



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 4198/1
File Number: DEC1600/2
Duration of Permit: From 8 August 2011 to 8 August 2013

PERMIT HOLDER

Paintessa Pty Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 10277 on Deposited Plan 185131, Bullsbrook

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 5.93 hectares of native vegetation within the areas cross-hatched yellow on attached Plan 4198/1.

CONDITIONS

1. Vegetation management

The Permit Holder shall not clear native vegetation within 30 metres of the *riparian vegetation* of any *watercourse* or *wetland* within and/or adjacent to the areas cross-hatched yellow on Plan 4198/1.

2. Wind erosion management

The Permit Holder shall not clear native vegetation unless turf farm development begins within two weeks of the clearing being undertaken.

3. Dieback and weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) shall only move soils in *dry conditions*;
- (c) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (d) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

Definitions

The following meanings are given to terms used in this Permit:

dieback means the effect of *Phytophthora* species on native vegetation;

dry conditions means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches;

fill means material used to increase the ground level, or fill a hollow;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

riparian vegetation has the meaning given to it in Regulation 3 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004;

watercourse has the meaning given to it in section 3 of the *Rights in Water and Irrigation Act 1914*;

weed/s means a species listed in Appendix 3 of the "Environmental Weed Strategy" published by the Department of Conservation and Land Management (1999), and plants declared under section 37 of the *Agriculture and Related Resources Protection Act 1976*; and

wetland/s means an area of seasonally, intermittently or permanently waterlogged or inundated land, whether natural or otherwise, and includes a lake, swamp, marsh, spring, dampland, tidal flat or estuary.



Kelly Faulkner
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

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

14 July 2011

Plan 4198/1



LEGEND

- Road Centrelines
- Cadastre Clearing Instruments
- Areas Approved to Clear
- Local Government Authorities

Swan Coastal Plain North
20cm Orthomosaic - Landgate
2009



0 75 m

Scale 1:3000
(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Date 18/7/11

K. Faulkner
Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.



Department of
Environment and Conservation

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1. Application details

1.1. Permit application details

Permit application No.: 4198/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Paintessa Pty Ltd

1.3. Property details

Property: LOT 10277 ON PLAN 185131 (House No. 873 COOPER BULLSBROOK 6084)
Local Government Area: CITY OF SWAN
Colloquial name: PERTH TURF SUPPLIES

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: GRANT
Decision Date: 14 JULY 2011

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
Beard Vegetation Associations: 1018: Mosaic: Medium forest; jarrah-marri / Low woodland; Banksia / Low forest; tea-tree / Low woodland; Casuarina obesa.	The proposal is to clear up to 5.93 hectares of native vegetation for the purpose of expanding the existing turf farm on Lot 10277 on Deposited Plan 185131 (Cooper Road), Bullsbrook.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994)	Description and condition of the vegetation under application was determined from site inspections conducted by DEC (DEC, 2007; DEC, 2011) and aerial imagery (Swan Coastal Plain North 20cm Orthomosaic - Landgate 2009).
949: Low woodland; banksia (Shepherd, 2009)	Vegetation on the property is recovering from historical clearing, grazing and a fire in 2005 (DEC, 2007; DEC, 2011).	To	
Hedde Vegetation Complex: Bassendean Complex-North: Vegetation ranges from a low open forest and low open woodland of Banksia species E. tottiana to low woodland of Melaleuca species and sedgelands which occupy the moister sites (Hedde et al., 1980)	The proposed clearing is divided into two areas. Southern sections of the property that are not exposed to seasonal inundation support vegetation including Adenanthos cygnorum, Xanthorrhoea preissii, Acacia saligna, Scholtzia involucreta, herbs and rushes with scattered Acacia saligna and immature Corymbia calophylla (DEC, 2007; DEC, 2011). Vegetation in the southern application area (1.17 hectares) ranges from completely degraded to very good (Keighery, 1994) condition, with the majority considered to be good (DEC, 2011). Vegetation up to approximately 40 metres in to the application area was found to be coated in a white residue (DEC, 2011) which the proponent advised is clay from a new bore (Paintessa, 2011b).	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)	
	The northern application area (4.76 hectares) is not exposed to seasonal inundation and is in a good (Keighery, 1994) condition, including Macrozamia riedlei, Xanthorrhoea preissii, Acacia saligna, Adenanthos cygnorum, Sholtzia involucreta, Hakea spp, sedges and herbs with scattered Banksia attenuata, B. ilicifolia, B. menziesii, Corymbia calophylla and Eucalyptus tottiana (DEC, 2007; DEC, 2011). This vegetation has reduced overstorey and sparse ground cover (DEC, 2011). There is a large impenetrable Jacksonia sternbergiana thicket in the centre of the northern application area that is		

considered to be in very good (Keighery, 1994) condition (DEC, 2011).

