



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8233/1
Permit Holder:	Commissioner of Main Roads Western Australia
Duration of Permit:	From 24 February 2019 to 24 February 2024

ADVICE NOTE

The funds referred to in condition 9 of this permit are intended for contributing towards the purchase of 19.57 hectares of native vegetation containing similar environmental values to the application area, being; habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*) and forest red-tailed black cockatoo (*Calyptorhynchus banksia naso*), and vegetation commensurate with the *Banksia* Woodlands of the Swan Coastal Plain threatened ecological community.

In regards to condition 8, the Permit Holder has allocated 11.67 hectares of its banked offset site at Lot 842 on Plan 254075, Nirimba to this project. The nominated 11.67 hectare area contains wetland vegetation in excellent condition.

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

1. Purpose for which clearing may be done

Clearing for the purpose of the Armadale Road-North Lake Road Bridge Project

2. Land on which clearing is to be done

Lot 9500 on Plan 50132, Cockburn Central

Lot 801 on Plan 50212, Jandakot

Lot 800 on Plan 50212, Jandakot

Lot 22 on Plan 2247, Jandakot

Kwinana Freeway road reserve (PIN: 11571638), Jandakot

Kwinana Freeway road reserve (PIN: 1246526), Cockburn Central

3. Area of clearing

The Permit Holder must not clear more than 5.1 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8233/1(a).

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 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 activities under the *Main Roads Act 1930* or any other written law.

PART II –MANAGEMENT CONDITIONS

6. Avoid, minimise and reduce the impacts and extent of 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 management

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.

8. Offset

The Permit Holder must fund the purchase of the area hatched red on attached Plan 8233/1(b) for inclusion in the conservation estate managed by the Department of Biodiversity, Conservation and Attractions.

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

Prior to undertaking any clearing authorised under this Permit and no later than 22 February 2020, the Permit Holder shall provide documentary evidence to the CEO that funding of \$197,657 has been transferred to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining native vegetation.

10. Wind erosion management

The Permit Holder shall not clear native vegetation unless development commences within three months of the authorised clearing being undertaken.

PART III - RECORD KEEPING AND REPORTING

11. Records must be kept

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

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (ii) the date that the area was cleared; and
 - (iii) the size of the area cleared (in hectares).
- (b) Actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 6 of the Permit.
- (c) Actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 7 of the Permit.
- (d) The date development commenced in accordance with condition 10 of the Permit;

12. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:
 - (i) of records required under condition 11 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 24 November 2023, the Permit Holder must provide to the *CEO* a written report of records required under condition 11 of this Permit where these records have not already been provided under condition 12(a) of this Permit.

Definitions

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

CEO: means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

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 Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
- (c) not indigenous to the area concerned.

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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

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

25 January 2019

Plan 8233/1(a)

32.116852°S

32.116852°S

115.860255°E

115.861236°E







115.860255°E

115.861236°E

32.12167°S

32.12167°S

Legend

-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority
-  Roads



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(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

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



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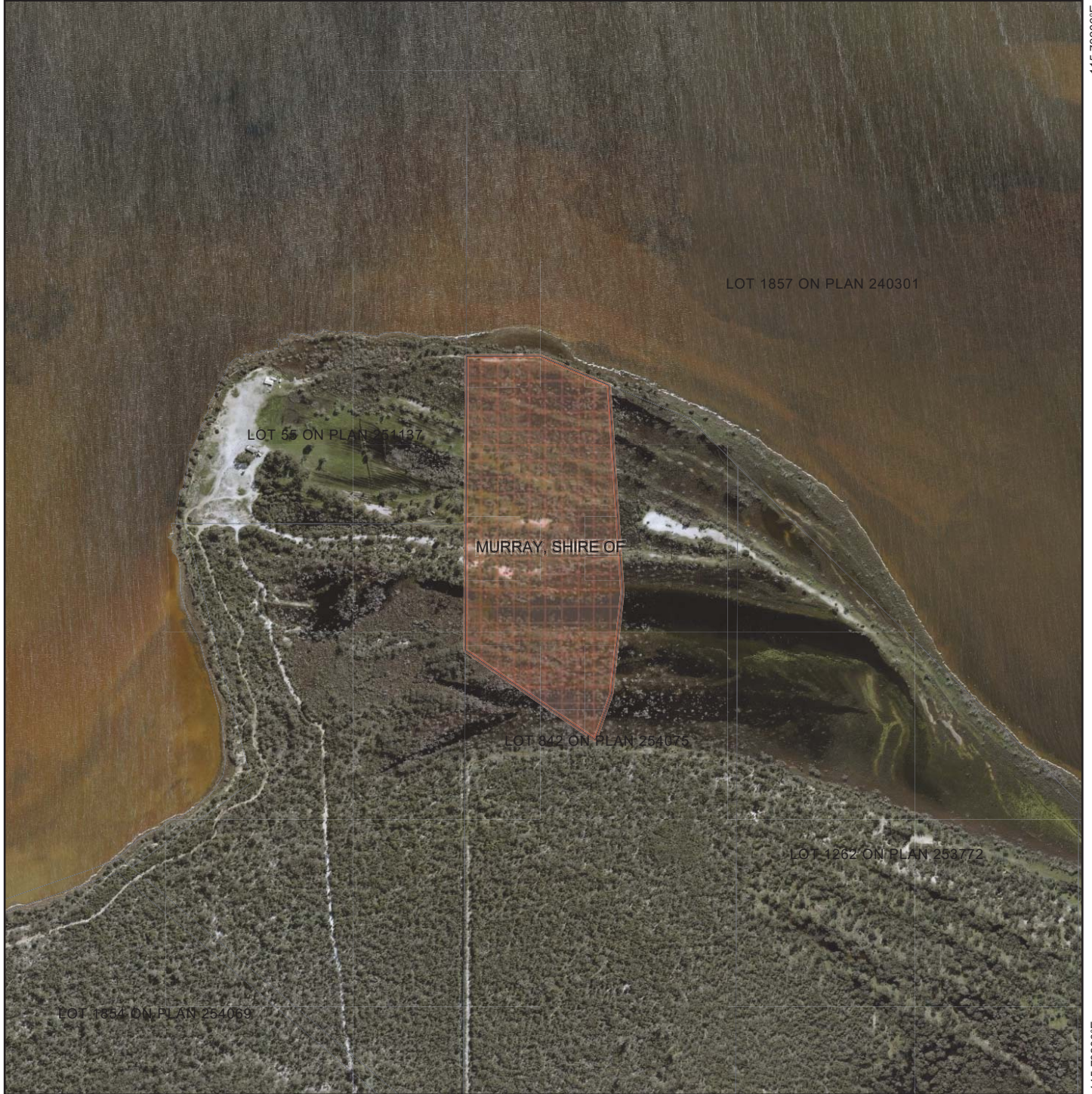
Plan 8233/1(b)

