



1. Application details

1.1. Permit application details

Permit application No.: 2200/1

Permit type: Area Permit

1.2. Proponent details

Proponent's name: Coffey Environments

1.3. Property details

Property: LOT 1 ON DIAGRAM 50963 (Lot No. 1 MANDURAH EAST ROCKINGHAM 6168)

Local Government Area: City Of Rockingham

Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
6.22		Mechanical Removal	Miscellaneous

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
Hedde Vegetation Complex:	The proposal is to clear 6.22 hectares of native vegetation on Lot 1 Mandurah Road, East Rockingham for the purpose of an industrial land development.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	Vegetation clearing description based on a site visit conducted by DEC officers on 12 December 2007 and a Flora and Vegetation survey conducted by ATA Environmental in October 2006 over Lots 1, 2 and 52 Mandurah Road, Lot 2259 Dixon Road, and Lot 14 Lodge Drive, East Rockingham.
Quindalup Complex - Coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of <i>M. lanceolata</i> - <i>Callitris preissii</i> and the closed scrub of <i>Acacia rostellifera</i> .	The vegetation under application is described by ATA Environmental (2007) as <i>Eucalyptus gomphocephala</i> woodland over an understorey including <i>Acacia rostellifera</i> and <i>Xanthorrhoea preissii</i> , with small depressions containing <i>E. gomphocephala</i> over <i>Melaleuca raphiophylla</i> , <i>A. rostellifera</i> and sedges.		
Beard Vegetation Association 3048: Shrublands; scrub-heath on the Swan Coastal Plain (Shepherd 2006)	The vegetation under application ranges in condition from good to excellent, with an average condition of very good.		

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 the spring flora survey of the area under application on Lot 1 Mandurah Road 25 native flora species and 21 introduced species were recorded.

The vegetation under application is in very good to excellent condition and includes both upland and wetland environments.

ATA Environmental (2007) inferred the vegetation Floristic Community Types (FCT) as 17 and 30c2, which

have not been identified as TECs, however ATA Environmental (2007) advised that FCT 17 is unusual in the Perth Metropolitan Region and is considered significant.

ATA Environmental (2007) also identified two areas of wetland with vegetation commensurate with Conservation Category values and consistent with the Becher suite wetlands, which are of international significance.

The vegetation under application has a low species diversity (ATA Environmental 2007), however this low diversity is characteristic of FCT 17 and 30c2 (Gibson et al. 1994).

DEC Species and Communities Branch (2007b) advised that the vegetation under application may also comprise the TEC 19b.

The applied area comprises Tuart woodland in very good to excellent condition and is therefore considered to be of conservation value. Although Tuart as a species seems well represented in parks and reserves, its conservation status is less clear when considering the presently described six structural Tuart ecosystems and the composition of flora associated with the Tuart (Tuart Response Group, 2002). In addition Tuart dominated communities have been significantly impacted by grazing, frequent fire, weed invasion and other threatening processes that result in the vegetation being more disturbed than surrounding vegetation types. As stated in Morgan (2005) for the above reasons Keighery et al. (2002) argued that any Tuart dominated vegetation in good or better condition should be a priority for retention and protection.

The vegetation under application is also considered to provide significant habitat for fauna in the local area, as it provides both wetland and upland habitat, and an ecological corridor between conservation areas.

Given that the vegetation under application is in very good to excellent condition, contains both upland and wetland environments, may comprise a TEC, and includes previously unmapped Conservation Category wetlands of international significance, it is considered to comprise a high level of biodiversity, and the proposal is therefore at variance to this Principle.

Methodology ATA Environmental (2007)
DEC (2008)
DEC (2007b)
DEC site visit 7/12/07
Gibson et al. (1994)
Keighery et al. (2002)
Response Group (2002)

(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**

Within the local area (5km radius) there are nine recorded occurrences of significant fauna including the following that have the potential to utilise the vegetation under application:

- Quenda - *Isoodon obesulus fusciventer* (P5),
- Western Brush Wallaby - *Macropus irma* (P4),
- Baudin's Black Cockatoo - *Calyptorhynchus baudinii* (Threatened), and
- Carpet Python - *Morelia spilota imbricata* (P4).

