



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

<b>Purpose Permit number:</b>	CPS 6366/1
<b>Permit Holder:</b>	Commissioner of Main Roads Western Australia
<b>Duration of Permit:</b>	31 May 2015 – 31 May 2020

### **Advice Note**

The funds referred to in condition 8 of this permit are intended for contributing towards the purchase of 99 hectares of native vegetation containing Carnaby's cockatoo habitat.

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 road construction.

#### **2. Land on which clearing is to be done**

Lot 14 on Diagram 41747, Neerabup  
Lot 304 on Plan 70747, Reserve 27575, Neerabup  
Lot 14057 on Plan 25659, Neerabup  
Lot 3321 on Plan 219820, Neerabup  
Un-allocated Crown land, Pin 9146, Neerabup  
Neerabup Road reserve, Pin 1135106, Clarkson  
Mitchell Freeway road reserve, Pin 1125426, Joondalup  
Closed Road reserve, Pin 1043801, Joondalup  
Mitchell Freeway Road reserve, Pin 1004602, Currambine  
Fisherton Court road reserve, Pin 11755916, Kinross  
Burns Beach Road reserve, Pin 1098149, Kinross

#### **3. Area of Clearing**

The Permit Holder must not clear more than 30.7 hectares of native vegetation within the area hatched yellow on attached Plan 6366/1a, 6366/1b and 6366/1c.

#### **4. Application**

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

#### **5. Type of clearing authorised**

This Permit authorises the Permit Holder to clear native vegetation for the project activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for those *project activities* under the *Main Roads Act 1930* or any other written law.

## PART II –MANAGEMENT CONDITIONS

### **6. Avoid, minimise etc clearing**

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- (a) avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

### **7. Dieback and weed control**

(a) 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*:

- (i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
  - (ii) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
  - (iii) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.
- (b) At least once in each 12 month period for the term of this Permit, the Permit Holder must remove or kill any *weeds* growing within and adjacent to areas cleared under this Permit.

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

Prior to undertaking any clearing authorised under this Permit and no later than 31 May 2016, the Permit Holder shall provide documentary evidence to the CEO that funding of \$219,582 has been transferred to the Department of Environment Regulation to purchase land for the purpose of establishing or maintaining native vegetation.

## **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;

*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.



