GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9163/1

File Number: DWERVT7240

Duration of Permit: From 30 May 2022 to 30 May 2030

PERMIT HOLDER

Shire of West Arthur

LAND ON WHICH CLEARING IS TO BE DONE

Darkan Road South (PINs 11243714 and 11243184), Darkan

AUTHORISED ACTIVITY

The permit holder must not clear more than 0.31 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 and Figure 2 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 30 May 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. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures 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 known *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. Revegetation and rehabilitation

The permit holder shall take the following actions for the purpose of *revegetation* and *rehabilitation;*

(a) prepare the *revegetation* area cross-hatched in red on Figure 3 of Schedule 1 by:

  (i) undertaking *weed* control; and

  (ii) ripping the soil within areas that have already been cleared;

(b) retain the vegetative material and topsoil removed by *clearing* authorised under this permit and lay the vegetative material and topsoil in areas that have already been cleared within the areas cross-hatched red on Figure 3 of Schedule 1;

(c) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the site;

(d) within 12 months of the commencement of *clearing* and at an *optimal time,* commence *revegetating* the areas cross-hatched red on Figure 3 of Schedule 1, by way of:

  (i) deliberately *planting* tube stock and/or salvaged vegetation of at least 48 *local species* plants, which are to include at least 15 each of the following species:

    A. Wandoo (*Eucalyptus* wandoo); and

    B. Marri (*Corymbia* calophylla);

  (ii) ensuring only *local provenance* propagating material is used for *plantings*;

  (iii) installing tree guards around the plantings;

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

(e) the permit holder must within 24 months of planting the 48 plants in accordance with condition 4(d) of this Permit:

  (i) engage an *environmental specialist* to make a determination that 48 plants which includes 15 *Eucalyptus wandoo* and 15 *Corymbia calophylla* will survive;

  (ii) If the determination made by the *environmental specialist* under condition 4(e)(i) that the 48 plants which includes 15 *Eucalyptus wandoo* and 15 *Corymbia calophylla* will not survive, the permit holder must *plant* additional *Eucalyptus wandoo, Corymbia calophylla* and *local species* plants that will result in 48 plants which includes 15 *Eucalyptus wandoo* and 15 *Corymbia*

calophylla persisting within the area cross hatched red on Figure 3 of Schedule 1.

(f) where additional *planting* of *Eucalyptus wandoo, Corymbia calophylla* and *local species* plants is undertaken in accordance with condition 4(e)(ii), the permit holder must repeat the activities required by condition 4(d) of this Permit.

5. 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 reduce the impacts and extent of clearing in accordance with condition 2; and (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3.
2.	In relation to revegetation management pursuant to condition 4	(a) a description of the *revegetation* and *rehabilitation* activities; (a) the date(s) on which the area *revegetation* and *rehabilitation* was undertaken; and (b) all actions taken in accordance with conditions 4(a) to 4(f).

6. Reporting

The permit holder must provide to the *CEO* the records required under condition 5 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table 2 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.

Term	Definition
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
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 a minimum of 2 years work experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the CEO as a suitable environmental specialist.
local provenance	means native vegetation seeds and propagating material from natural sources within 10 and 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.
local species	means *native vegetation* species recorded as naturally occurring within 10 kilometres of the land.
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*.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
revegetate / vegetated / revegetation	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 – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

Meenu Vitarana
A/Manager
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

6 May 2022

Schedule 1

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

Figure 2: Map of the boundary of the area within which clearing may occur (south)

Figure 3: Map of the boundary of the area within which revegetation in accordance with condition 4 is required

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 9163/1
Permit type:	Area permit
Applicant name:	Shire of West Arthur
Application received:	23 December 2020
Application area:	0.31 hectares of native vegetation
Purpose of clearing:	Widening of a road and construction of a slip lane
Method of clearing:	Mechanical
Property:	Darkan Road South (PINs 11243714 and 11243184)
Location (LGA area/s):	Shire of West Arthur
Localities (suburb/s):	Darkan

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within 20 small areas along the Darkan Road South road reserve (see Figures 1 and 2, Section 1.5). The clearing is required for two key projects within the road reserve:

- Northern portion of proposed clearing area (Figure 1, Section 1.5) - widening of the existing road shoulder by 0.5 metres and creation of an adjacent new road shoulder (0.5 metres) and batter (0.5 metres). Clearing is required where vegetation is present within the footprint of the batter, or is impacting the stability of the batter wall. This portion of the proposed clearing area contains 10 mature trees, several immature trees and some areas of understorey native vegetation; and
- Southern portion of proposed clearing area (Figure 2, Section 1.5) - construction of a single slip lane, requiring clearing of up to 6.5 meters from the existing bitumen, for a section of 200 meters from the intersection with Capercup North Road. The slip lane is to provide a merging area for heavy vehicles travelling from Capercup North Road into Darkan South road before approaching a hill. This portion of the proposed clearing area contains 9 mature trees.

Following a request to avoid and minimise the application area, the applicant reduced the size of the proposed clearing from the initially proposed area of 0.68 hectares to 0.31 hectares (see Section 3.1 for further details).

1.3. Decision on application

Decision:	Granted
Decision date:	6 May 2022
Decision area:	0.31 hectares of native vegetation 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 original application for 21 days and revised application (refer to Section 3.1) for 7 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), photographs provided by the applicant (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 3.3).

The assessment identified that the proposed clearing would result in:

- Impacts to significant foraging habitat for black cockatoo species, particularly forest red-tailed black cockatoos;
- Minor local impacts to an ecological linkage; and as such,
- Vegetation that 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 impacts of the proposed clearing to black cockatoo species and ecological linkages can be minimised and managed to be unlikely to 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
- Take hygiene steps to minimise the risk of the introduction and spread of weeds
- Rehabilitate and revegetate an area of nearby vegetation to mitigate impacts to black cockatoo foraging habitat and a local ecological linkage.

1.5. Site maps

Figure 1. Map of the northern portion of the application area (for the proposed road widening). The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

Figure 2. Map of the southern portion of the application area (for the proposed slip road). The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

Figure 3. The areas cross-hatched red indicate areas within which conditions to rehabilitate and revegetate apply.

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 principle of the conservation of biological diversity and ecological integrity.

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)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant originally applied for an area, totalling 0.68 hectares, as per the following description to be cleared:

- For the road widening along the northern portion of Darkan Road South – a 3 metre wide and approximately 600 metre long strip on each edge of the existing bitumen;
- For the slip lane along the southern portion of Darkan Road south – a 6.5 metre wide and approximately 530 metre long strip on the western side of the existing bitumen.

The applicant initially advised, in regards to avoidance and minimisation of clearing, that:

- For the road widening, that although the widening is required along the east and west sides of the road and the application area was also on both sides, the actual clearing would aim to remain within whichever side of the road has least vegetation to avoid large trees.
- Clearing for the slip lane is only within one side of the road.

Given the environmental values present within the original application, the department requested further evidence of efforts taken to avoid and/or mitigate significant environmental impacts resulting from the proposed clearing.

Following this, the applicant proposed further avoidance and mitigation measures, including undertaking redesign to reducing the clearing area, rehabilitating a nearby portion of road reserve vegetation and additional mitigation measures.

Road redesign and reduction of clearing area

The applicant redesigned the proposed road widening area, incorporating white line marking and a lower speed limit, such that less road widening of only 0.5 m on both sides of the road was required. The applicant also advised that clearing of only 9 trees was required for the slip lane construction, as these trees are located very close to the road edge and pose a safety hazard, and that no other clearing was required for the clip lane construction. The applicant subsequently reduced the clearing application area to the smaller area described in Section 1.2 and shown in Figures 1 and 2.

Rehabilitation of nearby road reserve

The applicant proposed to rehabilitate a nearby area (within 50 metres of the application area), comprising 0.15 hectares, of the Darkan Road South road reserve (refer to Figure 3 above). This rehabilitation has been conditioned on the permit, and will include the following measures within the area shown on Figure 3:

- Planting at least 48 local species plants, including at least 15 wandoo and 15 marri trees;
- Undertaking weed control before and three years post planting; and
- Monitoring of revegetation success, and if revegetation is not successful, undertaking further weed control and planting.

Additional mitigation measures

The applicant also advised the following in regards to the works (Shire of West Arthur, 2021-2022):

- Pruning or lopping of limbs will be conducted in preference to tree removal wherever possible.

- All vehicles and equipment used for construction will adhere to the access tracks, existing roads and exclusion areas outlined in the traffic management plan.
- Northern section of road widening - fill will be pushed over the edge of the road on the eastern side and some parts of the western side. The fill may cover parts of tree trunks but will enable the trees to be retained in this area. Widening will then occur mostly on the eastern side of the road.
- Mid-section of road widening – The table drain in this area will be cleared of fill that has eroded down the battered bank. Some small saplings will be removed. Batter will be made vertical to minimise impingement on native vegetation at the top of the batter. In this section widening will occur on the east side of the road where there are minimal trees and regrowth understorey. This will minimise disturbance to the larger section of remnant vegetation on the west side of the road
- All vegetation removed will be disposed of away from the native vegetation to prevent disturbance to additional native vegetation.
- Daily construction area assessments to visually check / review clearing boundaries and assess vegetation clearing

Following the above changes to the application and provision of additional information above, the Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential 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 **Error! Reference source not found.**) identified that the impacts of the proposed clearing to fauna and significant remnant vegetation required further consideration. 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 Principles (a) and (b)

Assessment

Considering the proximity, time and number of records, and habitat requirements and their resemblance with the application area, the following fauna species have been assessed to likely be present, inhabit, and / or utilise the application area:

- Black cockatoo species:
  - *Calyptorhynchus banksia naso* (Forest red-tailed black cockatoo) (FRTBC) - Vulnerable
  - *Calyptorhynchus baudinii* (Baudin's cockatoo) - Endangered
  - *Calyptorhynchus latirostris* (Carnaby's cockatoo) - Endangered
- *Phascogale calura* (Red-tailed phascogale) – Conservation Dependent
- *Phascogale tapoatafa wambenger* (South-western brush-tailed phascogale, wambenger) - Conservation Dependent
- *Platycercus icterotis xanthogenys* (Western rosella (inland)) – Priority 4

The application area is within the known breeding range of Carnaby's cockatoo, the 'core' habitat of FRTBC, and the likely range of Baudin's cockatoo. While habitat requirements for the three species of black cockatoos are different, the requirements in general can be categorised as breeding habitat, foraging habitat and night roosting habitat. Black cockatoo night roosts are usually located in the tallest trees of an area, and near both a food supply and surface water (Commonwealth of Australia, 2017). Flocks will use different night roosts, often for weeks, or until the local food supply is exhausted. Flocks show some fidelity to night roosts with sites used in most years to access high-quality feeding sites. No roosting sites have been recorded within the application area, however, several of the *Eucalyptus wandoo* (wandoo) trees within the application area are large enough to support roosting. Given that the proposed clearing will only remove a small proportion of suitable roosting trees from the patches of vegetation containing these trees, the proposed clearing is considered unlikely to have a significant impact on black cockatoo roosting trees.

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. Black cockatoos will generally forage up to 12 kilometres from an active breeding site (DSEWPaC, 2012). No breeding site is recorded

within a 20 kilometre radius from the application area, however it is acknowledged that unrecorded breeding sites may be present. Black cockatoos may also forage up to 20 kilometres (Commonwealth of Australia 2017) from a night roost. Two roosting sites have been recorded within a 20 kilometre radius of the application area, one of which has confirmed to have been used by FRTBC within the past three years (Peck, Barrett, and Williams, 2018). This roost site is located approximately 1 kilometre southwest of the area proposed to be cleared for the slip lane. The mature *Eucalyptus wandoo* (wandoo) and *Corymbia calophylla* (marri) trees present within the application area, comprising approximately 0.3 hectares, are likely to provide suitable foraging habitat for all three black cockatoo species, but particularly for FRTBC (DSEWPaC, 2012). Given the presence of the nearby confirmed roost sites, the proposed clearing may impact significant black cockatoo foraging habitat, particularly for FRTBC. The applicant has committed to rehabilitating a nearby area of road reserve (see Section 3.1 for more details), which will mitigate impacts to black cockatoo foraging habitat.

Black cockatoo breeding habitat as defined in the referral guidelines (DSEWPaC, 2012) as trees of species known to support breeding within the range of the species which either have a suitable nest hollow, or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, suitable DBH is 500 millimetres, although for wandoo trees 300 millimetres is considered to be a suitable DBH. All three black cockatoo species are known to utilise hollows in wandoo and marri trees for breeding (DSEWPaC, 2012). Information provided by the applicant indicates that several of the trees within the application area are likely to be of suitable DBH to develop a nest hollow, however information provided by the applicant and photographs of the vegetation (Shire of West Arthur, 2021-2022; Appendix E) indicate that no suitable breeding hollows are likely to be present.

The red-tailed phascogale inhabits woodlands with hollow-producing eucalypts, particularly wandoo (*Eucalyptus wandoo*) and york gum (*E. loxophleba*) with associated sheoak (*Allocasuarina huegeliana*). They show a preference for long unburnt habitat with a continuous canopy, as well as tree hollows. They nest within hollow logs, tree hollows and in skirts of live (or stumps of dead) grass trees (*Xanthorrhoea* spp.) (Threatened Species Scientific Committee, 2016). The application area is within the western extent of the mapped recordings of this species. South-western brush-tailed phascogale (*Phascogale tapoatafa wambenger*) have been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees. Records are less common in high rainfall areas (Department of Environment and Conservation, 2012). The application area is toward the eastern extent of recordings of the species.

Although the vegetation type in some portions of the application area may be suitable for both phascogale species, vegetation in the road reserve is likely to be subject to predation by foxes and is therefore unlikely to be suitable for the prolonged residence of these species, and is not contiguous with a large nature reserve more suitable for phascogale habitat. As such, the application area is unlikely to be utilised by phascogale species and the proposed clearing is unlikely to have a significant impact on phascogales.

The Western Rosella (inland) is found in the semi-arid southern interior, occurring mainly in Eucalypt and Casuarina woodland and scrubs, especially wandoo and salmon gum woodlands (Johnstone and Storr, 2004). Western Rosellas forage on seeds of grasses and other plants and nest within hollows in tree limbs and trunks, usually one metre or more deep (Birdlife Australia, 2022). Photographs provided by the applicant indicate the application area (Shire of West Arthur, 2021-2022) is unlikely to contain hollows suitable for Western Rosella nesting. While the application area may contain suitable habitat for this species, noting the extent of the proposed clearing and the condition of the vegetation within the application area, the proposed clearing is unlikely to impact on significant habitat for this species.

Conclusion

Based on the above assessment, the proposed clearing may result in impacts to foraging habitat for black cockatoo species, particularly forest red-tailed black cockatoos, however these impacts are considered likely to be mitigated by rehabilitation of a nearby area of the Darkan Road South reserve as proposed by the applicant and enforced as a condition of this permit.

Conditions

To address the above impacts, the applicant will be required revegetate and rehabilitate a nearby area of road reserve, including the following:

- Planting at least 48 local species plants, including at least 15 wandoo and 15 marri trees;
- Undertaking weed control before and three years post planting; and
- Monitoring of revegetation success, and if revegetation is not successful, undertaking further weed control and planting.

3.2.2. Significant remnant vegetation - Clearing Principle (e)

Assessment

Spatial data and aerial imagery indicate the local area (10 kilometre) is approximately 20 per cent vegetated and the interim biogeographic regionalisation for Australia's Bioregion (IBRA) (Jarrah Forest) retains approximately 37 per cent. The vegetation within the application area is mapped as Beard vegetation association Darkan 2 and Darkan 4 which retain 16.03 and 14.89 per cent respectively. The national objectives and targets for biodiversity conservation in Australia have a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The application area is part of an ecological linkage corresponding with Darkan Road. While the proposed clearing will not sever this linkage, it may have minor local impacts, particularly where the band of vegetation present is narrow. The proposed clearing may also result in impacts to significant foraging habitat for black cockatoo species, particularly forest red-tailed black cockatoos (refer to Section 3.2.1 above). As such, the application area may be considered as a significant remnant of native vegetation in an area that has been extensively cleared. Revegetation and rehabilitation efforts within the Darkan Road reserve committed to by the applicant (see Section 3.1 for further details) will strengthen the ecological linkage associated with this road reserve and mitigate impacts to black cockatoo foraging habitat.

Conclusion

Based on the above assessment, the proposed clearing may result in minor local impacts to an ecological linkage and in impacts to significant habitat for black cockatoo species within an extensively cleared area. These impacts are considered likely to be offset by rehabilitation of a nearby area of the Darkan Road South reserve enforced as a condition of this permit.

Conditions

To address the above impacts, the applicant will be required revegetate and rehabilitate a nearby area of road reserve, including the following:

- Planting at least 48 local species plants, including at least 15 wandoo and 15 marri trees;
- Undertaking weed control before and three years post planting; and
- Monitoring of revegetation success, and if revegetation is not successful, undertaking further weed control and planting.

3.3. Relevant planning instruments and other matters

An Aboriginal site of significance has been mapped within the local 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

During the assessment, the applicant provided the following additional information.

Summary of comments	Consideration of comment
Additional avoid/minimise information provided	Considered in Section 3.1
Photographs of vegetation provided	Considered in Table B.1 (vegetation description and condition) and Section 3.2.1 (likelihood of fauna habitat)

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of a part of a linear tract of native vegetation alongside Darkan South Road in the intensive land use zone of Western Australia. To the west and east of the road reserve are private properties utilised for farming. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 20 per cent of the original native vegetation cover.
Ecological linkage	The area proposed to be cleared is not part of any formal linkage. The roadside vegetation in which the proposed clearing is located may act as a local linkage.
Conservation areas	There are no conservation areas adjacent to the application area. The closest conservation area is a timber reserve located approximately 3.2 kilometres west of the northern portion of the proposed clearing.
Vegetation description	Photographs provided by the applicant indicate the vegetation within the proposed clearing area contains *Eucalyptus wandoo* (wandoo), *Corymbia calophylla* (marri) and sheoak (*Allocasuarana* or *Casuarina*) trees and understorey vegetation including *Acacia* spp., *Gastrolobium* spp. and weeds. Representative photos are available in Appendix E. This is partially consistent with the mapped vegetation type(s): • Darkan 2, which is described as Mixture of open woodland of *Eucalyptus marginata subsp. marginata-Banksia attenuata* and low open woodland of *Eucalyptus wandoo* and stands of *Eucalyptus drummondii* (northern) and *Eucalyptus decipiens* (southern) on lower slopes in the arid zone. • Darkan 4, which is described as Woodland of *Eucalyptus wandoo-Allocasuarina huegeliana-Acacia acuminata* on slopes and woodland of *Eucalyptus rudis* on lower slopes in the arid zone. The mapped vegetation types retain approximately 15 per cent of the original extent each (Government of Western Australia, 2019).
Vegetation condition	Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is in degraded (Keighery, 1994) condition, described as: • Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.
Climate and landform	The southern portion of clearing (the slip lane area) rises from approximately 280 m AHD in the north and south to 270 m AHD in the centre. The northern portion of the proposed clearing ranges from 330 m AHD in the south to 335 m AHD in the north.

Characteristic	Details
	The application area is within the 600 millimetre per year rainfall isohyet.
Soil description	The soil is mapped as the following two types: • Darkan 3 steep Phase which is described as Steeper slopes of the Darkan 3 subsystem with slopes of up to 30%, mainly red loamy and sandy duplex soils associated with rock outcrop; • Darkan 4 Subsystem, which is described as Foot slopes with grey deep sandy duplex and moderately deep sandy gravels; and • Darkan 1 subsystem which is described as Gravelly hill crests and upper slopes with mainly yellowish brown sandy and loamy gravels.
Land degradation risk	The mapped soil types within the application area have low land degradation risks for most categories though a high risk of subsurface acidification, and the Darkan 1 and Darkan 4 subsystems have a high risk of wind erosion.
Waterbodies	Minor non-perennial watercourses are mapped within approximately 20 metres of both the northern and southern portions of the proposed clearing area. Both of these watercourses are within the Blackwood River catchment. These watercourses are associated with creekline wetlands mapped in the Darkan Duranillin geomorphic wetlands dataset.
Hydrogeography	The application area is not within any proclaimed areas under the RIWI Act or the CAWS Act. The mapped groundwater salinity within the application area is 14000-35000 milligrams per litre which is described as highly saline. Hydrogeology is described as rocks of low permeability, fractured and weathered rocks - local aquifers (gneiss, migmatite lithology).
Flora	There are records of one threatened and five priority flora species within the local area, the closest of which to the application area, *Banksia acanthopoda* is approximately 6.9 km west of the application area. The records are within similar broad vegetation types but not within the same soil types as the application area.
Ecological communities	The application area is not within any mapped occurrences of Priority or Threatened Ecological Communities. The closest ecological community to the application area is occurrences of the Eucalypt woodlands of the Western Australian Wheatbelt listed as Critically Endangered under the EPBC Act 1999 and Priority 3 under the BC Act.
Fauna	There are records of five threatened, three priority, three migratory and two conservation significant fauna species within the local area, the closest of which to the application area is *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) approximately 1 km west of the application area (location also recorded as a roosting site for the 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*					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
Vegetation complex					
Darkan 2**	18,393.15	2,948.08	16.03	77.70	0.40
Darkan 4**	9,401.17	1,399.66	14.89	33.65	0.36
Local area calculation					

	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
10km radius			20.2	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.3. Fauna analysis table

With consideration for the site characteristics set out above and other relevant information (see Appendix H), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
Carnaby's cockatoo (*Calyptorhynchus latirostris*)	EN	Y	Y	3.9	N
numbat, walpurti (*Myrmecobius fasciatus*)	EN	N	N	4.6	N/A
red-tailed phascogale, kenngoor (*Phascogale calura*)	CD	N	Y	9.3	N
western brush wallaby (*Notamacropus irma*)	P4	N	N	4.4	N/A
quenda, southwestern brown bandicoot (*Isoodon fusciventer*)	P4	N	N	9.6	N/A
chuditch, western quoll (*Dasyurus geoffroii*)	VU	N	N	9.6	N/A
woylie, brush-tailed bettong (*Bettongia penicillata ogilbyi*)	CR	N	N	9.6	N/A
common sandpiper (*Actitis hypoleucos*)	MI	N	N	9.6	N/A
south-western brush-tailed phascogale, wambenger (*Phascogale tapoatafa wambenger*)	CD	N	Y	9.5	N
western rosella (inland) (*Platycercus icterotis xanthogenys*)	P4	Y	Y	9.7	N/A
forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*)	VU	Y	Y	1	N
white-tailed black cockatoo (*Calyptorhynchus* sp. 'white-tailed black cockatoo')	EN	Y	Y	1.3	N
sharp-tailed sandpiper (*Calidris acuminata*)	MI	N	N	6	N/A
red-necked stint (*Calidris ruficollis*)	MI	N	N	6	N/A

B.4. Land degradation risk table

Risk categories	***Darkan 3 steep Phase***
Wind erosion	3-10% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline

Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	<3% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	10-30% of map unit has a high to extreme phosphorus export risk

Risk categories	**Darkan 4 Subsystem**
Wind erosion	>70% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk
Salinity	10-30% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	10-30% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	3-10% of map unit has a high to extreme phosphorus export risk

Risk categories	**Darkan 1 Subsystem**
Wind erosion	>70% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	<3% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	3-10% of map unit has a high to extreme phosphorus export risk

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 does is unlikely to contain local or regionally significant flora or ecological communities or have high biodiversity. The application area does contain habitat for black cockatoo species and the western rosella (inland)).	May be at variance	Yes Refer to Section 3.2.1, above.

Assessment against the clearing principles	Variance level	Is further consideration required?
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 area proposed to be cleared contains foraging, roosting and breeding habitat for black cockatoo species.	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: Given that the proposed clearing is mainly for trees, and that areas where understorey is proposed to be cleared are small and in degraded condition, the area proposed to be cleared is unlikely to contain habitat for flora species listed under the BC Act.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The area proposed to be cleared does not contain species indicative of a threatened ecological community. Given that vegetation is in a Degraded condition, it is not considered to be consistent with the Eucalypt Woodlands of the Western Australian Wheatbelt state listed priority ecological community and EPBC Act listed threatened ecological community.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type and the native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is considered to be part of an ecological linkage in the local area and may provide signifciant habitat for black cockatoo species.	At variance	Yes Refer to Section 3.2.2, above.
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 likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: No watercourses or wetlands are present within the proposed clearing areas, and vegetation to be cleared is not riparian.	Not likely to be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Two of the mapped soil types within the application area have a high risk of wind erosion and all soil types have a high risk of subsoil acidification. However, noting the extent of the proposed clearing area and its linear shape, the proposed clearing is not likely to cause appreciable land degradation.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
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: Given the extent of the clearing, it is considered unlikely to result in impacts to nearby non-perennial watercourses and associated wetlands.	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 surveyed soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding or waterlogging. A minor non-perennial watercourse is mapped within the application area; however this watercourse is already intersected by the existing road and so the proposed clearing is not expected to further impact any associated flood risk.	Not likely to be at variance	No

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

Figure E-1. Trees in northern (proposed road widening) portion of application area

Figure E-2. Trees in northern (proposed road widening) portion of application area

Figure E-3. Wandoo tree in southern (proposed slip road) portion of application area

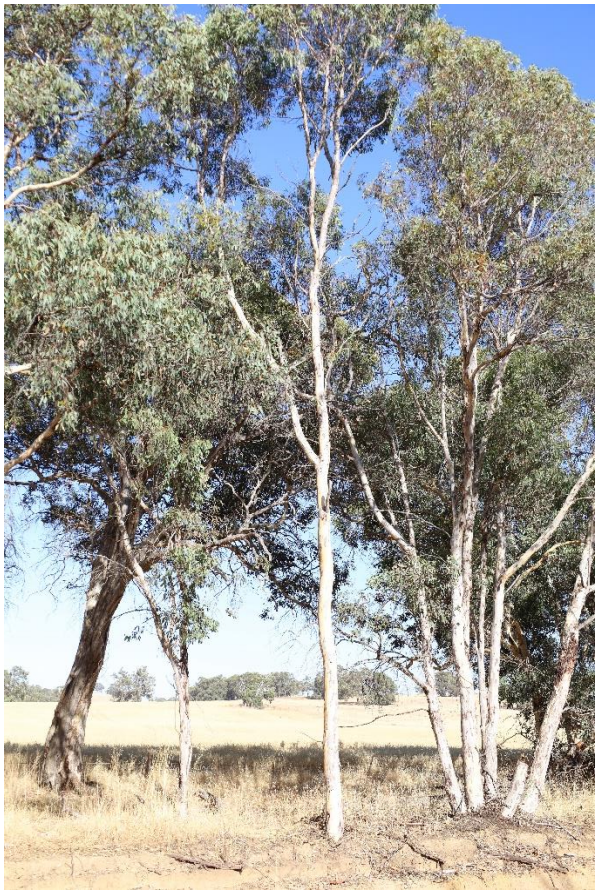

Figure E-4. Trees in southern (proposed slip road) portion of application area

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)

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