



## CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

<b>Purpose Permit number:</b>	CPS 8233/2
<b>Permit Holder:</b>	Commissioner of Main Roads Western Australia
<b>Duration of Permit:</b>	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 20.64 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 201 on Plan 415591, Jandakot  
Lot 201 on Plan 65564, Jandakot  
Princep Road Reserve (PIN 11246191), Jandakot  
Kentucky Close Road Reserve (PIN 1203668), Cockburn Central  
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 5.32 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8233/2a and Plan 8233/2b

**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 8233/2c 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)**

- (a) Prior to undertaking any clearing within the combined areas hatched yellow on Plan 8233/2a, the Permit Holder shall provide documentary evidence to the *CEO* that funding of \$197,657.00 has been transferred to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining native vegetation.
- (b) Prior to undertaking any clearing within the combined areas hatched yellow on Plan 8233/2b, the Permit Holder shall provide documentary evidence to the *CEO* that funding of \$10,684.79 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.



Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

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

23 September 2020

# Plan 8233/2a

115°51.150'E

115°51.300'E

115°51.450'E

115°51.600'E



32°7.050'S

32°7.200'S

32°7.350'S

32°7.050'S

32°7.200'S

32°7.350'S




115°51.150'E

115°51.300'E



115°51.450'E

115°51.600'E

## Legend

-  CPS areas approved to clear
-  Land TenureLGATE - 226
-  Local Government Authorities

## Road Centrelines

-  Local Rd - Sealed
-  0 - 100000

## Image



1:4500



MGA 94  
Geocentric Datum of Australia 1994

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**GOVERNMENT OF  
WESTERN AUSTRALIA**

# Plan 8233/2b

115°51.450'E

115°51.600'E

115°51.750'E



32°7.200'S

32°7.350'S

32°7.500'S

32°7.200'S

32°7.350'S




32°7.500'S

115°51.450'E




115°51.600'E

115°51.750'E

## Legend

-  CPS areas approved to clear
-  Land TenureLGate - 226
-  Local Government Authorities

## Road Centrelines

-  Highway
-  Local Rd - Sealed
-  0 - 100000

## Image



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Geocentric Datum of Australia 1994

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**GOVERNMENT OF  
WESTERN AUSTRALIA**

# Plan 8233/2c

115°43.350'E

115°43.500'E

115°43.650'E






115°43.350'E

115°43.500'E

115°43.650'E

## Legend

-  CPS subject to conditions
-  Land TenureL GATE - 226
-  Local Government Authority

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**GOVERNMENT OF  
WESTERN AUSTRALIA**



## 1. Application details

### 1.1. Permit application details

Permit application No.: 8233/2  
Permit type: Purpose Permit

### 1.2. Applicant details

Applicant's name: Commissioner of Main Roads  
Application received date: 10 August 2020

### 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 201 on Plan 415591, Jandakot  
Lot 201 on Plan 65564, Jandakot  
Princep Road Reserve (PIN 11246191), Jandakot  
Kentucky Close Road Reserve (PIN 1203668), Cockburn Central  
Kwinana Freeway Road Reserve (PIN – 11571638), Jandakot  
Kwinana Freeway Road Reserve (PIN – 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:
5.3		Mechanical Removal	Road construction or upgrades

### 1.5. Decision on application

Decision on Permit Application: Granted  
Decision Date: 23 September 2020

Reasons for Decision: The amendment is to increase the area authorised to clear under Clearing Permit CPS 8233/1 by 0.2 hectares. The amendment application 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) and it has been concluded that the findings from the previous assessment CPS 8233/1 are still relevant. It has been concluded that the proposed clearing is at variance with principles (a), (b), (d) and (f), may be at variance with principles (g) and (i), and is not likely to be at variance with the remaining principles.

The Delegated Officer considered that the proposed clearing will result in the following significant residual impacts:

- 3.9 hectares of foraging habitat for black cockatoos;
- 2.1 hectares of *Banksia* Woodlands of the Swan Coastal Plain (Banksia Woodlands) threatened ecological community (TEC); 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 20.644 hectares of remnant native vegetation will counterbalance the significant residual impacts to black cockatoo foraging habitat and the *Banksia* Woodlands TEC; and
- 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 avoid and minimise, dieback and weed management, wind erosion and offset conditions.

## 2. Site Information

### Clearing Description

The application is to clear 5.3 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

The application area has been mapped as Bassendean complex central and south which is described as vegetation ranging from woodland of *Eucalyptus marginata* (Jarrah) - *Allocasuarina fraseriana* (Sheoak) - *Banksia* species to low woodland of *Melaleuca* species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* (Jarrah) to *Eucalyptus todtiana* (Pricklybark) in the vicinity of Perth (MRIA 2017a).

