GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7119/1
Permit Holder:	Sweetman Excavations Pty Ltd
Duration of Permit:	1 October 2016 to 1 October 2026

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 sand and gravel extraction.

2. **Land on which clearing is to be done**
   Lot M 1920 on Diagram 12777, Muchea

3. **Area of Clearing**
   The Permit Holder must not clear more than 3.2 hectares of native vegetation within the area hatched yellow on attached Plan 7119/1.

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.

5. **Type of clearing authorised**
   a) The Permit Holder shall not clear any native vegetation after 1 October 2021; and
   b) The Permit Holder shall not clear native vegetation unless undertaking extractive industry activities within three months of the authorised clearing being undertaken.

PART II – MANAGEMENT CONDITIONS

6. **Avoid, minimise etc clearing**
   In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:
   (a) avoid the clearing of native vegetation;
   (b) minimise the amount of native vegetation to be cleared; and
   (c) reduce the impact of clearing on any environmental value.

7. **Fauna management**
   (a) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to conduct a *fauna survey* of the Permit Area to identify *habitat tree/s* being utilised by fauna species listed below:
      (i) Carnaby's cockatoo (*Calyptorhynchus latirostis*); and
      (ii) Forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*);

(b) Where fauna are identified under condition 7(a) of this Permit, the Permit Holder shall engage a *fauna specialist* to map *black cockatoo habitat tree/s* within the Permit Area.
(c) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall provide the results of the *fauna survey* in a report to the CEO.
(d) The *fauna survey* report must include the following;
    (i) the location of the *black cockatoo habitat tree/s* recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees; and
    (ii) the location of any fauna species, listed in condition 7(a) if identified, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees; and
    (iii) the name and amount of each fauna species identified; and
    (iv) the methodology, used to survey the Permit Area; and
    (v) a description of the *black cockatoo habitat tree/s* identified.
(e) where fauna are identified under condition 7(b) of this Permit, the Permit Holder shall ensure that:
    (i) no clearing within 10 metres of *black cockatoo habitat tree/s* of the identified fauna occurs, unless first approved by the CEO; and
    (ii) no taking of identified fauna occurs, unless first approved by the CEO.

8. Retain vegetative material and topsoil, revegetation and rehabilitation

The Permit Holder shall:
(a) retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
(b) within 12 months following the completion of works authorised under this Permit, *revegetate* and *rehabilitate* the area(s) that are no longer required for the purpose for which they were cleared, including:
    (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land; and
    (ii) ripping the ground on the contour to remove soil compaction; and
    (iii) ripping the pit floor and contour batters within the extraction site; and
    (iv) laying the vegetative material and topsoil retained under condition 8(a) on the cleared area(s) that are no longer required for the purpose for which they were cleared under this Permit.
(c) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 8(b) of this Permit:
    (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
    (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 8(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.
(d) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 8(c)(ii) of this permit, the Permit Holder shall repeat condition 8(c)(i) and 8(c)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.
(e) Where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in condition 8(c)(i) and 8(c)(ii) of this permit, that determination shall be submitted for the CEO's consideration. If the CEO does not agree with the determination made under condition 8(c)(ii), the CEO may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 8(c)(ii).

PART III - RECORD KEEPING AND REPORTING

9. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

(a) In relation to the clearing of native vegetation authorised under this Permit:
  (i) the species composition, structure and density of the cleared area;
  (ii) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  (iii) the date that the area was cleared; and
  (iv) the size of the area cleared (in hectares).

(b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 8 of this Permit:
  (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
  (iii) the size of the area *revegetated* and *rehabilitated* (in hectares);
  (iv) the species composition, structure and density of *revegetation* and *rehabilitation*, and
  (v) a copy of the environmental specialist's report.

10. 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 9 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 1 July 2026, the Permit Holder must provide to the CEO a written report of records required under condition 9 of this Permit where these records have not already been provided under condition 10(a) of this Permit.

