



## 1. Application details

### 1.1. Permit application details

Permit application No.: 1930/1

Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: City of Cockburn

### 1.3. Property details

Property: LOT 726 ON PLAN 194126 ( SUCCESS 6164)

Local Government Area: City Of Cockburn

Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
12.5		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: 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 sedgeland on the moister sites. This area includes the transition of <i>E. marginata</i> to <i>E. todtiana</i> in the vicinity of Perth.	The proposal is to clear 12.5 hectares of native vegetation for the purpose of building a recreation facility including ovals and tennis courts.  The vegetation under application comprises a mixture of <i>Melaleuca raphiophylla</i> woodland, and <i>Eucalyptus/Banksia/Allocasuarina</i> woodlands.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	Vegetation clearing description based on a site visit conducted by DEC officers on 2 August 2007 and a vegetation survey conducted between October and November 2008 by Regen4 Environmental Services. The vegetation ranges in condition from completely degraded to very good, with an average condition of very good.
Beard Vegetation Association: 1001 - Medium very sparse woodland; jarrah with low woodland; banksia and casuarina  (Shepherd 2006)	There is a drain that runs from the southeast corner of the applied area to the northwest corner, and continues on into Thomsons Lake. The drain contains thick stands of <i>Typha</i> . Vegetation to the north of the drain is in degraded condition, comprising occasional <i>Allocasuarina fraseriana</i> , <i>Banksia menziesii</i> , <i>Kunzea glabrescens</i> and numerous weed species. Vegetation to the south of the fire shed comprises scattered <i>Xanthorrhoea preissii</i> .  Vegetation in the northwest portion under application comprises pockets of <i>Melaleuca raphiophylla</i> over native sedges in very good condition, however the majority of this section is completely degraded with an understorey		

comprising weeds.

The vegetation under application immediately to the east of the central north-west track is in good to very good condition and comprises Banksia/Allocasuarina woodland over a mixed understorey including Xanthorrhoea preissii, Macrozamia riedlei, Acacia pulchella, Stirlingia latifolia, Kunzea glabrescens, sedges and numerous weed species. Vegetation further to the east is in degraded to completely degraded condition.

The vegetation under application to the west of the track, and east of the wetland is in very good condition and comprises Kunzea glabrescens thicket over Acacia pulchella, Hibbertia spp., Hardenbergia spp., Pterostylis spp., Kennedia prostrata, with occasional Banksia spp. and Allocasuarina fraseriana.

To the north of the wetland the vegetation comprises Banksia/Allocasuarina woodland over Acacia pulchella, Hibbertia hypericoides, Dryandra spp., Macrozamia riedlei, Conostylis spp., Xanthorrhoea preissii, Dasypogon spp. and Hybanthus spp. A portion of this vegetation is considered to be in very good condition.

Approximately 2.5 hectares of the vegetation under application has been identified by Regen4 (2008) as being in very good condition.

As above.	Approximately 3 hectares of the vegetation under application has been identified by Regen4 (2008) as being in good condition.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	As above.
As above.	Approximately 3 hectares of the vegetation under application has been identified by Regen4 (2008) as being in degraded condition.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	As above.
As above.	Approximately 3 hectares of the vegetation under application has been identified by Regen4 (2008) as being in completely degraded condition.	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)	As above.







may provide suitable habitat for this species.

The DRF species *Drakaea elastica* also has the potential to be present within the area under application, as it is usually found in 'white or grey sand in low-lying situations adjoining winter-wet swamps' and is often found in association with thickets of *Kunzea glabrescens* (Western Australian Herbarium 1998-). Suitable habitat for this species was observed within the area under application to the east of the wetland.

There are 17 known populations of Priority listed flora species within the local area, of which the following are considered to have the potential to be present within the low lying areas under application:

- *Aotus cordifolia* (P3) - erect or straggling shrub, generally found in peaty soils in swamps;
- *Anthotium junciforme* (P4) - open, erect to prostrate perennial, herb, generally found in sandy clay, clay in winter-wet depressions, and drainage lines;
- *Tripterococcus paniculatus* (P1) - perennial, herb, generally found in grey, black or peaty sand on winter-wet flats;
- *Verticordia lindleyi* subsp. *lindleyi* (P4) - erect shrub, generally found in sand, sandy clay in winter-wet depressions (Western Australian Herbarium 1998-).

During a spring survey of the area conducted by Regen4 (2008) no DRF or Priority flora were identified.

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

**Methodology** DEC site visit 2/8/07  
Regen4 (2008)  
Western Australian Herbarium (1998-)  
GIS Database:  
SAC Bio datasets accessed 09/08/07

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

There are no known occurrences of Threatened Ecological Communities (TEC) within the local area (5km radius), with the closest being SCP 26a (*Melaleuca huegelii* - *Melaleuca systema* shrublands on Limestone ridges) located approximately 7.8km to the southwest of the area application. There were no limestone ridges observed on site during the site visit and the vegetation under application is therefore not considered likely to comprise this TEC.

