



A936222 /

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number: CPS 6359/1
Permit Holder: City of Wanneroo
Duration of Permit: 15 August 2015 – 15 August 2045

ADVICE NOTE

The funds referred to in condition 9 of this permit are intended for the purchase of 400 hectares of native vegetation containing Carnaby's cockatoo foraging and potential breeding habitat, a high level of biodiversity and is significant in the maintenance of a conservation reserve(s), within the Shire of Gingin or the Shire of Chittering.

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 industrial development.
2. **Land on which clearing is to be done**
Lot 9000 on Deposited Plan 60745, Neerabup
Lot 9003 on Deposited Plan 70103, Neerabup
Lot 600 on Deposited Plan 302260, Neerabup
3. **Area of Clearing**
The Permit Holder must not clear more than 159 hectares of native vegetation within the area cross hatched yellow on attached Plan 6359/1a.
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. **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.

6. Offset - Site 1

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

- (a) give a conservation covenant under section 30B of the *Soil and Land Conservation Act 1945* setting aside the covenant area, being the area cross hatched red on attached Plan 6359/1a within Lot 9000 on Deposited Plan 60745, Neerabup, for the protection and management of vegetation in perpetuity; and
- (b) provide to the CEO a copy of the executed conservation covenant.

7. Offset – Site 2

The Permit Holder shall:

- (a) prior to undertaking any clearing authorised under this Permit, provide evidence from the Department of Lands that the purpose of the management order for the area cross hatched red on attached Plan 6359/1b (part Lot 10823 on Deposited Plan 187676, Reserve 11598, Pinjar), will be amended to Conservation; and
- (b) provide to the CEO a copy of the amended management order no later than 31 December 2017.

8. Offset - Site 3

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

- (a) give a conservation covenant under section 30B of the *Soil and Land Conservation Act 1945* setting aside the covenant area, being the area cross hatched red on attached Plan 6359/1c, Lot 24 on Plan 14380, Wanneroo, for the protection and management of vegetation in perpetuity; and
- (b) provide to the CEO a copy of the executed conservation covenant.

9. Monetary contributions to a fund maintained for the purpose of establishing or maintaining vegetation (offset)

Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall provide documentary evidence to the CEO that funding has been transferred to the Department of Parks and Wildlife to purchase 400 hectares of land for the purpose of establishing or maintaining native vegetation.

10. Revegetation and rehabilitation

The Permit Holder shall:

- (a) retain 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) prior to 9 July 2020, *revegetate* and *rehabilitate* the area cross-hatched red on attached Plan 6359/1b by:
 - (i) laying vegetative material and topsoil retained from clearing authorised under this permit on the area cross-hatched red on attached Plan 6359/1b;
 - (ii) 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
 - (iii) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area.
- (c) within 24 months of laying the vegetative material and topsoil on the area cross hatched red on attached plan 6359/1b, in accordance with condition 10(a) 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 10(b)(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 10(b)(ii) of this permit, the Permit Holder shall repeat condition 10(b)(i) and 10(b)(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 10(b)(i) and (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 10(b)(ii), the CEO may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 10(b)(ii).

11. Dieback and weed control

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

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

PART III - RECORD KEEPING AND REPORTING

12. 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 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;
 - (ii) the date that the area was cleared;
 - (iii) the size of the area cleared (in hectares); and
- (b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 10 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) the date *revegetation* and *rehabilitation* actions were undertaken;
 - (iii) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (iv) the size of the area *revegetated* and *rehabilitated* (in hectares);
 - (v) the species composition, structure and density of *revegetation* and *rehabilitation*; and
 - (vi) a copy of the environmental specialist's report.

13. 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 12 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 15 May 2045, the Permit Holder must provide to the CEO a written report of records required under condition 12 of this Permit where these records have not already been provided under condition 13(a) of this Permit.

DEFINITIONS

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

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

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.

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

local provenance means native vegetation seeds and propagating material from natural sources within 20 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.

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;

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; and

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.

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

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.

