



1. Application details

1.1. Permit application details

Permit application No.: 1684/1

Permit type: Area Permit

1.2. Proponent details

Proponent's name: Paintessa Pty Ltd T/as Perth Turf Supplies

1.3. Property details

Property: LOT 10277 ON PLAN 185131 (House No. 873 COOPER BULLSBROOK 6084)

Local Government Area: City Of Swan

Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
5		Mechanical Removal	Horticulture
1		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
<p>Beard Vegetation Associations:</p> <p>1018: Mosaic: Medium forest; jarrah-marri / Low woodland; Banksia / Low forest; tea-tree / Low woodland; Casuarina obesa.</p> <p>1949: Low woodland; Banksia on low sand hills, swamps in swales with tea-tree and paperbark. (Shepherd et al. 2001, Hopkins et al. 2001)</p> <p>Hedde Vegetation Complex:</p> <p>Bassendean Complex-North: Vegetation ranges from a low open forest and low open woodland of Banksia species E. totiana to low woodland of Melaleuca species and sedgelands which occupy the moister sites (Hedde et al. 1980).</p>	<p>The proposed clearing consists of a 6 ha area divided up into a 5 ha circle and a 1 ha rectangle of vegetation in the northern section of Lot 10277 on Plan 185131, Bullsbrook.</p> <p>Vegetation is recovering from historical grazing and a fire in 2005. These disturbances have left the vegetation in the seasonally inundated areas with fewer species than the adjacent Conservation Category Wetland. However, the area still supports a much greater floristic diversity than areas of the remnant not exposed to seasonal inundation which are degraded with few trees and a sparse depauperate understorey (Site Inspection 2007).</p> <p>Southern areas of the site under application which are not exposed to seasonal inundation support sparse, degraded vegetation including Adenanthos cygnorum, Xanthorrhoea preissii, Acacia saligna, Scholtzia spp., herbs and rushes with scattered immature Corymbia calophylla. Northern areas of the site under application not exposed to seasonal inundation support degraded vegetation comprising very sparse</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 (2007). The 6 ha of native vegetation proposed for clearing varies in condition from 'Degraded' to 'Very Good' with an overall condition of 'Degraded'.</p>

Macrozamia riedlei, Xanthorrhoea preissii and Acacia saligna with scattered Corymbia calophylla and Eucalyptus todtiana. Vegetation subject to seasonal inundation supports a dense low understorey to approximately 1.5 m including Acacia pulchella, Jacksonia furcellata, Hypolaena exsulca, Gompholobium aristatum and herbs with scattered Corymbia calophylla in very good condition (Site Inspection 2007).

Weeds, mainly Annual Veldtgrass (Ehrharta calycina), have invaded those areas of the remnant not exposed to seasonal inundation (Site Inspection 2007).

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments **Proposal may be at variance to this Principle**

The condition of the vegetation ranges from degraded to very good (Site Inspection 2007).

The vegetation under application abuts a Conservation Category Wetland (50 ha) and Bush Forever site 6 : (Cooper Road Water Reserve and adjacent bushland, Bullsbrook, 113.8 ha) to the west of the property and forms part of the eastern fringe of this wetland system, that is greater than 10 km in length and approximately 7.5 km at its widest point. This system now supports predominantly Multiple Use Wetlands.

Given the condition of vegetation, close proximity to conservation category wetlands and likelihood of significant species being supported by the area under application the proposed clearing may contain a high level of biological diversity.

Methodology **References:**

- Site Inspection Report (2007)

GIS Database:

- Swan Coastal Plain North 1m Orthomosaic - DLI 01/04
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
- EPP, Areas - DEP 06/95
- 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**

Twelve indigenous fauna species are recorded within a 10 km radius of the area under application. However BCS (2007) advise that habitat present on site is only suitable for the native bee *Hylaeus globuliferus* (P3), which favours flowers of *Adenanthos cygnorum* and the Australasian Bittern (*Botaurus poiciloptilus*) (Schedule 1) may be a seasonal visitor following seasons of high rainfall.

The vegetation under application is not likely to provide significant habitat for the remaining listed species.

Given neighbouring vegetation to the area under application is in the same and better condition and the large range of fauna identified the proposed clearing is not likely to be part of an area of significant habitat.