32.631453°S

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115.716698°E

115.73286°E







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32.638959°S

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Legend

-  Clearing Instruments Conditions
-  Imagery
-  Local Government Authority
-  offset



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Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8233/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Commissioner of Main Roads
Application received date: 29 October 2018

1.3. Property details

Property: LOT 9500 ON PLAN 50132, COCKBURN CENTRAL
LOT 801 ON PLAN 50212, JANDAKOT
LOT 800 ON PLAN 50212, JANDAKOT
LOT 22 ON PLAN 2247, JANDAKOT
ROAD RESERVE - 11571638, JANDAKOT
ROAD RESERVE - 1246526, COCKBURN CENTRAL
Local Government Authority: COCKBURN, CITY OF
Localities: JANDAKOT and COCKBURN CENTRAL

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
5.1		Mechanical Removal	Road construction or upgrades

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 25 January 2019

Reasons for Decision: The clearing permit application was received on 29 October 2018 and has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance to principles (a), (b), (d) and (f), may be at variance to principle (g) and (i), and is not likely to be at variance to the remaining principles.

It is considered that the proposed clearing will result in the following significant residual impacts:

- 3.7 hectares of foraging habitat for black cockatoos;
- 1.9 hectares of *Banksia* Woodlands of the Swan Coastal Plain threatened ecological community; and
- 2.8 hectares of vegetation growing in association with a multiple use wetland.

After consideration of the above impacts, the Delegated Officer determined that:

- the acquisition and conservation of 19.57 hectares of remnant native vegetation will counterbalance significant residual impacts to black cockatoo foraging habitat and the *Banksia* Woodlands of the Swan Coastal Plain threatened ecological community;
- the acquisition, conservation and management of 11.67 hectares of wetland vegetation will counterbalance significant residual impacts to wetlands.

The Delegated Officer also determined that the proposed clearing may increase the spread of weeds and dieback into adjacent vegetation and that the proposed clearing may cause appreciable land degradation in the form of wind erosion. To minimise the impact association with weeds and dieback, a condition has been placed on the permit requiring the implementation of weed and dieback management measures. To minimise the impact of wind erosion a condition has been placed on the permit requiring development to commence within three months of clearing.

The Delegated Officer also took into consideration that upgrades to the road will provide a public benefit.

Given the above, the Delegated Officer decided to grant a clearing permit subject to dieback and weed management, wind erosion and offset conditions.

