



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 2532 / 1
File Number: DEC8153
Duration of Permit: From 19 March 2009 to 19 March 2011

PERMIT HOLDER

Qube Hammond Park Development Pty Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 36 Gaebler Rd, (Hammond Park)

AUTHORISED ACTIVITY

Clearing of up to 3.6 hectares of native vegetation within the area cross-hatched yellow on attached Plan 2532/1.

CONDITIONS

1. The permit holder shall conduct clearing described under the authorised activity above, commencing from the northeast corner of Lot 36 Gaebler Road and proceeding towards the southwest corner of Lot 36 Gaebler Road.
2. **Fauna Management**
 - (a) Prior to clearing pursuant to this Permit during the months of September through to February the areas shall be inspected by a *fauna specialist* who shall identify the presence of *Merops ornatus* (Rainbow Bee-eater) or their nesting burrows.
 - (b) The Permit Holder shall not clear during the months of September through to February if *Merops ornatus* (Rainbow Bee-eater) or their nesting burrows identified under condition 2 (a).
 - (c) Prior to clearing within the areas described in Authorised Activity above, the areas shall be inspected by a *fauna specialist* who shall identify the presence of;
 - (i) Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)
 - (ii) Masked Owl (*Tyto novaehollandiae* subsp. *novaehollandiae*)
 - (iii) Western False Pipistrelle (*Falsistrellus mackenziei*)
 - (iv) Southern Brown Bandicoot (*Isodon obesulus* subsp. *fusciventer*)
 - (d) Prior to clearing the permit holder shall ensure that any fauna identified in condition 2 (c) shall be removed and relocated by a *fauna clearing person*, in accordance with a licence issued by the Department of Environment and Conservation.

- (e) Prior to clearing, the Permit Holder shall ensure that any fauna identified by condition 2(d) shall be removed and relocated by a *fauna clearing person*, in accordance with a licence issued by the Department.

3. Records to be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit in relation to fauna management pursuant to condition 2 of this Permit:

- (a) 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;
- (b) the species of fauna reasonably likely to utilise, or that have been observed utilising, the habitat/habitat tree(s); and
- (c) 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.

4. 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 3 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 19 December 2010, the Permit Holder must provide to the CEO a written report of records required under condition 3 of this Permit where these records have not already been provided under condition 4(a) of this Permit.

Definitions

The following meanings are given to terms used in 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;