Methodology **References:**

- Site Inspection Report (2007)
- BCS Advice (2007)
- DEC Fauna habitat notes.xls February 2007

GIS Database:

- SAC Bio datasets 14/02/2007

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments Proposal may be at variance to this Principle

There are 50 records of 9 'Rare' and 70 records of 29 'Priority' flora species occurring within 10km of the application area (6.0ha). The closest records are, *Grevillea curviloba* subsp. *curviloba* (Rare), *Acacia anomala* (Rare), *Stylidium squamellosum* (Priority 2), *Stylidium longitubum* (Priority 3), *Guichenotia tuberculata* (Priority 3), *Verticordia serrata* (Priority 3), *Hydrocotyle lemnoides* (Priority 4) and *Drosera occidentalis* (Priority 4) approximately 2.6km north-east of the application area (SAC Bio Datasets 031007).

The DEC site report states that the vegetation under application ranges in condition from 'Very Good' to 'Degraded' (Site Inspection Report, 2007).

The vegetation has been modified by historical grazing and a fire in 2005.

A number of known Declared Rare and Priority Flora found within the 10km local area are associated with the same vegetation associations and soil complexes as the application area.

The application area is associated with two soil associations 213Ya_8x and 213Ya_9x (DAFWA, 2007a).

213Ya_8x is related to flat plains with occasional low dunes. Subject to seasonal inundation on the deep white and pale yellow sands interspersed with swamp and generally underlain by siliceous/humic pans at depth (DAFWA, 2007a)

213Ya_9x is related to flat plains with occasional low dunes. Subject to seasonal inundation on the humic and peaty sands, wet and semi-wet soils that are generally underlain by siliceous/humic pans at depth (DAFWA, 2007a).

Based on the soil description and the preferred habitat of the DRF found within the 10km local area there is the possibility that some of the species could be located in the area particularly in the application that are in 'Very Good' condition.

The DRF that would most likely occur on areas adjacent to the wet areas would be *Caladenia huegelii* and *Grevillea curviloba* subsp. *curviloba* (Species and Communities, 2007).

Caladenia huegelii does not occur on the deeper white sands where *Corymbia*, *Adenanthos*, *Xanthorrhoea* and *Acacia saligna* grows. Therefore, this habitat is not suitable. The level of disturbance would have also removed this species from the site (Species and Communities, 2007).

Grevillea curviloba subsp. *curviloba* tends to grow on Muchea Limestone which does not appear to be associated with this site. The site also does not contain any species known to be associated with this DRF (Species and Communities, 2007). Therefore, this habitat appears unsuitable for this species.

The other dryland DRF that occur in the 10km local area are unlikely to occur in this habitat or would not have been expected to have persisted in this area (Species and Communities, 2007).

The wetland area may contain significant species, due to the condition of the vegetation. *Verticordia plumose* var. *pleiobotrya* occurs in a seasonal dampland to the north, has a range which extends south past this area and has vegetation (*Corymbia furcellata* and *Jacksonia furcellata*) associated with this species are within the wetland area. Therefore, there is some likelihood that this species may occur in this area, and a targeted survey should be conducted for this species from October to December. The survey should also include any Priority flora that might occur within the site (Species and Communities, 2007).

The adjacent wetland that this area is linked to is an EPP and a CCW wetland. The REW wetland on this property looks similar and could thus be considered to be of similar value and forms part of a linkage through to other wetland areas. It would be recommended that this wetland area be excluded from the clearing which would still enable a circular area to be cleared. If the wetland areas were to be excluded from the application then this would negate the need for a survey (Species and Communities, 2007).

Further the proponent made formal submission indicating that to wait for a flora survey would be unnecessary (submission, 2007).

Methodology DAFWA (2007a)
Species and Communities (2007)
Site Inspection Report (2007)
SAC Bio Datasets (031007)
Submission (2007)
GIS Database:

- EPP, Areas - DEP 06/95
- Hydrography, linear - DOE 1/2/04
- Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC_1
- Geomorphic Wetlands (Classification), Swan Coastal Plain - DEC
- Swan Coastal Plain North 20cm Orthomosaic - DLI06

(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 a 10 km radius of the area under application there are seven Threatened Ecological Communities (TECs)

The area under application is not located within the buffer of any known TEC and all TECs within a 10 km radius of the area under application have different species composition and occur on different soils and landform types to the area under application (Gibson et al. 1994; Site Inspection 2007).

Therefore the area under application is not considered necessary for the maintenance of a TEC.

