



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9094/1
File Number: DWERVT6813
Duration of Permit: From 24 October 2021 to 24 October 2023

PERMIT HOLDER

Mr Steven John Lynch
Mr Lisa Narelle Lynch

LAND ON WHICH CLEARING IS TO BE DONE

Lot 2168 on Deposited Plan 206919, Denbarker

AUTHORISED ACTIVITY

The permit holder must not clear more than 17.97 hectares of *native vegetation* within the area hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. 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.

2. 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.

3. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner in one direction towards the nearest native vegetation that will be retained to allow fauna to move into that vegetation ahead of the clearing activity.

4. Offset (conservation covenant)

- (a) Prior to 24 October 2022 the permit holder must provide to the *CEO* a copy of the conservation covenant under section 30B of the *Soil and Land Conservation Act 1945* setting aside the area hatched red on Figure 1 of Schedule 1, for the protection and management of native vegetation in perpetuity; and
- (b) Within 12 months of commencing clearing under this permit, the permit holder must fence the area hatched red on Figure 1 of Schedule 1 to exclude livestock.

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	<ul style="list-style-type: none"> (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 1; (f) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with condition 2; and (g) actions taken to allow fauna to move into

No.	Relevant matter	Specifications
		adjacent native vegetation in accordance with condition 3.
2.	In relation to the offset pursuant to condition 4	(a) the date that the fencing was completed; and (b) photographs of the completed fencing taken at regular intervals along the boundaries of the areas hatched red on Figure 1 of Schedule 1.

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 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 <i>Environmental Protection Act 1986</i> .
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 <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

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

30 September 2021

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

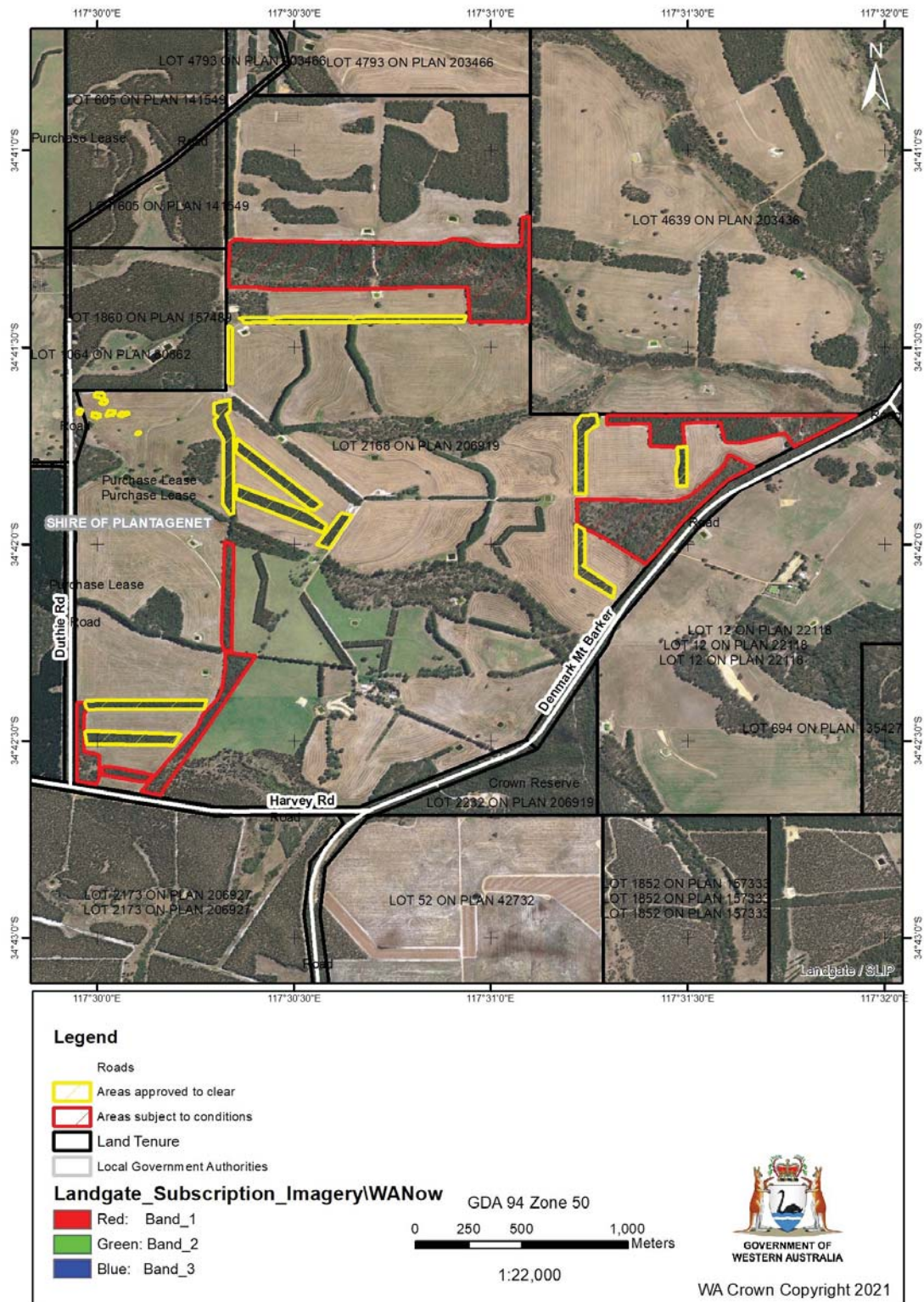


Figure 1: Map of the boundary of the area within which clearing may occur and of the area to which condition 4 applies



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9094/1
Permit type:	Area permit
Applicant name:	Mr Steven John Lynch and Ms Lisa Narelle Lynch
Application received:	28 October 2020
Application area:	19.87 hectares of native vegetation
Purpose of clearing:	Improve farm efficiency and crop production
Method of clearing:	Mechanical
Property:	Lot 2168 on Deposited Plan 206919
Location (LGA area/s):	Shire of Plantagenet
Localities (suburb/s):	Denbarker

1.2. Description of clearing activities

The purpose of the clearing is to improve farm efficiency, primarily in relation to crop production.

