



**CLEARING PERMIT**  
**Granted under section 51E of the Environmental Protection Act 1986**

<b>Purpose permit number:</b>	CPS 1964/2
<b>Permit holder:</b>	City of Wanneroo
<b>Purpose of clearing:</b>	Road Construction
<b>Shire:</b>	City of Wanneroo
<b>Duration of permit:</b>	1 June 2008 – 1 June 2013

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<b>Purpose permit number:</b>	CPS 1964/2
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<b>Purpose of clearing:</b>	Road Construction
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<b>Duration of permit:</b>	1 June 2008 – 1 June 2013

The permit holder is authorised to clear native vegetation for the above stated purposes, subject to the conditions of this Permit.

#### **PART I – CLEARING AUTHORISED**

##### **1. Land on which clearing is to be done**

Lot 7 on Diagram 40305 (Wangara 6065)  
Road Reserve, Gngangara

##### **2. Area of Clearing**

The Permit Holder must not clear more than 4.2 hectares of native vegetation within the area cross-hatched yellow on the attached Plan 1964/2.

##### **3. Application**

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purpose of road construction to the extent that the permit holder has the power to clear native vegetation under the *Local Government Act 1995* or any other written law and subject to compliance with the conditions of this Permit and approval from the Permit Holder.

##### **4. Compliance with Assessment Sequence and Management Procedures**

Prior to clearing any native vegetation under Conditions 1 and 2 of this Permit, the Permit Holder must comply with the Assessment Sequence and the Management Procedures set out in Part II of this Permit.

##### **5. Type of clearing authorised**

This Permit authorises the Permit Holder to clear native vegetation for activities to the extent that the Permit Holder has the power to clear native vegetation for those activities under the *Local Government Act 1995* or any other written law.

#### **PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES**

##### **6. Avoid, minimise etc clearing**

In determining the amount of native vegetation to be cleared for the purpose of road construction, the Permit Holder must have regard to the following principles, set out in order of preference:

- (a) Avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

##### **7. Dieback and weed control**

- (a) When undertaking any clearing or other activity pursuant to this Permit the Permit Holder must take the following steps to minimise the risk of introduction and spread of *dieback*.

- (i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (ii) avoid the movement of soil in wet conditions;
- (iii) ensure that no *dieback*-affected *road building materials, mulches* or *fill* are brought into an area that is not affected by *dieback*; and
- (iv) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

- (b) When undertaking any clearing or other activity pursuant to this Permit the Permit Holder must take the following steps to minimise the risk of introduction and spread of *weeds*:

- (i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;



- (ii) ensure that no *weed*-affected *road building materials*, *mulch* or *fill* or other material is brought into the area to be cleared; and
  - (iii) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.
- (c) At least once in each 12 month period for the term of this Permit, the Permit Holder must remove or kill any *weeds* growing within areas cleared under this Permit.

## 8. Offsets

### (a) Determination of *offsets*

- (i) For any part or all of the clearing to be done that contains or is necessary for the maintenance of rare flora or a threatened ecological community, or clears native vegetation within Bush Forever Site 463, the Permit Holder must implement an *offset* in accordance with Conditions 10(a) and 10(b) of this Permit with respect to that native vegetation.
- (ii) In determining the *offset* to be implemented with respect to a particular area of native vegetation proposed to be cleared under this Permit, the Permit Holder must have regard to the offset principles contained in Condition 10(b) of this Permit.
- (iii) Once the permit holder has developed an offset proposal, the permit holder must provide that offset proposal to the CEO for the CEO's approval prior to undertaking any clearing to which the *offset* relates, and prior to implementing the *offset*.
- (iv) Clearing may not commence until the CEO has approved the offset proposal.
- (v) The Permit Holder shall implement the offset proposal approved under Condition 10(a)(iii).
- (vi) Each offset proposal shall include a *direct offset*, timing for implementation of the offset proposal and may additionally include *contributing offsets*.