DEFINITIONS

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

black cockatoo habitat tree/s: means trees that have a diameter, measured at 1.5 metres from the base of the tree, of 50 centimetres or greater;

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist: means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist;

fauna specialist: means a person who holds a tertiary qualification specializing in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the CEO as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the *Wildlife Conservation Act 1950;*

***fauna survey*:** means a field-based investigation, including a review of established literature, of the biodiversity of fauna and/or fauna habitat of the Permit Area. Where conservation significant fauna are identified in the Permit Area, the survey should also include sufficient surrounding areas to place the Permit Area into local context;

local provenance: means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

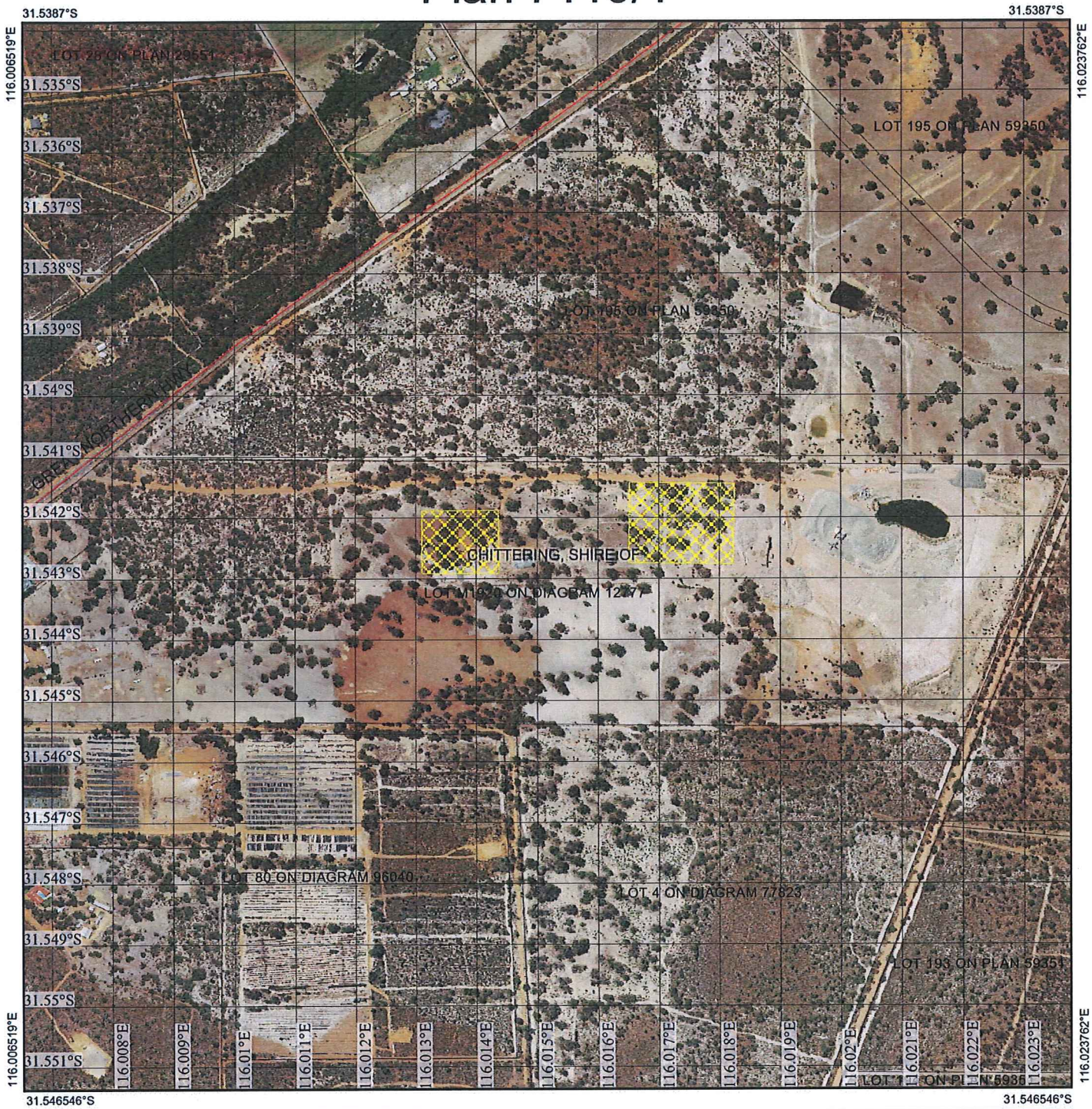
optimal time means the period from April to June for undertaking *direct seeding*, and the period from May to June for undertaking *planting*;
planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;
regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;
rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;
revegetate/ed/ion means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.

