



## CLEARING PERMIT

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

<b>Purpose Permit number:</b>	CPS 7623/1
<b>Permit Holder:</b>	Commissioner of Main Roads Western Australia
<b>Duration of Permit:</b>	From 22 November 2017 to 22 November 2022

### ADVICE NOTE

The funds referred to in condition 9 of this permit are intended for contributing towards the purchase of 17.2 hectares of native vegetation with similar environmental values containing Black cockatoo and threatened ecological community habitat within the Swan Coastal Plain Bioregion.

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 road construction and upgrades including associated activities.

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

Armadale Road Reserve (PIN 1203675), Banjup  
Armadale Road Reserve (PIN 11868129), Banjup  
Taylor Road Reserve (PIN 11869094), Forrestdale  
Armadale Road Reserve (PIN 11874636), Forrestdale  
Armadale Road Reserve (PIN 1246586), Forrestdale  
Armadale Road Reserve (PIN 1344978), Forrestdale  
Lot 111 on Diagram 95751, Forrestdale  
Lot 1 on Deposited Plan 13599, Banjup  
Lot 24 on Deposited Plan 13599, Banjup  
Lot 25 on Diagram 92915, Forrestdale  
Lot 31 on Deposited Plan 72740, Forrestdale  
Lot 32 on Deposited Plan 72740, Forrestdale  
Lot 33 on Deposited Plan 71376, Forrestdale  
Lot 35 on Deposited Plan 226007, Forrestdale  
Lot 35 on Deposited Plan 69547, Forrestdale  
Lot 40 on Deposited Plan 226007, Forrestdale  
Lot 41 on Deposited Plan 226007, Banjup  
Lot 461 on Deposited Plan 211709, Forrestdale  
Lot 4 on Diagram 39564, Banjup  
Lot 567 on Deposited Plan 14419, Banjup  
Lot 568 on Deposited Plan 14419, Banjup  
Lot 569 on Deposited Plan 14419, Banjup  
Lot 570 on Deposited Plan 14419, Banjup  
Lot 571 on Deposited Plan 14419, Banjup  
Lot 580 on Deposited Plan 14419, Banjup  
Lot 594 on Deposited Plan 217070, Banjup  
Lot 715 on Deposited Plan 219864, Banjup  
Lot 716 on Deposited Plan 219865, Banjup

Lot 717 on Deposited Plan 219865, Forrestdale  
Lot 718 on Deposited Plan 219866, Forrestdale  
Lot 719 on Deposited Plan 219866, Forrestdale  
Lot 821 on Deposited Plan 51421, Banjup

**3. Area of clearing**

The Permit Holder must not clear more than 12.4 hectares of native vegetation within the combined areas cross-hatched yellow on attached Plan 7623/1(a) and Plan 7623/1(b).

**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 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 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 cross-hatched red on attached Plan 7623/1(c) 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 14 January 2018, the Permit Holder shall provide documentary evidence to the CEO that funding of \$173,720 has been transferred to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining native vegetation.

## 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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James Widenbar  
A/SENIOR MANAGER  
CLEARING REGULATION

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

24 October 2017

# Plan 7623/1 (a)

32.108407°S

32.108407°S



115.82427°E

115.939441°E

32.170613°S

32.170613°S

## Legend

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



1:25,000  
 (Approximate when reproduced at A4)  
 GDA 94 (Lat/Long)  
 Geocentric Datum of Australia 1994

*J. Smith* Date *24/10/17*

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



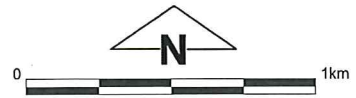
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 WESTERN AUSTRALIA  
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# Plan 7623/1 (b)



## Legend

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



1:25,000  
 (Approximate when reproduced at A4)  
 GDA 94 (Lat/Long)  
 Geocentric Datum of Australia 1994

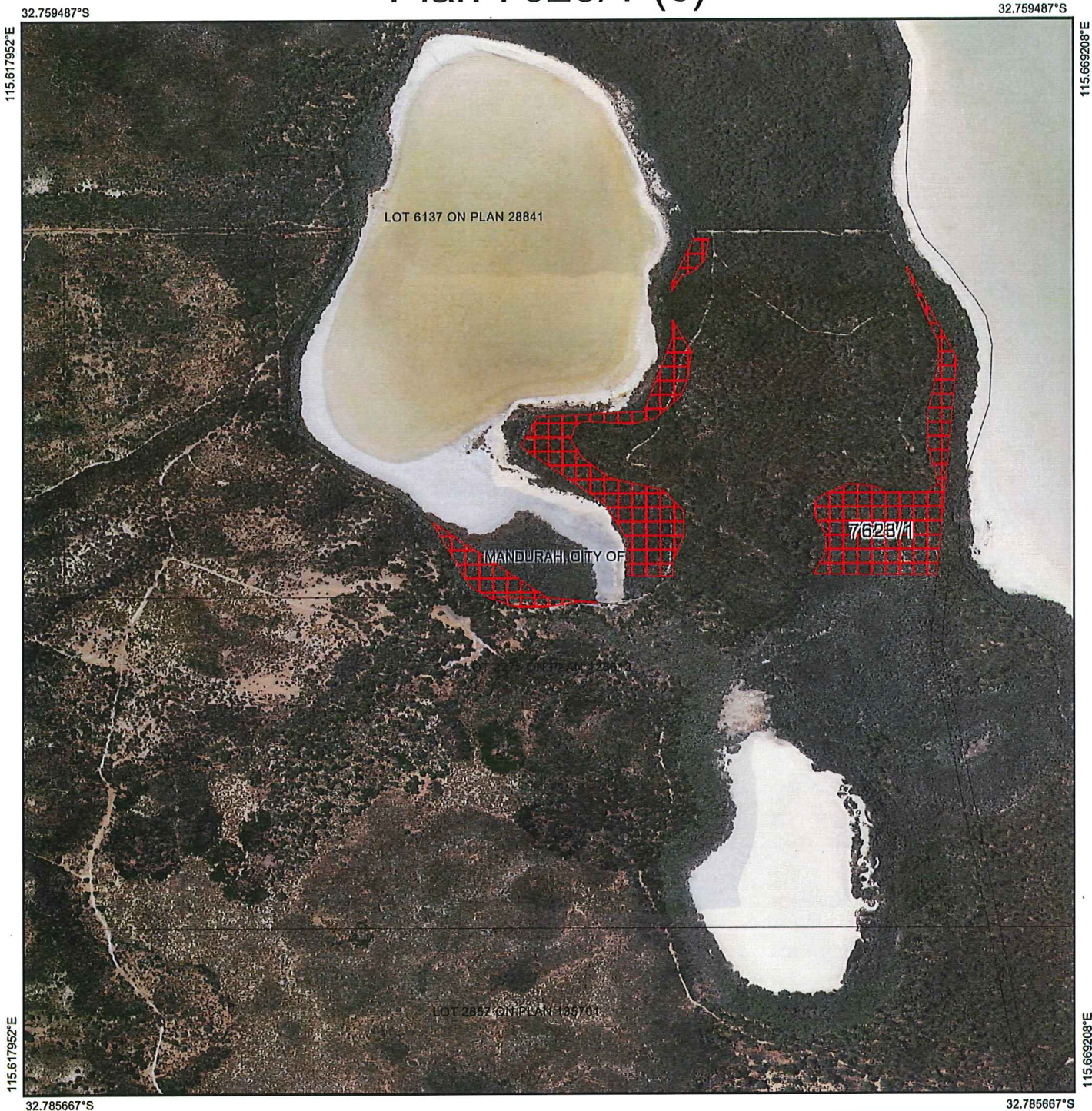
*[Signature]* Date 24.10.17

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









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# Plan 7623/1 (c)



