phosphate export off-site can be avoided.

The Acid Sulphate Soil (ASS) risk mapping indicates the area under application is mapped as having a Class 1 (~10ha, area associated with a Resource Enhancement Wetland) and a Class 2 risk. These classifications are defined as having a moderate to high risk of shallow (<3m depth) of ASS or potential ASS (Class 1) and a low risk of shallow (<3m depth) of ASS or potential ASS (Class 2). Therefore, given that approximately 10 hectares, which is associated with the wetland, have been identified as having a moderate to high risk of potential acid sulphate soils, the disturbance of this area may result in appreciable land degradation through acidity.

Wetlands Program (DEC, 2007) advised that the proposed clearing and horticultural land use will impact the Resource Enhancement category sumpland (44.7ha) located within 6, which is also identified under the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992. Approximately 18.7ha of the wetland is proposed to be utilised for horticulture, will be permanently impacted and unable to be restored to Conservation category. The proposed horticultural land use also has the potential to impact the remaining wetland area through changes to the hydrological regime, increased transport of nutrients and pollutants, and weed invasion. Potential impacts to the adjacent wetlands may also result from the horticultural land use; however, the extent of impact will depend upon soil transmissivity and drainage patterns (i.e. surface and groundwater flows).

Wetlands Program (DEC, 2007) recommends that ideally, the entire Resource Enhancement category wetland and an appropriate buffer should be protected from clearing and horticultural activities. However, if clearing and development is to be permitted, it is recommended that it should be limited to the north-eastern and south-eastern arms of the wetland only, as these areas have historically been impacted. The proponent should propose an environmental offset in accordance with EPA Position Statement No. 9 Environmental Offsets if clearing and development is to be permitted. For example, protection and restoration of the remaining central wetland area would be encouraged.

The area under application is within the Proclaimed Groundwater Area of Gingin. Therefore any abstraction of groundwater would require a licence. As the proposed purpose of the clearing is for irrigated horticulture and orchard development a groundwater licence is required.

Odeum Holdings Pty Ltd has submitted an application for Transfer of Licence to Take Water for Lot 6 Chitna Road to the Department of Water (DoW). This transfer would allow for the irrigation of up to 100 hectares of vegetables with a total groundwater allocation of 666,000kL/a. The application has been confirm by DoW (letter

dated 13 August 2007), but has not been finalised as the following information has to be provided (Odeum Holdings Pty Ltd, 2007):

- Proof of legal access to the property
- Submission of an Operation Strategy within six months
- Submission of a Nutrient and Irrigation Management Plan within six months

The Shire of Gingin (2007a; 2007b) advised that the Council raises no objections clearing proposed on 529 (Lot 6) Chitna Road for the purpose of irrigated horticulture and orchard, as the land use has been issued Planning Consent under Council's Town Planning Scheme No.8.

The Shire of Gingin issued Planning Consent (dated 16 July 2007; Odeum Holdings Pty Ltd, 2007; Shire of Gingin, 2007a) for 529 (Lot 6) Chitna Road with seven conditions, including:

- Condition 2: The area of Irrigated Horticulture, the subject of this application, shall be limited to 200 hectares.
- Condition 6: A 20 meter buffer comprising of native vegetation, shall be established around the perimeter of an approved Irrigated Horticulture area prior to the planting of the first crop and shall be maintained for the duration of the operation of the development. Such vegetation buffers shall be positioned in accordance with the Shire of Gingin's Fire Break Order.

There is no other RIWI Act Licence, Works Approval or EP Act Licence that affects the area under application.

Lot 140 on Diagram 84364 is zoned Rural under the Town Planning Scheme No. 8.

Odeum Holdings Pty Ltd (2008) sent a response to correspondence, which the Department sent on 10 January 2008. The additional information provided was reviewed by the Department and it was considered that issues relating to wetlands, ecological linkage and the vegetation's significance as a remnant were not adequately addressed therefore no amendment was necessary to the variance of clearing principles.

In addition, Odeum Holdings Pty Ltd (2008) advised that the property was selected for the north facing slope and the loss of 15 hectares and the remaining area would represent a massive loss of future revenue from the property and will eliminate some of the economies of scale, which would result from a larger citrus orchard.

Methodology

References:

- DEC (2007)
 - Northcote et al (1960)
 - Odeum Holdings Pty Ltd (2007)
 - Odeum Holdings Pty Ltd (2008)
 - Shire of Gingin (2007a)
 - Shire of Gingin (2007b)
 - Submission (2007)
- GIS databases:
- Acid Sulphate Soil risk map, Swan Coastal Plain DEC
 - RIWI Act, Groundwater Areas - DOW
 - RIWI Act, Surface Water Areas - DOW
 - Town Planning Scheme Zones - MFP 8/98

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Horticulture	Mechanical Removal	33	The assessable criteria have been addressed and the clearing as proposed is at variance to Principles (e), (f) and (h); and may be at variance to Principles (a), (b), (c), (g), (i) and (j).

5. References

- Birds Australia WA (2006). Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. Carnaby's Black-Cockatoo Recovery Project (<http://www.hotgecko.com/carnabys/Carnabys.htm>). Accessed on 11 December 2007.
- Brown A., Thomson-Dans C. and Marchant N., (1998). Western Australia's Threatened Flora, Department of Conservation and Land Management, Western Australia.
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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)