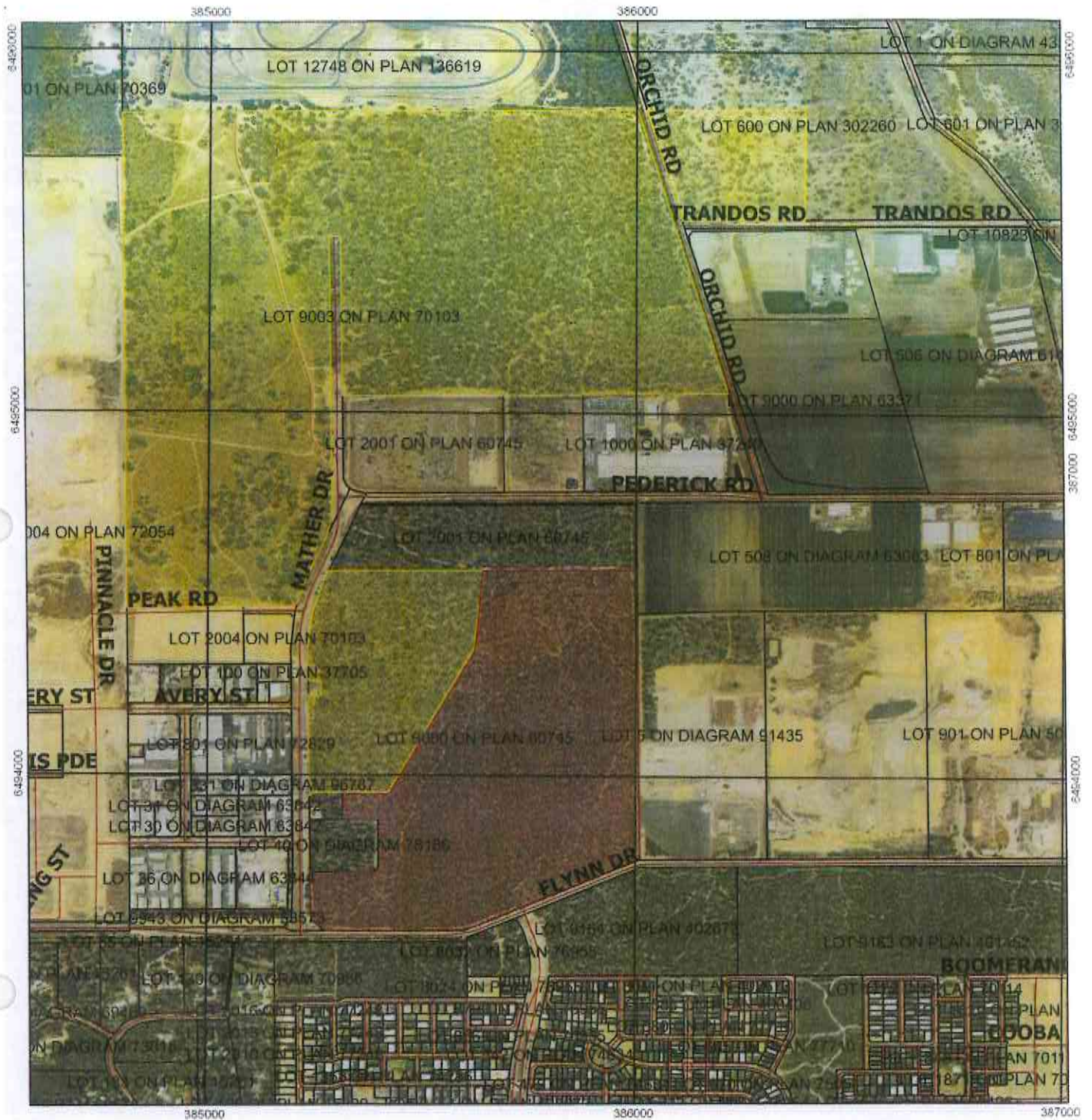


Kerry Laszig
A/EXECUTIVE DIRECTOR
LICENSING AND APPROVALS






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

16 July 2015

Plan 6359/1a



Legend

-  Area subject to conditions
 -  Areas approved to clear
 -  Roads
 -  LGA
 -  Cadastre
- Virtual Mosaic (LGATE-V001)



1:10,000

MGA 94

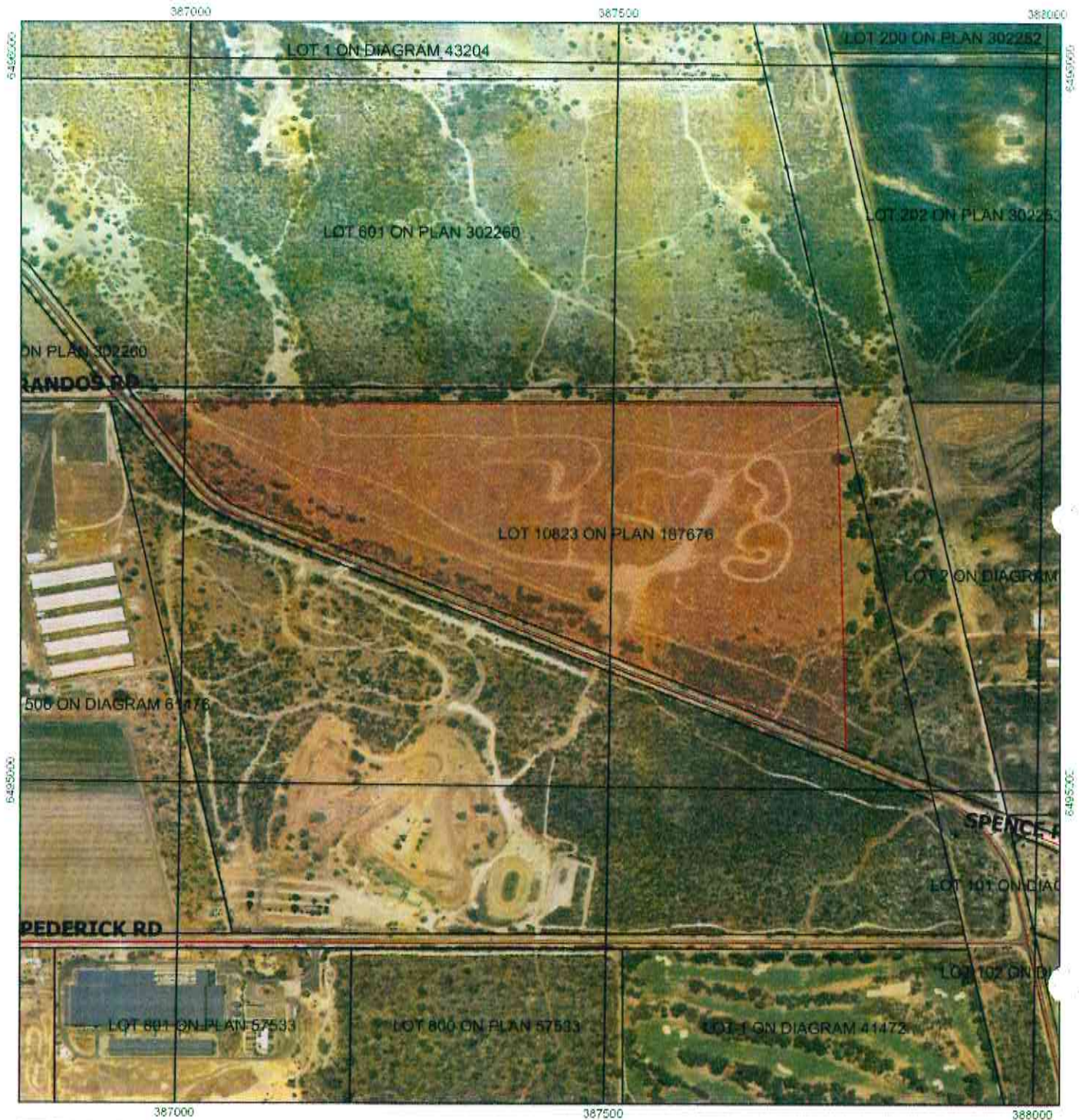
Geocentric Datum of Australia 1994

K Laszlg Date *16/7/15*





Officer delegated under Section 20
of the Environmental Protection Act 1986



Plan 6359/1b



Legend

-  Area subject to conditions
-  Roads
-  LGA
-  Cadastre
- Virtual Mosaic (LGATE-V001)