Weeds, mainly Perennial Veldtgrass (*Ehrharta calycina*), have encroached disturbed upland areas of the remnant (DEC, 2007; DEC, 2011).

Overall, the majority of the vegetation under application is considered to be in good (Keighery, 1994) condition.

Areas of the property subject to seasonal inundation support a very dense low understorey to approximately 1.5 metres including *Acacia pulchella*, *Jacksonia furcellata*, *Hypolaena exsulca*, *Gompholobium aristatum* and herbs with scattered *Corymbia calophylla* in very good to excellent (Keighery, 1994) condition (DEC, 2007, DEC, 2011). These areas are not under application.

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 proposal is to clear up to 5.93 hectares of native vegetation from two areas for the purpose of expanding the existing turf farm on Lot 10277 on Plan 185131, Bullsbrook.

There will be approximately 4 hectares of wetland vegetation in very good (Keighery, 1994) condition remaining on the property, should the 5.93 hectares under application be cleared.

The vegetation under application ranges from very good to completely degraded condition (Keighery, 1994), with the majority in good (Keighery, 1994) condition (DEC, 2011) and supports high species diversity (DEC, 2007).

The local area (10 kilometre radius) is predominantly cleared for agriculture, retaining approximately 30% native vegetation. Approximately two thirds of the remaining vegetation in the local area is held in secure tenure.

There is a Resource Enhancement Wetland (REW) on the property, located between the two application areas. The application areas are in close proximity to the mapped boundaries of the REW, with a maximum distance of 33 metres, and abutting the wetland in some areas. The proponent is prepared to remove the 620 square metres of mapped REW application area (Paintessa, 2011b). This area has been removed from the application area, which reduced the overall amount of clearing applied for from 6 hectares to 5.93 hectares.

A Conservation Category Wetland (CCW) is located 25 metres to the west, within Bush Forever Site 6 (Cooper Road Water Reserve and adjacent bushland, Bullsbrook, 113.8 hectares) that neighbours the property. The western edge of the clearing footprint is an environmentally sensitive area as it is within the 50 metre buffer to the CCW. The direction of groundwater movement is to the east, away from the CCW and extensive sumpland wetland system (53.2 hectares) that extends to the west and south (DAFWA, 2011b). Buffer conditions will minimise potential impacts to wetlands.

Vegetation on the property is part of a large remnant that contains Bush Forever site 6, Conservation Category Wetland and the Gngangara-Moore River State Forest to the west, and forms part of a linkage from these conservation areas to vegetation in Multiple Use Wetlands in the east.

The application area is in a relatively high (750mm) rainfall area, where soil disturbance and the movement of machinery whilst undertaking clearing activities poses a high risk of introducing or spreading dieback and weeds to the areas under application and surrounding environment, including Bush Forever Site 6. Weed and dieback management conditions will minimise this impact.

Three priority ecological communities (PEC) are known to occur within a 10 kilometre radius of the application area. The application area is not known to support species representative of the PECs known from the local area.

Considering the above, the proposed clearing may be at variance to this principle.

DEC notes the proponent intends to use an overhead suspended reticulation system instead of a centre pivot in order to achieve setbacks from the wetland area on the property and maintain a 25 metre buffer to the adjacent Conservation Category Wetland (Paintessa, 2011a). Tree buffer and 3 metre wide limestone driveway around the edges near the CCW and REW areas could eliminate spray drift and weed invasion concerns (Paintessa,

2011b).

Methodology

References:

DEC, 2007

DEC, 2011

Keighery, 1994

Paintessa, 2011a

Paintessa, 2011b

GIS Databases:

- Bush Forever 2000, Site Boundaries - Ministry for Planning 11/98

- Clearing Regulations, Environmentally Sensitive Areas - DEC 04/11

- DEC Managed Lands & Waters - DEC 28/10/09

- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC 11/04/07

- Hydrography, linear - DoW 13/7/06

- Pre-European vegetation - DA 01/01

- Rainfall, Mean Annual - BOM 30/09/01

- SAC Biodatasets - 09/03/11

- Soils, Statewide - 30/11/99

- Swan Coastal Plain North 20cm Orthomosaic - Landgate 2009

(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 may be at variance to this Principle

Thirteen fauna species of conservation significance have been recorded in the local area (10 kilometre radius) including the threatened species:

- Carnaby's black cockatoo (*Calyptorhynchus latirostris*) (Endangered, Environment Protection and Biodiversity Conservation Act 1999; Endangered, Wildlife Conservation Act 1950);

- Baudin's black cockatoo (*Calyptorhynchus baudinii*) (Vulnerable, Environment Protection and Biodiversity Conservation Act 1999; Endangered, Wildlife Conservation Act 1950);

- Chuditch (*Dasyurus geoffroyi*) (Vulnerable, Environment Protection and Biodiversity Conservation Act 1999; Vulnerable, Wildlife Conservation Act 1950);

- Western swamp tortoise (*Pseudemydura umbrina*) (Critically endangered, Environment Protection and Biodiversity Conservation Act 1999; Critically endangered, Wildlife Conservation Act 1950); and

- Native Bee (*Leioproctus douglasiellus*) (Endangered, Wildlife Conservation Act 1950).

Carnaby's black cockatoo meets Criterion A for Endangered as it has suffered a population decline of at least 50% over the past 45 years (Cale, 2003). This species nests in large hollows of Eucalyptus trees and forages on the seeds and nectar from the flowers of the proteaceae family including Banksia, Hakea, and Grevillea as well as species from Allocasuarina and Eucalyptus (Valentine and Stock, 2008). The vegetation under application contains some species that are the preferred feeding habitat for Carnaby's black cockatoo. In the southern area (1.17 hectares) *Corymbia calophylla* is considered to be immature. The northern area (4.76 hectares) has a reduced overstorey and sparse ground cover with a large *Jacksonia sternbergiana* thicket in the centre of the area. Therefore the vegetation under application may contain significant habitat for this species.

Baudin's black cockatoo sometimes associates with the Carnaby's black cockatoo around sources of food. Baudin's black cockatoo mostly forages in Marri trees, where it searches among the foliage and feeds on gumnuts and blossoms. The Marri trees present within the application area are small and immature. The vegetation under application is not likely to be significant habitat for this species.

Chuditch is known to have occupied a wide range of habitats from woodlands, dry sclerophyll (leafy) forests, riparian vegetation, beaches and deserts (DEC, 2006a). The vegetation under application contains suitable habitat for this species, however is not likely to contain significant habitat.

The western swamp tortoise lives in and near ephemeral winter-wet swamps with clay or sand over clay soils (DEC, 2006b). The closest record of this species is approximately 4.7 kilometres southeast of the application area, in the Twin Swamps Nature Reserve which is one of the two remaining wild populations. It is unlikely the western swamp tortoise occurs within the application area.

Native bee (*Leioproctus douglasiellus*) appears to be dependent on the flowers of *Goodenia filiformis* (Thread-leaved Goodenia) and is known only from specimens collected at Pearce and Forrestdale Lake, with the only population considered to be extant at Forrestdale Lake Nature Reserve. The vegetation under application is not likely to contain significant habitat for this species.

Habitat present on site is suitable for the native bee (*Hylaeus globuliferus*) (Priority 3), which favours flowers of *Adenanthos cygnorum*.

Vegetation on the property is part of a large remnant that contains Bush Forever Site 6, a Conservation Category Wetland and the Gnangara-Moore River State Forest to the west, and forms part of a linkage from

these conservation areas to vegetation in Multiple Use Wetlands in the east.

There will be approximately 4 hectares of wetland vegetation in very good (Keighery, 1994) condition remaining on the property, should the 5.93 hectares under application be cleared.

Given the above, the vegetation under application may be at variance to this principle.

Methodology

References:

Cale, 2003

DEC, 2006a

DEC, 2006b

DEC, 2011

Valentine and Stock, 2008

GIS Databases:

- Bush Forever 2000, Site Boundaries - Ministry for Planning 11/98

- DEC Managed Lands & Waters - DEC 28/10/09

- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC 11/04/07

- Pre-European vegetation - DA 01/01

- SAC Biodatasets - 09/03/11

- Swan Coastal Plain North 20cm Orthomosaic - Landgate 2009

(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

Five rare flora species (DRF) recorded within the local area (10 kilometre radius) of the application area are mapped as occurring on the same vegetation and soil type as the vegetation under application, with the closest being *Grevillea curviloba* subsp. *curviloba* and *Grevillea curviloba* subsp. *incurva* 2.6 kilometres north-northeast.

The vegetation under application ranges from completely degraded to very good condition (Keighery, 1994), with the majority in good (Keighery, 1994) condition, and has been modified by disturbance including historical grazing, clearing and fire (DEC, 2007; DEC, 2011).

The application area is predominantly associated with the soil type 213Ya_8x, which is a Bassendean sand type with flat plains and occasional low dunes that is 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, 2011a).

A small proportion of the application area being 213Ya_9x, which is humic and peaty sands, wet and semi-wet soils associated with the wetland areas of the property (DAFWA, 2011a).

Caladenia huegelii and *Grevillea curviloba* subsp. *curviloba* are the DRF taxa most likely occur on the property, as they occur on areas adjacent to wetlands within the local area. However, the vegetation under application is not likely to contain suitable habitat for these species and the level of disturbance would likely have removed them from the site.

The other dryland DRF that occur in the local area are unlikely to occur in the habitat present, or would not have been expected to have persisted in this area due to disturbance.

The Resource Enhancement Wetland (REW) area located between the application areas may contain *Verticordia plumosa* var. *Pleiobotrya*, as suitable habitat and associated species occur in this area. The applicant advised he is prepared to remove the 620 square metres of mapped REW from the application area (Paintessa, 2011b). This area has been removed from the application area.

Considering the above, the proposed clearing is not likely to be at variance to this principle.

Methodology

References:

DAFWA, 2011a

DEC, 2007

DEC, 2011

Keighery, 1994

Paintessa, 2011b

GIS Databases:

- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC 11/04/07

- Pre-European vegetation - DA 01/01

- SAC Biodatasets - 09/03/11

- Soils, Statewide - 30/11/99

(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 numerous records of seven threatened ecological communities (TEC) within a 10 kilometre radius of the area under application.

Due to the species composition, soils, landform types and vegetation condition, the vegetation under application is unlikely to be representative of TECs in the local area.

Considering the above, the proposed clearing is not likely to be at variance to this principle.

Methodology GIS Databases:

- Pre-European vegetation - DA 01/01
- SAC Biodatasets - 09/03/11
- Soils, Statewide - 30/11/99

(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

The two Beard Vegetation Associations mapped within the area under application, 949 and 1018, have approximately 58% and 12% of the pre-European extents remaining in the Swan Coastal Plain IBRA bioregion, respectively (Shepherd, 2009). Vegetation under application mapped as Beard vegetation association 1018 is in mostly good (Keighery, 1994) condition with reduced overstorey and sparse ground cover (DEC, 2011). Of the 2,755 hectares of Beard 1018 remaining in the bioregion, 91 hectares is held in secure land tenure (Shepherd, 2009).

One Heddle Vegetation Complex occurs within the area under application (Bassendean Complex - North), of which there is approximately 72% of the pre-European extent remaining (Shepherd, 2007).

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30% of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2000).

The local area (10 kilometre radius) is predominantly cleared for agriculture, retaining approximately 30% native vegetation. Approximately two thirds of the remaining vegetation in the local area is held in secure tenure.

There will be approximately 4 hectares of Resource Enhancement Wetland within vegetation in very good (Keighery, 1994) condition remaining on the property, should the 5.93 hectares under application be cleared.

Vegetation on the property is part of a large remnant that contains Bush Forever Site 6, a Conservation Category Wetland and the Gngangara-Moore River State Forest to the west, and forms part of a linkage from these conservation areas to vegetation in Multiple Use Wetlands in the east.

Vegetation under application ranges from very good to completely degraded (Keighery, 1994) condition, with the majority considered to be in good condition (Keighery, 1994) and DEC site visits reported the application area to support high species diversity (DEC, 2007; DEC, 2011). The area may also be significant as fauna habitat.

Considering the above, the application area may be significant as a remnant of native vegetation in an area that has been extensively cleared.

Pre-European	Current extent (ha)	Remaining (ha)	% In reserves (%)	DEC Managed Land
IBRA Bioregion				
Swan Coastal Plain*	4,506,656	2,514,549	56%	67% (1,689,684ha)
City of Swan*	104,248	45,326	43%	28% (12,498ha)
Beard Vegetation Association within Bioregion*				
949 (southwest 2/3)	209,983	122,087	58%	51% (61,936ha)
1018 (northeast 1/3)	14,059	2,756	12%	3% (91ha)
Heddle Vegetation Complex**				
Bassendean Complex-North	79,057	57,050	72%	39% (30,586ha)

- * (Shepherd, 2009)
- ** (Shepherd, 2007)

Methodology

References:

- Commonwealth of Australia, 2000
- DEC, 2007
- DEC, 2011
- Keighery, 1994
- Shepherd, 2007
- Shepherd, 2009
- GIS Databases:
 - Bush Forever 2000, Site Boundaries - Ministry for Planning 11/98
 - DEC Managed Lands & Waters - DEC 28/10/09
 - Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC 11/04/07
 - Pre-European vegetation - DA 01/01
 - SAC Biodatasets - 09/03/11
 - Swan Coastal Plain North 20cm Orthomosaic - Landgate 2009

(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 two application areas closely straddle a Resource Enhancement Wetland (REW) on the property. This REW is classified as a sumpland, which is a seasonally inundated basin.

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 buffer of 50 metres is adequate for a REW.

The REW on the property has similar characteristics to the adjacent CCW wetland and could thus be considered to be of similar value. A review of the wetland mapping on the property has not been undertaken since the original evaluation occurred in 1995 and this wetland area may have higher values than currently identified and may meet criteria for Conservation Category Wetland. It also forms part of a linkage through to other wetland areas.

The proponent is prepared to remove the 620 square metres of mapped REW application area (Paintessa, 2011b). This area has been removed from the application area.

A Conservation Category Wetland (CCW) abuts the western boundary of the property and is within 25 metres of the proposed clearing. 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). Depending on the wetland values, water application rates, nutrient application, direction of groundwater flow and the transmissivity of soils, a buffer of between 100 and 200 metres is the appropriate buffer to a CCW for the proposed land use under the Water and Rivers Commission's Position Statement: Wetlands (WRC, 2001). The direction of groundwater movement is to the east, away from the CCW and extensive sumpland wetland system (53.2 hectares) that extends to the west and south (DAFWA, 2011b).

Multiple Use Wetlands (MUW) extend to the north, northwest and northeast of the application area and extend to within 29 metres of the northern application area. 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).

In addition, the application areas may contain riparian vegetation, the removal of which may lead to increased soil erosion, sedimentation of water ways and surface water quality issues. Riparian vegetation provides significant water quality benefits through its ability to sustain aquatic ecosystems and filter pollutants (DoW, 2006). Vegetated buffers to sensitive water resources should be preserved (DoW, 2006).

The Ellen Brook is located approximately 3.5 kilometres east of the application area. Given the distance separating the proposed development site from Ellen Brook, it is quite likely that the concentration of Nitrogen and Phosphorus reaching the waterway would be attenuated, but it would in all probability add to its nutrient load (DAFWA, 2011b).

Given the above, the vegetation applied to be cleared is growing in an environment associated with wetlands and the proposed clearing is at variance to this Principle. Buffer conditions will minimise potential impacts to wetlands.

Methodology References:
DAFWA, 2011b
DoW, 2006
Government of Western Australia, 1997
Paintessa, 2011a
Paintessa, 2011b
WRC, 2001
GIS Databases:
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC 11/04/07
- Hydrography, linear - DoW 13/7/06
- Swan Coastal Plain North 20cm Orthomosaic - Landgate 2009

(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 application area is predominantly associated with the soil type 213Ya_8x, which is a Bassendean sand type with flat plains and occasional low dunes that is 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, 2011a).

A small portion of the application area is on soil type 213Ya_9x, which is humic and peaty sands, wet and semi-wet soils and is associated with the wetland areas of the property (DAFWA, 2011a).

The risk of eutrophication will increase with the proposed clearing of native vegetation (DAFWA, 2011a). The adoption of appropriate fertiliser and irrigation management practices may reduce this risk (DAFWA, 2011a). If groundwater levels rise to be closer to the ground surface, as in previous years, then the risk of eutrophication may increase further. The risk of eutrophication causing land degradation is high to very high (DAFWA, 2011a). The proponent intends to add amendments to the soil to increase water holding capacity and to reduce any nutrient leaching (Paintessa, 2007). Whilst soil amendment can reduce phosphorus export, it does not reduce nitrogen leaching. Information on the management of nitrogen has not been provided. The proponent advised that a Nutrient Irrigation Management Plan (NIMP) and measurement of nutrients will be required as part of Department of Water licensing, should additional water be used (Paintessa, 2011b). These actions will mitigate eutrophication risks associated with end land use.

There is a high risk of wind erosion causing land degradation resulting from the proposed clearing, however the risk would reduce once the turf is established (DAFWA, 2011a). Soil erosion management conditions will mitigate this risk.

The proposed area to be cleared is surrounded by low lying areas which are most likely to become waterlogged and pond water during wet years or high rainfall events (DAFWA, 2011a). The permeability of the deep sandy soils reduces the risk of waterlogging on-site only and the subject land may contribute to waterlogging off-site (DAFWA, 2011a). Noting the current dry conditions on site DAFWA (2011a) advised that during average rainfall years the groundwater level may rise back to the previous levels observed in 2007, increasing the risk of waterlogging on the property. The risk of waterlogging causing land degradation is nil to moderate (DAFWA, 2011a).

