



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 4952/1
Permit Holder:	Shire of Quairading
Duration of Permit:	4 October 2014 – 31 December 2015

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of fire hazard reduction.

2. Land on which clearing is to be done

Lot 332 on Deposited Plan 184578 (Quairading 6383)

Lot 500 on Deposited Plan 66103 (Quairading 6383)

Lot 9290 on Deposited Plan 84181 (Quairading 6383)

Quairading Townsite Lot 208 (Crown Reserve 21459) (Quairading 6383)

Unallocated Crown land (PIN 1097601) (Quairading 6383)

Unallocated Crown land (PIN 1097600) (Quairading 6383)

Unallocated Crown land (PIN 1097605) (Quairading 6383)

Coraling Street road reserve (PIN 1309461) (Quairading 6383)

Forrest Street road reserve (PIN 1309460) (Quairading 6383)

Loudon Street road reserve (PIN 1309462) (Quairading 6383)

Mount Stirling Road reserve (PIN 1309459) (Quairading 6383)

3. Area of Clearing

The Permit Holder must not clear more than 43.5 hectares of native vegetation within the area hatched yellow on attached Plan 4952/1.

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

PART II – MANAGEMENT CONDITIONS

5. 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*:

- clean machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- ensure that no *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- 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:

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 any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in a Department of Parks and Wildlife Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.