2. Site Information

Clearing Description	The application is to clear 5.1 hectares of native vegetation within Lot 22 on Plan 2247, Jandakot, Lot 9500 on Plan 50132, Cockburn Central, Lot 801 on Plan 50212, Jandakot, Lot 800 on Plan 50212, Jandakot, and Road Reserves (PIN 11571638 and 1246526), for the purpose of the Armadale Road North-Lake Road Bridge Project (Figure 1).
Vegetation Description	<p>The application area has been mapped as Bassendean complex central and south which is described as “Vegetation ranges from woodland of <i>Eucalyptus marginata</i> (Jarrah) - <i>Allocasuarina fraseriana</i> (Sheoak) - Banksia species to low woodland of Melaleuca species, and sedgelands on the moister sites. This area includes the transition of <i>Eucalyptus marginata</i> (Jarrah) to <i>Eucalyptus todtiana</i> (Pricklybark) in the vicinity of Perth”.</p> <p>The Detailed Flora and Vegetation Survey (MRIA 2017a) identified five remnant, native vegetation types within the survey area of which the following three are located within the application area;</p> <ul style="list-style-type: none">• BmEpEc: <i>Banksia menziesii</i>, <i>Banksia attenuata</i>, <i>Eucalyptus todtiana</i> and occasional <i>Nuytsia floribunda</i> low open woodland over <i>Eremaea pauciflora</i>, <i>Stirlingia latifolia</i>, <i>Hibbertia hypericoides</i>, <i>Hibbertia subvaginata</i> and <i>Allocasuarina humilis</i> mid shrubland with <i>*Ehrharta calycina</i>, <i>*Briza maxima</i> and <i>*Avena barbata</i> tall grassland over <i>Dasypogon bromeliifolius</i>, <i>Patersonia occidentalis</i>, <i>Lomandra preissii</i>, <i>Lomandra micrantha</i> and <i>Dampiera linearis</i> low herbland with <i>Desmocladus flexuosus</i>, <i>Lyginia barbata</i>, <i>Desmocladus fasciculatus</i> and <i>Hypolaena exsulca</i> low open rushland• BaXpEc: <i>Banksia attenuata</i>, <i>Banksia menziesii</i> and <i>Eucalyptus todtiana</i> low woodland over <i>Xanthorrhoea preissii</i>, <i>Scholtzia involucrata</i>, <i>Hypocalymma robustum</i>, <i>Macrozamia riedlei</i> and <i>Bossiaea eriocarpa</i> mid open shrubland with <i>*Ehrharta calycina</i>, <i>*Briza maxima</i>, <i>*Avena barbata</i> and <i>*Lagurus ovatus</i> mid tussock grassland over <i>Dasypogon bromeliifolius</i>, <i>*Carpobrotus edulis</i> and <i>*Pelargonium capitatum</i> low open forbland with <i>Lepidosperma squamatum</i> low sparse sedgeland and <i>Hypolaena exsulca</i> open rushland. Significant infestation of <i>*Acacia longifolia</i> has displaced many native flora species• MpAsHr: <i>Melaleuca preissiana</i> with occasional <i>Eucalyptus marginata</i> and <i>Banksia ilicifolia</i> (on edges) mid open forest over <i>Astartea scoparia</i>, <i>*Acacia longifolia</i> subsp. <i>longifolia</i>, and <i>Kunzea glabrescens</i> tall shrubland over <i>Lepidosperma gladiatum</i> and <i>Cyperus congestus</i> low open sedgeland with <i>Hypocalymma robustum</i> sparse low shrubs with <i>*Zantedeschia aethiopica</i>, <i>Carpobrotus edulis</i>, <i>Hypochaeris glabra</i> and <i>*Asparagus asparagoides</i> mid open forbland.
Vegetation Condition	<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>
Soil type	<p>Two main soil types have been mapped within the application area being:</p> <p>Bassendean B4 Phase (northern area associated with a wetland) – Broad poorly drained sandplain with deep grey siliceous sands or bleached sands.</p> <p>Bassendean B1 Phase – Extremely low to very low relief dunes, undulating sandplains and discrete sand rises with deep bleached grey sands.</p>
Comment	The local area considered in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of the application area.

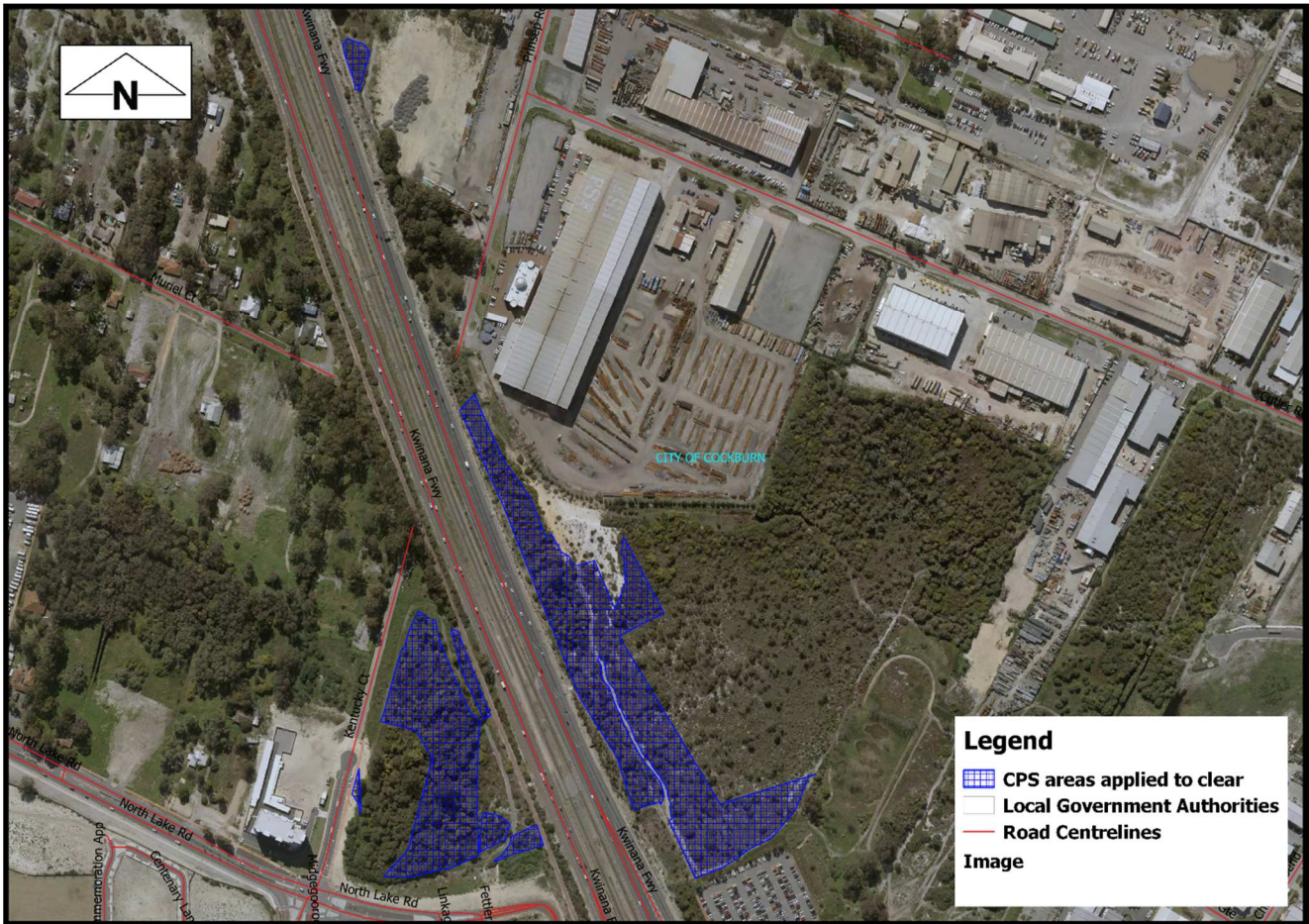


Figure 1: Application area hatched in blue.

