



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

| | |
|-------------------------------|---------------------------------|
| Purpose Permit number: | CPS 3059/1 |
| Permit Holder: | City of Cockburn |
| Duration of Permit: | 30 August 2009 – 30 August 2014 |

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of road construction.

2. Land on which clearing is to be done

SPEARWOOD AVENUE ROAD RESERVE (BIBRA LAKE 6163)
HOWSON WAY ROAD RESERVE (BIBRA LAKE 6163)
LOT 26 ON PLAN 3699 (HOWSON WAY, BIBRA LAKE 6163)
LOT 42 ON DIAGRAM 23635 (MIGUEL ROAD, BIBRA LAKE 6163)
LOT 303 ON DIAGRAM 70327 (MIGUEL ROAD, BIBRA LAKE 6163)
LOT 33 ON PLAN 3699 (MIGUEL ROAD, BIBRA LAKE 6163)
LOT 410 ON PLAN 3699 (MIGUEL ROAD, BIBRA LAKE 6163)
LOT 3004 ON PLAN 44630 (BIBRA LAKE 6163)
LOT 377 ON PLAN 3699 (BIBRA LAKE 6163)
ROAD RESERVE (BIBRA LAKE 6163)
ROAD RESERVE (BIBRA LAKE 6163)

3. Area of Clearing

The Permit Holder must not clear more than 4.7 hectares of native vegetation within the area hatched yellow on attached Plan 3059/1.

4. 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 purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

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.

6. Compliance with Assessment Sequence and Management Procedures

Prior to clearing any native vegetation under conditions 1, 2 and 3 of this Permit, the Permit Holder must comply with the Assessment Sequence and the Management Procedures set out in Part II of this Permit.

PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

7. Avoid, minimise etc clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, 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.

8. Fauna management

(a) Prior to undertaking any clearing authorised under this Permit, the area(s) shall be inspected by a *fauna specialist* who shall identify habitat/*habitat tree(s)* suitable to be utilised by fauna species listed below:

- (i) Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*);
- (ii) Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*);
- (iii) Quenda (*Isoodon obesulus fusciventer*)
- (iv) Black striped snake (*Neelaps calanotos*)
- (v) Lined skink (*Lerista lineata*)

(b) Prior to clearing, any habitat/*habitat tree(s)* identified by condition 8(a) shall be inspected by a *fauna specialist* for the presence of fauna listed in condition 8(a).

(c) Prior to clearing, the Permit Holder shall ensure that any fauna identified by condition 8(b) shall be removed and relocated by a *fauna clearing person*, in accordance with a licence issued by the Department.

9. Offsets

The Permit Holder must implement an *offset* in accordance with conditions 9(a) and 9(b) of this Permit with respect to all clearing of significant habitat for Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*).

(a) Determination of *offsets*:

- (i) 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 9(b) of this Permit;
- (ii) 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*;
- (iii) clearing shall not commence until and unless the CEO has approved the *offset proposal* to which the clearing relates;
- (iv) the Permit Holder shall implement the *offset proposal* approved under condition 9(a)(iii); and
- (v) each *offset proposal* shall include a *direct offset*, timing for implementation of the *offset proposal* and may additionally include *contributing offsets*.

(b) For the purpose of this condition, 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 4:1 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*.

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 in relation to the clearing of native vegetation authorised under this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the species composition, structure and density of the cleared area;
 - (ii) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (iii) the date that the area was cleared; and
 - (iv) the size of the area cleared (in hectares).
- (b) In relation to fauna management pursuant to condition 8 of this Permit:
 - (i) the location of each habitat/*habitat tree* identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (ii) the species of fauna reasonably likely to utilise, or that have been observed utilising, the habitat/*habitat tree(s)*; and
 - (iii) the location and date where relocated fauna was released, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings.
- (c) In relation to the *offset* of areas pursuant to condition 9 of this Permit:
 - (i) the location of any area of *offsets* recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (ii) a description of the *offset* activities undertaken; and
 - (iii) the size of the *offset* area (in hectares).

