GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9824/1

File Number: DWERVT10653

Duration of Permit: From 25 November 2022 to 25 November 2029

PERMIT HOLDER

Shire of Waroona

LAND ON WHICH CLEARING IS TO BE DONE

Coronation Road Reserve (PIN 11601218)
Lot 551 on Deposited Plan 31642, Waroona

AUTHORISED ACTIVITY

The permit holder must not clear more than ten (10) native trees within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any native vegetation authorized under this permit after the 25 November 2024.

2. Avoid, minimise, and reduce 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 descending 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. Vegetation management – revegetation

The permit holder must, within 24 months of undertaking clearing authorised under this permit:

(a) undertake deliberate *planting* of at least twelve (12) native marri trees (*Corymbia calophylla*) within the area cross-hatched red in Figure 1 of Schedule 2 that will result in a similar species composition, structure and density of native vegetation to pre-clearing in that area;

(b) ensure only *local provenance* propagating material of *Corymbia calophylla* is used;

(c) ensure *planting* is undertaken at the *optimal time*;

(d) ensure *plantings* are of a suitable size of at least one metre in height;

(e) undertake weed control and watering of *plantings* for at least three years post planting;

(f) the permit holder must, within 24 months of *planting* the native marri trees in accordance with condition 3(a) of this permit;

(i) engage an *environmental specialist* to make a determination that at least twelve (12) native marri trees will survive; and

(ii) if the determination made by the *environmental specialist* under condition 3(f)(i) that at least twelve (12) native marri trees will not survive, the permit holder must *plant* additional native marri trees that will result in at least twelve (12) native marri trees persisting within the area cross-hatched red in Figure 1 of Schedule 2.

(g) where additional *planting* of native marri trees is undertaken in accordance with condition 3(f)(ii), the permit holder must repeat the activities required by condition 3(b), 3(c), 3(d) and 3(e) of this permit.

4. 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 clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) 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; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and

No.	Relevant matter	Specifications
		reduce the impacts and extent of clearing in accordance with condition 1; and (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 2.
2.	In relation to vegetation management – *revegetation*	(g) *vegetation* activities undertaken in accordance with condition 3 of this permit including: (i) the date that *revegetation* activities commenced; (ii) the number of *plantings* (iii) the species planted, including the numbers of each species planted; (iv) weed control and watering activities undertaken; (v) determination by an *environmental specialist*; (vi) the date and activities undertaken where additional *planting* is required.

5. Reporting

The permit holder must provide to the *CEO* the records required under condition 4 of this permit when requested by the *CEO*.

DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of *Phytophthora* species on native vegetation.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
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

Term	Definition
	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 to fill a depression.
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 July for undertaking planting.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
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.
weeds	means any plant – • that is a declared pest under section 22 of the Biosecurity and Agriculture Management Act 2007; or • published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or • not indigenous to the area concerned.

END OF CONDITIONS

JBurton

Jessica Burton
A/MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

2 November 2022

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (.

Figure 1 1).

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

SCHEDULE 2

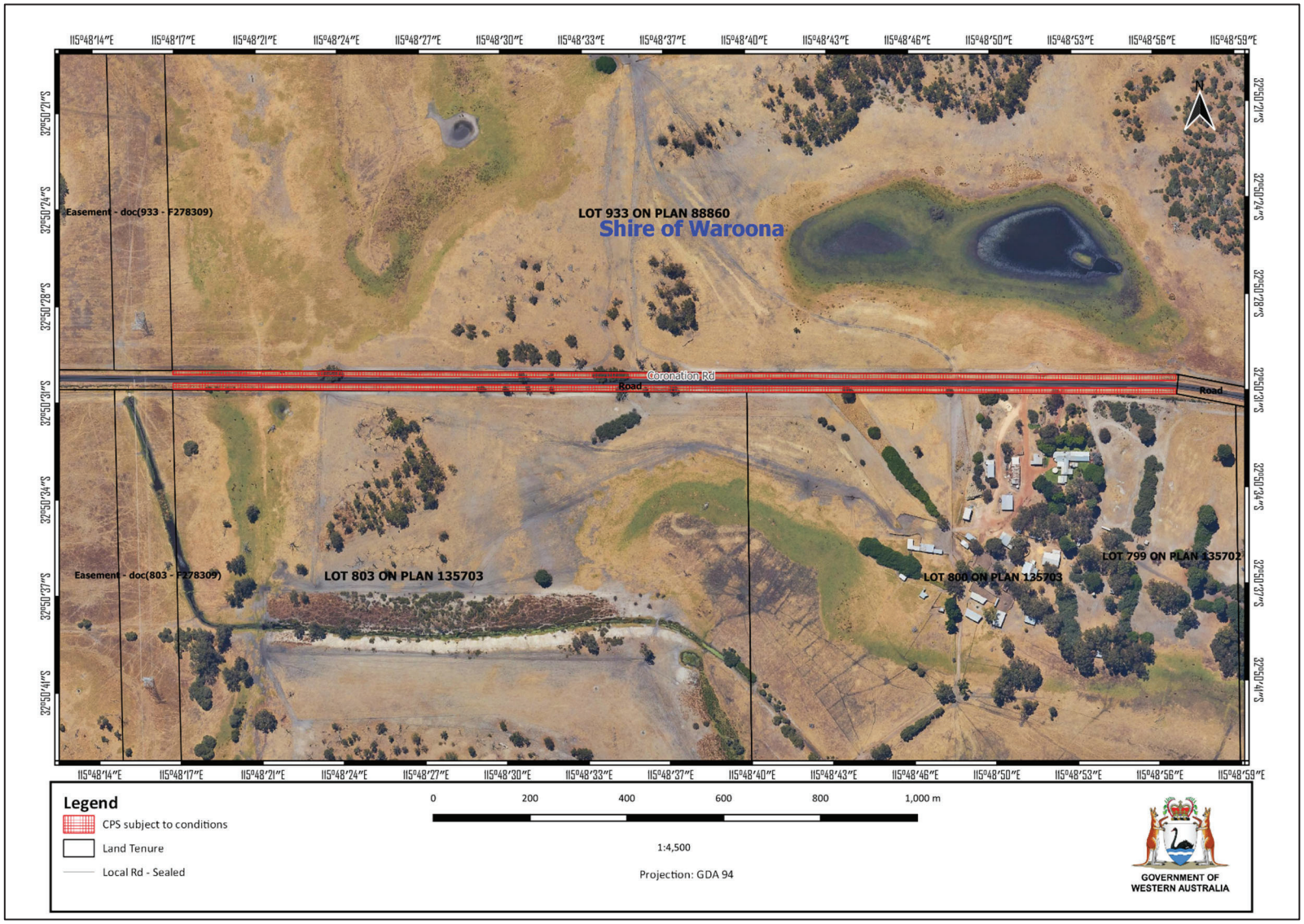


Figure 1: Map of the boundaries of the areas where specific conditions apply - revegetation