The risk of salinity, water erosion and flooding causing land degradation is low (DAFWA, 2011a).

Given the above, the proposed clearing may cause land degradation and therefore may be at variance to this principle.

Methodology References:
DAFWA, 2011a
Paintessa, 2007
Paintessa, 2011b

(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**

Bush Forever Site 6: (Cooper Road Water Reserve and adjacent bushland, Bullsbrook) abuts the western boundary of the property, 25 metres from the proposed clearing, and connects the vegetation under application with the Gngangara-Moore River State Forest, 1.1 kilometres to the west of the application area.

Bush Forever Site 6 contains a large (50 hectare) Conservation Category Wetland (CCW) that extends to the western boundary of the property, 25 metres from the proposed clearing.

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). Depending on the wetland values, water application rates, nutrient application, direction of groundwater flow and the transmissivity of soils, a buffer of between 100 and 200 metres is the appropriate buffer to a CCW for the proposed land use under the Water and Rivers Commission's Position Statement: Wetlands (WRC, 2001). The direction of groundwater movement is to the east, away from the CCW and extensive sumpland wetland system (53.2 hectares) that extends to the west and south (DAFWA, 2011b).

The Resource Enhancement Wetland (REW) located on the property, between the two application areas, links the CCW with Multiple Use Wetlands to the east that are part of the extensive wetland system in the area. The REW wetland on the property looks similar to the adjacent wetland and could thus be considered to be of similar value to the CCW. The applicant advised he is prepared to remove the 620 square metres of mapped REW from the application area (Paintessa, 2011b). This area has been removed from the application area.

The application areas may contain riparian vegetation, the removal of which may lead to increased soil erosion, sedimentation of water ways and surface water quality issues. Riparian vegetation provides significant water quality benefits through its ability to sustain aquatic ecosystems and filter pollutants (DoW, 2006). Vegetated buffers to sensitive water resources should be preserved (DoW, 2006).

The application area is in a relatively high (750mm) rainfall area, where soil disturbance and the movement of machinery whilst undertaking clearing activities poses a high risk of introducing or spreading dieback and weeds to the areas under application and surrounding environment, including Bush Forever Site 6. Weed and dieback management conditions will minimise this impact.

Considering the above, the proposed clearing may be at variance to this principle. Buffer conditions will minimise potential impacts to wetlands. The proponent has advised that tree line planting and a 3 metre wide limestone drive around the edges closest to the CCW and REW areas could be a way of addressing spray drift and weed encroachment concerns (Paintessa, 2011b).

Methodology

References:

DAFWA, 2011b

DoW, 2006

Government of Western Australia, 1997

Paintessa, 2011b

WRC, 2001

GIS Databases:

- Bush Forever 2000 - Site Boundaries - Ministry for Planning 11/98

- DEC Managed Lands & Waters - DEC 28/10/09

- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC 11/04/07

- Pre-European vegetation - DA 01/01

- Rainfall, Mean Annual - BOM 30/09/01

(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 may be at variance to this Principle**

The area under application is part of the Swan Avon - Lower Swan Catchment and the wetlands occurring adjacent to the area under application drain into the Ellen Brook River (approximately 3.5 kilometres east) via a perennial creek. Given the distance separating the proposed development site from Ellen brook, it is quite likely that the concentration of Nitrogen (N) and Phosphorus (P) reaching the waterway would be attenuated, but it would in all probability add to its nutrient load (DAFWA, 2011b).

The area is 1.9 kilometres east of the Gngangara Underground Water Pollution Control Area.

The risk of salinity is low (DAFWA, 2011a).

The proposed clearing of vegetation adjacent to wetlands may result in hydrological changes to the wetlands, nutrient transport and eutrophication.

In addition, the application areas may contain riparian vegetation, the removal of which may lead to increased soil erosion, sedimentation of water ways and surface water quality issues. Riparian vegetation provides significant water quality benefits through its ability to sustain aquatic ecosystems and filter pollutants (DoW, 2006). Vegetated buffers to sensitive water resources should be preserved (DoW, 2006). Buffer conditions will minimise potential impacts to riparian vegetation.

Given the above, the proposed clearing may impact on surface water and groundwater quality.

The proponent intends to add amendments to the soil to increase water holding capacity and to reduce any nutrient leaching (Paintessa, 2007). Whilst soil amendment can reduce phosphorus export, it does not reduce nitrogen leaching. Information on the management of nitrogen has not been provided. The proponent advised that a Nutrient Irrigation Management Plan (NIMP) and measurement of nutrients will be required as part of

Department of Water licensing, should additional water be used (Paintessa, 2011b). These actions will mitigate eutrophication risks associated with end land use.

- Methodology** References:
- DAFWA, 2011a
 - DAFWA, 2011b
 - DoW, 2006
 - Paintessa, 2007
 - Paintessa, 2011b
- GIS Databases:
- Hydrogeographic Catchments, Catchments - DoW 01/06/07
 - Hydrography, linear - DoW 13/7/06
 - Rainfall, Mean Annual - BOM 30/09/01

(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 is 5.93 hectares ranging from completely degraded to very good (Keighery, 1994), with the majority in good (Keighery, 1994) condition (DEC, 2011).

DAFWA (2011a) have advised that due to the high permeability of the deep sandy soils and the topography, no significant surface water is expected to leave the property. Therefore the proposed clearing is not likely to cause or exacerbate the incidence or intensity of flooding.

- Methodology** References:
- DAFWA, 2011a
 - DEC, 2011
 - Keighery, 1994

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

Comments

A previous application by the proponent for a clearing permit on this property (CPS 1684/1) was refused in 2007 based on impacts to the adjacent Conservation Category Wetland (CCW), Resource Enhancement Wetland (REW) and the local wetland system, and the potential impacts to rare flora.

The proponent has modified the clearing footprint from the previous application at this site and intends to use overhead suspended reticulation system instead off a centre pivot in order to achieve setbacks from the wetland area on the property and maintain a 25 metre buffer to the adjacent CCW (Paintessa, 2011a).

DEC wrote to the proponent on 29 April 2011 requesting information to address the impacts identified in the preliminary assessment report, including the potential for rare flora to occur within the application area, and impacts to wetlands within and adjoining the application area in the form of spray drift, weed invasion, nutrient export and buffer width. In a letter dated 24 May 2011, the proponent advised:

- Turf is environmentally good;
- Residue coating native vegetation adjacent to the existing turf farm is water spray containing white clay from a new bore that is harmless to plants;
- No herbicides or pesticides are sprayed through the irrigation, but are applied by tractor drawn boom sprays close to ground level using turbo sprays which produce very little spray drift;
- Green waste dumping in native vegetation does not occur;
- Prepared to remove the 620 square metres of the application area that is within the REW boundary from the application;
- If rare flora exists, then it is more likely to be in the REW area; and
- Should additional water be used, a Nutrient Irrigation Management Plan (NIMP) and measurement of nutrients will be required under Department of Water licensing (Paintessa, 2011b).

In support of the buffer distance to wetland areas the proponent noted:

- The direction of groundwater flow is away from the CCW;
- Turf farming has very minor nitrogen and other nutrient leaching ;
- Existing turf farm has been operating for 30 years and this has had no impact on the wetland that can be attributed to the turf farm; and
- Tree buffer and 3 metre wide limestone driveway around the edges near the CCW and REW eas could eliminate spray drift and weed invasion concerns (Paintessa, 2011b).

Additional advice from the Commissioner of Soil and Land Conservation, dated 9 June 2011, stated that:

- The clearing is largely confined to soil landscape mapping unit 213 Ya_8x which is a Bassendean sand type that poses a high risk of nutrient export once it is developed for turf production as it is unable to retain the Nitrogen (N) and Phosphorus (P) fertilizers that will have to be applied in order to achieve satisfactory levels of

production;

- Unacceptable levels of nutrients will leach into the groundwater, even if best practice is adopted and soil amendments are applied to the site;
- Advice from the Department of Water that groundwater flow is to the east is consistent with other areas of the east side of the Gngangara mound and with the topographic contours;
- Waterlogging is likely to occur during winter months;
- Given the distance separating the proposed development site from Ellen brook, it is quite likely that the concentration of N and P reaching the waterway would be attenuated, but it would in all probability add to its nutrient load; and
- The proposed clearing is likely to be at variance to principle (g) (DAFWA, 2011b).

Bush Forever (DPI, 2007) did not support the previous clearing permit application for this 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.

Issues relating to nutrient management and environmental impacts have been addressed in the assessment against the clearing principles, and above.

The property is zoned 'general rural' under the local town planning scheme.

Development Approval is required from the City of Swan for the proposed activity. The City has not received an application (City of Swan, 2011). The proponent advised that approval from the City of Swan will be applied for once some better direction has been received from DEC as the City would not give approval on the last application until DEC approves the clearing (Paintessa, 2011b).

The proponent has a valid groundwater extraction licence (GWL151206(4)) for the irrigation of up to 18 hectares of turf farming at an allocation rate of 192,000 kL/annum (DEC Ref: A365989). This Ground Water Licence is currently under utilised and if fully utilised should provide sufficient water for the proposed additional 5.93 hectares of turf farm (DoW, 2011).