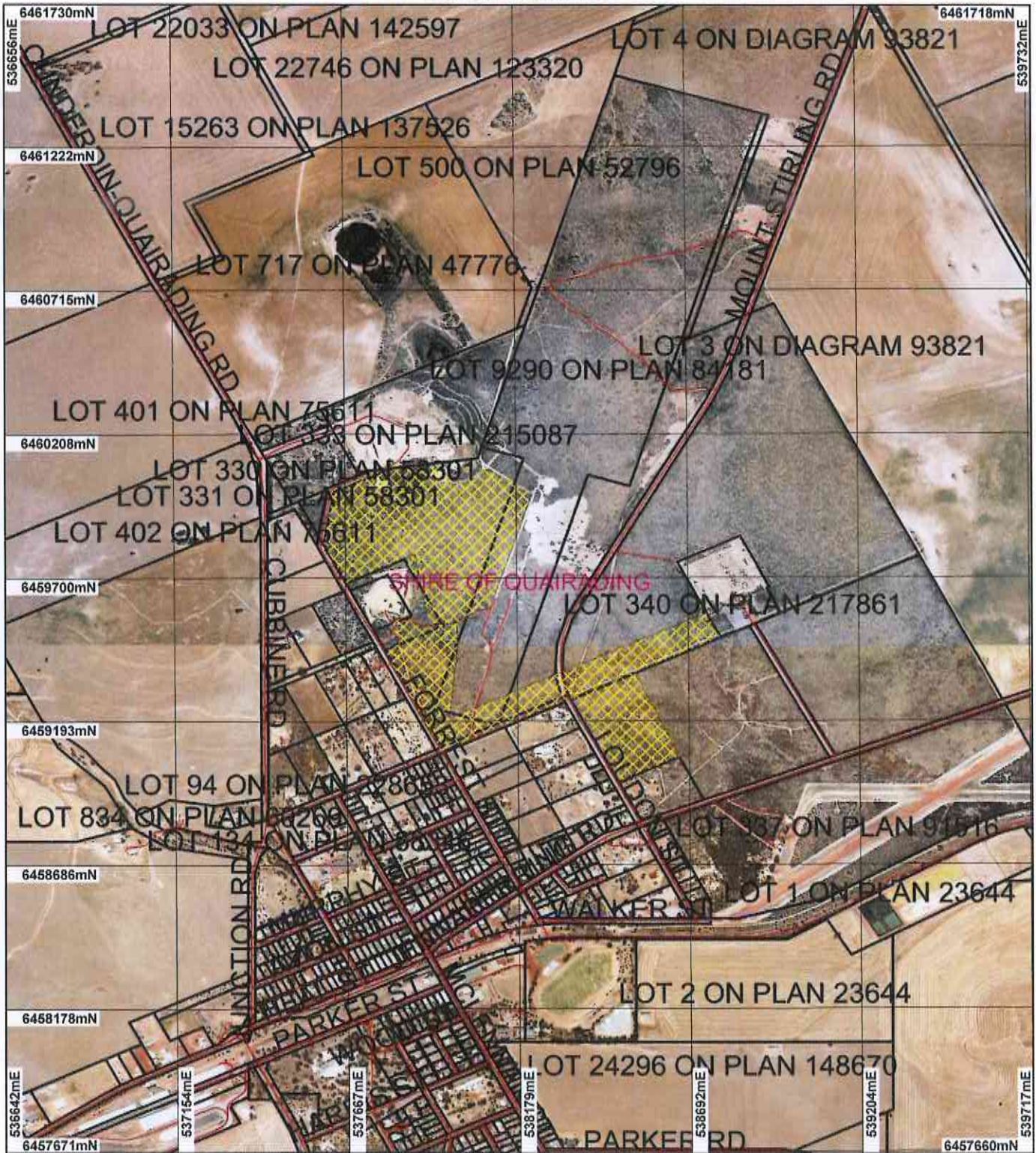


M Warnock
SENIOR MANAGER
CLEARING REGULATION

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

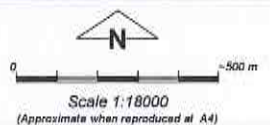
4 September 2014

Plan 4952/1



LEGEND

- Cadastre for labelling
 - Road Centrelines
 - Local Government Authorities
 - Clearing Instruments
 - Areas Approved to Clear
- Cunderdin 50cm Orthomosaic - Landgate 2004
 Brookton 80cm Orthomosaic - Landgate 2005



Geocentric Datum Australia 1994
 Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

M Warnock Date 14/9/14
 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 acknowledged by the agency acronym in the legend.



Clearing Permit Decision Report

Government of Western Australia
Department of Environment Regulation

1. Application details

1.1. Permit application details

Permit application No.: 4952/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Shire of Quairading

1.3. Property details

Property: QUAIRADING TOWNSITE LOT 208 (House No. 85 JENNABERRING QUAIRADING 6383)
UNALLOCATED CROWN LAND (QUAIRADING 6383)
ROAD RESERVE (QUAIRADING 6383)
UNALLOCATED CROWN LAND (QUAIRADING 6383)
ROAD RESERVE (QUAIRADING 6383)
ROAD RESERVE (QUAIRADING 6383)
LOT 9290 ON PLAN 84181 (QUAIRADING 6383)
UNALLOCATED CROWN LAND (QUAIRADING 6383)
LOT 500 ON PLAN 66103 (QUAIRADING 6383)
LOT 332 ON PLAN 184578 (House No. 110 FORREST QUAIRADING 6383)
ROAD RESERVE (QUAIRADING 6383)
ROAD RESERVE (QUAIRADING 6383)
Local Government Area: Shire of Quairading
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
43.5		Burning	Hazard reduction or fire control

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 4 September 2014

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
The vegetation under application has been mapped as Beard vegetation association 1049 which Shepherd et al(2001) describes as: Medium woodland; wandoo, York gum, salmon gum, morrel & gimlet.	The proposed clearing of 43.5 hectares of native vegetation for the purpose of fire hazard reduction.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The description and condition of the vegetation was determined by digital imagery and via a site inspection completed by the former Department of Environment and Conservation (DEC 2012a). A site inspection undertaken by the Department of Environment and Conservation (DEC 2012) indicated that portions of the proposed clearing area are covered by low Banksia prionotes/Xylomelum angustifolium woodland. Low Acacia shrub land; Eucalyptus woodland; heath and degraded shrub land constitutes the remainder of the area proposed for clearing.

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**
This application proposes to clear 43.5 hectares of native vegetation for the purpose of fire hazard reduction. The method of clearing will be a cool mosaic burn and mechanical removal of old debris.

The area under application has been mapped as vegetation association 1049. This vegetation association is endemic to the Avon Wheatbelt Region and has been identified as a priority 1 ecosystem in need of protection within the Wheatbelt Natural Resource Management (NRM) region (Richardson, 2007). This vegetation type is under-represented with less than 10 per cent of vegetation protected within conservation estate and less than 10 per cent of its pre-European extent remaining within the Avon Wheatbelt bioregion (Government of Western Australia 2013).

Nineteen priority flora species have been recorded within the local area (10 kilometre radius).

Five priority flora species have been recorded within close proximity to the application area.