3. Minimisation and mitigation measures

The applicant provided the following avoidance and mitigation measures on the clearing permit application form:

- The detailed design will seek to minimise impacts on vegetation as far as practicable;
- Where possible, drainage basins will retain original native vegetation. Road runoff will be directed into the existing vegetation instead of a cleared basin;
- Existing hydrological function of wetlands will be retained through the drainage design;
- Road embankments have been steepened to 3:1 slopes (with safety barriers) to minimise clearing impacts. (MRWA, 2018a)

4. Assessment of application against clearing principles

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

Proposed clearing is at variance to this Principle

The application is to clear 5.1 hectares of native vegetation within Lot 22 on Plan 2247, Jandakot, Lot 9500 on Plan 50132, Cockburn Central, Lot 801 on Plan 50212, Jandakot, Lot 800 on Plan 50212, Jandakot, and Road Reserves (PIN 11571638 and 1246526), for the purpose of Armadale Road-North Lake Road Bridge Project

The applicant is proposing to construct a flyover bridge over the Kwinana Freeway connecting Armadale Road to North Lake Road. The project is required to relieve congestion occurring as a result of the growth of Cockburn Gateway Shopping Centre; surrounding commercial, retail and residential development; and proximity to Cockburn Central Station and Kwinana Freeway (MRWA, 2018b).

According to available datasets, 40 priority and nine rare flora species have been recorded in the local area. A flora and vegetation assessment was conducted over the project area and surrounding native vegetation to identify and map the environmental values of the survey area. The survey area encompassed an area of 48.6 hectares (of which 18.4 hectares is covered by vegetation (native and non-native) and 30.2 hectares is cleared) which included the application area. The flora and vegetation assessment included undertaking two field surveys and collecting data from permanent quadrats and relevés in areas of remnant vegetation. The first field survey was conducted in June and July 2017. The second field survey was a target survey for *Drakaea elastica* and *Caladenia huegelii* and was conducted in August 2017 (MRIA, 2017a).

A total of 120 species from 89 genera and 44 families were recorded within the survey area. The total includes 97 (80 per cent) locally native species and 23 (20 per cent) introduced (exotic) or naturalised weed species (MRIA, 2017a).

The flora and vegetation survey identified 28 rare and priority flora species that could potentially occur within the survey area (MIRA, 2017), however the surveys did not identify any rare or priority flora species (MRIA, 2017a).

On 16 September 2016, the Commonwealth Department of the Environment and Energy (DotEE) listed Banksia Woodlands of the Swan Coastal Plain ecological community as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The mapping of this threatened ecological community (TEC) includes approximately half of the application area. Based on the results of the flora and vegetation assessment, the applicant has advised that 1.9 hectares of Banksia woodland TEC is located within the application area (MRWA, 2018a).

Ten terrestrial fauna species listed as rare or likely to become extinct under the *Biodiversity Conservation Act 2016* (BC Act), within the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*, have been recorded within the local area, being; Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), chuditch (*Dasyurus geoffroi*), numbat (*Myrmecobius fasciatus*), quokka (*Setonix brachyurus*), eastern curlew (*Numenius madagascariensis*), Australian bittern (*Botaurus poiciloptilus*), and two short-tongued bee (*Leioproctus douglasiellus* and *Neopasiphae simplicior*) (DBCA, 2007-). As discussed under principle (b), the application area contains 3.7 hectares of suitable foraging habitat for black cockatoos. Therefore, the application area contains significant habitat for black cockatoos.

The application area contains vegetation in very good (Keighery, 1994) condition, a TEC and significant habitat for black cockatoos. Therefore the application area contains a high level of biodiversity and is at variance to this Principle.

Taking into account the applicant's avoidance and minimisation measures (outlined in Section 3 of this assessment), it is considered that a suitable offset (outlined in Section 5 of this assessment) will counterbalance impacts to biodiversity. The applicant has advised that the proposed offset will consist of land acquisition.

(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.

Proposed clearing is at variance to this Principle

As discussed in Principle (a), ten terrestrial fauna species listed as rare or likely to become extinct under the BC Act, within the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*, have been recorded within the local area, being; Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), chuditch (*Dasyurus geoffroi*), numbat (*Myrmecobius fasciatus*), quokka (*Setonix brachyurus*), eastern curlew (*Numenius madagascariensis*), Australian bittern (*Botaurus poiciloptilus*), and two short-tongued bee (*Leioproctus douglasiellus* and *Neopasiphae simplicior*) (DBCA, 2007-).