11. Reporting

- (a) 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 of this Permit and activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.
- (b) Prior to 30 May 2014, the Permit Holder must provide to the CEO a written report of records required under condition 10 of this Permit where these records have not already been provided under condition 11(a) of this Permit.

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

direct offset/s 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/ies means a naturally occurring biological assemblage that occurs in a particular type of habitat (English and Blythe, 1997; 1999);

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;

fauna clearing person means a person who has obtained a licence from the Department, issued pursuant to the *Wildlife Conservation Regulations 1970* authorising them to take fauna;

fauna specialist means a person with training and specific work experience in fauna identification or faunal assemblage surveys of Western Australian fauna;

habitat tree(s) means trees that have a diameter, at average adult human chest height, of greater than 70cm, healthy but with dead limbs and broken crowns that are likely to contain hollows and roosts suitable for native fauna, or where these are not present then healthy but with the potential to contain hollows and roosts;

offset/s means an offset required to be implemented under condition 9 of this Permit;

offset proposal means an *offset* determined by the Permit Holder in accordance with condition 9 of this Permit.



Keith Claymore
A/ ASSISTANT DIRECTOR
NATURE CONSERVATION DIVISION

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

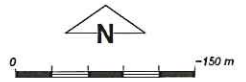
30 July 2009

Plan 3059/1



LEGEND

- | | |
|---|---|
| <p>Clearing Instruments</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Areas Approved to Clear <input checked="" type="checkbox"/> Road Centrelines <input type="checkbox"/> Cadastre | <p>Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007</p> |
|---|---|



Geocentric Datum Australia 1994

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

Kate Claymore Date *30/7/09*
K Claymore

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

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



1. Application details

1.1. Permit application details

Permit application No.: 3059/1
 Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: City of Cockburn

1.3. Property details

Property:
 ROAD RESERVE (BIBRA LAKE 6163)
 LOT 26 ON PLAN 3699 (HOWSON WAY BIBRA LAKE 6163)
 LOT 42 ON DIAGRAM 23635 (MIGUEL ROAD BIBRA LAKE 6163)
 LOT 303 ON DIAGRAM 70327 (MIGUEL ROAD BIBRA LAKE 6163)
 LOT 33 ON PLAN 3699 (MIGUEL ROAD BIBRA LAKE 6163)
 ROAD RESERVE (BIBRA LAKE 6163)
 LOT 410 ON PLAN 3699 (MIGUEL ROAD BIBRA LAKE 6163)
 ROAD RESERVE (BIBRA LAKE 6163)
 LOT 3004 ON PLAN 44630 (BIBRA LAKE 6163)
 LOT 377 ON PLAN 3699 (BIBRA LAKE 6163)
 ROAD RESERVE (BIBRA LAKE 6163)

Local Government Area: City of Cockburn
 Colloquial name: Spearwood Avenue Road Reserve

1.4. Application

| | | |
|--------------------|--------------------|----------------------------------|
| Clearing Area (ha) | Method of Clearing | For the purpose of: |
| 4.7 | 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 |
|--|--|---|--|
| The vegetation under application consists of the Heddlle Vegetation Complex - Karrakatta Complex - Central and South: Open Forest and Woodland. (Heddlle et al, 1980). | The vegetation proposed to be cleared is scattered throughout a 4.7ha area. The vegetation is in overall degraded condition however, it ranges from very good condition on the southern most property to completely degraded within the middle and most northern extents of the applied clearing area where the properties have been cleared in the past. | Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994) | The condition of the vegetation was confirmed during a site visit undertaken on the 24th April 2009 (DEC, 2009). |
| | The vegetation under application consists of <i>Corymbia calophylla</i> (Marri) and <i>Banksia</i> woodlands (<i>Banksia attenuata</i> and <i>Banksia menziesii</i>) with scattered <i>Eucalyptus marginata</i> , <i>Eucalyptus gomphocephala</i> and <i>Allocasuarina</i> sp.. The understorey to midstorey is diverse including <i>Xanthorrhoea preissii</i> , <i>Jacksonia</i> sp., <i>Hakea</i> sp., <i>Hibbertia</i> sp., <i>Macrozamia</i> , <i>Mesomelaena</i> sp., <i>Stirlingia latifolia</i> , <i>Eucalyptus</i> and <i>Casuarina</i> saplings, <i>Gompholobium</i> sp., <i>Acacia</i> | | |