## Legend

-  Cadastre
-  Cadastre (Search)
-  Imagery
-  Roads
-  Local Government Authority
-  Clearing Instruments Conditions



1:10,000  
 (Approximate when reproduced at A4)  
 GDA 94 (Lat/Long)  
 Geocentric Datum of Australia 1994

*J. Webster* Date *24/10/17*

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





## 1. Application details

### 1.1. Permit application details

Permit application No.: 7623/1  
Permit type: Purpose Permit

### 1.2. Applicant details

Applicant's name: Commissioner of Main Roads Western Australia

### 1.3. Property details

Property: Armadale Road Reserve - PIN 1203675, Banjup  
 Armadale Road Reserve - PIN 11868129, Banjup  
 Taylor Road Reserve - PIN 11869094, Forrestdale  
 Armadale Road Reserve - PIN 11874636, Forrestdale  
 Armadale Road Reserve - PIN 1246586, Forrestdale  
 Armadale Road Reserve - PIN 1344978, Forrestdale  
 Lot 111 on Diagram 95751, Forrestdale  
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 Lot 4 on Diagram 39564, Banjup  
 Lot 567 on Deposited Plan 14419, Banjup  
 Lot 568 on Deposited Plan 14419, Banjup  
 Lot 569 on Deposited Plan 14419, Banjup  
 Lot 570 on Deposited Plan 14419, Banjup  
 Lot 571 on Deposited Plan 14419, Banjup  
 Lot 580 on Deposited Plan 14419, Banjup  
 Lot 594 on Deposited Plan 217070, Banjup  
 Lot 715 on Deposited Plan 219864, Banjup  
 Lot 716 on Deposited Plan 219865, Banjup  
 Lot 717 on Deposited Plan 219865, Forrestdale  
 Lot 718 on Deposited Plan 219866, Forrestdale  
 Lot 719 on Deposited Plan 219866, Forrestdale  
 Lot 821 on Deposited Plan 51421, Banjup

Local Government Authority: Armadale, City of and Cockburn, City of  
 DER Region: Greater Swan  
 DPaW District: Swan Coastal  
 Localities: Forrestdale and Banjup

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
12.4		Mechanical Removal	Duplication of Armadale Road

### 1.5. Decision on application

Decision on Permit Application: Granted  
 Decision Date: 24 October 2017

Reasons for Decision: The clearing permit application was received on 31 May 2017 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), (f), (h) and (i), may be at variance to principle (e) and (g), and is not likely to be at variance to the remaining principles.

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

- loss of up to 4.85 hectares of vegetation that comprises of Black cockatoo foraging habitat;

- loss of up to 4.85 hectares of the *Banksia* Woodlands of the Swan Coastal Plain threatened ecological community;
- loss of up to 3.26 hectares of wetland vegetation;
- loss of approximately 3.26 hectares of quenda (*Isodon obesulus* subsp. *fusciventer*) habitat;
- loss of up to 0.24 hectares of Jandakot Regional Park;
- loss of up to 0.99 hectares of Bush Forever sites;
- loss of up to two individuals of *Dodonaea hackettiana* (P4);
- the potential to cause deterioration in the quality of surface and underground water and may cause land degradation via wind erosion; and
- the potential to spread dieback and weeds to adjacent conservation areas.

The applicant has avoided and minimised impacts through design choices including acquiring private land to avoid impacts to Bush Forever site 390, avoiding areas of native vegetation in the southern road reserve, avoiding direct clearing of a basin and indirect impacts to wetlands through the use of road drainage and management measures.

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

- the acquisition and conservation of 17.2 hectares of remnant native vegetation will counterbalance significant residual impacts to biodiversity, Black cockatoo foraging habitat and the *Banksia* Woodlands of the Swan Coastal Plain threatened ecological community, Bush Forever, and Jandakot Regional Park;
- the acquisition, conservation and management of 10.9 hectares of wetland vegetation will counterbalance significant residual impacts to wetlands; and
- implementing weed and dieback hygiene measures will mitigate the risk of significant impacts to adjoining native vegetation and conservation areas.

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

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

## 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 application area has been mapped as the following Swan Coastal Plain Vegetation Complexes:</p> <p><b>Bassendean Complex-Central And South</b> : Vegetation ranges from woodland of <i>Eucalyptus marginata</i> (Jarrah) - <i>Allocasuarina fraseriana</i> (Sheoak) - <i>Banksia</i> species to low woodland of <i>Melaleuca</i> species, and sedgelands on the moister sites. This area includes the transition of <i>Eucalyptus marginata</i> (Jarrah) to <i>Eucalyptus tottiana</i> (Pricklybark) in the vicinity of Perth; and</p> <p><b>Southern River Complex</b> : Open woodland of <i>Corymbia calophylla</i> (Marri) - <i>Eucalyptus marginata</i> (Jarrah) - <i>Banksia</i> species with fringing woodland of <i>Eucalyptus rudis</i> (Flooded Gum) - <i>Melaleuca raphiophylla</i> (Swamp Paperbark) along creek beds (Government of Western Australia 2016).</p>	<p>The proposed clearing is for 12.4 hectares of native vegetation for the purpose of constructing a second carriageway on Armadale 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 description and condition of the vegetation in the application area was determined from a site inspection conducted by Department of Water and Environmental Regulation (DWER) officers on 30 August 2017 (DWER 2017a) and from a biological assessment undertaken by Astron, which contained a Level 2 vegetation and flora survey conducted on 27, 29 and 30 October 2015 and supplementary surveys undertaken by Strategen in July 2016 and April 2017 (Strategen 2017).</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

##### Proposed clearing is at variance to this Principle

The application to clear 12.4 hectares of native vegetation within various properties and road reserves within the localities of Forrestdale, Treeby, and Banjup, is for the purpose of constructing a second carriageway on Armadale Road.

A flora and vegetation survey undertaken by Astron in October 2015 recorded a total of 103 native vascular plant taxa in the application area and adjoining remnant vegetation (Strategen 2017). No rare flora were identified and two individuals of *Dodonaea hackettiana* (P4) were recorded in the project area (Figure 1) within vegetation classed as 'Degraded' (Strategen 2017).

