



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 5881/1
Permit Holder:	BGC (Australia) Pty Ltd
Duration of Permit:	6 September 2014 to 6 September 2024

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 an extractive industry.

2. Land on which clearing is to be done

Lot 11 on Deposited Plan 34937, Hoddys Well

3. Area of Clearing

The Permit Holder must not clear more than 3.52 hectares of native vegetation within the area shaded yellow on attached Plan 5881/1a.

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. 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*:

- clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared;
- restrict the movement of machines and other vehicles to the limits of the areas to be cleared; and
- where *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is to be removed from the area to be cleared, ensure it is transferred to areas of comparable *soil disease status*.

6. Offsets – conservation covenant

Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall:

- give a conservation covenant under section 30B of the *Soil and Land Conservation Act 1945* setting aside the *covenant area* for the protection and management of vegetation in perpetuity; and
- provide to the CEO a copy of the executed conservation covenant.

7. Management plan

The Permit Holder must implement and adhere to the document 'Rehabilitation Plan, Lot 11 Salt Valley Road, Hoddys Well' 21 July 2014.

PART III - RECORD KEEPING AND REPORTING

8. Records must be kept

The Permit Holder must maintain a description of the activities undertaken in relation to Condition 7 of this permit.

9. Reporting

- (a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
 - (i) of records required under condition 8 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.
- (c) Prior to 6 June 2024, the Permit Holder must provide to the CEO a written report of records required under condition 8 of this Permit where these records have not already been provided under condition 9(a) of this Permit.

DEFINITIONS

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

covenant area means the area of land shaded red on attached Plan 5881/1b;

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

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;

soil disease status means soil types either infested, not infested, uninterpretable or not interpreted with a pathogen; and

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.

