



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 6488/1
Permit Holder:	Tamala Park Regional Council
Duration of Permit:	13 June 2015 – 13 June 2020

ADVICE NOTE

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

As part of approval 2010/5785 under the *Environment Protection and Biodiversity Conservation Act 1999* the proponent provided funds to the former Department of Environment and Conservation on 27 June 2013 for the purchase of one or more land parcels that contain a total of at least 420 hectares of Carnaby's cockatoo (*Calyptorhynchus latirostris*) foraging habitat and 66 hectares of potential Carnaby's cockatoo (*Calyptorhynchus latirostris*) breeding habitat.

Dust Management

As part of the planning approval's DA2014/978 and DA2014/2432, granted by the City of Wanneroo, the proponent is to prepare a Dust Management Plan for approval from the City of Wanneroo prior to the commencement of works.

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 conducting an unexploded ordnance search.

2. Land on which clearing is to be done

Lot 9015 on Plan 404168, Mindarie.

3. Area of Clearing

The Permit Holder must not clear more than 31.97 hectares of native vegetation within the area hatched yellow on attached Plan 6488/1.

4. Application

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

PART II – MANAGEMENT CONDITIONS

5. **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. **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; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

DEFINITIONS

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

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; 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*

14 May 2015



Plan 6488/1

378000



378000

Legend

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



1:7,000

MGA 94
Geocentric Datum of Australia 1994

M Wamock Date 14/5/15
M Wamock

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





1. Application details

1.1. Permit application details

Permit application No.: 6488/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Tamala Park Regional Council

1.3. Property details

Property: LOT 9015 ON PLAN 404168, MINDARIE

Local Government Area: City of Wanneroo

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
31.97		Mechanical Removal	Unexploded ordnance (UXO) search

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 14 May 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
<p>The vegetation under application is mapped as Beard vegetation associations (Shepherd et al, 2001):</p> <ul style="list-style-type: none"> - 949, described as low woodland; banksia; and - 1007, described as Acacia rostellifera and Acacia cyclops thicket. <p>The vegetation under application is mapped as Heddlé Vegetation Complexes (Heddlé et al, 1980):</p> <ul style="list-style-type: none"> - Cottesloe Complex-Central and South, described as a mosaic of woodland of <i>E. gomphocephala</i> and open forest of <i>E. gomphocephala</i> - <i>E. marginata</i> - <i>E. calophylla</i>; closed heath on the Limestone outcrops. - Quindalup Complex, described as Coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of <i>Melaleuca lanceolata</i> (Rottnest Teatree) - <i>Callitris preissii</i> (Rottnest Island Pine) and the closed scrub of <i>Acacia rostellifera</i> (Summer-scented Wattle). 	<p>To clear 31.97 hectares of native vegetation within Lot 9015 on Deposited Plan 404168, Mindarie, for the purpose of conducting an unexploded ordnance (UXO) search.</p>	<p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994).</p> <p>To</p> <p>Completely Degraded; No longer intact, completely/almost completely without native species (Keighery, 1994).</p>	<p>The condition of the vegetation under application was determined via a flora survey undertaken by Syrinx (2009).</p>

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 31.97 hectares of native vegetation within Lot 9015 on Deposited Plan 404168, Mindarie, for the purpose of conducting an unexploded ordnance (UXO) search prior to residential development.

The application areas form part of north-south and east-west ecological linkages, defined by the Gngangara Sustainability Strategy (2009). It also forms part of Perth Greenways linkages (Tingay, Alan and Associates, 1998). Ecological linkages have been defined as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape", (Molloy et al, 2009). Given this, the application may be significant in the movement of local fauna within the landscape.

The application area was mapped within Bush Forever (BF) site 322. A negotiated planning solution has been implemented in order for the application area to be removed from BF site 322 and secure the environmental values of the remainder of the site. BF site 322 adjoins BF site 323 through to Neerabup National Park, Yellagonga regional Park and the Gngangara-Moore River state forest to the east. Given this it forms part of one of the last remaining ecological linkages running from the coast in the west through the Perth metropolitan region to the Darling scarp in the east. Although the proposed clearing will remove a significant proportion of the vegetation, the BF site will remain connected to these reserves and will not sever the ecological linkage.

The greater a remnant area of vegetation, the greater its capacity to maintain a larger and more viable suite of species (Molloy et al, 2009), therefore the application areas together with adjoining vegetation are also likely to support discrete fauna populations.

The local area (10 kilometre radius) surrounding the application retains approximately 40 percent native vegetation.

Thirty six terrestrial fauna species of conservation significance have been recorded within the local area (10 kilometre radius) (DPaW, 2007-). Of these Carnaby's cockatoo (*Calyptorhynchus latirostris*), rainbow bee-eater (*Merops ornatus*), peregrine falcon (*Falco peregrinus*), chuditch (*Dasyurus geoffroii*), western brush wallaby (*Macropus irma*), quenda (*Isoodon obesulus subsp. fusciventer*), *Synemon gratiosa* (graceful sunmoth) and south west carpet python (*Morelia spilota subsp. imbricata*) 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 rare or likely to become extinct under the Wildlife Conservation Act 1950 (WC Act) and endangered under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Flora surveys of the application area recorded vegetation consistent with the breeding and foraging requirements of this species (Ecological Australia, 2010).

The flora surveys of the application area did not record any rare flora or vegetation consistent with a conservation significant ecological community (Syrinx, 2009). One flora species listed as Priority 2 by the Department of Parks and Wildlife was recorded.

Given the significance of the application area to fauna diversity and the linkage value of the vegetation, the application areas support a high level of biodiversity and the clearing is at variance to this clearing principle.

The application area forms part of a larger urban development (Catalina Estate) encompassing 180 hectares of land. The application area forms the western most portion of this estate. The majority of the Catalina estate (i.e. the area east of Marmion Avenue) was assessed by the Environmental Protection Authority under Metropolitan Regional Scheme (MRS) Amendment 992/33 Clarkson-Butler (EPA, 2000). As the application area was already zoned for urban development the zoning was not required to be changed and it was not included in the MRS assessment.

Clearing for the Catalina Estate has been assessed by the Department of the Environment (DotE) for its impacts to Carnabys cockatoos. Conditions imposed on the approval include the acquisition of a 400 hectares property within the vicinity of Gingin, proposed for addition to Department of Parks and Wildlife estate as it contains significant Carnaby's cockatoo habitat and fauna linkage values. The proposed offset areas are also significant in the movement of fauna through the landscape. The DotE requirements sufficiently offset the identified environmental impacts.

Methodology

References:

DPaW (2007-)
Ecological Australia (2010)
EPA (2000)
Gngangara Sustainability Strategy (2009)
Molloy et al (2009)
Syrinx (2009)
Syrinx (2010)
Tingay, Alan and Associates (1998)
GIS Datasets:
- SacBiodataSets - accessed May 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

The application area forms part of north-south and east-west ecological linkages defined by the Gngangara Sustainability Strategy (2009). It also forms part of Perth Greenways linkages (Tingay, Alan and Associates, 1998). Ecological linkages have been defined as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape", (Molloy et al, 2009). Given this, the application may be significant in the movement of local fauna within the landscape.

The application area was mapped within Bush Forever (BF) site 322. A negotiated planning solution has been implemented in order for the application area to be removed from BF site 322 and secure the environmental values of the remainder of the site. BF site 322 adjoins BF site 323 through to Neerabup National Park, Yellagonga regional Park and the Gnanagara-Moore River state forest to the east. Given this it forms part of one of the last remaining ecological linkages running from the coast in the west through the Perth metropolitan region to the Darling scarp in the east. Although the proposed clearing will remove a significant proportion of the vegetation, it will remain connected to these reserves and will not sever the ecological linkage.