### (b) Offset principles

For the purpose of this Part, the offset principles are as follows:

- (i) *Direct offsets* should directly counterbalance the loss of the native vegetation;
- (ii) *contributing offsets* should complement and enhance the *direct offset*;
- (iii) *offsets* are implemented only once all avenues to avoid, minimise, rectify or reduce environmental impacts have been exhausted;
- (iv) the environmental values, habitat, species, *ecological community*, physical area, ecosystem, landscape, and hydrology of the *offset* should be the same as, or better than, that of the area of native vegetation being *offset*;
- (v) a ratio greater than 1:1 should be applied to the size of the area of native vegetation that is offset to compensate for the risk that the *offset* may fail;
- (vi) *offsets* must entail a robust and consistent assessment process;
- (vii) in determining an appropriate *offset*, consideration should be given to ecosystem function, rarity and type of *ecological community*, vegetation *condition*, habitat quality and area of native vegetation cleared;
- (viii) the *offset* should either result in no net loss of native vegetation, or lead to a net gain in native vegetation and improve the condition of the natural environment;
- (ix) *offsets* must satisfy all statutory requirements;
- (x) *offsets* must be clearly defined, documented and audited;
- (xi) *offsets* must ensure a long-term (10-30 year) benefit; and
- (xii) an *environmental specialist* must be involved in the design, assessment and monitoring of *offsets*.

## 9. Fencing

- (a) The Permit holder shall construct a fence adjacent to Bush Forever Site 463 enclosing the areas cross hatched yellow on attached Plan 1964/2.
- (b) The fence shall be constructed and maintained so as to be adequate to exclude public access.
- (c) Construction of the fence shall be completed prior to commencement of clearing.
- (d) The Permit Holder shall notify the CEO in writing within one month of completing the construction of the fence.

## PART III – RECORD KEEPING AND REPORTING

### 10. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit, as relevant:

- (a) In relation to the clearing of native vegetation undertaken pursuant to the purpose of clearing:
  - (i) The species composition, structure and density of the cleared area;
  - (ii) the location where the clearing occurred, recorded using Geocentric Datum Australia 1994;
  - (iii) the date that the area was cleared; and

- (iv) the size of the area cleared (in hectares)
- (b) In relation to the *offsets* of areas pursuant to Condition 8
  - (i) The location of any area of *offsets* recorded using Geocentric Datum Australia 1994;
  - (ii) a description of the offset activities undertaken; and
  - (iii) the size of the offset area (in hectares).

## 11. Reporting

The Permit Holder must provide to the CEO, on or before 30 June of each year, a written report of records required under Condition 10 and activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.

## DEFINITIONS

The following meanings are given to terms used in this Permit:

**condition** means the rating given to native vegetation using the *Keighery scale* and refers to the degree of change in the structure, density and species present in the particular vegetation in comparison to undisturbed vegetation of the same type;

**contributing offsets** has the same meaning as is given to that term in the Environmental Protection Authority's *Position Statement No.9 Environmental Offsets*, January 2006;

**dieback** means the effect of *Phytophthora* species on native vegetation;

**direct offsets** has the same meaning as is given to that term in the Environmental Protection Authority's *Position Statement No.9 Environmental Offsets*, January 2006;

**ecological community** means a naturally occurring biological assemblage that occurs in a particular type of habitat (English and Blythe, 1997; 1999). The scale at which ecological communities are defined will depend on the level of detail in the information source, therefore no particular scale is specified.

**environmental specialist** means a person who is engaged by the permit holder for the purpose of providing environmental advice, who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit;

**fill** means material used to increase the ground level, or fill a hollow;

**mulch** means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

**offset** means an offset required to be implemented under Condition 8 of this Permit;

**road building material** means rock, gravel, soil, stone, timber, boulders and water;

**weed** means a species listed in Appendix 3 of the "Environmental Weed Strategy" published by the Department of Conservation and Land Management (1999), and plants declared under section 37 of the Agricultural and Related Resources Protection Act 1976.



M G Warnock  
A/MANAGER  
NATIVE VEGETATION CONSERVATION BRANCH

*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

14 October 2010



# Plan 1964/2

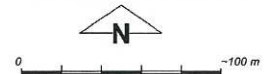


## LEGEND

- ☐ Cadastre for labelling
- ☐ Road Centrelines
- ☐ FW
- ☐ HY
- ☐ LRO (cont)

- ☐ LRS
- ☐ MR
- ☐ N
- ☐ TR
- ☐ Clearing Instruments
- ☐ Areas Approved to Clear

Swan Coastal Plain North  
20cm Orthomosaic - Landgate  
2009



Scale 1:3647

(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

*andrew* Date 14/10/10  
M G Warnock

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.



Department of  
Environment and Conservation

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\* Project Data is denoted by asterisk. This data has not been quality assured. Please contact map author for details.





## 1. Application details

### 1.1. Permit application details

Permit application No.: 1964/2  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: City of Wanneroo

### 1.3. Property details

Property: LOT 7 ON DIAGRAM 40305 (WANGARA 6065)  
Local Government Area:  
Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
4.2		Mechanical Removal	Road construction or maintenance

## 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: 949 - Low woodland; banksia	The proposal is to clear 4.2ha of vegetation for the extension of Ocean Reef Road from Hartman Drive to Gnangara Road.  There is a high level of disturbance to the area under application including vehicle tracks throughout the area, previous clearing, rubbish dumping and weed invasion. There is also evidence of disturbance from rabbits.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	The vegetation description was obtained from a site inspection conducted by DEC officers in 2008 and in September 2010.
Hedde Complex: Karrakatta Central and South - predominantly open forest of E. gomphocephala - E. marginata - E. calophylla and woodland of E. marginata - Banksia species.	The area under application slopes west to east. Vegetation varies within the landscape and ranges from Completely Degraded to Very Good condition and is best described in 4 sections:  South East Section - Vegetation is best described as very open Banksia woodland over Jacksonia furcellata, Adenanthos cygnorum and Zamia with a sparse shrub layer and understorey of grassy weeds in degraded to good condition.  Mid Section - The vegetation occurs in a low lying area and considered to be in good to degraded condition with the occasional Eucalyptus rudis over a Melaleuca preissiana thicket with a low shrubland, scattered sedges and grass weeds. Other trees present in this area included Nuytsia floribunda, Banksia attenuata, Banksia menziesii and Banksia illicifolia. ( 1.7ha)		
As above	Northern Section - A linear strip of vegetation along the north side the applied area has been previously cleared. There are areas of exposed sand with the occasional weed which is considered to be Completely degraded. The majority of this section has sparse regrowth and including Banksia attenuata, Banksia menziesii, Jacksonia floribunda and Mesomelaena pseudostygia with grass weeds and is considered to be degraded (1.4ha).	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	As above
As above	South West Section - the vegetation occurs on the crest and mid slope and varies from good to very	Very Good: Vegetation structure altered; obvious	As above



good condition depending on the level of disturbance and weed invasion. The vegetation is best described as an Open Woodland of *Eucalyptus marginata* over Low Woodland of *Banksia attenuata* and *Banksia menziesii* with *Allocasuarina* spp. over a diverse dense shrub layer including *Jacksonia furcellata*, *Hibbertia hypericoides*, *Synaphea spinulosa*, *Gompholobium tomentosum*, *Patersonia occidentalis*, *Stirlingia latifolia*, and *Mesomelaena pseudostygia* (1.1 ha).

signs of disturbance (Keighery 1994)

### 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

City of Wanneroo has requested to amend the area for Permit CPS 1964/1 to 4.2ha from the original area of 3.37ha. The amendment is required due to the previously approved area not incorporating the entire construction area necessary for the proposed extension of Ocean Reef Road.

The vegetation under application varies and ranges from completely degraded to very good (Keighery 1994) condition. There is a high level of disturbance to the applied area in the form of previous clearing, vehicle tracks, weed invasion and rubbish dumping (DEC 2008, DEC 2010).

There are 13 Bush Forever sites within the local area. The area under application is within Bush Forever Site 463, known as 'Starlight Grove Bushland, Gngangara/Wangara'. The proposed clearing will have a direct impact on the environmental values of Bush Forever Site 463. The proposed clearing also has the potential to further indirectly impact Bush Forever Site through the spread or introduction of dieback and weeds by machinery.

The south west portion of the area under application is in good to very good (Keighery 1994) condition and is best described as an Open Woodland of *Eucalyptus marginata* over Low Woodland of *Banksia attenuata* and *Banksia menziesii* with *Allocasuarina* spp. over a diverse dense shrub layer (DEC 2008). This dense, diverse understorey may provide suitable habitat for ground dwelling fauna. In addition, it may be considered for the vegetation under application to provide significant feeding habitat for Carnaby's black cockatoos.

It may also be considered that the portion of vegetation in good to very good condition may also be associated with Threatened Ecological Community (TEC) 'Floristic Community Type 20a - *Banksia attenuata* woodland over species rich dense shrublands' which is listed as Endangered in Western Australia (DEC, 2007) and may be necessary for the maintenance of Declared Rare or Priority Flora in the local area. *Caladenia huegelii* is known to occur in the same soils as the area under application. However, a flora survey undertaken in September 2008 did not identify any Rare or Priority Flora or TECs within the application area (Natural Area 2008).

Given that part of the vegetation to be cleared is considered to be in very good condition, is part of significant bushland that is part of a Bush Forever site and may contain significant fauna habitat for conservation significant fauna species, the proposed clearing is considered to be at variance to this Principle.

##### Methodology

##### References:

DEC (2007)  
DEC (2008)  
DEC (2010)  
Natural Area (2008)

##### GIS Databases:

-SAC Bio Datasets

#### (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

##### Comments

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

The following significant fauna have been recorded in the local area (~5km radius):

- Carnaby's Black-Cockatoo (*Calyptrorhynchus latirostris* - Endangered)
- Graceful Sunmoth (*Synemon grataiosa* - Endangered)
- Australasian Bittern (*Botaurus poiciloptilus* - Vulnerable)
- Little Bittern (*Ixobrychus minutus* - Priority 4)
- Western Brush Wallaby (*Macropus irma* - Priority 4)
- Quenda (*Isodon obesulus fusciventer* - Priority 5)

The closest known records of significant fauna are the Quenda and Carnaby's Black Cockatoo, both sighted ~1km from the applied area in Bush Forever site 327. DEC Fauna Habitat Notes (2007) indicate Carnaby's move around seasonally in flocks and feed in areas of proteaceous scrubs and heaths and eucalypt woodlands as well as pine plantations and breed in mature hollow trees. The south western portion of the



area under application is described as an Open Woodland of *Eucalyptus marginata* over Low Woodland of *Banksia attenuata* and *Banksia menziesii* with *Allocasuarina* spp. over a diverse dense shrub layer in very good (Keighery 1994) condition (DEC 2010). Many of the Eucalypts within the area under application are immature and not considered to be of hollow bearing age. It is therefore more likely this vegetation would be utilised as feeding habitat for the Carnaby's. Given that 1.1 ha of the application area is in very good (Keighery 1994) condition and 1.7 is in good (Keighery 1994) condition, it is considered for the proposed clearing to impact on significant feeding habitat for the Carnaby's black cockatoo.

Both the Quenda and Brush Wallaby prefer dense understorey (DEC Fauna Habitat Notes, 2007). A small portion of the vegetation under application is in very good (Keighery 1994) condition best described as an Open Woodland of *Eucalyptus marginata* over Low Woodland of *Banksia attenuata* and *Banksia menziesii* with *Allocasuarina* spp. over a diverse dense shrub layer including *Jacksonia furcellata*, *Hibbertia hypericoides*, *Synaphea spinulosa*, *Gompholobium tomentosum*, *Patersonia occidentalis*, *Stirlingia latifolia*, and *Mesomelaena pseudostygia* (DEC 2008). This dense, diverse understorey may provide suitable habitat for ground dwelling fauna.

The remaining bird species recorded in the local area are associated with habitat provided by Jandabup Lake ~4.8km north of the applied area. Given the distance to Jandabup Lake, the proposed clearing is not likely to comprise significant habitat for these bird species.

Given the vegetation in the south western portion of the applied area is considered to comprise dense understorey in good to very good (Keighery 1994) condition; it is considered that the area under application may comprise significant habitat for Carnaby's Black cockatoo and therefore may be at variance to this Principle.