sp., *Dianella* sp., *Jacksonia* sp. and *Pelargonium* sp.. Dense grasses (majority being non-native species) and *Leptospermum laevigatum* dominate the middle and northern portions of the applied clearing area.

Beard Vegetation Association: 6 - Medium woodland; Tuart and Jarrah. (Shepherd, 2007).

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (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 may be at variance to this Principle**

The vegetation under application occurs within a 4.7ha area, with the native vegetation ranging from completely degraded to very good condition (DEC, 2009).

The Beard Vegetation Association 6 - Medium woodland; Tuart and Jarrah with 26.2% of its pre-European extent remaining and the Heddle vegetation complex Karrakatta Complex-Central & South with 29.5% of its pre-European extent remaining (EPA, 2006, Heddle et al, 1980 & Shepherd, 2007). The vegetation consists of *Corymbia calophylla* (Marri) and *Banksia* (*Banksia attenuata* and *Banksia menziesii*) woodlands with scattered *Eucalyptus marginata* (Jarrah), *Eucalyptus gomphocephala* (Tuart) and *Allocasuarina* sp. over mixed shrubs and herbs (DEC, 2009).

Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*, Endangered) and the Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*, Vulnerable), have both been recorded within the local area (10km radius). The vegetation under application comprises Jarrah, Marri, Tuart and *Banksia* woodland which would provide feeding habitat for the Carnaby's and Forest Red-tailed Black Cockatoos.

The understorey vegetation is dense and in very good condition within the road reserve lot adjacent to Barrington Street (DEC, 2009) and therefore this patch of vegetation in particular is likely to provide excellent habitat for ground-dwelling indigenous fauna including but not limited to the Black striped snake (*Neelaps calanotos*, Priority 3), Lined skink (*Lerista lineata*, Priority 3) and Quenda (*Isodon obesulus fusciventer*, Priority 5) which have all been recorded within the local area. Quenda diggings were recorded during the site inspection (DEC, 2009). Given the dense understorey, the very good condition of the vegetation in this lot under application and the fact that the vegetation is the only remaining vegetation within the industry area, the applied clearing area is considered locally significant as habitat for indigenous fauna.

Twenty six declared rare and priority flora species have been recorded within the local area of the applied clearing area, with the closest species being *Dodonaea hackettiana* (Priority 4) approximately 995m south east of the applied clearing area.

Of these species, nine priority species may occur within the applied clearing area as they are recorded within similar vegetation types, soil types and topography to the vegetation under application. These include - *Amanita carneiphylla* (P2), *Amanita griseibrunnea* (P2), *Bossiaea modesta* (P2), *Angianthus micropodioides* (P3), *Aotus cordifolia* (P3), *Hibbertia spicata* subsp. *Leptotheca* (P3), *Jacksonia gracillima* (P3), *Dodonaea hackettiana* (P4) and *Jacksonia sericea* (P4).

Given these reasons it is concluded that the proposal may be at variance to this principle.

Methodology

References:

- Burbidge (2004)
- DEC (2009)
- EPA (2006)
- Heddle et al (1980)
- Nevill (2005)
- Shepherd (2007)

GIS Databases:

- Heddle Vegetation Complexes
- SAC Biodatasets - Accessed 21/04/2009
- Soils, Statewide - DA
- Topographic Contours, Statewide - DOLA

(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 seventeen threatened and priority fauna species identified within the local area (10km radius) with the closest being the Quenda (*Isodon obesulus fusciventer*), recorded approximately 915m north east of the applied clearing area.

A large number of Quenda diggings were observed during the site visit throughout the applied clearing area particularly towards the southern end of the road extension (DEC, 2009). The Quenda's preferred habitat is dense scrubby vegetation with dense cover up to one metre high with feeding grounds in adjacent forest and woodland or pasture with dense cover. Quenda also inhabit swampy areas or areas adjacent to watercourses (DEC, 2007).

Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*, Endangered) and the Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*, Vulnerable), have both been recorded within the local area (10km radius). The Carnaby's has a significant portion of its diet made up of "seeds of hakeas, banksias, grevilleas and eucalypts" (Burbidge, 2004) and the Forest Red-tailed "feeds on both Marri and Jarrah nuts as well as other south west eucalypts" (Nevill, 2005). The vegetation under application comprises Jarrah, Marri, Tuart and Banksia woodland which would provide feeding habitat for the Carnaby's and Forest Red-tailed Black Cockatoos.

Hollows were also recorded during the site visit within some of the trees under application which may provide significant habitat for indigenous fauna, including species of conservation significance (DEC, 2009).

The understorey vegetation is dense and in very good condition within the road reserve lot adjacent to Barrington Street (DEC, 2009) and therefore this patch of vegetation, in particular, is likely to provide excellent habitat for ground-dwelling indigenous fauna including but not limited to Black striped snake (*Neelaps calanotos*, Priority 3), Lined skink (*Lerista lineata*, Priority 3) and Quenda (*Isodon obesulus fusciventer*, Priority 5), which have all been recorded within the local area.

Given the presence of suitable habitat and hollows for a number of local native fauna species, including those of conservation significance, it is considered that the area under application is at variance to this Principle. The isolation of the vegetation under application means that for ground dwelling fauna there are no adjacent vegetated areas for these species to relocate following the removal of this vegetation. A fauna management condition has been placed on the permit so that indigenous fauna are appropriately recorded and relocated prior to clearing.

Approximately 1.2ha of the native vegetation under application is considered significant habitat for Carnaby's Black-Cockatoo as it contains plant species they feed upon, including, but not limited to, *Banksia menziesii*, *Banksia attenuata*, *Banksia grandis*, *Corymbia calophylla*, *Eucalyptus marginata*, *Eucalyptus gomphocephala*, *Xanthorrhoea preissii* and *Hakea* species (DEC, 2009, Burbidge, 2004 & Shah, 2006). A condition of the permit is that an offset be proposed to mitigate the loss of this vegetation for the purposes of retaining or creating feeding habitat for Carnaby's Black-Cockatoo.

Methodology

References:

- Burbidge (2004)
- DEC (2007)
- DEC (2009)
- Nevill (2005)
- Shah (2006)

GIS Databases:

- Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007
- SAC Biodatasets - Accessed 21/04/2009

(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

Four declared rare flora species have been recorded within the local area (10km radius), with the closest species being *Caladenia huegelii*, approximately 5.6km north east of the applied clearing area.

The four DRF known to occur within the local area have not been recorded on similar soil or within similar vegetation types to the vegetation under application, therefore it is unlikely that the vegetation includes or is necessary for the continued existence of rare flora.

Methodology

References:

- DEC (2009)

GIS Databases:

- SAC Biodatasets - Accessed (21/04/2009)
- Soils, Statewide - DA

- Topographic Contours, Statewide - DOLA
- Heddle Vegetation Complexes

(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

Six records of two threatened ecological communities (TECs), SCP30a (Vulnerable, *Callitris preissii* (or *Melaleuca lanceolata*) forests and woodlands, Swan Coastal Plain) and SCP26a (Endangered, *Melaleuca huegelii* - *Melaleuca acerosa* shrublands on limestone ridges) have been recorded within the local area (10km radius) of the proposed clearing area. The closest record is the SCP30a TEC approximately 4.7km west of the applied clearing area.