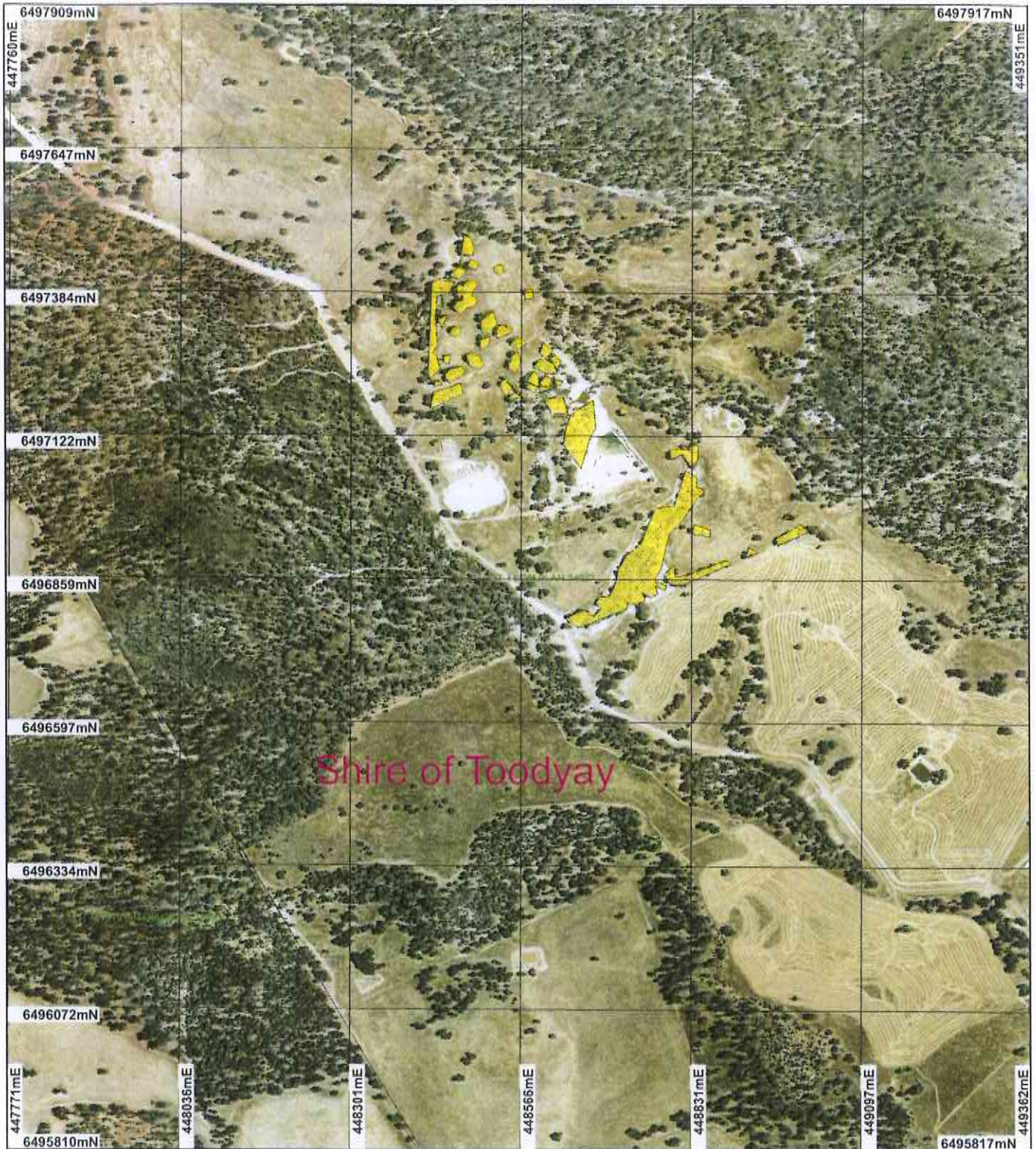


M Warnock
SENIOR MANAGER
CLEARING REGULATION

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

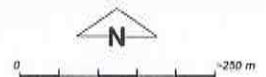
7 August 2014

Plan 5881/1a



LEGEND

-  Road Centrelines
-  Clearing Instruments
-  Areas Approved to Clear
- Perth Metropolitan North
East 40cm Orthomosaic -
Landgate 2005



Scale 1:9302
(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.

M Warnock Date 7/8/14

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.



Government of Western Australia
Department of Environment Regulation

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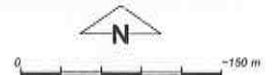
Plan 5881/1b



LEGEND

-  Road Centrelines
-  Cadastre
-  Local Government Authorities
-  Clearing Instruments
-  Areas Subject to Conditions

Perth Metropolitan North
East 40cm Orthomosaic -
Landgate 2005



Scale 1:5436
(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.

M Warnock Date 7/8/14
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.



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Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5881/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: BGC (Australia) Pty Ltd

1.3. Property details

Property: LOT 11 ON PLAN 34937 (House No. 768 CHITTY HODDYS WELL 6566)
Local Government Area: Shire of Toodyay
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
3.52		Mechanical Removal	Extractive Industry

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 7 August 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
Mapped Beard Vegetation Association 4 is described as medium woodland comprising marri and wandoo (Shepherd et al, 2001).	Clearing of 3.52 hectares of native vegetation within Lot 11 on Deposited Plan 34937, Hoddys Well, for the purpose of extracting clay.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The northern portion of the application area has been parkland cleared and utilised for grazing, which together with the surrounding extractive industry has resulted in completely degraded (Keighery, 1994) vegetation with very few native understorey species. This area is largely comprised of scattered Eucalyptus wandoo, Corymbia calophylla and Eucalyptus accedens (Brikmakers, 2012).
Mapped Mattiske vegetation complex (M1) consists of open woodland of Eucalyptus wandoo over Acacia acuminata with some Eucalyptus loxophleba on valley slopes, with low woodland of Allocasuarina huegeliana on or near shallow granite outcrops in arid and perarid zones (Mattiske and Havel, 1998).		To Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)	The vegetation within the southern portion of the application area has been fenced off and subject to fewer disturbances. This vegetation is in a good to very good (Keighery, 1994) condition and contains Eucalyptus wandoo, Corymbia calophylla and Eucalyptus accedens over a relatively dense understorey. A minor non perennial watercourse occurs within this southern portion. The condition and description of the vegetation under application was established via a site inspection (DER, 2013) and an assessment undertaken by Brikmakers (2012).

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 proposed clearing consists of 3.52 hectares of native vegetation within Lot 11 on Deposited Plan 34937, Hoddys Well, for the purpose of extracting clay. The vegetation under application ranges from completely degraded to very good (Keighery, 1994) condition (DER, 2013).

The vegetation within the northern portion of the application area has been significantly disturbed by previous cropping, grazing and extractive industry. This area is largely comprised of scattered Eucalyptus wandoo and contains little to no native understorey. The vegetation within the southern portion of the application area contains Eucalyptus wandoo, Corymbia calophylla and Eucalyptus accedens over a relatively dense native understorey (Brikmakers, 2012) and is in good to very good (Keighery, 1994) condition (DER, 2013).