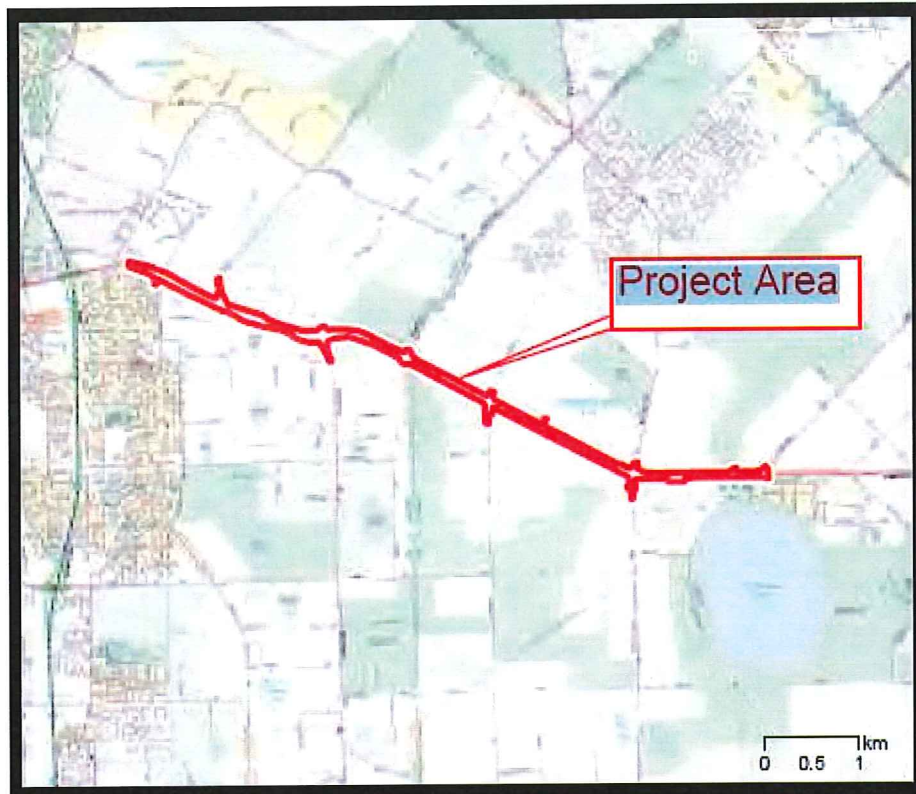


Figure 1: The Project Area. The Project area comprises a total area of approximately 63.90 hectares, including 43.70 hectares of cleared areas or existing road infrastructure and 20.19 hectares of vegetation, including 6.99 hectares of planted vegetation (Strategen 2017).

The Department of Biodiversity and Conservation and Attractions (DBCA) advised that *Dodonaea hackettiana* (Priority 4) is largely restricted to the highly urbanised area around Perth, although there are some disjunct populations in the north of the Swan Coastal Plain (north of Guilderton) (DBCA 2017c). DBCA advised that many of the known populations in the Perth metropolitan area have been cleared and the population recorded within the application area is the most eastern known population (DBCA 2017c).

DWER sought clarification from the applicant on the potential impacts to *Dodonaea hackettiana* and the applicant advised that the two individuals of *Dodonaea hackettiana* cannot be avoided (MRWA 2017a).

Given that this species largely occurs within highly urbanised areas, that many of the known populations have been cleared and that the population within the application area is the most eastern known population, impacts to this species have the potential to be of both local and regional significance (DBCA 2017c; DBCA 2017d).

As outlined in the assessment at principle (b), the application area contains foraging habitat for black cockatoo, comprises of habitat for quenda and provides an ecological linkage facilitating landscape connectivity and contributing to fauna dispersal between larger isolated bushland fragments, it is considered that the vegetation within the application area comprises significant habitat for indigenous fauna.

As outlined in the assessment at principle (d), the application area contains 4.85 hectares of the Commonwealth listed threatened ecological community (TEC) '*Banksia* Woodlands of the Swan Coastal Plain' and the State listed as Priority 3 priority ecological community '*Banksia* Dominated Woodlands of the Swan Coastal Plain IBRA Region'.

As outlined in the assessment at principles (f), (h) and (i), the application area includes wetland and watercourse vegetation and may cause deterioration in the quality of surface and underground water, and includes vegetation significant for maintaining the environmental values of any adjacent or nearby conservation area.

Given the application area contains areas of vegetation in better than good (Keighery, 1994) condition, supports areas of TEC and/or priority ecological communities (PEC), priority flora and significant habitat for fauna, the proposed clearing is at variance to this Principle.

Mechanical clearing increases the risk of spreading weeds and dieback into native vegetation adjacent to the application area. Potential impacts to biodiversity outside the application area as a result of the proposed clearing may be minimised by the implementation of weed and dieback management practices.

Taking into account the applicant's avoidance and minimisation measures, it is considered that a suitable offset will counterbalance impacts to biodiversity. Section 4 provides further information on these matters.

**Methodology**   References:  
DBCA (2017c)  
DBCA (2017d)  
DWER (2017a)  
Keighery (1994)  
MRWA (2017a)  
Strategen 2017

GIS Databases:  
- SAC biodatasets

**(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.**

**Comments   Proposed clearing is at variance to this Principle**

A search of NatureMap identified 41 fauna species specially protected under the *Wildlife Conservation Act 1950* within the local area (ten kilometre radius), including the forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), Numbat (*Myrmecobius fasciatus*) a native bee (*Leioproctus douglasiellus*) and chuditch (*Dasyurus geoffroyi*) (DBCA 2007-). Approximately 28 specially protected fauna are protected under international agreement. Seventeen priority fauna species were also identified in the local area, including the Quenda (*Isoodon obesulus* subsp. *fusciventer*), Southern Brown Bandicoot (*Isoodon obesulus*) and water rat (*Hydromys chrysogaster*).

Carnaby's cockatoo is listed as endangered, while Baudin's cockatoo and forest red-tailed black cockatoo are listed as vulnerable under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). According to Department of the Environment and Energy's (DotEE) EPBC Act referral guidelines for three threatened black cockatoo species, the application area falls within the known non-breeding range for Carnaby's cockatoo (Commonwealth of Australia 2012). According to these guidelines, the application area is within an area where Baudin's cockatoo are likely to occur and forest red-tailed black cockatoos may occur.

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). The application area contains *Banksia* sp., and a few marri and jarrah and foraging evidence was observed during the site inspection (DWER 2017a).

The level 1 Fauna survey undertaken by Astron in 2015 identified one forest red-tailed black cockatoo within the project area and limited foraging habitat for black cockatoo species (Strategen 2017). A Black cockatoo assessment was undertaken by Strategen in 2016 and 2017 which identified foraging by the forest red-tailed black cockatoo within the project area, specifically chewed fruit of Marri located within *Kunzea glabrescens* tall shrubland (Strategen 2017).