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 9824/1
Permit type:	Area permit
Applicant name:	Shire of Waroona
Application received:	27 July 2022
Application area:	10 native trees
Purpose of clearing:	Road construction and upgrades
Method of clearing:	Mechanical clearing and professional tree loppers
Property:	Coronation Road Reserve (PIN 11601218) Lot 551 on Deposited Plan 31642
Location (LGA area/s):	Shire of Waroona
Localities (suburb/s):	Waroona

1.2. Description of clearing activities

Clearing of ten trees is required to enable the realignment of Coronation Road (Shire of Waroona, 2022a). Coronation Road is listed in the Shire of Waroona's Road hierarchy as a commodity route which is used as a main passage for motorist heading from Waroona to the Forest Highway. The current road width is seven meters and has been flagged for realignment works with the main aim of the works being the realignment of the bends to improve road safety (Shire of Waroona, 2022b).

To accommodate the realignment works, ten native trees are proposed to be cleared along the Coronation Road in the locality of Waroona. The ten trees include of three *Corymbia Calophylla* (marri) trees and seven *Melaleuca Rhaphiophylla* (swamp paperbark) trees (Shire of Waroona, 2022a). The vegetation proposed to be cleared is illustrated in Figure 1, Section 1.5.

1.3. Decision on application

Decision:	Granted
Decision date:	2 November 2022
Decision area:	10 native trees, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit 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 submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1), the photographs and description of each tree (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered

relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the purpose of the clearing is to improve public safety by upgrading Coronation Road, Waroona and that the clearing is within a designated road reserve.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable foraging habitat for threatened black cockatoo species and is significant as a remnant of native vegetation in an area that has been extensively cleared.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be managed to unlikely lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing.
- undertake deliberate planting and ensure the long term survival of at least 12 locally-provenanced marri (*Corymbia calophylla*) trees within the Coronation Road reserve.

1.5. Site map

Figure 1: Map of the application area

The area crosshatched yellow indicates the area 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 principal
- 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)
- *Soil and Land Conservation Act 1945* (WA)

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)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The Shire of Waroona (the Shire) has advised the department that the road realignment works include the retaining and reuse of the existing road formation materials which is the most efficient use of funds as it allows the reuse of existing longitudinal drainage without major earthworks as well as using most of the existing formation as sub-base as much as possible. The vegetation clearing represented in this application is the worst-case scenario. The Shire will only remove the absolute minimum amount of native vegetation as required (Shire of Waroona, 2022c).

A surveyor has been engaged to create survey files to identify the location of the selected vegetation and each of the tree species have been identified to assist with the assessment of the application (Shire of Waroona, 2022c).

The Shire had to delay the original works along Coronation Road due to seeking approval from another government corporation for the drain relocation. Due to this delay, the Shire was able to redesign the curve located at the entrance to Lot 551 Coronation Road which resulted in four native *Corymbia Calophylla* trees being excluded from the required clearing. These four native trees would be considered mature and hold more value to the threatened black cockatoos as they provide foraging habitat and have potential for nesting hollows (Shire of Waroona, 2022c).

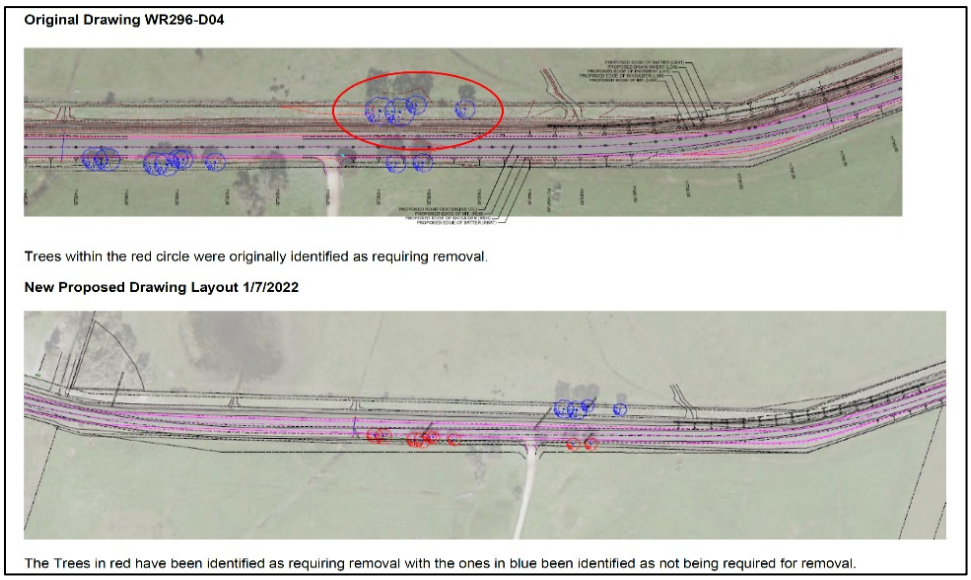


Figure 2: A map representing the trees that were avoided from clearing.