Jane Clarkson  
A/SENIOR MANAGER  
CLEARING REGULATION

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

1 May 2015



# Plan 6366/1a



## Legend

- Areas approved to clear
- Roads
- Iga
- Cadastre
- Virtual Mosaic



1:5,000

MGA 94  
Geocentric Datum of Australia 1994

*Jane Clarkson* Date 1.5.15  
Jane Clarkson

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



GOVERNMENT OF  
WESTERN AUSTRALIA



# Plan 6366/1b



## Legend

-  Areas approved to clear
-  Roads
-  Iga
-  Cadastre
- Virtual Mosaic



1:10,000

MGA 94  
Geocentric Datum of Australia 1994

*Jane Clarkson* Date 1.5.15  
Jane Clarkson

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

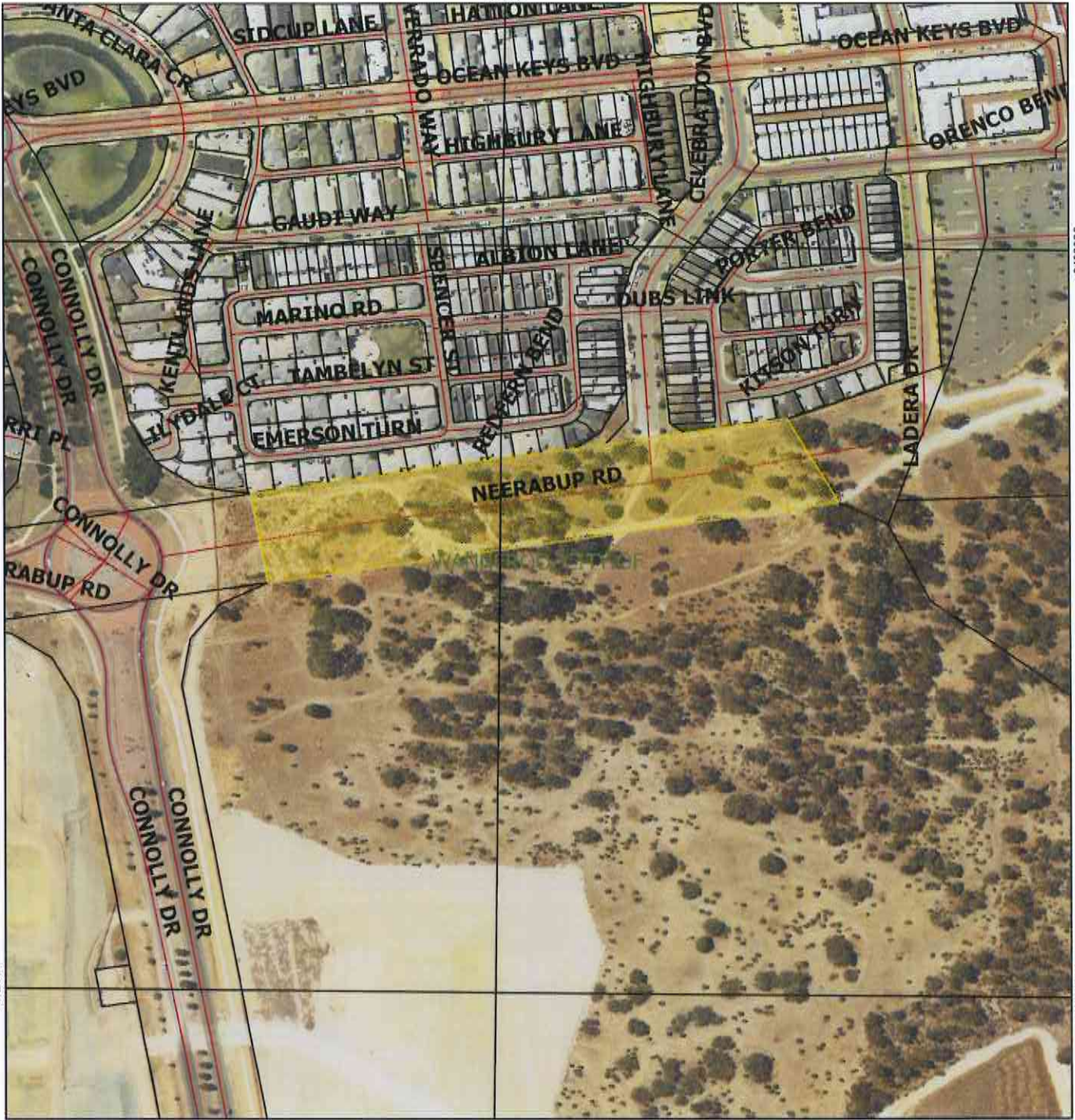


GOVERNMENT OF  
WESTERN AUSTRALIA



# Plan 6366/1c

380000



64933000

64933000

64925000

64925000

380000

## Legend

- Areas approved to clear
- Roads
- Iga
- Cadastre
- Virtual Mosaic



1:2,500

MGA 94  
Geocentric Datum of Australia 1994

*Jane Clarkson* Date *1.5.15*  
Jane Clarkson

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



GOVERNMENT OF  
WESTERN AUSTRALIA



## 1. Application details

### 1.1. Permit application details

Permit application No.: 6366/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Main Roads Western Australia

### 1.3. Property details

Property: ROAD RESERVE, CURRAMBINE  
CLOSED ROAD, JOONDALUP  
ROAD RESERVE, JOONDALUP  
LOT 14057 ON PLAN 25659, NEERABUP  
ROAD RESERVE, KINROSS  
LOT 14 ON DIAGRAM 41747, NEERABUP  
UNALLOCATED CROWN LAND, NEERABUP  
LOT 304 ON PLAN 70747, NEERABUP  
ROAD RESERVE, CLARKSON  
ROAD RESERVE, KINROSS

Local Government Area: City of Wanneroo  
City of Joondalup

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
30.7		Mechanical Removal	Road construction or upgrades