The Strategen (2017) Environmental Impact Assessment (EIA) advised that the the application area comprises of approximately 4.85 hectares of *Banksia* woodland that is moderate quality foraging habitat for Carnaby's black cockatoo and very poor foraging quality for Baudin's cockatoo and forest red-tailed black cockatoo (Strategen 2017). Strategen also advised that the "project area did not provide potential breeding or roosting habitat for any species of black cockatoo, as no trees exhibit potential breeding hollows, no trees are considered to be future breeding habitat (diameter at breast height [DBH], greater than 50 cm or no breeding hollows) and no roosting habitat was identified during the survey" (Strategen 2017).

Given the application area is located in a confirmed breeding area for Carnaby's cockatoos and the application area comprises of up to 4.85 ha of foraging habitat for black cockatoos, the application area is considered important for the long term protection of black cockatoos on the Swan Coastal Plain.

The chuditch has disappeared from approximately 95 per cent of their former range in the last 200 years. The primary causes of this reduction were habitat removal, the spread of introduced predators and active persecution by humans. Most chuditch are now found in varying densities throughout the jarrah forest and south coast of Western Australia (DEC 2012). The most dense populations have been found in riparian jarrah forest. Chuditch require adequate numbers of suitable den and refuge sites (horizontal hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles and small mammals) to survive. They are capable of travelling long distances and have large home ranges, and even at their most abundant, chuditch are generally present in low numbers. For this reason they require habitats that are of a suitable size and not excessively fragmented (DEC 2012). A DWER site inspection did not find suitable habitat for the chuditch within the application area (DWER 2017a).

Quenda are listed as priority 5 by DBCA. 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. Quenda inhabit scrubby, often swampy vegetation with dense cover up to 1 metre high. The quenda often feeds in areas of pasture and croplands lying close to dense cover (DEC 2012). A DWER site inspection observed Quenda within the application area and identified multiple quenda diggings around wetland vegetation (DWER 2017a).

The majority of the vegetation within the application area is in a good (Keighery 1994) condition, with some areas that are in degraded to completely degraded (Keighery 1994) condition (DWER 2017a). The native vegetation within Armadale Road reserve functions as an ecological linkage to regional Parks and other remnants of native vegetation within the local area. The proposed clearing is likely to increase edge effects with adjacent vegetation and contribute to the degradation of the fauna corridor through potential spread of weeds and dieback.

On the basis that the application area comprises foraging habitat for black cockatoos, comprises of habitat for quenda and provides an ecological linkage facilitating landscape connectivity and contributing to fauna dispersal between larger isolated bushland fragments, it is considered that the vegetation within the application area comprises significant habitat for indigenous fauna.

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

Taking into account the applicant's avoidance and minimisation measures, it is considered that a suitable offset will counterbalance impacts to Black cockatoo habitat and quenda habitat. Section 4 provides further information on these matters.

#### Methodology

##### References:

Commonwealth of Australia (2012)  
DBCA (2007-)  
DEC (2012)  
DWER (2017a)  
Keighery (1994)  
Strategen (2017)

##### GIS Databases:

- Imagery
- Remnant vegetation
- Carnaby Cockatoo breeding sites
- Carnaby Cockatoo feeding
- Geomorphic Wetlands Swan Coastal Plain (Management)

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

#### Comments

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

According to available databases, eleven rare flora species has been recorded within the local area (ten kilometre radius). The closest record is 299 metres from the application area.

The closest rare flora species is a spider orchid which grows in deep sandy soil, in mixed woodland of jarrah and *Banksia*. The species occurs in scattered localities over a range of 315 kilometers, from just north of Perth to near Margaret River and tends to favour areas of lush undergrowth. This species flowers September to October (Brown et al. 1998).

Another species is a hammer orchid which inhabits infertile grey sands in common sheoak and jarrah woodland or forest. This species usually grows on old firebreaks and in disturbed sites where competition from other plants has been removed. This species flowers September to October (Brown et al. 1998).

Astron completed a biological assessment in 2015, which included a Level 2 vegetation and flora survey on 27, 29 and 30 October 2015. This survey included a targeted survey for the spider orchid at an appropriate time of year. Strategen concluded that targeted flora surveys were required for the hammer orchid as the Astron 2015 survey was not completed during the optimal time (Strategen 2017). A Strategen 2016 targeted survey on 28 July 2017, did not locate any rare flora individuals within the *Kunzea glabrescens* tall shrublands (Strategen 2017). No threatened flora were recorded in either survey (Strategen 2017).

DBCA advised that surveys “should be conducted in late September – early October” and “mid- September and mid-October”. DBCA advised that due to the timing of the Astron survey and the seasonal conditions, additional appropriately timed targeted surveys for threatened orchids are recommended (DBCA 2017b). DBCA also advised that the application area may contain suitable habitat for another rare orchid species, however the species is unlikely to be flowering if the site has not been recently burnt and would therefore not be likely to be recorded in the flora survey (DBCA 2017b).

The targeted surveys conducted by both Astron and Strategen were conducted at the correct time of year (as per published information for the rare flora species) and in accordance with the technical Guidance – Flora and Vegetation Survey for Environmental Impact Assessment. Noting that targeted flora surveys were undertaken at the appropriate time of year, the survey intensity was adequate and the level of information provided was sufficient, additional appropriately timed targeted surveys are not deemed required.

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

**Methodology**    References:  
Brown et al. (1998)  
DBCA (2017b)  
Strategen (2017)

GIS Databases:  
- SAC Bio datasets (accessed July 2017)

**(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.**

**Comments      Proposed clearing is at variance to this Principle**

According to available datasets, seven TECs endorsed by the WA Minister for Environment have been mapped within ten kilometres of the application area. Parts of the application area are mapped as the ‘*Banksia* Woodlands of the Swan Coastal Plain’ (*Banksia* woodlands) ecological community listed as Priority 3 by DBCA. This community is listed as a TEC under the EPBC Act.

The flora and vegetation survey by Astron states that “Preliminary assessments of intact vegetation communities show that Floristic Community Types (FCTs) 4 (*Melaleuca preissiana* damplands), 5 (mixed shrub damplands) and 23a (Central *Banksia attenuata* – *Banksia menziesii* woodlands) are likely FCTs occurring in the area. None of the FCTs that match the vegetation associations are PECs or TECs. Hence, no TECs (State or Commonwealth listed) or PECs were recorded within the survey area.” (Astron 2015).