It was noted by the department's assessment that the proposed clearing includes removal of three marri (*Corymbia calophylla*) trees. The application area is located in the Swan Coastal Plain which is an area used by black cockatoos primarily for foraging resources and the marri trees are considered a primary food source for all three threatened black cockatoo species. A key focus for this region is the ongoing viability of foraging resources for black cockatoos, particularly the Carnaby's cockatoos (DAWE, 2022). Clearing of black cockatoo foraging species, within an extensively cleared landscape may represents a significant impact. Based on the above, the Shire was requested to consider revegetation to mitigate the impact of clearing.

Shire of Waroona has committed to replanting 12 *Corymbia calophylla* trees within a revegetation area stipulated in clearing permit CPS 9347/1 and illustrated in Figure three below. Shire of Waroona currently holds a clearing permit within Coronation Road reserve for clearing of 15 *Corymbia calophylla* trees. To counterbalance this impact, the department has conditioned that Shire of Waroona revegetate 30 *Corymbia calophylla* within Coronation Road reserve. The Shire has advised the department that the clearing approved under the clearing permit CPS 9347/1 has been completed and the Shire is planning to plant the 30 marri trees this year. The plants are currently being propagated by a local nursery and will be planted within the required zone once the road construction has been finalised. This is to prevent any damage caused by the heavy machinery being onsite (Shire of Waroona, 2022c) This area proposed for planting allowed for additional trees and given that the area is relatively large, the Shire is similarly proposing to utilise the same area for the proposed revegetation under CPS 9824/1, that is to plant 12 *Corymbia calophylla* trees(Shire of Waroona, 2022c).

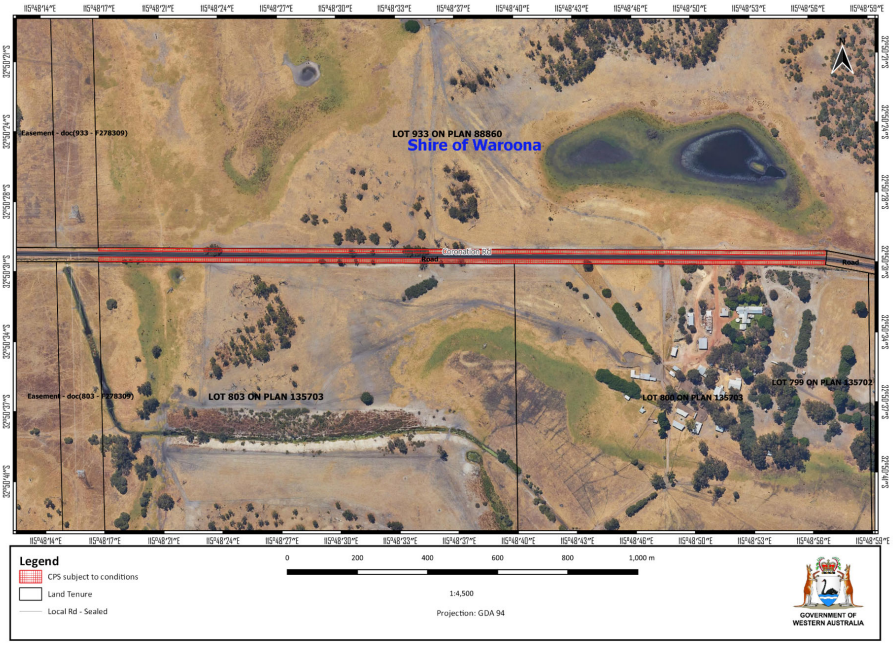


Figure 3: Map of the area proposed for revegetation.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid, minimise and mitigate impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (fauna), significant remnant vegetation and riparian vegetation. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

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

Assessment

The proposed clearing includes a total of ten native trees which equal to 0.10 hectares. The ten trees include three *Corymbia Calophylla* (marri) trees and seven *Melaleuca Rhaphiophylla* (swamp paperbark) trees. According to the

photographs provided by the Shire of Waroona, the condition of the vegetation is completely degraded (Keighery, 1994) with understory consisting predominantly of exotic grass species (Shire of Waroona, 2022b) (Appendix E).

The desktop assessment identified 21 conservation significant fauna species within the local area, which include 11 birds, one invertebrate, seven mammals and one reptile. Majority of the records identified from the local area are of the *Zanda latirostris* (previously *Calyptorhynchus latirostris*) (Carnaby's Cockatoo) with the closest record of the conservation significant fauna species recoded being the *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo) recorded 0.29 kilometers from the application area.
A likelihood of occurrence analysis was undertaken for the species that were identified from the local area and it was determined that habitat for the following species is likely to occur;

- *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo) – VU
- *Zanda Calyptorhynchus* (previously *Calyptorhynchus baudinii*) (Baudin's cockatoo) – EN
- *Zanda latirostris* (previously *Calyptorhynchus latirostris*) (Carnaby's cockatoo) – EN

The completely degraded (Keighery, 1994) condition of the native vegetation, and in particular the lack of an understorey and the isolation of the application area from areas of native vegetation in good or better condition (Keighery, 1997), excludes the likelihood of terrestrial fauna of conservation significance occurring within the application area.

Black cockatoos

The application area is mapped within the known distribution zones of the Endangered Baudin's cockatoos, Carnaby's cockatoos and the Vulnerable Forest red-tailed black cockatoos, together referred to as the black cockatoos. However, Baudin's Cockatoo is more commonly associated with the forests of the Jarrah Forest Bioregion (JAF) approximately 11 kilometers to the south, with Carnaby's Cockatoo more commonly associated with the Swan Coastal Plain (DAWE, 2022). This is reflected in the records of black cockatoo sightings within the local area, with 315 records for Carnaby's Cockatoos and only four records for Baudin's Cockatoos. The Forest red-tailed black cockatoo has become more commonly sighted on the Swan Coastal Plain in recent decades.

Black cockatoo habitat can be considered in terms of breeding, roosting and foraging habitat. Suitable breeding habitat for black cockatoos include trees which either have a suitable nest hollow or are of a suitable Diameter Breast Height (DBH) to develop a nest hollow. For most tree species a suitable DBH is 500 millimetres (Commonwealth of Australia, 2012). The supporting document provided by the applicant did not represent trees with hollows or trees likely to develop large hollows required for black cockatoo breeding within the application area (Shire of Waroona, 2022b).