Methodology

References:

- Site Inspection Report (2007)
- Gibson et al. (1994)

GIS Databases:

- SAC Bio datasets 14/02/2007

(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 may be at variance to this Principle

Two Beard Vegetation Associations are mapped within the area under application (1018 and 1949) and these have 22.5% and 25.6% remaining of the pre-European extents respectively. One Heddle Vegetation Complex occurs within the area under application (Bassendean Complex - North), there is 72% remaining of its pre-European extent.

reserves/DEC-	Pre-European area (ha)	Current extent (ha)	Remaining %	Conservation status***	% in managed land
Swan Coastal Plain	1,529,235	657,450	38.1*	Depleted	-
City of Swan	103,944	54,792	52.7*	Least Concern	-
Heddle vegetation complex	74,147	53,384	72.0**	Least concern	27.5
Beard vegetation associations					
1018	16,612	3,743	22.5*	Vulnerable	0.0
1949	132,958	34,012	25.6*	Vulnerable	0.0

* Shepherd (2006)

** (EPA, 2006)

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

The State Government is committed to the National Objective Targets for Biodiversity Conservation, which includes targets that prevent the clearing of ecological communities with an extent below 30% of that present pre-1750 (Department of National Resources and Environment 2002; EPA 2000).

Although the City of Swan has sizable amounts of vegetation remaining (52.7%), within a 10 km radius of the area under application approximately only 30% of native vegetation remains. Further, the majority of the application site supports the most heavily cleared vegetation association being Beard vegetation association 1018 (22.5%, 3743 ha).

Given that two Beard Vegetation Associations are below the 30% threshold, and that vegetation communities in general within a 10 km radius have been heavily cleared, the vegetation applied to be cleared may be considered a significant remnant of native vegetation in an area that has been extensively cleared.

Methodology

References:

- Department of Natural Resources and Environment (2002)
- EPA (2006)
- EPA (2000)
- Shepherd (2006)

GIS Databases:

- Pre-European Vegetation - DA 01/01
- Hedde Vegetation Complexes - DEP 21/06/95
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00

(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

Portions of both areas under application occupy areas of a perennial wetland which is classified as a Resource Enhancement Wetland (REW). REWs are priority wetlands which may have been partially modified but still support substantial ecological attributes and functions. The ultimate objective for these wetlands is for management, restoration and protection towards improving their conservation value. These wetlands have the potential to be restored to conservation category (Government of Western Australia 1997).

A Conservation Category Wetland (CCW) abuts the western boundary of the property and is within 5 m of the area under application. CCWs are recognised as wetlands with high ecological values and are the highest priority wetlands for protection. There should be no further loss or degradation of CCWs and their protection also requires the retention of an adequate buffer (Government of Western Australia 1997).

Multiple Use Wetlands (MUW) extend to the north, north west and north east and occur within 29 m from the circular area (5ha) under application to the north of the property. MUWs are wetlands that may have been highly modified and, as such, have few important ecological attributes and functions remaining. The use, development and management of these wetlands should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare (Government of Western Australia 1997).

Given the vegetation applied to be cleared forms part of vegetation necessary for the maintenance of a wetland system, including both Conservation Category and Resource Enhancement Wetlands, the proposed clearing is at variance to this Principle.

The proponent has made a formal submission (2007) stating that the area under application has been placed strategically on Lot 10277 to minimise impacts on the associated wetland and that the existing turf farm has been in operation for the past 20 years with no impacts on wetland vegetation attributed to the turf farm. DAFWA (2007b) advised that the proponents submission with regards to impacts to wetlands could not be confirmed.

Advice has been received from Department of Environment and Conservation's Wetland Program (2007) in response to the additional information supplied by the proponent (Submission, 2007). This advise stated: Clearing resulting in the direct loss of wetland vegetation within a priority wetland area (Resource Enhancement Category - REW) and has the potential to impact on an adjacent area of Conservation Category Wetland (CCW); The proposed extension to the turf farm has the potential to impact on the whole wetland system (both REW and CCW areas) through changes to the hydrological regime, increased transport of nutrients and pollutants (eg. Pesticides and herbicides) and weed invasion; A review of the wetland mapping on Lot 10277 has not been undertaken since the original evaluation occurred in 1996 and this wetland area may have higher values than currently identified and may meet criteria for Conservation Category Wetland; and a 100m to 200m buffer to the conservation category wetland could be kept in line with phosphorus retention index of the soils. Concluding that clearing of the vegetation under application is not supported.

Methodology References:

- Water and Rivers Commission (2001) Position Statement: Wetlands
- Bush Forever (2007)
- (Government of Western Australia 1997)
- Submission (2007)
- DAFWA (2007b)

GIS Databases:

- Geomorphic wetlands (Mgt Categories) - 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

The vegetation under application lies within soil unit Cb39. These soils are associated with a subdued dune-swale terrain with chief soils being leached sands with associated small areas of other sand soils, typically in the low dunes (Northcote et al. 1960-68).

DAFWA (2007a) report that due to the sandy nature of soils within the area under application, land will be subject to a high risk of wind erosion causing land degradation during the establishment phase of land use and reduce once ground cover is established.

In addition, the 5 ha circular area under application is surrounded by waterway which is most likely to become waterlogged and likely to pond water during wet years or high rainfall events. The subject land is likely to contribute to waterlogging off-site, this results in a moderate to high risk of waterlogging causing land degradation (DAFWA 2007a).

Furthermore, approximately half of the vegetation under application (that is half of the 1 ha strip and half of the 5 ha circle) lies within a Class 1 Acid Sulphate Soil (ASS) risk area. This Class is defined as having a high to moderate risk of ASS occurring within 3 m of the natural soil surface that could be disturbed by most land development activities. The remainder of the area under application is located in a Class 2 ASS Risk area. This Class is defined as having a moderate to low risk of ASS occurring within 3m of the natural soil surface that could be disturbed by most land development activities. As such, it is considered that the vegetation clearing activities proposed will likely lead to the disturbance of potential ASS.

The proponent has made a formal submission (2007) advising that:

- Wind erosion will not be a problem once turf is established as turf stabilises the soil;
- Water logging will not be a problem as the area under application has similar soils to other areas of Lot 10277 which have supported turf for the past 20 years and these areas drain well with no waterlogging. The proponent intends to add amendments to the soil to increase water holding capacity and to reduce any nutrient leaching, and;
- The area under application is not at risk of Acid Sulphate Soils. Soil testing has been done on areas of existing turf (in 2001 and 2007) showing low sulphate amounts and neutral PH levels. These same levels are expected in the area under application.

Considering additional information provided by the proponent DAFWA (2007b) advise that soil characteristics are such that surface soil is not likely to be able to adsorb applied phosphorous (P) fertiliser without amendment. The subsoil may have an iron organic layer that will fix P. Careful irrigation and fertiliser management combined with monitoring of the lysimeters as required under the water licence conditions should reduce the risk of nutrients leaching below the root zone of the turf during the irrigation phase. Eutrophication is most likely to occur when nutrients accumulate in the sediments of the wetlands and subsequently promote algal blooms under favourable conditions. This risk is likely to be much reduced as run off from the site is unlikely. Thus the source of water and nutrient reaching these wetlands may be ground water rather than surface water. Further impacts to wetlands can not be confirmed. On the basis of the additional information provided eutrophication risk is lower than initially indicated and the proposal may be at variance with this principle.

- Methodology** References:
- Northcote et al. (1960-68)
 - DAFWA (2007a)
 - Submission (2007)
 - DAFWA (2007b)

- GIS Databases:
- Acid Sulphate Soil risk map, Swan Coastal Plain, DEC
 - Soils, Statewide - DA 11/99

(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**
- State Forest 65 (Gnangara-Moore River State Forest) is located 1.18 km west of the area under application. A large area of Conservation Category Wetland (50 ha) connects the area under application with the State Forest. Both the State Forest and Conservation Category Wetland are part of Bush Forever Site no. 6: (Cooper Road Water Reserve and adjacent bushland, Bullsbrook, 113.8 ha). Bush Forever Site no.6 and the Conservation Category Wetland abutting the western boundary of the property are also identified within the Gnangara Mound Environmental Protection Policy (EPP) Area (91,000 ha).

As the proposed clearing is likely to impact on the conservation values of the adjacent Bush Forever site, and Conservation Category Wetland the proposed clearing may be at variance to this Principle.

- Methodology** References:
- Bush Forever (2007) (TRIM Ref: DOC16116)
 - Environmental Protection Authority (1992)
- GIS Databases:
- CALM Managed Lands and Waters - CALM 01/07/05
 - BushForever - MFP 07/01
 - Geomorphic wetlands (Mgt Categories) - Swan Coastal Plain - DEC
 - EPP, Areas - DEP 06/95

(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 forms part of the Swan Avon - Lower Swan Catchment and the wetlands occurring on and adjacent to the area under application drain into the Ellen Brook River via a perennial creek.

The risk of salinity causing land degradation is low (DAFWA, 2007a).

The area under application is 1.9 km east from the Gngara Underground Water Pollution Control Area.

The proponent has made a formal submission (2007) stating that amendments will be added to soils in the area under application that will increase water holding capacity and reduce nutrient leaching. It is stated that monitoring bores and lysimeters will be installed to meet Department of Water requirements and therefore nutrient leaching and eutrophication will be avoided. Also mentioned is research by the University of Western Australia stating that very little nutrients leach through the root zone of turf farms when best irrigation management practices and monitoring of water movement is in place.

Considering additional information provided by the proponent DAFWA (2007b) advise that soil characteristics are such that surface soil is not likely to be able to adsorb applied phosphorous (P) fertiliser without amendment. The subsoil may have an iron organic layer that will fix P. Careful irrigation and fertiliser management combined with monitoring of the lysimeters as required under the water licence conditions should reduce the risk of nutrients leaching below the root zone of the turf during the irrigation phase. Eutrophication is most likely to occur when nutrients accumulate in the sediments of the wetlands and subsequently promote algal blooms under favourable conditions. This risk is likely to be much reduced as run off from the site is unlikely. Thus the source of water and nutrient reaching these wetlands may be ground water rather than surface water. On the basis of the additional information provided eutrophication risk is lower than initially indicated.

DAFWA (2007b) additionally advised that the proponents submission (2007) on impacts to wetlands could not be confirmed.

Given the risk to disturbance of wetlands within and surrounding the area under application the proposed clearing may impact on the surface water quality within and surrounding the property under application.

Methodology References:

- Environmental Protection Authority (1992)
- DAFWA (2007a)
- Submission (2007)
- DAFWA (2007b)

GIS Databases:

- Hydrography, linear - DOE 01/02/04
- Hydrographic Catchments, Sub-catchments - DOE 01/07/03
- Public Drinking Water Source Areas (PDWSAs) - DOW
- Evaporation Isopleths - BOM 09/98
- Isohyets - BOM 09/98

(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 vegetation under application comprises 6 ha, part of which is a perennially inundated Resource Enhancement Wetland which abuts a larger Conservation Category Wetland area. Given that the application involves clearing of the vegetation within the fringes of a perennial wetland, clearing of this heavily vegetated area is likely to increase flooding under both normal seasonal conditions and, more so, following unseasonally high rainfall (DAFWA 2007a).

Considering additional information provided by the proponent DAFWA (2007b) advise that surface water drainage from the proposed new area of turf is low.

Methodology References:

- DAFWA (2007a)
- DAFWA (2007b)

GIS Databases:

- Geomorphic wetlands (Mgt Categories) - Swan Coastal Plain - DEC

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

Comments

Development Approval is required from the City of Swan for the proposed activity. An application has not been submitted to the City.

The proponent has a valid groundwater extraction licence for the irrigation of 12 ha that has been cleared at an allocation rate of 192,000 kL/annum. This Ground Water Licence does not include the proposed extension to the turf farm and the proponent has not applied to have the water allocation amended (Department of Water 2007).

Bush Forever (2007) do not support the development, expressing concern that development will lead to degradation of the Conservation Category Wetland by pesticides and weeds, and the fact that no drainage and nutrient management plan has been provided that addresses the potential impacts of the clearing and proposed extension to the turf farm on Bush Forever site 6 and the Conservation Category Wetland.

A Public Submission was received recommending against the proposed clearing, on the grounds that the site under application is located on Bassendean sands and thus there is a high risk of increased nutrient export into the groundwater and surface water entering the Ellen Brook River as turf farming is a high nutrient-use industry. This submission has been addressed under the clearing principles.

A Public Submission was received recommending against the proposed clearing, on the grounds that:

- The Ellen Brook catchment is a Priority 1 catchment under the Swan Canning Cleanup Program and is a major contributor to nutrient load in the Swan-Canning Estuary. Thus any clearing will lead to further degradation in the catchment and further impacts downstream,
- The Department of Environmental Protection (DEP) Interim Ellen Brook Horticultural Strategy considers turf farming to be an 'intensive horticultural activity' and has a high potential for excessive nutrient export and is thus considered an inappropriate practice for the Ellen Brook catchment,
- There are concerns regarding the impact of fertiliser and pesticide application rates, the construction of drains to control groundwater levels onsite, and the placement of fill and flattening of the site all of which are associated with this proposal,
- The proposed clearing is of a seasonal wetland, which have already been heavily cleared on the Swan Coastal Plain; and that
- There are concerns relating to the large quantities of groundwater required for turf farming.

The last issue can not be addressed under the clearing principles the remaining issues have been addressed under the clearing principles.

The vegetation under application is associated with an Aboriginal Site of Significance (SO2516 Ellen Brook: Upper Swan) The proponent will be advised to liaise with the Department of Indigenous Affairs regarding the applicant's obligations under the Aboriginal Heritage Act 1972.

There is no required Works Approval or EP Act Licence or Permits that affect the areas under application.

The proponent made a formal submission (2007) addressing issues of the associated wetlands, land degradation and flora of conservation significance. Arguments raised include:

1. The proposed turf farm has been strategically located on the property to minimise impacts on the associated wetland;
2. The existing turf farm has been operating for over 20 years and thus far there has been no impact on the wetland that can be attributed to the turf farm;
3. Using best management practice research has shown that there is very little leaching of nutrients through the turf root zone on turf farms;
4. Water logging is not a problem in the area under application and amendments are to be added to the soil to increase water holding capacity;
5. Nutrient leaching and eutrophication will be reduced through the installation of monitoring bores and lysimeters to meet DoW requirements. Nutrient leaching will also be reduced through the addition of soil amendments;
6. Parts of the property currently under turf cultivation have been tested for Acid Sulphate Soils in the past (2001 and 2007) with results showing low sulphate amounts and neutral PH levels. The proposed extension is believed to have similar soil PH and sulphate levels thus Acid Sulphate Soils will not be a problem;
7. Rare flora is unlikely to be present as the Lot has recently been burnt and has supported cattle grazing in the past. Further, if rare flora are present there will be uncleared areas on the Lot where they can survive, and ;
8. The current amount of groundwater allocated to the property will remain the same but will be utilised in an efficient watering system that uses monitored irrigation management practices. Allowing irrigation of the additional area under application.

Methodology

References:

- Bush Forever (2007) (TRIM Ref: DOC16116)
- Department of Water (2007) (TRIM Ref: DOC20291)
- Department of Indigenous Affairs (2007) (TRIM Ref: DOC25183)
- Submission (2007a) (TRIM Ref: DOC29040)
- Submission (2007b) (TRIM Ref: DOC32115)

- Submission (2007c) (TRIM Ref. DOC33016)
- DAFWA (2007b) (TRIM Ref. DOC31599)

4. Assessor's comments

Purpose	Method Applied	area (ha)/ trees	Comment
Horticulture	Mechanical Removal	5	The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986, and the proposed clearing is at variance to Principles (f), may be at variance to Principles (a), (c), (e), (g), (h) and (i); and is not likely to be at variance to the remaining clearing principles.
Miscellaneous	Mechanical Removal	1	As above

5. References

- AGPS (2001) The national objective and targets for biodiversity conservation 2001-2005. Commonwealth of Australia, Canberra.
- Biodiversity Coordination Section. (2007). Biodiversity Coordination Section Advice, Department of Environment and Conservation (DEC). Perth, Western Australia. TRIM Ref. DOC18666.
- Bush Forever. (2007). Bush Forever Advice, Department of Planning and Infrastructure (DPI). Perth, Western Australia. TRIM Ref. DOC16116.
- Department of Agriculture and Food Western Australia. (2007a). Land Degradation Assessment Report. Perth, Western Australia. TRIM Ref. DOC 20669.
- Department of Agriculture and Foods Western Australia. (2007b). Application to clear native vegetation Lot 10277 Cooper Road, Bullsbrook CPS 1684/1 - Amendment to advice considering additional advice provided by proponent. TRIM Ref. DOC31599.
- Department of Indigenous Affairs. (2007). Aboriginal Heritage Inquiry System. Perth, Western Australia. <http://www.dia.wa.gov.au/Heritage/Inquiry/>. Accessed 11 June 2007. TRIM Ref. DOC25183.
- 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.
- Environmental Protection Authority. (1992). Environmental Protection (Gnangara Mound Crown Land) Policy Approval Order 1992. www.epa.wa.gov.au/. Accessed Friday 15 June 2007.
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority.
- 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, Western Australia. Unpublished report for the Australian Heritage Commission.
- Government of Western Australia (1997) Wetlands Conservation Policy for Western Australia, Department of Conservation and Land Management and the Water and Rivers 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.
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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)