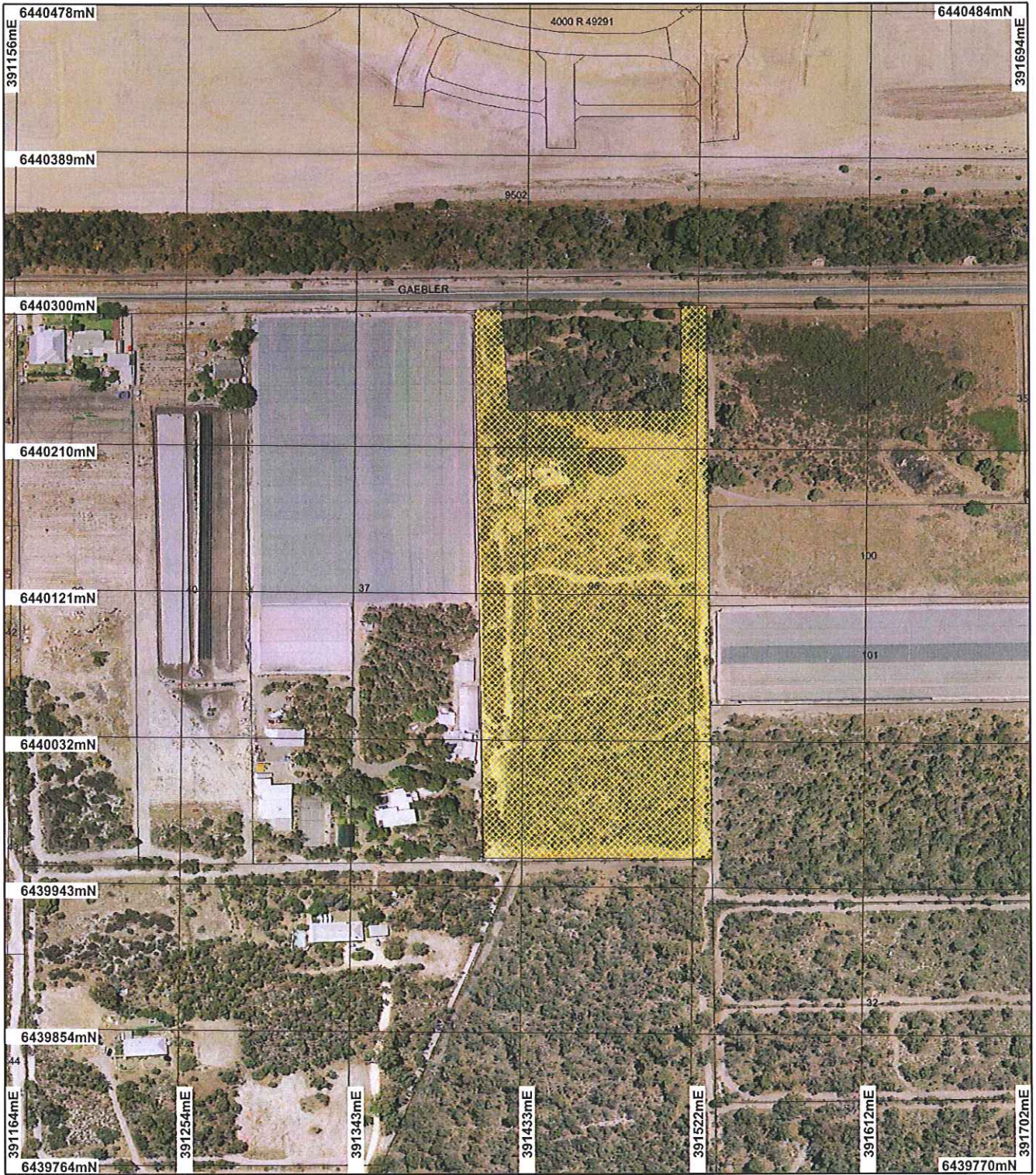


Keith Claymore
A/ASSISTANT DIRECTOR
NATURE CONSERVATION DIVISION

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

19 February 2009

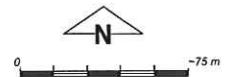
Plan 2532/1



LEGEND

- Cadastre for labelling
- Road Centrelines
- FW
- HY
- LRO (cont)
- MR
- N
- TR
- Clearing Instruments
- Areas Approved to Clear

Perth Metropolitan Area
Central 20cm Orthomosaic -
Landgate 2007



Scale 1:3155
(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.

Kath Claymore 19/2/09 Date

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.



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.: 2532/1
 Permit type: Area Permit

1.2. Proponent details

Proponent's name: Qube Hammond Park Development Pty Ltd

1.3. Property details

Property: LOT 36 ON DIAGRAM 33785 (House No. 62 GAEBLER HAMMOND PARK 6164)
 Local Government Area: City Of Cockburn
 Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
3.6		Mechanical Removal	Building or Structure

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: Medium very sparse woodland: Jarrah, with low woodland, Banksia and Casuarina (Shepherd 2006).</p> <p>Hedde Vegetation Complex: Bassendean Complex Central and South: Vegetation ranges from woodland of <i>E. marginata</i> - <i>C. fraseriana</i> - <i>Banksia</i> spp. to low woodland of <i>Melaleuca</i> species, and sedgelands on the moister sites. This area includes the transition of <i>E. marginata</i> to <i>E. todtiana</i> in the vicinity of Perth (Hedde et al. 1980).</p>	<p>The proposal is to clear 3.6 ha of native vegetation for a residential subdivision.</p> <p>The area under application supports two vegetation associations Banksia/ Allocasuarina Low Woodland and Marri/Banksia Closed Forest (Site Inspection 2008).</p> <p>Banksia /Allocasuarina Low Woodland covers the majority of the area under application (~3.3 ha) and comprises <i>Banksia menziesii</i>, <i>Banksia attenuata</i>, <i>Allocasuarina fraseriana</i> Low Woodland over <i>Hibbertia hypericoides</i>, <i>Allocasuarina huegelii</i> and <i>Bossiaea eriocarpa</i> Open Low Heath over <i>Patersonia occidentalis</i>, <i>Dasyogon bromeliifolius</i>, <i>Stirlingia latifolia</i> and <i>Mesomelaena</i> sp. Very Open Herbland (Site Inspection 2008). Approximately 1ha of the Banksia/Allocasuarina Low Woodland on site is in very good condition, approximately 1.4 ha is in good condition, approximately 0.4ha is in degraded condition and approximately 0.5 ha is in completely degraded condition.</p> <p>Marri /Banksia Closed Forest occupies the northern area of Lot 36 Gaebler Road with approximately 0.3 ha under application. The majority of this association is outside the area under application. This association comprises <i>Corymbia calophylla</i>, <i>Banksia attenuata</i> and <i>Banksia ilicifolia</i> Closed Forest over <i>Xanthorrhoea preissii</i> and <i>Macrozamia fraseri</i> Open Shrubland over <i>Dasyogon bromeliifolius</i> and <i>Kennedia prostrata</i> Very Open Herbland (Site Inspection 2008). All the Marri/Banksia Closed Forest on site is in good condition.</p> <p>Weeds observed within the areas under application include Wild Gladiolas (<i>Gladiolus caryophyllaceus</i>) and Perennial Veldtgrass (<i>Ehrharta calycina</i>) which are distributed throughout both Lot 36 Gaebler Road (Site Inspection 2008).</p>	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)</p>	<p>Description and condition of the vegetation under application was determined from the Site Inspection (2008). Vegetation ranges in condition from completely degraded to very good with an average condition rating of good.</p>

