GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 3954/1
File Number: DEC492-1
Duration of Permit: From 11 December 2010 to 11 December 2012

PERMIT HOLDER

Quoc Thanh Tran
Thi Diep Tran
Duc Van Tran
Thanh Dao Trinh

LAND ON WHICH CLEARING IS TO BE DONE

Lot 2 on Diagram 62178, Bullsbrook

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 9.2 hectares of native vegetation within the area hatched yellow on attached Plan 3954/1.

CONDITIONS

1. Dieback and weed control

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

(b) At least once in each 12 month period for the term of this Permit, the Permit Holder must remove or kill any *weeds* growing within areas cleared under this Permit.

2. Wind erosion management

The Permit Holder shall not clear native vegetation unless horticulture begins within one month of the clearing being undertaken.

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;

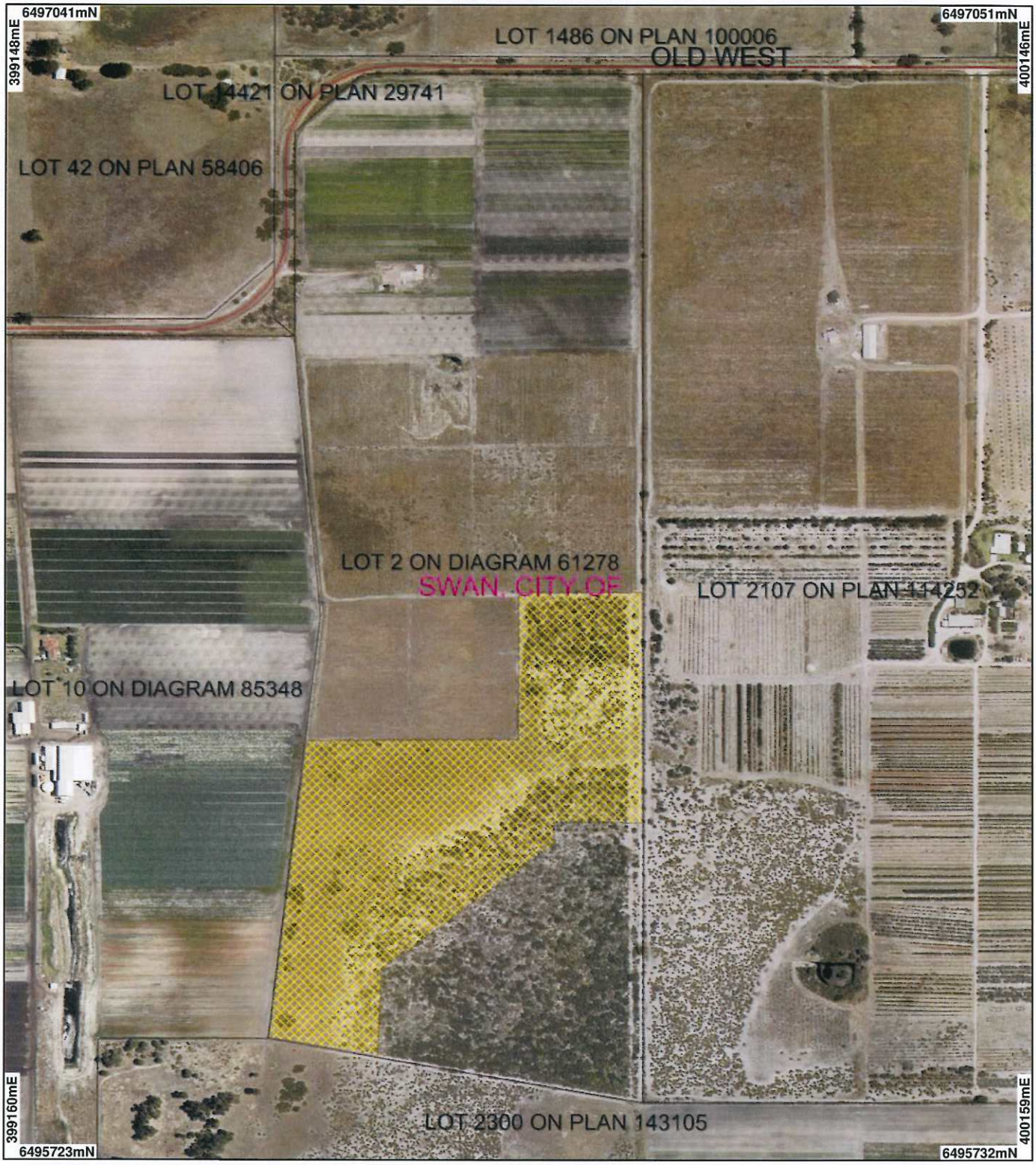
weed/s means a species listed in Appendix 3 of the "Environmental Weed Strategy" published by the Department of Conservation and Land Management (1999), and plants declared under section 37 of the *Agriculture and Related Resources Protection Act 1976*.