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 1 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"> <li>- 949 which is described as low woodland; banksia; and</li> <li>- 998 which is described as medium woodland; tuart.</li> </ul> <p>The vegetation under application is mapped as Heddl Vegetation Complex Cottesloe Complex-Central and South which is 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 (Heddl et al, 1980).</p> <p>A flora survey of the application area identified the vegetation as (GHD, 2014a):</p> <ul style="list-style-type: none"> <li>- FCT 24: Northern Spearwood shrublands and woodlands (Priority 3 Priority Ecological Community); and</li> <li>- FCT 28: Spearwood Banksia attenuata or Banksia attenuata/Eucalyptus woodlands.</li> </ul>	<p>To clear 30.7 hectares of native vegetation for intersection construction at the corner of Burns Beach Road and Mitchell Freeway, Neerabup, and the extension of Neerabup Road to Wanneroo Road.</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (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 GHD (2014a).</p> <p>Approximately 10.3 hectares of the application area is in an excellent (Keighery, 1994) condition, 5.1 hectares is in a very good (Keighery, 1994) condition, 0.7 hectares is in a good (Keighery, 1994) condition, 4.4 hectares is in a good to degraded (Keighery, 1994) condition and 1.2 hectares is in a degraded (Keighery, 1994) condition, one hectares is in a degraded to completely degraded condition (Keighery, 1994) condition and eight hectares is in a completely degraded (Keighery, 1994) condition (GHD, 2014a).</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 30.7 hectares of native vegetation for intersection works at the corner of Burns Beach Road and Mitchell Freeway, Neerabup, and the extension of Neerabup Road to Wanneroo Road. The Neerabup Road East section of the clearing crosses the width of Neerabup National Park and adjoining contiguous vegetation (Bush Forever site 383). The clearing is approximately 60 metres wide in order to account for four lanes of traffic, a median strip and shared pathway.

A flora survey of the application areas identified the vegetation as (GHD, 2014a):

- FCT 24: Northern Spearwood shrublands and woodlands (Priority 3 Ecological Community).
- FCT 28: Spearwood *Banksia attenuata* or *Banksia attenuata/Eucalyptus* woodlands.

The Department of Parks and Wildlife (2015a) has advised that given the results of the flora survey, the entire application area is likely to most closely align with FCT 24.

Approximately 10.3 hectares of the application area is in an excellent (Keighery, 1994) condition, 5.1 hectares is in a very good (Keighery, 1994) condition, 0.7 hectares is in a good (Keighery, 1994) condition, 4.4 hectares is in a good to degraded (Keighery, 1994) condition and 1.2 hectares is in a degraded (Keighery, 1994) condition, one hectares is in a degraded to completely degraded condition (Keighery, 1994) condition and eight hectares is in a completely degraded (Keighery, 1994) condition (GHD, 2014a).

The local area (10 kilometre radius) surrounding the application retains approximately 20 percent native vegetation.

The Neerabup Road East section of the application area crosses Bush Forever site 383 (which includes Neerabup National Park), which if cleared would create a barrier to fauna movement through the centre of the reserve. Neerabup National Park forms a large broadly contiguous north-south remnant of native vegetation with Yellagonga regional park (Bush Forever site 383, Lake Joondalup Nature reserve) and Bush Forever sites 323, 322, 383 and 384. The application areas also adjoin large areas of reserved vegetation to the east through Bush Forever site 293. 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 (GHD, 2014a).

The application areas form part of several north-south and east-west ecological linkages, defined by the Ngarangara Sustainability Strategy (2009). They also form part of Perth Greenways links 2, 5 and 35 (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 areas are significant in the movement of local fauna within the landscape. The significance of the application area to the movement of fauna has been confirmed through a Fauna Movement Study (GHD, 2014b) undertaken across the Neerabup road section of the proposed clearing.

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.

An assessment of the environmental impacts of the Neerabup Road East section of the application area was undertaken by the EPA as part of the Metropolitan Region Scheme Amendment No. 992/33 Clarkson-Butler, Wanneroo. It was noted that (EPA, 2000):

- The construction of the road would divide the *Banksia Eucalyptus* woodland habitat into two areas. This habitat would be seriously affected by the segregation;
- Fauna movement, and therefore genetic flow, between these areas would be seriously impeded for non-aerial species;
- The design and construction of the road will have to be of an exceptional standard, given its location within a National Park, and particularly address the issue of fauna movement; and
- The proposed scheme amendment is acceptable subject to conditions but the actual construction of the road should be referred to the EPA for assessment under section 38 of the Environmental Protection Act 1986 so that the deferred factor of terrestrial fauna can be assessed at a later date.

Thirty six terrestrial fauna species of conservation significance have been recorded within the local area (10 kilometre radius) (DPaW, 2007-; GHD, 2014b). Of these Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), rainbow bee-eater (*Merops ornatus*), peregrine falcon (*Falco peregrinus*), chuditch (*Dasyurus geoffroii*), western brush wallaby (*Macropus irma*), quenda (*Isodon obesulus* subsp. *fusciventer*) 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), *Synemon gratiosa* (graceful sunmoth) 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). A black cockatoo habitat assessment of the application areas recorded the sites as high value foraging habitat (GHD, 2014c). Carnaby's cockatoos were recorded within the application areas on numerous occasions and further foraging evidence was also recorded across the site. The assessment recorded 95 potential nesting trees (diameter at breast height of greater than 0.5 metres) within the application areas. Of these, eight trees were observed to have hollows suitable for Carnaby's cockatoo breeding. Given this, the application areas contain all habitat requirements deemed critical to the survival of the species (DEC, 2012a).