The vegetation proposed to be cleared comprises 13 separate areas (see Figure 1, Section 1.5). Twelve of the areas are linear strips of vegetation which combined measure 19.8 hectares and have dimensions ranging from between 20 to 65 metres wide by 180 to 880 m long (approx.). The remaining area is made up of seven small patches of paddock trees (0.07 hectares). The paddock trees did not form part of the original application area but were included later at the request of the applicant.

The application area was further revised during the assessment in response to preliminary findings communicated to the applicant. The applicant agreed to the removal of one of the linear strips of vegetation measuring 1.9 hectares. Therefore, the final revised area measures 17.97 hectares.

1.3. Decision on application

Decision:	Granted
Decision date:	30 September 2021
Decision area:	17.97 hectares of native vegetation, as depicted in Figure 2, 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 one submission was received. Consideration of matters raised in the public submission is summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix H.1), the findings of a fauna survey (see Section 3.2.1 and **Error! Reference source not**

found.), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), and planning instruments and other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing would result in:

- the loss of 17.97 hectares of native vegetation that is considered significant foraging habitat for black cockatoo species and may constitute a significant remnant of native vegetation in an area that has been extensively cleared;
- an increased risk of spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values; and
- the mortality of fauna with the greatest risk or appearing relate to common brushtail possums which the fauna survey recorded as residing within the application area.

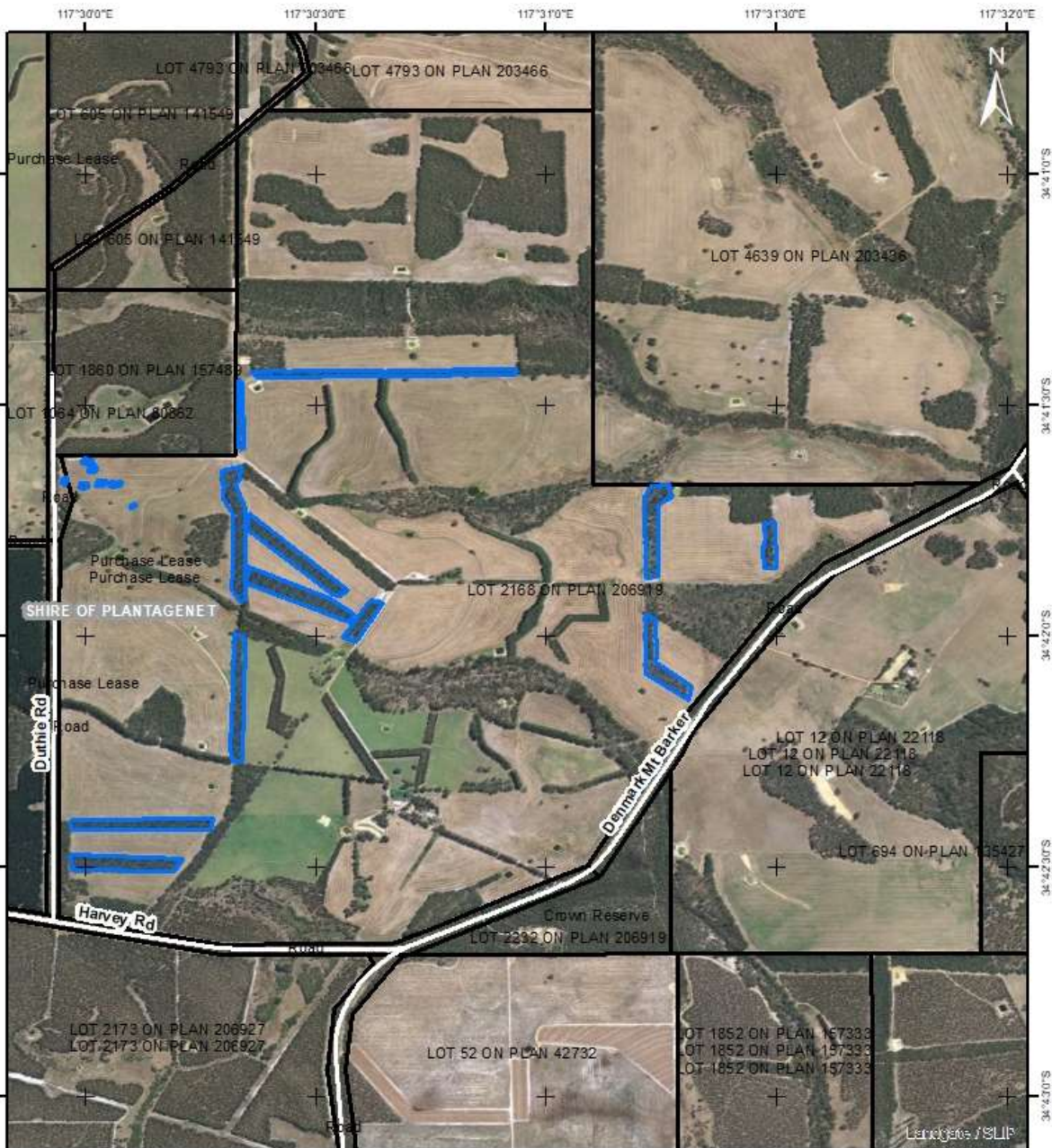
After consideration of the available information, as well as the applicant's avoidance and mitigation measures (see Section 3.1), the Delegated Officer determined that the impacts of the proposed clearing can be minimised, managed and offset so as to be environmentally acceptable.

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

- avoid, minimise and reduce the impacts and extent of clearing
- undertake slow, progressive, one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback into adjacent remnants
- enter into a conservation covenant for 56 hectares of remnant vegetation elsewhere on the property to offset significant residual impacts to black cockatoo foraging habitat including the fencing of that area and protection in perpetuity (see Section 4).

1.5. Site maps




The areas hatched blue in Figure 1 indicate the areas applied to clear. The areas hatched yellow in Figure 2 indicate the areas authorised to be cleared and the areas hatched red in the same figure indicate the areas to which conditions apply (i.e. offset areas subject to a requirement to enter into a conservation covenant).