Matthew Warnock
A/MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

Officer delegated under Section 20
of the Environmental Protection Act 1986

11 November 2010

Plan 3954/1



LEGEND

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

Swan Coastal Plain North
20cm Orthomosaic - Landgate
2009

N

0 ~150 m

Scale 1:5839
(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 11/11/10

M. Warnock

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 acknowleged by the agency acronym in the legend.

Department of Environment and Conservation

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Department of Environment and Conservation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3954/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: **Quoc Thanh Tran, Thi Diep Tran, Duc Van Tran and Thanh Dao Trinh**

1.3. Property details

Property: LOT 2 ON DIAGRAM 61278 (House No. 235 OLD WEST 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:
9.2		Mechanical Removal	Horticulture

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 11 November 2010

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 Association: 949: Low woodland; banksia. (Shepherd, 2009) Heddle Vegetation Complex: Bassendean Complex-North: A transition complex of low open forest and low woodland of Banksia species - Eucalyptus todtiana (Pricklybark) on a series of high sand dunes. The understorey species reflect similarities with both the Bassendean-North and Karrakatta-North vegetation complexes. (Heddle et al., 1980)	The proposed clearing is of 9.2ha of native vegetation for the purpose of horticulture within Lot 2 Old West Road, Bullsbrook. The location and shape of the proposed clearing was relocated in order to retain and minimise the impact of clearing and associated land use on the high value remnant Banksia Woodland in the southeast corner of the property. The vegetation under application can be divided into two general areas. The eastern portion of the application area consists of approximately 4.8ha of remnant Banksia Woodland in good to completely degraded (Keighery, 1994) condition. This vegetation was the outer area of Banksia Woodland included in the original application area. The vegetation structure in this area is severely altered, with signs of historical clearing and grazing. The area is dominated by Adenanthos cygnorum, Nuytsia floribunda, Eucalyptus todtiana, Banksia menziesii and B. attenuata. Lower storey vegetation includes Xanthorrhoea preisii, Acacia pulchella, Patersonia occidentalis, Jacksonia floribunda, Stirlingia latifolia, Petrophile linearis, Burchardia congesta, Eremaea pauciflora, Podotheca gnaphalioides, Haemodorum sp, Hibbertia sp, Loxocarya sp, with an understorey of native herbs, sedges and small shrubs. The western 4.4ha of vegetation under application is in completely degraded (Keighery, 1994) condition. This area was added to the application during assessment when the proposed clearing area was realigned and relocated. This area is largely cleared and without structure. There is a ground cover of native herbs, sedges and small shrubs and several scattered over storey species persisting in the southwest corner. Weeds such as perennial veldt grass (Ehrharta calycina), Ursinia sp, cape weed (Arctotheca calendula), pink gladiolus (Gladiolus caryophyllaceus) and blowfly grass (Briza maxima) are present at a moderate to high density throughout the application area.	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994) To Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994)	Description and condition of the vegetation under application was determined from aerial imagery and a site inspection conducted in September 2010 (DEC, 2010).

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The proposal is to clear up to 9.2 hectares (ha) of native vegetation for the purpose of horticulture within Lot 2 Old West Road, Bullsbrook. Approximately 22ha of the 38ha property is already cleared and used for horticulture. Surrounding properties are largely cleared and support horticultural pursuits.