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

During a site inspection (2008) the area under application was observed to support two vegetation associations being Banksia/Allocasuarina low woodland and Marri/Banksia closed forest. Vegetation with the area under application ranges in condition from very good to completely degraded with the majority (~2.7 ha) being in good or better condition.

A flora and vegetation survey of the vegetation under application concluded that the most likely Floristic Community Types (FCT) present on site are FCT 28 Spearwood Banksia attenuata or Banksia attenuata - Eucalyptus woodland, and FCT 22 Banksia ilicifolia woodlands (Ecoscape (Australia) Pty Ltd 2008). In areas under application in optimal vegetation condition these vegetation communities are known to have a species richness of 55 and 36 respectively (Ecoscape (Australia) Pty Ltd 2008). Gibson et al. (1994) concludes that the mean species richness values for FCT 28 and FCT 22 are 55.2 and 32.5 respectively, thus confirming the high floristic diversity present within the area under application.

In addition, an analysis of the FCT present on site revealed that FCT 24 Northern Spearwood shrublands and woodlands may also be present within the area under application. This FCT is listed as a priority 3 ecological community.

Three priority flora species are also known to occur with the local area within the same vegetation associations and soils as the area under application, being *Cyathochaeta teretifolia* (P3), *Phlebocarya pilosissima* subsp. *pilosissima* (P3) and *Jacksonia sericea* (P4). Although the flora survey did not record any of these species (Ecoscape (Australia) Pty Ltd 2008) the survey was conducted at a time of year when only *Phlebocarya pilosissima* subsp. *pilosissima* would be flowering, and thus it is considered that *Cyathochaeta teretifolia* and *Jacksonia sericea* may be present within the vegetation under application.

In addition it is considered that vegetation within the area under application is likely to support habitat for indigenous fauna as the site contains floristically diverse and structurally intact vegetation, with the majority (~2.7 ha) in good or better condition. Hollows suitable for hollow dependent fauna were also observed on site and the vegetation under application is located within part of a regionally significant vegetation corridor within the Perth Metropolitan Area (Site Inspection 2008; Government of Western Australia 2000; Ecoscape (Australia) Pty Ltd 2008).

Given that the applied area comprises areas of high floristic diversity, suitable habitat for a range of indigenous fauna, and may support a priority ecological community and populations of priority flora, the area of vegetation under application is considered to comprise a high level of biological diversity.

Methodology

References:

- Ecoscape (Australia) Pty Ltd (2008)
- Government of Western Australia (2000)
- Site Inspection (2008)
- Western Australian Herbarium (1998)

GIS Databases:

- SAC Bio datasets 02/07/2008
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06

(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

The area under application comprises two vegetation associations, with the majority of the area under application (~ 2.7 ha) being in good or better condition (Site Inspection 2008).

Fifteen indigenous fauna species of conservation significance have been recorded within a 10 km radius of the area under application.

Of the species identified within the local area, the area under application is considered to comprise habitat for Carnaby's Black Cockatoo, Western False Pipistrelle and Masked Owl due to the presence of suitable feeding plants (such as *Banksia* sp.), mature trees with hollows suitable for nesting, and open areas suitable for prey foraging, respectively (Site Inspection 2008; DEC 2006a; Garnett and Crowley 2000). The vegetation under application also comprises areas of low woodland/heath with a dense understorey (Site Inspection 2008), with connectivity to nearby wetland areas, providing suitable habitat for Western Brush Wallaby and Southern Brown Bandicoot (Site Inspection 2008; DEC 2006b; DEC 2006c). In addition, plant species favoured by the native bee, *Leioproctus contrarius*, are also present on site. Therefore, the vegetation under application may also provide habitat for this species.

A fauna survey of the vegetation under application (Ecoscape (Australia) Pty Ltd 2008) identified Southern Brown Bandicoot and Kangaroo activity (diggings) within the applied area. In addition a flock of Rainbow Bee-

eaters (*Merops ornatus*) were also observed within the area under application during the fauna survey. The Rainbow Bee-eater is protected under the Environmental Protection Biodiversity Conservation Act 1999. This migratory species nests in burrows excavated in sandy ground during the spring and summer months. Given that this species was observed on site during the fauna survey, and the area under application comprises sandy soils and vegetated areas suitable for nesting, it is considered likely that the area under application provides significant local habitat for this protected species. Furthermore, any clearing of vegetation during the months of September to February is likely to destroy any burrows that are present on site.

During the site inspection (2008) several indigenous passerine and non-passerine bird species, including species listed by the Bushplan Project as significant and in decline on the Swan Coastal Plain, were also observed within the area under application (Government of Western Australia 2000, Site Inspection 2008). These species include Fairy-wrens (*Malurus* sp.) and Thornbills (*Acanthiza* sp.) which have a limited distribution range and are particularly sensitive to habitat loss (Bamford 2006).

In addition the vegetation under application is well connected to large remnants of native vegetation in the local area, and forms part of a regionally significant linkage within the Perth Metropolitan Area (Government of Western Australia 2000). Therefore, in addition to direct habitat loss, the proposed clearing is considered likely to impact on local indigenous fauna through the fragmentation of this ecological corridor, and impede fauna movement particularly in an east-west direction across the landscape.

Given the observed presence of protected fauna within the area under application, presence of suitable habitat for a variety of local indigenous fauna including those of conservation significance, and the applied area's location within a regionally significant vegetation corridor, the vegetation under application is considered to comprise significant habitat for indigenous fauna.

In order to reduce impacts on local fauna, conditions will be placed on this permit for fauna survey targeting the Rainbow Bee-eater, Carnaby's Black-Cockatoo, Masked Owl, Western False Pipistrelle, Western Brush Wallaby and Southern Brown Bandicoot and translocation of these species as necessary. In the case of the Rainbow Bee-eater if this species is found to be nesting on site clearing of vegetation shall not be permitted between the breeding months of September to February. In addition clearing will be required to proceed in a north east to south west direction to permit fauna not already translocated to escape to surrounding remnant vegetation.

Methodology

References:

- DEC fauna habitat notes. February 2007
 - Government of Western Australia (2000)
 - Garnett and Crowley (2000)
 - Bamford (2006)
 - Site Inspection (2008)
 - Ecoscape (Australia) Pty Ltd (2008)
 - DEC (2006a)
 - DEC (2006b)
 - DEC (2006c)
- GIS Databases:
- SAC Bio datasets 02/07/2008
 - Swan Coastal Plain Central 20cm Orthomosaic - DLI06

(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

Eight species of rare flora are known to occur within a 10 km radius of the area under application. The closest known record of rare flora is *Caladenia huegelii*, located approximately 3.3 km from the area under application.

During a site inspection (2008) the area under application was observed to support two vegetation associations, being *Banksia/Allocasuarina* low woodland and *Marri/Banksia* closed forest. Soils on site were observed to range from grey sands in the lower lying areas to brown sands at the dune crest.

Caladenia huegelii and *Drakaea elastica* are known to occur within the same vegetation and soils as the area under application. In particular, *Drakaea elastica* is usually found in white or grey sand in low-lying situations adjoining winter-wet swamps in association with thickets of *Kunzea glabrescens*, with *Caladenia huegelii* favouring deep, sandy soils in mixed woodland of Jarrah and *Banksia* (CALM 2004, Western Australian Herbarium 1998-).

An appropriately timed flora survey of the area under application did not identify *Caladenia huegelii* or *Drakaea elastica*. Therefore, the area under application is not considered likely to comprise, or be necessary for the continued existence of rare flora.

Methodology

References:

- CALM (2004)

- Western Australian Herbarium (1998-)
 GIS Database:
 - SAC Bio datasets 02/07/2008

(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**
 Four Threatened Ecological Communities (TEC) are known to occur within a 10km radius of the area under application being:
 - SCP 08: Herb rich shrublands in clay pans (Vulnerable);
 - SCP 10a: Shrublands in dry clay flats (Endangered);
 - SCP 30a: Calitris preissii (or Melaleuca lanceolata) forests and woodlands, Swan Coastal Plain (Vulnerable) ;
 and
 - SCP 26a: Melaleuca huegelii - Melaleuca systema shrublands on limestone ridges (Endangered).

During a site inspection (2008) the area under application was observed to support two vegetation associations being Banksia/Allocasuarina low woodland and Marri/Banksia closed forest. In addition a vegetation survey did not identify any TEC within the area under application (Ecoscape (Australia) Pty Ltd 2008).

Therefore, the area under application is not considered likely to comprise the whole or a part of, a threatened ecological community.

Methodology **References:**
 - Ecoscape (Australia) Pty Ltd (2008)
 - Site Inspection (2008)
 GIS Database:
 - SAC Bio datasets 02/07/2008

(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 area of vegetation under application is associated with Heddle Bassendean Central and South vegetation complex and Beard Vegetation Association 1001, which have 27% and 26.5% pre-European vegetation extent remaining respectively (Shepherd 2006; EPA 2006).

The State government is committed to the National Objectives and Targets for Biodiversity Conservation, which includes targets that prevent the clearing of ecological communities with an extent below 30% of that present pre-1750 (Commonwealth of Australia 2001).

Both vegetation associations mapped within the area under application are below the State Government's biodiversity conservation target, with less than 30% of their pre-European extent remaining.

However the area under application is located within the 'constrained area' of the Perth Metropolitan Region (EPA 2006). Within this area the EPA (2006) provides for the reduction of vegetation complexes to a minimum of 10% pre-European extent.

In addition, the area under application is not a significant remnant in an area that has been extensively cleared as it is surrounded and connected to large remnants of vegetation along its southern and western sides.

As both vegetation associations present within the area under application are above the minimum 10% pre-European extent representation and the area under application is not a significant remnant in the local area, the clearing as proposed is not considered likely to be at variance to this principle.

	Pre-European area (ha)	Current extent (ha)	Remaining % reserves/DEC-	% in managed land
Bioregion:				
Swan Coastal Plain *	1,501,208	583,140	38.8	
Local area (10 km radius)	31,500	17,900	57.0	-
Heddle vegetation complex **				
Bassendean Complex - central and south	87,477	23,624	27.0	0.7
Beard vegetation association *				

1001 57,410 14,545. 25.3 5.1

* (Shepherd 2007)

** (EPA, 2006)

Methodology References:
- Commonwealth of Australia (2001)
- EPA (2006)
- Shepherd (2007)
GIS Databases:
- Heddle Vegetation Complexes
- Interim Biogeographic Regionalisation of Australia
- NLWRA, Current Extent of Native Vegetation
- Pre-European Vegetation
- Swan Coastal Plain Central 20cm Orthomosaic - DLI06

(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

Several wetlands surround the area under application, with the closest being a conservation category wetland 230m west of the area under application. Given the distance to the nearest surface hydrological feature, the vegetation under application is not considered to be growing in association with this wetland.

During a site inspection (2008) of the area under application, the northern extent of Lot 36 Gaebler Road was observed to support Marri /Banksia Closed Forest with soils being damp under foot. Some wetland dependent species including Melaleuca preissiana, Banksia littoralis and Kunzea glabrescens were observed in close proximity to this portion of the area under application (Site Inspection 2008).

However, given the applied area's higher elevation within the local landscape, the area under application is not considered likely to be growing in or in association with a wetland or water course.

Methodology Reference:
- Site Inspection (2008)
GIS Database:
- Geomorphic Wetlands (Management Categories), Swan Coastal Plain

(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 lies within soils associated with subdued dune-swale terrain with chief soils being leached sands on the low dunes (Northcote et al. 1960-68).

During a site inspection (2008) the area of vegetation under application was observed to be located on a dune crest supporting brown sands in areas of higher elevation, and grey sands in areas of lower elevation.

The soils on site and location of the area under application on the Swan Coastal Plain, are consistent with the geology of the Bassendean dune system which has a high risk of wind born soil erosion (Department of Agriculture 2005). Given that the proposal is to clear 3.6 ha of deep-rooted vegetation on loose, sandy soils, the proposed clearing is considered likely to lead to land degradation in the form of wind erosion.

In addition, the water table at the northern end of Lot 36 Gaebler Road is located approximately 1m below the surface and given that clearing involves the removal of 3.6 ha of deep rooted perennial vegetation on soil with a low nutrient retention ability, clearing is considered likely to lead to increased export of nutrients offsite and exacerbate the risk of eutrophication in nearby wetlands (Department of Agriculture 2005).

Given that the proposed clearing is likely to lead to wind erosion of soils and exacerbate the risk of eutrophication, the proposed clearing may be at variance to this principle.

Methodology References:
- Department of Agriculture (2005)
- Northcote et al. (1960-68)
- Site Inspection (2008)
GIS Databases:
- Groundwater Salinity, Statewide
- Groundwater Contours, Historic Maximum
- Topographic Contours, Metropolitan Area

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

Comments Proposal may be at variance to this Principle

The closest conservation reserve to the area under application is the Harry Waring Marsupial Reserve, which also forms part of Bush Forever Site 392, located 350m west of the area under application. The area under application is well connected to the Harry Waring Marsupial Reserve by remnant vegetation on nearby adjacent Lots to the west.

The Harry Waring Marsupial Reserve is well fenced to exclude introduced predators which also acts to limit fauna movement between the reserve and the area under application (Ecoscape (Australia) Pty Ltd 2008). Despite this the fencing is not considered likely to be a barrier to the movement of invertebrates, small mammals and reptiles or birds.

Given the close proximity and vegetated connectivity to the Harry Waring Marsupial Reserve, it is considered that clearing may impact on the values of this nearby conservation area by limiting fauna and floral dispersal between the conservation area and nearby remnant vegetation. Therefore it is considered that clearing as proposed may be at variance to this principle.

Methodology Reference:

- Ecoscape (Australia) Pty Ltd (2008)
- GIS Databases:
- Bushforever
 - CALM Managed Lands and Waters
 - Swan Coastal Plain Central 20cm Orthomosaic - DLI06

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

Comments Proposal may be at variance to this Principle

Several wetlands surround the area under application, with the closest being a conservation category wetland 230m west of the area under application.

During a site inspection (2008) the area under application was observed to be located on a dune crest supporting brown sands in areas of higher elevation and grey sands in areas of lower elevation. In addition, the area under application is located within the Bassendean dune system which is characterised by soils with poor nutrient retention ability (Department of Agriculture 2005).

Within the area under application groundwater levels vary from a depth of approximately 12m, to approximately 1m near the northern area of Lot 36 Gaebler Road. During site inspection (2008) this northern area of Lot 36 Gaebler Road was observed to support waterlogged soils.

Given the relatively large area proposed to be cleared (3.6 ha), low nutrient retention ability of the soils on site and high water table within the area under application, it is considered that the proposed clearing may cause deterioration in the quality of surface and underground waters.

Methodology References:

- Department of Agriculture (2005)
 - Site Inspection (2008)
- GIS Databases:
- Geomorphic Wetlands (Management Categories), Swan Coastal Plain
 - Groundwater Contours, Historic Maximum
 - Topographic Contours, Metropolitan Area

(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 area under application is located on a dune crest supporting brown sands in areas of higher elevation and grey sands in areas of lower elevation (Site Inspection 2008). Groundwater levels vary across the site from a depth of approximately 12m, to approximately 1m near the northern area of Lot 36 Gaebler Road.

Despite the high groundwater table at the northern end of the area under application the area is located on porous soils and is surrounded by large areas of native deep-rooted perennial vegetation (Site Inspection 2008).

Given the geology of the site and high vegetation representation locally, the proposed clearing is not considered likely to cause or exacerbate the incidence or intensity of flooding.

Methodology Reference:
- Site Inspection (2008)
GIS Databases:
- Groundwater Contours, Historic Maximum
- Topographic Contours, Statewide

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

Comments

A direct interest submission was received from the City of Cockburn (2008a) raising the following issues:
- Surveys should be conducted for flora and fauna and if surveys reveal significant vegetation or fauna on site that measures should be taken to ensure protection;
- Prior to clearing bushland salvage should be undertaken including seed collection, translocation of plants such as Xanthorrhoea and Zamia and collection of hollow logs for habitat. Salvaged plants should be used for landscaping at this site or other locations. If these items are not suitable for use in this development then they should be used at other locations or donated to other organisations or agencies that can utilise them; and
- Clearing should be undertaken in such a manner that allows fauna not collected from the site to escape.