A Priority 3 species is known to occur approximately 30 metres from the area under application and within the Shire Reserve west of the town of Quairading. The exact size and location of these populations is unknown. This species responds well to fire and therefore the proposed cool mosaic burn is unlikely to impact the conservation status of this species (DEC 2012b).

A second Priority 3 species has been recorded within 500 metres of the area under application and is known to grow in association with a rare flora species which is also recorded within close proximity to the application area. Records of this species have noted a number of plants regenerating after fire, therefore it is likely this species will respond well to the prescribed burn (DEC 2012b).

A third Priority 3 species is known from at least 8 populations within the Wheatbelt Region. This species has been recorded within close proximity of the application area. Records indicate this species has regenerated well from previous wildfires within the area, therefore it is likely the proposed clearing by method of burning will not affect the conservation status of this species (DEC 2012b).

A fourth Priority 3 species is known to occur within 500 metres of the application area, it is unknown what the size and extent of the population is and whether it occurs elsewhere within the reserve (DEC 2012b). The response of this species to fire is unknown, however the impacts of the proposed clearing is not likely to have a significant impact on the conservation status of this species (Parks and Wildlife 2014).

Seven species of rare flora have been recorded within the local area (10 kilometre radius). Four species have been recorded in close proximity to the application area. It appears that the application area will avoid direct impacts to the four rare flora species located within close proximity to the application area. However, the proposed clearing may still cause inadvertent damage to some plants and soil stored seed (Parks and Wildlife 2014). The clearing proposed may impact upon a number of rare flora species however the impacts are likely to be minimal and the clearing is not likely have an impact on the conservation status of these species. The applicant has obtained a permit to take declared rare flora under Section 23F of the Wildlife Conservation Act 1950.

Two fauna species listed as rare or likely to become extinct under the Wildlife Conservation Act 1950 have been recorded within the local area (10 kilometre radius) being Shield-backed trapdoor spider (*Idiosoma nigrum*) and Bilby (*Macrotis lagotis*) (DEC 2007-). A fauna survey for the Shield-backed trapdoor spider was undertaken within the area under application and did not identify this species (Wheatbelt Natural Resource Management Inc. 2014).

The application area is located adjacent to remnant vegetation in a very good (Keighery 1994) condition and the proposed clearing may indirectly impact the adjacent vegetation through the spread of weeds. Weed management practices will help mitigate this risk.

The application area consists of vegetation in a very good (Keighery, 1994) condition and occurs within an extensively cleared landscape. Given the vegetation type is under represented within the bioregion, is in very good (Keighery 1994) condition and the clearing proposed may impact upon rare flora, the applied clearing area is considered to comprise a high level of biological diversity. However, It is noted that the proposed clearing will be completed by undertaking a cool mosaic burn to reduce fuel load. After the proposed burn the vegetation under application will be able to regenerate.

Therefore the proposed clearing may be at variance to this principle.

Methodology

References:

- DEC (2012)
- Keighery (1994)
- DEC (2007-)
- Parks and Wildlife (2014)
- Richardson (2007)
- Government of Western Australia (2011)
- Wheatbelt Natural Resource Management Inc. (2014)

GIS Databases:

- Cunderdin 50cm Orthomosaic - Landgate 2004
- SAC Biodatasets - Accessed 27 April 2012

(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

Two fauna species listed as rare or likely to become extinct under the Wildlife Conservation Act 1950 have been recorded within the local area (10 kilometre radius) being Shield-backed trapdoor spider (*Idiosoma nigrum*) and Bilby (*Macrotis lagotis*) (DEC 2007-). The Red-tailed Phascogale (*Phascogale calura*) is also known to occur within the Wheatbelt region (DEC 2007-).

Given the very good (Keighery 1994) condition of the vegetation under application it may provide habitat for a number of fauna species.

Shield-backed trapdoor spider (*Idiosoma nigrum*) is ranked as Vulnerable under the Wildlife Conservation Act 1950, and has been recorded within the local area (10 kilometre radius). Shield-backed trapdoor spider is known to inhabit areas of Eucalypt woodlands over granite and loam soils and the critical habitat for this species comprises 'York gum (*Eucalyptus loxophleba*), Salmon gum (*Eucalyptus salmonophloia*) and Wheatbelt wandoo (*Eucalyptus capillosa*) woodland, where Jam (*Acacia acuminata*) forms a sparse understorey in heavy clay soils' (ACC, 2007).

