



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2252/1  
Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: Kallamar Estate Ltd

### 1.3. Property details

Property: LOT 6 ON PLAN 13245 ( ORANGE SPRINGS 6503)  
LOT 5 ON PLAN 13245 (House No. 237 ORANGE SPRINGS ORANGE SPRINGS 6503)  
Local Government Area: Shire Of Gingin  
Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
152.3		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. (SAC Bio Datasets 05/03/2008; Shepherd, 2006)</p> <p>Heddle Vegetation Complexes: Bassendean Complex - North: Vegetation ranges from a low open forest and low open woodland of Banksia species - E. tottiana to low woodland of Melaleuca species and sedgelands which occupy the moister sites. Bassendean Complex - North-Transition: A transition complex of low open forest and low woodland of Banksia species - E. tottiana on a series of high sand dunes. The understorey species reflect similarities with both the Bassendean-North and Karrakatta-North vegetation complexes. Coonambidgee Complex: Vegetation ranges from a low open forest and low woodland of E. tottiana - B. attenuata - B. menziesii - B. ilicifolia with localised admixtures of B. prionotes to an open woodland of E. calophylla - Banksia species.</p>	<p>The two areas under application total 152.3ha, of which approximately 14.7ha is located within Lot 5 (507.5ha property) and approximately 136.6ha is located within Lot 6 (507.8ha property) (both zoned rural). The proposed clearing is for irrigated horticulture to expand the existing olive grove area.</p> <p>Ten plant communities were identified within the areas surveyed by Cardno BSD across Lots 5 and 6 (which includes the 152.3ha under application), of which three plant communities were identified within the areas under application including: Plant Community W2: Woodland of Banksia attenuata and Banksia menziesii with Eucalyptus tottiana and Nuytsia floribunda over Adenanthos cygnorum subsp. cygnorum, Eremaea pauciflora var. calyptra and Verticordia nitens over Hibbertia hypericoides and Phlebocarya ciliata on white or grey sands on low hills and rises; Plant Community W1: Open Woodland of Corymbia calophylla and</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)</p>	<p>The condition of the native vegetation under application was sourced from the Site Inspection (2008) and Consultant's report (Cardno BSD, 2008).</p>

(Hedde et al, 1980)

*Eucalyptus tottiana* with *Banksia menziesii*, *Banksia attenuata* and *Banksia ilicifolia* over *Xanthorrhoea preissii* and *Calothamnus quadrifidus* over *Hibbertia hypericoides* on grey loamy sands on low hills and rises; and

Plant Community S7: Low shrubland of *Hakea trifurcata*, *Xanthorrhoea preissii* and *Calothamnus quadrifidus* with emergent *Corymbia calophylla* over *Hyalosperma cotula* on loamy sands on broad flats (Cardno BSD, 2008).

### 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**

A flora and vegetation survey (Cardno BSD, 2008) undertaken in October 2007 identified 275 native flora species and 18 weed species within an approximately 480 hectare subject site (~440ha within Lot 6 and ~40ha within Lot 5), which included the 152.3 hectares under application. Three priority flora species and three species of significance were identified within the subject site, of which three populations (with one population within the north-east area under application comprising 30 individuals) of priority flora species, *Gastrolobium axillare* (P3), were identified within the areas under application (Cardno BSD, 2008).

The vegetation under application has been identified as comprising three plant communities with the dominant communities being:

- Plant Community W1: Open Woodland of *Corymbia calophylla* and *Eucalyptus tottiana* with *Banksia menziesii*, *Banksia attenuata* and *Banksia ilicifolia* over *Xanthorrhoea preissii* and *Calothamnus quadrifidus* over *Hibbertia hypericoides* on grey loamy sands on low hills and rises; and
- Plant Community W2: Woodland of *Banksia attenuata* and *Banksia menziesii* with *Eucalyptus tottiana* and *Nuytsia floribunda* over *Adenanthos cygnorum* subsp. *cygnorum*, *Eremaea pauciflora* var. *calyptra* and *Verticordia nitens* over *Hibbertia hypericoides* and *Phlebocarya ciliata* on white or grey sands on low hills and rises (Cardno BSD, 2008).