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;

- BmEpEc: *Banksia menziesii*, *Banksia attenuata*, *Eucalyptus todtiana* and occasional *Nuytsia floribunda* low open woodland over *Eremaea pauciflora*, *Stirlingia latifolia*, *Hibbertia hypericoides*, *Hibbertia subvaginata* and *Allocasuarina humilis* mid shrubland with *Ehrharta calycina*, *Briza maxima* and *Avena barbata* tall grassland over *Dasyogon bromeliifolius*, *Patersonia occidentalis*, *Lomandra preissii*, *Lomandra micrantha* and *Dampiera linearis* low herbland with *Desmocladius flexuosus*, *Lyginia barbata*, *Desmocladius fasciculatus* and *Hypolaena exsulca* low open rushland.
- BaXpEc: *Banksia attenuata*, *Banksia menziesii* and *Eucalyptus todtiana* low woodland over *Xanthorrhoea preissii*, *Scholtzia involucreta*, *Hypocalymma robustum*, *Macrozamia riedlei* and *Bossiaea eriocarpa* mid open shrubland with *Ehrharta calycina*, *Briza maxima*, *Avena barbata* and *Lagurus ovatus* mid tussock grassland over *Dasyogon bromeliifolius*, *Carpobrotus edulis* and *Pelargonium capitatum* low open forbland with *Lepidosperma squamatum* low sparse sedgeland and *Hypolaena exsulca* open rushland. Significant infestation of *Acacia longifolia* has displaced many native flora species.
- MpAsHr: *Melaleuca preissiana* with occasional *Eucalyptus marginata* and *Banksia ilicifolia* (on edges) mid open forest over *Astartea scoparia*, *Acacia longifolia* subsp. *longifolia*, and *Kunzea glabrescens* tall shrubland over *Lepidosperma gladiatum* and *Cyperus congestus* low open sedgeland with *Hypocalymma robustum* sparse low shrubs with *Zantedeschia aethiopica*, *Carpobrotus edulis*, *Hypochaeris glabra* and *Asparagus asparagoides* mid open forbland.

### Vegetation Condition

The vegetation condition within the application area ranges from Completely Degraded to Very Good, described as:

- Very Good; Vegetation structure altered; obvious signs of disturbance (Keighery, 1994); to
- Completely Degraded; No longer intact, completely/almost completely without native species (Keighery, 1994).

### Soil type

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

- Bassendean B4 Phase (northern area associated with a wetland) – Broad poorly drained sandplain with deep grey siliceous sands or bleached sands; and
- Bassendean B1 Phase – Extremely low to very low relief dunes, undulating sandplains and discrete sand rises with deep bleached grey sands.