Legend

- Roads
-  Areas applied to clear
-  Land Tenure
-  Local Government Authorities

Landgate_Subscription_Imagery\WANow

-  Red: Band_1
-  Green: Band_2
-  Blue: Band_3

GDA 94 Zone 50



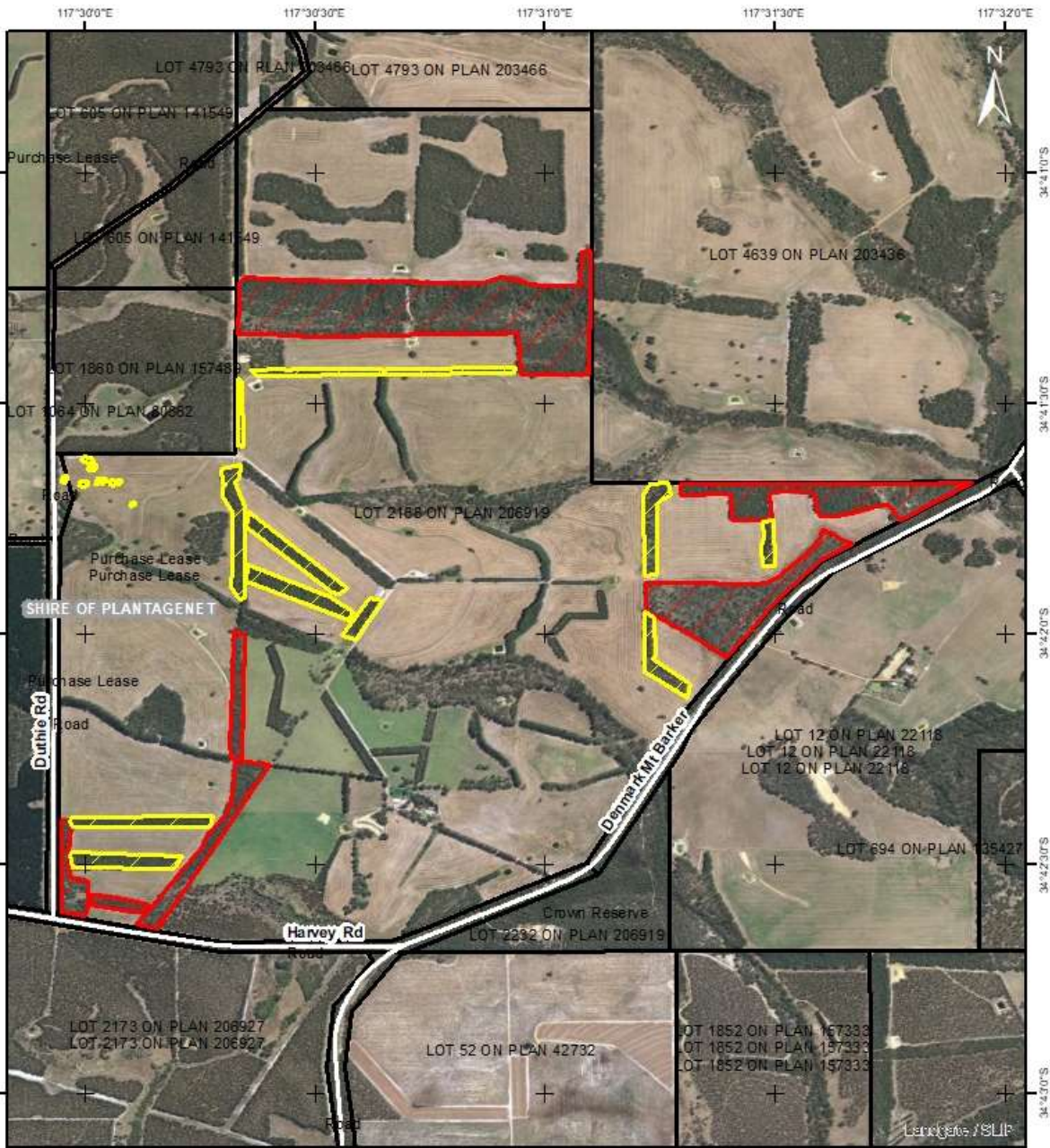
1:22,000



GOVERNMENT OF WESTERN AUSTRALIA

WA Crown Copyright 2021

Figure 1 Map of the application area



Legend

- Roads
- Areas approved to clear
- Areas subject to conditions
- Land Tenure
- Local Government Authorities

Landgate_Subscription_Imagery\WANow

- Red: Band_1
- Green: Band_2
- Blue: Band_3

GDA 94 Zone 50



1:22,000



GOVERNMENT OF WESTERN AUSTRALIA

WA Crown Copyright 2021

Figure 2 Map of the granted clearing area and areas subject to conditions

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Soil and Land Conservation Act 1945* (WA)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

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

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

At the time of applying, the applicant outlined that the areas proposed to be cleared had been carefully selected considering a range of factors including landscape and hydrology/drainage, as well as farm efficiency. The applicant advised:

“We apply for a clearing permit to effectively re plan the land use on this farm for efficiency with conservation in mind. Cropping to the contour rather than the shape of existing paddocks. Joining larger areas on the farm to save costs of production such as spray/fertiliser application overlap. Our planter is now 12m wide and the sprayer 36 m wide. Single paddock trees and small strips once left as shelter for stock are a major hindrance in cropping. The “Tree effect” really cuts into our bottom line. The droughting and shading effect of these shelter belts adds up making us as primary producers less viable.”

...

“We apply to clear the proposed areas to aid in our whole farm plan and remove dying strips of native vegetation to make our farm and business function more efficiently. They where [sic] once a good idea as shelter belts but are now poisoned from too much nutrient. The understory has been out competed by grass weeds and many jarrah and marri trees are suffering from nutrient poisoning.”

...

“The proposed removal of the native trees from the landscape has been carefully planned [sic] and considered, we believe, as to not upset the hydrology, flora, fauna, or aesthetics of the land.” (Lynch & Lynch, 2020).

It is understood that creeklines on the property were deliberately excluded from the application due to their environmental values.

Following completion of the fauna survey and identification of significant black cockatoo habitat values, additional efforts to avoid, mitigate and offset the impacts were requested from the applicant. The applicant subsequently agreed to exclude a 1.9 hectare portion of the application area that contains a potential nesting tree and submitted an offset proposal to counterbalance residual impacts to foraging habitat.