Several priority flora species have been recorded in the local area (10 kilometre radius). Three of these species (two priority 2 species and one priority 3 species) share similar habitat preferences to those found on site and therefore have the potential to occur within the dense southern portion of proposed clearing (DPaW, 2013). A vegetation assessment was undertaken within the application area in February 2014 and did not identify any of the abovementioned flora species (Landform Research, 2014)

There are no priority or threatened ecological communities mapped within the local area of the proposed clearing (10 kilometre radius).

The vegetation under application provides suitable habitat for *Macropus Irma* (Western brush wallaby) and suitable foraging habitat for *Calyptorhynchus banksii* subsp. *naso* (forest red-tailed black cockatoo), *Calyptorhynchus baudinii* (Baudin's cockatoo) and *Calyptorhynchus latirostris* (Carnaby's cockatoo), however, given the presence of large better quality remnant vegetation bordering the application to the east and west, it is not likely that the vegetation under application provides significant habitat for these species.

The vegetation under application provides a linkage between the abovementioned large high quality vegetation remnants, particularly the dense southern portion of the application area associated with the minor non perennial watercourse. The removal of the vegetation under application is likely to result in fauna dispersal limitations between these areas and across the landscape.

The local area surrounding the application area (10 kilometre radius) retains approximately 45 per cent native vegetation.

The proposed clearing will increase the risk of weeds and dieback spreading into adjacent vegetated areas. Weed and dieback mitigation strategies will help to reduce the risk of spreading weeds and dieback.

Given the very good condition of the southern portion of the application area, and that this portion provides a linkage between two high quality remnants, the proposed clearing may be at variance to this Principle.

Methodology

References:

- Keighery (1994)
- DER (2013)
- DPaW (2013)
- Landform Research (2014)

GIS Databases:

- SAC Bio Datasets (Accessed December 2013)
- NLWRA, Current Extent of Native Vegetation

(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

Several fauna species of conservation significance have been recorded within the local area (10 kilometre radius), including, *Calyptorhynchus banksii* subsp. *naso* (forest red-tailed black-cockatoo), *Calyptorhynchus baudinii* (Baudin's cockatoo), *Calyptorhynchus latirostris* (Carnaby's cockatoo), *Dasyurus geoffroii* (chuditch), *Idiosoma nigrum* (shield-backed trapdoor spider), *Leipoa ocellata* (malleefowl), *Macrotis lagotis* (bilby) and *Macropus irma* (Western brush wallaby) (DEC, 2007-).

The shield-backed trapdoor spider has a preference for eucalypt woodland in heavy clay soils. Malleefowl prefer habitat consisting of shrubland and low woodland on sandy or loamy soils that receive 200 to 450 millimetres of rainfall each year and bilby's require sandy or loamy soil in which to burrow, with a particular preference for sandy dunes (DotE, 2013). Given the presence of sandy soils and ironstone gravels on site, the application area contains potential habitat for the malleefowl and bilby. However given that the most recent record for the abovementioned species within the local area was taken in 1972, it is unlikely that these species have persisted in the landscape.

The Western Brush Wallaby has a preference for open forest or woodland, particularly favouring open, seasonally-wet flats with low grasses and open scrubby thickets (DotE, 2013). The application area contains open woodland of *Eucalyptus wandoo* and a seasonally wet area (minor non perennial watercourse occurs within southern portion) in good to very good (Keighery, 1994) condition. However, given the presence of large better quality remnant vegetation bordering the application to the west and east, it is not likely that the vegetation under application provides significant habitat for these species. It may however provide a linkage for this species between higher quality remnants

Calyptorhynchus banksii subsp. *naso* (forest red-tailed black cockatoo), *Calyptorhynchus baudinii* (Baudin's cockatoo) and *Calyptorhynchus latirostris* (Carnaby's cockatoo) forage on the seeds, nuts and flowers of proteaceous species (*Banksia*, *Hakea*, *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species (Valentine and Stock, 2008). The application area contains several *Eucalyptus wandoo* and *Corymbia calophylla* (DER, 2013) which provide suitable foraging habitat for these species. However, given the presence of large higher quality remnant vegetation bordering the application to the west and east, it is not likely that the vegetation under application provides significant foraging habitat for these species.

No hollows were identified in the trees on site (DER, 2013) and a preliminary assessment of the application area undertaken by Brikmakers (2012) did not identify the presence of hollows. Therefore the application area is unlikely to contain suitable breeding habitat for black cockatoos.