A targeted Shield-backed trapdoor spider survey undertaken within the area under application in January 2014 did not identify this species. A large proportion of the application area consists of deep yellow sand which is not thought to provide the appropriate habitat. No burrows or other signs of the Shield-backed trapdoor spider were located during the search (Wheatbelt Natural Resource Management Inc. 2014). Therefore the clearing proposed is not likely to impact upon this species.

The Bilby (*Macrotis lagotis*) were formerly known to occupy habitat ranging from Eucalyptus and Acacia woodlands in the Wheatbelt of Western Australia to Triodia grasslands in the desert regions. Bilbies are now only found in areas where foxes do not occur or are not abundant (DEC 2012c). The major habitats within Western Australia now include mulga scrub and hummock grasslands on sand plains or along drainage or salt lake systems. Given the above this species is not likely to occur within the application area (DEC 2012c).

The Red-tailed Phascogale (*Phascogale calura*) populations are currently known from several isolated nature reserves in the south-west of Western Australia, from the Wheatbelt to the south coast. This species inhabits Wandoo (*Eucalyptus wandoo*) and Sheoak (*Allocasuarina huegeliana*) woodland associations, with populations being most dense in the latter vegetation type (DEC 2012d). They show a preference for long unburnt habitat with a continuous canopy, as well as tree hollows. From a site inspection undertaken by DEC (2012) the vegetation proposed to be cleared does not form a continuous canopy therefore it is unlikely this species will be present within the application area (DEC 2012d).

The area under application is located within an extensively cleared landscape, the relatively large area under application is likely to provide an ecological linkage for fauna species to other remnant vegetation located within the local area. It is noted that the proposed clearing will be completed by undertaking a cool mosaic burn to reduce fuel load. After the proposed burn the vegetation under application will be able to regenerate and therefore the ecological linkage will not be severed.

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

Methodology

References:

- Keighery (1994)
- DEC (2007-)
- Wheatbelt Natural Resource Management Inc. (2014).

GIS Databases:

- Cunderdin 50cm Orthomosaic - Landgate 2004

(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

Seven species of rare flora have been recorded within the local area (10 kilometre radius). Four species of rare flora have been recorded within close proximity of the area under application.

The first rare flora species is only known from two populations in the Great Southern District. One population which consists of a number of subpopulations occurs within close proximity to the application area. This species is known throughout the local area (10 kilometre radius). Previous maintenance of firebreaks has not appeared to be detrimental to this species but care should be taken to minimise the impact to this rare flora species where possible (Parks and Wildlife 2014).

The second rare flora species consists of 12 populations within the Great Southern District. It is estimated that approximately 690-779 plants occur within these 12 populations, with approximately 150-200 plants found within close proximity to the application area (DEC 2012b).

The third rare flora species is only known from one population. This population occurs within Reserve 13002 and within close proximity to the area under application. This population contains approximately 24 mature plants, therefore any impacts to this population would be considered significant to the conservation of this species (DEC 2012b).

The fourth rare flora species is known from 16 populations within the Great Southern and Central Wheatbelt Districts. One population has been recorded near the application area. This population has not been relocated since a wildfire occurred in 1996, therefore it is believed the population may have been destroyed by the wildfire and therefore not likely to be impacted by the clearing as proposed (DEC 2012b).

It appears that the application area will avoid direct impacts to the four rare flora species located within close proximity to the application area. The proposed clearing may still cause inadvertent damage to some plants and soil stored seed (Parks and Wildlife 2014). Therefore the proposed clearing may impact upon rare flora.

The applicant has obtained a permit to take declared rare flora under Section 23F of the Wildlife Conservation Act 1950. The clearing proposed may impact upon a number of rare flora species however the impacts are likely to be minimal and not likely have an impact on the conservation status of these species.

Given the above the clearing as proposed may be at variance to this principle.

Methodology

References:

- DEC (2012b)
- Parks and Wildlife (2014)

GIS Databases:

- Cunderdin 50cm Orthomosaic
- Pre-European Vegetation
- SAC Biodatasets - Accessed 27 April 2012

(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

The closest threatened ecological community (TEC) is the Critically Endangered 'Toolibin - Perched wetlands of the Wheatbelt Region with extensive stands of *Casuarina obesa* and *Melaleuca strobophylla*.' The buffer of this community has been recorded approximately 75 kilometres south west of the applied clearing area within different mapped vegetation types.