As well as Carnaby's cockatoo, a fauna survey recorded rainbow bee-eater (specially protected under the WC Act), western brush wallaby (Priority 4), quenda (Priority 5) and south west carpet python (specially protected under the WC Act) within the application area.

Given the results of a flora survey and advice from the Department of Parks and Wildlife (Parks and Wildlife), rare flora are not likely to occur within the application areas (GHD, 2014a; Department of Parks and Wildlife, 2015b). Two records of a flora species listed as Priority 4 by Parks and Wildlife have been recorded within the application areas (GHD, 2014a). Parks and Wildlife has advised that given the number of records of this species in the larger project area, it is not likely to be significantly impacted by the proposed clearing.

Parks and Wildlife (2015a) has advised that given the results of the flora survey (GHD, 2014a), the entire application area is likely to most closely align with FCT 24, Northern Spearwood Shrublands and Woodlands. This vegetation association is listed as a Priority 3 Ecological Community (PEC) by Parks and Wildlife who have advised that (Department of Parks and Wildlife, 2015a):

- The PEC has been mapped at 18 separate bushland locations;
- The application area forms part of the largest mapped occurrence of the PEC;
- The clearing represents approximately 3.6 percent of the total mapped area of the PEC;
- The application area will fragment the largest mapped occurrence of the PEC; and
- The application area forms part of "a very significant area of intact bushland".

The disturbance caused by the proposed clearing will increase the risk of weeds and dieback being spread/introduced into the PEC. Weed and dieback management practices will assist in mitigating this risk. Weed control adjacent to the cleared areas, especially along the boundaries of the Neerabup Road East section is required to minimise the impacts of increased fragmentation.

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

The applicant has the following management measures in place to address the environmental issues outlined above:

A Black Cockatoo Avoidance and Mitigation Plan (360 Environmental, 2014) has been prepared in order to limit the impacts to black cockatoos. Actions to be undertaken include:

- Habitat demarcation;
- Marking of breeding trees to be retained and protected in accordance with AS 4970;
- Checking of nesting hollows during the defined breeding season;
- Staged clearing; and
- Monitoring.

Clearing Permit CPS 916/3 overlaps portions of the application area at the Burns Beach Rd intersection. In order to mitigate the impacts associated with CPS 916/3 an offsite revegetation condition was placed on the permit. Although clearing within these areas was not undertaken, revegetation was completed (Elegant Landscapes, 2011). Given this, the environmental impacts of clearing within these portions of the application area have already been offset.

In order to mitigate the residual significant environmental impacts to black cockatoos totalling 16.6 hectares, the applicant has committed to providing funds for the purchase of a 564 hectare offset property within the Shire of Gingin that contains significant Carnaby's cockatoo habitat. The 564 hectare site exceeds the Department of Environment Regulation's (DER) requirements (99 hectares) as the clearing forms part of a larger black cockatoo impact area assessed by the Commonwealth Department of the Environment. The DER requirements are accounted for within this larger area.

In order to reduce the impact to the movement of fauna through the landscape the applicant commissioned a fauna movement study (GHD, 2014b) and designed four fauna underpasses to be positioned in areas identified to have high fauna use. A flora and fauna management plan further defines actions to be undertaken in order to ensure the effectiveness of the underpasses and reduce the impact to endemic fauna (GHD, 2014d). A Construction Environmental Management Plan has been developed in order to limit the environmental impacts during the construction phase (GHD, 2014e). These management plans were conditioned under Metropolitan Regional Scheme (MRS) amendment 992/33 (EPA, 2000).



In relation to the Neerabup Road East section of the application area, the loss of vegetation containing high biodiversity, PEC vegetation and vegetation within a conservation reserve was assessed and approved under MRS amendment 992/33 (EPA, 2000) with terrestrial fauna the only deferred factor. Given this, these environmental impacts have been accounted for and do not require further offsetting.

The ongoing potential impacts to the adjoining conservation reserves and vegetation containing high biodiversity are addressed through the Construction Environmental Management Plan (GHD, 2014e) and a flora and fauna management plan (GHD, 2014d) conditioned under MRS amendment 992/33 (EPA, 2000).