After consideration of avoidance and mitigation measures, it was determined that the implementation of an offset to counterbalance the residual impacts to black cockatoo foraging habitat was acceptable. In accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, the suitability of the offset has been assessed as summarised in Section 4.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix C) 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 present a risk to biological values (fauna). 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

An initial desktop assessment of the application area identified the presence of potential habitat for several conservation significant fauna species (Appendix C3). This included the three black cockatoo species (Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo), the western ringtail possum (WRP) and the south-western brush-tailed phascogale (SWBTP). A fauna survey was therefore requested from the applicant to inform the assessment (DWER, 2021).

The applicant subsequently commissioned a fauna survey with the report received in June 2021. The survey was completed by Greg Harewood and involved a daytime survey on 18 May 2021 and both a day and nocturnal survey on 20 May 2021. Six motion sensing infrared camera traps were also installed across the application area on 18 May 2021 and retrieved on 20 May 2021 (2 days of deployment) (Harewood, 2021).

Five fauna species were captured on the camera traps and an additional six species were recorded during the day and night surveys. One species of conservation significance was observed: forest red-tailed black cockatoo (Harewood, 2021).

Black cockatoos

A flock of three forest red-tailed black cockatoos was observed flying over the property during the day surveys. No black cockatoo foraging evidence was recorded but virtually the entire application area was identified as representing quality foraging habitat given the presence of marri and jarrah (main/common food sources). Some potential roosting habitat was recorded but no evidence of roosting activity (Harewood, 2021).

In relation to nesting habitat, most trees observed appeared relatively young and did not contain hollows suggesting they are regrowth from historical clearing. Five trees with potentially large hollows were identified so were inspected further using a drone. Four were found to be too small/shallow for black cockatoo use but one was identified as being large internally with some significant chew marks around the hollow entrance (refer map and photos in Appendix G). The survey report states it is unclear if the chew marks are a result of black cockatoo breeding activity or galahs but applying the precautionary principle the tree should be classified as a potential black cockatoo nesting tree (Harewood, 2021).

The applicant has agreed to exclude the 1.9 hectare portion of the application area containing the potential nest hollow. Exclusion of the entire portion rather than just the tree itself is considered appropriate due to the risk of windthrow.

Therefore, the main impact to black cockatoo species will be the loss of 17.97 hectares of foraging habitat. This habitat is considered significant noting the historical clearing of the eastern margins of the jarrah forest for agriculture has been identified as a principal cause of the decline of both Baudin's and forest red-tailed black cockatoos (DEC, 2008). The application area is located along the eastern margins with most of the remaining vegetation in the local area occurring to the west and south. Availability of foraging habitat has also been identified as a key limiting factor for Carnaby's cockatoo (DPaW, 2013). While the loss of foraging habitat is significant, it is considered that the impacts can be counterbalanced by an offset (refer Section 4).

Western ringtail possum

No WRP or evidence of their presence was identified. The survey reported that the vegetation under application appears to represent very poor habitat for WRP given the lack of a coherent midstory element in most areas, a lack

of floral diversity, and in particular, a lack of favoured foraging species. It was concluded that WRP are unlikely to utilise the application area and therefore the proposed clearing is unlikely to have a significant impact on the species (Harewood, 2021).

It is noted that the survey duration was limited to a few days in May and therefore the presence of WRP within the application area at other times of the year cannot be ruled out. For example, WRP are known to feed on the flowers of marri and site photos in the survey report show marri was not in flower at the time. However, the fact no individuals were identified, that there is minimal availability of other foraging species, and that tree hollows suitable for daytime refuge are largely absent suggests that regular/extended use of the application area by WRP is unlikely. This conclusion is supported by studies which have shown that the rate of sighting of WRP correlates with the abundance of WA peppermint (*Agonis flexuosa* – a main foraging species) and presence of hollow bearing trees (Shedley and Williams, 2014).

If present on the property, WRP is more likely to reside in the better condition vegetation proposed to be conserved by the applicant as an offset to counterbalance the loss of black cockatoo foraging habitat. The application area may act as supporting habitat to the offset areas (e.g. when marri are in flower or as corridors for young to use for dispersal), but this is not considered significant noting the offset areas will be conserved and are already connected to other remnant vegetation not under application (e.g. to road reserve remnants and other privately held remnants nearby including creek lines). No significant impacts to WRP are therefore expected.

South-western brush-tailed phascogale

Preferred habitat of the SWBTP is within dry sclerophyll forests and open woodlands that contain hollow-bearing trees. The species is active between dusk and dawn, and forages almost entirely amongst the tree canopy (DEC, 2012).

The fauna survey did not record any SWBTP individuals or evidence of their presence. The survey reported that habitat for the species is generally of poor/marginal quality given a general absence of hollow bearing trees which the species requires for daytime refuge and breeding. Eight common brushtail possums (*Trichosurus vulpecula*) were recorded in the nocturnal surveys and it is reported that their apparent high density would further reduce the availability for SWBTP of the already minimal hollows present. The survey concluded it is unlikely the application area represents important habitat for SWBTP and that clearing is unlikely to have a significant impact on the species (Harewood, 2021).

In relation to the survey effort, the same limitations for identifying SWBTP apply as for WRP. That is, the survey duration was limited to a few days in May and presence of SWBTP at other times of the year cannot be ruled out. However, the general absence of tree hollows is a key limiting factor for SWBTP meaning regular/extended use of the application area is unlikely. The species, if present, is more likely to reside in more intact remnants on the property which are proposed to be conserved by the applicant as an offset to counterbalance the loss of black cockatoo foraging habitat. The application area may act as supporting habitat to the offset areas but this is not considered significant noting the offset areas are already connected to other remnant vegetation not under application (e.g. to road reserve remnants and other privately held remnants nearby including creek lines). No significant impacts to SWBTP from the proposed clearing are therefore expected.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 17.97 hectares of native vegetation that is significant as black cockatoo foraging habitat. It is considered that this impact can be appropriately counterbalanced by an offset requiring the conservation of other remnant vegetation on the property (refer Section 4).

The proposed clearing also has the potential to result in mortality of individuals from a resident population of common brushtail possums, as well as WRP and SWBTP individuals if present, although unlikely, at the time of clearing. While significant impacts to these species are not expected, it is considered appropriate that management measures are implemented to prevent unnecessary loss. It is considered that the clearing should be undertaken in a slow progressive manner in one direction towards adjacent remnant vegetation to help allow fauna to escape. It is also considered appropriate that hygiene measures should be implemented during clearing to help protect adjacent remnant vegetation from weed and dieback spread and the resultant degradation in habitat that can occur.

Conditions

The following conditions will be applied to the clearing permit:

- clearing shall be undertaken in a slow, progressive manner in one direction towards the nearest native vegetation that will be retained to allow fauna to move into that vegetation ahead of the clearing activity
- when undertaking clearing:

- earth-moving machinery is to be cleaned of soil and vegetation prior to entering and leaving the area to be cleared
- no known dieback or weed-affected soil, mulch, fill or other material is to be brought into the area to be cleared
- machinery/vehicles to be restricted to the limits of the area to be cleared
- the permit holder must provide to the CEO of DWER a copy of the conservation covenant under section 30B of the *Soil and Land Conservation Act 1945* setting aside the offset area for the protection and management of native vegetation in perpetuity
- within 12 months of commencing clearing the offset area is to be fenced to exclude livestock

3.3. Relevant planning instruments and other matters

The Shire of Plantagenet advised DWER that the Town Planning Scheme does not contain any provisions concerning the clearing of native vegetation on rural zoned land and that it has no further comment.

The applicant may have notification responsibilities under the EPBC Act for impacts to black cockatoos, as set out in the EPBC Act referral guidelines, and has been advised to contact the federal Department of Water, Agriculture and the Environment (DAWE) to discuss EPBC Act referral requirements.

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.

4 Suitability of offsets

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

- loss of 17.97 hectares of black cockatoo foraging habitat.

The applicant proposed an environmental offset consisting of the conservation of 56 hectares of remnant vegetation elsewhere on the property (refer areas hatched red in Figure 2). The 56 hectares would be fenced to prevent the incursion of stock and subject to a conservation covenant entered into under the *Soil and Land Conservation Act 1945* requiring the area to be set aside for the protection and management of native vegetation in perpetuity.

In assessing the suitability of the proposed offset, consideration was given to the six offset principles described in the Government of Western Australia's *Environmental Offsets Policy* (September 2011) as documented in Table 1 below. Based on this assessment, the Delegated Officer considers that the offset adequately counterbalances the significant residual impacts.

Table 1. Consideration of offset principles

Principle	Consideration
1. Environmental offsets will only be considered after avoidance and mitigation options have been pursued.	Avoidance and mitigation options have been considered as outlined in Section 3.1. A portion of the application area containing a potential black cockatoo nest hollow has been avoided.
2. Environmental offsets are not appropriate for all projects.	The impacts are not considered minor noting the size of the area but they are also not considered unacceptable noting the condition of the vegetation (i.e. its reduced ability to naturally regenerate), the avoidance of a potential black cockatoo nest hollow, and the availability of a substantial amount of other similar habitat in the local area (approx. 50 per cent remnant vegetation remaining comprising mainly jarrah and marri forests).
3. Environmental offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted.	In relation to cost-effectiveness, the main cost in implementing the offset is likely associated with fencing. Fence construction and maintenance is a routine practice on agricultural properties and the fencing involved in this case is not considered excessive or unreasonable. The offset area contains similar vegetation (e.g. jarrah and marri) that on average is in a better condition than the impact area and contains higher foraging habitat value (refer photos at Appendix G). The size of the offset area is approx. three times larger than the impact area and was determined to be appropriate based on a calculation undertaken using the Commonwealth Offsets Assessment Guide. The justification for the values used in the offset calculation is provided in 0. Therefore, the offset is considered relevant and proportionate to the significance of the environmental values being impacted.
4. Environmental offsets will be based on sound	The assessment has been informed by a fauna survey and published scientific guidance on threats to black cockatoo species.

environmental information and knowledge.	In relation to the offset, the use of conservation covenants as a tool to protect habitat is recognised as a recovery action in the <i>Carnaby's Cockatoo Recovery Plan (DPaW, 2013)</i> .
5. Environmental offsets will be applied within a framework of adaptive management.	The risks associated with the offset such as time-lags for delivery have been considered in undertaking the offset calculation (i.e. the greater the risk/uncertainty the larger the offset required). Should a covenant not be able to be entered into, which is considered an unlikely scenario, an alternative offset can be negotiated and conditioned through an amendment to the permit.
6. Environmental offsets will be focussed on longer term strategic outcomes.	The offset involves conserving remnant vegetation in perpetuity including a potential nest hollow. Retaining sufficient nesting habitat is a key factor for maintaining black cockatoo populations. Therefore, the offset is considered to provide a long term strategic outcome.

End

Appendix A. Additional information provided by applicant

Additional information provided by the applicant has been discussed where appropriate under Sections 3 and 4.

Appendix B. Details of public submissions

The application was advertised in November 2020 for public submissions with one submission received. The submission raised concerns around the size and age of marri and jarrah trees proposed to be cleared. It was submitted that the application doesn't indicate the number of trees to be cleared nor their age and size and that this information is important for assessing potential impacts to black cockatoos.

As outlined earlier in this report, a fauna survey including a black cockatoo habitat tree assessment was requested and received from the applicant. Based on the findings of the fauna survey, a potential black cockatoo nesting tree was excluded from the area approved to clear and an offset was required in relation to the loss of significant black cockatoo foraging habitat.

Appendix C. 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 this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix D.

C.1. Site characteristics

Characteristic	Details
Local context	<p>The application area primarily comprises strips of remnant vegetation located between cleared agricultural areas. The application area is within the intensive land use zone of Western Australia. The land use of adjacent properties is mostly cropping, grazing and timber production.</p> <p>Spatial data indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 50 per cent of the original native vegetation cover.</p>
Ecological linkage	<p>The application area is approximately 7.5 km northwest of a mapped South Coast Linkage.</p> <p>Most of the areas proposed to be cleared could be considered to provide linkages between areas of native vegetation within the property and in adjacent properties. However, should the proposed clearing occur, some areas of vegetation, outside of the application areas, would still be present within the property that would provide linkages between areas of native vegetation within the property and in adjacent properties.</p>
Conservation areas	<p>The nearest DBCA legislated tenure to the application area is:</p> <ul style="list-style-type: none"> • Mount Lindesay National Park (approximately 3.4 km south) • Ongerup Lagoon Nature Reserve (approximately 4.2 km northeast) • Pardelup Nature Reserve (approximately 5.5km northwest). <p>There are also several areas subject to an Agreement to Reserve or a Conservation Covenant under the <i>Soil and Land Conservation Act 1945</i> located approximately one to three kilometres south of the application area.</p>
Vegetation description	<p>Broadscale vegetation type mapping has been completed over the application area by Mattiske and Havel (1998) with two vegetation complexes intersected:</p> <ul style="list-style-type: none"> • Bevan 2 (BEy2) which is described as “Open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i>-<i>Corymbia calophylla</i>-<i>Banksia grandis</i> on undulating uplands in humid and subhumid zones”, and • Narrow Valleys (S5) which is described as “Woodland of <i>Corymbia calophylla</i> on shallow gullies in humid to semiarid zones”. <p>The overwhelming majority of the application area is mapped as vegetation complex Bevan 2 with only a small portion at the northern end mapped as Narrow Valleys.</p> <p>Photographs and information supplied by the applicant indicates the vegetation within the application area largely consists of marri and jarrah over introduced grasses. Photos provided are available in Error! Reference source not found. The fauna survey report described the vegetation as:</p> <p><i>“...a marri (Corymbia calophylla)/jarrah (Eucalyptus marginata) woodland/open forest over a grassland of introduced grasses/weeds. Variations occur between areas with respect to the density and relative abundance of the two dominant tree species. The additional area not included in the original application consists of scattered paddock trees (marri and jarrah).</i></p> <p><i>A high percentage of the trees in most areas are relatively young/small which suggests they represent regrowth from an historical clearing event. There is also an obvious lack of floral diversity across the entire survey area with almost no native midstory or groundcover being present. It is assumed that this is a</i></p>

Characteristic	Details
	<i>consequence of initial clearing and then ongoing livestock grazing/frequent fires.</i> " (Harewood, 2021)
Vegetation condition	<p>Information supplied by the applicant and the fauna survey consultant indicates the vegetation under application is in degraded to completely degraded (Keighery, 1994) condition, described as:</p> <ul style="list-style-type: none"> • Degraded – Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing. • Completely Degraded – The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs. <p>The full Keighery (1994) condition rating scale is provided in 0. Photos are available in Error! Reference source not found.</p>
Climate and landform	<p>Based on available datasets, the application area experiences approximately 800 mm average annual rainfall.</p> <p>The application area occupies mid slope and upper positions in the landscape (CSLC, 2020). Topography over the application area varies from approximately 170 m AHD in the northeast to 200 m AHD in the southeast.</p>
Soil description	Frankland land resources survey indicates that the application area is associated with the Mallowillup Subsystem soil landscape Map Unit 254KeMW. The soils of this map unit are described as broadly undulating low gravelly rises with duplex sandy gravel, shallow gravel with semi-wet soil, deep sandy gravel and grey deep sandy duplex soils (CSLC, 2020).
Land degradation risk	Refer to land degradation risk table at Appendix C4. The Commissioner for Soil and Land Conservation (CSLC; 2020) found that the risk of the proposed clearing causing land degradation through salinity, eutrophication, wind erosion, water erosion, waterlogging or flooding is low. The CSLC's findings considered the observations of a site inspection, the risk profile and a land capability assessment of the soils present, and the intended land use (i.e. pasture/crops).
Waterbodies	Available datasets and aerial imagery indicate that two minor, non-perennial watercourses intersect the property, however, the application area does not include any of the watercourse areas or their buffering vegetation. No wetlands occur within the application area.
Hydrogeography	<p>Hydrogeology within the application area is described as rocks of low permeability, fractured and weathered rocks - local aquifers with gneiss and migmatite lithology. Groundwater salinity is mapped as 3000-7000 mg/L total dissolved solids.</p> <p>The application area does not occur within a Public Drinking Water Source Area or a surface or groundwater area under the <i>Rights in Water and Irrigation Act 1914</i> nor does it occur within an area subject to the <i>Country Areas Water Supply Act 1947</i>.</p>
Flora	There are records of 13 threatened and 46 priority flora species within a 20 kilometre radius, the closest of which (<i>Synaphea</i> sp. Kwornicup (D. Trenowden 429) – Priority 2) is mapped approximately 2 kilometres from the application area.
Ecological communities	The closest threatened or priority ecological community to the application area is the Mount Lindesay – Little Lindesay Vegetation Complex (Endangered) located approximately 20 kilometres southwest of the application area.

Characteristic	Details
Fauna	Records of 15 threatened fauna species, seven priority fauna species, two conservation dependent fauna species and five fauna species protected under an international agreement occur within a 20 km radius, the closest of which (<i>Leipoa ocellata</i> (Malleefowl) – Vulnerable) is mapped approximately 320 metres from the application area. Further information is included in a fauna analysis table at Appendix C3.

C.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					
Mattiske vegetation complex BEy2**	78,310.30	24,978.17	31.90	11,550.61	14.75
Mattiske vegetation complex S5**	2,580.13	908.70	35.22	286.78	11.12
Local area					
20km radius	139,940.7	70,179.57	50.15		

*Government of Western Australia (2019b)

**Government of Western Australia (2019a)

C.3. Fauna analysis table

Species name	Conservation status	Distance of closest record to application area (km)	Suitable habitat present? [Y/N]	Was survey adequate to identify? [Y, N, N/A]	Did survey identify? [Y, N, N/A]	Comment
<i>Bettongia penicillata ogilbyi</i> (Woylie, brush-tailed bettong)	T (CR)	19.7	N	N/A	N/A	
<i>Pseudocheirus occidentalis</i> (Western ringtail possum, ngwayir)	T (CR)	2.0	Y	Y/N	N	Survey effort a potential limitation
<i>Calyptorhynchus baudinii</i> (Baudin's cockatoo)	T (EN)	1.7	Y	Y/N	N	Survey effort a potential limitation
<i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo)	T (EN)	3.2	Y	Y/N	N	Survey effort a potential limitation
<i>Galaxias truttaceus</i> (Western Australian population) (Western trout minnow, western spotted galaxias)	T (EN)	17.8	N	N/A	N/A	
<i>Galaxiella nigrostriata</i> (Black-stripe minnow, black-striped dwarf galaxias)	T (EN)	19.0	N	N/A	N/A	
<i>Myrmecobius fasciatus</i> (Numbat, walpurti)	T (EN)	6.9	N	N/A	N/A	
<i>Nannoperca pygmaea</i> (Little pygmy perch)	T (EN)	19.0	N	N/A	N/A	
<i>Calyptorhynchus banksii naso</i> (Forest red-tailed black cockatoo)	T (VU)	4.3	Y	Y/N	Y	Flock observed
<i>Dasyurus geoffroi</i> (Chuditch, western quoll)	T (VU)	19.6	N	N/A	N/A	
<i>Galaxiella munda</i> (Mud minnow, western dwarf galaxias)	T (VU)	11.6	N	N/A	N/A	
<i>Leipoa ocellata</i> (Malleefowl)	T (VU)	0.3	N	N/A	N/A	