These plant communities, which cover approximately 150ha of the vegetation under application, have been inferred as Floristic Community Type (FCT) 23b (Cardno BSD, 2008). FCT 23b (Northern *Banksia attenuata* - *Banksia menziesii* woodlands as defined by Gibson et al, 1994) is listed as a priority ecological community (Priority 3) in Western Australia (DEC, 2008a).

Furthermore, the vegetation under application is considered to be in excellent condition and is predominantly *Banksia* woodland (*Banksia* spp.), which may provide feeding habitat for Carnaby's Black-Cockatoo. The vegetation comprises a dense mid-storey and a dense understorey with very little disturbance (Site Inspection, 2008). The dense understorey of the vegetation to be cleared may contain significant habitat for ground-dwelling fauna such as the Western Brush Wallaby and Chuditch.

Given the flora species of conservation significance identified; the ~150ha of vegetation under application inferred as FCT 23b, which is listed as a priority ecological community; the potential habitat value of the vegetation; and the areas of structurally intact native vegetation in excellent condition, the vegetation applied to be cleared is considered to comprise a high level of biological diversity. Therefore, the clearing is considered to be at variance to this Principle.

##### Methodology

###### References:

- Cardno BSD (2008)
- DEC (2008a)
- Gibson et al (1994)
- Site Inspection (2008)

#### (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 are four fauna species of conservation significance recorded within the local area (5km radius) including:

- Chuditch (*Dasyurus geoffroii*) (Vulnerable),
- Western Brush Wallaby (*Macropus irma*) (Priority 4),

- Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) (Endangered), and
- *Leioproctus contrarius* (Priority 3) a native bee species.

The nearest known fauna record is Carnaby's Black-Cockatoo located approximately 3.1km north-east of the areas under application.

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*) and tuart (*Eucalyptus gomphocephala*) (Birds Australia WA, 2006).

DEC Fauna Habitat Notes (2007) indicate that Chuditch occupy large home ranges, is highly mobile and appears able to utilise bush remnants and corridors and that Western Brush Wallaby occur in areas of forest and woodland supporting a dense shrub layer.

A site inspection (2008) of the areas under application identified the vegetation as predominantly Banksia woodland with a dense shrub layer and a dense herb layer, in excellent condition. These areas under application may provide habitat for ground dwelling fauna such as Chuditch and feeding habitat for Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*).

Many fauna move between dryland and wetland areas for feeding and breeding therefore intact dryland vegetation is important to maintain wetland values (DEC, 2008b). The dryland vegetation also provides an ecological linkage among the wetlands within Lot 6; and between the wetlands within Lot 6 and those in the Moore River National Park (DEC, 2008b). The vegetation within the application area is likely to be providing habitat for native fauna that migrate between the wetlands and dryland of Lot 6, and between Lot 6 and the Moore River National Park (DEC, 2008b).

Given the occurrence of approximately 152.3ha of native vegetation, being predominantly Banksia woodland and in excellent condition, and the vegetated connectivity to the surrounding conservation areas it is considered that the vegetation under application is likely to comprise significant habitat for fauna indigenous to Western Australia and is therefore, considered at variance to this Principle.

#### Methodology

##### References:

- Birds Australia WA (2007)
- DEC (2008b)
- Site Inspection (2008)

##### GIS Databases:

- DEC Fauna Habitat Notes.xls February (2007)
- SAC Bio Datasets 12/03/2008

### (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 records of one species of rare flora in the local area (5km radius), being *Paracaleana dixonii* located approximately 1.6km east south-east and 3.5km south-east of the areas under application, within the same soils and within the same vegetation complex as the areas under application.

The rare flora, *Paracaleana dixonii* grows in deep sand in open areas beneath dense tall shrubs with scattered Banksias, or in heathland in shallow sand over laterite, and flowers in October to January (Brown et al, 1998).

A flora and vegetation survey (Cardno BSD, 2008) undertaken in October 2007 did not identify any rare flora within the area under application. Therefore, it is considered that the clearing is not likely to be at variance to this Principle.

#### Methodology

##### References:

- Brown et al (1998)
- Cardno BSD (2008)

##### GIS Databases:

- Heddle Vegetation Complexes
- Pre-European Vegetation
- SAC Bio Datasets 17/03/2008
- 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 may be at variance to this Principle**

There are no known occurrences of Threatened Ecological Communities (TEC) located within the local area (5km radius). The nearest recorded TEC is located approximately 17km south of the areas under application.