The vegetation under application is in very good condition, and includes a dense understorey that has the potential to provide habitat suitable for ground-dwelling fauna such as the Quenda. 'Quenda is generally found in dense scrubby, vegetation with dense cover...often associated with wetlands on the Swan Coastal Plain' (DEC 2007a). During the site visit DEC officers observed extensive Quenda diggings within the wetland area under application.

The vegetation under application also includes mature *Eucalyptus gomphocephala* trees that may contain hollows with the potential to be utilised for habitat by birds such as Baudin's Black Cockatoo and Carnaby's Black Cockatoo, and also by mammals such as possums.

The applied area includes both wetland and upland environments, providing a range of habitats for a wider range of fauna in the local area.

The vegetation under application forms part of a vegetated remnant that is considered to provide a greenway link (Bush Forever 2007) facilitating movement of fauna between the Bush Forever site to the east and vegetation to the south that includes Rockingham Lakes Regional Park. This ecological corridor is considered to be significant given its location between the railway line and cleared land to the north.

Given that the vegetation under application has the potential to be utilised for habitat by a range of fauna species, including species of conservation significance, and provides an ecological linkage between remnant vegetation, it is considered that the vegetation under application comprises significant habitat for indigenous

fauna.

Methodology Bush Forever (2007)
DEC (2007a)
DEC site visit 7/12/07
GIS Database: SAC Bio datasets accessed 5/12/07

(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

Within the local area (5km radius) there is one known population of the Declared Rare Flora (DRF) *Diuris micrantha* located approximately 4.3km to the northeast of the applied area. There are also four known populations of the Priority flora *Dodonaea hackettiana* (P4) and *Jacksonia sericea* (P4) in the local area.

D. micrantha flowers in Sep-Oct and occurs in brown loamy clay, in winter-wet swamps and in shallow water (Western Australian Herbarium 1998-). The area under application includes dune swales that are likely to become wet in winter, however are not considered likely to provide suitable habitat for *D. micrantha*.

During the survey in October 2006 ATA Environmental (2007) did not record any DRF or Priority flora species within the survey area, which included the area under application.

Given that no DRF or Priority flora were identified during the spring flora survey, and given the distance to the nearest known population of DRF, it is not considered likely that the vegetation under application includes, or is necessary for the continued existence of, rare flora.

Methodology ATA Environmental (2007)
DEC site visit 7/12/07
Western Australian Herbarium (1998-)
GIS Database: SAC Bio datasets accessed 4/12/07

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments Proposal may be at variance to this Principle

There are 18 known occurrences of the Threatened Ecological Community (TEC) 19b (woodlands over sedgeland in Holocene dune swales of the southern Swan Coastal Plain) within the local area (5km radius) with the closest being located approximately 800m to the west of the applied area.

In addition the Bush Forever study identified the TEC associated with the Quindalup Dunes to be 30a - *Callitris preissii* and/or *Melaleuca lanceolata* forests and woodlands (Government of Western Australia 2000).

ATA Environmental (2007) inferred that the *Eucalyptus gomphocephala* and *Acacia rostellifera* woodland under application is representative of Floristic Community Type (FCT) 30c2 (Woodlands and shrublands on Holocene Dunes) (Gibson et al. 1994); and inferred the *E. gomphocephala* and *Melaleuca raphiophylla* woodland as being representative of FCT 17 (*Melaleuca raphiophylla* - *Gahnia trifida* seasonal wetlands) (Gibson et al. 1994). These FCTs have not been identified as TECs, however no information was provided by ATA Environmental (2007) as to the methods used to make these inferences.