The greater a remnant of vegetation, the greater its capacity to maintain a larger and more viable suite of species (Molloy et al, 2009), therefore the application areas together with adjoining vegetation is also likely to support discrete fauna populations.

Thirty seven terrestrial fauna species of conservation significance have been recorded within the local area (10 kilometre radius) (DPaW, 2007-). Of these, two are mammals, 28 are avian, two are reptiles and five are invertebrates.

Of the avian fauna, 24 species are associated with wetland or marine systems and are therefore not likely to be impacted by the proposed clearing. Of the remaining species Baudin's cockatoo (*Calyptorhynchus baudinii*) and Carnaby's cockatoo (*Calyptorhynchus latirostris*) are listed as rare or likely to become extinct under the Wildlife Conservation Act 1950 (WC Act) and vulnerable/ endangered under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) respectively, rainbow bee-eater (*Merops ornatus*) is specially protected as a migratory species while peregrine falcon (*Falco peregrinus*) is listed as specially protected under the WC Act.

The application area falls at the mapped northern extent of Baudin's cockatoo. Given this, although it forms potential feeding habitat, the species is not likely to be significantly impacted by the proposed clearing.

Carnaby'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 cockatoos (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).

Flora surveys of the application area recorded species utilised by black cockatoos for feeding and breeding within the application area (Syrinx, 2009).

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

- The eucalypt woodlands that provides 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, 2012). Given the above, the application area contains vegetation that is critical to the survival of Carnaby's cockatoo.

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. Although this species may be 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.

The peregrine falcon has a national distribution. The application areas are not likely to contain significant foraging habitat for this species as it is likely to disperse to adjoining vegetation during clearing events. Given this it is not likely to be impacted by the clearing.

Of the two mammals of conservation significance recorded within the local area the western brush wallaby (*Macropus irma*) is listed as Priority 4 by the Department of Parks and Wildlife (Parks and Wildlife) and the quenda (*Isodon obesulus* subsp. *fusciventer*) is listed as Priority 5. As the application area forms part of a larger remnant of vegetation, it may form part of a significant habitat for these species.

Of the two conservation significant reptiles recorded within the local area south west carpet python (*Morelia spilota* subsp. *imbricata*) is specially protected under the WC Act and black-striped snake (*Neelaps calonotos*) 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. Major threats to this species include the loss of bushland for land development. The black-striped snake has previously been recorded to the north, east and south of the application area and the area applied to clear may contain preferred habitat for the species.

Of the conservation significant insects recorded within the local area *Austrosaga spinifer* (cricket), *Hylaeus globuliferus* (bee) and *Leioproctus contrarius* (bee) are listed as Priority 3 by Parks and Wildlife. 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 has not been determined, they may be present on site and impacted by the proposed clearing.

Synemon gratioiosa (graceful sunmoth) is listed as Priority 4. Priority 4 is defined as species that are not currently considered threatened but could be if current circumstances change. Although this species is present on site, it is not likely to be significantly impacted by the proposed clearing.

The shield-backed trapdoor spider (*Idiosoma nigrum*) has been recorded within the local area. The habitat requirements of this species are not present therefore, it is not likely to be impacted by the proposed clearing.

As the application area may be significant in the movement of fauna through the landscape and contains habitat critical to the survival of Carnaby's cockatoo, the proposed clearing is at variance to this clearing principle.

The application area forms part of a larger urban development (Catalina Estate) encompassing 180 hectares of land. The application area forms the western most portion of this estate. The majority of the Catalina estate (i.e. the area east of Marmion Avenue) was assessed by the Environmental Protection Authority under Metropolitan Regional Scheme (MRS) Amendment 992/33 Clarkson-Butler (EPA, 2000). As the application area was already zoned for urban development the zoning was not required to be changed and it was not included in the MRS assessment.