This TEC has been identified as being Community type 7: Herb rich saline shrublands in claypans.

Plant Community S2: Low shrubland of *Kunzea micrantha* subsp. *micrantha* with *Hakea marginata* over *Meeboldina cana* and *Dampiera teres* on seasonally wet grey clays occurs 50m from the vegetation under application and covers an area of approximately 0.2ha, (Cardno BSD, 2008). This Plant Community S2 is inferred as FCT 8: Herb rich shrublands in clay pans, which is recognised as being a threatened ecology community (Cardno BSD, 2008).

Two plant communities (Plant Communities W1 and W2) identified within the areas under application, which cover approximately 150ha of the vegetation under application, have been inferred as Floristic Community Type (FCT) 23b (Cardno BSD, 2008). FCT 23b (Northern *Banksia attenuata* - *Banksia menziesii* woodlands as defined by Gibson et al, 1994) is listed as a priority ecological community (Priority 3) in Western Australia (DEC, 2008a).

Given the vegetation under application that has been inferred as Floristic Community Type 8: Herb rich shrublands in clay pans, which is a groundwater dependant community, is located 50m from the vegetation applied to be cleared; this may not be an adequate buffer. Therefore the vegetation to be cleared may be necessary for the maintenance of a threatened ecological community. Furthermore, to be certain FCT 8 occurs within the vegetation identified as Plant Community S2 it is recommended to install plot/s within this vegetation, score them at least twice at suitable times of the year, and appropriately analyse the data against that held in Gibson et al. (1994).

**Methodology** Reference:  
 - Cardno BSD (2008)  
 - DEC (2008a)  
 - Gibson et al (2008)  
 GIS Database:  
 - SAC Bio Datasets 14/03/2008

**(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 within the areas under application is identified as a component of Beard vegetation type 949, and Heddle Complexes Bassendean Complex North, Bassendean Complex North/Transition, and Coonambidgee Complex, of which there is 57.0%, 72.0%, 92.3% and 45.1% of Pre-European extent remaining respectively (Shepherd, 2006; EPA, 2006). Further, the Beard vegetation type and the Heddle vegetation complexes are well represented in secure tenure (49.3%, 27.5%, 57.8% and 9.4%) (Shepherd, 2006; EPA, 2006). In addition, vegetation mapping of the local area (5km radius) shows approximately 70% remnant vegetation to be remaining.

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 and Heddle complexes are below the recommended minimum of 30% representation.

Given there is 57.0%, 72.0%, 92.3% and 45.1% of Pre-European extent remaining of the Beard and Heddle vegetation associations; the vegetation applied to be cleared is not considered significant as a remnant of native vegetation. Therefore, the clearing as proposed is considered not likely to be at variance to this Principle.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	In secure tenure (%)
IBRA Bioregion*				
Swan Coastal Plain^	1,501,456	571,758	38.1	
Shire of Gingin**	315,560	177,688	56.3	
Local area (5km radius)	7,850	~5,500	70.0	
Beard vegetation type 949*	218,204	124,461	57.0	49.3
Heddle vegetation complexes***				
Bassendean - North	74,147	53,384	72.0	27.5
Bassendean - Nth/Transition	17,675	16,308	92.3	57.8
Coonambidgee	6,272	2,830	45.1	9.4

\* (Shepherd, 2006)

\*\* (Shepherd et al, 2001)

\*\*\* (EPA, 2006)

^ Area within Intensive Land Use Zone

- Methodology** References:
- Commonwealth of Australia (2001)
  - EPA (2006)
  - Shepherd et al (2001)
  - Shepherd (2006)
- GIS Databases:
- Heddle Vegetation Complexes
  - Pre-European Vegetation
  - Interim Biogeographic Regionalisation of Australia
  - NLWRA, Current Extent of Native Vegetation
  - SAC Bio Datasets 05/03/2008

**(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 seasonally inundated basin (sumpland) identified as an Environmental Protection Policy (EPP) lake and classified as a Resource Enhancement Wetland (REW), located immediately adjacent to the eastern area under application with no buffer. The purpose of this policy is to protect the environmental values of lakes on the Swan Coastal Plain (EPA, 1992).