The vegetation under application is associated with an Aboriginal Site of Significance (SO2516 Ellen Brook: Upper Swan). The proponent will be advised of their obligations under the Aboriginal Heritage Act 1972.

Two public submissions were received recommending against the proposed clearing, on the grounds that:

- the property is situated on Bassendean sands within the Ellen Brook catchment and thus there is a high risk of increased nutrient export into the groundwater and surface water entering the Ellen Brook (Submission, 2011a; Submission, 2011b);
- turf farming is a high nutrient and irrigation use industry (Submission, 2011a; Submission, 2011b);
- the removal of native vegetation in the Ellen Brook catchment exacerbates the already high nutrient load entering the Swan River and mitigation is difficult (Submission, 2011b); and
- further clearance of native vegetation would further decrease biodiversity in the area (Submission, 2011a).

Points raised in the submissions have been addressed in the assessment against clearing principles, and above.

Methodology

References:

- City of Swan, 2011
- DoW, 2011
- DPI, 2007
- Paintessa, 2011a
- Paintessa, 2011b
- Submission, 2011a
- Submission, 2011b
- WRC, 2001
- GIS Databases:
 - Aboriginal Sites of Significance - DIA 02/10
 - RIWI Act, Areas - DoW 05/04/02
 - RIWI Act, Groundwater Areas - DoW 13/07/06
 - Town Planning Scheme Zones - MFP 31/08/98

4. References

- Cale, B (2003) Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan 2002- 2012. Department of Environment and Conservation. Wanneroo WA.
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DAFWA (2007a) Land Degradation Assessment Report. Department of Agriculture and Food Western Australia. TRIM Ref. DOC 20669.
- DAFWA (2007b) Application to clear native vegetation Lot 10277 Cooper Road, Bullsbrook CPS 1684/1 - Amendment to advice considering additional advice provided by proponent. Department of Agriculture and Foods Western Australia. TRIM Ref. DOC31599.
- DAFWA (2011a) Land Degradation Assessment Report. Department of Agriculture and Food Western Australia. DEC Ref. A387935.
- DAFWA (2011b) Commissioner of Soil and Land Conservation - Review of information submitted by proponent. Department of Agriculture and Food, Western Australia. Received 22/06/2011. DEC Ref: A406153.
- DEC (2006a) NatureBase - Fauna Species Profile: Western Swamp Tortoise. Department of Environment and Conservation, Western Australia.
- DEC (2006b) NatureBase - Fauna Species Profile: Chuditch. Department of Environment and Conservation, Western Australia.
- DEC (2007) Site Inspection Report CPS 1684/1. Department of Environment and Conservation, Perth, Western Australia. TRIM Ref. DOC15875
- DEC (2011) Site Inspection Report CPS 4198/1. Department of Environment and Conservation, Perth, Western Australia. DEC Ref: A410323.
- DoW (2006) Water Quality Protection Note; Roads Near Sensitive Water Resources - WQPN 44. Department of Water, Western Australia.
- DPI (2007) Bush Forever Advice. Department of Planning and Infrastructure, Perth, Western Australia. TRIM Ref. DOC16116.
- Gibson N., Keighery B., Keighery G., Burbidge A. and Lyons M. (1994) A Floristic Survey of the Southern Swan Coastal Plain. Western Australian Department of Conservation and Land Management and the Western Australian Conservation Council.
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- 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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- Minister for the Environment (2008) Appeal Decision Report - Appeal Number C036 of 2007, 9 April 2008. DEC Ref: A392573
- Paintessa (2007) Application to clear native vegetation Lot 10277 Cooper Road, Bullsbrook - CPS 1684/1. Trim DOC29040
- Paintessa (2011a) Application to clear native vegetation Lot 10277 Cooper Road, Bullsbrook - CPS 4198/1. DEC Ref: A365989
- Paintessa (2011b) Application to clear native vegetation Lot 10277 Cooper Road, Bullsbrook - CPS 4198/1 - Response to DEC letter 29 April 2011. DEC Ref: A398657
- Shepherd, D.P. (2007) Adapted from: 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.
- Shepherd, D.P. (2009) 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.
- Submission (2011a) Public submission. 11 March 2011. DEC Ref: A378936
- Submission (2011b) Public submission. 15 March 2011. DEC Ref: A379966
- Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gnaragara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.
- Water and Rivers Commission (2001) Position Statement: Wetlands, Water and Rivers Commission, Perth.

5. 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)