During site inspection undertaken by DEC (2012) vegetation representative of threatened ecological communities was not observed. Given this, and the distance to the nearest community, the vegetation under application is not likely to comprise the whole or a part of, or is necessary for the maintenance of a TEC and therefore the proposed clearing is not likely to be at variance to this principle.

Methodology

References:

- DEC (2012)

GIS Databases:

- Cunderdin 50cm Orthomosaic - Landgate 2004
- Pre-European Vegetation
- SAC Biodatasets - Accessed 27 April 2012

(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 vegetation under application is mapped as Beard vegetation type 1049 - 'medium woodland; wandoo, York gum, Salmon gum, Morrel and Gimlet' which has approximately 6 per cent of its pre-European extent remaining within the Avon Wheatbelt Region (Government of Western Australia 2013). The Shire of Quairading is extensively cleared with approximately 9 per cent of the pre-European extent of vegetation remaining (Government of Western Australia 2013).

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The vegetation under application is endemic to the Avon Wheatbelt Region and has been identified as a priority 1 ecosystem in need of protection within the Wheatbelt NRM region (Richardson, 2007).

The area under application is located within an extensively cleared area, consists of vegetation in a very good (Keighery 1994) condition, may contain a high biological diversity and may impact upon rare flora. Therefore the area under application may be considered to be a significant remnant.

Although the area is located within an extensively cleared landscape it is noted that the proposed clearing will be completed by undertaking a cool mosaic burn to reduce fuel load. After the proposed burn the vegetation under application will be able to regenerate and will therefore not impact upon the biological diversity or fauna habitat located within the application area.

Therefore the clearing as proposed may be at variance to this principle.

	Pre-European (ha)	Current Extent Remaining (ha)	Remaining (%)	Extent in DER Managed Lands (%)
IBRA Bioregion*				
Avon Wheatbelt	9,517,110	1,732,026	18	8
Shire*				
Shire of Quairading	201,679	18,906	9	8
Beard Vegetation Association in Bioregion*				
1049	833,385	56,953	7	6

* Government of Western Australia (2013)

Methodology

References:

- Commonwealth of Australia (2001)
- DEC (2011)
- Government of Western Australia (2013)
- Richardson (2007)

GIS Databases:

- Cunderdin 50cm Orthomosaic - Landgate 2004
- Local Government Authorities - Landgate
- Pre-European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments

Proposal is not likely to be at variance to this Principle

No watercourse or wetlands are located within the application area. The closest non-perennial minor watercourse is located approximately 580 metres west of the application area.

Two lakes have been recorded approximately 360 metres and 640 metres north of the application area.

The closest major watercourse is Salt River located approximately 5 kilometres south of the application area.

Given the distance of these watercourses from the application area it is unlikely the vegetation proposed to clear is growing in or in association with an environment associated with a watercourse or wetland. Therefore the clearing as proposed is not likely to be at variance to this principle.

Methodology

GIS Databases:

- Hydrology, linear

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments

Proposal is not likely to be at variance to this Principle

There are two soil types mapped within the application area which Northcote et al (1960-68) describes them as:

Ms7: Gently sloping to gently undulating plateau areas with long and very gentle slopes and, in places, abrupt erosional scarps: chief soils are on gently convex slopes of the plateau, sandy yellow earths (containing ironstone gravels and with clay D horizons; (ii) on depositional slopes flanking erosional sites, yellow earthy sands sometimes with ironstone gravels at depth; (iii) on erosional ridges and slopes, leached sands containing ironstone gravels and overlying mottled or pallid-zone clays; and (iv) sandy depressions of leached sands with some soils.

uf1: Undulating terrain with ridges, spurs, and lateritic mesas and buttes: chief soils on the broad undulating ridges and spurs are hard, and also sandy, neutral, and also acidic, yellow mottled soils all containing ironstone gravels.

The salinity risk across the site ranges from low to high with a groundwater salinity ranging from 14000 - 35000 milligrams per litre total dissolved solids. It is noted the majority of the proposed clearing will be completed by undertaking a cool mosaic burn to reduce fuel load. After the proposed burn the vegetation under application will be able to regenerate. Given the above the clearing as proposed is not likely to increase salinity within the application area.