1:5,000

MGA 94

Geocentric Datum of Australia 1994

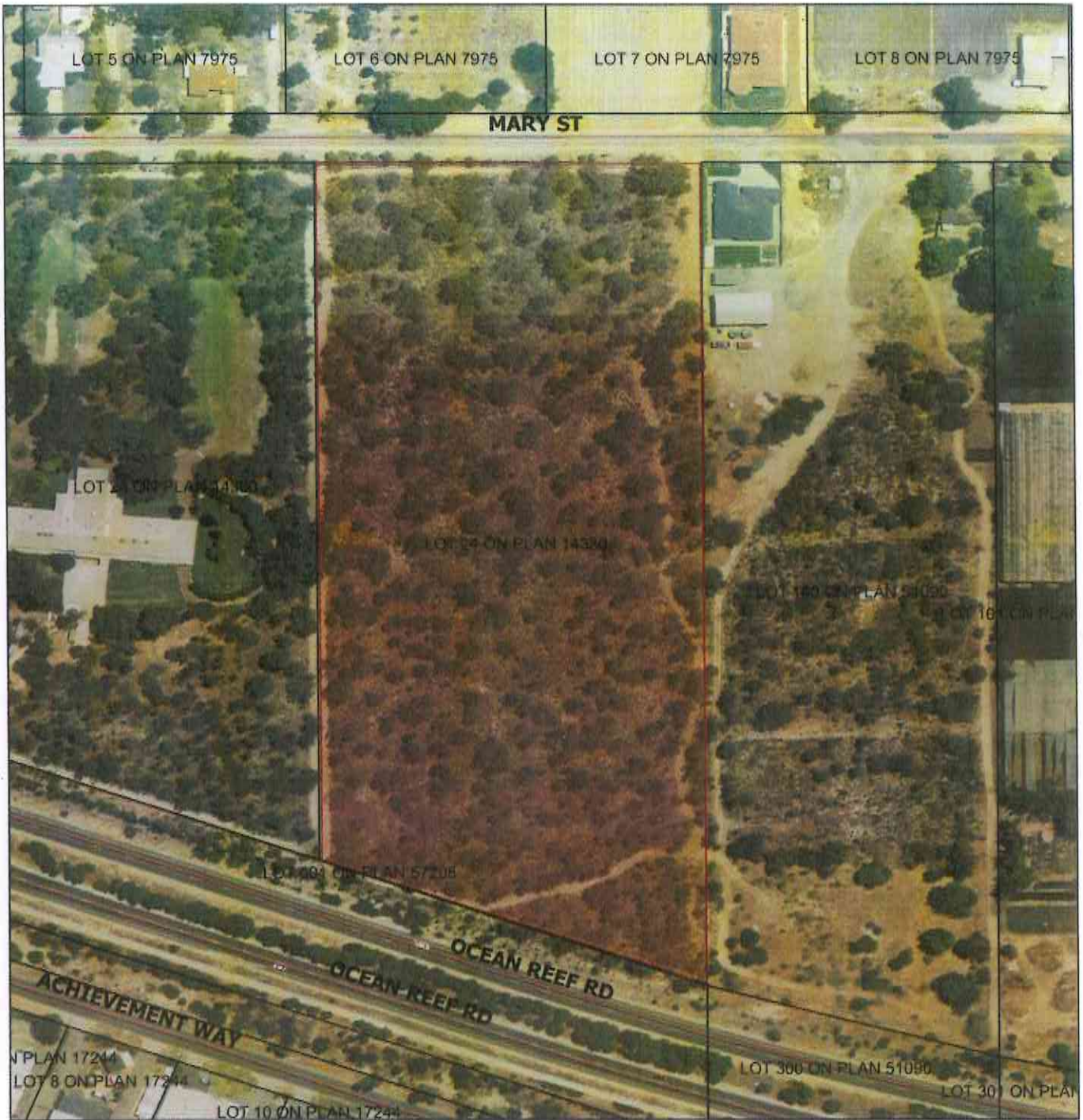
K Laszig Date *16/7/15*
K Laszig

Officer delegated under Section 20
of the Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA

Plan 6359/1c



Legend

- Area subject to conditions
 - Roads
 - LGA
 - Cadastre
- Virtual Mosaic (LGATE-V001)



1:1,500

MGA 94
Geocentric Datum of Australia 1994

K Laszig Date *16/3/15*
K Laszig

Officer delegated under Section 20
of the Environmental Protection Act 1986





1. Application details

1.1. Permit application details

Permit application No.: 6359/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: City of Wanneroo

1.3. Property details

Property: LOT 9003 ON DEPOSITED PLAN 70103 (House No. 85 MATHER NEERABUP 6031)
LOT 9000 ON DEPOSITED PLAN 60745 (House No. 240 FLYNN NEERABUP 6031)
LOT 600 ON DEPOSITED PLAN 302260 (House No. 570 WATTLE NEERABUP 6031)
Local Government Area: City of Wanneroo

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
159	-	Mechanical Removal	Industrial development and extractive industry

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 16 July 2015

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 is mapped as: Beard vegetation association 6 which is described as medium woodland, tuart and jarrah (Shepherd et al, 2001). Hedde Vegetation Complex Cottesloe Complex-Central and South which is described as a mosaic of woodland of Eucalyptus gomphocephala and open forest of E. gomphocephala - E. marginata - Corymbia calophylla; closed heath on the Limestone outcrops (Hedde et al, 1980). Hedde Vegetation Complex Karrakatta Complex-Central and South which is described as predominantly open forest of E. gomphocephala - E. marginata - E. calophylla and woodland of E. marginata - Banksia species (Hedde et al, 1980).	To clear 159 hectares of native vegetation within Lot 9000 on Deposited Plan 60745, Lot 9003 on Deposited Plan 70103 and Lot 600 on Deposited Plan 302260, Neerabup, for the purposes of limestone extraction and industrial development.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994). To Completely Degraded; No longer intact, completely / almost completely without native species (Keighery, 1994).	A majority of the application area (102.1 hectares) has been described as an open forest of Eucalyptus marginata and Allocasuarina fraseriana over woodland of Banksia attenuata and Banksia menziesii over shrubland of Xanthorrhoea preissii over low open shrubland of Hibbertia hypericoides, with occasional Hypocalymma robustum and Bossiaea eriocarpa over open herbland including Mesomelaena pseudostygia, Desmocladius flexuosus and Lyginia barbata on grey loamy sands and sandy midslopes on midslopes and upper slopes in a good to excellent (Keighery, 1994) condition (Eco logical, 2013). The condition of the vegetation under application was determined via a flora and fauna assessment undertaken by Eco logical (2013) and a site inspection undertaken by the Department of Environment Regulation (2015). Approximately 21.2 hectares of the application area is in a completely degraded condition, 44 hectares is in a degraded condition, 70.6 hectares is in a good condition, three hectares is in a very good condition and 19.5 hectares is in an excellent condition (DER, 2015).