A level 1 fauna survey and a targeted black cockatoo survey were undertaken within the survey area. The field surveys were undertaken in July 2017 (MRIA, 2017b). The field surveys identified 37 fauna species directly or indirectly within the survey area. This comprised three reptiles, one amphibian, six mammals and 27 bird species. Of the 37 fauna species observed, six were of conservation significance; Carnaby's cockatoo, forest red-tailed black cockatoo, quenda, Horsfield's bronze cuckoo (*Chrysococcyx basilis*), magpie lark (*Grallina cyanoleuca*) and the Australian white ibis (*Threskionis moluccus*).

Carnaby's cockatoo is listed as endangered and forest red-tailed cockatoo is listed as vulnerable under the EPBC Act. Black cockatoo's breed in large hollow-bearing trees, generally within woodlands or forests or in isolated trees (Commonwealth of Australia, 2012). These species nest in hollows in live or dead trees of karri, marri, wandoo, tuart, salmon gum, jarrah, flooded gum, York gum, powder bark, bullich and blackbutt (Commonwealth of Australia, 2012).

Thirty potential breeding trees were observed within the survey area. Of these 30 trees, six contained nine hollows, however none were suitable to be utilised by breeding black cockatoos (MRIA, 2017b).

Black cockatoos have a preference for foraging habitat that includes jarrah and marri woodlands and forest heathland and woodland dominated by proteaceous plant species such as *Banksia* sp., *Hakea* sp. and *Grevillea* sp. (Commonwealth of Australia, 2012).

Approximately 23.7 hectares of foraging habitat for Carnaby's cockatoos was identified within the survey area, with 3.7 hectares of 'quality' to 'high quality' foraging habitat located within the application area.

Quenda inhabits scrubby, often swampy, vegetation with dense cover up to one metre high, often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland laying close to dense cover. Populations inhabiting jarrah and wandoo forests are usually associated with watercourses (DEC, 2012). The quenda was directly sighted in the woodland habitat and is also likely to utilise the heathland and wetland habitats present (MRIA, 2017b). The quenda is widely distributed and therefore the application area is not considered to contain significant habitat for this species, however to ensure that quenda are not directly impacted by the proposed clearing, the Permit Holder will be required to undertake clearing in a slow, directional manner to allow quenda to move on.

Horsfield's bronze cuckoo, magpie lark and the Australian white ibis are all listed as Marine under the EPBC Act. Species listed as Marine under the EPBC Act are only considered of conservation significance when recorded on Commonwealth land (MRIA, 2017b). The application area does not contain Commonwealth land and therefore these three species have not been considered in this assessment.

As discussed under Principle (h), large tracts of Bush Forever sites are located east and west of the application area that form north-south ecological linkages across the landscape. Given, the presence of these Bush Forever sites which are forming north, south linkages, the application area is not likely to have significant linkage values.

Given the above and noting that the application area provides significant foraging habitat for black cockatoos, the proposed clearing is at variance to this Principle.

Taking into account the applicant's avoidance and minimisation measures (outlined in Section 3 of this assessment), it is considered that a suitable offset (outlined in Section 5 of this assessment) will counterbalance impacts to black cockatoos. The applicant has advised that the proposed offset will consist of land acquisition.

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

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

According to available datasets, nine rare flora species have been recorded in the local area, being; *Caladenia huegelii*, *Diuris micrantha*, *Diuris purdiei*, *Drakaea elastica*, *Drakaea micrantha*, *Austrostipa jacobiana*, *Eremophila glabra* subsp. *Chlorella*, *Lepidosperma rostratum* and *Synaphea* sp. *Fairbridge Farm* (D. Papenfus 696).

Of these nine species, two were identified as potentially occurring within the application area, being *Drakaea elastica* and *Caladenia huegelii*.

Drakaea elastica grows in deep sandy soil in banksia woodland, in low-lying areas alongside winter-wet swamps (Brown et al., 1998).

Caladenia huegelii occurs in areas of mixed woodland of jarrah (*Eucalyptus marginata*), candlestick banksia (*Banksia attenuata*), holly banksia (*B. ilicifolia*) and firewood banksia (*B. menziesii*) with scattered sheoak (*Allocasuarina fraseriana*) and marri (*Corymbia calophylla*) over dense shrubs of blueboy (*Stirlingia latifolia*), swan river myrtle (*Hypocalymma robustum*), yellow buttercups (*Hibbertia hypericoides*), buttercups (*H. subvaginata*), balga (*Xanthorrhoea preissii*), coastal jugflower (*Adenanthos cuneatus*) and *Conostylis* species (DEC, 2009). Throughout its range, the species tends to favour areas of dense undergrowth. Soil is usually deep grey-white sand usually associated with the Bassendean sand-dune system (DEC, 2009).

Targeted surveys for *Drakaea elastica* and *Caladenia huegelii* were undertaken during their respective ideal survey season (August and September). The survey did not identify either of these orchid species or other rare flora species within the survey area (MRIA, 2017a).

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

(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.

Proposed clearing is at variance to this Principle

As discussed in Principle (a), the *Banksia* Woodlands of the Swan Coastal Plain TEC is listed as endangered under the EPBC Act.

The *Banksia* Woodlands ecological community is restricted to areas in and immediately adjacent to the Swan Coastal Plain IBRA bioregion, including the Dandaragan plateau. This coastal plain stretches from around Jurien Bay in the north, to Dunsborough in the south (DotEE, 2016).

This ecological community has undergone a decline of about 60 per cent in its original extent and almost all of the ecological community that remains, occurs as highly fragmented patches less than 10 hectares in size (DotEE, 2016).

This ecological community has a dominant *Banksia* component, which includes at least one of four key species—*Banksia attenuata* (candlestick banksia), *B. menziesii* (firewood banksia), *B. prionotes* (acorn banksia) and/or *B. ilicifolia* (holly-leaved banksia) (DotEE, 2016).

The ecological community provides habitat for many native plants and animals that rely on *Banksia* Woodlands for their homes and food. Remaining patches of the ecological community provide important wildlife corridors and refuges in a mostly fragmented landscape (DotEE, 2016).

The DotEE mapping of this ecological community includes approximately half of the application area. The mapping of the *Banksia* Woodland TEC is based on the Commonwealth's 'likely to occur' areas and incorporates broad-scale mapping of areas most likely to contain the TEC.

Five vegetation types were recorded within the survey area, three of which were *Banksia* woodlands (MIRA, 2017). Approximately 5.87 hectares of the *Banksia* woodland TEC, in good to very good (Keighery, 1997) was confirmed as occurring within the survey area (MIRA, 2017a). The applicant has advised that 1.9 hectares of *Banksia* woodland TEC is located within the application area (MRWA, 2018a). A review of condition mapping indicates that the area of *Banksia* woodland TEC within the application area is in very good (Keighery, 1994) condition.

Given that the application area includes 1.9 hectares of a TEC, the proposed clearing is at variance to this Principle.

Taking into account the applicant's avoidance and minimisation measures (outlined in Section 3 of this assessment), it is considered that a suitable offset (outlined in Section 5 of this assessment) will counterbalance impacts to the *Banksia* Woodlands of the Swan Coastal Plain TEC. The applicant has advised that the proposed offset will consist of land acquisition.

(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.

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

The application area is located within the Swan Coastal Plain IBRA bioregion. This bioregion has approximately 38.57 per cent of its pre-European vegetation extent remaining (Government of Western Australia, 2018a).

The application area is also mapped as Bassendean central and south complex which retains approximately 26.9 per cent pre-European extent (Government of Western Australia, 2018b).

The area under application is located within the City of Cockburn, within which there is approximately 28 per cent pre-European extent remaining (Government of Western Australia, 2018a).

The local area retains approximately 19 per cent native vegetation (approximately 10,000 hectares).

The National Objectives and Targets for Biodiversity Conservation 2001-2005 include a target to have clearing controls in place that prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (Commonwealth of Australia 2001). The mapped vegetation complex and the local area fall below the threshold level of 30 per cent and therefore the application area is located within an area that has been extensively cleared. In the Perth Metropolitan and Bunbury regions, the Environmental Protection Authority (EPA) has a modified objective to retain at least 10 per cent of the pre-clearing extent of vegetation complexes for defined constrained areas (intensely developed) (EPA, 2015; EPA, 2003; Government of Western Australia, 2000). The application area is located within a constrained area given that it occurs within the Bush Forever Study Area Boundary.

The application area contains vegetation in very good (Keighery, 1994) condition, a TEC and significant habitat for black cockatoos. Therefore the application area is a significant remnant, however as the application is located within a constrained area it is not considered to be a significant remnant in an area that has been extensively cleared.

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

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DBCA Managed Lands (%)
IBRA Bioregion				
Swan Coastal Plain	1,501,222	578,997	38.57	38.47
Shire				
City of Cockburn	17,087	4,791	28	44
Vegetation Complex				
Bassendean central and south	87,476	23,533	26.9	5

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance to this Principle

No watercourses have been mapped within the application area.

A multiple use wetland is mapped over more than half of the application area. The applicant has advised that 2.8 hectares of wetland vegetation is proposed to be cleared under this application (MRWA, 2018b).

Multiple use category wetlands are wetlands with few important ecological attributes and functions remaining. Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare (Water and Rivers Commission, 2001).

In the 2017 Wetland Review, this area was assessed as being High Value with a Multi Criterion Evaluation (MCE) percentage of 54-64 per cent. This score suggests that the site may be consistent with a higher category (Resource Enhancement or Conservation) wetland (DBCA, 2018). Further to this the consultant identified areas of *Melaleuca preissiana* damplands within the application area as being in good to very good condition with the majority being in good condition. The management category for this wetland may therefore require re-evaluation (DBCA, 2018).

The wetland historically existed over an area 1.9 kilometres in an east west orientation, it is now dissected by the Kwinana Freeway and has been largely developed for light industrial, commercial and peri-urban residential. The clearing is proposed to occur in the western half of the wetland, either side of the freeway (DBCA, 2018).

This wetland is part of the Jandakot consanguineous suite and is characterised as a dampland.

This wetland is an altered system which has been impacted by a history of incremental clearing and development. The hydrology has historically been significantly altered by the filling in of portions and introduction of landfill. This has resulted in the formation of open water bodies throughout the wetland. The remaining wetland was recently reviewed (2017 wetland mapping review), the vegetated portions of the wetland, including the application area were assessed as high value. The consultant's assessment of the area confirm that the area retains wetland values. DBCA (2018) advises that further development, such as clearing, and road construction are likely to cause the following impacts:

- Direct loss of 2.8ha of wetland vegetation identified as being in very good to degraded condition;
- Edge effects on wetland vegetation adjoining the application area including weed encroachment, installation of management firebreaks and degradation of the vegetation which may in turn further impact local hydrology;
- Clearing of Banksia woodland TEC;
- Clearing of Carnaby's Black Cockatoo foraging habitat. This may have both direct effects e.g. reducing access to food and indirect effects e.g. further exposing birds to vehicular movement resulting greater potential for bird strikes.

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

Taking into account the applicant's avoidance and minimisation measures (outlined in Section 3 of this assessment), it is considered that a suitable offset (outlined in Section 5 of this assessment) will counterbalance impacts to wetland vegetation. The applicant has advised that the proposed offset will consist of allocating a portion of its banked offset site (Lot 842 on Plan 254075, Nirimba) to this project.

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

Proposed clearing may be at variance to this Principle

Two main soil types have been mapped within the application area being:

Bassendean B4 Phase (northern area associated with a wetland) – Broad poorly drained sandplain with deep grey siliceous sands or bleached sands.

Bassendean B1 Phase – Extremely low to very low relief dunes, undulating sandplains and discrete sand rises with deep bleached grey sands.

Land Deg Risk Category	Bassendean B1 Phase	Bassendean B4 Phase
Water Erosion	3-10% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk
Wind Erosion	>70% of the map unit has a high to extreme wind erosion risk	10-30% of the map unit has a high to extreme wind erosion risk
Waterlogging	3-10% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk
Flooding	<3% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk
Salinity Risk	30-50% of map unit has a moderate to high salinity risk or is presently saline	30-50% of map unit has a moderate to high salinity risk or is presently saline

Based on the mapped land degradation risk outlined above, the application area has a relatively low likelihood of water erosion and flooding (Schoknecht et al., 2004).

Wind erosion for Bassendean B1 Phase is mapped at 70 per cent of the map unit having a high to extreme risk of wind erosion (Schoknecht et al., 2004).

Waterlogging for Bassendean B2 Phase (associated with the wetland area) is mapped at 70 per cent of the map unit having a high to extreme risk of waterlogging.

Given the sandy nature of the soils and mapped land degradation risk, the proposed clearing may lead to appreciable land degradation through wind erosion and waterlogging.

The proposed clearing may be at variance to this Principle. The requirement to commence development within three months of clearing will assist in ensuring that appreciable land degradation in the form of wind erosion does not occur.

The applicant has advised that drainage basins will retain original native vegetation and that existing hydrological function of wetlands will be retained through the drainage design. These measures will assist in managing potential waterlogging.

(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.

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

Large tracts of Bush Forever sites are located east and west of the application area (see Figure 2) that form north, south ecological linkages across the landscape. Some of these Bush Forever sites are also DBCA managed lands. The closest conservation area to the application area is Bush Forever site 391 which is located approximately 1.4 kilometres west of the application area.

Given the distance to the closest conservation area, the proposed clearing is not likely to impact on the environmental values of any conservation areas. Also, noting that the Bush Forever sites form linkages across the landscape, the application area is not likely to be supporting a significant linkage.

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

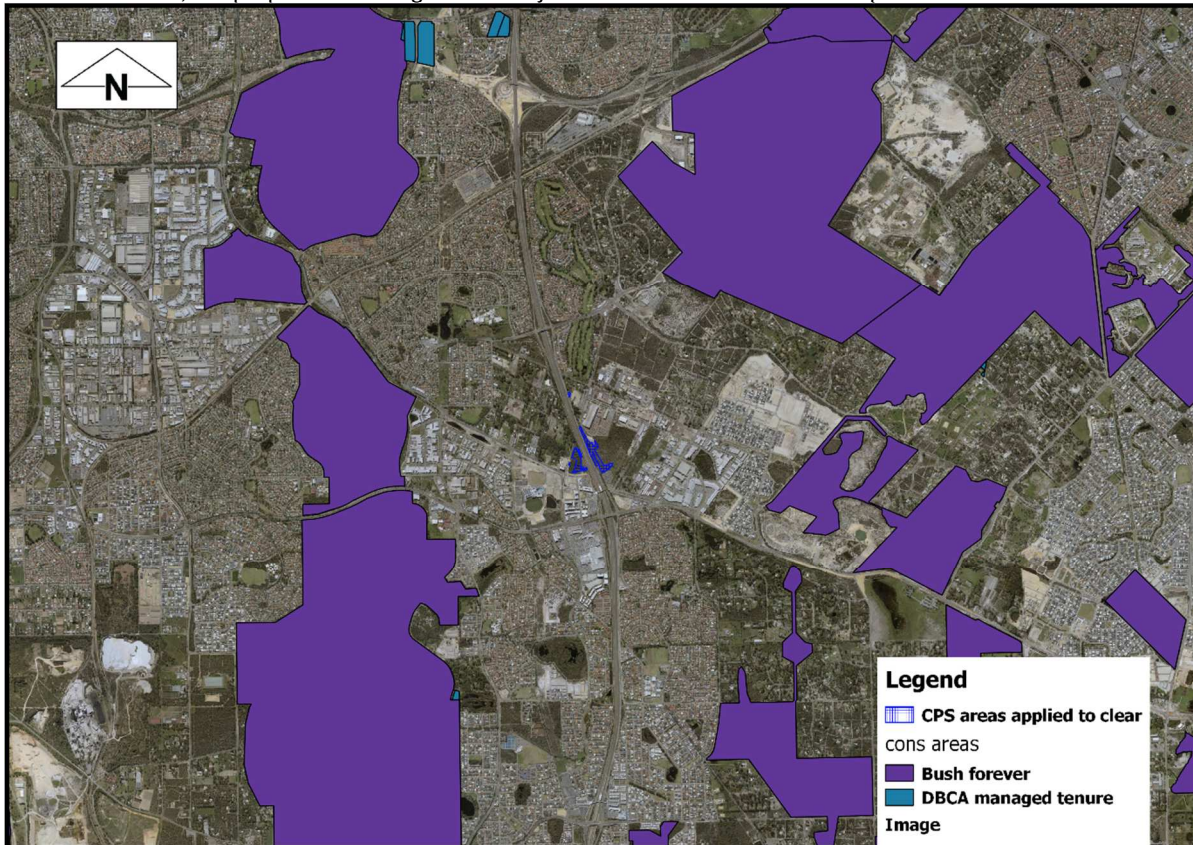


Figure 2. Bush Forever sites depicted in purple

(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.

Proposed clearing may be at variance to this Principle

Groundwater salinity within the application area is mapped <500 total dissolved solids, milligrams per litre. This level of groundwater salinity is classified as 'fresh'. Given this level, the proposed clearing is not likely to increase groundwater salinity.

As discussed in Principle (f), 2.8 hectares of the application area is mapped as a wetland. The application area appears to include small areas which were historically open water. Lidar imagery also indicated that they are lower areas suggesting clearing will impact some wetter areas (DBCA, 2018). Given that the application area may contain areas of surface water, the proposed clearing will increase sedimentation in the wetland, thus potentially degrading the quality of surface water.

Given the potential for deterioration of the quality of surface water, the proposed clearing may be at variance to this Principle.

Although the proposed clearing may deteriorate the quality of surface water, the impact is unlikely to be significant as the impact is likely to be short term during the clearing process. Surface water will be managed through the drainage design of the project.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

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

Less than three per cent of the mapped soil unit has a moderate to high flood risk. Based on this relatively low risk of flooding the proposed clearing is not likely to cause or exacerbate, the incidence or intensity of flooding.

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

Planning instruments and other relevant matters.

The Project was referred to the WA Environmental Protection Authority (EPA) on 20 August 2018 and was subject to public comment from 31 August to 6 September 2018. On 10 October 2018 the EPA decided to not assess the Project.

The Project was referred to the Commonwealth Department of the Environment and Energy (DotEE) on 22 August 2018 (EPBC 2018/8284). The Project was referred to DotEE due to potential impacts on Matters of National Environmental Significance under the EPBC Act, including: *Banksia* Woodlands of the Swan Coastal Plain TEC and habitat for Carnaby's cockatoo (*Calyptrorhynchus latirostris*). On 25 October 2018, DotEE determined that the proposed action was not a controlled action.

The Project may require a Section 5C licence for construction dewatering, under the *Rights in Irrigation and Water Act 1914*.

The Project will require Development Approval under the *Planning and Development Act 2005*, for works outside road reserves. Main Roads has advised that an application for Development Approval will be submitted once the land acquisition process is complete.

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the DWER website on 22 November 2018 with a 21 day submission period. One submission was received in relation to this application. In summary, the submission raised the following matters:

- The clearing is unnecessary as a crossing already exists and can be upgraded with little to no native vegetation impact;
- The clearing of the endangered *Banksia* Woodlands of the SCP TEC is against accepted published conservation advice and will have an adverse impact on the survival of this TEC;
- The proposed offset is both unacceptable and indicative of how precious remaining fragments of this TEC are;
- The clearing would impact black cockatoo habitat in contravention of recovery plans; and
- The clearing would impact vegetation associated with wetlands and potentially impact surface and groundwater quality.

Concerns relating to *Banksia* woodlands TEC, black cockatoos and wetlands have been addressed under Principles (a), (b), (d) and (f) above and under section 5 below.

In regards to the first dot point, Main Roads has advised that the widening of the existing Beelihar Drive bridge over the Kwinana Freeway on its own is insufficient to cater for forecasted traffic volumes. Both the proposed Armadale Road-North Lake Road bridge and the widening of the existing Beelihar Drive bridge will ultimately be required to cater for the forecasted traffic volumes.

5. Suitability of Proposed Offset

After avoidance, minimisation and mitigation (outlined in Section 3 of this report), it is considered that the proposed clearing will result in the following significant residual impacts:

- 3.7 hectares of foraging habitat for black cockatoos;
- 1.9 hectares of *Banksia* woodlands of the Swan coastal Plain TEC; and
- 2.8 hectares of vegetation growing in association with a multiple use wetland.

The applicant had proposed two offsets, to counterbalance the significant residual impacts listed above, consisting of:

- Land acquisition of 13.1 hectares to counterbalance impacts to Carnaby's cockatoo and *Banksia* woodland TEC, and
- Land acquisition (banked offset) of 8.4 hectares to counterbalance impacts to vegetation growing in association with a wetland.

In assessing whether the proposed offset is adequately proportionate to the significant environmental values listed above, the Department of Water and Environmental Regulation (DWER) undertook a calculation using the Commonwealth Offsets Assessment Guide. DWER's calculations determined that 19.57 hectares was required to offset the significant residual impacts associated with the *Banksia* Woodlands TEC and black cockatoos. To offset the significant residual impact associated with the wetland DWER determined that a 11.67 hectares area is required. These areas were calculated using values agreed upon between DWER and MRWA. A quality score of 6 was used to reflect the good to very good (Keighery, 1994) condition of the vegetation and the 'quality' to 'high quality' foraging habitat for Carnaby's cockatoo.

In a letter dated 16 January 2019, Main Roads formally accepted DWER offset calculations.

In regards to the wetland offset, Main Roads has a banked offset site which it intends on utilising. In 2016, Main Roads provided funding to DBCA for the purchase of Lots 842, 1262 and 295 Carabungup Road, Nirimba as part of the environmental offset for Roe Highway Extension. Lot 295 was utilised for the Roe Highway project and Lots 842 and 1262 were 'banked' for future offsets. The portion of Lot 842 being utilised for this project is in excellent condition and is mapped as a resource enhancement wetland.

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