Night-roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and a water source (DAWE, 2022). The seven *Melaleuca Rhaphiophylla* trees will not support black cockatoo roosting and the three marri trees located within the application area are not of a suitable height to provide for a roosting habitat. The closest confirmed roost site is located 8.2 kilometers to the southwest of the application area.

Foraging habitat for Carnaby's, Baudin's and Forest red-tailed black cockatoo varies (Commonwealth of Australia, 2012). Forest red-tailed black cockatoo forages within jarrah and marri woodlands and forest, and edges of karri forests including wandoo, within the range of the subspecies. The species largely feeds on seeds of marri and jarrah, as well as other Eucalyptus species and Allocasuarina cones (Johnstone et al, 2013). Baudin's cockatoos prefer foraging within eucalypt woodlands and forest, and proteaceous woodland and heath. Its diet consists mainly of seeds from marri, but Baudin's also feed on various Banksia species., Hakea species. and jarrah, and occasionally insects and insect larvae (DBCA, 2017). During the breeding season (October to late January/early February) Baudin's has a preference for marri seeds. Outside the breeding season the species may feed in fruit orchards and tips of Pinus species. (Commonwealth of Australia, 2012). Carnaby's cockatoo feeds on the seeds, nuts and flowers of a large variety of plants including proteaceous species (Banksia, Hakea and Grevillea), as well as Allocasuarina and Eucalyptus species, marri and a range of introduced species (Valentine and Stock, 2008).

Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore, viewed in the context of known breeding and night roosting sites particularly it is considered for foraging habitat within six to 12 kilometres of an application area to be significant food source (DAWE, 2022). According to the available databases, no recorded black cockatoo roosting sites or breeding sites occur within six kilometres of the application area. The closest known breeding site is located 7.5 kilometres from the application area.

Based on the above, the department's assessment has identified that the three marri trees proposed for clearing is a food resource for the black cockatoo species given the marri fruit are a known food source for the black cockatoos.

Furthermore, a key focus for the Swan Coastal Plain is the ongoing viability of foraging resources for black cockatoos, particularly Carnaby's cockatoo (DAWE, 2022). However, given the size of the proposed clearing in relation to its position in the landscape, and the location of known roost and breeding sites, it is unlikely that the three individual marri trees proposed for clearing represent significant foraging resource to support black cockatoo populations. According to the mapped black cockatoo foraging in the Swan Coastal Plain layer, the department recognises that the application area is not mapped as an area requiring investigation as black cockatoo feeding habitat, nor does it qualify as mapped remnant vegetation as illustrated in Figure 3 below.

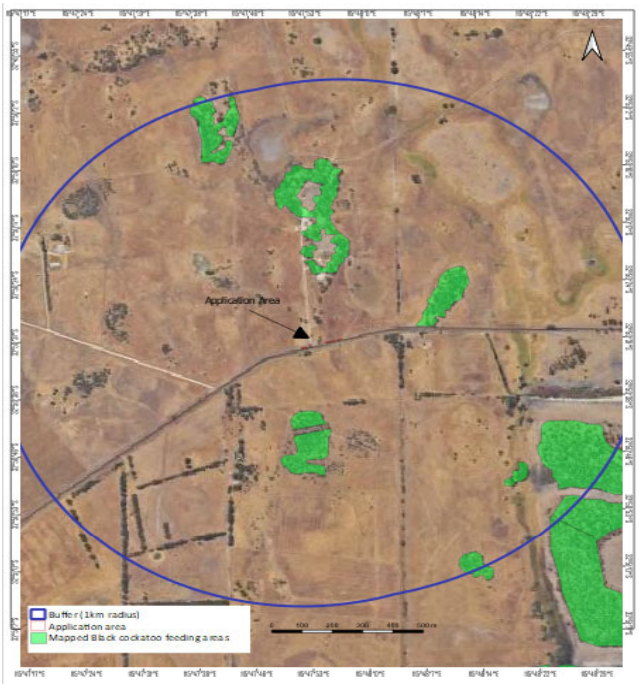


Figure 4: A map illustrating the extent of the DBCA mapped black cockatoo foraging within one kilometer radius of the application area.

The Shire has committed to replace the native trees cleared by re-planting marri trees within an area along the Coronation Road reserve which is previously subject to a revegetation condition under the clearing permit application CPS 9347/1 held by Shire of Waroona. The proposed revegetation as part of this application, along with the revegetation conditioned under CPS 9347/1 will provide a linear patch of native vegetation which will provide a far greater environmental benefit compared to revegetation within two detached areas. The proposed revegetation will counterbalance the loss of the minor foraging resource impacted by the proposed clearing.

Conclusion

Based on the above assessment, and the avoidance and mitigation measured provided by the Shire, the Delegated Officer has considered that the potential impacts of the proposed clearing on threatened species of black cockatoos can be managed by the re-planting of black cockatoo foraging species.

Conditions

To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- Planting and ensure the long-term survival of 12 marri trees, within Coronation Road reserve, using locally-provenanced material.

3.2.2. Significant remnant vegetation - Clearing Principles (e)

Assessment

The proposed application area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) region of Western Australia. The Swan Coastal Plain bioregion has approximately 38.6 per cent of its original extent of native vegetation remaining.

The application area falls within the Beard bassendean vegetation association 1000, which is described as woodland/ low woodland/ low forest or woodland and within the vegetation complex (ID 40); described as a mosaic of vegetation from adjacent vegetation complexes of Bassendean, Karrakatta, Southern River, and Vasse. The mapped Swan

Coastal Plain vegetation 'Cannington complex' retains approximately 11.81 per cent of its pre-European vegetation extent within the bioregion (Government of Western Australia, 2019b). The native vegetation remaining within the beard vegetation association is also below 30 per cent with 26.41 per cent remaining.

The departments assessment notes that the vegetation in the application area consists of marri trees and swamp paperbarks in a completely degraded condition (Keighery, 1994). Based on the condition of the vegetation, it is unlikely to be representative of the mapped vegetation complex and the mapped vegetation association, and is not considered significant as a remnant of native vegetation.

The national objectives and targets for biodiversity conservation in Australia has a target to prevent the clearance of ecological communities with an extent below 30 per cent of that present prior to the year 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

Within the local area of a 10-kilometre radius of the application area, approximately 14.78 per cent of its original native vegetation extent remains, this is bellow the 30 per cent retention threshold of the Commonwealth of Australia (2001). Based on this, the application area is considered to be within an extensively cleared landscape. Although the vegetation within the application area appears to be in a completely degraded condition (Keighery, 1994), all native vegetation remains significant within and extensively cleared landscape.

Clearing of the ten native trees within an extensively cleared area is considered a significant impact. A mitigation calculation was conducted using the WA environmental offset metric calculator and it was determined that to mitigate this environmental impact, the Shire is required to revegetate at least 15 native plants. Following consultation with the Shire, the DWER was advised that the large drain on the southern side of the Coronation Road limit the replanting areas along the Coronation Road and given that realignment of curves, the Shire advise that planting within these areas will cause potential safety issues in the future. However, the revegetation area stipulated in Clearing Permit CPS 9347/1 does allow for additional trees and given this area is relatively large, the Shire propose to use this area to plant the additional trees (Shire of Waroona, 2022c). Although the department requested 15 trees to be planted, the Shire advised that planting 15 trees within this area will become overcrowded. Therefore, the Shire proposed to plant 12 marri trees (Shire of Waroona, 2022c). Following the consideration of the safety concerns, the Delegated Officer determined that the planting of the 12 trees among the 30 trees conditioned under CPS 9347/1 will provide a far greater environmental benefit in the future in comparison to revegetation within two different areas. Based on this, the Delegated Officer was satisfied with the re-planting of 12 marri trees to mitigate the clearing of native vegetation within an extensively cleared landscape.

Conclusion
For the reasons set out above, and the avoidance and mitigation measures provided by the Shire, it is considered that potential impacts of the proposed clearing on remnant vegetation can be managed by re-planting 12 marri trees within the Coronation Road reserve.

Conditions:
To address potential impacts to remnant vegetation from proposed road upgrades, the following management measures will be required as a condition on the clearing permit.

- Replant and ensure the long term survival of 12 marri trees, 1 within Coronation Road reserve, using locally-provenanced material.

3.2.3. Environmental value: watercourse and wetlands - Clearing Principles (f)

Assessment
No natural watercourse intersects the application area. A drainage line is apparent along the application area, and the entire application area is located within a mapped geomorphic wetland of the Swan Coastal Plain. That is, a multiple use wetland; Palusplain (UFI 15231). A palusplain is simply a flat that is seasonally water-logged (Semeniuk and Semeniuk, 2004). Multiple use wetlands are considered wetlands with few remaining important attributes and functions (EPA, 2004; EPA, 2008). The management objective for multiple use wetlands should be to take all reasonable measures to retain the wetland's hydrological function, but is not incompatible with clearing (EPA, 2008).

Proposed clearing within the multiple use wetland is unlikely to contribute to degradation of the mapped wetland as the proposed clearing is minimal. The seven *Melaleuca Rhaphiophylla* (swamp paperbark) trees proposed to be cleared are considered as riparian vegetation. However, it is in a completely degraded condition (Keighery, 1994) and no natural watercourse is present. The cleared area will be replaced with a hard road surface with drainage controls. Based on this, it is unlikely that the proposed clearing within Coronation Road would negatively impact the mapped wetland.

Conclusion
Based on the above and the small, linear extent of the proposed clearing along with the implementation of the standard methodologies for road construction, it is considered unlikely that clearing of the seven swamp paperbark trees will have a significant impact on the mapped multiple use wetland.

Condition
No riparian vegetation, watercourse or wetland management conditions required.

3.3. Relevant planning instruments and other matters

The Shire is the public authority that manages the Coronation Road reserve (PIN 11601217). The Coronation Road reserve is zoned a major road (Zone No. 809) under the Shire's Local Planning Scheme No.7. The proposed clearing purpose is consistent with Local Planning Scheme No.7.

The application area is located within the Murray Groundwater Area proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act). It is not located within any Surface Water Areas or Irrigation Districts proclaimed under the RiWI Act, or any *Country Areas Water Supply Act 1947* (CAWS Act) Clearing Control Catchments, or Public Drinking Water Source Areas. Groundwater will not be intercepted, the beds or banks of any watercourses will not be disturbed, and no additional permitting by DWER is required.

There is a registered Native Title within the application area, that is the Gnaala Karla Booja Indigenous Land Use Agreement (ILUA) (WI2015/005). There is an extinguished Native Title within the application area, that is the southwest settlement (WAD6085/1998).

No Aboriginal sites of significance have 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.

End

Appendix A. Additional information provided by applicant

Information	Description
Supporting information – Correlating tree ID's and canopy width (Shire of Waroona, 2022b).	• Identification of trees to be cleared (and retained) along Coronation Road. • Project background, project brief, timing, design elements, tree data (ID, species, DBH, Canopy), aerial photography, photographs of individual trees with comments.
Mitigation strategies proposed by the Shire (Shire of Waroona, 2022c)	Shire of Waroona submitted a letter response in relation to the requested further information letter by DWER. The response included the Shire's proposed mitigation measures (Shire of Waroona, 2022c).

Appendix B. Site characteristics

B.1. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of the assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

Characteristic	Details
Local context	The application area is located within the Swan Coastal Plain IBRA Bioregion of Thackway and Cresswell (1995) and the Perth sub-region. The proposed clearing include ten native trees consisting of three *Corymbia Calophylla* trees and seven *Melaleuca Rhaphiophylla* trees in the Shire of Waroona, located approximately 110 kilometres south of Perth. Aerial imagery and Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 13.90 per cent of the original native vegetation cover.
Ecological linkage	No formal ecological linkage is mapped within the application area. However, roadside vegetation in an extensively cleared landscape provides an important ecological linkage function for movement of fauna species throughout the landscape.
Conservation areas	No conservation areas are mapped within the application area. The closet conservation area is the Buller Nature Reserve mapped approximately 3.9 kilometres south of the application area. The Myalup state forest is located approximately seven kilometres to the west of the application area.
Vegetation description	Photographs supplied by the Shire indicate the vegetation within the proposed clearing area consists of *Corymbia Calophylla* and *Melaleuca Rhaphiophylla* trees (Shire of Waroona, 2022b). Representative photos are available in Appendix E. The broadly mapped vegetation type within the application area is: • Beard vegetation association, 1000, which is described as woodland / low woodland and low forest or Woodland (Shepherd et al, 2001). • Cannington complex (40), which is described as mosaic of vegetation from adjacent vegetation complexes of Bassendean, Karrakatta, Southern River and Vasse. The mapped vegetation types retain less than 30 per cent of the original extent (Government of Western Australia, 2019a and Government of Western Australia, 2019b).

Characteristic	Details
Vegetation condition	Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is in completely degraded condition (Keighery, 1994). The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.
Climate and landform	The southwest of Western Australia experiences a Mediterranean climate of hot dry summers and cool wet winters, and the proposed clearing area is situated within the 'Temperate – distinctly dry and warm summer' Köppen climate class. An average of 680.6 millimetres of rainfall is recorded annually from the Pinjarra South weather station. The application area is within the Pinjarra System described as Swan Coastal Plain from Perth to Capel. Poorly drained coastal plain with variable alluvial and aeolian soils. Variable vegetation includes Jarrah, marri, wandoo, paperbark sheoaks and rudis (DPIRD, 2019)
Soil description	The application area is mapped within two soil landscape mappings (DPIRD, 2019). • Pinjarra B6 phase, described as sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands (DPIRD, 2019). • Pinjarra P5 phase, described as poorly drained flats, commonly with gilgai microrelief and with deep black-grey to olive-brown cracking clays with subsoils becoming alkaline (DPIRD, 2019).
Land degradation risk	The land degradation table B.5. below outline the land degradation risk levels for both the Pinjarra B5 phase and the Pinjarra P5 Phase.
Waterbodies	The desktop assessment and aerial imagery indicated that approximately 50 per cent of the application area falls within a geomorphic wetland of the Swan Coastal Plan, known as a Palusplain, multiple use wetland.  Figure 5: The extent of the proposed clearing area (red) mapped within the multiple use wetland (blue) There are no natural watercourses in the vicinity of the application area.
Hydrogeography	The application area is located within the Coastal Plain hydrological zone of Western Australia (DPIRD-059). The application area falls within the Murray groundwater area proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act) (DWER-034).

Characteristic	Details
	The application area is not mapped within a surface water area proclaimed under the RiWI Act (DWER-037), not within an area subject to the *Country Areas Water Supply Act 1917* clearing control catchments or within any Public Drinking Water Source Areas (DWER-033). The groundwater salinity level (Total Dissolved Solids) is mapped as 500-1,000 milligrams per litter (fresh) (DWER-026).
Flora	The desktop assessment identified 13 conservation significant flora species within the local area which comprise of one threatened flora and 12 priority flora taxa. The closest species recorded was the threatened *Caladenia speciosa* located approximately 1.68 kilometres from the application area.
Ecological communities	The application area is not mapped within a Threatened Ecological Community or within a Priority Ecological Community. The species identified over the application area do not represent a conservation significant ecological community.
Fauna	The desktop assessment identified 21 conservation significant fauna species within the local area which include 11 birds, one invertebrate, 7 mammals and one reptile. The closest record of the conservation significant fauna species was the *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo) recorded 0.29 kilometres from the application area. The local area (10-km radius buffer) includes one black cockatoo roost site and no confirmed black cockatoo breeding sites. The application area is located within the distribution zone of the conservation significant black cockatoos species.

B.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 association/complex					
Beard vegetation association 1000 *	94,175.31	24,869.20	26.41	4,769.48	5.06
Cannington complex 40 **	16,661.33	1,965.94	11.81	981.34	5.89
Local area					
10km radius	31,462	4,656	14.78	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.3. Flora analysis table

Conservation significant flora species identified from the local area.

Species name	Conservation status	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Acacia semitrullata	4	8.79	1	N
Angianthus drummondii	3	6.66	1	N
Boronia capitata subsp. *gracilis*	3	5.01	3	N
Caladenia huegelii	T	4.85	3	N
Caladenia speciosa	4	1.68	7	N
Carex tereticaulis	3	5.09	2	N
Diuris brevis	2	3.19	3	N
Grevillea bipinnatifida subsp. *pagna*	1	9.44	1	N
Hemigenia microphylla	3	3.96	3	N
Pterostylis frenchii	2	9.27	1	N
Schoenus natans	4	4.04	3	N
Schoenus sp. Waroona (G.J. Keighery 12235)	3	3.20	1	N
Synaphea odocoileops	1	3.82	1	N

B.4. Fauna analysis table

Conservation significant fauna species identified from the local area.

Species name	Common name	Conservation status	Class	Distance of closest record to application area (km)	Number of known records (total)	Most recent year of record
Actitis hypoleucos	Common Sandpiper	MI	Bird	3.85	5	1992
Calidris ruficollis	Red-necked stint	MI	Bird	7.81	1	1991
Calyptorhynchus banksii naso	forest red-tailed black cockatoo	VU	Bird	0.29	63	2013
Calyptorhynchus baudinii	Baudin's cockatoo	EN	Bird	6.15	4	2012
Calyptorhynchus latirostris	Carnaby's cockatoo	EN	Bird	1.48	315	2018
Calyptorhynchus sp. 'white-tailed black cockatoo'	white-tailed black cockatoo	EN	Bird	6.46	7	2012
Ctenotus ora	Coastal Plains skink	P3	Reptile	4.58	3	1960
Dasyurus geoffroii	chuditch, western quoll	VU	Mammal	3.34	2	2012
Falsistrellus mackenziei	Western false pipistrelle, western falsistrelle	P4	Mammal	6.12	2	2013
Hydromys chrysogaster	water-rat, rakali	P4	Mammal	3.34	2	2013
Hydroprogne caspia	Caspian Tern	MI	Bird	3.85	1	1991
Idiosoma sigillatum	Swan Coastal Plain shield-backed trapdoor spider	P3	Invertebrate	7.03	1	1980
Isoodon fusciventer	quenda, southwestern brown bandicoot	P4	Mammal	3.60	29	2013
Notamacropus irma	western brush wallaby	P4	Mammal	4.25	2	2005
Oxyura australis	Blue-billed duck	P4	Bird	3.51	20	1992
Pandion cristatus	Osprey, eastern osprey	MI	Bird	3.85	2	1991
Phascogale tapoatafa wambenger	south-western brush-tailed phascogale, wambenger	CD	Mammal	3.34	2	2013
Plegadis falcinellus	Glossy ibis	MI	Bird	7.37	4	1992
Pseudocheirus occidentalis	western ringtail possum, ngwayir	CR	Mammal	6.21	3	2020

Species name	Common name	Conservation status	Class	Distance of closest record to application area (km)	Number of known records (total)	Most recent year of record
Thinornis rubricollis	hooded plover, hooded dotterel	P4	Bird	7.54	18	2006
Tringa nebularia	Common greenshank, greenshank	MI	Bird	3.85	4	1991

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

B.1. Land degradation risk table

Risk categories	***213Pj_B6***
Wind erosion	H2: 100% of map unit has a high to extreme hazard
Water erosion	L1: 0% of map unit has a very high to extreme hazard
Salinity	L1: 0% of map unit has a moderate hazard
Subsurface Acidification	H2: 100% of map unit has a high susceptibility
Flood risk	L1: 0% of the map unit has a moderate to high hazard
Water logging	M2: 45% of map unit has a moderate to very high
Phosphorus export risk	H2: 90% of map unit has a high to extreme hazard
Risk categories	***213Pj_P5***
Wind erosion	L2: 5% of map unit has a high to extreme hazard
Water erosion	L1: 0% of map unit has a very high to extreme hazard
Salinity	H1: 65% of map unit has a moderate hazard
Subsurface Acidification	H2: 75% of map unit has a high susceptibility
Flood risk	L1: 0% of the map unit has a moderate to high hazard
Water logging	H2: 100% of map unit has a moderate to very high risk
Phosphorus export risk	L1: 0% of map unit has a high to extreme hazard

L = Low M = Medium H = High

Appendix C. 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 area proposed to be cleared contains marri trees which are suitable foraging habitat for the three threatened black cockatoo species. However, based on the completely degraded condition (Keighery, 1994) of the vegetation with no native species present in the understorey, the native vegetation proposed to be cleared does not represent any conservation significant ecological communities, does not support Threatened or Priority flora taxa, and does not comprise a high level of biodiversity.	Not likely to be at variance	No
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 application area is mapped within the modelled distribution of the three black cockatoo species. The marri trees are likely to provide foraging habitat for the species and unlikely to provide breeding and roosting habitat due to the size of the trees. The Shire is proposing to mitigate the impact by revegetating 12 marri trees along the Coronation Road reserve.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: Native vegetation is in a completely degraded condition with exotic pasture grasses in the understorey (Keighery, 1994). No native flora species are represented in the understorey and the native vegetation within the application area is unlikely to include, or be necessary for, the continues existence of flora species listed under the BC Act.	Not 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 application area proposed to be cleared does not contain species that can indicate a threatened ecological community.	Not 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 type and the native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia.	At variance	Yes *Refer to Section 3.2.2, above*

Assessment against the clearing principles	Variance level	Is further consideration required?
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: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not 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: Proposed clearing is located within a Geomorphic Wetland of the Swan Coastal Plain. That is, a multiple use wetland; Palusplain. The proposed clearing includes seven swamp paperbark trees which are growing along a drainage line.	At variance	Yes *Refer to Section 3.2.3, above.*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Noting the extent and location of the application area and the condition of the vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation. Standard and staged road construction methodologies will be employed, including strategies for drainage controls. Eutrophication (Phosphorus export) is not likely to be a risk in consideration of the final land use as a public road. Soils will not be excavated at depth, and groundwater will not be intersected. Given the scale and location of the application area, proposed clearing is unlikely to contribute to rising salinity. Any impacts to surrounding landscapes, soils and drainage can be managed through appropriate design. Vegetation is currently in a completely degraded condition and the cleared area will be replaced with a hard road surface negating any potential for wind erosion.	Not likely to be at variance	No
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: No natural water courses intersect the application area. A drainage is present along the application area. Soils will not be excavated at depth and risks to groundwater are low. The proposed clearing of the Coronation Road roadside may cause some short-term surface water sedimentation during works. However, surface water flow will be controlled by incorporating drainage management design and by implementing standard road construction methodologies for drainage control and water erosion. Proposed clearing is not likely to cause deterioration in the quality of surface or underground water	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 mapped land degradation risk for flooding potential over the application area is rated at low. The application area is not located within any annual exceedance probability (AEP) floodplains. Standard and staged road	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
construction methodologies will be employed, including strategies for drainage controls and water erosion. Noting the location and extent of the proposed clearing and standard management prescriptions employed, the proposed clearing of native vegetation is not likely to cause, or exacerbate, the incidence or intensity of flooding.		

Appendix D. 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 E. photographs of the vegetation

North Side of Road Reserve			
Tree ID	Description	Trunk (m)	Canopy (m)
305	*Corymbia Calophylla*	1.5	5
304	*Corymbia Calophylla*	1.9	9
N/A	*Corymbia Calophylla*	1.8	9
657	*Melaleuca Rhaphiophylla*	3m multi base	4
660	*Melaleuca Rhaphiophylla*	3.5 multi stem	3.5
661	*Melaleuca Rhaphiophylla*	3	6
662	*Melaleuca Rhaphiophylla*	1.3	5
663	*Melaleuca Rhaphiophylla*	1.5	7
666	*Melaleuca Rhaphiophylla*	1.4	5.5
667	*Melaleuca Rhaphiophylla*	1.5	5

Figure 6: The trees proposed for clearing

** The Map above shows Coronation Road running in an East/ West direction, with the nearest crossroad being Coles Road.*

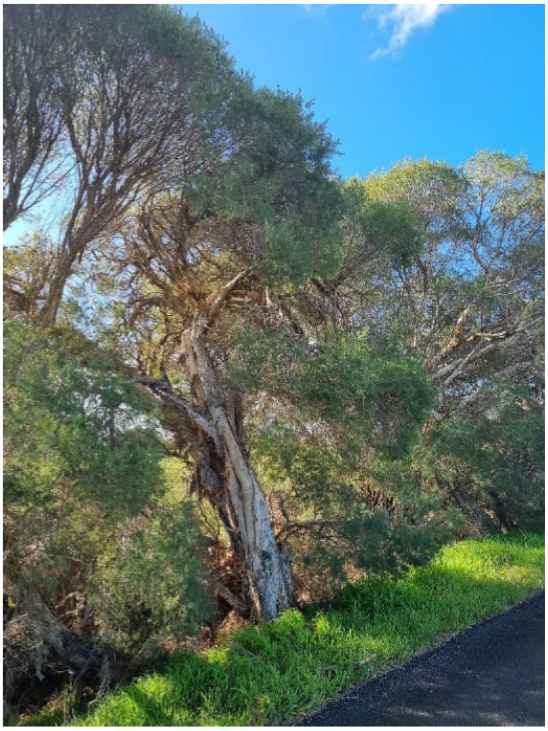
** The Map above shows Coronation Road running in an East/ West direction, with the nearest crossroad being Coles Road.*

Figure 7: A map of the location of the trees proposed for clearing

6. Photos and Additional Information

All photos have been taken heading East along Coronation Road. First inspection of the trees showed no obvious signs of nesting or hollow points.

Tree ID	Description	Trunk (m)	Canopy (m)	Pruning/ Removal	Observations
305	*Corymbia Calophylla*	1.48	8	Removal	No visible signs of nesting or hollows.



Tree ID	Description	Trunk (m)	Canopy (m)	Pruning/ Removal	Observations
661	*Melaleuca Raphiophylla*	3	6	Removal	No visible signs of nesting or hollows.
662	*Melaleuca Raphiophylla*	1.3	5	Removal	No visible signs of nesting or hollows.

Tree ID	Description	Trunk (m)	Canopy (m)	Pruning/ Removal	Observations
304	*Corymbia Calophylla*	1.9	9	Removal	No visible signs of nesting or hollows.
N/A	*Corymbia Calophylla*	1.8	9	Removal	No visible signs of nesting or hollows. Within 1184 Coronation Road
657	*Melaleuca Raphiophylla*	3m	4	Removal	No Visible signs of nesting or hollows.
660	*Melaleuca Raphiophylla*	3.5m	6	Removal	No Visible signs of nesting or hollows.

Tree ID	Description	Trunk (m)	Canopy (m)	Pruning/ Removal	Observations
663	*Melaleuca Raphiophylla*	1.6	7	Removal	No visible signs of nesting or hollows.
666	*Melaleuca Raphiophylla*	1.4	5.5	Removal	No visible signs of nesting or hollows.

Tree ID	Description	Trunk (m)	Canopy (m)	Pruning/ Removal	Observations
667	Melaleuca Raphiophylla	1.5	5	Removal	No visible signs of nesting or hollows.

Figure 8: A detailed description of each tree proposed to be cleared.

Appendix F. Sources of information

F.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)

F.2. References

Shire of Waroona (2022a) *Clearing permit application CPS 9824/1*, received 27 July 2022 (DWER Ref: DWERDT636545).

Shire of Waroona (2022b) *Supporting information for clearing permit application CPS 9824/1,* received 27 July 2022 (DWER Ref: 642265).

Shire of Waroona (2022c) *Supporting information for clearing permit application CPS 9824/1,* received 04 October 2022 (DWER Ref: DWERDT667294).

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

Commonwealth of Australia (2012) EPBC Act referral guidelines for three threatened black cockatoo species, Canberra.

Department of Agriculture, Water and the Environment (DAWE) (2022), *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's cockatoo, Baudin's cockatoo and the Forest Red-tailed Black-cockato,* Department of Agriculture, Water and the Environment, Canberra, February

Department of Biodiversity, Conservation and Attractions (DBCA) (2017a). Fauna Profile – Baudin's black cockatoo Calyptorhynchus baudinii. Retrieved from http://www.dbca.wa.gov.au/

Department of Environment Regulation (DER) (2013). *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.

Department of Primary Industries and Regional Development (DPIRD) (2019). *NRInfo Digital Mapping. Department of Primary Industries and Regional Development.* Government of Western Australia. URL: https://maps.agric.wa.gov.au/nrm-info/ (accessed 27 October 2022).

Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.

Environmental Protection Authority (EPA) (2004). Revised Draft Environmental Protection (Swan Coastal Plain Wetlands) Policy and Regulations 2004. Environmental Protection Authority (EPA). November 2004.

Environmental Protection Authority (EPA) (2008) Environmental Guidance for Planning and Development Guidance Statement No 33. Environmental Protection Authority, Western Australia.

Government of Western Australia (2019a) *2018 South West Vegetation Complex Statistics. Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth, https://catalogue.data.wa.gov.au/dataset/dbca

Government of Western Australia. (2019b) *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019.* WA Department of Biodiversity, Conservation and Attractions. https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Heddle, E. M., Loneragan, O. W., and Havel, J. J. (1980) *Vegetation Complexes of the Darling System, Western Australia*. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Johnstone, R.E, Kirkby, T., and Sarti, K. (2013) The breeding biology of the Forest Red-tailed Black Cockatoo Calyptorhynchus banksii naso Gould in south-western Australia. I. Characteristics of nest trees and nest hollows.

Mattiske, E.M. and Havel, J.J. (1998) *Vegetation Complexes of the South-west Forest Region of Western Australia.* Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Valentine, L.E. and Stock, W. (2008) *Food Resources of Carnaby's Black Cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy Study Area*. Edith Cowan University and Department of Environment and Conservation. December 2008.

Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. https://florabase.dpaw.wa.gov.au/ (Accessed 19 October 2022)