DBCA advised that the methods described for the preliminary assessment do not state that statistical analysis against the original Gibson *et al.* (1994) or Bush Forever datasets was completed. DBCA’s own assessment of key combinations of taxa indicates that Astron’s sites have affinities for a number of FCTs that include PECs, as follows:

- Site 1: FCTs 24 (P3), 28, 21c (P3)
- Site 2: FCT 21c (P3)
- Site 3: FCT 4, 21a, 22 (P3), 23a
- Site 4: FCT 4
- Site 5: FCT 5, 21a, 21c (P3), 28
- Site 6: 21a, 28
- Site 7: FCTs 21a, 21c (P3), 23a
- Site 8: FCTs 4, 5  
(DBCA 2017b)

The Approved Conservation Advice for the *Banksia* woodlands of the Swan Coastal Plain TEC states:

A number of vegetation communities or floristic community types are encompassed within the *Banksia* Woodlands ecological community. Some of these sub-communities within the *Banksia* Woodlands are highly restricted and listed as Threatened or Priority ecological communities in Western Australia. These have higher significance than sub-types known to be more common and should be provided specific or additional protection, particularly where assigned a higher threat rank than the *Banksia* Woodlands listing (TSSC 2016).

The DWER site inspection observed additional *Banksia* woodland communities than the Astron (2015) and Strategen (2017) survey mapping indicated (Strategen 2017). DWER identified *Banksia* species throughout the application area, including numerous examples of *Banksia* regeneration (DWER 2017a).

The Strategen EIA states that an assessment of the *Banksia* woodland within the Project area against the key diagnostic criteria was undertaken and identified that up to 4.85 ha of the Endangered *Banksia* woodlands of the Swan Coastal Plain TEC will be cleared (Strategen 2017).

DWER sought clarification from the applicant on the potential impacts to TECs and informed the applicant that the floristic quadrat data from the Astron (2015) report should be statistically analysed using appropriate methods against the Gibson *et al* (1994) or Bush Forever dataset (Keighery *et al.* 2012) to clarify the FCTs present. Noting that the single quadrat scoring and paucity of annuals and ephemerals could result in some FCT alignments not being satisfactorily verified. The applicant advised that further FCT analysis would be inconclusive and that no further survey or analysis would be undertaken (MRWA 2017a).

DBCA advised that the recent listing of the *Banksia* woodlands of the Swan Coastal Plain as Endangered under the EPBC Act has increased the importance of determining the FCTs present in *Banksia* woodlands as the Conservation Advice attaches greater significance to WA listed TECs and PECs. The Astron survey and 'preliminary assessments' in 2015 preceded that EPBC listing. Combinations of key taxa in Astron (2015) quadrats indicate that PECs are possible in some locations (DBCA 2017e).

DBCA further advised that the methods utilised for Astron's 'preliminary assessment' are not described however the use of the term 'preliminary' implies that the assessments were considered preparatory and required further confirmation (DBCA 2017e). Astron collected the floristic data from quadrats as is recommended by DBCA, and in some quadrats the species richness is reasonable and should be suitable for statistical analysis. Additional scorings of the quadrats, could have increased the species richness, and improved the likelihood of statistical analysis being conclusive. It is not possible to determine if statistical analysis will provide more conclusive results regarding the FCTs present unless the analysis is completed (DBCA 2017e).

The identified 4.85 hectares of *Banksia* Woodlands is not one large patch of remnant vegetation, it is located in small areas scattered throughout the application area. Noting the applicants advice that no further analysis or surveys will be conducted, it is inferred that the application area contains 4.85 hectares of the *Banksia* Woodlands of the Swan Coastal Plain TEC. Given this, the proposed clearing is at variance to this Principle.

Taking into account the applicant's avoidance and minimisation measures, it is considered that a suitable offset will counterbalance impacts to *Banksia* Woodlands of the Swan Coastal Plain TEC. Section 4 provides further information on these matters.

**Methodology**

**References:**

DBCA (2017b)  
DBCA (2017e)  
DWER (2017a)  
MRWA (2017a)  
Strategen (2017)  
TSSC (2016)

**GIS Databases:**

- SAC Bio datasets (September 2017)

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

**Comments**

**Proposed clearing may be at variance to this Principle**

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001). Within constrained areas on the Swan Coastal Plain, the target for representation of the pre-clearing extent of a particular native vegetation complex is 10 per cent (EPA 2006). The application area is zoned as 'Primary regional roads' within the Metropolitan Region Scheme and is therefore considered to be located within a constrained area.

As indicated in Table 2, the vegetation extents applicable to the application area are greater than the recommended 10 per cent threshold for constrained areas.

Noting that a majority of the vegetation within application area is in a good (Keighery 1994) condition, comprises a high level of biological diversity, contains significant habitat for fauna including species of conservation significance, and will impact on conservation category wetlands and TEC's, the vegetation within the application area is significant as a remnant.

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

**Table 2: Vegetation Extents**

	Pre-European	Current Extent	Remaining	Extent in DBCA Managed Lands	Current Extent in All DPaW-Managed Land (proportion of Current Extent) (%)
<b>IBRA Bioregion*</b>					
Swan Coastal Plain	1,501,222	578,432	39	-	38
<b>Local government**</b>					
City of Cockburn	15,756	4,313	27	-	-
City of Armadale	9,203	1,507	16	-	-
<b>Swan Coastal Plain – Vegetation Complexes**</b>					
Bassendean Complex-Central And\South:	87, 476	22,463	26	5	-
Southern River Complex:	58,781	10,838	18	2	-

**Methodology**

**References:**

- Commonwealth of Australia (2001)
- EPA (2006)
- \*Government of western Australia (2016)
- \*\*Government of Western Australia (2017)

**GIS Databases:**

- Pre-European vegetation
- NLWRA, Current Extent of Native Vegetation
- Vegetation Complexes – Swan Coastal Plain
- Metropolitan Region Scheme - Zones and Reserves

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

**Comments**

**Proposed clearing is at variance to this Principle**

According to available databases, the application area intersects a number of mapped wetlands, including conservation category wetland damplands and sumplands, resource enhancement sumplands and multiple use damplands. A DWER site inspection also identified a number of other areas of vegetation that identify as wetlands (DWER 2017a).

Conservation category wetlands are the highest priority wetlands which support a high level of ecological attributes and functions. While Resource enhancement wetlands may have been partially modified but still support substantial ecological attributes and functions; and Multiple use wetlands have few important ecological attributes and functions remaining (Water and Rivers Commission 2001).

The condition of the wetland vegetation proposed to be cleared as identified in the DWER site inspection ranges from excellent to degraded (Keighery 1994) condition (DWER 2017a).

Strategen EIA advised that the project area intersects 1.09 ha of mapped boundaries of Conservation category Geomorphic wetlands. Strategen advised that these wetlands have been subject to degradation from weeds and surrounding rural land use activities (Strategen 2017).

It is noted that wetland areas proposed to be cleared in Strategen's EIA (section 4.4.1) are not consistent with the application area proposed to be cleared. A DWER site inspection identified an area of vegetation as the vegetation community '*Melaleuca preissiana* damplands' in good to excellent condition (DWER 2017a). Noting this dampland has not been mapped as a wetland, considering the vegetation condition, the area is likely to meet the criteria for conservation category (DBCA 2017a). Given this, DWER considers that 3.26 ha of wetland vegetation in good or better (Keighery 1994) condition is proposed to be cleared.