### 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.



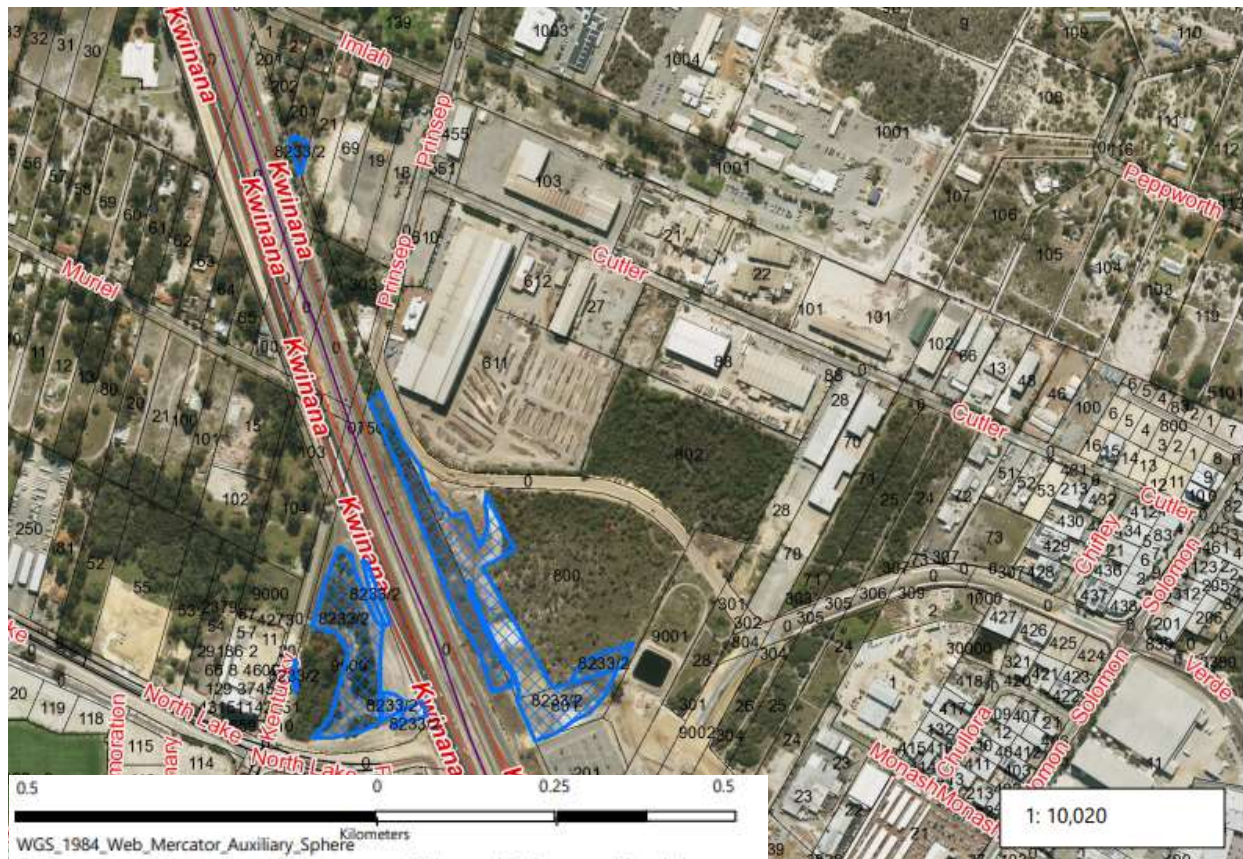


Figure 1: Application area hatched in blue.

### 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; and
- 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

The application is to amend clearing permit CPS 8233/1 to increase the area of clearing by 0.2 hectares from 5.1 hectares to 5.3 hectares required for the construction of Knock Place extension, a road connecting the Cockburn Central Public Transport Authority carpark to Prinsep Road (MRWA, 2020a). The extent of the proposed clearing is indicated in Figure 1.

The amendment application has been assessed against the clearing principles in accordance with section 51O of the EP Act and it has been concluded that the findings from the previous assessment CPS 8233/1 are still relevant. It has been concluded that the proposed clearing is at variance with principles (a), (b), (d) and (f), may be at variance with principles (g) and (i), and is not likely to be at variance with the remaining principles.

The additional 0.2 hectares applied for in the application to amend will impact black cockatoo foraging habitat and the Banksia Woodlands TEC. In considering the residual environmental impacts of the clearing authorised under CPS 8233/1 and values of the additional 0.2 hectares applied for in the application to amend, DWER has undertaken an additional assessment to determine suitable offset and mitigation measures to counterbalance the following impacts.

- 3.9 hectares of foraging habitat for black cockatoos;
- 2.1 hectares of *Banksia* Woodlands TEC; 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 20.644 hectares of remnant native vegetation will counterbalance significant residual impacts to black cockatoo foraging habitat and the *Banksia* Woodlands TEC;
- the acquisition, conservation and management of 11.67 hectares of wetland vegetation will counterbalance significant residual impacts to wetlands;
- 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;

- the proposed clearing may result in wind erosion. To minimise the impact of wind erosion a condition has been placed on the permit requiring development to commence within three months of clearing; and
- the applicant has suitably demonstrated avoidance and minimisation measures (see Section 3)

### Planning instruments and other relevant matters.

The assessment against planning instruments and other matters is unchanged and can be found in the Decision Report prepared for Clearing Permit CPS 8233/1.

### 5. Suitability of Proposed Offset

Taking into consideration the avoidance, minimisation and mitigation actions outlined in Section 3 of this report, it has been considered that the proposed clearing will result in the following significant residual impacts:

- 3.9 hectares of foraging habitat for black cockatoos;
- 2.1 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 in the original application CPS 8233/1, 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 20.644 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 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.