DEC Species and Communities Branch (DEC 2007b) advised that 'it is possible that the site may contain the FCT 19b 'Woodlands over Sedgeland in Holocene Dune Swales', which is listed as a TEC, as there are a number of species in two quadrats that have been recorded in 19b previously at Lake Cooloongup'.

DEC (2008) subsequently advised that since both FCT 19a, 19b and 17 are found in the vicinity of the applied area, and given the species found on site, the vegetation under application could be FCT 19b or 17.

DEC Species and Communities Branch (2008b) advised, based on correspondence from Semenuik (2003) for a nearby study on a Holocene Dune Swale community, that a 50m buffer is not adequate to protect the FCT 19a and 19b from hydrological impacts. For the nearby Holocene Dune Swale community Semenuik (2003) recommended a minimum buffer of 200m to protect the wetland and associated FCT from potential impacts arising from changes to the hydrological regime, increased transport of nutrients and pollutants, and weed invasion.

Given that DEC (2008b) advised that the vegetation under application could be FCT 17 or the TEC 19b, and given the proximity of the applied area to known occurrences of this TEC, it is considered that the vegetation under application may comprise, or be necessary for the maintenance of, a TEC.

Methodology ATA Environmental (2007)
DEC (2007b)
DEC (2008b)

(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 identified by Heddle et al. (1980) as 'Quindalup Complex' of which there is 47.1% of pre-European vegetation remaining (EPA 2006). The vegetation under application is also part of Beard vegetation association 3048 of which there is 29.3% remaining (Shepherd 2006).

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).

The remaining Beard vegetation community is below the minimum 30% vegetation present pre-1750 target within the National Objectives for Biodiversity Conservation. There is approximately 60% of pre-European vegetation remaining in the local area (10km radius).

Although the vegetation complexes identified on site have less than the recommended 30% threshold remaining the applied area is considered to be within a constrained area. The EPA (2003) recognises the Perth Metropolitan Region as a 'constrained area', providing for the variation of the minimum % of vegetation complexes remaining to 10% of the pre-European extent. Therefore the proposal is not considered likely to be at variance to this Principle.

	% in reserves/DEC- managed land	Pre-European (ha)	Current (ha)	Remaining %
Swan Coastal Plain	1,501,211	579,227	38.6**	15.9
City of Rockingham	24,326	8,534	35.1*	
Local Area (~10km radius)	19,350	11,900	~60	
Heddle vegetation complex			***	
Quindalup Complex	38,238	18,000	47.1	5.2
Beard vegetation association 3048	12,100	3,549	29.3	8.5

* (Shepherd et al. 2001)
 ** (Shepherd 2006)
 *** (EPA, 2006)

Methodology Commonwealth of Australia (2001)
 DEC Site visit 7/12/07
 EPA (2006)
 Shepherd (2006)
 GIS Databases:
 Heddle Vegetation Complexes - DEP 21/06/95
 Pre-European Vegetation - DA 01/01

(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 seriously at variance to this Principle

Although there are no mapped wetlands within the area under application, ATA Environmental (2007) identified the wetland obligate species *Melaleuca raphiophylla*, *Gahnia trifida* and *Lepidosperma longitudinale* in small depressions within the area under application; and identified these areas as 'wetlands with seasonal groundwater close to the surface and possibly above-ground in wet years'.

DEC Wetlands Program (2008a) also noted that soils in the lower areas of the applied area were 'darker and peaty' and advised that the vegetation, landform and soil information provided from ATA Environmental indicates areas of wetland located in the north-west of the applied area.

DEC (2008a) also advised that the area under application is part of Becher suite of wetlands. Wetlands within the Becher suite are identified as 'a series of inter-ridge depressions which intersect or lie close to the water table in a prograding coastal beachridge plain', and the wetland areas on site are consistent with this description. Becher suite wetlands are considered internationally significant in terms of developmental history, diverse dune types, calcrete and vegetation relationships, sea level history and coastal dynamics, and are significant for future research.