Clearing for the Catalina Estate has been assessed by the Department of the Environment (DotE) for its impacts to Carnaby's cockatoos. Conditions imposed on the clearing include the acquisition of a 400 hectares property within the vicinity of Gingin, proposed for addition to Department of Parks and Wildlife estate as it contains significant Carnaby's cockatoo habitat and fauna linkage values. The proposed offset areas are also significant in the movement of fauna through the landscape. The DotE requirements sufficiently offset the identified environmental impacts.

Methodology

References:

DEC (2012)
DotE (2015)
DPaW (2007-)
Garnett et al. (2011)
Gnangara Sustainability Strategy (2009)
Johnstone and Storr (1998)
Molloy et al (2009)
Saunders (1990)
Saunders and Ingram (1998)
Shah (2006)
Syrinx (2009)
Tingay, Alan and Associates (1998)
Valentine and Stock (2008)

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

A rare and priority flora survey was undertaken over the application area (Syrinx, 2009). As no rare flora were recorded the application area is not likely to include or be 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:
Syrinx (2009)

GIS Databases:
- SAC Biodatasets - accessed May 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**
Three threatened ecological communities (TECs) have been recorded within the local area (10 kilometre radius). Flora surveys of the application area did not record vegetation consistent with a TEC (Syrinx, 2009).

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

Methodology Reference:
Syrinx (2009)

GIS Datasets:
- SAC Biodatasets - accessed May 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 retains approximately 39 percent of its pre-European vegetation extent (Government of Western Australia, 2013).

The vegetation under application is mapped as Beard vegetation associations 949 and 1007 of which there is approximately 57 percent and 71 percent pre-European extent remaining within the Swan Coastal Plain bioregion respectively (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 Hedde vegetation complexes Cottesloe Complex Central and/South and Quindalup Complex which retain approximately 33 percent and 62 percent pre-European extent respectively (DPaW, 2015).

The local area (10 kilometre radius) retains approximately 40 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 may be a significant remnant, as it falls within a defined constrained area and all vegetation associations/complexes retain above 10 percent, the application is not likely to be at variance to this principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DPaW Managed Lands (%)
IBRA Bioregion*				
Swan Coastal Plain	1,501,221	586,975	39	36
Shire*				
City of Wanneroo	67,516.93	31,428.72	46	51
Beard Vegetation Association within Bioregion*				
949	209,983	121,216	57	55
1007	30,109	21,414	71	11
Hedde Vegetation Association **				
Cottesloe Complex Central and South	45,299	15,026	33	13
Quindalup Complex	52,250	32,885	62	9

Methodology References:
Commonwealth of Australia (2001)
**DPaW (2015)
EPA (2006)
*Government of Western Australia (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 not at variance to this Principle**
No watercourses or wetlands have been mapped within the application area. The closest, Neerabup Lake, occurs within approximately four kilometres.

Flora surveys of the application area did not record vegetation growing in association with a wetland (Syrinx, 2009).

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

Methodology References:
Syrinx (2009)

GIS Datasets:
- Swan Minor Hydrography
- Geomorphic wetlands, Swan Coastal Plain

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

Comments **Proposal may be at variance to this Principle**
Groundwater salinity within the application areas is mapped as 500 -1000 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.

No watercourses are present within the application areas. Given this, the application is not likely to cause, water erosion, waterlogging or eutrophication.

Soil within the application area has been identified as B24 which is 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 (Northcote et al, 1960-68). Given the loose sandy nature of the soils and the position of the application area in close proximity to the coast, clearing the vegetation under application may lead to appreciable land degradation through wind erosion.

Given the above, the application may be at variance to this clearing principle.

Implementation of a dust management plan as conditioned in the City of Wanneroo planning approvals (DA2014/978 and DA2014/2432) for the clearing is likely to manage this risk.

Methodology References:
Northcote et al (1960-68)

GIS Datasets:
- Swan Minor Hydrography
- Geomorphic wetlands, Swan Coastal Plain

(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 application areas form part of north-south and east-west ecological linkages, defined by the Gnangara Sustainability Strategy (2009). It also forms part of Perth Greenways linkages (Tingay, Alan and Associates, 1998). Ecological linkages have been defined as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape", (Molloy et al, 2009). Given this, the application may be significant in the movement of local fauna within the landscape.

The application area previously formed part of Bush Forever (BF) site 322. A negotiated planning solution has been implemented in order for the application area to be removed from BF site 322 and secure the environmental values of the remainder of the site. BF site 322 adjoins BF site 323 through to Neerabup National Park, Yellagonga regional Park and the Gnangara-Moore River state forest to the east. Given this it forms part of one of the last remaining ecological linkages running from the coast in the west through the Perth metropolitan region to the Darling scarp in the east. Although the proposed clearing will remove a significant proportion of vegetation adjoining BF site 322, the site will remain connected to these reserves and clearing the vegetation under application will not sever the ecological linkage.

The Environmental Protection Authority (EPA)(2013) recognises that large consolidated naturally vegetated areas are the most resilient in protecting biodiversity in the long term. The EPA recommends that development projects should aim to retain naturally vegetated areas in large consolidated blocks to avoid fragmentation or isolation.

As the application area adjoins a conservation reserve, the clearing will likely lead to direct degradation of the reserve through the introduction and spread of weeds and dieback, as well as an increase in human activity. The clearing is also likely to lead to impacts to the fauna component of the reserves by reducing the size of available habitat.

Given the above, the application is at variance to this clearing principle.

Clearing for the Catalina Estate has been assessed by the Department of the Environment (DotE) for its impacts to Carnabys cockatoos. Conditions imposed on the clearing include the acquisition of a 400 hectares property within the vicinity of Gingin, proposed for addition to Department of Parks and Wildlife estate as it contains significant Carnaby's cockatoo habitat and fauna linkage values. The proposed offset areas are also significant in the movement of fauna through the landscape. The DotE requirements sufficiently offset the identified environmental impacts.

Weed and dieback management measures will further reduce the potential impact to the adjoining conservation area.

Methodology References:
EPA (2013)
Gnangara Sustainability Strategy (2009)
Molloy et al (2009)
Tingay, Alan and Associates (1998)

GIS Datasets:
- Bush forever
- CALM Regional Parks
- DPaW Tenure

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

Comments **Proposal is not likely to be at variance to this Principle**
No watercourses or wetlands have been mapped within the application area. The closest, Neerabup Lake, occurs approximately four kilometres from the application area. Groundwater salinity within the application area is mapped as 500 -1000 total dissolved solids, milligrams per litre. Given this and the end land use, the clearing is not likely to deteriorate the quality of surface water or ground water.

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

Methodology GIS Datasets:
- 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:
- Swan Minor Hydrography
- Geomorphic wetlands, Swan Coastal Plain

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

Comments The application area forms part of a larger urban development (Catalina Estate) encompassing 180 hectares of land. The application area forms the western most portion of this estate. The majority of the Catalina estate (i.e. the area east of Marmion Avenue) was assessed by the Environmental Protection Authority under Metropolitan Regional Scheme (MRS) Amendment 992/33 Clarkson-Butler (EPA, 2000). As the application area was already zoned for urban development the zoning was not required to be changed and it was not included in the MRS assessment.

Clearing for the Catalina Estate has been assessed by the Department of the Environment (DotE) for its impacts to Carnaby's cockatoos. The DotE identified 72.5 hectares of foraging habitat and 11 hectares of breeding habitat within Catalina estate. Conditions imposed on the approval (EPBC 2010/5785) include the acquisition of a 400 hectares property within the vicinity of Gingin, proposed for addition to Department of Parks and Wildlife estate as it contains significant Carnaby's cockatoo habitat and fauna linkage values.

The application area was formerly part of Bush Forever site 322. In order for the zoned urban development to take place, a negotiated planning solution was undertaken. This resulted in Tamala Park regional Council agreeing to sell 29 hectares of urban zoned land to the Western Australian Planning Commission while retaining 31 hectares for residential development and removal from the Bush Forever site (WAPC, 2015).

The City of Wanneroo has granted two separate Planning Approvals for the application area for the purposes of an unexploded ordnance search subject to conditions including the preparation and approval of a Dust Management Plan.

An Aboriginal Site of Significance intersects the application area. The applicant is advised to contact the Department of Aboriginal Affairs regarding their obligations under the Aboriginal Heritage Act 1972.

No public submissions have been received in relation to this application.

Methodology References:
EPA (2000)
WAPC (2015)

4. References

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DEC (2012). Carnaby's cockatoo (*Calyptorhynchus latirostris*) Recovery Plan. Department of Environment and Conservation, Perth, Western Australia.
- DotE (2015) SPRAT species Profile, *Merops ornatus*' Rainbow Bee-eater. Accessed at http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=670. Accessed January 2015.
- DPaW (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed April 2015.
- DPaW (2015) 2015 South West Forest and Swan Coastal Plain Vegetation Complex Statistics: a report prepared for the Department of Environment Regulation. Current as of March 2015. Department of Parks and Wildlife, Perth, Western Australia.
- Ecological Australia (2010) Catalina Residential Development. Mitigation and Offset Management Plan. December 2010
- EPA (2000) Metropolitan Region Scheme Amendment No. 992/33 Clarkson-Butler, Wanneroo. Western Australian Planning Commission. March 2000.
- EPA (2006) Advice on areas of conservation significance in the Preston Industrial Park. Environmental Protection Authority Perth, Western Australia Bulletin 1282 March 2008.
- EPA (2013), Environmental Protection Bulletin No. 20, Protection of naturally vegetated areas through planning and development. Perth, Environmental Protection Authority.
- Garnett, S., Szabo, J. and Dutson, G. (2011). The Action Plan for Australian Birds 2010. CSIRO Publishing, Melbourne, Victoria.
- Gnangara Suitability Strategy (2009) Ecological Linkages Proposed for the Gnangara Groundwater System. May 2009.
- Government of Western Australia (2013) 2013 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2013. WA Department of Parks and Wildlife, Perth.
- Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Johnstone, R.E. and Storr, G.M. (1998). Handbook of Western Australian Birds, Volume I, Non-passerines (Emu to Dollarbird). Western Australian Museum, 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.
- Molloy, S, Wood, J, Hall, S, Wallrodt, S and Whisson G (2009) South Western Regional Ecological Linkages Technical report, Western Australian Local Government Association and Department of Environment and Conservation, Perth.
- 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.

- Saunders, D.A. (1990). Problems of survival in an extensively cultivated landscape: the case of Carnaby's cockatoo *Calyptorhynchus funereus latirostris*. *Biological Conservation*. 54: 277-290.
- Saunders, D.A. and Ingram, J.A. (1998). Twenty-eight years of monitoring a breeding population of Carnaby's cockatoo. *Pacific Conservation Biology*. 4: 261-270.
- Shah, B. (2006) Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.
- Syrinx (2009) Declared Rare and Priority Flora Survey for Western Cell of the Tamala Park Proposed Development. April 2009
- 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.
- Tingay, Alan and Associates (1998) A Strategic Plan for Perth's Greenways – Final Report, prepared for Environment Australia, Ministry for Planning.
- WAPC (2015) Information received in relation to Lot 118 Bush Forever Site 322 and 323 – MOU Outline Agreement for a negotiated Planning Solution. Received 5 May 2015, DER ref A:906863 and 906864.
- Valentine L. E. & Stock W. (2008) Food Resources of Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) in the Gnangara Sustainability Strategy study area. Unpublished report to the Forests Products Commission. Available online: <http://ro.ecu.edu.au/ecuworks/6147>.