Given these TECs have been recorded on different vegetation and soil types to that of the applied clearing area and given the distance of the vegetation to these TECs it is concluded that it is unlikely that the applied clearing area comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Methodology

References:

- DEC (2009)
- GIS Databases:
- SAC Biodatasets - Accessed 21/04/2009
- Soils, Statewide - DA
- Heddle Vegetation Complexes

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

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

The vegetation under application is located within an extensively cleared industrial and urban area. The proposed clearing area is mapped within the Beard Vegetation Association 6 - Medium woodland; Tuart & Jarrah, of which there is 26.2% of the pre-European extent within the Swan Coastal Plain IBRA Region remaining (Shepherd, 2007).

The vegetation is also mapped as the Heddle Karrakatta Complex Central and South, described as predominantly open forest of *Eucalyptus gomphocephala* (Tuart), *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri) and woodland of *Eucalyptus marginata* (Jarrah) and *Banksia* species (Heddle et al, 1980).

The property lies within the City of Cockburn in the Swan Coastal Plain IBRA Region which have 33.7% and 38.8% of their pre-European extent remaining respectively.

The Beard Vegetation Association 6 and the current extent of the Heddle Karrakatta Complex Central and South are both less than 30% of their pre-European extent. However, the EPA recognises the Perth Metropolitan Region as a 'constrained area' providing for the reduction of vegetation complexes to a minimum of 10% of their pre-European extent (EPA, 2000 & EPA, 2006). According to 1998 Bush Forever (BF) data, 18.2% of the Karrakatta Central and South Complex remains within the Perth Metropolitan Region Scheme (PMRS) constrained area (Government of Western Australia, 2000), however, due to increased development within this area this value is likely to have decreased within the last 11 years.

Although the local area (10km radius) is extensively cleared for industry and urban development, both the Beard Vegetation Association 6 and the Karrakatta Complex Central and South are above the 10% threshold required for 'constrained areas,' and given the overall degraded condition and scale of the native vegetation under application, it is concluded that this proposal is not likely to be at variance to this principle.

| | Pre-European (ha) | Current Extent (ha) | Remaining (%) | In secure tenure (%) |
|---|----------------------|------------------------|------------------|-------------------------|
| IBRA Bioregion* | | | | |
| Swan Coastal Plain Shire* | 1,501,208 | 583,140 | 38.8 | 32.55 |
| City of Cockburn | 17,087 | 5753 | 33.7 | 14.55 |
| Beard Vegetation Association* 6 (within SWA IBRA Region) | 56,343 | 14,750 | 26.2 | 34.27 |
| Heddle Vegetation Complex** Karrakatta Complex Central & South | 49,912 | 14,729 | 29.5 | 2.50 |
| Karrakatta Complex Central & South*** (within PMRS constrained area in 1998) | 34,532 | 6,275 | 18.2 | 7.50 (BF sites) |

*(Shepherd, 2007)

** (EPA, 2006)

*** (Government of Western Australia, 2000)

- Methodology** References:
- DEC (2009)
 - EPA (2000)
 - EPA (2006)
 - Government of Western Australia (2000)
 - Heddle et al (1980)
 - Shepherd (2007)
- GIS Databases:
- Heddle Vegetation Complexes
 - Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007
 - SAC Biodatasets - Accessed 21/04/2009

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

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

Approximately one quarter of the land within the local area (10km radius) consists of wetlands ranging from multiple use to conservation category. The closest wetland, also an EPP Lake, is a multiple use and resource enhancement perennial lake, South Lake, which is approximately 970m east of the applied clearing area part of the Beeliiar Regional Park and Adjacent Areas.

The Forrestdale and Thomsons Lakes Ramsar wetlands are located approximately 2.5km south east of the applied clearing area and the closest watercourse is the Swan River approximately 8.5km to the north.