DBCA advise that the application area is not a significant portion of wetlands within the vicinity of Armadale Road and the proposed clearing is not likely to have a significant impact on the ecology of wetlands of high conservation significance in the area (DBCA 2017a). Noting this, the proposed clearing has the potential to contribute to the local and regional cumulative impacts of clearing and loss of wetland connectivity in the landscape and cause hydrological alteration of some wetlands (DBCA 2017a).

The proposed clearing and road duplication is occurring within 50 metres of various wetland areas along the alignment. Noting that EPA guidance recommends that wetlands to be protected are afforded a minimum 50 m buffer, wetland areas without an appropriate buffer may be subjected to degrading processes and values may be reduced. For example, weeds and rubbish may encroach into wetland areas that are currently being buffered by the existing roadside vegetation. Consideration should therefore be given to opportunities to mitigate impacts of the clearing and road upgrade on affected or adjacent wetlands through establishment of native vegetation adjacent to the affected wetland.

Given the above, the proposed clearing of the application area will impact upon 3.26 hectares of vegetation growing in and in association with a wetland. Therefore, the proposed clearing is at variance to this Principle.

Potential hydrological impacts to wetlands can be managed through the installation of drainage structures, complementing the existing Armadale Road alignment.

Taking into account the applicant's avoidance and minimisation measures, it is considered that a suitable offset will counterbalance impacts to wetlands. Section 4 provides further information on these matters.

**Methodology**

References:

DBCA (2017a)  
DWER (2017a)  
Keighery (1994)  
Strategen (2017)  
Water and Rivers Commission (2001)

GIS Databases:

- Geomorphic Wetlands Swan Coastal Plain (Management)  
- Hydrography linear

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

**Comments**

**Proposed clearing may be at variance to this Principle**

The application area has five soil systems mapped by the former Department of Agriculture and Food Western Australia (DAFWA) (now Department of Primary Industries and Regional Development) (DAFWA 2017):

- Bassendean B1 Phase (212Bs\_B1) – Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; *Banksia* dominant.
- Bassendean B2 Phase (212Bs\_B2) – Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- Bassendean B3 Phase (212Bs\_B3) – Closed depressions and poorly defined stream channels with moderately deep, poorly to very poorly drained bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.
- Bassendean B4 Phase (212Bs\_B4) – Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan; and
- Pinjarra P8 Phase (213Pj\_P8) - Broad poorly drained flats and poorly defined stream channels with moderately deep to deep sands over mottled clays; acidic or less commonly alkaline grey and yellow duplex soils to uniform bleached or pale brown sands over clay.

The majority of the application area is mapped as either the 212Bs\_B1 or 212Bs\_B2 map units.

DAFWA mapping indicates that greater than 70 per cent of the above mentioned soils systems have a high to extreme wind erosion risk (highest risk rating out of six risk categories). DAFWA mapping indicates that 30-50 per cent of the above mentioned soil systems have a moderate to high salinity risk or is presently saline. DAFWA mapping also indicates that greater than 70 per cent of the above mentioned soils systems has a high to extreme phosphorus export risk (Department of Agriculture and Food 2017).

The DWER site inspection observed sandy soils in the application area and some steep slopes were observed in the western portion, with the northern road reserve higher than the southern side. (DWER 2017a).

Given the extensively cleared local area, size of the application area, topography and mapped soil type, the proposed clearing may cause land degradation via wind erosion.

Given the above, the proposed clearing may be at variance to this Principle. Undertaking road construction activities within two months of clearing will assist in mitigating this risk.

**Methodology**

References:

DAFWA (2017)  
DWER (2017a)

GIS Databases:  
- Topographic Contours, Statewide  
- Land Degradation datasets

**(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.**

**Comments Proposed clearing may be at variance to this Principle**

0.24 hectares of the application area is within the Jandakot Regional Park, while other parts of the application area are directly adjacent to parts of the Jandakot Regional Park. The application area is also mapped within Bush Forever site 344 "Denise De Young Reserve and Gibbs Road Swamp Bushland, Banjup/Forrestdale" (Government of Western Australia 2000), of which a portion is managed as the Jandakot Regional Park.

DBCA advised that:

"The main protection that Jandakot Regional Park has is by virtue of its Parks and Recreation reservation and its inclusion in Bush Forever (2000). Potential impacts that the proposed clearing would have on the environmental attributes of Jandakot Regional Park are no different to the predicted impacts to Bush Forever sites. State Planning Policy (SPP) 2.8 – Bushland Policy for the Perth Metropolitan Region (2010) requires proposals within Bush Forever areas to ensure that all reasonable steps have been taken to avoid, minimise or offset any likely adverse impacts on regionally significant bushland, so while the Regional Parks Unit does not support clearing within Jandakot Regional Park if the Bush Forever impacts have been addressed through appropriate offsets this should be sufficient." (DBCA 2017f)

The proposed clearing is likely to impact this conservation area through the introduction and spread of weeds and the direct loss of 0.24 hectares of Jandakot Regional Park and 0.99 hectares of Bush Forever site 344. Given that the proposed clearing is only 0.22 per cent of the Regional Park and 0.25 per cent of the Bush Forever site, the impacts to the environmental values of these conservation areas are not likely to be significant.

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

As discussed under principle (a), Mechanical clearing increases the risk of spreading weeds and dieback into native vegetation adjacent to the application area. Weed and Dieback management measures will mitigate the impacts of the introduction and spread of weeds.

It is considered that an offset for impacts to a biodiversity will address impacts to Jandakot Regional Park and Bush Forever sites. Section 4 provides further information on these matters.

**Methodology** References  
DBCA (2017f)  
Government of Western Australia (2000)

GIS Databases:  
- Regional Parks  
- Bushforever

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

**Comments Proposed clearing is at variance to this Principle**

As discussed under Principle (f), the application area currently intersects a number of mapped wetlands, including a conservation category wetland, a resource enhancement wetland and a multiple use wetland. The application area comprises of approximately 3.26 hectares of wetland vegetation. The application area is also mapped within the Priority 1 Jandakot Underground Water Pollution Control Area. Given the clearing of 3.26 hectares of wetland vegetation, the proposed clearing is likely increase turbidity and sedimentation and is likely to cause deterioration in the quality of surface water.

The Strategen (2017) EIA advised that the project area is "underlain by the Superficial aquifer (Superficial formations), Osborne Formation and the Leederville aquifer. The Superficial and Leederville aquifers are major aquifers in the Perth region. The Superficial aquifer contains the Jandakot Mound beneath the Bassendean and Spearwood Dunes. The Superficial aquifer is in hydraulic connection with the Osborne Formation but not in hydraulic connection with the Leederville aquifer" (Strategen 2017).