In order to mitigate impacts to 4.5ha of high value Banksia Woodland vegetation in the southeast corner of the property, the applicant relocated and realigned the area under application during the Department of Environment and Conservation's (DEC) assessment of this application. The amended application area provides for the retention of an approximately 50m wide buffer of degraded to good (Keighery, 1994) condition Banksia Woodland between the proposed clearing and the high value Banksia Woodland vegetation in the southeast corner of the property.

The application area is largely cleared of over and mid-storey vegetation and is highly disturbed. There is 4.8ha of good to completely degraded (Keighery, 1994) Banksia Woodland in the eastern area and few scattered trees in the southwest portion of the application area with a ground cover of small native shrubs, sedges, herbs and weeds (DEC, 2010). Vegetation structure has been severely impacted and reduced by multiple disturbances that are likely to include historic clearing and grazing (DEC, 2007; DEC, 2010).

Aerial imagery and GIS mapping indicate that the local area (10km radius) comprises approximately 48% native vegetation cover, almost all of which is held in secure tenure. The application area is in close proximity to several large, secure tracts of remnant vegetation, with the Gnangara-Moore River State Forest approximately 600m to the west, a significant Bush Forever site extending to within 600m of the application area and a 4000ha bushland area zoned for water supply in the local area.

Due to the extent and level of disturbance, the vegetation under application has reduced floristic diversity, is unlikely to provide significant habitat for native fauna or flora of conservation significance and is not likely to be representative of an area high in biodiversity on a local or regional scale. The vegetation under application is not likely to be significant as an ecological linkage or 'stepping stone' between conservation reserves in the area.

The vegetation to be retained in the southeast corner of the property (outside the application area) is considered to be significant as habitat for Carnaby's black cockatoo and a wide variety of other native avifauna (DEC, 2007; DEC, 2010). The vegetation in this area was observed to support healthy Banksia Woodland vegetation and is suitable foraging habitat for the Carnaby's black cockatoo (Calyptorhynchus latirostris). A large number of fallen Banksia fruits in this area (outside the application area) were found to exhibit signs of feeding, possibly by cockatoos (DEC, 2010).

Soil disturbance and removal of native vegetation increases the risk of weeds and pathogens, such as dieback (Phytophthora cinnamomi), being introduced or spread. Management of weeds and pathogens are of particular importance, as the proposed clearing is adjacent to 4.5ha of high value remnant vegetation. Weed and dieback management conditions will minimise the risk of introduction or spread of pathogens and invasive species into the adjacent high value vegetation.

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

Methodology

References:
DEC (2007)
DEC (2010)
Keighery (1994)

GIS Databases:
- DEC Managed Lands & Waters - DEC 28/10/09
- Evapotranspiration, Area Actual - BOM 30/09/01
- Groundwater Salinity, statewide - DoW 13/07/06
- Hydrogeographic Catchments, Catchments - DoW 01/06/07
- Hydrogeology, statewide - DoW 13/07/06
- Hydrography, linear - DoW 13/7/06
- Rainfall, Mean Annual - BOM 30/09/01
- Pre-European vegetation - DA 01/01
- SAC Biodatasets - 15/09/10
- 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 is not likely to be at variance to this Principle

Nine fauna species of conservation significance have been recorded within the local area (10 km radius), including the Carnaby's black cockatoo (Calyptorhynchus latirostris) (Endangered, Wildlife Conservation Act 1950; Endangered, Environment Protection and Biodiversity Conservation Act 1999) which has been recorded approximately 485m to the southwest.

During a recent site inspection (DEC, 2010) the area under application was observed to support approximately 4.8ha of Banksia Woodland vegetation in good to completely degraded (Keighery, 1994) condition. The vegetation has reduced floristic diversity and the vegetation structure has been altered with the removal of canopy and shrub species. The vegetation under application was not observed to support hollows and no evidence of black cockatoo foraging was found in the amended application area (DEC, 2010). The vegetation under application is highly disturbed and in predominantly degraded (Keighery, 1994) and is not likely to provide significant feeding habitat for Carnaby's black cockatoo. It is unlikely the application area could be restored, without intensive works, to a level that would provide suitable feeding habitat.