The vegetation under application provides a linkage between the abovementioned large high quality vegetation remnants, particularly the dense southern portion of the application area associated with the minor non perennial watercourse. The removal of the vegetation under application is likely to result in fauna dispersal limitations between these areas and across the landscape.

Given the above, the proposed clearing may be at variance to this Principle.

Methodology References:
-DEC (2007-)
-DER (2013)
-Brikmakers (2012)
-DotE (2013)
-Valentine and Stock (2008)

(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**

One species of rare flora has been mapped within the local area of the proposed clearing (10 kilometre radius). This species has a preference for clay loam, granite outcrops and hills (Western Australian herbarium, 1998-) and is mapped approximately 8.1 kilometres south east of the application area.

This species is not likely to occur within the completely degraded (Keighery, 1994) vegetation in the northern portion of the application area and given that the southern portion of the application area is not situated on a granite outcrop or hill, it is unlikely that the area of proposed clearing includes or is necessary for the continued existence of this species.

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

Methodology References:
-Keighery (1994)
-Westren Australian Herbarium (1998-)

GIS Databases:
-SAC Bio Datasets (Accessed December 2013)

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments **Proposal is not likely to be at variance to this Principle**

There are no threatened ecological communities mapped within the local area of proposed clearing (10 kilometre radius).

The proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Databases:
-SAC Bio Datasets (Accessed December 2013)

(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 at variance to this Principle**

The local area surrounding the application area (10 kilometre radius) retains approximately 45 per cent native vegetation.

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 Northern Jarrah Forest Bioregion, Shire of Toodyay, mapped Beard Vegetation Association (4) and mapped Mattiske Vegetation Complex (Michbin) retain approximately 23, 50, and 26 and 23 per cent pre-European vegetation remaining respectively (Government of Western Australia, 2013).

The southern portion of the vegetation under application is in very good condition and provides fauna linkage values. Given this, and that the Bioregion, mapped vegetation association and mapped vegetation complex are all below the 30 percent threshold, the proposed clearing is considered to be a significant remnant in an extensively cleared area.

The proposed clearing is at variance to this Principle.

To offset the residual impacts of the proposed clearing, the applicant has provided a Rehabilitation Plan which involves the rehabilitation of a degraded, 2.4 hectare area to the north of the application area. The rehabilitated area will be set aside for the protection and management of vegetation in perpetuity under a conservation covenant, issued under section 30B of the Soil and Land Conservation Act 1945.

	Pre-European (ha)	Current Extent Remaining (ha)	Remaining (%)	Extent in DPaW Managed Lands (%)
IBRA Bioregion				
Northern Jarrah Forest	1,025,022	241,500	23	4
Shire				
Shire of Toodyay	173,440	88,082	50	5
Mattiske Vegetation Complex*				
Michbin Complex	1,345	356	26	6
Beard Vegetation Association**				
4	1,054,317	245,362	23	4
Mattiske and Havel (1998)*				
Government of Western Australia (2013)**				

Methodology References:
 -Government of Western Australia (2013)
 -Commonwealth of Australia (2001)

GIS Databases:
 -SAC Bio Datasets (Accessed December 2013)

(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**
 Several minor non perennial watercourses are mapped within the application area and a minor non perennial watercourse (creek) associated with a light depression in the landscape, occurs within the southern portion of the application area (DER, 2013).

There is dense understorey growing in and adjacent to the southern watercourse (DER, 2103), therefore the vegetation under application is growing in association with an environment associated with a watercourse or wetland.

The proposed clearing is at variance with this Principle.

Methodology References:
 -DER (2013)

GIS Databases:
 -Hydrography, linear
 -Hydrography, hierachy

(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**
 The soils within the application area have been mapped by Northcote et al (1960-68) as hard acidic yellow mottled soils along with sandy acidic yellow mottled soils, containing moderate to large amounts of ironstone gravels in their surface horizons.

Sandy soils are highly susceptible to wind erosion, however given the relatively small size of the application area, and that a significant portion is in a completely degraded (Keighery, 1994) condition, it is not likely that the proposed clearing will result in wind erosion causing appreciable land degradation.

Sandy and gravelly soils are highly permeable, therefore water erosion resulting from the proposed clearing is unlikely where these soils are present. Hard soils are less permeable, and if present within the southern portion of the application area (associated with the minor non perennial watercourse), may lead to some water erosion.

However, given the relatively small area of proposed clearing in this portion, it is unlikely that water erosion will result in appreciable land degradation.