There are three Conservation Category Wetlands (CCW) (~50m away) adjacent to the southern section under application within Lot 6. In addition, there is a CCW located 100m south-west of the southern section under application within Lot 6; this wetland covers an area of approximately 9.5 hectares; and there is a CCW located approximately 60m west of the areas under application within the adjoining property. CCW are the highest priority wetlands which support a high level of ecological attributes and functions (WRC, 2001). There should be no further loss or degradation of CCW and their protection also requires the retention of an adequate buffer (WRC, 2001).

Although the wetlands have been excluded from the areas under application the clearing is proposed within the critical zone of influence (within 50m of mapped wetlands) and the secondary zone of influence (within 200m of mapped wetlands), which may adversely impact the ecological processes and functions within the wetlands (Hill et al, 1996).

The nearest watercourses, Whitfield Brook and Moore River, are located approximately 2.4km south south-east and 3.2km north of the areas under application, respectively.

Given that the north-eastern corner of the eastern area under application is within the buffer to a EPP Lake (also identified as a resource enhancement wetland), and that three conservation category wetlands occur adjacent to the southern area under application; the vegetation under application is considered to be growing in association with an environment associated with wetlands that have significant environmental values. Therefore, the clearing as proposed is at variance to this Principle.

- Methodology** References:
- Cardno BSD (2008)
  - EPA (1992)
  - Hill et al (1996)
  - Site Inspection (2008)
  - WRC (2001)
- GIS Databases:
- EPP, Lakes
  - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
  - Rivers

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

**Comments Proposal is 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 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 Bassendean Dune System, which are described as deep pale sands, with small areas of brownish-yellow alluvial sands and humic dark grey swamp soils (DAFWA, 2008). These soils have a high to very high risk of wind erosion, water erosion and phosphorus export or

eutrophication (DAFWA, 2008; State of Western Australia 2005). The high erosion potential is due to the sandy nature of the topsoil and without appropriate ground cover, windbreaks or adequate dust suppression on exposed surfaces the proposal would be likely to cause land degradation.

DAFWA (2008) has advised that there is a moderate to very high risk of waterlogging and salinity. There will be increased recharge associated with the significant clearing, and as wetlands and poorly drained depressions and floodplains occur, particularly where there is a hardpan or clay base this will contribute to a perched water table (DAFWA, 2008). In addition, a land capability assessment, which included the areas under application, mapped eight soil landscape units within the areas under application, of which one of the units (BW4) was susceptible to waterlogging (RPS Environment Pty Ltd, 2008)

Given the areas of sandy soils and smaller areas of clayey soils, it is considered that the proposed clearing of approximately 152.3ha of native vegetation is highly likely to cause appreciable land degradation in the form of wind erosion, water erosion, waterlogging, salinity and eutrophication. Therefore, it is considered that clearing as proposed is at variance to this Principle.

**Methodology**   References:  
- DAFWA (2008)  
- McPharlin et al (1990)  
- Northcote et al (1960)  
- RPS Environment Pty Ltd (2008)  
- State of Western Australia (2005)  
GIS Databases:  
- Soils, Statewide

**(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 two conservation reserves within the local area (6km radius) being Moore River National Park, located immediately adjacent to the southern boundary of Lot 6 and approximately 50m from the southern area under application; and Namming Nature Reserve, located approximately 6km north-west of the areas under application.

A site inspection (2008) of the areas under application identified the vegetation as predominantly Banksia woodland and is considered to be in excellent condition. Aerial imagery of the local area shows vegetated connectivity in an east-west and north-south direction, which is likely to provide an ecological linkage from the 152.3ha of native vegetation to the adjoining conservation area. This vegetation under application is considered likely to support fauna utilising the conservation area and maintain fauna movement and migration across the local landscape.

In addition, the Wetlands Program (DEC, 2008b) advised that the dryland vegetation provides an ecological linkage between the wetlands within Lot 6 and the wetlands in the Moore River National Park. Many fauna move between dryland and wetland areas for feeding and breeding (DEC, 2008b).

Given the occurrence of 152.3ha of native vegetation in excellent condition and the connectivity to the adjacent and 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 to feeding and breeding sites.