- Methodology**      References:
- DEC Fauna Habitat Notes (2007)
  - DEC (2008)
- GIS Databases:
- Bushforever
  - Hydrography, linear (hierarchy)
  - SAC Bio datasets (Accessed 28/03/08)

**(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 2 known records of 2 Declared Rare Flora (DRF) species within the local area. Both of these DRF species, *Caladenia huegelii* and *Pityrodia axillaris* are known to occur ~1.4km north east of the area under application in the same soil types.
- In addition, there are 12 known records of 4 Priority species within the local area. Of these species it is considered that the Priority 3 species *Hibbertia helianthemoides* and *Cyathochaeta teretifolia*; and the Priority 4 species *Jacksonia sericea*, may occur within the area under application as they are known to occur in the same soil types.
- A flora survey undertaken during September 2008 did not identify any Rare or Priority Flora within the survey areas (Natural Area 2008). This survey was conducted during the optimal flowering times for *Caladenia huegelii* and *Hibbertia helianthemoides*, therefore it is not considered for the application area to contain rare flora.

- Methodology**      References:
- Natural Area (2008)
- GIS Databases:
- SAC Bio Datasets (Accessed 27/03/08)
  - 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 are 35 records of Threatened Ecological Communities (TEC) within the local area. These TEC's are Endangered and known as 'Floristic Community Type (FCT) 20a - *Banksia attenuata* woodland over species rich dense shrublands'.
- The closest known occurrence of the TEC FCT 20a is ~1.3km south west of the area under application. These TEC's are known to occur in the same soil type and Heddl vegetation complex as the area under application. The following indicator species of the Floristic Community Type 20a were identified during a site inspection



(DEC 2008) of the area under application: *Alexgeorgea nitens*, *Daviesia nudiflora*, *Mesomelaena pseudostygia* and *Synaphea spinulosa*. Other species identified in the area which are associated with FCT 20a included: *Gompholobium tomentosum*, *Jacksonia floribunda*, *Lyginia barbata*, *Patersonia occidentalis* and *Stirlingia latifolia*.

In addition, an Environmental Impact Report (SMEC, 2007) contained a flora survey undertaken on 2nd of December 2006. One site in the survey area (located at the western end of the proposed clearing area) showed some affinity to SCP20a in very good to excellent condition (SMEC, 2007).

However, an additional flora report undertaken in September 2008 (Natural Area 2008) identified that the vegetation under application is more representative of FCT 21a ?Central *Banksia attenuata* ? *Eucalyptus marginata* woodlands? and therefore the application area does not contain a TEC.

The proposed clearing is not at variance to this Principle.

- Methodology**    References:
- DEC (2007)
  - DEC (2008)
  - SMEC (2007)
  - Natural Area (2008)
- GIS Databases:
- Hedde Vegetation Complexes - DEP 21/06/95
  - Soil Statewide
  - SAC Bio Datasets (28/03/08)

**(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 Hedde vegetation complex identified in the area under application is the Karrakatta Complex-Central and South which has a pre-European representation level of 29.5% remaining (EPA, 2006). Beard Vegetation Association 949 is identified within the applied area with a current representation level of 57.0% (Shepherd, 2006). In addition, there is ~49.1% of native vegetation remaining in the local area.

The State Government is committed to the National Objectives Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-1750 (Commonwealth of Australia, 2001).

Although the Hedde Complex has 29.5% remaining, having less than the recommended 30% minimum of Pre-European extent remaining, the applied area is considered to be within a constrained area. The EPA (2006) recognises the Perth Metropolitan Region as a 'constrained area', providing for the reduction of vegetation complexes to a minimum of 10% of the Pre-European extent.

Given the extent of vegetation remaining in the local area (~49.1%) and the current representation levels of the Hedde complex and Beard vegetation association, it is not considered likely that the vegetation under application is significant as a remnant in an area that has been extensively cleared.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	% In reserves DEC Managed Land
IBRA Bioregions*				
Swan Coastal Plain^	1,501,456	571,758	38.1	32.7
LGA**				
City of Wanneroo	68,070	34,057	50.0	N/A
Vegetation in the Local Area (~5km radius)	~4,892	~2,405	~49.1	N/A
Hedde Vegetation Complex***				
Karrakatta Complex-Central and South	49,912	14,729	29.5	2.5
Beard Vegetation Type 949*	218,204	124,461	57.0	49.3