Given the absence of known occurrences of TEC in the local area, the distance to the nearest TEC, and that no limestone ridges were observed on site, the vegetation under application is not considered likely to comprise, or be necessary for the maintenance of, a TEC.

**Methodology** DEC site visit 2/8/07  
GIS Databases:  
SAC Bio datasets accessed 03/08/07

**(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 Heddl et al. (1980) as 'Bassendean Complex - Central and South' of which there is 27.0% of pre-European vegetation remaining.

The vegetation under application is also part of Beard vegetation association 1001 of which there is 26.5% 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 ecological communities for both the Heddl et al. (1980) and Shepherd et al. (2001) are below the minimum 30% vegetation present pre-1750 target within the National Objectives for Biodiversity Conservation. There is approximately 41% 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.

	Pre-European (ha)		Current (ha)	Remaining %	% in reserves
Swan Coastal Plain	1,501,456	471,758	38.1*		
Local area (~10km radius)	314,000	13,000	~41		
Hedde vegetation complex					
Bassendean Complex Central and south	87,477	23,624	27.0**	0.7	
Beard vegetation associations					
1001	57,412	15,241	26.5*	13.0	

\* (Shepherd 2006)  
 \*\*(EPA, 2006)

**Methodology** Commonwealth of Australia (2001)  
 DEC Site visit 2/8/07  
 EPA (2006)  
 Shepherd (2006)  
 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 at variance to this Principle**

The area under application is located 50m from a Conservation Category Wetland (CCW). CCWs are wetlands with high ecological values; are the highest priority wetlands for protection (Water and Rivers Commission 2001); and are recognised under objective one of the Wetlands Conservation Policy for Western Australia as valuable (Government of Western Australia 1997). The area under application also was previously identified as a sump land and a CCW (Hill et al. 1996). The nearest mapped watercourse is located approximately 3km to the northwest of the applied area, however there is a drain located along the northern boundary of the property.

The vegetation under application includes *Melaleuca raphiophylla* and native sedges, which are species generally found in association with wetland environments.

Although the area under application is located outside the minimum 50m buffer (Water and Rivers Commission 2001) distance from the CCW, the vegetation under application includes wetland dependent vegetation. It is therefore considered that the vegetation under application includes vegetation growing in association with a wetland.

The permit will include conditions requiring revegetation and fencing of wetland area.

**Methodology** Government of Western Australia (1997)  
 Hill et al. (1996)  
 Water and Rivers Commission (2001)  
 GIS Databases:  
 Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC

**(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**

Soils within the area under application have been identified as belonging to the Bassendean Dune System that comprise well-drained, pale grey to white sands. These soils have a low phosphorus retention ability (Aquaterra 2005), however it is not considered likely that the clearing of vegetation would impact on the export of nutrients.

The northwest corner of the area under application has a high to moderate acid sulphate soil disturbance risk, however it is not considered likely that the proposed clearing would significantly disturb these soils so that management would be required. A large portion of the area under application also has a high salinity risk and the proposed clearing of 12.5 hectares of vegetation has the potential to result in salinity on and off site.

The sandy soils on site are also likely to have a high risk of wind erosion, and without appropriate vegetation cover, windbreaks or adequate dust suppression on exposed surfaces the proposed removal of vegetation from the area under application may expose the site to wind erosion.

Given the potential for the proposed clearing to cause appreciable land degradation in the form of wind erosion and salinity, it is considered that it may be at variance to this Principle.

**Methodology** Aquaterra (2005)  
GIS Databases:  
Acid Sulphate Soil Risk Map, Swan Coastal Plain - DEC  
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 is at variance to this Principle**

The area under application is part of Reserve 7756, which is listed on the Register of National Estate as 'an area of swamp important for the conservation of fauna within a developed area and forms part of the drainage system of the eastern chain of the Cockburn Wetlands' (Australian Heritage Council 2007).

A number of other conservation areas are located in the local area (5km radius) including Thomson's Lake Nature Reserve 450m to the west and Harry Waring Marsupial Reserve 1.2km to the northwest. The vegetation under application may provide an ecological linkage to facilitate the movement of fauna between the CCW to the northeast and Thomson's Lake to the west.

Given that the proposed clearing is within an area listed on the Register of National Estate for its natural values, it is considered that it will have a direct impact on the environmental values of this conservation area. In addition, the proposed clearing may have indirect impacts on the environmental values of the nearby conservation reserves through restricting the movement of fauna. The proposal is therefore considered to be at variance to this Principle.

The permit will include conditions requiring revegetation and fencing of wetland area.

**Methodology** Australian Heritage Council (2007)  
DEC site visit 2/8/07  
Water and Rivers Commission (2001)  
GIS Databases:  
Bushforever - MFP 07/01  
CALM Managed Lands and Waters - CALM 1/07/05  
Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC  
Register of National Estate - EA 28/01/03

**(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**

The area under application is located directly adjacent to a Conservation Category Wetland (CCW), is approximately 480m from Thomsons Lake, also a CCW, and is situated at an elevation of 22-25 metres. The applied area is not located within a Public Drinking Water Source Area (PDWSA).