3. Assessment of application against Clearing Principles

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

Comments Proposal is at variance to this Principle

The application is to clear 159 hectares of native vegetation within Lot 9000 on Deposited Plan 60745, Lot 9003 on Deposited Plan 70103 and Lot 600 on Deposited Plan 302260, Neerabup, for the purposes of limestone extraction and industrial development.

The application area has been described as the following seven vegetation types (Eco logical, 2013):

- Open forest of *Eucalyptus marginata* and *Allocasuarina fraseriana* over woodland of *Banksia attenuata* and *Banksia menziesii* over shrubland of *Xanthorrhoea preissii* over low open shrubland of *Hibbertia hypericoides*, with occasional *Hypocalymma robustum* and *Bossiaea eriocarpa* over open herbland (102.1 hectares).
- Open woodland of *Corymbia calophylla*, *Banksia grandis* and *Banksia attenuata* over low open scrubland of *Hibbertia hypericoides* over grassland of introduced species (12.4 hectares).
- *Eucalyptus gomphocephala* open woodland over *Jacksonia furcellata* and *Acacia saligna* tall scrub over *Macrozamia riedlei* and *Xanthorrhoea preissii* open shrubland (4.3 hectares).
- *Eucalyptus marginata* low woodland with scattered *Banksia attenuata*, *Banksia menziesii*, and *Allocasuarina fraseriana* over *Xanthorrhoea preissii* low to low open shrubland (14.4 hectares).
- *Eucalyptus rudis*, *Allocasuarina fraseriana*, and *Melaleuca preissiana* open woodland with scattered *Banksia ilicifolia* and *Nuytsia floribunda* over *Jacksonia furcellata* tall open shrubland over an open grassland of *Ehrharta calycina* (4.3 hectares).
- *Eucalyptus todtiana* and *Nuytsia floribunda* low open woodland over *Hibbertia hypericoides*, *Eremaea pauciflora* and *Xanthorrhoea preissii* low open shrubland over grassland and *Ehrharta calycina* (5.6 hectares).
- *Corymbia calophylla* and *Eucalyptus marginata* open forest over *Hibbertia hypericoides* and *Hakea prostrata* low shrubland to open shrubland over *Ehrharta calycina*, *Ehrharta longiflora* and *Bromus diandrus* grassland (15.9 hectares).

A Department of Environment Regulation (2015) site inspection observed approximately 21.2 hectares of the application area to be in a completely degraded condition, 44 hectares in a degraded condition, 70.6 hectares in a good condition, three hectares in a very good condition and 19.5 hectares in an excellent condition (DER, 2015).

A biological survey of the application area (Eco logical, 2013) recorded a total of 96 taxa of vascular flora species, 25 vertebrate fauna species comprised of reptiles and mammals and 42 species of birds.

The local area (10 kilometre radius) surrounding the application area retains approximately 30 percent native vegetation.

Thirty five terrestrial fauna species of conservation significance have been recorded within the local area (Parks and Wildlife, 2007-). Of these *Calyptorhynchus baudinii* (Baudin's cockatoo), *Calyptorhynchus latirostris* (Carnaby's cockatoo), *Merops ornatus* (rainbow bee-eater), *Falco peregrinus* (peregrine falcon), *Dasyurus geoffroi* (chuditch), *Macropus irma* (western brush wallaby), *Isodon obesulus* subsp. *fusciventer* (quenda) and *Morelia spilota* subsp. *imbricata* (South West carpet python) are likely to be impacted by the proposed clearing. *Austrosaga spinifer* (cricket), *Hylaeus globuliferus* (bee), *Leioproctus contrarius* (bee) and *Neelaps calonotos* (black-striped Snake) may also be present.

Carnaby's cockatoo is listed as endangered under the Wildlife Conservation Act 1950 (WC Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). A Carnaby's cockatoo habitat assessment of the project area (application area and adjoining 50 hectare remnant) recorded a majority of the vegetation as high value foraging habitat (Eco logical, 2013). Flocks of Carnaby's cockatoos estimated at approximately 100 birds were recorded foraging within the project area during both survey days and further foraging evidence was also recorded across the site. The assessment recorded approximately 694 potential nesting trees (diameter at breast height of greater than 0.5 metres). Of these approximately 120 trees were observed to have hollows suitable for Carnaby's cockatoo breeding.

The Carnaby's cockatoo recovery plan (DEC, 2012a) summarises habitat critical to the survival of Carnaby's cockatoos as:

- The eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- Woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- In the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources.

The recovery plan also states, "success in breeding is dependent on the quality and proximity of feeding habitat within 12 kilometres of nesting sites. Along with the trees that provide nest hollows, the protection, management and increase of this feeding habitat that supports the breeding of Carnaby's cockatoo is a critical requirement for the conservation of the species" (DEC, 2012a). Given the above, the application area contains vegetation that is critical to the survival of Carnaby's cockatoo.

The threatened ecological community (TEC) *Banksia attenuata* woodland over species rich dense shrublands is situated within contiguous vegetation 50 metres from the application area. Flora surveys of the application area did not record vegetation consistent with a TEC. The applicant has developed a Conservation Area Management Plan in order to minimise the potential for indirect impacts to TEC vegetation (AECOM, 2015a).

Flora surveys of the application area undertaken in 2007 (ATA Environmental, 2007) and 2013 (Eco logical, 2013) did not record any rare or priority flora species. One species recorded in 2007 (*Conostylis aculeata* subsp. *cygnorum*) is however listed in Bush Forever as a significant flora species of the Perth Metropolitan Region (ATA Environmental, 2007) and will be impacted by the proposed clearing.

Given the condition of the vegetation (largely good to excellent (Keighery, 1994)), its proximity to a threatened ecological community, the presence of significant rare fauna habitat and the linkage value of the vegetation to other conservation reserves, the application area supports a high level of biodiversity and the proposed clearing is at variance to this clearing principle.

The applicant has developed a Construction Environmental Management Plan in order to manage impacts to biodiversity during the construction phase of the project (AECOM, 2015b). The management plan includes a commitment to prevent injury or disturbance to breeding cockatoos during the construction phase of the project.

In order to offset the residual environmental impacts of the application the applicant has committed to:

- Providing funds for the purchase of 400 hectares of vegetated land within the vicinity of Gingin that contains potential Carnaby's cockatoo nesting and feeding habitat.
- The revegetation and conservation management (by the City of Wanneroo) of a 20 hectare disused refuse site in close proximity to the application area.
- The management of a four hectare reserve (by the City of Wanneroo) in close proximity to the application area for conservation.
- The transfer of 50 hectares of Industrial zoned land (including areas containing the TEC *Banksia attenuata* woodland over species rich dense shrublands) to conservation tenure, to be managed by the City of Wanneroo.

Methodology

References:

ATA Environmental (2007)
AECOM (2015a)
AECOM (2015b)
Brown et al (2009)
DEC (2012a)
DER (2015)
Eco logical (2013)
Keighery (1994)
Molloy et al (2009)
Parks and Wildlife (2007-)

GIS Datasets:

- SacBiodataSets - accessed January 2015

(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 at variance to this Principle

A majority of the application area (102.1 hectares) has been described as an open forest of *Eucalyptus marginata* and *Allocasuarina fraseriana* over woodland of *Banksia attenuata* and *Banksia menziesii* over shrubland of *Xanthorrhoea preissii* over low open shrubland of *Hibbertia hypericoides*, with occasional *Hypocalymma robustum* and *Bossiaea eriocarpa* over open herbland in a good to excellent (Keighery, 1994) condition (Eco logical, 2013). No vegetation associated with a wetland has been identified within the application area.

Tracks of vegetation, defined by the Gngarara Sustainability Strategy (Brown et al, 2009) runs through contiguous vegetation to the south and east of the application area, connecting it to nature reserves in all directions. Remnant vegetation (both contiguous and non-contiguous) acts as stepping stones of habitat which facilitates the maintenance of ecological processes and the movement of organisms within, and across, a landscape (Molloy et al, 2009). Given this, the application area is significant in the movement of local fauna within the landscape. However, as the land to the west of the application area is zoned industrial, the long term viability of this connection cannot be assured.

Thirty five terrestrial fauna species of conservation significance have been recorded within the local area (10 kilometre radius) (Parks and Wildlife, 2007-). Of these five are mammals, 24 are avian, two are reptiles and four are invertebrates.

Of the avian fauna 20 species are associated with wetland or marine systems and are therefore not likely to be impacted by the proposed clearing. The remaining avian fauna species include *Calyptorhynchus baudinii* (Baudin's cockatoo) and *Calyptorhynchus latirostris* (Carnaby's cockatoo) which are listed as endangered/vulnerable under the Wildlife Conservation Act 1950 (WC Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) respectively, *Merops ornatus* (rainbow bee-eater) which is listed as specially protected as a migratory species under the WC Act and *Falco peregrinus* (peregrine falcon) which is listed as specially protected under the WC Act.

Carnaby's cockatoo and Baudin's cockatoo nest in large hollows of eucalyptus trees and forage on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (*Banksia*, *Hakea*, *Grevillea*), *Eucalyptus* species, *Corymbia* species and a range of introduced species, especially seeds from cones of *Pinus* species (Shah, 2006; Valentine and Stock, 2008). Clearing of feeding habitat on the Swan Coastal Plain poses a significant threat to the long term survival of Carnaby's cockatoo (Shah, 2006).

Carnaby's cockatoo was once abundant in Western Australia. Since the late 1940s the species has suffered a 30 percent contraction in range, a 50 percent decline in population, and between 1968 and 1990 disappeared from more than a third of its breeding range. Basic ecological theory, expert opinion and recent evidence, suggests that the remaining native and pine plantation foraging habitat on the Swan Coastal Plain is just sufficient to support the current population of Carnaby's cockatoo. Therefore any reduction in the amount of food source will result in a reduction in the carrying capacity of the region and therefore a decline in the population of Carnaby's cockatoo (Saunders 1990; Johnstone and Storr 1998; Saunders and Ingram 1998; Garnett et al. 2011).

Twenty seven confirmed Carnaby's cockatoo roost sites have been mapped within the local area (10 kilometre radius), six of which fall within two kilometres of the application area. The vegetation under application has been mapped as unconfirmed feeding habitat and the application area falls approximately 4.6 kilometres from a mapped breeding area.

A Carnaby's cockatoo habitat assessment of the project area (application area and adjoining 50 hectare remnant) recorded a majority of the vegetation as high value foraging habitat (Ecological, 2013). Flocks of Carnaby's cockatoos estimated at approximately 100 birds were recorded foraging within the project area during both survey days and further foraging evidence was also recorded across the site. The assessment recorded approximately 694 potential nesting trees (diameter at breast height of greater than 0.5 metres). Of these approximately 120 trees were observed to have hollows suitable for Carnaby's cockatoo breeding.

The Carnaby's cockatoo recovery plan (DEC, 2012a) summarises habitat critical to the survival of Carnaby's cockatoos as:

- The eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- Woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- In the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources.

The recovery plan also states, "success in breeding is dependent on the quality and proximity of feeding habitat within 12 kilometres of nesting sites. Along with the trees that provide nest hollows, the protection, management and increase of this feeding habitat that supports the breeding of Carnaby's cockatoo is a critical requirement for the conservation of the species" (DEC, 2012a).

The rainbow bee-eater is a migratory species that arrives in the south west of Western Australia in late September-early October nesting in burrows dug in the ground. Sixteen sightings of this species were made within the application area during a 2006 survey (ATA Environmental, 2007). Although this species is present within the application area, given its large distribution and large population size (DotE, 2015) it is not likely to be significantly impacted by the proposed clearing unless breeding on site (Parks and Wildlife, 2015).

The peregrine falcon has a national distribution. The application area is not likely to contain significant foraging habitat for this species as it is likely to disperse to adjoining vegetation during clearing events (Parks and Wildlife, 2015).

Of the five mammals of conservation significance recorded within the local area *Bettongia penicillata* subsp. *ogilbyi* (woylie) is listed as endangered under the EPBC Act and critically endangered under the WC Act, *Dasyurus geoffroyi* (chuditch) and *Petrogale lateralis* subsp. *lateralis* (black-flanked rock-wallaby) are listed as vulnerable under the EPBC Act and WC Act, *Macropus irma* (western brush wallaby) is listed as Priority 4 by the Department of Parks and Wildlife (Parks and Wildlife) and *Isodon obesulus* subsp. *fusciventer* (quenda) is listed as priority 5 by Parks and Wildlife.

The current distribution of the woylie is severely restricted due to the presence of introduced predators since European settlement; as no populations are known from the local area it is not likely to be impacted by the proposed clearing (Yeatman and Groom, 2012). As the habitat requirements for the black-flanked rock-wallaby are not present within the application area it is not likely to be impacted by the proposed clearing (Pearson, 2013).

The habitat preferences for the chuditch are noted within the application area. This species has been recorded within the local area and the vegetation under application meets the habitat requirements deemed critical to the survival of the species (DEC, 2012b), therefore it may be impacted by the proposed clearing. Given the species large home range the retention of vegetation corridors is an important requirement of the species (DEC, 2012b).

The western brush wallaby has been reported within the area and recorded within the adjacent National Park (ATA Environmental, 2007). Given this, and as its habitat preferences are present within the application area, it may be impacted by the proposed clearing.

Quenda are listed as priority 5 by Parks and Wildlife. Priority 5 is defined as species that are managed under a specific conservation program, the cessation of which would result in the species becoming threatened. Given this, although it may be present within the application area, the proposed clearing is unlikely to alter the conservation status of the taxon.

Of the two conservation significant reptiles recorded within the local area *Morelia spilota* subsp. *imbricata* (South West carpet python) is specially protected under the WC Act and *Neelaps calonotos* (black-striped snake) is listed as priority 3 by Parks and Wildlife.

The South West carpet python occurs in semi-arid coastal and inland habitats consisting of *Banksia* woodland, eucalypt woodlands, and grasslands with known populations in close proximity to the application area (DEC, 2012c; ATA Environmental, 2007). A fauna assessment of the application area noted that the species occurs occasionally within the vicinity of the application area (ATA Environmental, 2007). Major threats to this species include the loss of bushland for land development (DEC, 2012c).

Of the four conservation significant invertebrates recorded within the local area *Austrosaga spinifer* (cricket), *Hylaeus globuliferus* (bee) and *Leioproctus contrarius* (bee) are listed as priority 3 by Parks and Wildlife while *Synemon gratioiosa* (Graceful Sunmoth) is listed as priority 4. Species are included as priority 3 if they are comparatively well known from several localities but do not meet survey requirements and appear to be under threat from known threatening processes. Although the impact to these species and the black-striped snake has not been determined, they may be present on site and impacted by the proposed clearing.

Priority 4 is defined as species that are not currently considered threatened but could be if current circumstances change. A review of the application in relation to the graceful sunmoth found that it was not likely to be impacted (Eco logical, 2013).

As the application area contains habitat critical to the survival of Carnaby's cockatoo and contains habitat for Baudin's cockatoo as well as 15 other fauna species of conservation significance, the proposed clearing is at variance to this clearing principle.

The applicant has developed a Construction Environmental Management Plan in order to manage impacts to fauna during the construction phase of the project (AECOM, 2015b). The management plan includes a commitment to prevent injury or disturbance to breeding cockatoos during the construction phase of the project.

In order to offset the residual environmental impacts of the application the applicant has committed to:

- Providing funds for the purchase of 400 hectares of vegetated land within the vicinity of Gingin that contains potential Carnaby's cockatoo nesting and feeding habitat.
- The revegetation and conservation management of a 20 hectare disused refuse site in close proximity to the application area.
- The management of a four hectare reserve in close proximity to the application area for conservation.
- The transfer of 50 hectares of Industrial zoned land (TEC vegetation located 50 metres from the application area) to conservation tenure and management into the future.

Methodology

References:

ATA Environmental (2007)
AECOM (2015b)
Brown et al (2009)
DEC (2012a)
DEC (2012b)
DEC (2012c)
DotE (2015)
Eco logical (2013)
Garnett et al. (2011)
Johnstone and Storr (1998)
Keighery (1994)
Molloy et al (2009)
Parks and Wildlife (2007-)
Parks and Wildlife (2015b)
Pearson (2013)
Saunders (1990)
Saunders and Ingram (1998)
Shah (2006)
Valentine and Stock (2008)
Yeatman and Groom (2012)

GIS Datasets:

- Carnaby Cockatoo breeding sites
- Carnaby Cockatoo feeding
- Hydrography linear

(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

Three rare flora species have been recorded within the local area (10 kilometre radius). Flora surveys of the application area undertaken in 2007 (ATA Environmental, 2007) and 2013 (Ecological, 2013) did not record any rare flora species or vegetation necessary for the continued existence of rare flora.

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

Methodology Reference:
ATA Environmental (2007)
Ecological (2013)

GIS Databases:
- SAC Biodatasets - accessed January 2015

(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 threatened ecological community (TEC) *Banksia attenuata* woodland over species rich dense shrublands occurs within the southern portion of Lot 9000. A 50 metre vegetated buffer from the TEC to the application area will be retained.

The Department of Parks and Wildlife (2015a) has advised that the results of flora surveys conducted over the application area are convincing in their conclusions that the vegetation to the west and north of the TEC is consistent with Gibson et al (1994) floristic community type 28 and not that of a TEC.

PGV Environmental (2013) conducted a TEC buffer study of Lot 5 Flynn Drive in order to assess the potential edge effect clearing 7.14 hectares of native vegetation would have on the TEC. Lot 5 falls adjacent (east) of the TEC and approximately 400 metres from the application area. Impacts taken into account were:

- Introduction and Spread of Weeds,
- Spread of dust from the cleared area,
- Alteration of the hydrology,
- Increased wind speed resulting in drying of vegetation,
- Spread of rubbish,
- Introduction and spread of disease,
- Increased human activity, and
- Increased frequency of fires.

The Department of Parks and Wildlife (2015a) has advised that given the findings of PGV Environmental's (2013) TEC buffer study, the retention of a 50 metre buffer from the application area is likely to sufficiently protect the TEC from a majority of the impacts listed above. However, the TEC may be impacted through changes to the hydrology of the area through an alteration in water flows in and out of the TEC.

Given this, the applicant has developed a Conservation Area Management Plan outlining the management actions to be undertaken in order to limit impacts to contingent TEC vegetation (AECOM, 2015a). These include:

- Fencing and access management,
- Rubbish removal,
- Bushfire management,
- Weed control,
- Revegetation, and
- Monitoring.

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

Methodology Reference:
Gibson et al (1994)
Parks and Wildlife (2015a)
PGV Environmental (2013)

GIS Databases:
- SAC Biodatasets - accessed January 2015

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is not 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 percent of its pre-European vegetation extent remaining (Government of Western Australia, 2013).

The vegetation under application is mapped as Beard vegetation association 6 of which there is approximately 24 percent of its pre-European extent remaining within the Swan Coastal Plain bioregion (Government of Western Australia, 2013).

The area under application is located within the City of Wanneroo, within which there is approximately 46 percent pre-European extent remaining (Government of Western Australia, 2013).

The application area is mapped as Heddle vegetation associations Cottesloe Complex central and/south and Karrakatta Complex central and/south which retain approximately 33 percent and 23 percent pre-European extent respectively (Parks and Wildlife, 2015c).

The local area (10 kilometre radius) retains approximately 30 percent native vegetation.

The national objectives and targets for biodiversity conservation in Australia have a target to prevent clearance of ecological communities with an extent below 30 percent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). Within defined constrained areas on the Swan Coastal Plain, the Environmental Protection Authority has set a threshold for retention of 10 percent of the pre-clearing extent of each native vegetation complex (EPA, 2006). The area under application has been classified as a constrained area.

Although the application area is a significant remnant due to its fauna and biodiversity values, as the application is located within a defined constrained area and all vegetation associations retain above 10 percent native vegetation, the application is not likely to be at variance to this principle.

	Pre-European (ha)	Current Extent (ha)	Extent Remaining (%)	Extent in DPaW Managed Lands (%)
IBRA Bioregion*				
Swan Coastal Plain	1,501,221	586,975	39	36
Shire*				
City of Wanneroo	67,516	31,428	46	50
Beard Vegetation Association within Bioregion *				
6	56,343	14,018	24	36
Heddle Vegetation Complex**				
Cottesloe complex central and/South	45,299	15,026	33	13
Karrakatta complex central and/South	49,912	11,374	23	5

Methodology References:
Commonwealth of Australia (2001)
EPA (2006)
*Government of Western Australia (2013)
**Parks and Wildlife (2015c)

(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 watercourses or wetlands have been mapped within the application area. The closest, Lake Pinjar, occurs within approximately 270 meters from the eastern most portion of the application area.

Flora surveys of the application area did not record vegetation growing in association with a wetland (ATA Environmental, 2007; Eco logical, 2013).

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

Methodology References:
ATA Environmental (2007)
Eco logical (2013)

GIS Datasets:
- Hydrography linear

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(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**

Groundwater salinity within the application area is mapped as less than 500 total dissolved solids, milligrams per litre. Given this, clearing the vegetation under application is not likely to cause land degradation through primary or secondary salinity.

The mapped soil type (Northcote et. al. 1960-68) has been described as an undulating dune landscape underlain by aeolianite which is frequently exposed; small swales of estuarine deposits are included. Chief soils are siliceous sands with smaller areas of brown sands and leached sands in the wetter sites. Given the sandy nature of the soils, clearing the vegetation under application may lead to land degradation through wind erosion. Advice received from the Commissioner of Soil and Land Conservation (2007) for a previous clearing permit application over the area states "the soils are potentially erodible and clearing the large area is likely to cause wind erosion".

No watercourses or wetlands are mapped within the application area. Given this and the mapped soil type, the application is not likely to cause land degradation through water erosion, waterlogging or eutrophication.

The applicant has developed a Construction Environmental Management Plan which outlines management actions to be undertaken in order to minimise wind erosion within the application area (AECOM, 2015b). Actions to be undertaken include:

- Installation of wind fencing around the perimeter of the site,
- Stockpiled soil to be stabilised with hydro mulch or similar material,
- Earthworks slopes to be stabilised with hydro-mulch, prior to vegetation establishment.

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

Methodology References:
AECOM (2015b)
Commissioner of Soil and Land Conservation (2007)
Northcote et. al. (1960-68)

GIS Datasets:
- Hydrography linear
- Soils statewide
- Topographic contours

(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 at variance to this Principle**

The Gngangara-Moore River State Forest (A class reserve) is situated approximately 500 meters north and two kilometres south east of the application area covering an area of approximately 71,000 hectares.

The Neerabup National Park (A class reserve) is situated approximately 2.8 kilometres south west of the application area encompassing a large chain of conservation reserves running parallel to the coast including Yellagonga Regional Park.

Bush Forever sites 295 and 428 are located immediately adjacent to the application area to the north and south respectively. Bush Forever sites 494, 444, 457 and 455 adjoin sites 295 and 428 providing linkages to sites 446, 140, 139, 293, 382 and 384.