\* (Shepherd 2006)

\*\* (Del Marco et al. 2004)

\*\*\* (EPA 2006)

^ Area within Intensive Land Use Zone

- Methodology**    **References:**
- Commonwealth of Australia (2001)
  - Del Marco et al. (2004)
  - EPA, 2006
  - Shepherd (2006)

- GIS Databases:**
- Hedde Vegetation Complexes
  - Interim Biogeographic Regionalisation of Australia
  - Remnant Vegetation, Metropolitan Area
  - SAC bio datasets (Accessed 28/02/08)

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

There are no watercourses within the local area. The closest wetland is known as the Sydney Road Sumpland situated ~40m south of the area under application. The western portion of this wetland is classified as an EPP wetland and is ~320m south of the applied area. In addition there are four EPP Lakes within the local area, including Little Badgerup Lake (~500m), Gngara Lake (~850m), Badgerup Lake (~1km) and Lake Goolelal (~3.5km) from the area under application. There are also 14 EPP wetlands and a further 13 perennial swamps in the local area.

There were no streams and no obvious wetlands present in the area under application (DEC 2008). The flora survey (SMEC, 2007) did not identify any wetland dependant vegetation; however, in the low lying portion of the landscape (within the applied area) there were stands of *Melaleuca preissiana* which are considered wetland dependant vegetation (Site Inspection Report 2008).

Although there are no mapped watercourses or wetlands within the applied area, given the presence of *Melaleuca preissiana*, it is considered the proposed clearing may be at variance to this Principle.

- Methodology**    **References:**
- DEC (2008)
  - SMEC (2007)

- GIS Databases:**
- EPP, Lakes
  - EPP, Wetlands 2004 (DRAFT)
  - Hydrography, linear
  - Hydrography, linear (hierarchy)

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

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

The area under application is associated with subdued dune-swale terrain. Chief soils are leached sands (Northcote et al. 1968). Generally, these soils have a high risk of wind erosion and a low risk of water erosion due to the high infiltration rates associated with sands.

The majority of the area under application has a low risk of salinity. The salinity risk increases in the low lying areas and nearby lakes. The area under application is associated with a Class 3 Acid Sulphate Soils (ASS) risk. A Class 3 ASS risk is defined as having no known risk of ASS occurring within 3m of natural surface (or deeper) that could be disturbed by most land development activities. It is noted, areas adjacent to the proposed Ocean Reef Road extension have been identified as areas having a high risk of ASS occurring within 3m from the surface (SMEC, 2007).

It is noted that the road extension requires cuts to a depth of ten (10) metres to occur within three hundred (300) metres of areas marked as having a high risk of acid sulphate soils (SMEC, 2007). Given the ASS risk associated with disturbance below 3m, it is recommended that further investigation and identification of ASS is required prior to any excavation work. Following investigation and identification, appropriate management of ASS is required.

The proposed clearing has a high risk of wind erosion given the sandy associated with the area under application, and without appropriate management for exposed surfaces the proposal may cause appreciable land degradation.

It is noted that appropriate management practices such as dust suppression and the installation of a bituminised surface would likely limit land degradation caused by wind erosion.



- Methodology**    **References:**
- Northcote et al. (1968)
  - SMEC (2007)
- GIS Databases:
- Acid Sulfate Soil Risk Map, Swan Coastal Plain
  - Salinity Risk LM 25m - DOLA 00
  - Soils, Statewide
  - Topographic Contours, Statewide - DOLA 12/09/02

**(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**

The closest DEC managed reserve to the application site is a State Forest (Gnangara-Moore River State Forest) situated approximately 2.3km east of the proposed clearing area. Also, Jandabup Nature Reserve lies approximately 4.4 km north of the application site. Given the distance to these conservation areas the proposed clearing is not likely to have an impact on the environmental values.

In addition, there area 13 Bush Forever sites within the local area. The area under application is within Bush Forever Site 463, known as 'Starlight Grove Bushland, Gnangara/Wangara'. The proposed clearing will have a direct impact on the environmental values of Bush Forever Site 463. The proposed clearing also has the potential to further indirectly impact Bush Forever Site through the spread or introduction of dieback and weeds by machinery. There are serious consequences associated with the spread of such exotic species into areas reserved for conservation, including the potential local extinction of species.