The proposed clearing of 43.5 hectares may result in wind erosion. However, it is noted that the method of clearing is burning, therefore the roots of the vegetation will still be intact and therefore will stabilise the soil.

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

Methodology References:
- Northcote et al (1960-68)

GIS Databases:
- Soils, Statewide

(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 likely to be at variance to this Principle**

Nine nature reserves are located within the local area (10 kilometre radius). The closest being Quairading Spring Nature Reserve, Badjaling West Nature Reserve and an un named Nature Reserve all located approximately 5 kilometres from the application area.

The vegetation under application may contribute to connectivity across the landscape. However, it is noted that the proposed clearing will be completed by undertaking a cool mosaic burn to reduce fuel load. After the proposed burn the vegetation under application will be able to regenerate.

Given the above the proposed clearing is not likely to have an impact upon the environmental values of these areas and is not likely to be at variance to this principle.

Methodology GIS Databases:
-Parks and Wildlife Tenure

(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 areas under application lies within the Swan Avon Salt River Catchment of the Avon River Basin

No watercourses or wetlands are located within the application area. The closest non-perennial minor watercourse is located approximately 580 metres west of the application area.

Two lakes have been recorded approximately 360 metres and 640 metres north of the application area.

The closest major watercourse is Salt River located approximately 5 kilometres south of the application area.

Given the distance to the closest watercourse or wetland the clearing as proposed is not likely to cause deterioration in the quality of surface or underground water.

The salinity risk across the site ranges from low to high with a groundwater salinity ranging from 14000 - 35000mg/L total dissolved solids. It is noted that the majority of the proposed clearing will be completed by undertaking a cool mosaic burn to reduce fuel load. After the proposed burn the vegetation under application will be able to regenerate. Given the above the clearing as proposed is not likely to increase salinity within the application area.

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

Methodology GIS Databases:
-Hydrology linear
-Soils, Statewide

(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 proposed clearing of 43.5 hectares by the method of burning is not expected to increase the incidence or

intensity of flooding.

Therefore the proposed clearing is not likely to be at variance to this principle.

Methodology GIS Databases:
-Hydrology, linear

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

Comments

This application proposes to clear 43.5 hectares of native vegetation for the purpose of fire hazard reduction. The method of clearing is a cool mosaic burn and mechanical removal of old debris. The majority of the proposed clearing will be undertaken by a cool mosaic burn. Mechanical removal of old debris will be undertaken in the north eastern section of the application area.

The applicant has amended the application area and reduced the proposed clearing area from 71 hectares to 43.5 hectares.

The area under application is zoned as 'Public Purpose' and 'General Rural'.

An Aboriginal Site of Significance 'Old Quairading Cemetery' is located approximately 1.1 kilometres east of the application area.

The applicant has obtained a permit to take declared rare flora under Section 23F of the Wildlife Conservation Act 1950.

Methodology References:
-DEC (2012a)

GIS Databases:
-Aboriginal sites of significance

4. References

- ACC (2007) Shield - backed Trapdoor Spider (*Idiosoma nigrum*) Conservation Plan. Avon Catchment Council, Western Australia.
- DEC (2012a) Regional advice for Clearing Permit 4952/1 - Shire of Quairading. Department of Environment and Conservation, Wheatbelt Region, Western Australia. (A506847)
- DEC (2012b) Species and Communities Advice for Clearing Permit CPS 4952/1. Department of Environment and Conservation, Species and Communities Branch, Western Australia. (DEC Ref: A508549)
- DEC (2012c). Factsheet: Bilby, *Macrotis lagotis* (Reid, 1837) www.dec.wa.gov.au/component/option,com_docman/.../Itemid/
- DEC (2012d). Factsheet: Red-tailed Phascogale, *Phascogale calura* (Gould, 1844) www.dec.wa.gov.au/component/option,com_docman/.../Itemid/
- Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
- Parks and Wildlife (2014). Species and Communities Advice for Clearing Permit CPS 4952/1. Department of Parks and Wildlife, Species and Communities Branch, Western Australia. DER Ref A750180
- Richardson, J. (2007) Ecosystem Prioritization Workshop. Avon Natural Diversity Alliance. Department of Environment and Conservation, Perth, Western Australia.
- 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.