Tracks of vegetation, defined by the Gngangara Sustainability Strategy (Brown et al, 2009) runs through contiguous vegetation to the south and east of the application area, connecting it to nature reserves in all directions. Remnant vegetation (both contiguous and non-contiguous) acts as stepping stones of habitat which facilitates the maintenance of ecological processes and the movement of organisms within, and across, a landscape (Molloy et al, 2009). Given this, the application area is significant in the movement of local fauna within the landscape. However, as the land to the west of the application area is zoned industrial, the long term viability of this connection cannot be assured.

As the application area adjoins conservation reserves, the proposed clearing is likely to lead to degradation of these bushland areas through impacts such as the introduction and spread of weeds and dieback, alteration of the hydrology, increased wind speed resulting in drying of vegetation and excess dust, spread of rubbish, increased human activity and an increased frequency of fires.

The applicant has developed a Construction Environmental Management Plan which outlines management actions to be undertaken in order to limit impacts to adjoining vegetation (AECOM, 2015b). Actions to be undertaken include:

- Demarcation, flagging and fencing of the area to be cleared,
- Restricting access to the boundary of the clearing area,
- Topsoil management,
- Weed and dieback procedures and
- Erosion and Dust management procedures.

However, as the proposed clearing is likely to affect the movement of ecological processes between reserves, it is at variance to this clearing principle.

In order to offset the residual environmental impacts of the application the applicant has committed to:

- Providing funds for the purchase of 400 hectares of vegetated land within the vicinity of Gingin that contains potential Carnaby's cockatoo nesting and feeding habitat.
- The revegetation and conservation management of a 20 hectare disused refuse site in close proximity to the application area.
- The management of a four hectare reserve in close proximity to the application area for conservation.
- The transfer of 50 hectares of Industrial zoned land (TEC vegetation contingent with the application area) to conservation tenure and management into the future.

Methodology

References:

AECOM (2015b)
Brown et al (2009)
Molloy et al (2009)

GIS Datasets:

- Bush forever
- CALM Regional Parks
- Parks and Wildlife Tenure
- SAC Biodata sets - accessed January 2015

(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

Groundwater salinity within the application area is mapped as less than 500 total dissolved solids, milligrams per litre. Given this, clearing the vegetation under application is not likely to increase the salinity of groundwater or surface water.

The Commissioner of Soil and Land Conservation (2007) has previously advised that given the hydrological gradient present, length of flow path and depth of groundwater, any nutrients released from the clearing are likely to be attenuated without significant impact.

As no watercourses or wetlands are mapped within the application area, clearing the vegetation is not likely to impact on the quality of surface water.

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

Methodology

References:

Commissioner of Soil and Land Conservation (2007)

GIS Databases:

- 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

Proposal is not likely to be at variance to this Principle

No watercourses or wetlands have been identified within the application area. Given this, the proposed clearing is not likely to be at variance to this clearing principle.

Methodology

GIS Datasets:

- Hydrography linear

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

Planning

The western portion of the application falls within a key extraction area as defined in the West Australian Planning Commissions Statement of Planning Policy no. 2.4, Basic Raw Materials.

In 1994 the Environmental Protection Authority (EPA) considered Metropolitan Regional Scheme amendment 948/33 in which the application area was to be zoned Industrial. The EPA found that the development could be implemented without causing unacceptable environmental impacts.

The application to clear native vegetation was referred to the EPA. On 1 September 2014 the EPA determined to not assess the proposal under Part IV of the Environmental Protection Act 1986 (EP Act) and recommended that the proposal be dealt with under Part V Division 2 of the EP Act.

The proposed clearing was referred to the Commonwealth Department of the Environment (DotE)(EPBC 2007/3479) and it was determined that the clearing was a 'controlled action' due to its potential impacts to Carnaby's black cockatoos. The DotE approved the 'controlled action' on 2 July 2014 subject to conditions which include:

- The development and approval of a Construction Environmental Management Plan,
- The development and approval of a Conservation Area Management Plan for three proposed reserves adjoining and in close proximity to the clearing area (Mary Street site, Tip site and on-site conservation area), and
- The provision of funds to purchase a 400 hectare offset property in the vicinity of Gingin.

The applicant has developed a Construction Environmental Management Plan and Conservation Area Management Plan in order to fulfil the DotE conditions.

The application area is part of the Department of Planning's "Perth and Peel@ 3.5 million" which is a discussion paper available on the Department of Planning website. This document states "The four draft frameworks have been guided by the Strategic Assessment of the Perth and Peel Regions – a joint Commonwealth-State Governments' initiative to streamline environmental approvals processes". The Department of Planning web documents (Western Australian Planning Commission, 2015) indicate that the development of the subject area as an industrial estate has been a part of the planning considerations over an extended period.

Other Matters

In 2007 the City of Wanneroo applied for a clearing permit over most of the application area to clear 175 hectares of native vegetation for the purpose of industrial development (CPS 1795/1). The application was found to be at variance to principles (a), (b), (d), (g) and (h), may have been at variance to principle (e) and was not likely to be at variance to principle (c), (f), (i) or (j). This application was refused on 6 March 2008 due to the identified environmental impacts and as sub-division approval had not been obtained. An offset for CPS 1795/1 was not presented for consideration.

CPS 1795/1 varied from the current application by excluding approximately four hectares of vegetation within the north of Lot 2001, more vegetation in southern Lot 9003, six hectares more vegetation within the south of Lot 9003 and additional vegetation within lot 9000 surrounding the identified TEC.

On 17 March 2015 DER wrote to the applicant outlining the identified environmental impacts of the clearing. On 22 June 2015 the applicant provided a Conservation Area Management Plan and Construction Environmental Management Plan outlining actions to be undertaken in order to minimise impacts during the construction phase of the project and potential impacts to TEC vegetation (AECOM, 2015a; AECOM, 2015b). Further information was also provided on the requirement for Industrial Land within the City of Wanneroo including the areas of industrial land available and predicted future requirements.

No Aboriginal Sites of Significance have been mapped within the application area.

One submission has been received in relation to this application recommending that it be refused (Submission, 2014). The matters raised have been addressed in the assessment against the clearing principles and consideration of planning and other matters.

Methodology

References:

- AECOM (2015a)
- AECOM (2015b)
- Submission (2014)
- Western Australian Planning Commission (2015)

4. References

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