The area under application lacks dense understorey vegetation preferred by Quenda (Isoodon obesulus fusciventer) (Priority 4), the canopy vegetation is largely removed and where present is sparse, making the area unsuitable for Chuditch (Dasyurus geoffroyii) (Vulnerable, Wildlife Conservation Act 1950; Vulnerable, Environment Protection and Biodiversity Conservation Act 1999), and the area lacks seasonally wet flats with low grasses and open scrubby thickets preferred by the Western Brush Wallaby (Macropus irma) (Priority 4). Considering this, the area under application is unlikely to present significant habitat for these species. The native bee Leioproctus douglasiellus (Endangered, Wildlife Conservation Act 1950) has been recorded from two locations within the local area (10km radius), with the closest known record approximately 7km to the east of the application area. However, these records are mapped in medium woodland of marri and wandoo and as such the vegetation under application is unlikely to support this species.

The vegetation to be retained in the southeast corner of the property (outside the application area) is considered to be significant as habitat for Carnaby's black cockatoo and a wide variety of other native avifauna (DEC, 2007; DEC, 2010). The vegetation in this area was observed to support healthy Banksia Woodland vegetation and is suitable foraging habitat for Carnaby's black cockatoo. A large number of fallen Banksia fruits in this area (outside the application area) were found to exhibit signs of feeding, possibly by cockatoos (DEC, 2010). In order to mitigate impacts to this high value Banksia Woodland vegetation, the applicant relocated and realigned the area under application during DEC's assessment of this application. The amended application area will result in the retention of an approximately 50m wide buffer of degraded to good (Keighery, 1994) condition Banksia Woodland between the proposed clearing and the high value Banksia Woodland vegetation in the southeast corner of the property.

The Banksia Woodland areas of the property were observed to support large stands of Adenanthos cygnorum (DEC, 2007; DEC, 2010), making the area potential habitat for the native bee species Hylaeus globuliferus (Priority 3). Flora in the family Goodeniaceae, namely Leucopogon sp, were also found during a recent site inspection (DEC, 2010) and as such the area may also be suitable for the Leioproctus contrarius (Priority 3) native bee. However, due to the highly disturbed and predominantly degraded (Keighery, 1994) condition of the application area and the presence of very good (Keighery, 1994) condition vegetation in the adjacent area of Banksia Woodland to be retained, it is unlikely that, if these species are present on site, the vegetation under application is significant habitat.

Considering the above, the vegetation under application is unlikely to be significant as habitat for indigenous fauna and the proposed clearing is not likely to be at variance to this principle.

Methodology

References:
DEC (2007)
DEC (2010)
Keighery (1994)

GIS Databases:
- Pre-European vegetation - DA 01/01
- SAC Biodatasets - 15/09//10
- Soils, Statewide - 30/11/99
- 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

There are nine declared rare flora species recorded within the local area (10km radius), with the closest four being Darwinia foetida (2.7km northeast), Grevillea curviloba subsp. curviloba, Acacia anomala (both 3.8km east) and Caladenia huegelii (5.8km west-southwest).

Considering the vegetation, soils and landform type present, Caladenia huegelii is the only declared rare flora species known from the local area that may potentially occur in the application area. This species occurs in areas of mixed woodland of jarrah, banksia and marri over dense shrubs of blueboy, Swan River myrtle, buttercups, balga, coastal jugflower and Conostylis species (DEC, 2009). Throughout its range Caladenia huegelii tends to favour areas of dense undergrowth with little disturbance. It usually inhabits soil of deep grey-white sand associated with the Bassendean sand-dune system (DEC, 2009), which is consistent with the soils of the application area (DEC, 2007; DEC, 2010). Due to the highly disturbed condition of the vegetation under application, it is unlikely to provide suitable habitat for this species.

There is potential for Caladenia huegelii to occur within the 4.5ha area of good to very good (Keighery, 1994) condition Banksia Woodland vegetation adjacent to the application area in the southeast corner of the property. In order to mitigate impacts to this area, the applicant relocated and realigned the area under application during DEC's assessment of this application. The amended application area will result in the retention of an approximately 50m wide buffer of degraded to good (Keighery, 1994) condition Banksia Woodland between the proposed clearing and the high value Banksia Woodland vegetation in the southeast corner of the property.