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

Methodology References:
-Northcote et al (1960-68)
-Keighery (1994)

GIS Databases:
-Hydrography, linear
-Hydrography, hierarchy

(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**
The closest conservation reserve to the application area is Clackline Nature Reserve which occurs approximately four kilometres south east of the application area.

Given the distance of the application area to this reserve, it is unlikely that the proposed clearing will impact on the environmental values of this conservation area.

The proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Databases:
-DEC 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 at variance to this Principle**
Several minor, non perennial watercourses are mapped within the application area and minor non perennial watercourse (creek), associated with a light depression in the landscape, occurs within the southern portion of the application area (DER, 2013).

Groundwater salinity on site is mapped at 3000 to 14000 milligrams per litre (saline). Despite this relatively high salinity level, it is not likely that the proposed clearing of 3.52 hectares, of which a significant portion is completely degraded (Keighery, 1994), will lead to a perceptible rise in the watertable and thus an increase in groundwater salinity levels.

The clearing of native vegetation within the abovementioned watercourse is likely to result in surface water sedimentation of the watercourse, and potentially further downstream, particularly after rainfall.

Given the above the proposed clearing is at variance to this Principle.

The proponent has advised that the operational area will be separated from the watercourse by diverting runoff from the excavation areas away from the natural flow of the watercourse, which will prevent further siltation downstream (Brikmakers, 2013).

Methodology References:
-Keighery (1994)
-DER (2013)

GIS Databases:
-Hydrography, linear
-Hydrography, hierarchy

(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**
Given the relatively small size of the application area, the proposed clearing is unlikely to cause or exacerbate the incidence or intensity of flooding.

The proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Databases:
-SAC Bio Datasets (Accessed December 2013)

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

Comments

- The proposed clearing consists of 3.52 hectares of native vegetation within Lot 11 on Deposited Plan 34937, Hoddys Well, for the purpose of extracting clay.
- The proponent was granted Planning Approval and an Extractive Industry Licence on 2 April 2014. These approvals were granted for 21.5 hectares for a term of ten years.
- There is the potential for the extractive works to cause contamination of the minor non perennial watercourse located within the southern portion of the application area. The proponent has advised that the operational area will be separated from the nearby creek by diverting runoff from operational areas into a combination of exhausted clay pits and dams (Brikmakers, 2013).
- No submissions from the public have been received for the proposed clearing.
- The application area is zoned 'rural' under the town planning scheme.
- The application area falls within the Avon River Catchment Surface Water Area proclaimed under the Rights in Water and Irrigation Act 1914. The Department of Water (DoW, 2014) has advised the Shire of Toodyay that the proposed extraction is supported subject to more information being provided in the form of a Water Management Plan, detailing how the watercourse on site will be protected from extractive industries. It is advised that the water management plan should include, but not be limited to, erosion control, surface water management, and stormwater management.
- The Toodyay Land Conservation District Committee (LCDC) has advised that there is no reason to oppose the proposed clearing on the proviso that the appropriate management strategies are adhered to by the proponent (Toodyay LCDC, 2013).

Methodology

References:

- Brikmakers (2013)
- Toodyay LCDC (2013)

GIS Databases:

- RIWI, Groundwater Areas
- Town Planning Scheme Zones

4. References

- Brikmakers (2012) Assessment of Proposed Extension of Clearing. Additional Information for CPS 5881/1. DER Ref: A691990
- Brikmakers (2013) Extractive Industries Licence Variation Application. Lot 11, DP 34937 Salt Valley Rd, Hoddys Well, Toodyay. DER Ref A712329
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DEC (2007 -) NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. URL: <http://naturemap.dec.wa.gov.au/>. Accessed January 2014.
- DER (2013) Site Inspection Report for Clearing Permit Application CPS 5881/1. Site inspection undertaken 21/11/2013. Department of Environment Regulation, Western Australia (DER Ref A712331).
- DotE (2013) *Leipoa ocellata*, *Idiosoma nigrum*, *Macrotis lagotis* and *Macropus irma* in Species Profile and Threats Database, Department of the Environment, Canberra.
- 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.
- Landform Research (2014) Vegetation Assessment, Portion, Lot 11 on Deposited Plan 34937, Salt Valley Road, Hoddys Well, Brikmakers Pty Ltd. 14 February 2014 (DER Ref: A786005).
- Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment 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.
- 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.
- Toodyay LCDC (2013) Submission for Clearing Permit Application CPS 5881/1. Toodyay Land Conservation District Committee. DER Ref A703025.
- Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gnarara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed January 2014).