#### Methodology

##### References:

360 Environmental (2014)  
DPaW (2007-)  
DEC (2012a)  
Department of Parks and Wildlife (2015a)  
Department of Parks and Wildlife (2015b)  
Elegant Landscapes (2011)  
EPA (2000)  
EPA (2013)  
GHD (2014a)  
GHD (2014b)  
GHD (2014c)  
GHD (2014d)  
GHD (2014e)  
Gnangara Sustainability Strategy (2009)  
Keighery (1994)  
Molloy et al (2009)  
Tingay, Alan and Associates (1998)

##### GIS Datasets:

- SacBiodataSets - accessed March 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 flora survey of the application area identified the vegetation as (GHD, 2014a):

- FCT 24: Northern Spearwood shrublands and woodlands (Priority 3 Ecological Community).
- FCT 28: Spearwood Banksia attenuata or Banksia attenuata/Eucalyptus woodlands.

The Neerabup Road East section of the application area crosses Bush Forever site 383 (which includes Neerabup National Park), which if cleared would create a barrier to fauna movement through the centre of the reserve. Neerabup National Park forms a large broadly contiguous north-south remnant of native vegetation with Yellagonga regional park (Bush Forever site 383, Lake Joondalup Nature reserve) and Bush Forever sites 323, 322, 383 and 384. The application areas also adjoin large areas of reserved vegetation to the east through Bush Forever site 293. 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 (GHD, 2014a).

The application areas form part of several north-south and east-west ecological linkages, defined by the Gnangara Sustainability Strategy (2009). They also form part of Perth Greenways links 2, 5 and 35 (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 areas are significant in the movement of local fauna within the landscape.

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.

An assessment of the environmental impacts of the Neerabup Road East section of the application area was undertaken by the EPA as part of the Metropolitan Region Scheme Amendment No. 992/33 Clarkson-Butler, Wanneroo. It was noted that (EPA, 2000):

- The construction of the road would divide the Banksia Eucalyptus woodland habitat into two areas. This habitat would be seriously affected by the segregation;
- Fauna movement, and therefore genetic flow, between these areas would be seriously impeded for non-aerial species;
- The design and construction of the road will have to be of an exceptional standard, given its location within a National Park, and particularly address the issue of fauna movement; and

- The proposed scheme amendment is acceptable subject to conditions but the actual construction of the road should be referred to the EPA for assessment under section 38 of the *Environmental Protection Act 1986* so that the deferred factor of terrestrial fauna can be assessed at a later date.

As the application area crosses through Neerabup National Park with an approximate clearing width of 60 metres in order to account for four lanes of traffic, a median strip and shared pathway; there is a significant potential for road strikes causing fauna death. A Fauna Movement Study has been completed in order to identify areas within the study area where there may be greater levels of fauna activity, and therefore identify locations where fauna underpasses, overpasses or bridging are recommended (GHD, 2014b).

The Fauna Movement Study identified four locations where construction of fauna underpasses (or wildlife crossing alternatives) is recommended (GHD, 2014b). The Department of Parks and Wildlife has advised that in addition to fauna underpasses, fencing the entire road verge will aid in managing the impact to and from indigenous fauna (Department of Parks and Wildlife, 2015c).

Thirty six terrestrial fauna species of conservation significance have been recorded within the local area (10 kilometre radius) (DPaW, 2007-; GHD, 2014f). Of these, three are mammals, 26 are avian, two are reptiles and five are invertebrates.

Of the avian fauna, 22 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/endorsed 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.

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 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).

Black Cockatoo Assessments of the project areas identified (360 Environmental, 2014; 360 Environmental, 2015):

- That the application areas are highly unlikely to form habitat for Baudin's cockatoo.
- Numerous sightings of Carnaby's cockatoo within the application areas ranging from a pair of birds to a flock of over 100 birds.
- Extensive foraging evidence across the application areas.
- 95 significant trees (diameter at breast height of >500 millimetres) which have the potential to develop hollows in the near future. Of these 38 trees currently contained hollows and eight were currently deemed suitable for Carnaby's cockatoo breeding.
- 21.36 hectares of black cockatoo foraging habitat.

The Carnaby's cockatoo recovery plan (DEC, 2012a) 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, 2012a). Given the above, the application areas contain 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. A fauna survey of the application areas recorded the species at two locations. 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.



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 three mammals of conservation significance recorded within the local area chuditch (*Dasyurus geoffroii*) is listed as vulnerable under the EPBC Act and WC Act, the western brush wallaby (*Macropus irma*) is listed as Priority 4 by the Department of Parks and Wildlife (Parks and Wildlife) and the quenda (*Isoodon obesulus* subsp. *fusciventer*) is listed as Priority 5 by Parks and Wildlife.

The habitat preferences for the chuditch were noted within the application area. This species has been recorded within the local area (GHD, 2014f) 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 conservation requirement of the species (DEC, 2012b).