JAMES WITTENBERG
MANAGER
CLEARING REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

1 September 2016

Plan 7119/1



Legend

- Imagery
- Clearing Instruments Activities
- Local Government Authority

N

0 200m

1:8,673

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

..... Date 1/9/2016

James Widenbar

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

GOVERNMENT OF WESTERN AUSTRALIA

Government of Western Australia
Department of Environment Regulation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7119/1
Permit type: Area Permit

1.2. Applicant details

Applicant's name: Sweetman Excavations Pty Ltd

1.3. Property details

Property: LOT M1920 ON DIAGRAM 12777, MUCHEA
Local Government Authority: SHIRE OF CHITTERING
DER Region: Greater Swan
DPaW District: PERTH HILLS
LCDC: Chittering Valley
Localities: MUCHEA

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 1 September 2016
Reasons for Decision: The clearing application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the *Environmental Protection Act 1986*, and it has been concluded that the proposed clearing may be at variance to principles (b) and (e) and is not likely to be at variance to the remaining clearing principles.

The Delegated Officer determined that the application area has the potential to provide nesting habitat and provides foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*) and forest red-tailed black-cockatoo (*Calyptorhynchus banksii subsp. naso*).

Consideration was given to the amount of vegetation remaining in the local area and the presence of better quality habitat for conservation significant fauna in nearby conservation reserves.

The requirement to identify and check all potential nesting trees prior to clearing will assist in mitigating potential impacts to black cockatoos.

The Delegated Officer determined that the proposed clearing may increase the risk of wind erosion. The requirement to not clear native vegetation unless undertaking extractive industry activities within three months of the authorised clearing being undertaken will mitigate this risk.

The Delegated Officer noted that planning approval for an Extractive Industry Licence has been obtained from the Shire of Chittering. State policies and other relevant policies have been taken into consideration in the decision to grant a clearing permit.

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 1020 is described as: Mosaic: Medium forest; jarrah-marri / Medium woodland; marri-wandoo (Shepherd et al., 2001). Mapped Mattiske vegetation Mh complex comprises low open	The clearing of 3.2 hectares of native vegetation within Lot M 1920 on Diagram 12777, Muchea is for the purpose of sand and gravel extraction.	Completely Degraded; No longer intact, completely/almost completely without native species (Keighery, 1994). To	The condition of the vegetation under application was determined by a site inspection undertaken by officers of the Department of Environment Regulation

forest to woodland of *Banksia attenuata-Banksia menziesii-Eucalyptus todtiana-Banksia prionotes* on sandier slopes and open woodland of *Corymbia calophylla* (Mattiske and Havel, 1998).

Mapped Heddle vegetation Moondah complex is comprised of low closed to low open forest of *Banksia attenuata* (Slender Banksia) - *Banksia menziesii* (Firewood Banksia) - *Eucalyptus todtiana* (Pricklybark) - *Banksia prionotes* (Acorn Banksia) on slopes, open woodland of *Corymbia calophylla* (Marri) - Banksia species in valley.(Heddle et al., 1980).

Good; Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

(DER) (2016).

3. Assessment of application against clearing principles

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

Comments

Proposed clearing is not likely to be at variance to this Principle

The proposed clearing of 3.2 hectares of native vegetation within Lot M 1920 on Diagram 12777, Muchea, is for the purpose of sand and gravel extraction. The western portion of the application area is proposed to be cleared for a gravel pit (Area 1). An old gravel pit already exists within this area. The eastern portion of the application area is proposed to be cleared for sand extraction (Area 2). Both areas can be described as an open mixed *Eucalyptus marginata, Corymbia calophylla* and *Eucalyptus wandoo* woodland over *Xanthorrhoea preissii,* in a completely degraded to good (Keighery, 1994) condition, with the majority of the vegetation in a degraded (Keighery, 1994) condition. Both areas have been subject to historical disturbance from extractive industry practices and subsequently have minimal understorey with a high concentration of weeds. A small area of vegetation in the north eastern corner of Area 2 has a more diverse, intact understorey (DER, 2016).

Twenty four priority flora and fourteen rare flora species have been mapped within the local area (10 kilometre radius). The closest priority flora species is '*Verticordia lindleyi* subsp. *lindleyi*' (priority 4) mapped approximately one kilometre from the application area. This species is an erect shrub, 0.2 to 0.75 metres high with a preference for sand or sandy clay soils within winter-wet depressions (Western Australian Herbarium, 1998-). It is not likely this species would occur within the application area given there are no hydrological features present and the high level of weed infestation. The application area is not likely to contain suitable habitat for the remaining rare or priority flora taxa, given the predominately degraded (Keighery, 1994) condition of the vegetation under application.

Fourteen rare flora species have been recorded within the local area (10 kilometre radius), with the closest recorded being approximately 955 metres south east of the application area. The Department of Parks and Wildlife (Parks and Wildlife, 2016a) has advised that given the sites general condition and habitat type, the likelihood of this species occurring within the application area is low.

The closest priority ecological community (PEC) known as 'Swan Coastal Plain *Banksia attenuata - Banksia menziesii* woodlands' is mapped 600 metres south east of the application area. A site inspection undertaken by DER (2016) identified that the vegetation under application is not consistent with this PEC.

The local area (10 kilometre radius) surrounding the application area retains approximately 55 per cent vegetation.

Given its degraded (Keighery, 1994) condition, the application area is unlikely to contain significant habitat for ground dwelling fauna. A site inspection identified that the application area does however, represent suitable foraging habitat and potential nesting habitat for the forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*) and Carnaby's cockatoo (*Calyptorhynchus latirostris*) (DER 2016). Fauna management practices such as identifying and checking habitat trees prior to clearing will assist in mitigating impacts to black cockatoo species.

Although the application area contains habitat for black cockatoos, given its predominantly degraded (Keighery 1994) condition it is not likely to comprise a high level of biological diversity. Therefore the proposed clearing is not likely to be at variance to this clearing principle.

Methodology

References:
Department of Environment Regulation (2016)
Keighery (1994)

Parks and Wildlife (2016a)
Western Australian Herbarium (1998-)

GIS Datasets:
NLWRA, Current Extent of Native Vegetation
SAC Bio Datasets (Accessed August 2016)

(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

Proposed clearing may be at variance to this Principle

Eleven fauna species of conservation significance have been recorded within the local area (10 kilometre radius) (Department of Parks and Wildlife (Parks and Wildlife), 2007-). The application area is likely to provide suitable habitat for two of these, Carnaby's cockatoo (*Calyptorhynchus latirostris*) and forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*). These species are listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* and endangered and vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* respectively.

Forest red-tailed black cockatoo and Carnaby's cockatoo have a preference for foraging habitat that includes jarrah and marri woodlands and forest heathland and woodland dominated by proteaceous plant species such as Banksia, Hakea and Grevillea (Commonwealth of Australia 2012).

The habitat critical to survival of forest red-tailed black cockatoo and Carnaby's cockatoo comprises all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 millimetres of annual average rainfall (Commonwealth of Australia 2012). A site inspection of the application area determined that given the dominance of marri and jarrah, the application area may provide suitable black cockatoo foraging habitat. A pair of Carnaby's cockatoos were observed foraging in a *Eucalyptus wandoo* tree adjacent to the application area. Although suitable for foraging, the vegetation under application is unlikely to provide significant foraging habitat given the largely degraded (Keighery, 1994) condition of the application area, that the local area retains approximately 55 per cent vegetative cover and the presence of better quality habitat in nearby conservation reserves.

Potential habitat trees for the black cockatoos have a diameter at average adult human chest height, of greater than 50 centimetres. Suitable habitat trees are generally healthy but with dead limbs and broken crowns that are likely to contain hollows and roosts suitable for native fauna. A site inspection identified several large trees suitable for black cockatoo breeding (DER, 2016) and Parks and Wildlife advised that the application area contains a number of mature *Eucalyptus wandoo, Eucalyptus marginata* and *Corymbia calophylla* trees that are suitable for roosting, feeding and breeding for both species (Parks and Wildlife, 2016b). In addition, the application area is near the northern limit of the distribution of the forest red-tailed black cockatoo. Therefore, additional loss of habitat in this area could further reduce the species current range (Parks and Wildlife, 2016b). Management measures prior to clearing including requiring a fauna specialist to identify and inspect habitat trees for the presence of black cockatoos and no clearing authorised within 10 metres of identified trees will assist in minimising impacts to these species.

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

Methodology

References:
Commonwealth of Australia (2012)
Department of Environment Regulation (2016)
Keighery (1994)
Parks and Wildlife (2007-)
Parks and Wildlife (2016b)

GIS Databases:
SAC Bio Datasets (Accessed August 2016)

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

Comments

Proposed clearing is not likely to be at variance to this Principle

Fourteen rare flora species have been recorded within the local area (10 kilometre radius), with the closest recorded being approximately 955 metres south east of the application area. The preferred habitat for this species predominantly occurs in lateritic soils among low scrub in jarrah and wandoo woodland, and in heath on lateritic hill tops (Parks and Wildlife, 2016a; Brown et al., 1998).

