



1. Application details

1.1. Permit application details

Permit application No.: 1514/1
 Permit type: Area Permit

1.2. Proponent details

Proponent's name: 360 Environmental Pty Ltd

1.3. Property details

Property: Lot 2730 on Plan 215879 (Lot No. 2730 Elanora Drive COOLOONGUP 6168)
 Local Government Area: City Of Rockingham
 Colloquial name:

1.4. Application

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

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
Heddlle Vegetation Complex: 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 proposal includes the clearing of 2.9 hectares of vegetation for the purpose of constructing a new practice fairway within the Rockingham Golf Course. 360 Environmental (2006) identified the following three vegetation units within the applied area: Ar - Vegetation in the southeast corner comprising <i>Acacia rostellifera</i> , (<i>Hakea prostrata</i>) closed scrub over <i>Erharta longiflora</i> closed grassland with <i>Acanthocarpus preissii</i> very open herbland. Vegetation is in a Very Poor condition with high weed cover and few native species. ArSgXp - Vegetation in the northern portion comprising <i>A. rostellifera</i> open to closed scrub over <i>Spyridium globulosum</i> , <i>Xanthorrhoea preissii</i> high open shrubland over <i>E. longiflora</i> closed grassland with <i>A. preissii</i> scattered herbs and <i>Clematis linearifolia</i> open lianes. Vegetation is in Poor condition. HpAr - Vegetation in the central majority of the applied area comprising <i>Hakea prostrata</i> high open shrubland to high shrubland over <i>Desmocladius aspera</i> scattered sedges with <i>Acanthocarpus preissii</i> , <i>Conostylis aculeata</i> subsp. <i>aculeata</i> , <i>Euphorbia terracina</i> herbland and <i>Avena barbata</i> , <i>Bromus diandrus</i> grassland. Vegetation is in Very Poor condition with many weeds and few native species.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	Vegetation clearing description based on a spring flora survey produced by 360 Environmental Pty Ltd (2006). The vegetation under application is described by 360 Environmental (2006) as varying between Poor and Very Poor condition, which is equivalent to Good to Degraded on the Keighery (1994) scale (Government of Western Australia 2000). The majority of the vegetation under application is considered to be in a degraded condition.

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 not likely to be at variance to this Principle**

The vegetation under application comprises 23 native species and 18 weed species, and the majority is in a degraded condition (360 Environmental 2006). The area under application is located within a mapped Bush Forever site, however it is also located within an established golf course.

Given that the vegetation under application is located in the centre of a golf course, has a low species diversity and that the majority is in a degraded condition with extensive weed invasion it is not considered likely that it comprises a high level of biodiversity.

Methodology 360 Environmental (2006)
GIS Database: Bushforever - MFP 07/01

(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 not likely to be at variance to this Principle**

The majority of the vegetation under application is in a degraded condition with a low species diversity and an understorey consisting primarily of weed species. The vegetation is sparse and is scattered over 2.9 hectares located in the centre of a golf course.

Given the low species diversity and the mostly degraded condition of the vegetation under application it is not considered likely to comprise significant habitat for indigenous fauna.

Methodology 360 Environmental (2006)
GIS Database: 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**

There are no known occurrences of Declared Rare Flora (DRF) or Priority flora within the local area (5km radius of the applied area) and no DRF, Priority flora or other flora of conservation significance were recorded in the survey area (360 Environmental 2006).

Given the absence of DRF species in the local area, and that none were identified during the appropriately timed flora survey of the applied area, the vegetation under application is not considered likely to include, or be necessary for the continued existence of, rare flora.

Methodology 360 Environmental (2006)
GIS Database: Declared Rare and Priority Flora List - CALM 01/07/05

(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**

Within the local area (5km radius) of the application there are 20 known occurrences of Threatened Ecological Communities (TEC), the closest of which is located approximately 2.2km to the northeast of the applied area.

During the flora survey the vegetation under application was identified by 360 Environmental (2006) as being most similar to Floristic Community Types 29a and 29b, neither of which is identified as a TEC.

Given that the applied vegetation was not identified as a TEC during the flora survey, and given the distance to the nearest known occurrence, the vegetation under application is not considered likely to comprise, or be necessary for the maintenance of, a TEC.