The western brush wallaby has been reported within the area and was recorded in the fauna survey of the application area (GHD, 2014f). This species is only known from large remnants and the application areas are considered of high value to the species.

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. The species was recorded on three occasions during the fauna survey (GHD, 2014f). However, given its current conservation status, although it may be present it is not likely to be significantly impacted by the proposed clearing.

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 areas. This species was recorded during a fauna survey of the application areas (GHD, 2014f). Major threats to this species include the loss of bushland for land development (DEC, 2012c). The application areas have been classified as high to moderate value habitat for the species (GHD, 2014f).

The black-striped snake has previously been recorded four kilometres west, seven kilometres south and 5.5 kilometres south east of the application area (GHD, 2014f). The areas applied to clear contain preferred habitat for the species and has been classified as high to moderate value habitat for the species (GHD, 2014f).

Of the four 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 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. Priority 4 is defined as species that are not currently considered threatened but could be if current circumstances change. Although the impact to these species has not been determined, they may be present on site and 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 within the application areas, therefore it is not likely to be impacted by the proposed clearing.

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

The applicant has the following management measures in place to address the environmental issues outlined above:

A Black Cockatoo Avoidance and Mitigation Plan (360 Environmental, 2014) has been prepared in order to limit the impacts to black cockatoos. Actions to be undertaken include:

- Habitat demarcation;
- Marking of breeding trees to be retained and protected in accordance with AS 4970;
- Checking of nesting hollows during the defined breeding season;
- Staged clearing; and
- Monitoring.

Clearing Permit CPS 916/3 overlaps portions of the application area at the Burns Beach Rd intersection. In order to mitigate the impacts associated with CPS 916/3 an offsite revegetation condition was placed on the permit. Although clearing within these areas was not undertaken, revegetation was undertaken (Elegant Landscapes, 2011). Given this, the environmental impacts of clearing within these portions of the application area (includes 4.76 hectares of Carnaby's cockatoo habitat) have already been offset.

In order to mitigate the residual significant environmental impacts to Carnaby's cockatoo totalling 16.6 hectares, the applicant has committed to providing funds for the purchase of a 564 hectare offset property within the Shire of Gingin that contains significant Carnaby's cockatoo habitat. The 564 hectare site exceeds the Department of Environment Regulation's (DER) requirements (99 hectares) as the clearing forms part of a larger black cockatoo impact area assessed by the Commonwealth Department of the Environment. The DER requirements are accounted for within this larger area.

In order to reduce the impact to the movement of fauna through the landscape the applicant designed four fauna underpasses to be positioned in areas identified in the fauna movement study (GHD, 2014b) to have high fauna use. A flora and fauna management plan further defines actions to be undertaken in order to ensure the effectiveness of the underpasses and reduce the impact to endemic fauna (GHD, 2014d). A Construction Environmental Management Plan has been developed in order to limit the environmental impacts during the construction phase (GHD, 2014e). These management plans were conditioned under Metropolitan Regional Scheme amendment 992/33 (EPA, 2000).

**Methodology**

References:

- 360 Environmental (2014)
- 360 Environmental (2015)
- DEC (2012a)
- DEC (2012b)
- DEC (2012c)
- Department of Parks and Wildlife (2015c)
- DotE (2015)
- DPaW (2007-)
- EPA (2000)
- EPA (2013)
- Garnett et al. (2011)
- GHD (2014a)
- GHD (2014b)
- GHD (2014c)
- GHD (2014d)
- GHD (2014e)
- GHD (2014f)
- Gnangara Sustainability Strategy (2009)
- Johnstone and Storr (1998)
- Keighery (1994)
- Molloy et al (2009)
- Saunders (1990)
- Saunders and Ingram (1998)
- Shah (2006)
- 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**

Two rare flora species have been recorded within the local area (10 kilometre radius). A flora survey of the application areas (GHD, 2014a) did not record these rare flora species, however it concluded that two further flora species may be present.

The Department of Parks and Wildlife (2015b) has advised that given the habitat types present within the application areas, they are not likely to contain rare flora.

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

**Methodology**

Reference:

- GHD (2014a)
- Department of Parks and Wildlife (2015b)

GIS Databases:

- SAC Biodatasets - accessed March 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**  
 Seven threatened ecological communities (TECs) have been recorded within the local area. A flora assessment of the application areas did not record any TECs (GHD, 2014a).  
 Parks and Wildlife (2015b) has advised that given the species recorded on site, the application areas are likely to be solely consistent with Floristic Community Type 24.  
 Given the above, the application is not likely to be at variance to this clearing principle.