Species name	Conservation status	Distance of closest record to application area (km)	Suitable habitat present? [Y/N]	Was survey adequate to identify? [Y, N, N/A]	Did survey identify? [Y, N, N/A]	Comment
<i>Macrotis lagotis</i> (Bilby, dalgyte, ninu)	T (VU)	8.4	N	N/A	N/A	
<i>Nannatherina balstoni</i> (Balston's pygmy perch)	T (VU)	17.8	N	N/A	N/A	
<i>Setonix brachyurus</i> (Quokka)	T (VU)	14.4	N	N/A	N/A	
<i>Elapognathus minor</i> (Short-nosed snake)	P2	19.4	N	N/A	N/A	
<i>Falsistrellus mackenziei</i> (Western false pipistrelle, western falsistrelle)	P4	17.8	N	N/A	N/A	
<i>Hydromys chrysogaster</i> (Water-rat, rakali)	P4	13.4	N	N/A	N/A	
<i>Isodon fusciventer</i> (Quenda, southwestern brown bandicoot)	P4	10.3	N	N/A	N/A	
<i>Notamacropus irma</i> (Western brush wallaby)	P4	5.7	N	N/A	N/A	
<i>Oxyura australis</i> (Blue-billed duck)	P4	13.3	N	N/A	N/A	
<i>Thinornis rubricollis</i> (Hooded plover, hooded dotterel)	P4	13.6	N	N/A	N/A	
<i>Cacatua pastinator pastinator</i> (Muir's corella)	CD	14.7	Y	Y/N	N	Survey effort a potential limitation but no significant impacts expected ¹
<i>Phascogale tapoatafa wambenger</i> (South-western brush-tailed phascogale, wambenger)	CD	16.5	Y	Y/N	N	Survey effort a potential limitation
<i>Actitis hypoleucos</i> (Common Sandpiper)	IA	3.5	N	N/A	N/A	
<i>Calidris acuminata</i> (Sharp-tailed sandpiper)	IA	13.3	N	N/A	N/A	
<i>Calidris melanotos</i> (pectoral sandpiper)	IA	13.3	N	N/A	N/A	
<i>Calidris ruficollis</i> (Red-necked stint)	IA	13.3	N	N/A	N/A	
<i>Tringa nebularia</i> (Common greenshank, greenshank)	IA	3.5	N	N/A	N/A	

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, CD: conservation dependent, IA: protected under international agreement

¹ Muir's corella has recovered from a population as low as 100 birds in the 1940s to over 20,000 birds in 2014. They are again forming significant flocks numbering in their thousands during the summer months where they descend on grain crops and into towns seeking food resources. They cause significant damage to standing cereal crops, compete with stock for grain that is fed during the summer and are also destructive in town environments where they chew coaxial cables, artificial turf cricket pitches and bowling greens, and cause considerable damage to gardens and lawns (DBCA, 2021).

Such has been its recovery that the species was removed from the Western Australian threatened species list on 6 November 2012. Muir's corella does, however, remain specially protected by State legislation. A Wildlife Management Program has been prepared to meet the expectation of the community to control the birds as they are regarded as a pest, yet not to decrease or impact on the bird's population to such an extent it again meets the criteria for listing as a threatened species (DBCA, 2021). Noting this information and the exclusion of a potential black cockatoo nesting tree from the application area (which is also likely suitable for nesting by Muir's corella), no significant impacts to the species is expected from the proposed clearing.

C.4. Land degradation risk table

Risk categories	Map Unit 254KeMW
Wind erosion	0% of map unit has an extreme risk 0% of map unit has a very high risk 79% of map unit has a high risk 21% of map unit has a nil to moderate risk
Water erosion	0% of map unit has an extreme risk 0% of map unit has a very high risk 0% of map unit has a high risk 100% of map unit has a nil to moderate risk
Salinity	0% of map unit presently saline 0% of map unit has a high risk 2% of map unit has a moderate risk 98% of map unit has a slight to nil risk
Water logging	2% of map unit has an extreme risk 2% of map unit has a very high risk 19% of map unit has a high risk 79% of map unit has a nil to moderate risk
Phosphorus export risk	0% of map unit has an extreme risk 0% of map unit has a very high risk 0% of map unit has a high risk 100% of map unit has a nil to moderate risk

Data obtained from CSLC (2020).

Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u> The vegetation proposed to be cleared comprises minimal floristic and faunal diversity in the context of other remnant vegetation in the local area which includes nature reserves and national parks. The proposed clearing largely consists of marri and jarrah over introduced grasses.</p>	Not likely to be at variance	No
<p><u>Principle (b):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared contains foraging habitat for conservation significant fauna (black cockatoos).</p>	At variance	Yes <i>Refer to Section 3.2.1 above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u> The application area is unlikely to contain habitat for threatened flora species listed under the BC Act noting the vegetation type and condition.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u> The vegetation proposed to be cleared does not contain a structure, diversity and condition that would indicate the presence of a threatened ecological community listed by the Western Australian Minister for Environment.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> The extent of vegetation remaining within the bioregion, the mapped vegetation complexes, and the local area (refer Appendix C2) is greater than 30 per cent which is considered the threshold for protecting biodiversity as outlined in the national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia, 2001). However, the extents of the vegetation complexes remaining are approaching 30 per cent and it is recognised that representation levels may need to be increased above 30 percent in already fragmented landscapes (DER, 2013). Noting this, and that the application area includes significant foraging habitat for black cockatoos, it is considered that the proposed clearing may be at variance to this principle.</p>	May be at variance	No <i>The potential impacts relate to the value of the vegetation as black cockatoo foraging habitat which are considered in detail under Section 3.2.1 above</i>
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u> Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of any conservation area.</p>	Not likely to be at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> Given no watercourses or wetlands occur within/next to the application area, the proposed clearing is unlikely to impact watercourse or wetland values.</p>	Not likely to be at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The mapped soils are not highly susceptible to land degradation risks such as salinity, eutrophication (phosphorus export), water erosion, wind erosion, waterlogging or flooding. Advice received from the Commissioner of Soil and Land Conservation is that the risk of land degradation from the proposed clearing is low.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u> Given no watercourses or wetlands occur within or in close proximity to the application area, and that the risk of land degradation such as salinity, water erosion and eutrophication is low, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> The mapped soils and position in the landscape do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be at variance	No

Appendix E. 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 the application's location within the South West land division, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery (1994).