There is a drainage swale running along the north boundary of the area under application, which continues to the west into Thomsons Lake.

The sandy soils on site are considered to have high infiltration rates, and it is not considered likely that the proposed clearing would result in appreciable runoff causing a deterioration in surface water quality through sedimentation.

The northwest corner of the area under application has a high to moderate acid sulphate soil disturbance risk however it is not considered likely that the proposed clearing would significantly disturb these soils so that management would be required. A large portion of the area under application also has a high salinity risk and the proposed clearing of 12.5 hectares of vegetation has the potential to result in salinity, causing a deterioration in the quality of groundwater.

Given the high risk salinity within a portion of the area under application, it is considered that the proposed clearing may result in a deterioration in the quality of underground water through salinity.

**Methodology** DEC site visit 2/8/07  
GIS Database:  
Acid Sulphate Soil Risk Map, Swan Coastal Plain - DEC  
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**

The area under application is located directly adjacent to a Conservation Category Wetland at an elevation of 22-25 metres. The applied area is located on well-drained sandy soils (Aquaterra 2005) and it is therefore not considered likely that the proposal would have an impact on peak flood height or duration.

**Methodology** Aquaterra (2005)  
GIS Database:  
Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC  
Topographic Contours, Metropolitan Area - DLI

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

**Comments**

The area under application is located directly adjacent to a Conservation Category Wetland (CCW), and is approximately 480m from Thomson's Lake, a Ramsar listed CCW. There is a drainage swale located in the northern portion of the area under application that flows in the direction of Thomsons Lake.

The proposed clearing is to construct a recreation facility that includes tennis courts, netball courts, hard courts, a large grassed area, clubrooms and car parks. The City of Cockburn expects to apply liquid fertiliser to grassed areas 6-8 times per year, and particulate fertiliser twice a year. A Nutrient Irrigation Management Plan (NIMP) has been prepared by Aquaterra (2005) and a zone will be maintained around the oval areas to which no fertiliser will be applied.

Currently, the gradient slopes from the centre of the applied area towards the drainage swale to the north and the CCW to the south. In the NIMP, Aquaterra (2005) advise that the site will essentially be flat to suit the playing fields and would be unlikely to shed significant runoff due to the free-draining nature of the sandy soils. However, given the fertiliser application rates there is the potential for the loss of nutrients past the root zone which would result in the leaching of nutrients into groundwater, with regional groundwater flow direction and drainage heading west towards Thomsons Lake (Aquaterra 2005).

If the irrigation and fertiliser application is not managed adequately the proposal has the potential to result in leaching of excess nutrients, which would increase the discharge of nutrients into Thomsons Lake leading to eutrophication of receiving water bodies. In addition, the removal of vegetation from within the 50m Zone of Critical Influence of the adjacent CCW has the potential to exacerbate nutrient inputs, as well as increase weed invasion. Given the recommended buffer width to protect a wetland on transmissive soils from the impacts of increased nutrient inputs is considered to be 200m (Water and Rivers Commission 2001), the reduction of the 50m minimum buffer would likely impact on the values of the wetland. This issue has now been addressed through the reduction of the proposed clearing area to exclude the 50m buffer to the CCW.

The area under application is not part of a Native Title Claim.

Reserve 7756 is part of a Native Crown Reserve vested in the City of Cockburn for 'Civic purposes; drainage; recreation; reserve', and is zoned 'urban deferred'.

The City of Cockburn has a current Licence to Take Water issued by the Department of Water to irrigate 9.6ha of recreation areas on Lot 726.

The City of Cockburn has a current development approval for the proposal.

It is considered likely that the risk of wind erosion, salinity and nutrient export will be minimised through conditions placed on the bulk earthworks approval and water licence, however these have not yet been issued.

**Methodology** Aquaterra (2005)  
Water and Rivers Commission (2001)  
GIS Databases:  
Metropolitan Regional Scheme - DPI 07/10/05  
Native Title - DLI

**4. Assessor's comments**

**Comment**

The assessable criteria have been addressed and the proposed clearing is at variance to Principles f and h, and may be at variance to Principles b, g and i.

**5. References**

Aquaterra Consulting Pty Ltd (2005) Nutrient Irrigation Management Plan - Reserve No. 7756 Hammond Road, Success. DEC  
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<http://www.environment.gov.au/cgi-bin/ahdb/>. Accessed 31 July 2007.
- Commonwealth of Australia (2001). National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.
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- Regen4 Environmental Services (2008) Vegetation Survey and Rare and Priority Flora Search - Lot 726 (reserve 7756) Hammond Road Success, City of Cockburn. DEC TRIM ref. DOC45851.
- 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.
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- Water and Rivers Commission (2001) Position Statement: Wetlands.
- Western Australian Herbarium (1998-). FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> Accessed on Friday, 17 August 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)