**Methodology**   Reference:  
- DEC (2008b)  
- Site Inspection (2008)  
GIS databases:  
- DEC Managed Lands and Waters  
- Gingin 50cm Orthomosaic - Landgate06

**(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**

There is a seasonally inundated basin (sumpland) identified as an Environmental Protection Policy (EPP) lake and classified as a Resource Enhancement Wetland (REW), located immediately adjacent to the eastern area under application with no buffer. The purpose of this policy is to protect the environmental values of lakes on the Swan Coastal Plain (EPA, 1992). REW is a priority wetland 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 (WRC, 2001).

There are three Conservation Category Wetlands (CCW) (~50m away) adjacent to the southern section under application within Lot 6. In addition, there is a CCW located 100m south-west of the southern section under

application within Lot 6; and there is a CCW located approximately 60m west of the areas under application within the adjoining property. CCW are the highest priority wetlands which support a high level of ecological attributes and functions (WRC, 2001). There should be no further loss or degradation of CCW and their protection also requires the retention of an adequate buffer (WRC, 2001).

The Wetlands Program (DEC, 2008b) advised that Lot 6 and the surrounding area contains a mosaic of high value wetlands (sumplands and damplands) and intact dryland vegetation. Wetland hydrology can be a complex and it is likely that the wetlands within Lot 6 and the wetlands within the [adjacent] Moore River National Park are hydrologically connected (DEC, 2008b). Therefore, the clearing proposal may have adverse indirect impacts on the wetlands within the Moore River National Park (DEC, 2008b).

Although the wetlands have been excluded from the areas under application the clearing is proposed within the critical zone of influence (within 50m of mapped wetlands) and the secondary zone of influence (within 200m of mapped wetlands), which may adversely impact the ecological processes and functions within the wetlands (Hill et al, 1996).

The nearest watercourses, Whitfield brook and Moore river, are located approximately 2.4km south south-east and 3.2km north of the areas under application, respectively.

The areas under application are not located in a Public Drinking Water Source Area. The areas under application are considered to have approximately 65ha of low to moderate salinity risk and approximately 30ha of high salinity risk.

DAFWA (2008) has advised that there is a moderate to very high risk of salinity and waterlogging, a very high risk of eutrophication and a high risk of wind erosion on exposed sandy soils over much of the areas under application. There will be increased recharge associated with the significant clearing, and as wetlands and poorly drained depressions and floodplains occur, particularly where there is a hardpan or clay base this will contribute to a perched water table (DAFWA, 2008). There will be phosphorous loss across the area to be cleared, particularly in swamps or wetlands (DAFWA, 2008).

The vegetation under application is in excellent condition with some of the vegetation within the wetland buffer; and there are areas of moderate to very high risk of salinity and waterlogging, very high risk of eutrophication and high risk of wind erosion. Therefore, the clearing as proposed is considered likely to cause deterioration in the quality of surface water of the adjacent wetlands.

#### Methodology

##### References:

- DAFWA (2008)
- DEC (2008b)
- EPA (1992)
- Hill et al (1996)
- WRC (2001)

##### GIS Databases:

- EPP, Lakes - DEP 1/12/92
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
- Public Drinking Water Source Areas (PDWSAs)
- Rivers
- 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 seasonally inundated basin (sumpland) identified as an Environmental Protection Policy (EPP) lake and classified as a Resource Enhancement Wetland (REW), located immediately adjacent to the eastern area under application.

There are three Conservation Category Wetlands (CCW) (~50m away) adjacent to the southern section under application within Lot 6. In addition, there is a CCW located 100m south-west of the southern section under application within Lot 6; and there is a CCW located approximately 60m west of the areas under application within the adjoining property.

Given the occurrence of six wetlands within 100m of the areas under application, it is considered that the clearing as proposed (152.3ha) may cause or increase the incidence or intensity of localised waterlogging and flooding.

#### Methodology

##### GIS Database:

- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain

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

### Comments

RPS Environment Pty Ltd (2008) sent a letter, a soil assessment report and an amended map in response to correspondence, which the Department sent on 8 May 2008. In this correspondence the area under application was amended from of 183.2ha down to 152.3ha which included the following amendments:

- Removal of the Conservation Category Wetland (CCW) [within the south-west portion of Lot 6] and installation of a 100m buffer from the area to be cleared;
- Plant Community S2 [Inferred FCT 8] will be excised from the clearing application along with a 50m buffer linked by a 100m corridor to the vegetation of the national park to the west [national park is location to the south]; and
- Removal of an area of 'low capability' BB1category land in the south western portion of the site surrounding the CCW.