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

Methodology

References:
DEC (2007)
DEC (2009)
DEC (2010)
Keighery (1994)
Western Australian Herbarium (1998-)

GIS Databases:
- Pre-European vegetation - DA 01/01
- SAC Biodatasets - 15/09//10
- Soils, Statewide - 30/11/99
- Swan Coastal Plain North 20cm Orthomosaic - Landgate 2009- SAC Biodatasets - 09/06

(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 at variance to this Principle

Within the local area (10km radius) there are occurrences of six Threatened Ecological Communities (TECs). These TECs are:
- Shrublands and woodlands on Muchea Limestone (Endangered);
- Communities of Tumulus Springs (Critically Endangered);
- SCP3c - Eucalyptus calophylla - Xanthorrhoea preisii woodlands and shrublands, (Critically Endangered);
- SCP15 - Forests and woodlands of deep seasonal wetlands (Vulnerable);
- SCP08 - Herb rich shrublands in clay pans; (Vulnerable); and
- SCP07 - Herb rich saline shrublands in clay pans; (Vulnerable)

The vegetation present on site is not representative of any of these TECs and the proposed clearing is not at variance to this Principle.

Methodology

GIS Databases:
- Pre-European vegetation - DA 01/01
- SAC Biodatasets - 15/09//10
- Soils, Statewide - 30/11/99
- Swan Coastal Plain North 20cm Orthomosaic - Landgate 2009- SAC Biodatasets - 09/06/10

(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 at variance to this Principle

The vegetation within the area under application is identified as Beard Vegetation Association 949 (Shepherd, 2009). This vegetation association is identified as having approximately 58% of the pre-European extent remaining in the Swan Coastal Plain IBRA region and 52% in the City of Swan (Shepherd, 2009).

There are significant amounts of remnant vegetation in the local area (10km radius), located within Bush Forever sites and the Gnangara-Moore River State Forest.

Most of the vegetation under application is in degraded to completely degraded (Keighery, 1994) condition and is not a true representation of the mapped Beard Vegetation Association.

Considering the above, the vegetation under application is not significant as a remnant of native vegetation in an area that has been extensively cleared.

Methodology References:
Keighery (1994)
Shepherd (2009)

GIS Databases:
- Pre-European Vegetation
- Heddle Vegetation Complexes
- Interim Biogeographic Regionalisation of Australia
- SAC Bio Datasets - 15/09/2010

(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 may be at variance to this Principle

The western 3.5ha of the application area is mapped near the centre of a relatively large palusplain Multiple Use Wetland (MUW), which is approximately 2.3km long and extends in a north-south direction. A significant portion of this MUW is cleared for horticulture, including the property neighbouring the application area to the west. Multiple Use category wetlands have few remaining important attributes and functions and the protection of these wetlands is the lowest priority.

A Resource Enhancement Wetland is located approximately 200m to the east and two Conservation Category Wetlands (CCW) are mapped nearby, with one approximately 650m southwest and the other approximately 450m east-northeast of the applied area. This eastern CCW is also a recognised EPP Lake.

Vegetation on the property is not consistent with wetland dependent vegetation (DEC, 2007; DEC, 2010), however as it is within a mapped palusplain wetland the proposed clearing may be at variance to this principle.

Methodology Reference:
DEC (2007)
DEC (2010)

GIS Databases:
- ANCA, Wetlands - 26/03/99
- Hydrogeology, statewide - DoW 13/07/06
- Hydrography, linear - DoW 13/7/06
- RAMSAR, Wetlands - 15/10/09
-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 vegetation under application lies within soils associated with a subdued dune-swale terrain with chief soils being leached sands (Northcote et al., 1960-68).

The application area is dominated by grey Bassendean sands (DAFWA, 2007a; DEC, 2007; DEC, 2010). Soils of the Bassendean dune system have a high wind erosion risk and DAFWA (2007a) advised that, post clearing, the risk of wind erosion of soils causing land degradation is very high.

Phosphorous loss is generally high in sands of the Bassendean dune system and the Phosphorous Retention Index is generally low. Although the Bassendean Sands - Jandakot phase have a thin band of yellow sand, which allows some phosphorus retention, the overall phosphorus retention is considered low (DAFWA, 2007b). The loss of nitrogen through these soils is likely to be high given the permeability of the soil (DAFWA, 2007b). The application area leaves a vegetated buffer along the southern boundary of the lot that is likely to reduce the movement of nutrients off the property in groundwater to the south (DAFWA, 2010).

Given the sandy soils, it is considered that the proposed clearing of approximately 9.2ha of native vegetation may cause appreciable land degradation in the form of wind erosion and nutrient loss.

Soil erosion associated with the proposed clearing can be managed with residue management, cover crops and strategic applications of irrigation water and application of best management practice from irrigation water management and fertiliser application can reduce nutrient loss by 40-50% (DAFWA, 2010). Soil erosion management conditions will minimise the risk of soil erosion causing land degradation.

The proposed clearing may be at variance to this Principle.

Methodology

References:
DAFWA (2007a)
DAFWA (2007b)
DAFWA (2010)
DEC (2007)
DEC (2010)
Northcote et al. (1960-68)

GIS Databases:
- Acid Sulfate Soils Risk Map, Pilbara Coastline - DEC 06/09/06
- Evapotranspiration, Area Actual - BOM 30/09/01
- Groundwater Salinity, statewide - DoW 13/07/06
- Hydrogeology, statewide - DoW 13/07/06
- Rainfall, Mean Annual - BOM 30/09/01
- Soils, Statewide - 30/11/99
- Topographic Contours, Statewide - DOLA 12/09/02

(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 not at variance to this Principle

The vegetation under application is located in relatively close proximity to numerous Bush Forever Sites and the Gnangara-Moore River State Forest, approximately 600m to the west and extending to within 2km in the north and south.

Considering the applied area is largely cleared of native mid and upper storey species, in highly impacted and disturbed condition and separated from vegetation in conservation areas by horticultural land, the vegetation under application is not likely to be part of a significant ecological linkage between these reserves. Therefore the proposed clearing is not at variance with this Principle.

Methodology

GIS Databases:
- DEC Managed Lands & Waters - DEC 28/10/09
- Pre-European vegetation - DA 01/01
- Soils, Statewide - 30/11/99

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

Comments

Proposal is not likely to be at variance to this Principle

The Ellen Brook Catchment is a major contributor to nutrient loading in the Swan-Canning system which is located downstream of Ellen Brook. A minor watercourse is located 1.3km south east of the application area and flows east to drain into the Ellen Brook. A chain of wetlands to the east of the area under application are expressions of the groundwater table and the above mentioned watercourse drains these wetlands. The majority of nutrients entering the Ellen Brook is from surface water flows and there is a low likelihood of surface water flow from the property into the tributaries of the Ellen Brook (DAFWA, 2008).

The removal of vegetation under application is not likely to increase the risk of nutrient export and the proposed clearing retains a buffer along the southern boundary of the property that is likely to reduce the movement of nutrients off the property in groundwater to the south (DAFWA, 2010).

The property exhibits no signs of salinity and the risk of salinity causing land degradation is low (DAFWA 2007a).

Considering the lack of surface water flows and attenuation of nutrients in groundwater through the wetland systems east of the area under application, it is considered that the risk of nutrient export from the property as a result of clearing native vegetation would be low and the proposed clearing is not likely to be variance with this Principle.

Methodology

References:
DAFWA (2007a)
DAFWA (2008)
DAFWA (2010)

GIS Databases:
- Country Area Water Supply Act (Part IIA) Clearing Control Catchments - DoW 29/06/06
- Hydrogeographic Catchments, Catchments - DoW 01/06/07
- Hydrogeology, statewide - DoW 13/07/06
- Public Drinking Water Source Areas (PDWSAs) - DoW 07/02/06
- Rainfall, Mean Annual - BOM 30/09/01

- RIWI Act, Areas - DoW 05/04/02
- RIWI Act, Groundwater Areas - DoW 13/07/06
- RIWI Act, Irrigation Districts - DoW 13/07/06
- Soils, Statewide - 30/11/99
- Topographic Contours, Statewide - DOLA 12/09/02

(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 at variance to this Principle

The western half of the application area is mapped as part of a relatively large palusplain Multiple Use Wetland, which is approximately 2.3km long and extends in a north-south direction.

A minor watercourse is located 1.3 km south east of the area under application and flows east to drain into Ellen Brook River.

The vegetation under application lies within soils associated with a subdued dune-swale terrain with chief soils being leached sands (Northcote et al., 1960-68). The area under application is dominated by grey Bassendean sands (DEC, 2007; DEC, 2010)

Due to the soil types present, the risk of waterlogging is low and the removal of native vegetation is not expected to contribute to flooding (DAFWA, 2007a).

The proposed clearing is not at variance with this Principle.

Methodology

References:
DAFWA (2007a)
DEC (2007)
DEC (2010)
Northcote et al., (1960-68)

GIS Databases:
- Evapotranspiration, Area Actual - BOM 30/09/01
- Hydrogeology, statewide - DoW 13/07/06
- Pre-European vegetation - DA 01/01
- Rainfall, Mean Annual - BOM 30/09/01
- Soils, Statewide - 30/11/99
- Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

In order to mitigate impacts to 4.5ha of high value Banksia Woodland vegetation in the southeast corner of the property, the applicant resized and relocated the area under application during DEC's assessment of this application. The proposed clearing will result in the retention of an approximately 50m wide buffer of degraded to good (Keighery, 1994) condition Banksia Woodland between the proposed clearing and the high value vegetation.

The application area leaves a buffer along the southern boundary of the property that is likely to reduce movement of nutrients off the property in ground water to the south (DAFWA, 2010). The nutrient export is related to the change of land use from native vegetation to horticulture crops (DAFWA, 2010). This new land use will require regular inputs of nutrients and there is the risk of a very small incremental increase in export of Nitrogen and Phosphorus from the property to the Ellen Brook (DAFWA, 2010). Application of best management practice from irrigation water management and fertiliser application can reduce loss by 40-50%. Soil erosion associated with the proposed clearing can be managed with residue management, cover crops and strategic applications of irrigation water (DAFWA, 2010).

One submission was received in relation to the proposed clearing, expressing concerns relating to both the original (Submission, 2010a) and amended (Submission, 2010b) application areas. Refusal of the application is recommended considering a previous application by the same owner was refused in 2009 as it was at variance with Principle (b) and may have been at variance with Principles (g) and (i).

- While the amended proposal seeks to remove the best quality vegetation from the application, significant amounts of Banksia Woodland will be removed (Submission, 2010b) and the impact of clearing and the activities involved in market gardening will impact upon the remaining bushland and it will become degraded in time, reducing the habitat values of this parcel of land (Submission, 2010a). This is addressed in Principles (a) and (b).
- Any further clearing in the Ellen Brook Catchment is detrimental to the water quality and as such is at variance with Principle (i) (Submission, 2010b), which is addressed in Principle (i).
- The applicant holds a groundwater licence to irrigate 18.68ha for horticulture and that currently approximately 24ha of the property has been cleared for this purpose and that without increasing

their water licence or irrigation practices further clearing is not required (Submission, 2010b). The water licence is valid for a certain area to be irrigated at any one time and, as vegetables are grown on a rotational basis, having a larger area cleared for the purpose of horticulture does not require an increase in water licence. The applicant has provided DEC with a letter from the Department of Water advising that the licensed groundwater allocation is not being fully utilised (DEC Ref: A344399).

- This parcel of vegetation is extremely important as a 'stepping stone' from the Bullsbrook Biodiversity Corridor to the Banksia Woodland of the Gnangara Regional Park (Submission, 2010a). This is addressed in Principle (a).

The application area is within the Swan Groundwater Area proclaimed under the Rights in Water and Irrigation Act 1914. There is a current groundwater licence for the property and that as horticulture is conducted in a rotational manner, a larger area can be used for this purpose than the area stated on the licence. The proponent has supplied a copy of groundwater licence GWL160334(3), along with a letter of 28 June 2010 from the Department of Water advising that the licensed water allocation is not being fully utilised and that the department has granted an additional 2 years to complete the irrigation project, with failure to complete the development within this period resulting in any unused water being recouped (DEC Ref: A344399).

Development approval is required from the City of Swan. Approval has previously been granted for horticultural pursuits on this property and the main item for consideration in granting approval is whether the clearing of native vegetation is permitted (City of Swan, 2010). The applicant advised they are aware that development approval is required and has been in contact with the City in relation to this.

There are no known Aboriginal Sites of Significance within the application area.

Methodology

References:
DAFWA (2010)
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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)