Given the area under application occurs within Bush Forever Site 463, the proposed clearing will have a direct impact on this conservation reserve and therefore the proposal is considered to be at variance to this principle.

- Methodology**    **GIS Databases:**
- Bushforever
  - CALM Managed Lands and Waters

**(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

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

The area under application is ~1km from the proclaimed groundwater area, Gnangara Underground Water Pollution Control Area (a Priority 1 Public Drinking Water Source Area (PDWSA)). Groundwater generally flows east/west and depth varies from ~3-13m within the applied area. Given the relatively small amount of clearing (4.2ha over ~500m), depth to groundwater and distance to the nearest PDWSA the proposed clearing is not considered likely to cause a deterioration in the quality of groundwater.

The closest watercourse or wetland is known as the Sydney Road Sumpland situated ~40m south of the area under application. The western portion of this wetland is classified as an EPP wetland and is ~320m south of the applied area. In addition there are four EPP Lakes within the local area, including Little Badgerup Lake (~500m), Gnangara Lake (~850m), Badgerup Lake (~1km) and Lake Goolelal (~3.5km) from the area under application. There are also 14 EPP wetlands and a further 13 perennial swamps in the local area. It is considered any development within 50m the boundary of a wetland can critically influence the wetland and any development within 200m of the wetland boundary would have a secondary influence on the wetland (Hill et al. 1996). Although wetland mapping shows the area under application ~40m from the Sydney Road Sumpland, this area of the wetland has been previously developed for market gardens therefore the proposed clearing is not considered likely to impact on this area of the sumpland. In addition, given that the vegetation under application is outside the 200m zone of influence for the EEP area of the wetland, the proposed clearing is not considered likely to impact the surface water quality of the wetlands or lakes in the local area

- Methodology**    **References:**
- Hill et al. (1996)
- GIS Databases:
- EPP, Lakes
  - EPP, Wetlands 2004 (DRAFT)
  - Groundwater Contours, Historic Maximum
  - Groundwater Contours, Minimum
  - Hydrography, linear
  - Public Drinking Water Source Areas (PDWSAs)



**(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.**

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

The closest wetland is Sydney Road Sumpland~40m from the area under application. There are no watercourses within the local area.

Given the distance to the nearest water body and high infiltration rates associated with sandy soils, the clearing as proposed is not considered likely to cause or exacerbate the incidence of flooding.

**Methodology GIS Databases:**

- EPP, Lakes
- EPP, Wetlands 2004 (DRAFT)
- Hydrography, linear (hierarchy)
- Soils, Statewide

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

**Comments**

The majority of the area under application (~3.6ha) is zoned Regional Roads under the Metropolitan Regional Scheme (MRS). The north-eastern portion of the area under application and the south-western corner (~0.6 ha) is zoned Rural under the MRS and Town Planning Scheme; therefore, development approval from the WA Planning Commission is required. The City of Wanneroo has commenced proceedings to acquire the Ocean Reef Road portion of Lot 7 from the Aboriginal Lands Trust (ALT).

Department of Planning (2010) (DPI) advise that the area under application is within Bush Forever Site 463 and the proposed clearing for the extension of Ocean Reef Road fragments the regionally significant bushland. DPI recommends that the offset package to be increased proportionally to the increase in the clearing at a ratio of 2:1 revegetation.

An offset proposal is currently being assessed by DEC for the clearing for the Ocean Reef Road extension and for other clearing permits within the City of Wanneroo.

The Department of the Environment, Water, Heritage and the Arts have established that the proposed clearing for Ocean Reef Road is not a controlled action if undertaken in a particular manner which included an approved offset proposal for clearing of feeding and nesting habitat for the Carnaby's black cockatoo.

**Methodology References:**

- Department of Planning (2010)
- SMEC (2007)

**GIS Databases:**

- Aboriginal Sites of Significance
- Metropolitan Regional Scheme
- Native Title Claims
- Town Planning Scheme Zones

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## 5. 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)