The assessment of the clearing principles has been undertaken against the amended area.

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 considered as part of the assessment. The vegetation proposed to be cleared contains high conservation banksias and *E. tottiana* woodland. The submission stated that ample cleared land is available on the open market within the Gingin shire and therefore the clearing of these sandy phosphate leaching soils for agricultural use is opposed. 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.

Wetlands Program (DEC, 2008b) advised that the proposed clearing will result in the loss of dryland vegetation that is contiguous with the wetlands within and adjacent to the application area. The proposed horticultural activity has the potential to significantly impact wetland values through changes to the hydrological regime and the introduction of nutrients and pollutants.

Wetlands Program (DEC, 2008b) advised that it is likely that the wetlands within Lot 6 and the wetlands within the [adjacent] Moore River National Park are hydrologically connected. Therefore, the clearing horticultural proposal may have adverse indirect impacts on the wetlands within the Moore River National Park (DEC, 2008b).

In addition, Wetlands Program (DEC, 2008b) advised that wetlands that are to be conserved require a buffer to protect them from potential adverse impacts and, maintain ecological processes and functions within the wetland. The width of the buffer should be determined based on the values of the wetland to be protected and the threats posed by the adjacent land use. The proposed clearing and horticultural activity will result in no buffer to the adjacent Environmental Protection Policy Lake (also classified as a resource enhancement category wetland) and 50m -100m buffers to four conservation category wetlands.

Given the transmissive nature of the soils within the proposed area (Northcote et al, 1960), it is considered that a 200 metres buffer to any identified Resource Enhancement or Conservation Category Wetland should be maintained to protect wetlands from nutrient inputs (WRC, 2001). As the proposed irrigated horticultural area (olive grove) is in closer proximity to the wetland areas than that recommended, the proposed land use may negatively impact on the wetland areas.

DAFWA (2008) advised that there is a potential of contamination of the groundwater and possibly wetlands due to the very high risk of phosphorous loss from the site. Therefore, the fertiliser applications and irrigation practices associated with horticultural activities require careful management.

A land capability assessment for olives within Lot 6 and Part Lot 5, which includes the areas under application, mapped eight soil landscape units within the areas under application (RPS Environment Pty Ltd, 2008). These soil landscape units were then ranked on a scale from very low to high capability for the proposed land use of growing olive trees with:

- four units ranked as having a low capability,
- one unit ranked as having a fair to low capability,
- two units ranked as having a fair capability, and
- one unit ranked as having a high capability (RPS Environment Pty Ltd, 2008).

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 olive groves a groundwater licence is required. The applicant has advised that an application for a ground water licence was submitted in January 2007, and they are currently awaiting approval (RPS Environment Pty Ltd, 2008).

The Shire of Gingin (2008) advised that no land use approval has been granted for the purpose of irrigated olive groves within Lot 5 and Lot 6. The applicant has advised an application for irrigated horticulture will be submitted to the Shire of Gingin once a clearing permit has been finalised (RPS Environment Pty Ltd, 2008).

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



- Methodology Lot 5 on Plan 13245 and Lot 6 on Plan 13245 are zoned Rural under the local Town Planning Scheme.
- References:
- DAFWA (2008)
  - DEC (2008)
  - Northcote et al (1960)
  - RPS Environment Pty Ltd (2008)
  - Shire of Gingin (2008)
  - Submission (2007)
  - WRC (2001)
- GIS databases:
- RIWI Act, Groundwater Areas
  - RIWI Act, Surface Water Areas
  - 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), (g), (h) and (i); and may be at variance to Principles (d) and (j).

#### 5. References

- Cardno BSD (2008) Lot 5 Orange Springs Road and Lot 6 Brand Highway, Gingin: Flora and Vegetation Survey and Wetland Assessment; Version 3, Cardno BSD. TRIM Ref DOC51147
- Commonwealth of Australia (2001) National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.
- DAFWA (2008) Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia. TRIM Ref DOC48655
- DEC (2008a) Priority ecological communities for Western Australia, Department of Environment and Conservation.
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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)