Methodology 360 Environmental (2006)
GIS Database: Threatened Ecological Communities - CALM 12/4/05

(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 Hedde et al. (1980) as 'Quindalup Complex' of which there is 47.1% of pre-European vegetation remaining, and which is considered to be depleted (Department of Natural Resources and Environment 2002).

The vegetation under application is also part of Beard vegetation association 3048 of which there is 28.7% remaining (Shepherd et al. 2002), and which is considered to be vulnerable (Department of Natural Resources and Environment 2002).

The Quindalup Complex has 5.2% of vegetation in secure tenure with JANIS (1997) recommending that 15% of the pre-1750 distribution of each vegetation ecosystem should be protected in a comprehensive, adequate and representative reserve system.

Although Beard vegetation association 3048 has below the minimum 30% of pre-European representation target set in the National Objectives Targets for Biodiversity Conservation, and Quindalup complex has below the minimum 15% in reserves, the majority of the vegetation under application is in a degraded condition. The applied vegetation is therefore not considered likely to be representative of the identified vegetation complexes and the proposal is not likely to be at variance to this Principle.

To offset the proposed clearing the City of Rockingham has committed to revegetating an equivalent area to the proposed clearing within the existing practice fairway.

	Pre-European (ha)	Current (ha)	Remaining %	Conservation status***	% in reserves
Swan Coastal Plain	1,529,235	657,450	43.0*	Depleted	
City of Rockingham	24,326	8,534	35.1*	Depleted	
Local Area (~10km radius)					
Hedde vegetation complex					
Quindalup Complex	38,238	18,000	47.1**	Depleted	5.2
Beard vegetation associations 3048	14,575	4,184	28.7*	Vulnerable	19.2

* (Shepherd et al. 2001)

** (EPA, 2003)

*** (Department of Natural Resources and Environment 2002)

Methodology Department of Natural Resources and Environment (2002)
EPA (2000)
JANIS (1997)
Shepherd et al. (2001)
GIS Databases:
Hedde 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 not likely to be at variance to this Principle

The area under application is located approximately 230m to the west of Coo loongup Lake, which is a Conservation Category Wetland (CCW).

Given the distance to the nearest wetland, and that no wetland dependent vegetation was identified during the flora survey, the applied vegetation is not considered likely to be growing in, or in association with, an environment associated with a watercourse or wetland.

Methodology 360 Environmental (2006)
GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
Hydrography, linear (hierarchy) - DOW

(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 area under application is part of the Quindalup Dune System with soils comprising 'deep calcareous sands with variable organic matter' (State of Western Australia 2005). During the flora survey the soils were described as fine brown sand and white calcareous sand (360 Environmental 2006). Soils of this type have a high risk phosphorus export and wind erosion associated with the removal of vegetation.

The proposed land use of a practice fairway will result in the area under application having adequate ground cover and irrigation therefore minimising the potential for wind erosion. The City of Rockingham has also committed to revegetating the existing practice fairway at a level of two to one to the proposed clearing, and therefore it is considered that there would be no net increase of nutrient export from the soil.

Given that adequate ground cover will be present, and given the proposed offsets, it is not considered likely that the proposed clearing would result in appreciable land degradation.

Methodology 360 Environmental (2006)
State of Western Australia (2005)

(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 within Bush Forever site 356 and is part of the Rockingham Lakes Regional Park. This area has been defined as being significant for conservation due to its representation of ecological communities and being a location for JAMBA/CAMBA species.

Bush Forever (2006) advise that at least 20% of the Quindalup complex is proposed to be retained, with approximately 48% currently remaining, therefore any clearing that is required should be done in areas that are already cleared or degraded.

The proposed clearing will impact vegetation contained within the Bush Forever site that is in a good to degraded condition and therefore may have a localised impact on the environmental values on the conservation reserve.

The City of Rockingham has committed to revegetating the existing practice fairway at a two to one level to the proposed clearing, as recommended by the Bush Forever office, to offset the loss of vegetation and to create an ecological corridor to adjacent remnant vegetation. In addition the impact is likely to be limited due to the mostly degraded condition of the vegetation under application.

