GOVERNMENT OF WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8573/2
Permit Holder:	Commissioner of Main Roads Western Australia
Duration of Permit:	24 June 2020 to 24 June 2030

ADVICE NOTE
The funds referred to in condition 12 of this permit are intended for contributing towards the purchase of 129.78 hectares of native vegetation with habitat values for Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*).

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

PART I –CLEARING AUTHORISED

1. Purpose for which clearing may be done
Clearing for the purposes of road reconstruction, widening and associated activities.

2. Land on which clearing is to be done

Property	Locality
Lot 125 on Deposited Plan 410127	Wannamal
Lot 21 on Plan 22601	Wannamal
Lot 2 on Plan 6399	Wannamal
Lot 3234 on Deposited Plan 152709	Wannamal
Lot 3 on Plan 6398	Wannamal
Lot 4 on Plan 6398	Wannamal
Lot 81 on Deposited Plan 74123	Wannamal
Lot 82 on Deposited Plan 74123	Wannamal
Lot 102 on Deposited Plan 156300	Yarawindah
Lot 11 on Plan 24201	Yarawindah
Lot 1 on Plan 13508	Yarawindah
Lot 321 on Deposited Plan 63642	Yarawindah
Lot 322 on Deposited Plan 63643	Yarawindah
Lot 323 on Deposited Plan 62546	Yarawindah
Lot 324 on Deposited Plan 63644	Yarawindah
Lot 3509 on Deposited Plan 207394	Yarawindah
Lot 539 on Deposited Plan 246476	Yarawindah
Lot 621 on Deposited Plan 63642	Yarawindah
Lot 622 on Deposited Plan 63643	Yarawindah
Lot 623 on Deposited Plan 62546	Yarawindah
Lot 624 on Deposited Plan 63644	Yarawindah
Lot 77 on Deposited Plan 162731	Yarawindah
Lot 8 on Plan 9755	Yarawindah
Lot M1903 on Plan 5926	Yarawindah
Lot M1991 on Diagram 14747	Yarawindah
Lot 2 on Diagram 6996	New Norcia
Lot 1 on Plan 13508	New Norcia
Lot 354 on Deposited Plan 245110	New Norcia
Lot 365 on Deposited Plan 245118	New Norcia
Lot 400 on Deposited Plan 41111	New Norcia
Lot 401 on Deposited Plan 41111	New Norcia

Lot 464 on Deposited Plan 246379	New Norcia
Lot 50 on Diagram 4980	New Norcia
Road Reserve - 11673195	Wannamal
Road Reserve - 11670477	Wannamal
Road Reserve - 11294578	Wannamal
Road Reserve - 11501211	Wannamal
Road Reserve - 11282935	Wannamal
Road Reserve - 11501210	Wannamal
Road Reserve - 11670535	Yarawindah
Road Reserve - 11670536	Yarawindah
Road Reserve - 11294579	Yarawindah
Road Reserve - 11294580	Yarawindah
Road Reserve - 11294581	Yarawindah
Road Reserve - 11282932	Yarawindah
Road Reserve - 11501345	Yarawindah
Road Reserve - 11501344	Yarawindah
Road Reserve - 11294582	Yarawindah
Road Reserve - 11294583	Yarawindah
Road Reserve - 11501290	Yarawindah
Road Reserve - 11501291	Yarawindah
Road Reserve - 11501207	Yarawindah
Road Reserve - 11501209	Yarawindah
Road Reserve - 11501267	Yarawindah
Road Reserve - 11501289	Yarawindah
Road Reserve - 11501208	Yarawindah
Road Reserve - 11294584	Yarawindah
Road Reserve - 11294586	Yarawindah
Road Reserve - 11282930	Yarawindah
Road Reserve - 11501206	Yarawindah
Road Reserve - 11282931	Yarawindah
Road Reserve - 11501205	New Norcia
Road Reserve - 11294587	New Norcia
Road Reserve - 11501343	New Norcia
Road Reserve - 11501346	New Norcia
Road Reserve - 1382293	New Norcia
Road Reserve - 11294588	New Norcia
Road Reserve - 11294585	New Norcia
Road Reserve - 11501204	New Norcia
Unallocated Crown Land – 1052976	New Norcia
Unallocated Crown Land – 1052977	Yarawindah

3. Area of clearing

The Permit Holder must not clear more than 28.6 hectares of native vegetation within the areas cross-hatched red in Figures 1 a-d of Schedule 1.

4. Application

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

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 work involving clearing for those activities under the *Main Roads Act 1930* or any other written law.

6. Period in which clearing is authorised

The Permit Holder shall not clear any native vegetation after 24 June 2025.

PART II –MANAGEMENT CONDITIONS

7. 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
(c) reduce the impact of clearing on any environmental value

8. Dieback and weed control

When undertaking any clearing 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 known *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared
(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

9. Fauna management - direction of clearing

The Permit Holder shall conduct clearing in a slow progressive manner from one direction to the other (e.g. east to west) to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

10. Erosion management

The Permit Holder must ensure that road reconstruction, widening and associated activities commence within three months of the authorised clearing being undertaken.

11. Watercourse management

Where a *watercourse* is to be impacted by clearing, the Permit Holder shall maintain the existing surface water flow.

12. 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 24 June 2021, the Permit Holder shall provide documentary evidence to the *CEO* that funding of $129,779.53 has been transferred to the Department of Water and Environmental Regulation to purchase land for the purpose of establishing or maintaining native vegetation.

13. Carnaby's Black Cockatoo habitat management

The Permit Holder shall not clear more than 20.6 hectares of vegetation that provides suitable *foraging habitat for Carnaby's Black Cockatoo* (*Calyptorhynchus latirostris*).

14. Revegetation plan

(a) Within 24 months of clearing commencing, the Permit Holder must submit a Project Revegetation Plan to the *CEO* for approval for the *revegetation/rehabilitation* of 20.6 hectares of land within the areas cross-hatched red in Figures 1 a-d of Schedule 1, which shall be developed in accordance with *A Guide to Preparing Revegetation Plans for Clearing Permits* (Department of Water and Environmental Regulation (DWER) 2018).
(b) The Project Revegetation Plan must be prepared by an *environmental specialist*.
(c) The Project Revegetation Plan must include the following:
    (i) *site preparation*
    (ii) *weed* control
    (iii) *regeneration, direct seeding* or *planting*, at an *optimal time*
    (iv) a *vegetation establishment period*
    (v) *revegetation* success *completion criteria* based on selected *reference sites*, including but not limited to target weed cover, target vegetation condition, target density and target structure
    (vi) remedial actions to be undertaken if *completion criteria* are not met
    (vii) ongoing maintenance and monitoring of the area to be revegetated and rehabilitated
    (viii) timeframes for completion of the activities

(ix) management commitments that will be achieved.

(d) The Permit Holder shall implement the Project Revegetation Plan as approved by the CEO.

PART III - RECORD KEEPING AND REPORTING

15. Records must be kept

The Permit Holder must maintain the following records for activities done 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
   (iii) the size of the area cleared (in hectares)
   (iv) purpose for which clearing was undertaken.
   (v) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 7 of this Permit;
   (vi) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 8 of this Permit;
   (vii) activities taken in accordance with condition 9 of this Permit;
   (viii) activities taken in accordance with condition 10 of this Permit;
   (ix) actions taken in accordance with condition 11 of this Permit;
   (x) activities taken in accordance with condition 12 of this Permit;
   (xi) activities taken in accordance with condition 13 of this Permit.

(b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 14 of this Permit:
   (i) a description of the *revegetation* and *rehabilitation* activities undertaken;
   (ii) the size of the areas *revegetated* and *rehabilitated* (in hectares);
   (iii) the date that *revegetation* and *rehabilitation* works began;
   (iv) actions taken in accordance with condition 14 of this Permit.

16. 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 15 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 has been undertaken, a written report confirming that no clearing under this Permit has been undertaken, must be provided to the *CEO* on or before 30 June of each year.

(c) Prior to 24 March 2030, the Permit Holder must provide to the *CEO* a written report of records required under condition 15 of this Permit where these records have not already been provided under condition 16(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*

completion criteria means a measurable outcome based on suitable *reference sites*, used to determine revegetation/*rehabilitation* success

dieback means the effect of *Phytophthora* species on native vegetation

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the *CEO* as a suitable environmental specialist

fill means material used to increase the ground level, or fill a hollow

foraging habitat for Carnaby's Black Cockatoo means the foraging habitat that was mapped in Arup Jacobs Joint Venture (2019) Great Northern Highway Bindoon Bypass – Northern Section (SLK 94.74 – 112.2) Clearing Permit Supporting Information.

local provenance means native vegetation seeds and propagating material from natural sources within 100 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared

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

optimal time means the optimal time for undertaking *direct seeding* and *planting* in the Avon Wheatbelt

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species

reference sites means nearby sites used to provide baseline data for planning a revegetation project. Measurements from fixed reference points or plots where biodiversity components are measured are used to set measurable completion criteria for revegetation projects. The *reference sites* must contain the following values:

(a) Suitable foraging habitat for Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)
(b) Vegetation in a good (Keighery, 1994) or better condition

rehabilitate/ed/ion/ing means actively managing an area containing native vegetation in order to improve the ecological function of that area

revegetate/ed/ion/ing means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area

regeneration means revegetation that can be established from in situ seed banks contained either within the topsoil or seed-bearing mulch;

vegetation establishment period means a period of at least two summers after the revegetation during which time replacement and infill revegetation works may be required for areas in which revegetation has been unsuccessful, and involves regular inspections of revegetation sites to monitor the success of revegetation;

watercourse has the meaning given to it in section 3 of the *Rights in Water and Irrigation Act 1914*

weed/s means any plant -

(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or

(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or

(c) not indigenous to the area concerned.

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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

15 February 2021

Schedule 1

The boundary of the area authorised to be cleared is shown in the maps below (Figures 1a-d).

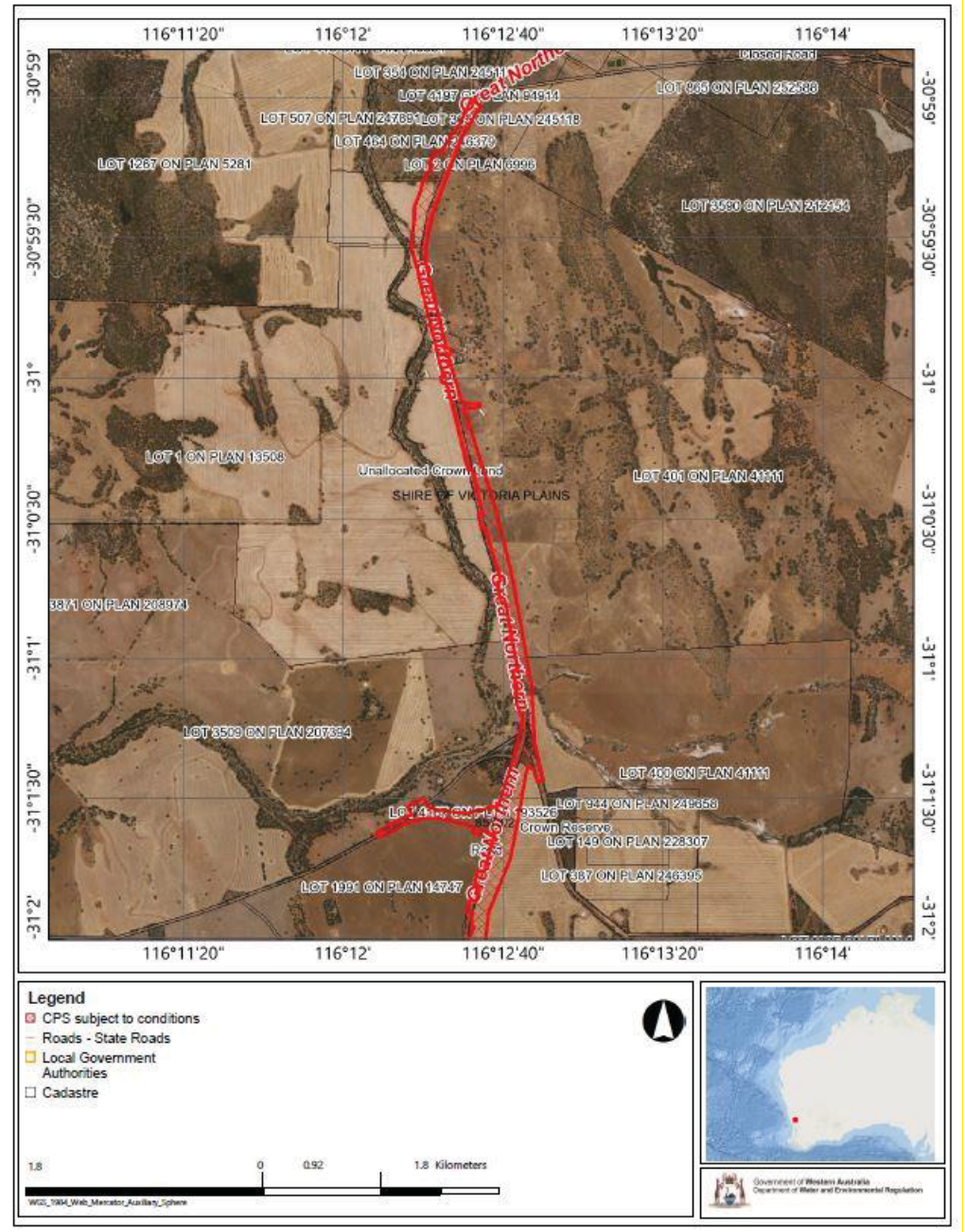

Figure 1a: Map of the boundary of the area within which clearing may occur

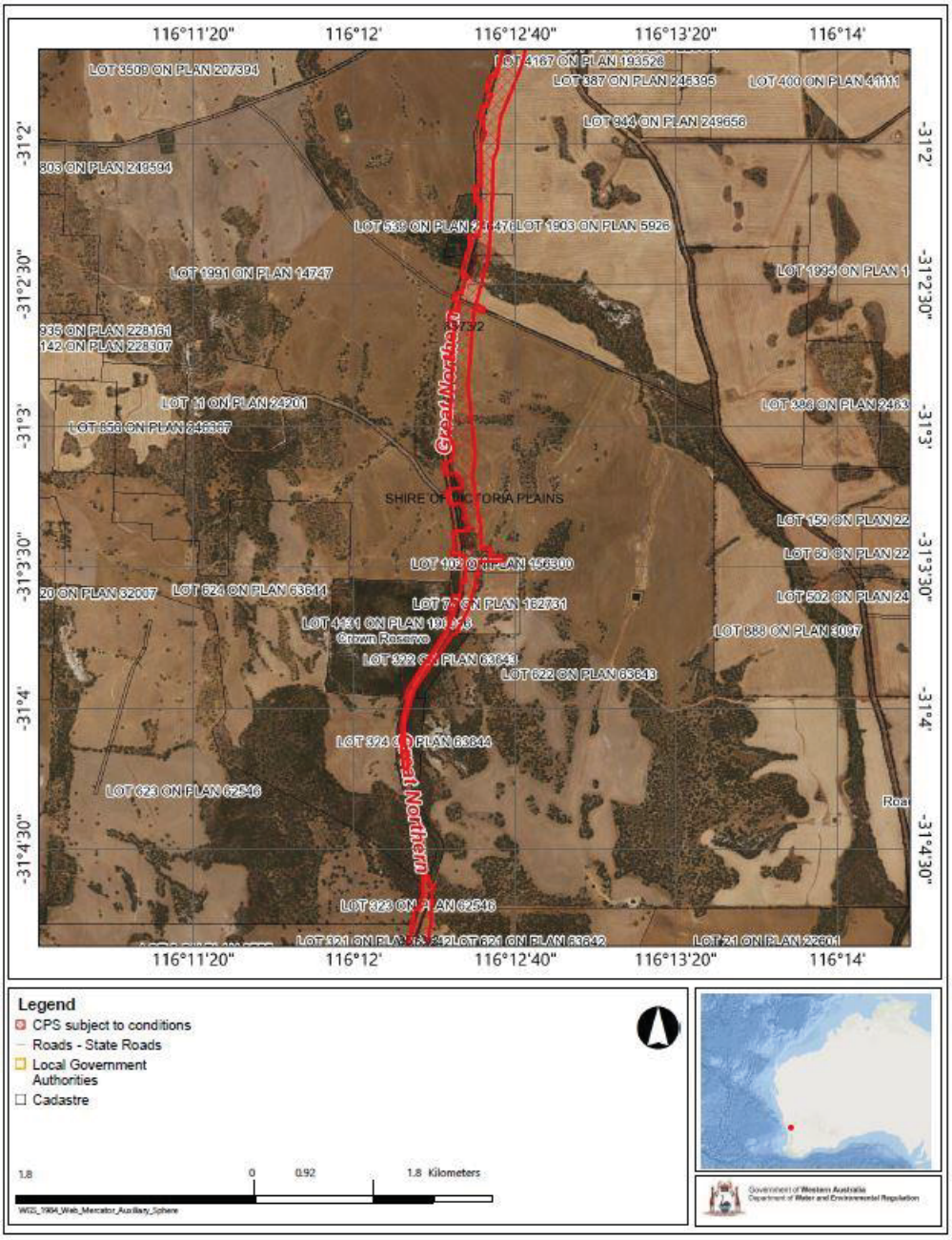

Figure 1b: Map of the boundary of the area within which clearing may occur

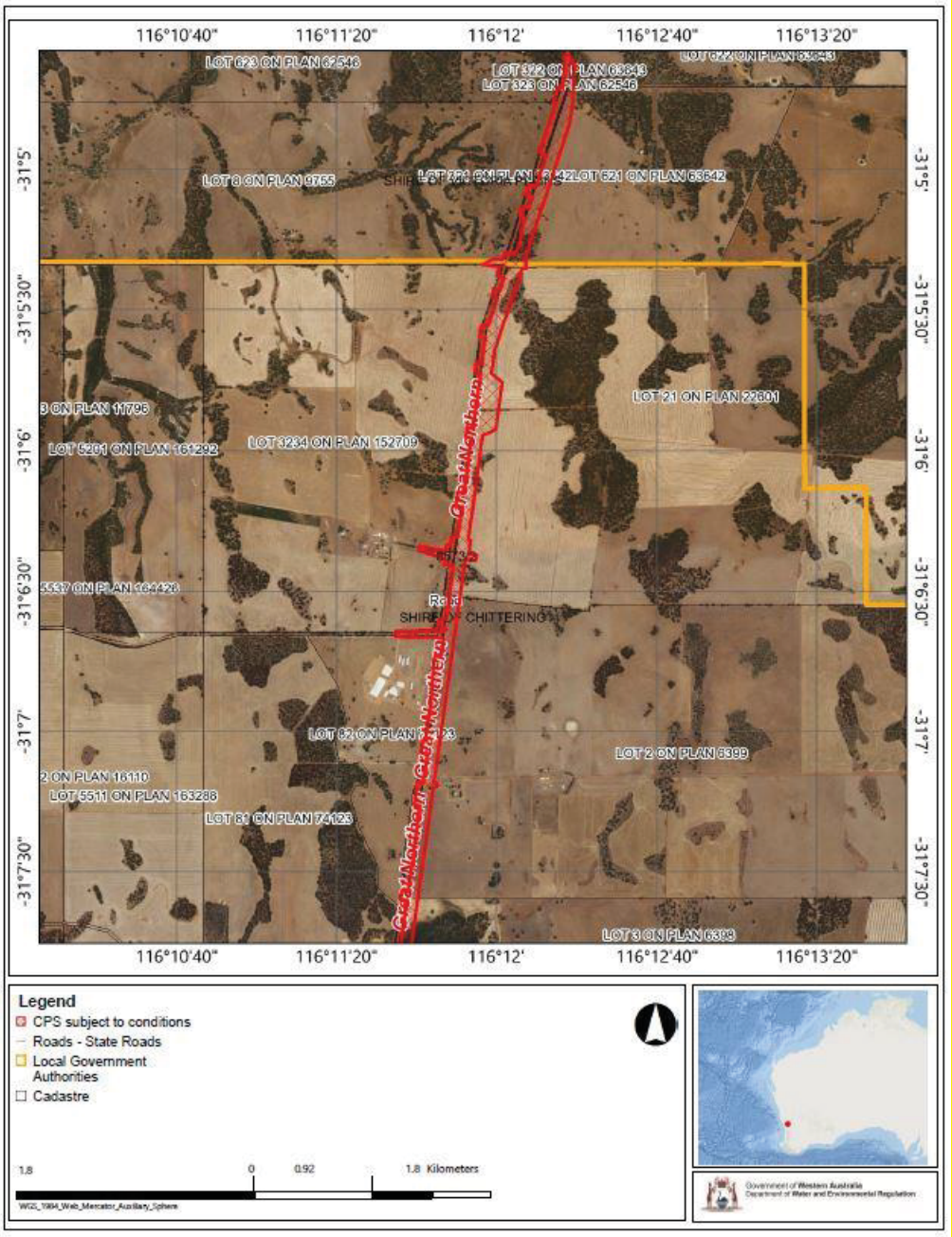

Figure 1c: Map of the boundary of the area within which clearing may occur

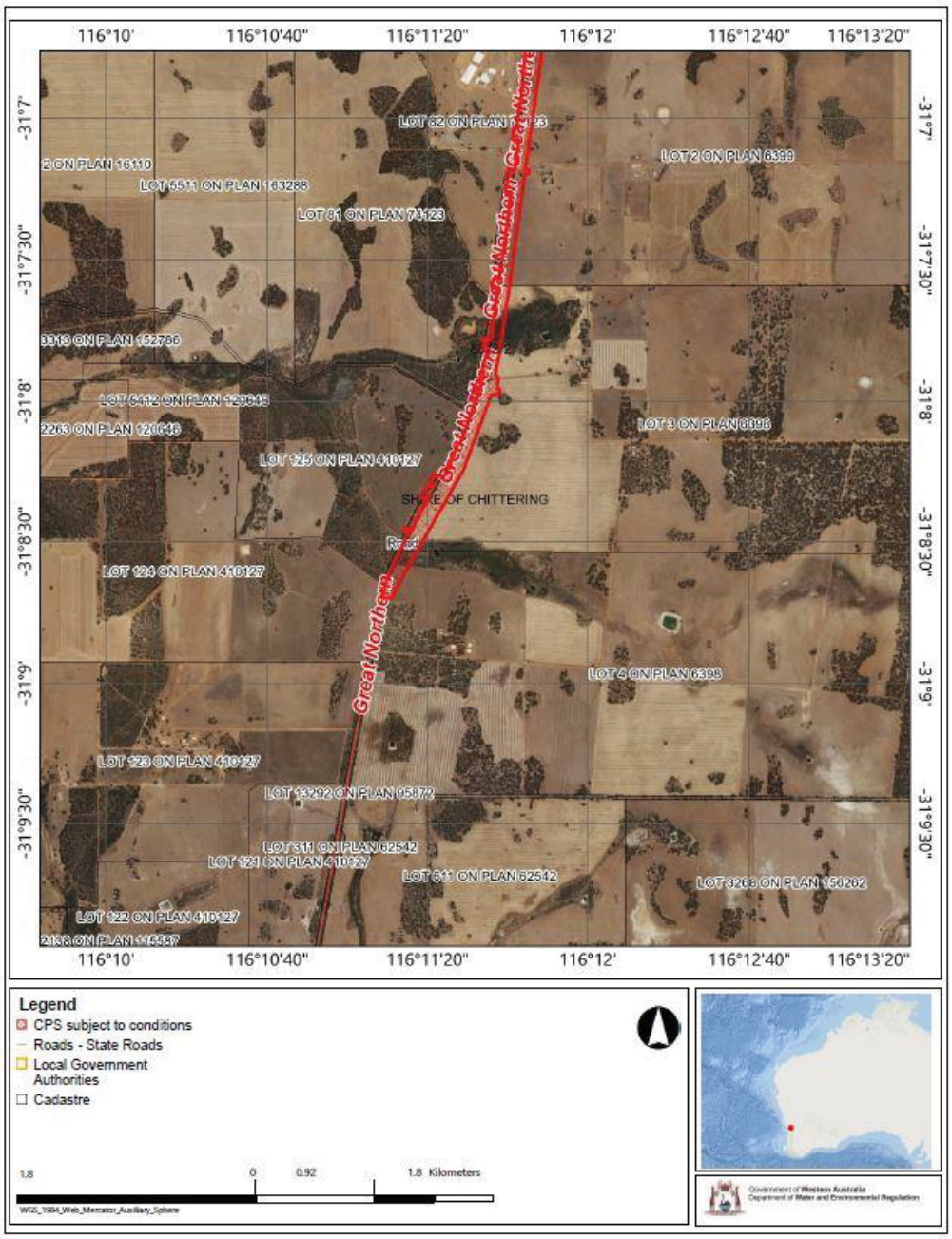

Figure 1d: Map of the boundary of the area within which clearing may occur

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 8573/2
Permit type:	Purpose permit
Applicant name:	Commissioner of Main Roads Western Australia
Application received:	1 December 2020
Application area:	28.6 hectares of native vegetation
Purpose of clearing:	Road widening and construction
Method of clearing:	Mechanical removal
Property:	Lot 125 on Deposited Plan 410127, Wannamal Lot 21 on Plan 22601, Wannamal Lot 2 on Plan 6399, Wannamal Lot 3234 on Deposited Plan 152709, Wannamal Lot 3 on Plan 6398, Wannamal Lot 4 on Plan 6398, Wannamal Lot 81 on Deposited Plan 74123, Wannamal Lot 82 on Deposited Plan 74123, Wannamal Lot 102 on Deposited Plan 156300, Yarawindah Lot 11 on Plan 24201, Yarawindah Lot 1 on Plan 13508, Yarawindah Lot 321 on Deposited Plan 63642, Yarawindah Lot 322 on Deposited Plan 63643, Yarawindah Lot 323 on Deposited Plan 62546, Yarawindah Lot 324 on Deposited Plan 63644, Yarawindah Lot 3509 on Deposited Plan 207394, Yarawindah Lot 539 on Deposited Plan 246476, Yarawindah Lot 621 on Deposited Plan 63642, Yarawindah Lot 622 on Deposited Plan 63643, Yarawindah Lot 623 on Deposited Plan 62546, Yarawindah Lot 624 on Deposited Plan 63644, Yarawindah Lot 77 on Deposited Plan 162731, Yarawindah Lot 8 on Plan 9755, Yarawindah Lot M1903 on Plan 5926, Yarawindah Lot M1991 on Diagram 14747, Yarawindah

	Lot 2 on Diagram 6996, New Norcia
	Lot 1 on Plan 13508, New Norcia
	Lot 354 on Deposited Plan 245110, New Norcia
	Lot 365 on Deposited Plan 245118, New Norcia
	Lot 400 on Deposited Plan 41111, New Norcia
	Lot 401 on Deposited Plan 41111, New Norcia
	Lot 464 on Deposited Plan 246379, New Norcia
	Lot 50 on Diagram 4980, New Norcia
	Road Reserve - 11673195, Wannamal
	Road Reserve - 11670477, Wannamal
	Road Reserve - 11294578, Wannamal
	Road Reserve - 11501211, Wannamal
	Road Reserve - 11282935, Wannamal
	Road Reserve - 11501210, Wannamal
	Road Reserve - 11670535, Yarawindah
	Road Reserve - 11670536, Yarawindah
	Road Reserve - 11294579, Yarawindah
	Road Reserve - 11294580, Yarawindah
	Road Reserve - 11294581, Yarawindah
	Road Reserve - 11282932, Yarawindah
	Road Reserve - 11501345, Yarawindah
	Road Reserve - 11501344, Yarawindah
	Road Reserve - 11294582, Yarawindah
	Road Reserve - 11294583, Yarawindah
	Road Reserve - 11501290, Yarawindah
	Road Reserve - 11501291, Yarawindah
	Road Reserve - 11501207, Yarawindah
	Road Reserve - 11501209, Yarawindah
	Road Reserve - 11501267, Yarawindah
	Road Reserve - 11501289, Yarawindah
	Road Reserve - 11501208, Yarawindah
	Road Reserve - 11294584, Yarawindah
	Road Reserve - 11294586, Yarawindah
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	Road Reserve - 11294588, New Norcia Road Reserve - 11294585, New Norcia Road Reserve - 11501204, New Norcia Unallocated Crown Land – 1052976, New Norcia Unallocated Crown Land – 1052977 , Yarawindah
Location (LGA area/s):	Shire of Chittering and Shire of Victoria Plains
Localities (suburb/s):	New Norcia, Wannamal and Yarawindah

1.2. Description of clearing activities

This amendment is to alter the permit boundary and increase the area approved to be cleared under CPS 8573/1 by 0.6 hectares (see Figure 1, Section 1.5). CPS 8573/1 allowed for the clearing of 28 hectares to upgrade the Great Northern Highway (GNH) for the northern section of the Bindoon Bypass. The upgrade includes the following activities:

- construction of approximately 14.7 kilometres (km) of new carriageway with a 10 m wide seal on a 12 m wide formation;
- additional overtaking lanes;
- widening and an overtaking lane extension of approximately 3.4 km of the existing GNH;
- provision of new intersections to link the existing GNH (retained as a local access road) to the new sections of the GNH;
- construction and realignment of private driveways;
- upgrade and installation of culverts;
- installation of signage and line markings and removal of redundant signage;
- installation of safety barriers;
- installation of road reserve fencing; and
- potential installation of road lighting.

The total proposed clearing sought under CPS 8573/2 is 28.6 hectares.

The proposed changes are for a “tie-in” to link a section of the new road back into the existing GNH in order to effectively manage construction of the Bindoon Bypass- Northern Section. Additionally, negotiations with landowners have progressed since the grant of CPS 8573/1 resulting in the locations of some driveways, fencing and drainage structures having moved slightly and are now outside of the permit boundary of CPS 8573/1. The changes requested to the permit boundary will increase the amount of native vegetation within the boundary by 3 hectares, from 33 hectares to 36 hectares.

For the purposes of this amendment, vegetation clearing will be required for:

- construction of approximately 350 metres of road to create a tie-in from the newly constructed portion of the Bindoon Bypass – Northern Section to the existing GNH between Straight Line Kilometre (SLK) 97.4 and SLK 98;
- construction of roadside drainage;
- installation of signage and line marking;
- installation of safety barriers, if required; and
- installation of road lighting, if required.

1.3. Decision on application

Decision:	Granted
Decision date:	15 February 2021
Decision area:	28.6 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

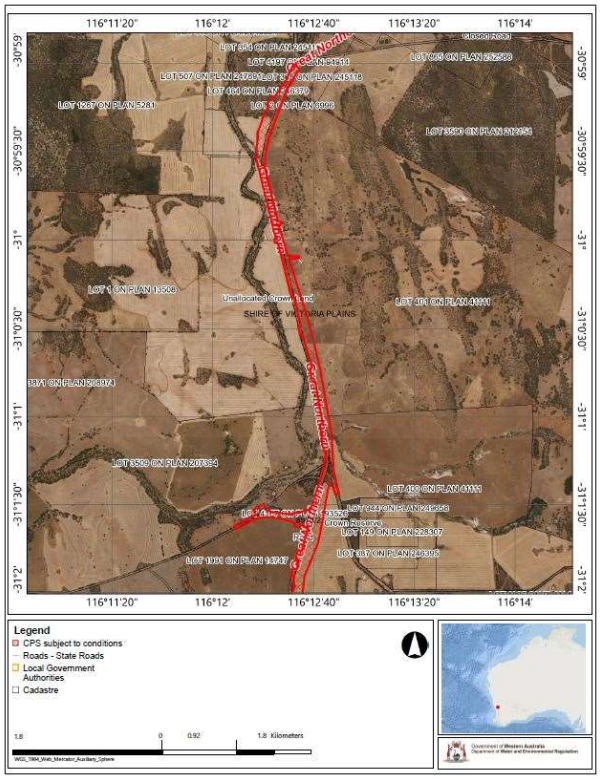
This clearing permit amendment application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 14 days and no submissions were received.

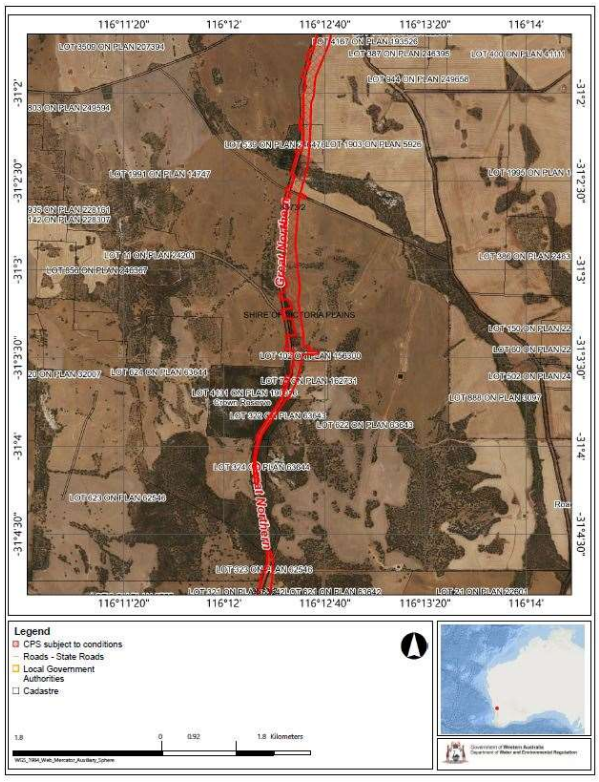
In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix F), and the findings of a biological survey (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that the road upgrades are required to improve road safety for passenger and heavy-haulage vehicles. The applicant has advised that there have been serious crashes within the project area over the years and with the proposed use of 53.5 metre road trains to travel between Muchea and Wubin, it was identified that the current geometry and standard of road condition along the GNH between Hay Flat Road and New Norcia was likely to negatively impact driver safety, and constrain the safe and efficient movement of all vehicles. The applicant further advised that without road upgrades, crash susceptibility would persist.

The assessment has not changed since the assessment for CPS 8573/1, except for additional considerations under principle (a) and principle (b). The impact from the amended permit boundary to Priority 4 flora species *Persoonia sulcata* and the additional proposed clearing of 0.6 hectares of black cockatoo quality foraging habitat are considered under principle (a) and principle (b) in this assessment.

After consideration of the available information, the Delegated Officer has determined that with appropriate management conditions, the proposed additional clearing of 0.6 hectares is not likely to lead to an unacceptable risk to the environment.

1.5. Site maps





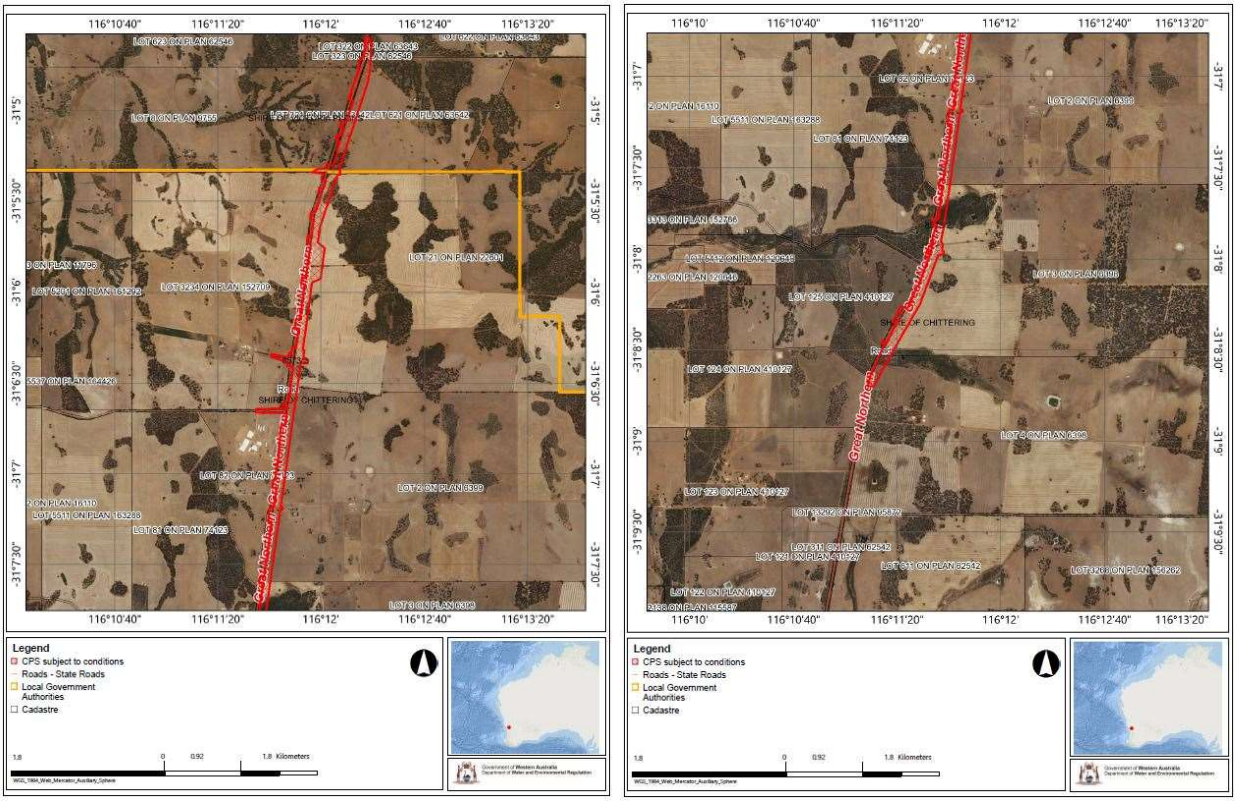


Figure 1 Maps of the application area

The areas crosshatched red indicate the areas authorised to be cleared under the granted clearing permit and are subject to conditions.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the polluter pays principle
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Avoidance and mitigation measures detailed in Clearing Permit Decision Report CPS 8573/1 remain applicable under this amendment.

The supporting documentation submitted with the amendment application states that a Principal's Environmental Management Plan (PEMP) has been developed to managed potential environmental impacts for the proposed activities (Arup Jacobs Joint Venture, 2020). The following management measures relevant to vegetation clearing in the PEMP include:

- demarcation of site boundaries and areas to be cleared;
- establishment and communication of No-Go Zones around significant flora or vegetation;
- establishment of weed and disease management areas, such as 'clean on entry' facilities';
- implementation and enforcement of speed limits for construction traffic;
- as required by DWER, a Revegetation Plan will be prepared for the project. An additional 0.6 hectares that provides suitable foraging habitat for Carnaby's black cockatoo will be included in the revegetation plan to account for the additional 0.6 hectares of habitat to be cleared under the amendment application.

After consideration of avoidance and mitigation measures, it was determined that an offset to counterbalance the significant residual impacts to Carnaby's black cockatoo foraging habitat and significant remnant vegetation within a highly cleared area were necessary. In accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided are summarised in Section 4.

3.2. Assessment of impacts on environmental values

A review of current environmental information (Appendix C) reveals that the assessment against the clearing principles has not changed significantly from the Clearing Permit Decision Report CPS 8573/1.

The amendment to the permit boundary includes one individual of the Priority 4 flora species *Persoonia sulcata,* and there is no change to the number of other Priority flora species identified in CPS 8573/1 within the permit boundary. The changes under this amendment will increase the amount of habitat for Carnaby's black cockatoo within the permit boundary by three hectares, of which 0.6 hectares is proposed to be cleared.

These environmental values are addressed in the section below.

3.2.1. Biological values (flora and fauna) - Clearing Principles (a) and (b)

Assessment

Flora
A single individual of *Persoonia sulcata* (Priority 4) is likely to be cleared from the proposed amendment, in order to provide an appropriate firebreak for the adjacent landowner to comply with local government requirements (Arup Jacobs Joint Venture, 2020).

There is a total of 40 known records of *Persoonia sulcata,* and this species is known to grow in lateritic or granitic soils in the Avon Wheatbelt, Geraldton Sandplains, Jarrah Forest and Swan Coastal Plain bioregions (Arup Jacobs Joint Venture, 2020). The 40 records represent the total known population of the species, with the individual recorded within the amended permit boundary being an additional record. The individual is isolated from other populations and the loss of a single plant is not likely to reduce the area of occurrence for this species or have a significant impact to the species at a regional or local level.

Fauna
The additional proposed clearing will result in an additional 0.6 hectares of quality Carnaby's black cockatoo habitat being cleared. A total of 36 potential breeding trees (diameter at breast height of 500 millimetres or more) are included within the additional proposed clearing area, however, no trees with hollows showing evidence of use or that are suitable for use by the species will be cleared (Arup Jacobs Joint Venture, 2020).

The Recovery Plan for Carnaby's Black Cockatoo states that breeding habitat, in particular known nesting trees, are critical habitat for this species (DPAW, 2013). Success in breeding is dependent on the quality and proximity of

feeding habitat within 6 kilometres of nesting sites (DPAW, 2013). Along with the trees that provide nest hollows, the protection, management, and increase of the available foraging habitat that supports the breeding of Carnaby's Black Cockatoo is a critical requirement for the conservation of the species (DPAW, 2013).

It is considered that the additional proposed clearing area contains significant habitat for the Carnaby's Black Cockatoo as it comprises 0.6 hectares of foraging habitat and is in close proximity to hollows suitable for breeding.

Conclusion
Based on the above assessment, the proposed additional clearing will result in the loss of a *Persoonia sulcata* (Priority 4) individual and 0.6 hectares of significant Carnaby's black cockatoo habitat.

For the reasons set out above, it is considered that the impacts of the proposed clearing on constitutes a significant residual impact to Carnaby's black cockatoo habitat.

Conditions
To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Provision of an offset to address significant residual impact to Carnaby's black cockatoo habitat from the proposed clearing (Section 4).

3.3. Relevant planning instruments and other matters

A registered Aboriginal Heritage site has been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

4 Suitability of offsets

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- 0.6 hectares of black cockatoo feeding habitat.
- 0.6 hectares of vegetation in an extensively cleared landscape.

To counterbalance the above impacts, the applicant has committed to the following offset/mitigation measures:

- revegetation/rehabilitation of 0.6 hectares of land within the boundary of the application area with flora species identified as providing known foraging and breeding habitat for Carnaby's Black Cockatoo; and
- providing an additional monetary offset contribution of $3,779.53 to the amount required under CPS 8573/1, for the purchase of 129.78 hectares of land with native vegetation containing habitat for Carnaby's Black Cockatoo.

Offset adequacy
In assessing whether the proposed offset is adequately proportionate to the significance of the habitat values being impacted, DWER undertook a calculation using the Commonwealth Offsets Assessment Guide.

Revegetation
The applicant proposed to revegetate an additional 0.6 hectares of redundant road reserve within the application area a year following the completion of construction. It was determined that the additional proposed revegetation would mitigate 23.44 per cent of the residual impacts to Carnaby's cockatoo habitat and 39 per cent of the impact to significant remnant vegetation within a highly cleared area, from the additional clearing of 0.6 hectares.

Monetary contribution for land acquisition
The calculation determined that the allocation of the following areas of native vegetation to be put to conservation estate is adequate to counterbalance the significant residual impacts (taking into account the above revegetation measures):

- 3.78 hectares of native vegetation in a very good condition that provides suitable foraging habitat for Carnaby's Black Cockatoo
- 1.69 hectares of native vegetation in a very good condition that is a significant remnant within a highly cleared area.

The cost of acquiring a 3.78 hectare land parcel of land equates to a monetary contribution of $3,779.53, determined based on the estimated value per hectare of a 200 hectare vegetated parcel of land in the Shire of Victoria Plains. This figure was obtained using the values determined by Western Australia's Valuer-General.

Given the above, a monetary contribution of $3,779.53 for the acquisition of an additional 3.78 hectares of native vegetation for conservation, and the revegetation/rehabilitation of 0.6 hectares is considered adequate to counterbalance the significant residual impacts of the proposed clearing, consistent with the *WA Environmental Offsets Policy September 2011.*

The Delegated Officer considers that this adequately counterbalances the significant residual impacts listed above.

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of remnant vegetation located within road reserves and private properties adjacent to Great Northern Highway, in the intensive land use zone of Western Australia. It is mostly surrounded by agricultural land, with a section adjacent to a nature reserve. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 21 per cent of the original native vegetation cover.
Ecological linkage	The areas proposed to be cleared may contribute towards fauna dispersal within the landscape due to the extensive clearing that has occurred within the local area.
Conservation areas	A section of the application area is adjacent to the Sevenmile Well Nature Reserve.
Vegetation description	Vegetation surveys (Phoenix, 2019) indicate the majority of the vegetation within the proposed clearing area consists of medium woodlands of Wandoo, York Gum, Flooded Gum and/or Marri. The full survey descriptions and maps are available in Appendix D. This is consistent with the mapped vegetation types (Mattiske and Havel, 1998): • Ck: Woodland of *Eucalyptus wandoo* with mixtures of *Eucalyptus patens*, *Eucalyptus marginata* subsp. t*halassica* and *Corymbia calophylla* on the valley slopes in arid and perarid zones; • No: Mosaic of low open forest of *Casuarina obesa* and open scrub of *Casuarina obesa* - *Acacia* spp., *Melaleuca* spp. and woodland of *Eucalyptus rudis* – *Melaleuca rhaphiophylla* on major valley systems in the perarid zone; • Mi: Open woodland of *Eucalyptus wandoo* over *Acacia acuminata* with some *Eucalyptus loxophleba* on valley slopes, with low woodland of *Allocasuarina huegeliana* on or near shallow granite outcrops in arid and perarid zones; and • Y6: Woodland of *Eucalyptus wandoo* - *Eucalyptus accedens*, less consistently open forest of *Eucalyptus marginata* subsp. *thalassica* - *Corymbia calophylla* on lateritic uplands and breakaway landscapes in arid and perarid zones
Vegetation condition	Vegetation surveys (Phoenix, 2019) indicate the vegetation within the proposed clearing area is in Degraded to Excellent (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix C. The full survey descriptions and mapping are available in Appendix D.
Climate	The application area generally experiences a warm Mediterranean climate with warm dry summers and cool wet winters (Phoenix, 2019). The highest average monthly temperature was recorded in January (34.6°C) while the lowest average monthly temperature was recorded in July (6.6°C). The average annual rainfall is 388.2 mm, the vast majority of which falls during winter
Soil and landform description	The soil is mapped as (Purdie et. Al, 2004)*:* • Udamong System: Northern Darling Range near New Norcia. Partially stripped lateritic plateau with undulating low hills to gently undulating rises. Loamy gravel, minor pale sand and clay; deep weathered granitic gneiss, gneiss and schist; • Wannamal System: Alluvial plain and fans, brown and red loamy earths, yellow brown sandy duplexes, loamy duplexes; • Yarawindah System: dissected lateritic plateau with rolling to undulating low hills and undulating rises; loamy gravel, loamy earth, loamy duplex, some rock; weathered schist and some gneiss; • Glentrome System: stripped, weathered plateau with undulating low hills and rises; loamy earths, loam, loamy gravel and some clay and rock; weathered granite and migmatite;

Characteristic	Details
	• Julimar System: Moderately dissected areas with gravelly slopes and ridges and minor rock outcrop on the eastern side of the Darling Plateau over weathered granite and granitic gneiss, loamy gravel, shallow duplexes and pale deep sand common; and • Ranfurly System: level to gently undulating plain being a relict flood plain, partially rejuvenated; loamy earths and clay, some duplex; from alluvium.
Land degradation risk	There is low to nil risk of salinity, water erosion and waterlogging over the application area. There is however a relatively moderate to high risk of wind erosion.
Waterbodies	The desktop assessment and aerial imagery indicated that there are numerous minor non-perennial watercourses cross the application area as well as two significant streams, Yarawindah Brook and an un-named stream which are tributaries of Moore River. The application area also abuts the Moore River in one location.
Flora	A desktop and literature review (Phoenix, 2019) identified a total of 92 conservation significant flora species; including 24 threatened species (listed under the EPBC Act and/or BC Act and 68 DBCA listed Priority flora species (Phoenix, 2019) which may occur within the area of the surveys. Flora surveys undertaken by Phoenix of the application area and surrounds between October 2014 and March 2018 recorded a total of 244 native species and 52 weed species within the application area and immediate surrounds (Phoenix, 2019).
Ecological communities	No state listed TECs have been recorded within the local area of the proposed clearing. The closest state listed TEC is 'Herb rich saline shrublands in clay pans' recorded 15 kilometres west of the application area. Available DBCA databases indicate the northern portion of the application area is mapped as the Commonwealth listed TEC and State listed priority ecological community (PEC) 'Eucalypt woodlands of the Western Australian Wheatbelt'.
Fauna	Fauna surveys commissioned by the applicant recorded two fauna species listed as conservation significant occurring within the application area and immediate surrounds; Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) listed as endangered under the Biodiversity Conservation Act 2016 (BC Act) and the Julimar Shield- backed trapdoor spider (*Idiosoma mcclemenstorum*) listed as Priority 2 by the Department of Biodiversity Conservation and Attractions (DBCA).