The vegetation under application itself is not growing within, or in association with any of the aforementioned wetlands and watercourses nor is the clearing likely to indirectly result in further degradation of the wetlands and watercourses. It is therefore concluded that the proposal to clear the remaining vegetation within the 4.7ha area for the construction of Spearwood Avenue is unlikely to be at variance to this principle.

- Methodology** References:
- DEC (2009)
 - DEWHA (2009)
- GIS Databases:
- EPP, Lakes
 - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
 - Hydrography, linear - DoW
 - Hydrography, linear (hierarchy) - DoW
 - RAMSAR Wetlands

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

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

The vegetation under application occurs on the Spearwood Dunes on soils associated with an undulating dune landscape overlying deep aeolianite with chief soils of brown and leached sands (Northcote et al 1960-1968).

The location of the proposed clearing ranges in topography from 20m to 45m AHD. The majority of the mapped salinity risk across the applied clearing area is low and the groundwater salinity risk is less than 500mg/L total dissolved solids.

Given the small area of remaining vegetation across the 4.7ha applied clearing area, the low salinity risk associated with this location and the low location of the site within the landscape it is unlikely that the clearing of this vegetation is going to cause appreciable land degradation through wind or water erosion or salinity.

- Methodology** References:
- DEC (2009)
 - Northcote et al (1960-1968)
- GIS Databases:
- Groundwater Salinity, Statewide - DoW
 - Salinity Risk LM 25m - DOLA
 - Soils, Statewide - DA
 - Topographic Contours, Statewide - DOLA
 - Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

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

There are seventeen System 6 Conservation Reserves within the local area (10km radius) with the closest being the Cockburn wetlands - Eastern Chain approximately 900m north east. This chain of wetlands is also a component of the Beeliar Regional Park and Adjacent Areas, registered in the interim list under the Register of National Estate (DEWHA, 2009).

Four DEC managed lands exist within the local area with the closest being Thomsons Lake Nature Reserve, also incorporating the Forrestdale and Thomsons Lakes Ramsar wetland, approximately 2.5km south east of the applied clearing area.

Given the vegetation under application is in overall degraded condition and the conservation areas are separated from the vegetation by existing industry and roads. It is therefore concluded that the proposal is unlikely to be at variance to this principle.

Methodology

References:

- DEWHA (2009)

GIS Databases:

- CALM Managed Lands and Waters

- RAMSAR, Wetlands

- Register of National Estate

- System 6 Conservation Reserves

- Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007

(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 applied clearing area lies within the Bartram Road Catchment in the Murray River Basin. The proposed clearing is located approximately 8.5km south of the Swan River and the closest EPP Lake and Resource Enhancement Wetland is South Lake, approximately 1km east of the applied clearing area.

The mapped groundwater salinity for the area is less than 500mg/L total dissolved solids with the salinity risk for the area ranging from low to some small patches of high risk.

Given the scale of the clearing and the proximity of the applied clearing area to the watercourses and wetlands within the local area (10km radius) it is unlikely that the proposed clearing will cause deterioration in the quality of surface or underground water.

Methodology

References:

- DEC (2009)

GIS Databases:

- Geomorphic wetlands (Mgmt Categories), Swan Coastal Plain

- Groundwater Salinity, Statewide - DoW

- Hydrographic Catchments - Basins - DoW

- Hydrographic Catchments - Catchments - DoW

- Salinity Risk LM 25m - DOLA

(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 watercourse to the applied clearing area is the Swan River approximately 8.5km north of the applied clearing area.

Approximately one quarter of the land within the local area (10km radius) consists of wetlands ranging from multiple use to conservation category. The closest wetland is a multiple use and resource enhancement perennial lake, South Lake, approximately 970m east of the applied clearing area.

Due to the small scale of the clearing, the overall degraded condition of the vegetation, the siliceous sands associated with this site and the distance of the vegetation to the watercourses and wetlands in the local area, it is concluded that the proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.

Methodology

References:

- DEC (2009)

GIS Databases:

- Geomorphic Wetlands (Mgmt Categories), Swan Coastal Plain

- Hydrography, linear - DoW
- Hydrography, linear (hierarchy)- DoW
- Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007
- Topographic Contours, Statewide - DOLA
- Soils, Statewide - DA

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

Comments

Two of the properties (in addition to existing road reserves) under application are currently zoned 'Road Reserve' while the other properties are still under private ownership. The City of Cockburn has obtained written approval from four of the private landowners. While two of the authorisations are still outstanding it is understood that Spearwood Avenue is identified under the Metropolitan Region Scheme as 'Other Regional Roads' and therefore falls under the control and management of the Local Government. The City of Cockburn under various state legislation can also acquire land for this purpose.

Two Aboriginal Sites of Significance, Bibra Lake West 01 and 02, exist at the northern section of the applied clearing area. Therefore, the applicant will be advised that they are required to seek further advice from the Department of Indigenous Affairs prior to the commencement of works and clearing of native vegetation.

One submission was received by the Department on the 5th May 2009 expressing concerns that the vegetation under application is important in providing habitat for indigenous fauna and stated that the fauna should be relocated. The submission also stated that if it is a two lane road than the whole of the vegetation should not require clearing (Submission, 2009).

Methodology

References:

- Submission (2009)
- #### GIS Databases:
- Aboriginal Sites of Significance - DIA
 - Cadastre - Landgate
 - Metropolitan Region Scheme - DPI

4. Assessor's comments

Comment

The assessable criteria have been addressed and the proposed clearing is at variance to Principle (b), may be at variance to Principle (a), and is not likely to be at variance to Principles (c), (d), (e), (f), (g), (h), (i) and (j).

5. References

- Burbidge, A. (2004) Threatened Animals of Western Australia, Department of Conservation and Land Management, Perth, Western Australia.
- DEC (2007) NatureBase - Fauna Species Profile: Quenda (*Isodon obesulus*). Accessed at <http://www.naturebase.net/content/view/840/1288/>. Accessed 29/04/2009. Department of Environment and Conservation, Western Australia.
- DEC (2009) Site Inspection Report for Clearing Permit Application CPS 3059/1, Spearwood Avenue Road Extension, Bibra Lake. Site inspection undertaken 24/04/2009. Department of Environment and Conservation, Western Australia (TRIM Ref. DOC84878).
- DEWHA (2009) Australian Heritage Database: Beeliar Regional Park and Adjacent Areas, Beeliar Drive, Beeliar, WA. Canberra, Australia. Website accessed 29th April 2009 (<http://www.environment.gov.au/heritage/ahdb/index.html>).
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority, Western Australia.
- EPA (2006) Guidance for the Assessment of Environmental Factors - Level of Assessment for Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region. Guidance Statement No 10. Environmental Protection Authority, Western Australia.
- Government of Western Australia (2000) Bush Forever Volumes 1 and 2. Western Australian Planning Commission, Perth WA.
- Heddle, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- Nevill, S.J. (2005) Guide to the Wildlife of the Perth Region, Simon Nevill Publications, Perth Western Australia.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.

- Shah, B. (2006) Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.
- Shepherd, D.P. (2007). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- Submission (2009) Public Submission, 5/05/2009, TRIM ref DOC DOC83696.
- Western Australian Herbarium (1998). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.dec.wa.gov.au/> (Accessed 22/04/2009).

6. Glossary

| Term | Meaning |
|-------|--|
| DA | Department of Agriculture (now Department of Agriculture and Food) |
| DEC | Department of Environment and Conservation |
| DEWHA | Department of Environment, Water, Heritage and the Arts |
| DIA | Department of Indigenous Affairs |
| DoW | Department of Water |
| DRF | Declared Rare Flora |
| EPP | Environmental Protection Policy |
| GIS | Geographical Information System |
| ha | Hectare (10,000 square metres) |
| TEC | Threatened Ecological Community |