Field Name	Description	Justification for value used for the TEC and Carnabys Cockatoo foraging	Justification value used for the wetland values
<i>IUCN Criteria</i>	The IUCN criteria for the value being impacted	1.2% - Carnabys cockatoo are listed as Endangered under the EPBC Act as is the Banksia woodlands of the Swan coastal Plain TEC	0% The application area contains 2.8 hectares of vegetation growing in association with a wetland . Annual probability of extinction is 0%. There is no IUCN Criteria.
<i>Area of impact (habitat/community ) or Quantum of impact (features/individual s)</i>	The area of habitat/community impacted or number of features/individuals impacted	3.9 – upto 3.9 hectares of foraging habitat for black cockatoos and upto 2.1 hectares of TEC. As the proposed clearing impacts both of these values, the higher number is applied to the calculation.	Wetland: The proposed clearing will impact 2.8 hectares of vegetation growing in association with a wetland.
<i>Quality of impacted area (habitat/community )</i>	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability.	6 - The quality of the site as Banksia Woodland TEC and foraging habitat for Carnaby's cockatoo is based on the following: - condition of the foraging habitat for Carnaby's cockatoo is good to very good - fauna report notes the foraging habitat is 'quality' to 'high quality' - The area corresponding with the TEC is in very good condition  DWER considers the quality rating of the vegetation for Carnaby's cockatoo and Banksia Woodland TEC is a 6 based the above.	4 - The quality of the wetlands is based on the following: - the condition of the vegetation (completely degraded to very good) (note majority is degraded) -cumulative impacts of CPS 7623/1;  DWER considers the quality rating of the wetland vegetation is a 4 based on the premise that a majority of the vegetation is classified as a resource enhancement wetland.
<i>Time over which loss is averted (habitat/community )</i>	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	20 - The offset site will be owned and managed by the Department of Biodiversity, Conservation and Attractions for conservation in perpetuity. Therefore, the maximum of 20 years was applied.	
<i>Time until ecological benefit (habitat/community ) or Time horizon (features/individual s)</i>	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	1 - It is anticipated that identification and acquisition of a property for conservation will take 1 year.	

<i>Start area (habitat/community) or Start value (features/individuals)</i>	The area of habitat/community or number of features/individuals proposed to offset the impacts	20.644 ha of land with vegetation consistent with this TEC is required to offset the proposed clearing	11.66 ha of land is required to offset the proposed clearing of vegetation growing in association with a wetland
<i>Start quality (habitat/community)</i>	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	8. An offset site has not been identified for the calculation. The quality scores for the offset is 8 on the basis that Banksia woodland on the northern Swan Coastal Plain (which may be considered suitable as an offset) is likely to be in excellent (Keighery 1994) condition. The score of 8 is consistent with the start quality of an offset for a project adjacent to the application area.	8. Lot 842 Carabungup Road is a banked offset funded by Main Roads in 2016. Decision report CPS 8233/1 notes this lot is in excellent condition.
<i>Future quality without offset (habitat/community) or Future value without offset (features/individuals)</i>	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	8 - No change to the quality of the offset site is expected with or without acquisition for conservation.	8 - No change to the quality of the offset site is expected with or without acquisition for conservation.
<i>Future quality with offset (habitat/community) or Future value with offset (features/individuals)</i>	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	8 - No change to the quality of the offset site is expected with or without acquisition for conservation.	8 - No change to the quality of the offset site is expected with or without acquisition for conservation.
<i>Risk of loss (%) without offset (habitat/community)</i>	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	30% - The land is presently zoned rural, which may result in the land being developed in the future.	
<i>Risk of loss (%) with offset (habitat/community)</i>	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	10% - Acquiring an area for conservation to be managed by DBCA is considered to reduce the risk of loss of an offset site to 10%. Risk of impacts from dieback and fire etc. still remain.	
<i>Confidence in result (%) – risk of loss (habitat/community)</i>	The capacity of measures to mitigate risk of loss of the proposed offset site	90% - It is considered that there is a high level of confidence that the risk of loss of the offset site will be reduced from 30 to 10%.	
<i>Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)</i>	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	100% - As there is no change in quality with or without the offset.	
<i>% of impact offset</i>	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	100%	100%

## 6. References

- Department of Water and Environmental Regulation (DWER) (2019) Clearing Permit and Decision Report CPS 8233/1. URL: <ftp://ftp.dwer.wa.gov.au/permit/8233/>
- Keighery, B.J. (1994). Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia
- Metropolitan Road Improvement Alliance (MRIA) (2017a) Detailed Flora and Vegetation Assessment. Armadale Road to North Lake Road Bridge Project.
- Metropolitan Road Improvement Alliance (MRIA) (2017b) Level 1 Fauna and Targeted Black Cockatoo Surveys. Armadale Road to North Lake Road Bridge Project.
- Main Roads Western Australia (MRWA) (2018a) Cover letter for Clearing Permit Application CPS 8233/1 (DWER Ref: A1733328).
- Main Roads Western Australia (MRWA) (2020) Application to amend CPS 8233/1. (DWER Ref: A1921418)
- Schoknecht, N., Tille, P. and Purdie, B. (2004) Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs' Resource Management Technical Report No. 280. Department of Agriculture.

**Geographic information system databases:**

- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Remnant Vegetation, All Areas
- Soil Landscape Mapping – Best Available
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- RIWI Act, Groundwater Areas (DWER-034)

**Restricted GIS Databases used:**

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities