



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 8908/2
File Number: DWERVT5789
Duration of Permit: From 26 September 2020 to 26 September 2031

PERMIT HOLDER

Shire of Serpentine-Jarrahdale

LAND ON WHICH CLEARING IS TO BE DONE

Mundijong Road reserve (PIN 11752666), Oldbury and Mardella
King Road Reserve (PIN 11614250), Oldbury

AUTHORISED ACTIVITY

The permit holder must not clear more than 16 native trees within the areas cross-hatched yellow in Figure 1(a), Figure 1(b) and Figure 1(c) of Schedule 1.

CONDITIONS

1. Period within which clearing is authorised

The permit holder shall not clear any *native vegetation* after 26 September 2026.

2. Avoid, minimise and reduce the impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply 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.

3. Dieback and weed control

When undertaking any *clearing* or other activity authorised under this permit, the permit holder must take the following steps to minimise the risk of 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.

4. Offset – Planting (black cockatoo habitat)

- (a) Within 12 months of the commencement of *clearing* authorised under this permit and no later than 26 September 2027, the permit holder must *plant* at least 33 (thirty-three) marri (*Corymbia calophylla*) trees within the area cross-hatched red in Figure 2 of Schedule 1.
- (b) In undertaking the *planting* required under condition 4(a) of this permit, the permit holder must:
 - (i) remove infrastructure and rip the ground to remove soil compaction prior to undertaking *planting*;
 - (ii) ensure only *local provenance* propagating material is used;
 - (iii) ensure *planting* is undertaken at an *optimal time*; and
 - (iv) undertake *weed* control and watering of *plantings* for at least three years post *planting*;
- (c) Within 12 months of *planting* the 33 (thirty-three) marri (*Corymbia calophylla*) trees in accordance with condition 4(a) and condition 4(b) of this permit, the permit holder must:
 - (i) engage an *environmental specialist* to make a determination that at least 33 (thirty-three) marri (*Corymbia calophylla*) trees will survive, to be set out in a report; and
 - (ii) if the determination made by the *environmental specialist* under condition 4(c)(i) of this permit is that a minimum of 33 (thirty-three) marri (*Corymbia calophylla*) trees will not survive, the permit holder must undertake additional *planting* that will result in 33 (thirty-three) marri (*Corymbia calophylla*) trees *persisting* within the area cross-hatched red in Figure 2 of Schedule 1.
- (d) Where additional *planting* of trees is undertaken in accordance with condition 4(c)(ii) of this permit, the permit holder must repeat the activities required by condition 4(b)(ii-iv) and condition 4(c) of this permit.

5. Offset – Revegetation and rehabilitation

- (a) Within 12 months of the commencement of *clearing* authorised under this permit and no later than 26 September 2027, the permit holder must:
 - (i) *revegetate* and *rehabilitate* 0.12 hectares of *native vegetation* in the area cross-hatched red in Figure 2 of Schedule 1;
 - (ii) *revegetate* and *rehabilitate* 0.06 hectares of *native vegetation* in the area cross-hatched red in Figure 2 of Schedule 1, with tree species that are representative of the *Guildford vegetation complex*.
- (b) In undertaking the *revegetation* and *rehabilitation* required under condition 5(a) of this permit, the permit holder must:
 - (i) remove infrastructure and rip the ground to remove soil compaction prior to *revegetating* and *rehabilitating* the area cross-hatched red in Figure 2 of Schedule 1;
 - (ii) ensure only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate*;
 - (iii) undertake *revegetation* and *rehabilitation* activities at an *optimal time* with *native vegetation*;

- (iv) undertake *weed* control activities and watering to achieve the minimum completion criteria specified in Table 3 of Schedule 2;
- (v) establish at least two 10 x 10 metre quadrats within the *revegetation* and *rehabilitation* areas, in the area cross-hatched red in Figure 2 of Schedule 1;
- (vi) engage an *environmental specialist* to monitor quadrats specified in condition 5(b)(v) annually until the completion criteria, outlined in Table 3 of Schedule 2, have been met and maintained for a minimum of two years.
- (vii) if the monitoring required under condition 5(b)(vi) indicates that the completion criteria outlined in Table 3 of Schedule 2 have not been met, undertake remedial actions for *revegetation* and *rehabilitation* including:
 - (i) deliberately *planting native vegetation* within the area cross-hatched red in Figure 2 of Schedule 1, that will result in the completion criteria specified in Table 3 of Schedule 2 being met, ensuring only *local provenance* seeds and propagating material are used;
 - (ii) undertake additional *weed* control activities;
 - (iii) continue the annual monitoring of *revegetation* and *rehabilitation* areas, in the area cross-hatched red in Figure 2 of Schedule 1, by an *environmental specialist* until the completion criteria outlined in Table 3 of Schedule 2, are met.
- (c) Where remedial actions have been undertaken in accordance with condition 5(b)(vii) of this permit, the permit holder must repeat the activities required by condition 5(a) and conditions 5(b)(ii-vii) of this permit.
- (d) Where an *environmental specialist* has determined that the completion criteria outlined in Table 3 of Schedule 2 have been met, that report is to be provided to the *CEO*.
- (e) If the *CEO* does not agree with the determinations made by an *environmental specialist* under condition 5(b) of this permit, the *CEO* may require the permit holder to repeat the required actions under conditions 5(a) and 5(b) of this permit.

6. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised <i>clearing</i> activities generally	<ul style="list-style-type: none"> (a) the species composition, structure, and density of the cleared area; (b) the location where the <i>clearing</i> occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of <i>clearing</i> in accordance with condition 2; and

No.	Relevant matter	Specifications
		(f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 3.
2.	In relation to <i>planting</i> pursuant to condition 4	(a) the date that <i>planting</i> began; (b) the location where the <i>planting</i> occurred (recorded digitally as a shapefile); (c) the number of marri (<i>Corymbia calophylla</i>) trees <i>planted</i> (d) a description of the <i>planting</i> activities undertaken, including actions taken to implement watering and weed control; (e) a description of any remedial actions required to be undertaken pursuant to conditions 4(c)(ii) and 4(d); and (f) a copy of the <i>environmental specialist's</i> monitoring report and determination, pursuant to condition 4(c)(i).
3.	In relation to revegetation pursuant to condition 5	(a) the date that <i>revegetation</i> works began; (b) the boundaries of the area <i>revegetated</i> (recorded digitally as a shapefile); (c) a description of the <i>revegetation</i> and <i>rehabilitation</i> activities undertaken, including actions taken to implement watering and <i>weed</i> control; (d) a list of the <i>native vegetation</i> species <i>planted</i> ; (e) a description of any remediation works undertaken pursuant to condition 5(b)(vii); (f) the date that completion criteria were considered to be met; and (g) a copy of the <i>environmental specialist's</i> monitoring report and determination, pursuant to condition 5(d).

7. Reporting

- (a) The permit holder must provide to the *CEO*, on or before 30 June of each calendar year, a written report containing:
- (i) the records required to be kept under condition 6; and
 - (ii) records of activities done by the permit holder under this permit between 1 January and 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 calendar year.
- (c) The permit holder must provide to the *CEO*, no later than 90 calendar days prior to the expiry date of the permit, a written report of records required under condition 6, where these records have not already been provided under condition 7(a).

DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the <i>department</i> responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> (EP Act).
clearing	has the meaning given under section 3(1) of the <i>EP Act</i> .
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
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 <i>CEO</i> as a suitable environmental specialist.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
fill	means material used to increase the ground level, or to fill a depression.
Guildford vegetation complex	is described as a mixture of open forest to tall open forest of <i>Corymbia calophylla</i> (Marri) - <i>Eucalyptus wandoo</i> (Wandoo) - <i>Eucalyptus marginata</i> (Jarrah) and woodland of <i>Eucalyptus wandoo</i> (Wandoo) (with rare occurrences of <i>Eucalyptus lane-poolei</i> (Salmon White Gum)). Minor components include <i>Eucalyptus rudis</i> (Flooded Gum) - <i>Melaleuca rhapsiophylla</i> (Swamp Paperbark).
local provenance	means native vegetation seeds and propagating material from natural sources within 50 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.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
optimal time	means the period from May to June for undertaking planting and seeding.
plant/ing	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
rehabilitate/ed/ion	means actively managing an area containing native vegetation in order to improve the ecological function of that 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.
revegetate/ed/ion	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.

Term	Definition
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; 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.



Ray Carvalho
MANAGER
NATIVE VEGETATION REGULATION

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

5 April 2024

SCHEDULE 1



Figure 1a: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)



Figure 1b: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)



Figure 1c: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)

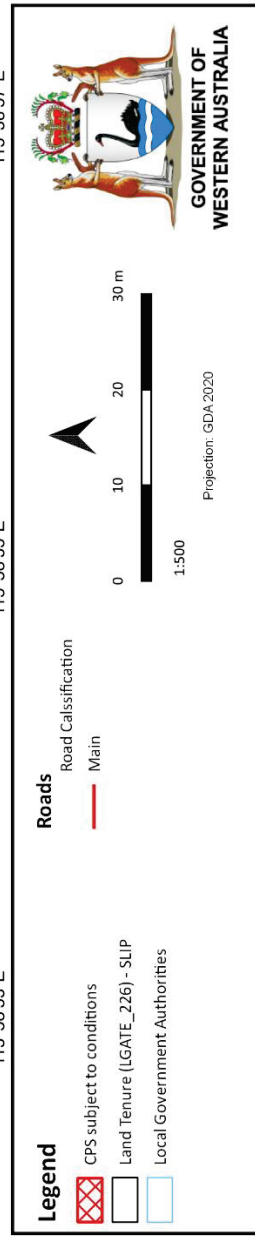
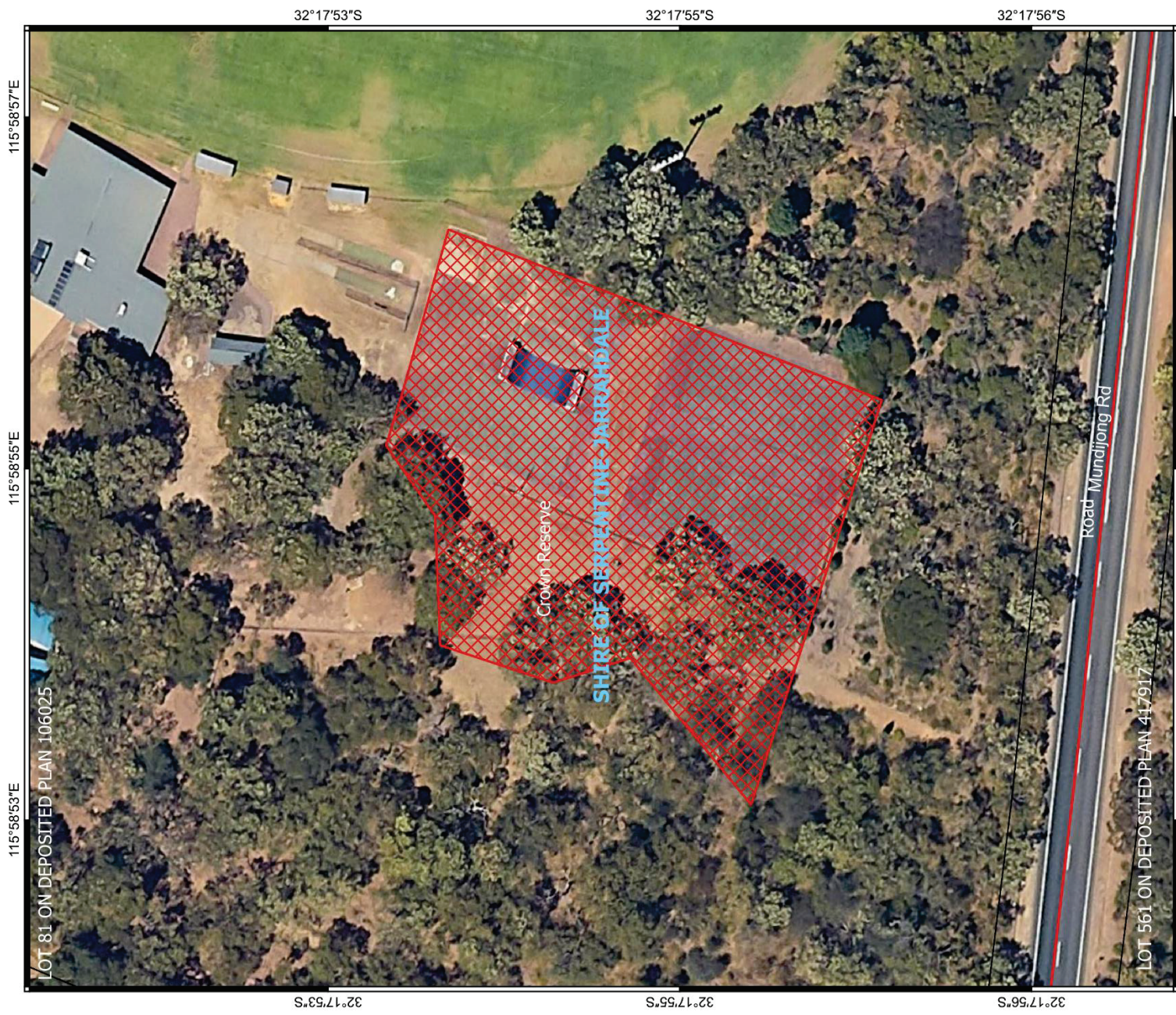


Figure 2: Map of the boundary of the area within which conditions apply (cross-hatched red).

SCHEDULE 2

Table 3: Completion criteria for the *revegetation* and *rehabilitation* within the areas cross-hatched red in Figure 2 of Schedule 1 as referred to under Condition 5 of this permit.

Characteristic	Completion criteria	Monitoring
Species richness	<p>Species richness of eight or more species of <i>native vegetation</i> per 100m² for the 0.12 hectare area required to be <i>rehabilitated</i> under condition 5(a)(i).</p> <p>Species richness of eight or more species of <i>native vegetation</i> per 100m², which must include a minimum of two tree species that are representative of the Guildford vegetation complex, for the 0.06 hectare area required to be rehabilitated under condition 5(a)(ii).</p>	Annual monitoring by an <i>environmental specialist</i> , of species richness within the two monitoring quadrats required by condition 5(b)(v-vi). Completion criteria must be met and maintained for two years.
Species density	Density of one stem per two square metres in the areas required for <i>revegetation</i> and <i>rehabilitation</i> under condition 5(a).	Annual monitoring by an <i>environmental specialist</i> , of species density within the two monitoring quadrats required by condition 5(b)(v-vi). Completion criteria must be met and maintained for two years.
Vegetation cover	<20% bare ground assessed as vegetation cover in the areas required for <i>revegetation</i> and <i>rehabilitation</i> under condition 5(a).	Annual monitoring by an <i>environmental specialist</i> , of vegetation cover within the two monitoring quadrats required by condition 5(b)(v-vi). Completion criteria must be met and maintained for two years.
Vegetation condition	Targeted vegetation condition in Good (Keighery, 1994), or better condition in the areas required for <i>revegetation</i> and <i>rehabilitation</i> under condition 5(a).	Annual monitoring by an <i>environmental specialist</i> , of vegetation condition within the two monitoring quadrats required by condition 5(b)(v-vi). Completion criteria must be met and maintained for two years.
Weed cover	<p>No declared weeds within the areas required for <i>revegetation</i> and <i>rehabilitation</i> under condition 5(a).</p> <p>Weed cover of less than 10% of total species abundance on site in the areas required for <i>revegetation</i> and <i>rehabilitation</i> under condition 5(a).</p>	Annual, during Autumn and Spring, monitoring by an <i>environmental specialist</i> , of weed cover within the two monitoring quadrats required by condition 5(b)(v-vi). Completion criteria must be met and maintained for two years.



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 8908/2
Permit type:	Area permit
Applicant name:	Shire of Serpentine-Jarrahdale
Application received:	4 November 2022
Application area:	16 native trees
Purpose of clearing:	Road upgrades
Method of clearing:	Mechanical removal
Property:	Mundijong Road Reserve (PIN 11752666) King Road Reserve (PIN 11614250)
Location (LGA area/s):	Shire of Serpentine-Jarrahdale
Localities (suburb/s):	Oldbury Mardella

1.2. Description of clearing activities

This amendment is to reduce the size of the authorised clearing area and extend the period in which clearing is authorised. The application has been revised to selectively clear 16 native trees (see Figure 1, Section 1.5).

CPS 8908/1 allowed for the clearing of 0.51 hectares of native vegetation to widen Mundijong Road reserve and increase road safety. CPS 8908/1 authorised clearing until 26 September 2022. The applicant advised that no clearing has been undertaken under CPS 8908/1 since the commencement of the permit in September 2020.

1.3. Decision on application

Decision:	Granted
Decision date:	5 April 2024
Decision area:	16 native trees, 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 21 days and no public submissions were received. The application was readvertised for a further 7 days due to a change in the application area and no public submissions were received.

In making this decision, the Delegated Officer had regard for the CPS 8908/1 Decision Report, site characteristics (see Appendix A.1), relevant datasets (see Appendix G.1), information provided by the applicant, 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 3.3). The Delegated Officer also took into consideration the purpose of the clearing is to improve road safety and is a black spot funded project.

The assessment has not changed since CPS 8908/1, except in the case of principle (b) and principle (e), which are discussed further under Section 3. Based on current environmental information and the assessment undertaken for CPS 8908/1, the Delegated Officer has determined that the proposed clearing will result in:

- the loss of native vegetation that is suitable habitat for *Zanda latirostris* (Carnaby's cockatoo), *Zanda baudinii* (Baudin's cockatoo) and *Calyptorhynchus banksia naso* (forest red-tailed black cockatoo) (collectively referred to as black cockatoos herein)
- the loss of significant remnant native vegetation that provides ecological linkage values in an area that has been extensively cleared
- the loss of native vegetation that is representative of the extensively cleared Guildford vegetation complex
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, the applicant's minimisation and mitigation measures (see section 3.1) and current departmental practices, the Delegated Officer determined the proposed clearing will result in the following significant residual impacts, the loss of:

- 13 native trees that provide suitable foraging habitat for all three species of black cockatoo
- 16 native trees considered significant remnant vegetation within an extensively cleared landscape
- 8 native trees that are representative of an extensively cleared vegetation complex (Guildford complex).

In accordance with the Government of Western Australia's Offsets Policy (2011) and Offset Guidelines (2014), an offset is required to counterbalance the significant residual impacts of the proposed clearing (see section 4). The Delegated Officer considered the quantification of the offset required in accordance with the Western Australian Environmental Offset Calculator and Guideline (see Appendix D). The Shire of Serpentine Jarrahdale (the Shire) proposed an offset to undertake revegetation within a 0.34 hectare area with suitable foraging habitat for black cockatoos and species representative of the Guildford vegetation complex. The Delegated Officer considered that the offset adequately counterbalances the significant residual impacts. The suitability of the offset is summarised in section 4.

The Delegated Officer therefore decided to grant an amended clearing permit, subject to conditions to:

- undertake planting of 33 marri trees in Lot 232 On Deposited Plan 37784 (R4486), subject to contingency measures
- undertake revegetation of 0.12 hectares of native vegetation from completely degraded to good condition, subject to specific completion criteria
- undertake revegetation of 0.06 hectares of native vegetation from completely degraded to good condition that is representative of the Guildford vegetation complex, subject to specific completion criteria
- avoid, minimise and reduce the impacts and extent of clearing
- take steps to minimise the risk of the introduction and spread of weeds and dieback.

As the proposed revegetation offset is considered to replace the need for the revegetation conditioned on the previous permit (CPS 8908/1), this condition has been removed. All other clearing permit conditions stipulated in CPS 8908/1 have been maintained and contemporised to align with current departmental practices. Clearing Permit CPS 8908/2 has been amended to revise the clearing area to 16 native trees.

Given the above and noting the offset provided counterbalances the significant residual impacts of the clearing (see section 4), the Delegated Officer determined that the proposed clearing is unlikely to lead to an unacceptable risk to the environment.

1.5. Site maps



Figure 1a Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit



Figure 1b Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.



Figure 1c Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

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)
- *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)
- *Environmental offsets metric: Quantifying environmental offsets in WA* (October 2021)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating that trees will be selectively cleared, with pruning preferred over clearing. Only those trees that are close to the final bitumen seal of the road will be removed.

After consideration of avoidance and mitigation measures, it was determined that an offset was necessary to counterbalance the significant residual impacts to suitable habitat for black cockatoos, a significant remnant of native vegetation in an extensively cleared landscape and an extensively cleared vegetation complex. 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 A) reveals that the assessment against the clearing principles (see Appendix B) has not changed significantly from the Clearing Permit Decision Report CPS 8908/1, except in the case of clearing principle (b) and clearing principle (e).

Photographs and supporting information supplied by the applicant (see Appendix E) indicate the amendment area consists of 16 native trees, comprising (Shire of Serpentine Jarrahdale, 2022):

- seven *Corymbia calophylla* (including one dead tree)
- seven *Casuarina obesa*
- one *Melaleuca raphiophylla*
- one *Eucalyptus camaldulensis* (see Appendix A.1).

Photographs supplied by the applicant indicate the vegetation within the amendment area is in Degraded to Completely Degraded (Keighery, 1994) condition (see Appendix E). The vegetation within the amendment area is similar to the vegetation authorised to clear under CPS 8908/1.

Flora

A review of current databases indicates there are 17 new records of conservation significant flora species in the local area since the previous assessment (Western Australian Herbarium, 1998-). Of these, six species had not been recorded in the local area (10-kilometre radius of the application area) during the previous assessment.

Photographs and information provided by the applicant indicates that the understorey within the amendment area is comprised entirely of weeds (Shire of Serpentine Jarrahdale, 2022). Consequently, it is unlikely that any conservation significant flora species are present within the amendment area. Given this, and that the application is to selectively clear individual trees, the proposed clearing is considered unlikely to impact on conservation significant flora.

Bush Forever

As per CPS 8908/1, the proposed clearing is not considered to constitute a significant residual impact to Bush Forever Site 360 and an offset is not required in this instance. However, the proposed revegetation offset to counterbalance the significant residual impacts described below (see section 4 for offset information) will address impacts to the Bush Forever area by improving the linkage between two vegetated portions of Bush Forever Site 360.

The assessment of the impacts of the proposed amended clearing on biological values (fauna) and significant remnant vegetation require further consideration as detailed below.

3.2.1. Biological values (fauna) - Clearing Principle (b)

Fauna habitat values within the amendment area are similar to the original clearing area. A review of current databases indicates that there are 112 new records of threatened or priority fauna species in the local area since the previous assessment. All new records are of species that were considered in the previous assessment. Additionally, the new records are further from the amendment area than the previous records of these species. Given this, the likelihood of conservation significant fauna occurring within the amendment area is considered unchanged from the previous assessment. However, based on current environmental knowledge and departmental practices, the significance of the impact of the proposed clearing on foraging habitat for black cockatoos is considered to have changed (increased) since the previous assessment.

Black cockatoos

The amendment area is within the mapped distribution of *Zanda latirostris* (Carnaby's cockatoo), *Zanda baudinii* (Baudin's cockatoo) and *Calyptorhynchus banksia naso* (forest red-tailed black cockatoo) (herein referred to as black cockatoos). According to available databases, there are no confirmed black cockatoo breeding sites within the local area. Three potential artificial hollows are located approximately eight kilometres from the amendment area. The closest known roost site is approximately two kilometres south.

The referral guideline for threatened black cockatoo species, published by the Department of Agriculture, Water and the Environment (DAWE) (2022), specifies that habitat critical for the recovery of black cockatoos includes foraging habitat (including remnant patches of vegetation), night roosting habitat and nesting trees for breeding. Suitable breeding habitat for black cockatoos includes trees with a suitable nest hollow or of a suitable diameter at breast height (DBH) to develop a nest hollow (DAWE, 2022). Night roosting sites are often located near food and water resources.

The amendment area contains 13 trees that provide suitable foraging habitat for black cockatoos, comprising six marri and seven *Casuarina obesa* trees. The amendment area is also relatively close to the Serpentine River which provides a water source for black cockatoos. Consequently, the trees proposed for clearing may comprise suitable roosting habitat for black cockatoos. Information and photographs provided by the applicant indicate the trees are unlikely to contain hollows of suitable size for breeding by black cockatoos (see Appendix E). Given this, the amendment area is considered to provide suitable foraging and potential roosting habitat for black cockatoos.

The amendment area is within an extensively cleared landscape and forms part of a mapped ecological linkage (see section 3.2.2). The proposed clearing will have a cumulative impact on black cockatoo foraging habitat in the local area.

Based on the above assessment, the impact of the proposed clearing on black cockatoo foraging habitat constitutes a significant residual impact. Environmental offsets are required to counterbalance this significant residual impact (see section 4).

3.2.2. Significant remnant vegetation - Clearing Principle (e)

As per CPS 8908/1, the application area is a significant remnant within an extensively cleared landscape and is representative of the extensively cleared Guildford vegetation complex. However, the previous assessment

concluded that the impact of the proposed clearing does not constitute a significant residual impact given the area was not found to contain significant environmental values. Rehabilitation planting was therefore considered sufficient to mitigate the impacts of the proposed clearing under CPS 8908/1.

The amendment area contains nine trees considered representative of the Guildford complex, comprising seven marri and one *Melaleuca raphiophylla*. These trees are located 100 metres or more from the remaining eight trees (*Casuarina obesa* and *Eucalyptus camaldulensis*) that are not considered representative of the Guildford vegetation complex (see Appendix E).

The amendment area is considered to contain significant foraging habitat for black cockatoos (see section 3.2.1), which differs from the previous assessment, and is within the mapped Perth Regional Ecological Linkage. The trees proposed for clearing provide value to this mapped linkage. Given this, the amendment area is considered a significant remnant of native vegetation within an extensively cleared landscape.

Given the above, the impact of the proposed clearing on significant remnant vegetation in a highly cleared landscape and an extensively cleared vegetation complex constitutes a significant residual impact. Environmental offsets are required to counterbalance this significant residual impact (see section 4).

3.3. Relevant planning instruments and other matters

In addition to CPS 8908/2, the Shire of Serpentine Jarrahdale has four concurrent clearing permit applications with the department: CPS 9019/1, CPS 10192/1, CPS 10264/1 and CPS 10545/1. The cumulative impact of the clearing proposed under these applications has been accounted for during the assessment of CPS 8908/2, and was considering in requiring offsets for this amendment application.

According to available databases, there are no Aboriginal sites of significance mapped within the amendment 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:

- 13 native trees that provide suitable foraging habitat for all three species of black cockatoos
- 16 native trees that represent significant remnant native vegetation in an extensively cleared landscape
- 8 native trees that are considered representative of an extensively cleared vegetation complex (Guildford vegetation complex).

The applicant has proposed an environmental offset to counterbalance the above impacts, consisting of revegetation within a 0.34 hectare area, comprising:

- planting of 33 marri trees that provide suitable foraging habitat for black cockatoos
- revegetation of 0.12 hectares from completely degraded to good condition, including 0.06 hectares with species representative of the Guildford vegetation complex.

The proposed offset area is located approximately five kilometres east of the application area (Figure 3), in Crown Reserve R4486 (Lot 232 On Deposited Plan 37784) vested with the Shire (Figure 2).

Aerial imagery and photographs provided by the applicant indicate that the offset area contains approximately 0.14 hectares of remnant native vegetation in Completely Degraded (Keighery, 1994) condition, comprised of marri trees over bare ground (Shire of Serpentine Jarrahdale, 2022). The remaining 0.2 hectare area is comprised of redundant infrastructure with no native vegetation present. Representative photographs are available in Appendix F. The redundant infrastructure will be removed and the ground will be ripped to remove soil compaction prior to undertaking revegetation activities.

According to available databases, all three species of black cockatoo have been recorded within one kilometre of the proposed offset area. There are 25 roost sites recorded within 10 kilometres of the offset area, the closest roost site is approximately 250 metres east. The closest confirmed breeding site is approximately 18 kilometres away.

The offset area is less than 30 metres from a mapped palusplain wetland which may provide seasonal watering sites for black cockatoos. The offset area is also within 5 km of the Serpentine River. The offset area is mapped within the Guildford vegetation complex and is part of the mapped Perth Regional Ecological Linkage. Given the above, the proposed offset area is considered to have a similar site context to the area proposed to be cleared.

The Delegated Officer considers that the proposed offset adequately counterbalances the significant residual impacts listed above. The Delegated Officer had consideration for the Government of Western Australia's Offsets Policy (2011) and Offset Guidelines (2014), and WA Environmental Offsets Metric in making this determination.

The justification for the values used in the offset calculation is provided in Appendix D. The amended clearing permit will contain conditions that require specific completion criteria and contingency measures for the proposed revegetation.



Legend

- CPS subject to conditions
- Land Tenure (LGATE_226) - SLIP
- Local Government Authorities

Roads

- Road Classification
- Main

0 10 20 30 m

1:500

Projection: GDA 2020

GOVERNMENT OF WESTERN AUSTRALIA

Figure 2. Map of the proposed offset site (crosshatched red) measuring approximately 0.34 hectares.

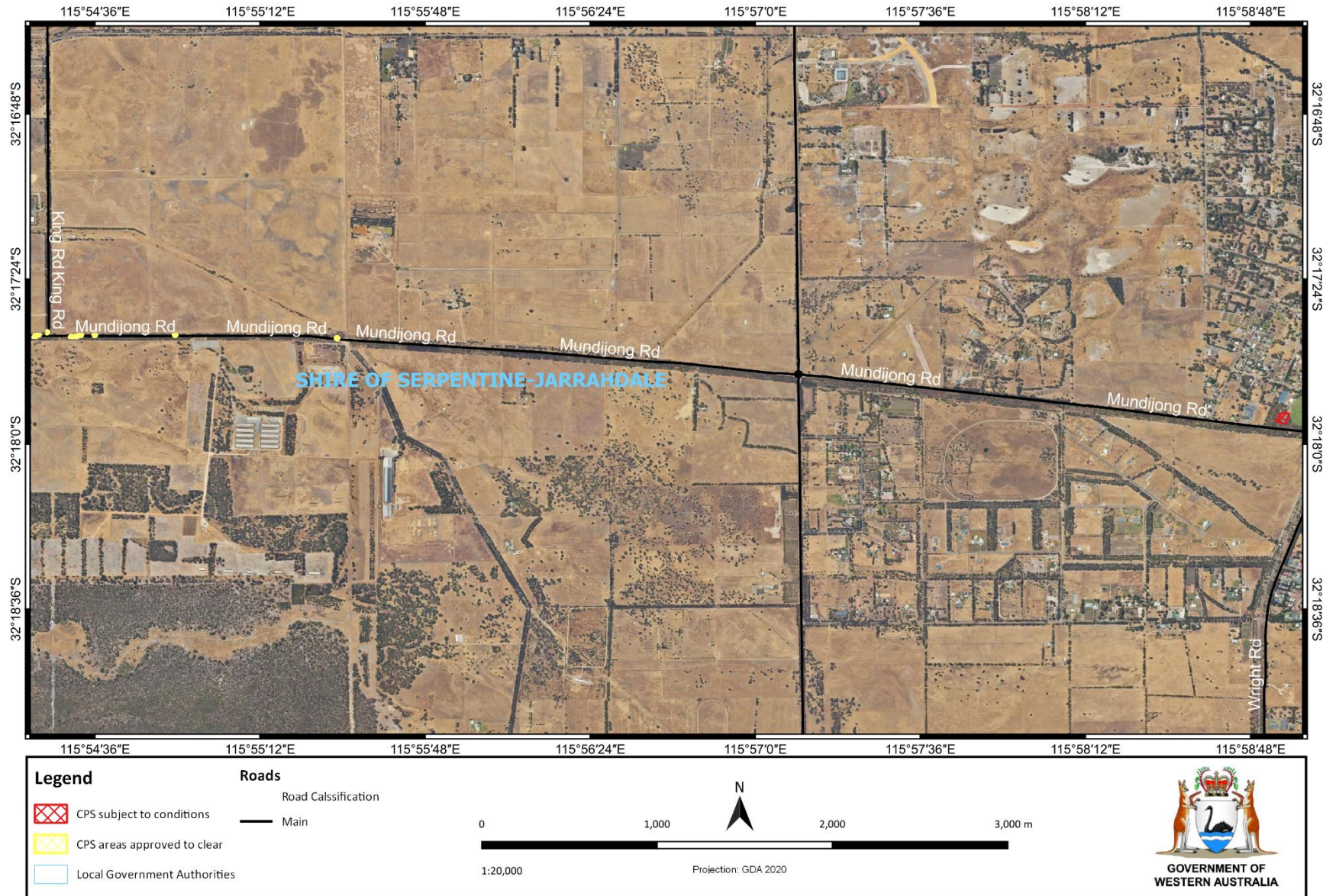


Figure 3. Map of the proposed offset site (right; crosshatched red) in context of the amendment area (left; crosshatched yellow).

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	<p>The trees proposed to be cleared are part of a linear strip of native vegetation located along an east-west road. The application area is in the intensive land use zone of Western Australia and is surrounded by areas cleared for rural use. The trees proposed to be cleared contribute to an important linkage in a highly cleared landscape.</p> <p>Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 17 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area is entirely within the mapped Perth Regional Ecological Linkage.
Conservation areas	The application area is within two environmentally sensitive areas (ESA): an area within 50 metres of a defined wetland and Bush Forever Site 360.
Vegetation description	<p>Photographs supplied by the applicant indicate the vegetation within the proposed clearing area consists of 16 native trees: seven <i>Corymbia calophylla</i>, seven <i>Casuarina obesa</i>, one <i>Melaleuca raphiophylla</i> and one <i>Eucalyptus camaldulensis</i>. Representative photographs are available in Appendix E.</p> <p>This is broadly consistent with the mapped vegetation type (Hedde et al, 1980):</p> <ul style="list-style-type: none"> • Guildford Complex (system 32), which is described as a mixture of open forest to tall open forest of <i>Corymbia calophylla</i> (Marri) - <i>Eucalyptus wandoo</i> (Wandoo) - <i>Eucalyptus marginata</i> (Jarrah) and woodland of <i>Eucalyptus wandoo</i> (Wandoo) (with rare occurrences of <i>Eucalyptus lane-poolei</i> (Salmon White Gum)). Minor components include <i>Eucalyptus rudis</i> (Flooded Gum) - <i>Melaleuca raphiophylla</i> (Swamp Paperbark) (Government of Western Australia, 2019). <p>The mapped vegetation type retains approximately five per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is in Degraded to Completely Degraded (Keighery, 1994) condition, described as:</p> <ul style="list-style-type: none"> • 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. • 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. <p>The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photographs are available in Appendix E.</p>
Climate and landform	The average annual rainfall received over the application area from 1991 to 2020 is 600 to 1000 millimetres (Commonwealth of Australia, 2021). The application area is at an altitude of 10 to 15 meters above sea level.
Soil description	<p>The soil is mapped as:</p> <ul style="list-style-type: none"> • Pinjarra P3 Phase (213Pj__P3), described as flat to very gently undulating plain with deep, imperfect to poorly drained acidic gradational yellow or grey-brown earths and mottled yellow duplex soils, with loam to clay loam surface horizons, and • Pinjarra P4 Phase (213Pj__P4), described as poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils (DPIRD, 2019).
Land degradation risk	Land degradation risks are summarised in Table A.5.

Characteristic	Details
Waterbodies	The desktop assessment and aerial imagery indicate the application area is entirely within a conservation category and multiple use palusplain (seasonally waterlogged flat). The application area is adjacent to a manmade drain and a non-perennial minor river.
Hydrogeography	The application area falls within the Serpentine Groundwater Area as proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act). The groundwater salinity level (Total Dissolved Solids) is mapped as 1000 to 3000 milligrams per litre.
Flora	The desktop assessment identified 47 conservation significant flora species within the local area, comprised of 12 threatened flora and 35 priority flora taxa. The nearest record is a Priority 3 species, <i>Jacksonia gracillima</i> , approximately 300 metres from the application area (Western Australian Herbarium, 1998-).
Ecological communities	<p>No conservation significant ecological communities are mapped over the application area. Multiple conservation significant ecological communities are mapped within two kilometres of the application area:</p> <ul style="list-style-type: none"> • <i>Corymbia calophylla</i> — <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in Gibson et al. 1994) • <i>Corymbia calophylla</i> – <i>Kingia australis</i> woodlands on heavy soils (floristic community type 3a as originally described in Gibson et al. 1994) • Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. 1994) • Banksia Woodlands of the Swan Coastal Plain ecological community • Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. 1994) <p>The application area is not considered representative of these ecological communities.</p>
Fauna	<p>The desktop assessment identified 31 conservation significant fauna in the local area. The closest record is the priority 4 <i>Notamacropus eugenii derbianus</i> (tammar wallaby) recorded 50 metres from the application area.</p> <p>The application area is within Baudin's cockatoo, Carnaby's cockatoo and forest red-tailed black cockatoo known distribution zones. There are 36 known black cockatoo roost sites within the local area, the closest is approximately two kilometres south of the application area.</p>

A.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex**					
Guildford Complex (system 32)	90,513.13	4,607.91	5.09	287.49	0.43
Local area					
10km radius	34,894.69	6,117.62	17.53	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

A.3. Flora analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)
<i>Jacksonia gracillima</i>	P3	N	Y	Y	0.32
<i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026)	P1	N	Y	Y	1.77
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103)	T	N	Y	Y	2.33
<i>Schoenus capillifolius</i>	P3	N	Y	Y	2.54
<i>Schoenus</i> sp. Waroona (G.J. Keighery 12235)	P3	N	Y	Y	2.54
<i>Morelotia australiensis</i>	T	N	Y	Y	2.60
<i>Leucopogon</i> sp. Busselton (D. Cooper 243)	P2	N	Y	Y	3.68
<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182)	T	N	Y	Y	3.70

A.4. Fauna analysis table

A review of current available databases identified that the fauna likelihood analysis remains unchanged from the CPS 8908/1 assessment.

Species name	Conservation status	Distance of closest record to application area (km)
<i>Notamacropus eugenii derbianus</i> (tammar wallaby)	P4	0.05
<i>Isoodon fusciventer</i> (quenda)	P4	0.11
<i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo)	VU	1.93
<i>Dasyurus geoffroii</i> (chuditch)	VU	2.26
<i>Phascogale tapoatafa wambenger</i> (south-western brush-tailed phascogale)	CD	2.60
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	3.49
<i>Zanda baudinii</i> (Baudin's cockatoo)	EN	4.07
<i>Notamacropus irma</i> (western brush wallaby)	P4	4.34
<i>Falco peregrinus</i> (peregrine falcon)	OS	6.82

A.5. Land degradation risk table

Risk categories	Land Unit 1
Subsurface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid
Water logging	H2: >70% of map unit has a moderate to very high waterlogging risk
Salinity	M1: 10-30% of map unit has a moderate to high salinity risk or is presently saline
Wind erosion	L1: <3% of map unit has a high to extreme wind erosion risk
Water erosion	L1: <3% of map unit has a high to extreme water erosion risk
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Phosphorus export risk	L1: <3% of map unit has a high to extreme phosphorus export risk
Water repellence	L1: <3% of map unit has a high water repellence risk

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The amendment application area is limited to individual trees over non-native grass. Given the size and condition of the area, it is unlikely to comprise a high level of biodiversity.</p>	<p>Not likely to be at variance <i>(as per CPS 8908/1)</i></p>	<p>No <i>Refer to CPS 8908/1</i></p>
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The amendment application area contains significant foraging habitat and suitable roosting habitat for black cockatoos.</p>	<p>At variance <i>(changed from CPS 8908/1)</i></p>	<p>Yes <i>Refer to Section 3.2.1, above.</i></p>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The amendment application area is unlikely to contain habitat for threatened flora species.</p>	<p>Not likely to be at variance <i>(as per CPS 8908/1)</i></p>	<p>No <i>Refer to CPS 8908/1</i></p>
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The amendment area is not considered to represent a threatened ecological community and is unlikely to be necessary for the maintenance of nearby mapped threatened ecological communities.</p>	<p>Not likely to be at variance <i>(as per CPS 8908/1)</i></p>	<p>No <i>Refer to CPS 8908/1</i></p>
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type 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 part of a significant ecological linkage in the local area.</p>	<p>At variance <i>(as per CPS 8908/1)</i></p>	<p>Yes <i>Refer to Section 3.2.2, above.</i></p>
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The application area is within Bush Forever Site 360. Given the condition of the vegetation and size of the amendment area, the proposed clearing is considered unlikely to significantly impact Bush Forever Site 360. The revegetation proposed to offset significant residual impacts under clearing principles (b) and (e) will however mitigate impacts to Bush Forever Site 360 by linking vegetated portions of Bush Forever Site 360.</p>	<p>At variance <i>(as per CPS 8908/1)</i></p>	<p>Yes <i>Refer to Section 3.2, above</i></p>

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>The amendment area is within a mapped conservation category and multiple use wetland (palusplain) and contains riparian vegetation in the form of six <i>Casuarina obesa</i> trees, a <i>Eucalyptus camaldulensis</i> tree and a <i>Melaleuca raphiophylla</i> tree. Given the limited extent of clearing of riparian vegetation proposed, and degraded to completely degraded condition of the amendment application area, with little to no native understorey, the proposed clearing is not likely to significantly impact on the broader wetland values.</p>	<p>At variance (as per CPS 8908/1)</p>	<p>No Refer to CPS 8908/1</p>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are highly susceptible to waterlogging and subsurface acidification and moderately susceptible to salinity. Noting the extent of the amendment area, purpose of the application, condition of the vegetation and that it is located along an existing road, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	<p>Not likely to be at variance (as per CPS 8908/1)</p>	<p>No</p>
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p> <p>Given the size of the amendment area, the purpose of the proposed clearing, and that it is located along an existing road, impacts to surface water quality are considered minimal and short term. The proposed clearing is considered unlikely to cause a deterioration in groundwater quality.</p>	<p>Not likely to be at variance (as per CPS 8908/1)</p>	<p>No Refer to CPS 8908/1</p>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>According to available mapping, the amendment area is within a low flood risk area , noting this, and the relatively small area of proposed clearing, it is unlikely that the proposed clearing will cause or exacerbate flooding.</p>	<p>Not likely to be at variance (as per CPS 8908/1)</p>	<p>No</p>

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.
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. Offset calculator value justification**Offset calculation and justification for significant residual impact to black cockatoos.**

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Black cockatoo foraging habitat	The amendment application area includes vegetation that provides black cockatoo foraging habitat within an extensively cleared landscape
Type of environmental value	Species (flora/fauna)	Suitable habitat for black cockatoos
Conservation significance of environmental value	Rare/threatened species – endangered	Carnaby's black cockatoo and Baudin's black cockatoo are listed as endangered under the BC Act (state) and EPBC Act (federal); forest red-tailed black cockatoo is listed as vulnerable under the BC Act (state) and EPBC Act (federal). The highest attribute was used for the calculation.
Landscape level value impacted	Yes/No	Yes - extensively cleared landscape
Significant impact		
Description	Clearing of 13 black cockatoo foraging trees (equates to 0.13 hectares)	Proposed clearing of native vegetation considered suitable foraging habitat for all three species of black cockatoos, within an extensively cleared landscape
Significant impact (hectares)	0.13	Applicant is proposing to selectively clear 16 native trees, of which 13 (6 marri trees and 7 casuarina trees) provide foraging habitat for all three species of black cockatoos. The canopy area of each tree has been averaged and an area calculation considered for the offset, noting the canopy provides the foraging values.
Quality (scale)	7	The application area is within ten kilometres of 29 mapped roost sites and occurs within a mapped palusplain wetland which may provide seasonal watering sites for black cockatoos. The closest confirmed breeding site is 12 kilometres away and closest confirmed roost site is 2 kilometres away. The application area is within an extensively cleared part of the species range and is

Calculation	Score (Area)	Rationale
		part of the mapped Perth Regional Ecological Linkage. The application area contains primary and secondary foraging species for black cockatoos. Given the habitat attributes and site context of the application area, the vegetation under application is considered to provide high quality foraging habitat for black cockatoos.
Rehabilitation credit		
N/A	N/A	Onsite revegetation will not be taking place.
Offset		
Description	Planting native trees over bare ground	The planting of native trees considered preferred foraging species for all three black cockatoos, over bare ground within an extensively cleared landscape.
Proposed offset (area in hectares)	0.33	The area required to counterbalance 100% of significant residual impact (SRI) of the proposed clearing. This equates to 33 trees.
Current quality of offset site	1	Trees will be planted in areas comprised of bare ground (completely degraded quality) or that are currently covered by redundant infrastructure and contain no native vegetation.
Future quality WITHOUT offset	1	It is considered unlikely the habitat quality will increase without active revegetation.
Future quality WITH offset	6	The habitat quality of the offset site is considered to increase to high quality foraging habitat by planting trees that are suitable foraging species for black cockatoos.
Time until ecological benefit (years)	17	Average time until planted vegetation can be used as foraging habitat by black cockatoos. An extra two years has been added to account for the delay in commencement of the revegetation (assumed to commence within two years of the permit start date).
Confidence in offset result (%)	80	Moderate to high level of confidence that the quality within the rehabilitated areas will improve with best practice revegetation techniques and appropriate completion criteria.
Duration of offset implementation (maximum 20 years)	20	Maximum value applied noting the vegetation is not to be cleared in the future.
Time until offset site secured (years)	0	The offset is proposed within land tenure currently held by the applicant.
Risk of future loss WITHOUT offset (%)	15%	There is a moderate to low risk of loss given the offset area is within a Shire managed reserve for the purpose of recreation.
Risk of future loss WITH offset (%)	15%	<p>The risk of loss is not considered to change with the proposed offset as the bare areas are within a Shire managed reserve and no further security mechanisms are proposed (e.g. changing purpose of reserve to conservation). While a risk of loss with offset of lower than 15% would be preferable, it is considered acceptable in this instance only, given:</p> <ul style="list-style-type: none"> the proposed offset will fill a gap in an otherwise intact remnant of native vegetation (being a Bush Forever Site) close to the impact site which is a preferred environmental outcome in accordance with appeal determination 018-22, a degree of protection is afforded to the vegetation in the offset area given the vegetation will be planted for conservation purposes and any future clearing would be subject to the requirements of Part V of the EP Act.

Offset calculation and justification for significant residual impact to extensively cleared remnant vegetation.

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Extensively cleared local area	The application is to clear significant native vegetation within an extensively cleared local area.
Type of environmental value	Vegetation/habitat	Extensively cleared local area (10 kilometres).
Conservation significance of environmental value	Terrestrial native vegetation complex - <30% extent remaining in the bioregion	The local area retains approximately 15 per cent of the original extent of native vegetation.
Landscape level value impacted	Yes/No	Yes - extensively cleared landscape.
Significant impact		
Description	Clearing of 16 native trees (equates to 0.16 hectares)	Proposed clearing of 16 native trees within an extensively cleared landscape.
Significant impact (hectares)	0.16	Applicant is proposing to selectively clear native trees.
Quality (scale)	2	The application area is in Degraded to Completely Degraded (Keighery, 1994) condition, comprising scattered trees over weeds.
Rehabilitation credit		
N/A	N/A	Onsite revegetation will not be taking place
Offset		
Description	Revegetation over bare ground	Revegetation over bare ground within an extensively cleared landscape.
proposed offset (area in hectares)	0.12	The area required to counterbalance 100% of significant residual impact (SRI) of the proposed clearing.
Current quality of offset site	1	Revegetation will occur in areas comprised of trees over bare ground (completely degraded quality) or that are currently covered by redundant infrastructure and contain no native vegetation.
Future quality WITHOUT offset	1	It is considered unlikely the quality will increase without active revegetation.
Future quality WITH offset	5	The proposed revegetation over bare ground with both overstorey and understorey species will increase the condition of the offset site to a good quality. A conservative estimate was used for future quality of the offset site to increase confidence that the proposed revegetation can be achieved, given most of the offset area currently contains redundant infrastructure over heavily compacted soil. .
Time until ecological benefit (years)	12	Average time until planted vegetation has matured. An extra two years has been added to account for the delay in commencement of the revegetation (assumed to commence within two years of the permit start date).
Confidence in offset result (%)	80	Moderate to high level of confidence that the quality within the rehabilitated areas will improve with best practice revegetation techniques and appropriate completion criteria.
Duration of offset implementation (maximum 20 years)	20	Maximum value applied noting the vegetation is not to be cleared in the future.

Calculation	Score (Area)	Rationale
Time until offset site secured (years)	0	The offset is proposed within land tenure currently held by the applicant.
Risk of future loss WITHOUT offset (%)	15%	There is a moderate risk of loss given the offset area is within a Shire managed reserve for the purpose of recreation.
Risk of future loss WITH offset (%)	15%	<p>The risk of loss is not considered to change with the proposed offset as the bare areas are within a Shire managed reserve and no further security mechanisms are proposed (e.g. changing purpose of reserve to conservation). While a risk of loss with offset of lower than 15% would be preferable, it is considered acceptable in this instance only, given:</p> <ul style="list-style-type: none"> the proposed offset will fill a gap in an otherwise intact remnant of native vegetation (being a Bush Forever Site) close to the impact site which is a preferred environmental outcome in accordance with appeal determination 018-22, a degree of protection is afforded to the vegetation in the offset area given the vegetation will be planted for conservation purposes and any future clearing would be subject to the requirements of Part V of the EP Act.

Offset calculation and justification for significant residual impact to extensively cleared vegetation complex.

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Extensively cleared vegetation complex (Guildford complex)	The application is to clear vegetation considered representative of the Guildford vegetation complex.
Type of environmental value	Vegetation/habitat	Extensively cleared vegetation complex.
Conservation significance of environmental value	Terrestrial native vegetation complex - <30% extent remaining in the bioregion	The Guildford vegetation complex retains approximately 5.09 per cent of the original extent of native vegetation (Government of Western Australia, 2019).
Landscape level value impacted	Yes/No	Yes - extensively cleared landscape.
Significant impact		
Description	Clearing of 8 native trees (equates to 0.08 hectares)	Proposed clearing of eight native trees considered representative of the Guildford vegetation complex.
Significant impact (hectares)	0.08	Applicant is proposing to selectively clear native trees.
Quality (scale)	2	The application area is in Degraded to Completely Degraded (Keighery, 1994) condition comprising scattered trees over weeds.
Rehabilitation credit		
N/A	N/A	Onsite revegetation will not be taking place.
Offset		
Description	Revegetation over bare ground	Revegetation with species considered representative of the Guildford vegetation complex, over bare ground within an extensively cleared landscape.
proposed offset (area)	0.06	The area required to counterbalance 100% of significant residual

Calculation	Score (Area)	Rationale
in hectares)		impact (SRI) of the proposed clearing.
Current quality of offset site	1	Revegetation will occur in areas comprised of trees over bare ground (completely degraded quality) or that are currently covered by redundant infrastructure and contain no native vegetation.
Future quality WITHOUT offset	1	It is considered unlikely the quality will increase without active revegetation.
Future quality WITH offset	5	The proposed revegetation over bare ground with both overstorey and understorey species that are representative of the Guildford Complex will increase the condition of the offset site to a good quality. A conservative estimate was used for future quality of the offset site to increase confidence that the proposed revegetation can be achieved, given most of the offset area currently contains redundant infrastructure over heavily compacted soil.
Time until ecological benefit (years)	12	Average time until planted vegetation has matured. An extra two years has been added to account for the delay in commencement of the revegetation (assumed to commence within two years of the permit start date).
Confidence in offset result (%)	80	Moderate to high level of confidence that the quality within the rehabilitated areas will improve with best practice revegetation techniques and appropriate completion criteria.
Duration of offset implementation (maximum 20 years)	20	Maximum value applied noting the vegetation is not to be cleared in the future.
Time until offset site secured (years)	0	The offset is proposed within land tenure currently held by the applicant.
Risk of future loss WITHOUT offset (%)	15%	There is a moderate to low risk of loss given the offset area is within a Shire managed reserve for the purpose of recreation.
Risk of future loss WITH offset (%)	15%	<p>The risk of loss is not considered to change with the proposed offset as the bare areas are within a Shire managed reserve and no further security mechanisms are proposed (e.g. changing purpose of reserve to conservation). While a risk of loss with offset of lower than 15% would be preferable, it is considered acceptable in this instance only, given:</p> <ul style="list-style-type: none"> the proposed offset will fill a gap in an otherwise intact remnant of native vegetation (being a Bush Forever Site) close to the impact site which is a preferred environmental outcome in accordance with appeal determination 018-22, a degree of protection is afforded to the vegetation in the offset area given the vegetation will be planted for conservation purposes and any future clearing would be subject to the requirements of Part V of the EP Act.

Appendix E. Photographs of vegetation in application area (Shire of Serpentine Jarrahdale (2022))



Figure 4. Tree 1 - marri (*Corymbia calophylla*)



Figure 5. Tree 2 - *Melaleuca raphiophylla*



Figure 6. Tree 3 - marri (*Corymbia calophylla*)



Figure 7. Tree 4 and tree 5 - marri (*Corymbia calophylla*)



Figure 8. Tree 6 - marri (*Corymbia calophylla*).



Figure 9. Tree 7 - *Casuarina obesa*.



Figure 10. Tree 8 and tree 9 - *Casuarina obesa*



Figure 11. Tree 10 - *Casuarina obesa*



Figure 12. Tree 11 - *Eucalyptus camaldulensis*



Figure 13. Tree 12 - *Casuarina obesa*



Figure 14. Tree 13 - *Casuarina obesa*



Figure 15. Tree 14 - *Casuarina obesa*



Figure 16. Tree 15 - marri (*Corymbia calophylla*)



Figure 17. Tree 15 - marri (*Corymbia calophylla*)



Figure 18. Tree 16 - marri (*Corymbia calophylla*). The Shire confirmed no hollows are present.



Figure 19. Locations of trees numbered 1 to 6. Provided by Shire of Serpentine Jarrahdale.

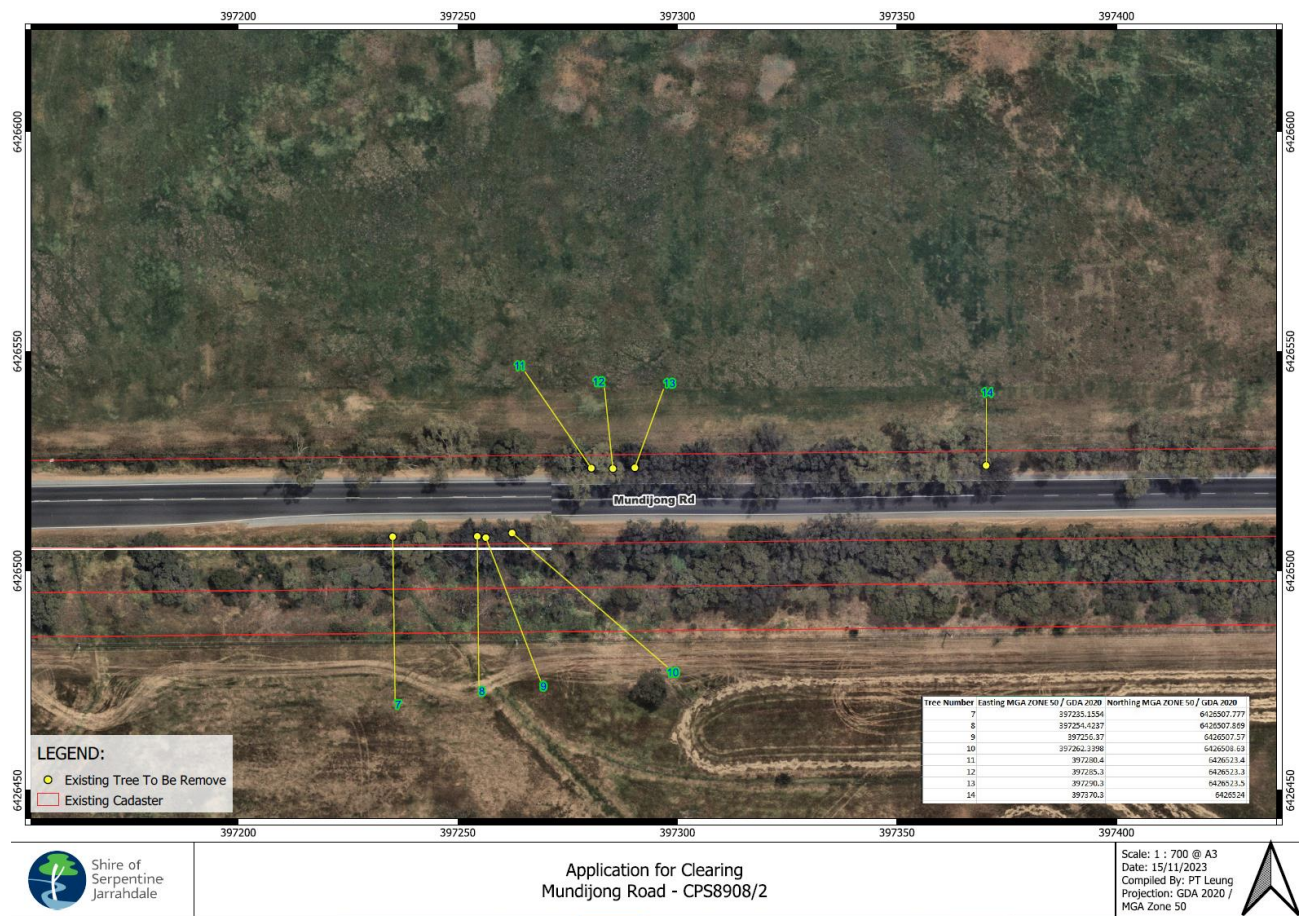


Figure 20. Locations of trees numbered 7 to 14. Provided by Shire of Serpentine Jarrahdale.



Application for Clearing
Mundijong Road - CPS8908/2

Scale: 1 : 2,500 @ A3
Date: 15/11/2023
Compiled By: PT Leung
Projection: GDA 2020 / MGA Zone 50



Figure 21. Locations of trees numbered 15 to 16. Provided by Shire of Serpentine Jarrahdale.

Appendix F. Representative photographs of the offset area (Shire of Serpentine Jarrahdale (2022))



Figure 22. Vegetation within the offset area consists of trees over bare ground.



Figure 23. Vegetation within the proposed offset area.



Figure 24. Redundant infrastructure in the offset area.



Figure 25. Redundant infrastructure in the offset area.

Appendix G. Sources of information

G.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- 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)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- 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
- Wheatbelt Wetlands Stage 1 (DBCA-021)

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)

G.2. References

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