Methodology Bush Forever (2006) submission
GIS Database: Bushforever - MFP 07/01

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

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

The area under application is located approximately 230m from Coo loongup Lake, at an elevation of 5-6 metres with minimal slope. The applied area is not located within a Public Drinking Water Source Area (PDWSA) and groundwater salinity is 500-1000 mg/L. The applied area has a nil risk of Acid Sulphate Soils.

Given the limited amount of vegetation contained within the applied area, it is not considered likely that its removal would result in significant changes in groundwater levels. The removal of deep rooted perennials may reduce the potential of nutrient uptake. In addition the application of additional nutrients associated with the proposed land use has the potential to increase nutrient loss.

Although the proposed clearing may result in additional nutrient application, the City of Rockingham has committed to revegetating the existing practice fairway at a level of two to one, and therefore the proposed clearing is not likely to result in a net loss of nutrients resulting in deterioration in quality of surface or underground water. In addition, an operating strategy is currently being developed in consultation with the Department of Water to improve management of pesticide, fertiliser and water application (Department of Water 2006).

Methodology Department of Water (2006) advice
GIS Databases:
Acid Sulfate Soil Risk Map, Swan Coastal Plain - DEC
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
Groundwater Salinity, Statewide - 22/02/00
Public Drinking Water Source Areas (PDWSAs) - DOE 07/02/06
Topographic Contours, Metropolitan Area - DLI

(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 approximately 230m from Coo loongup Lake, at an elevation of 5-6 metres. The applied area is located on sandy soils (360 Environmental 2006) with a high permeability and given the limited amount of vegetation within the applied area it is not considered likely that the proposal would have an impact on peak flood height or duration.

Methodology 360 Environmental (2006)
GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain

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

Comments

The area under application is Crown Land and is part of a Native Title Claim however the City of Rockingham holds a management order for the designated purpose of 'Recreation; Golf Course' and therefore the clearing as proposed should not fall under the future acts process of the Native Title Act 1993.

In a submission Bush Forever (2006) advise that given the degraded condition of the vegetation under application they have no objections to the clearing, however recommends that the proposed offset measures are at a level of two to one, and an environmental management plan be prepared for the area prior to clearing.

The City of Rockingham is currently preparing an Environmental Management Plan for the Golf Course.

A current groundwater licence is held by the Rockingham Golf Club - GWL159075. The Department of Water is currently working on an operating strategy with the Golf Club to improve management of water and chemical application, and to increase revegetation.

No other approvals are required for the proposed clearing from the Department of Environment and Conservation or the Department of Water.

Methodology Bush Forever (2006) submission. DEC TRIM ref. DOC13038
 Department of Water advice - DEC TRIM ref. DOC13080
 GIS Database: Native Title Claims - DLI 7/11/05

4. Assessor's comments

Purpose	Method Applied	Applied area (ha)/ trees	Comment
Recreation	Mechanical Removal	2.9	<p>The assessable criteria have been addressed and the clearing as proposed may be at variance to Principle h.</p> <p>Principle (h): The vegetation under application is in a good to degraded condition and is located within a Bush Forever site. The proposed clearing therefore may impact the environmental values of the Bush Forever site. The City of Rockingham has committed to revegetating the existing practice fairway of equivalent area, and an environmental management plan is being developed to manage application of chemicals and water.</p> <p>The assessing officer therefore recommends that the permit be granted with conditions requiring the permit holder to develop an offset plan with revegetation at a level of two to one.</p>

5. References

360 Environmental Pty Ltd (2006) Rockingham Golf Course Proposed Practice Fairway Area: Spring Flora Survey. DEC TRIM, DOC 12733.

Bush Forever (2006) Submission. DOC 13038.

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

EPA (2003) 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.

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.

JANIS Forests Criteria (1997) Nationally agreed criteria for the establishment of a comprehensive, Adequate and Representative reserve System for Forests in Australia. A report by the Joint ANZECC/MCFFA National Forest Policy Statement Implementation Sub-committee. Regional Forests Agreement process. Commonwealth of Australia, Canberra.

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

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.

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)