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The additional area proposed to be cleared contains one priority flora species and significant foraging habitat for Carnaby's cockatoo within a highly cleared landscape.	At variance	Yes *Refer to Section 3.2.1*
Principle (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."* Assessment: The additional area proposed to be cleared contains significant foraging habitat for Carnaby's cockatoo within a highly cleared landscape.	At variance	Yes *Refer to Section 3.2.1*

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The additional area proposed to be cleared is unlikely to contain individuals or habitat for flora species listed under the BC Act.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The additional area proposed to be cleared does not contain species that can indicate a threatened ecological community.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (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."* Assessment: The extent of the mapped vegetation types and native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is considered to be part of an ecological linkage in the local area. Native vegetation that will remain along the Great Northern Highway will facilitate fauna movement and the proposed revegetation works will contribute to improving the value of the linkage. The proposed offset will counterbalance the significant residual impact to significant remnant vegetation within an extensively cleared area.	At variance	No
Principle (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."* Assessment: The additional area proposed to be cleared is not in proximity to a conservation area, however a section of the application area is adjacent to the Seven Mile Well Nature Reserve. Given the proximity of the application area to the Nature Reserve, the proposed clearing may have an impact on its environmental values if insufficient weed and dieback controls are in place. The applicant has advised effective weed and disease hygiene controls will be implemented to manage this risk, and a condition on the clearing permit reinforcing this will further reduce this risk.	May be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given no water courses or wetlands are recorded within the additional area proposed to be cleared, the additional clearing is unlikely to impact on- or off-site hydrology and water quality.	At variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment:	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
The mapped soils are moderately to highly susceptible to wind erosion. Noting the linear nature of the application area, the proposed clearing is not likely to have an appreciable impact on land degradation.		
Principle (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."* Assessment: The proposed clearing is for upgrading Great Northern Highway, direct impacts to watercourses mapped within the application area are expected to be limited to the clearing of relatively narrow watercourse crossings. Noting this and the linear nature of the application area, the proposed clearing is considered unlikely to result in significant changes to groundwater quality.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The application area is linear, approximately 17 kilometres in length. Considering the linearity of the application area and that the proposed clearing is adjacent to existing roads with culverts and drainage infrastructure, the proposed clearing is unlikely to be in a location or of a scale that would result in an increase in the incidence or intensity of flooding.	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.

Condition	Description
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

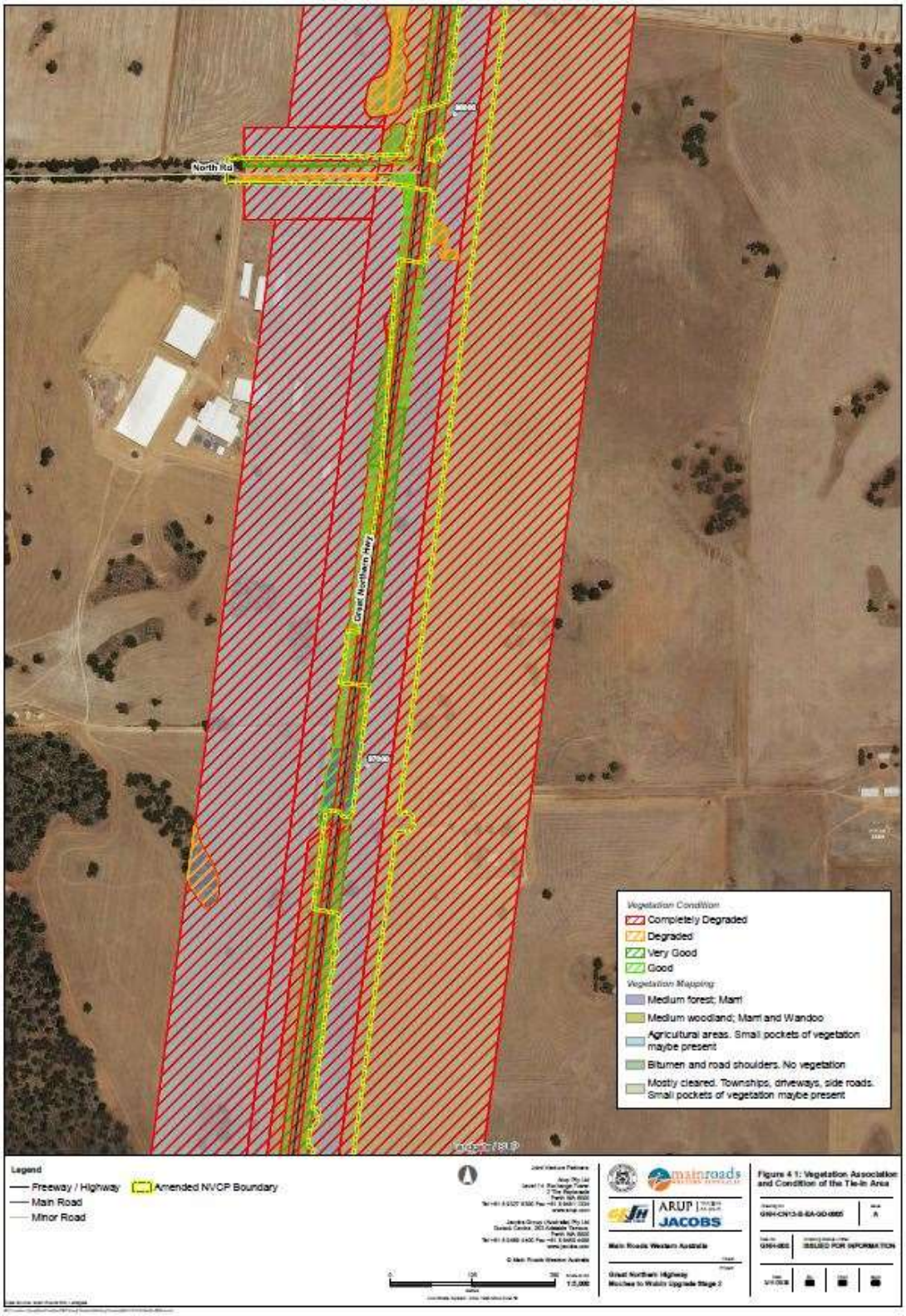
Appendix D. Biological survey information excerpts

Vegetation associations within amended permit boundary (Arup Jacobs Joint Venture, 2020).

Vegetation Association	Additional Area within Permit Boundary (ha)
4: Medium woodland; Marri and Wandoo	0.80
7: Medium woodland; York Gum (*Eucalyptus loxophleba*) and Wandoo	0.70
946: Medium woodland; Wandoo	0.40
973: Low forest; paperbark (*Melaleuca rhaphiophylla*)	0.30
999: Medium woodland; Marri	0.30
1034: Medium woodland; Marri, Wandoo and Powderbark	0.30
1182: Medium woodland; *Eucalyptus rudis* and *Melaleuca rhaphiophylla*	0.20
Total	3.00

Vegetation condition of additional proposed clearing (Arup Jacobs Joint Venture, 2020).

Vegetation Association	Vegetation Condition	Additional Clearing Required (ha)
4: Medium woodland; Marri and Wandoo	Good	0.2
4: Medium woodland; Marri and Wandoo	Very Good	0.4
Total		0.6



Vegetation association and condition of the tie-in area (Arup Jacobs Joint Venture, 2020).

Appendix F. Sources of information

F.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 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
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems

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
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

F.2. References

Arup Jacobs Joint Venture (2020). Great Northern Highway - Muchea to Wubin Upgrade – Stage 2. CPS 8573/1 Amendment – Supporting Information Document. Unpublished report prepared for Main Roads Western Australia. GNH-CN09-EN01-RPT-0007 Revision 3, 5 November 2020.

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Purdie, B.R., P.J. Tille and N.R. Schoknecht (2004). Soil landscape mapping in south-west Western Australia: an overview of methodology and outputs. Department of Agriculture and Food, Perth.