The area under application is zoned 'Urban' under the Metropolitan Regional Scheme and 'Development' under the City of Cockburn's Town Planning Scheme No.3 (Cardno BSD Pty Ltd 2008).

If a clearing permit is issued the applicant proposes to transplant specific native plants (including grass trees). Seed has already been collected from the area under application (Cardno BSD Pty Ltd 2008).

Development Approval for bulk earthworks has been issued by the City of Cockburn on the 28 November 2008 (City of Cockburn 2008b)

The entire area under application is considered to be at moderate risk of acid sulfate soils with a small area at the north eastern corner of Lot 36 Gaebler Road being at high risk of acid sulfate soils occurring within 3m of the soil surface. The bulk earth works approval outlines that the area of high risk will be filled with imported soils and therefore it is considered unlikely to result in disturbance of acid sulfate soils.

Methodology References:
- Cardno BSD Pty Ltd (2008)
- City of Cockburn (2008a)
- City of Cockburn (2008b)
GIS Databases:
- Aboriginal Sites of Significance
- Acid Sulfate Soil Risk Map, Swan Coastal Plain
- Native Title Claims

4. Assessor's comments

Comment

The application has been assessed against the clearing principles and the proposed clearing is considered to be at variance to Principles (a) and (b) and may be at variance to Principles (g), (h) and (i).

5. References

Bamford Consulting Ecologists (2006) Jindalee Fauna Assessment CPS 1694/1. Unpublished report prepared for RPS Bowman Bishaw Gorham.

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

CALM (2004) Grand Spider Orchid (*Caladenia huegelii*) Fact sheet.

Cardno BSD. (2008). Lot 26 Gaebler Rd and Lot 45 Franklin Ave, Hammond Park: Application for clearing permit (area permit). TRIM Ref. DOC53603.

City of Cockburn (2008b) Development Approval - Lot 36 Gaebler Rd, Hammond Park. TRIM Ref DOC76106

City of Cockburn. (2008a). Clearing Application Comments. Lot 36 and 45 Gaebler Road. TRIM Ref. DOC56515.

Commonwealth of Australia (2001). National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.

DEC. (2006a). NatureBase - Fauna Species Profile: Carnaby's Black Cockatoo. Accessed at <http://www.naturebase.net/content/view/840/1288/>. Accessed 09/07/2008. Department of Environment and Conservation, Western Australia.

DEC. (2006b). NatureBase - Fauna Species Profile: Southern Brown Bandicoot. Accessed at <http://www.naturebase.net/content/view/840/1288/>. Accessed 09/07/2008. Department of Environment and Conservation, Western Australia.

DEC. (2006c). NatureBase - Fauna Species Profile: Western Brush Wallaby. Accessed at <http://www.naturebase.net/content/view/840/1288/>. Accessed 09/07/2008. Department of Environment and Conservation, Western Australia.

Department of Agriculture (2005) AgMaps Land Manager CD-rom for the Shires of Serpentine-Jarrahdale, Kwinana, Rockingham, Mandurah, Murray, Boddington, Waroona and Harvey. Department of Agriculture, Western Australia. ISSN: 1448-235X.

Ecoscape (Australia) Pty Ltd. (2008). Hammond Park development: Flora and Fauna Survey. North Fremantle, Ecoscape (Australia) Pty Ltd. TRIM Ref DOC55100.

EPA (2006) Guidance for the Assessment of Environmental Factors -level of assessment of proposals affecting natural areas within the System 6 region and Swan Coastal Plain portion of the System 1 Region. Report by the EPA under the Environmental Protection Act 1986. No 10 WA.

Garnett, S.T. and Crowley G.M. (2000). The Action Plan for Australian Birds 2000. Canberra, Environment Australia.

Government of Western Australia (2000) Bush Forever Volumes 1 and 2. Western Australian Planning Commission, Perth WA.

Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

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.

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.

Site Inspection. (2008). Site Inspection Report, Department of Environment and Conservation (DEC). Perth, Western Australia. TRIM Ref. DOC57405.

Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 09 July 2008).

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)