**Methodology**    Reference:  
 Department of Parks and Wildlife (2015b)  
 GHD (2014a)  
 GIS Databases:  
 - SAC Biodatasets - accessed March 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 areas under application are 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 associations 949 and 998 of which there is approximately 57 percent and 38 percent pre-European extent remaining within the Swan Coastal Plain bioregion respectively (Government of Western Australia, 2013).  
 The areas under application are located within the Cities of Wanneroo and Joondalup, within which there is approximately 46 percent and 11 percent pre-European extent remaining respectively (Government of Western Australia, 2013).  
 The application area is mapped as Heddle vegetation complex Cottesloe Complex Central and/South which retains approximately 33 percent of its pre-European extent (DPaW, 2015).  
 The local area (10 kilometre radius) retains approximately 20 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 areas are significant remnants, as they fall 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 Joondalup	9,662	1,108	11	8
City of Wanneroo	67,516	31,428	46	50
*Beard Vegetation Association within Bioregion				
949	209,983	121,216	57	55
998	50,867	19,372	38	41
**Heddle Vegetation Complex Cottesloe complex central and/South	45,300	15,026	33	13

**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 areas. The closest, Neerabup Lake, occurs approximately 700 meters from the Neerabup Road section of the clearing.

A flora survey of the application areas did not record vegetation growing in association with a wetland (GHD, 2014a).

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

**Methodology**   References:  
GHD (2014a)  
  
GIS Datasets:  
- Hydrography linear

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

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

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 linear nature of the clearing, and the end land use, the application is not likely to cause wind erosion, water erosion, waterlogging or eutrophication.

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

**Methodology**   GIS Datasets:  
- Hydrography linear  
- 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 application areas can be grouped into three distinct areas. Area one involves clearing for intersection works at Burns Beach Road and Mitchell Freeway. Area two crosses the width of Neerabup National Park (Neerabup Road East) and adjoining contiguous vegetation (Bush Forever site 383) with approximately 60 metres of clearing in order to account for four lanes of traffic, a median strip and shared pathway. Area three involves clearing for the construction of Neerabup Road west of the proposed Mitchell Freeway extension.

The clearing of area two will create a barrier to fauna movement through the centre of the adjoining conservation reserves. Neerabup National Park forms a large broadly contiguous north-south remnant of native vegetation with Yellagonga regional park (Bush Forever site 383, Lake Joondalup Nature reserve) and Bush Forever sites 323, 322, 383 and 384. The application areas also adjoin large areas of reserved vegetation to the east through Bush Forever site 293. 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 (GHD, 2014a).

Areas one and two form part of several north-south and east-west ecological linkages, defined by the Gnaragara Sustainability Strategy (2009). They also form part of Perth Greenways links 2, 5 and 35 (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, areas one and two are significant in the movement of local fauna between conservation reserves. The significance of the application areas to the movement of fauna has been confirmed through a Fauna Movement Study undertaken across the Neerabup road section of the proposed clearing (GHD, 2014b).



As the application areas traverses conservation reserves, the clearing will lead to direct degradation of these bushland areas through a direct loss of native vegetation, the potential introduction and spread of weeds and dieback, as well as an increase in human activity with associated impacts. As well as the direct impact to the vegetation, the application is also likely to lead to impacts to the fauna component of the reserves by creating a barrier to fauna movement through the landscape and an increase in road strikes.

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

In order to reduce the impact to the movement of fauna through the landscape the applicant designed four fauna underpasses to be positioned in areas identified in the fauna movement study (GHD, 2014b) to have high fauna use. A flora and fauna management plan further defines actions to be undertaken in order to ensure the effectiveness of the underpasses and reduce the impact to endemic fauna (GHD, 2014d). A Construction Environmental Management Plan has been developed in order to limit the environmental impacts during the construction phase (GHD, 2014e). These management plans were conditioned under Metropolitan Regional Scheme (MRS) amendment 992/33 (EPA, 2000).

Clearing Permit CPS 916/3 overlaps significant portions of area one. In order to mitigate the impacts associated with CPS 916/3 an offsite revegetation condition was placed on the permit. Although clearing within these areas was not undertaken, revegetation was completed (Elegant Landscapes, 2011). Given this, the impacts to conservation reserves associated with the clearing of area one are considered to have already been offset.