Area 1 of the application area contains both jarrah and wandoo woodland, and consists of lateritic soils. However, a site inspection revealed that Area 1 has been subject to significant historical disturbance from extractive industry practices and has little remaining understorey vegetation, consisting predominantly of exotic grass species (DER, 2016). Parks and Wildlife advised that given the general site condition, the likelihood of this species occurring within the application area is low (Parks and Wildlife, 2016a).

Although Area 2 of the application area contains an area of intact understorey vegetation in the north eastern corner, it is not likely this species would occur within this area given this species has a preference for lateritic soils, Area 2 consists of sandy soils. Given the differing habitat type, the chance of this species occurring within this area is low (Parks and Wildlife, 2016).

The application area is not likely to support suitable habitat for the remaining rare flora taxa, given the largely degraded (Keighery, 1994) condition of the majority of the vegetation under application.

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

Methodology

References:
Brown et al. (1998)
DER (2016)
Keighery (1994)
Parks and Wildlife (2016a)

GIS Databases:
SAC Bio Datasets (Accessed August 2016)

(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

Proposed clearing is not likely to be at variance to this Principle

Five threatened ecological communities (TECs) are located within the local area (10 kilometre radius). The closest TEC is known as '*Banksia attenuata* woodland over species rich dense shrublands' mapped 5.5 kilometres from the application area.

Given the type and condition of the vegetation proposed to be cleared, it is not representative of this community.

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

Methodology

GIS Databases:
SAC Bio Datasets (Accessed August 2016)

(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

Proposed clearing is not likely to be at variance to this Principle

The area under application is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 39 per cent of its pre-European vegetation extent remaining (Government of Western Australia, 2015).

The vegetation under application is mapped as Beard vegetation association 1020 of which there is approximately 28 per cent of its pre-European extent remaining within the Swan Coastal Plain bioregion (Government of Western Australia 2015). The application area is also mapped as comprising Heddle vegetation Moondah complex and Mattiske Mh complex of which approximately 41 and 33 per cent of their pre-European vegetation remains, respectively (Parks and Wildlife, 2015).

The area under application is located within the Shire of Chittering, within which there is approximately 38 per cent of pre-European extent remaining (Government of Western Australia, 2015). It is estimated that the local area retains approximately 55 per cent vegetative cover.

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).

Given the application area may contain significant habitat for black cockatoo species, it may be considered a significant remnant. Only the mapped Beard vegetation association contains less than the above mentioned 30 per cent threshold and the local area has 55 per cent vegetative cover.

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

The requirement to revegetate the cleared areas once extraction activities cease, will ensure no permanent loss of extensively cleared vegetation types will occur.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Managed Lands (%)
IBRA Bioregion*				
Swan Coastal Plain	1,501,222	579,162	39	37
Shire*				
Shire of Chittering	121,835	46,528	38	10
Beard Vegetation Association in Bioregion*				
1020	5,296	1,501	28	6
Heddle Vegetation Complex **				
Moondah Complex:low closed forest and low open forest	17,715	7,187	41	12
Mattiske Vegetation Complex **				
Mh	2,043	667	33	1

Methodology

References:
Commonwealth of Australia (2001)
Government of Western Australia (2015)*
Parks and Wildlife (2015)**

GIS Databases:
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

Proposed clearing is not likely to be at variance to this Principle

No watercourses or wetlands are mapped within the application area and no riparian vegetation was observed during a site inspection undertaken by DER officers (DER, 2016). A man-made drainage line/runoff area was observed along the northern edge of Area 2.

The closest hydrological features is a perennial lake and non-perennial watercourse which occur 150 metres east and 400 metres north-east of Area 2 respectively.

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

Methodology

References:
DER (2016)

GIS Databases:
Hydrography linear

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

Comments

Proposed clearing may be at variance to this Principle

The soils mapped within the application area have been mapped as Reagan 1b Phase soil sub unit described as gentle slopes of deeply bleached sands with very low woodland and shrubland with scattered low trees of *Banksia prionotes*, Casuarina ssp., Adenanthos and a few stunted *Eucalyptus marginata* (Schoknecht et al., 2004). A site inspection observed lateritic soils within Area 1 and sandy soils within Area 2 (DER, 2016).