Strategen also advised that the project area is located in close proximity to the Forrestdale Main Drain and Bailey's Branch Drain, located approximately 1.7 km and 700 m respectively; however these areas will not be directly impacted by the project (Strategen 2017). Strategen advised that James Drain may be impacted by the project and surface water flows resulting from stormwater can be readily managed through the installation of stormwater and drainage infrastructure, therefore are not expected to be significant.



DBCA advised that the James Drain is an important source of surface water inflow to Forrestdale Lake Ramsar site. DBCA also advised that the City of Armadale is considering a proposal to remediate James Drain and recommended that MRWA consult with the City of Armadale with the objective of ensuring that road works and associated drainage infrastructure are consistent with the James Drain proposal (DBCA 2017a). The applicant advised that 'impacts on this drain from clearing and road construction can be readily managed through measures such as lit fences on land and slit curtains in the drain to prevent plumes of silt in the drain' (MRWA 2017b)

The majority of the application area is mapped as having a moderate to low risk of acid sulfate soils. Portions of the application area, associated with wetlands, are mapped as having a high to moderate risk of acid sulfate soils. The removal of deep-rooted native vegetation may mobilise acid sulfate soils, which may result in water quality deterioration.

Based on the above, it is considered that the proposed clearing is likely to cause deterioration in the quality of surface water and may cause deterioration in the quality of underground water.

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

Strategen advised that through the implementation of drainage infrastructure, any potential impacts to surface water and groundwater will be mitigated consistent with requirements of Water Quality Protection Notices and State Planning Policy 2.3 (Strategen 2017).

**Methodology**   References:  
DBCA (2017a)  
Strategen (2017)

GIS Databases:  
- Acid Sulfate Soil Risk Map, Swan Coastal Plain  
- Geomorphic Wetlands Swan Coastal Plain (Management)  
- Public Drinking Water Protection Areas  
- Hydrography linear  
- Land Degradation datasets

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

**Comments**       **Proposed clearing is not likely to be at variance to this Principle**  
The application area is located in a medium rainfall area, where the average rainfall is 900 millimetres per year.

Based on the medium rainfall, that the majority of the application area has well-draining soil types mapped and the linear nature of the clearing, it is considered that 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

**Methodology**   GIS Databases:  
- Hydrography, linear

## Planning instruments and other relevant matters.

<b>Comments</b>	<p>The application to clear 12.4 hectares of native vegetation within various properties and road reserves within the localities of Forrestdale, Treeby, and Banjup, is for the purpose of constructing a second carriageway on Armadale Road.</p> <p>The clearing permit application was advertised on the former Department of Environment and Regulation website on 22 June 2017, for a 21 day public submission period. No submissions were received in relation to this application.</p> <p>On 22 August 2017, the Commonwealth DotEE determined that the duplication of approximately 7 km of Armadale road (EPBC 2017/7972) is not a controlled action (DotEE 2017).</p> <p>There are three Aboriginal Sites of Significance mapped within the application area, being; Banjup: Calsil; Readymix Sandpit 1; and Readymix Sandpit 2. It is the applicant's responsibility to comply with the <i>Aboriginal Heritage Act 1972</i> and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.</p> <p>The application area is predominantly zoned as 'Primary regional roads' within the Metropolitan Region Scheme.</p> <p>The application area impacts 0.53 hectares of phase 1 and 0.66 hectares of phase 2 conservation reserves identified in the Draft Conservation Program of the Draft Green Growth Plan Commitments.</p> <p>DBCA recommended "the preparation and implementation of a Construction Environmental Management Plan. The plan is to address issues such as protection of remnant vegetation where possible; rehabilitation of the edges of the road reserve (a gentle sloping batter) with local native species; weed, disease and access control. Existing infrastructure such as fences and gates will need to be replaced and new deposited plans for the affected lots will need to be provided. Should clearing be approved, Regional Parks Unit (RPU) expects that the boundaries are properly pegged prior to clearing" (DBCA 2017f).</p> <p>The application area is mapped within the Perth and Jandakot groundwater area which are areas proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act). DWER's Peel Region advised that any groundwater abstraction in these proclaimed areas will require a licence under section 26D (construct a well) and Section 5C (groundwater abstraction) of the RIWI Act. DWER's Peel Region advised that records currently indicate that no application has been received. Water availability for dust suppression will depend upon which groundwater area will be accessed and the proponent is encouraged to contact the licensing section on 9550 4222 for further advice (DWER 2017b).</p> <p>DWER's Peel Region also advised that the land is located within the Jandakot Underground Water Pollution Catchment Area (UWPCA) and is managed in accordance with the Western Australian Planning Commission's (WAPC) Statement of Planning Policy No 2.3 <i>Jandakot groundwater protection policy</i> (SPP 2.3) and the Water Quality Protection Note (WQPN 25) <i>Land use compatibility table for public drinking water source areas</i> (DWER 2017b). Under WQPN 25, road infrastructure is a compatible use with conditions in both Priority 1 and 2 areas (DWER 2017b).</p> <p>DBCA advised that the proposed clearing may impact and alter the existing hydrological regime. DBCA recommends that stormwater management is in accordance with the <i>Decision Process for Stormwater Management in WA</i> (DWER draft released for consultation August 2016). In particular, stormwater management in the vicinity of the internationally important Forrestdale Lake (Ramsar site) will need to be managed to the highest standard to reduce the risk of additional impacts on the nature reserve and Ramsar site's values (DBCA 2017a).</p>
<b>Methodology</b>	<p>References: DotEE (2017) DBCA (2017a) DBCA (2017f) DWER (2017b)</p> <p>GIS Databases: - Aboriginal Sites of Significance - RIWI Areas - Perth Metro Region Scheme - Zoning</p>

## 4. Avoidance, minimisation and offset

MRWA provided the following information in regards to avoidance and minimisation for the proposed clearing:

"Avoidance measures:

As the proposed duplication of Armadale Road between Tapper Road and Anstey Road is a widening of the existing road, avoidance measures available to the project were limited.

- Between Ludlow Road and Warton Road the second carriageway is proposed to be built on the southern side of the existing Armadale Road in order to avoid impacts on Bush Forever site 390. Additional privately owned land has been acquired to avoid this impact.