In relation to area two, the loss of vegetation within/adjoining a conservation reserve was assessed and approved under MRS amendment 992/33 (EPA, 2000) with terrestrial fauna the only deferred factor. Impacts to the fauna values of the conservation reserves will be offset through the requirement to purchase a 564 hectare offset property within the Shire of Gingin that contains significant Carnaby's cockatoo habitat. The 564 hectare site exceeds the Department of Environment Regulation's (DER) requirements (99 hectares) as the clearing forms part of a larger black cockatoo impact area assessed by the Commonwealth Department of the Environment. The DER requirements are accounted for within this larger area.

**Methodology**    References:  
360 Environmental (2015)  
Environmental Protection Authority (2000)  
Environmental Protection Authority (2013)  
GHD (2014a)  
GHD (2014b)  
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 areas. The closest, Neerabup Lake, occurs approximately 700 meters from the Neerabup Road section of the clearing. Groundwater salinity within the application areas is mapped as 500 -1000 total dissolved solids, milligrams per litre. Given this, the linear nature of the clearing areas and end land use, the application 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 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 areas. 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** The application is to clear 30.7 hectares of native vegetation for intersection works at the corner of Burns Beach Road and Mitchell Freeway, Neerabup, and the extension of Neerabup Road to Wanneroo Road. The Neerabup Road East section of the clearing crosses the width of Neerabup National Park and adjoining contiguous vegetation (Bush Forever site 383). The clearing is approximately 60 metres wide in order to account for four lanes of traffic, a median strip and shared pathway.

The Western Australian Planning Commission initiated a major Metropolitan Regional Scheme (MRS) Amendment 992/33 Clarkson-Butler which contains eleven amendments for rezoning and reservation in the north-west corridor of the metropolitan region. Of the eleven amendments, six were considered by the Environmental Protection Authority (EPA) to have the potential to have significant impacts on the environment and were assessed under section 48A of the Environmental Protection Act 1986 (EP Act) (EPA Bulletin 971 and Ministerial Statement 629).

The proposed clearing for the Neerabup Road East section is one of these six areas with another being the reservation of the alignment for the Mitchell Freeway and Northern Suburbs Rail System from Burns Beach Rd to Romeo Rd. However, MRS Amendment 992/33 did not include Neerabup Road West, or an area at the intersection of Burns Beach Road and Mitchell Freeway. Also, EPA Bulletin 971 recommended that the design and construction of Neerabup Road East be referred to the EPA under Section 38 of the EP Act noting "the design and construction of Neerabup Road will have to be of an exceptional standard, given its location within a National Park, and particularly address the issue of fauna movement" with terrestrial fauna being a deferred factor. The EPA (2000) also raised concerns over the lack of evidence that fauna underpasses are readily utilised by indigenous fauna and fencing may prevent the escape of fauna during a bushfire.

On 9 June 2014 Main Roads referred the construction of Neerabup Road (east and west) to the EPA under Section 38 of the EP Act. On 18 August 2014 the EPA determined not to assess the proposal and provided the following public advice:

- Potential impacts to fauna movement may result from the implementation of Neerabup Road.
- The proponent has considered the potential impacts of the proposed clearing by undertaking a Fauna Movement Study (GHD, 2014b) and concluded that while the proposed extension would create a barrier to fauna movement, the road could be designed to mitigate these impacts through the installation of four fauna underpasses.

The application is a part of a larger Main Roads Western Australia (Main Roads) project extending Mitchell Freeway from Burns Beach Road to Hester Avenue (stage one) and Hester Avenue to Romeo Road (stage two).

Stage one of the proposed clearing including Neerabup Road East was referred to the Commonwealth Department of the Environment (DotE) under the Environment Protection and Biodiversity Conservation Act 1999 and it was determined that the clearing was a 'controlled action' due to its potential impacts to Carnaby's cockatoos (89 hectares of habitat). On 2 September 2014 the DotE approved the "controlled action" with conditions including:

- The implementation of a black cockatoo avoidance and mitigation plan; and
- The procurement of a 564 hectare offset property to be transferred to and managed by the Department of Parks and Wildlife.

A black cockatoo avoidance and mitigation plan has been submitted to the DotE and was approved on 26 October 2014 (360 Environmental, 2014).

The City of Wanneroo has advised that they support the application (City of Wanneroo, 2015),

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

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

**Methodology** References:  
360 Environmental (2014)  
City of Wanneroo (2015)  
EPA (2000)  
GHD (2014b)

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- GHD (2014d) Mitchell Freeway Extension – Burns Beach Road to Romeo Road, Flora and Fauna Management Plan. December 2014.
- GHD (2014e) Mitchell Freeway Extension – Burns Beach Road to Romeo Road, Construction Environmental Management Plan. December 2014.
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