The application area is situated on sloping land with a gradient of up to one in fourteen at Area 1 and up to one in 17 in Area 2. Although the application area is situated on a slope, it not likely the proposed clearing will result in water erosion given the porous nature of both soil types and moderate rainfall (800 millimetres per annum) within Areas 1 and 2.

The sandy soils within Area 2 are susceptible to wind erosion. The proposed clearing may result in land degradation in the form of wind erosion. However, it is not likely the proposed clearing will cause appreciable land degradation in the form of wind erosion, given the relatively small size of Area 2 (2.38 hectares). The requirement to not clear native vegetation unless undertaking works within three months post-clearing and dust mitigation measures required under the Shire of Chittering's planning approval will assist in mitigating this risk (Shire of Chittering, 2016a).

Groundwater salinity within the application area has been mapped as brackish to moderately saline at between 1000-3000 milligrams per litre Total Dissolved Solids. However, given the sparseness of the vegetation under application and that the majority of it is in a degraded (Keighery, 1994) condition, it not likely the proposed clearing will cause land degradation through salinity.

The proposed clearing is therefore may be at variance to this Principle.

Methodology

References:
DER (2016)
Keighery (1994)
Schoknecht et al. (2004)
Shire of Chittering (2016a)

GIS Databases:
Soils, Statewide
Groundwater salinity

(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

Proposed clearing is not likely to be at variance to this Principle

The closest conservation area is the Barracca Nature Reserve (A class), located approximately 2.1 kilometres north east of the application area. The Chandala Nature Reserve and Bullsbrook Nature Reserve are located 6.3 kilometres north west and 8.5 kilometres south of the application area respectively.

Given the distance, amount of vegetation in better quality in the local area and limited connectivity of the application area within the landscape, it is not likely to be significant for the movement of fauna nor is it likely the proposed clearing will impact the environmental values of these reserves.

Given the above, the proposed clearing 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

Proposed clearing is not likely to be at variance to this Principle

The closest hydrological features to the application area is a perennial lake and non-perennial watercourse that occur 150 metres east and 400 metres north-east of Area 2 respectively. The minor non-perennial watercourse is a tributary of the Chandala Brook which is located four kilometres south west of the application area. The minor perennial watercourse runs north and north east of the application area.

No watercourses or wetlands are mapped within the application area. Area 1 is situated on land with a gradient of up to one in fourteen, sloping towards the minor non-perennial watercourse which is approximately 500 metres north of the application area. The main risk related to the proposed clearing is erosion, sediment transport and associated turbidity to this non-perennial watercourse. This risk is likely to be low given the distance from the application area to this watercourse.

Groundwater salinity within the application area has been mapped as brackish to moderately saline at between 1000-3000 milligrams per litre Total Dissolved Solids. Given the relatively small amount of clearing proposed and the vegetative cover in the local area, it is not likely the proposed clearing will lead to a perceptible rise in the water table and thus an increase in groundwater salinity levels.

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

Methodology

References:
Keighery (1994)

GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
Hydrography, linear
Groundwater Salinity, 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

Proposed clearing is not likely to be at variance to this Principle

The proposed clearing is not likely to cause or exacerbate the incidence of flooding, given there are no watercourses or wetlands mapped within the application area and the relatively small area and predominately degraded (Keighery, 1994) condition of the vegetation under application.

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

Methodology References:
Keighery (1994)

GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
Hydrography, linear

Planning instruments and other relevant matters.

Comments On the 23 September 2015 the Shire of Chittering approved the applicant's application for planning approval for extractive industry within the application area (Shire of Chittering, 2016a).

On the 9 August 2016 the applicant was issued an Extractive Industry Licence from the Shire of Chittering for the purpose of sand and gravel excavation (Shire of Chittering, 2016b)

The Chittering Landcare Group (CLCG) (2016) has raised concern over the removal of habitat trees within the application area as they provide nesting and foraging for black cockatoos and prevent land degradation in the form of salinity and water erosion. CLCG has recommended that should clearing be approved there should be a requirement for the applicant to rehabilitate the property. Conditions have been placed on the clearing permit to identify and check all identified potential nesting trees prior to clearing and to revegetate the area post extraction.

The application area is zoned as 'Agriculture Resource' under the local Town Planning Scheme.

Methodology References:
Chittering Landcare Group (2016)
Shire of Chittering (2016a)
Shire of Chittering (2016b)

GIS Databases:
Town Planning Scheme Zones

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