DEC (2008a) advised that 'in consideration of the vegetation condition, habitat and linkage values, and representativeness, the wetlands within Lot 1 are commensurate with Conservation Category values'.

In addition, ATA Environmental (2007) advised that the wetlands within the applied area are located within the oldest dunes of the Becher Plain and are likely to be important in demonstrating the wetland evolution on this landform.

DEC does not consider the wetland mapping undertaken by ATA Environmental to be accurate, and considers that the wetland area is much larger and consistent with the topographic contours.

It is considered that the proposed clearing is likely to result in catchment flow changes and a 50m buffer is not likely to be adequate to protect the wetland from potential impacts. For a nearby Becher suite wetland Semenuik (2003) recommended a minimum buffer of 200m to protect the wetland and associated FCT from potential impacts arising from changes to the hydrological regime, increased transport of nutrients and pollutants, and weed invasion.

Given that a wetland area has been identified within the area under application, it is considered that the vegetation under application is growing in, and in association with, a wetland. In addition, given that the wetlands are considered to be of Conservation Category and consistent with the internationally significant Becher suite of wetlands, the proposed clearing is considered to be seriously at variance to this Principle.

Methodology ATA Environmental (2007)
DEC (2008a)
Semenuik (2003)
GIS Databases:
Geomorphic Wetlands (Classification), Swan Coastal Plain
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 soils within the area under application are part of the Quindalup Qf2 phase, comprising deep uniform calcareous sand, which have a very high and extreme risk of wind erosion, but a low risk of other land degradation such as salinity and water logging (State of Western Australia 2005).

The area under application has no known risk of acid sulphate soils.

Given the sandy soils present on site and the high risk of wind erosion, without appropriate management, it is considered that the proposed clearing may result in appreciable land degradation through wind erosion. The proposal therefore may be at variance to this Principle.

Methodology State of Western Australia (2005)
GIS Databases:
Acid Sulfate Soil Risk Map, Swan Coastal Plain
Salinity Risk LM 25m - DOLA 00

(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 area under application is located approximately 70m to the west of Bush Forever site 349, which includes Leda Nature Reserve; and 530m to the north of Bush Forever site 356, which includes Cooloongup Lake and Rockingham Lakes Regional Park.

The vegetation under application forms part of a vegetated remnant that is likely to provide an ecological corridor facilitating movement of fauna between Bush Forever site 349 and Bush Forever site 356. The Bush Forever office (2007) has advised that although outside the Bush Forever site 349, the area under application forms an "important greenway link for biodiversity". This ecological corridor is considered to be significant given its location between the railway line and cleared land to the north. In addition, the lot to the north of the applied area is also under application, and it is considered that the proposal will contribute to the cumulative impacts of clearing in the local area, including reduction of ecological corridors for fauna between conservation areas.

While it is not considered likely that the proposed clearing would have a direct impact on the environmental values of the nearby Bush Forever sites and Regional Park, it is considered that the clearing may have an indirect impact on the environmental values of these conservation areas through restricting the movement of fauna. The proposed clearing therefore may be at variance to this Principle.

Methodology Bush Forever (2007)
GIS Databases:

(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

Although the nearest mapped wetland is located 450m to the northeast of the applied area, ATA Environmental (2007) identified wetland areas within the area under application.

The area under application has a low salinity risk and no known acid sulphate soil risk and therefore it is not considered likely that the proposed clearing would cause in a deterioration in groundwater quality through acid sulphate soils or salinity.

The Quindalup sands within the applied area have a low risk of water erosion due to high infiltration rates, and also the low gradient on site. It is therefore not considered likely that the proposed clearing would result in water erosion causing a deterioration in the quality of surface water.