- Between Tapper Road and Fraser Road the second carriageway is to be built on the cleared northern side of Armadale Road
- At the intersection of Armadale Road and Nicholson Road, road drainage will be directed away from the intersection to a proposed basin 350 m to the east. This avoids direct (ie clearing for a drainage basin) and indirect (flooding and water quality) impacts on the vegetated Resource Enhancement Wetland to the south east of the intersection and the Conservation Category Wetland to the south west." (MRWA, 2017c)

"Minimisation measures:

- Temporary works (site offices, laydowns, access tracks) will be located in already cleared areas. No clearing of native vegetation will occur for temporary works.
- Acid sulfate soil (ASS) investigation and management plan will be implemented in accordance with DWER ASS management guidelines (note that this is still in development and will depend on the final design)
- Clearing of native vegetation will be limited to 0.5 m beyond the extent of permanent earthworks
- Clearing of native vegetation will only occur within the defined boundaries of CPS 7623/1
- Where mature trees occur within the permanent footprint consideration will be given to conserving the tree if practicable. This will be limited to those trees near the extent of earthworks. It will need to be considered on a case by case basis and consider safety and maintenance issues.
- Clearing boundaries will be clearly marked to delineate extent of clearing and to minimise the risk of over-clearing.
- Dust will be managed during construction to avoid nuisance impacts on residents and significant dust deposition on adjacent vegetation.
- The road design will continue to be refined and will seek to minimise clearing of native vegetation where practicable.
- The drainage design will continue to be refined. It may be possible to avoid or minimise the clearing of a proposed basin within Bush Forever 342.
- Drainage design will maintain existing hydrology where practicable." (MRWA, 2017c)

MRWA has also advised that the detailed road design is yet to be completed (MRWA 2017b). The final road design will be completed during the construction phase of the project and MRWA is unable to provide additional information on the extent to which native vegetation can be avoided or mitigated rather than offset (MRWA 2017b). The area of wetland vegetation, Black cockatoo habitat and *Banksia* Woodlands TEC is calculated to be the maximum extent proposed to be cleared with the current road design. Impacts to the abovementioned environmental receptors are likely to be further reduced by the applicant following the detailed road design.

It is noted that significant environmental impacts have been avoided and minimised during the design process and that upgrades to the road will provide a public benefit including improved road safety. It is also noted that the road is constrained on either side by wetlands and Black cockatoo habitat and *Banksia* Woodlands TEC and that if the applicant avoided impacts to wetlands in the southern sections of the application area, it would likely result in additional impacts to Black cockatoo habitat and *Banksia* Woodlands TEC to the north of the application area.

The assessment against the clearing principles has identified that the proposed clearing is at variance to principles (a), (b), (d), (f), (h) and (i). After consideration of the proposed avoidance, minimisation and mitigation measures, it is considered that the proposed clearing will result in the following significant residual impacts:

- loss of up to 4.85 hectares of vegetation that comprises of Black cockatoo foraging habitat;
- loss of up to 4.85 hectares of the *Banksia* Woodlands of the Swan Coastal Plain threatened ecological community;
- loss of up to 3.26 hectares of wetland vegetation;
- loss of quenda (*Isodon obesulus* subsp. *fusciventer*) habitat; and
- loss of up to two individuals of *Dodonaea hackettiana* (P4).

To offset any significant residual impacts the applicant proposes to provide a monetary contribution of \$173,720 for the purchase of 17.2 hectares of remnant vegetation containing high biodiversity, Black cockatoo foraging habitat and the *Banksia* Woodlands of the Swan Coastal Plain threatened ecological community. These figures are based on land values and the Commonwealth Offsets Assessment Guide. The applicant also proposes to offset the significant residual loss of wetland vegetation through the acquisition of 10.9 hectares of suitable wetland vegetation (Lots 2275 and 2240, Lake Clifton). This is in excess of a 3:1 ratio and is consistent with recent EPA requirements for the offsetting of wetland impacts" (MRWA 2017b).

In assessing whether the proposed offset is adequately proportionate to the significance of the environmental values being impacted, the DWER undertook a calculation using the Commonwealth Offsets Assessment Guide. The calculation indicated that the acquisition of 17.2 hectares is sufficient to counterbalance the loss of Black cockatoo foraging habitat and the *Banksia* Woodlands of the Swan Coastal Plain TEC in an excellent (Keighery 1994) condition.

Given the above, a monetary contribution of \$173,720 for the acquisition of 17.2 hectares of Black cockatoo foraging habitat and the *Banksia* Woodlands for conservation and 10.9 hectares of wetland vegetation is considered adequate to counterbalance the significant residual impacts of the proposed clearing consistent with the *WA Environmental Offsets Policy September 2011*.

## 5. References

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**1. Application details**

**1.1. Permit application details**

Permit application No.: 7623/1  
Permit type: Purpose Permit

**1.2. Applicant details**

Applicant's name: Commissioner of Main Roads Western Australia  
Postal address: 6206 EAST PERTH WA 6892  
Contacts: Name: Mr John Braid Main Roads Western Australia  
Phone: 93236183  
Fax:  
Email: john.braid@mainroads.wa.gov.au

**1.3. Property details**

Property: ROAD RESERVE - 1203675, BANJUP  
ROAD RESERVE - 11868129, BANJUP  
ROAD RESERVE - 11868128, BANJUP  
ROAD RESERVE - 11869094, FORRESTDALE  
ROAD RESERVE - 11874636, FORRESTDALE  
ROAD RESERVE - 1246586, FORRESTDALE  
ROAD RESERVE - 1344978, FORRESTDALE  
LOT 111 ON DIAGRAM 95751, FORRESTDALE  
LOT 1 ON PLAN 13599, BANJUP  
LOT 24 ON PLAN 13599, BANJUP  
LOT 25 ON DIAGRAM 92915, FORRESTDALE  
LOT 31 ON PLAN 72740, FORRESTDALE  
LOT 32 ON PLAN 72740, FORRESTDALE  
LOT 33 ON PLAN 71376, FORRESTDALE  
LOT 35 ON PLAN 226007, FORRESTDALE  
LOT 35 ON PLAN 69547, FORRESTDALE  
LOT 40 ON PLAN 226007, FORRESTDALE  
LOT 41 ON PLAN 226007, BANJUP  
LOT 461 ON PLAN 211709, FORRESTDALE  
LOT 4 ON DIAGRAM 39564, BANJUP  
LOT 567 ON PLAN 14419, BANJUP  
LOT 568 ON PLAN 14419, BANJUP  
LOT 569 ON PLAN 14419, BANJUP  
LOT 570 ON PLAN 14419, BANJUP  
LOT 571 ON PLAN 14419, BANJUP  
LOT 580 ON PLAN 14419, BANJUP  
LOT 594 ON PLAN 217070, BANJUP  
LOT 715 ON PLAN 219864, BANJUP  
LOT 716 ON PLAN 219865, BANJUP  
LOT 717 ON PLAN 219865, FORRESTDALE  
LOT 718 ON PLAN 219866, FORRESTDALE  
LOT 719 ON PLAN 219866, FORRESTDALE  
LOT 821 ON PLAN 51421, BANJUP

Colloquial name:  
Local Government Authority: ARMADALE, CITY OF and COCKBURN, CITY OF  
DER Region: Greater Swan  
DPaW District: SWAN COASTAL  
LCDC:  
Localities: FORRESTDALE and BANJUP

**1.4. Application**

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

**1.5. Correspondence in QA**

Date: Grant  
Description: 23 October 2017