Methodology ATA Environmental (2007)
State of Western Australia (2005)
GIS Database:
Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC
Salinity Risk LM 25m - DOLA 00

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

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

Although the nearest mapped wetland is located 450m to the northeast of the applied area, ATA Environmental (2007) identified wetland areas within the area under application, with soils that are considered likely to have a higher risk of water logging.

However, given the small size of the wetland area and the low risk of water logging associated with the remainder of the applied area, it is not considered likely that the proposed clearing would have an impact on peak flood height or duration.

Methodology ATA Environmental (2007)
State of Western Australia (2005)
GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

Lot 1 Mandurah Road East Rockingham is part of a Native Title Claim however, since it is privately owned the Native Title has been extinguished under the Native Title Act. Therefore the clearing as proposed should not fall under the future acts process of the Native Title Act 1993.

Landcorp does not yet own the land under application and therefore a subdivision application has not been lodged.

The City of Rockingham advised that a development application has not been received for the site. The City considers the vegetation under application to be a good representation of Tuart woodland and given the States commitment to the Tuart conservation strategy they should be retained.

Lot 1 Mandurah Road is zoned Industrial in the Metropolitan Region Scheme and is within the East Rockingham IP14 Area.

The area under application is located within the Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992, an approved policy that aims to limit nutrient loads entering the Peel Harvey Estuary via changes in land use within the catchment. Although the current proposal for industrial development may be considered a change in land use, it is not considered likely to significantly increase the nutrient export from the site. The clearing of native vegetation is not explicitly protected within the EPP and it is not considered that the proposal will result in a significant increase in nutrient export from the site.

The area under application is across the road from application CPS 2195/1 submitted by the same applicant for industrial development.

The Bush Forever office advise they have no objections to the clearing permit and would support any vegetation offsets, but recommend DEC Species and Communities Branch be consulted in relation to the potential for the TEC to occur on site.

Methodology Bush Forever (2007)
City of Rockingham (2007)
GIS Database: Native Title Claims

4. Assessor's comments

Comment

The assessable criteria have been addressed, and the proposed clearing is seriously at variance to Principle f; is at variance to Principles a and b; and may be at variance to Principles d, e, g and h.

5. References

- ATA Environmental (2007) Flora and Vegetation Survey Lots 1, 2 and 52 Mandurah Road, Lot 2259 Dixon Road and Lot 14 Lodge Drive East Rockingham, Version 2. January 2007.
- Bush Forever (2007) Direct interest submission - DEC TRIM ref. DOC42250.
- Commonwealth of Australia (2001). National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.
- DEC (2007a) Nature Base Fauna Species Profiles - Quenda.http://www.naturebase.net/component/option,com_docman/task,cat_view/Itemid,1288/gid,372/orderby,dmd_atcounter/ascdesc,DESC/
- DEC (2007b) Advice for clearing permit application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 14 December 2007. Species and Communities Branch, Department of Environment and Conservation, Western Australia. DEC TRIM ref. DOC41732.
- DEC (2008a) Advice for clearing permit application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 15 January 2008. Wetlands Program, Department of Environment and Conservation, Western Australia. DEC TRIM ref. DOC43348.
- DEC (2008b) Advice for clearing permit application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 16 May 2008. Species and Communities Branch, Department of Environment and Conservation, Western Australia. DEC TRIM ref. DOC53185.
- 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.
- Gibson, N., Keighery, B., Keighery, G., Burbidge, A. and Lyons, M. (1994) A Floristic Survey of the southern Swan Coastal Plain. Department of Conservation and Land Management, Perth.
- 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.
- Semenuik (2003) Letter report: Proposed Lark Hill Development ? buffer for conservation of wetlands, remnant beachridge vegetation, and effect of rising water on vegetation. DOC53185.
- Shepherd (2006) 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.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Site Visit 7 December 2007, Department of Environment and Conservation (DEC), Western Australia. TRIM ref DOC41520.
- State of Western Australia (2005) Agmaps Land Manager CD Rom.
- Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> Accessed on Wednesday 5 December 2007.

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)