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.

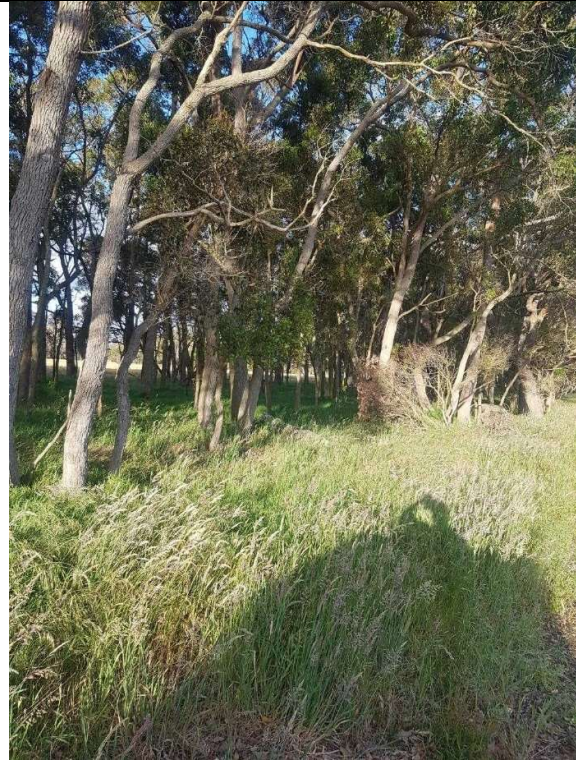
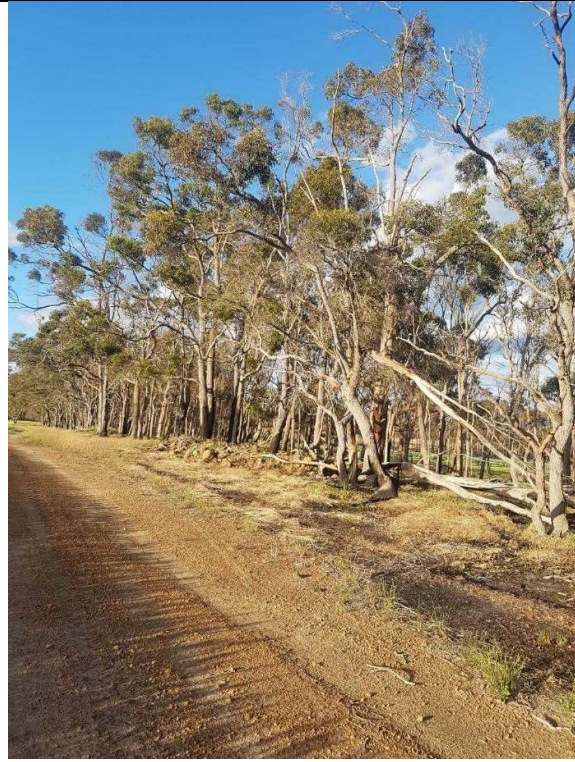
Appendix F. Offset calculator value justification

Field Name	Justification for value used
<i>IUCN Criteria</i>	1.2% (Endangered) – The highest conservation status for black cockatoos is endangered.
<i>Area of impact (habitat/community) or Quantum of impact (features/individuals)</i>	17.97 - The entire application area contains black cockatoo foraging habitat. After exclusion of the patch containing the potentially suitable nest hollow (1.9 ha) and the addition of the 7 paddock trees (0.07 ha) the area of impact is $19.8 - 1.9 + 0.07 = 17.97$ ha.
<i>Quality of impacted area (habitat/community)</i>	4 - The vegetation is degraded (mostly trees over grass) which would normally translate to a score on the lower end of the scale. However, the canopy is the most important for providing foraging habitat and this is still present. In terms of site context there is a reasonable amount of vegetation remaining in the local area (approximately 50% within a 20km radius) and some of this will likely be in better condition (e.g. areas located on DBCA land to the south) offering additional foraging habitat in the mid storey. A potential nesting tree occurs on the property but such trees are also likely to be present in better condition vegetation on DBCA land. Taking this all into account a mid range score of 4 out of 10 is considered appropriate.
<i>Time over which loss is averted (habitat/community)</i>	20 - Assume the offset would be a covenant applicable in perpetuity meaning the max 20 years would apply.
<i>Time until ecological benefit (habitat/community) or Time horizon (features/individuals)</i>	10 - Refer future quality with/without offset - quality scores are based on an assessed period of 10 years.
<i>Start area (habitat/community) or Start value (features/individuals)</i>	56 ha - this is the size of the covenant areas proposed.
<i>Start quality (habitat/community)</i>	6 - Based on photos of the proposed offset areas provided by the applicant, the offset areas generally contain similar vegetation types to the application area but are in better condition with more diversity, density and structure. Therefore a score of 6 out of 10 has been applied for the offset site.
<i>Future quality without offset (habitat/community) or Future value without offset (features/individuals)</i>	5 - The proposed offset areas are not actively protected/managed for conservation and are vulnerable to degradation from ongoing agricultural activities on the property. It is considered there is potential for a decline in quality of 1 over the next 10 years if the offset (i.e. fencing and covenant) is not implemented.
<i>Future quality with offset (habitat/community) or Future value with offset (features/individuals)</i>	6 - It is considered that fencing and entering into a covenant alone is only likely to avert a degradation in quality rather than result in an improvement in quality. Therefore a score of 6 (i.e. the same as the start quality) was applied.
<i>Risk of loss (%) without offset (habitat/community)</i>	30% - Standard value applied to rural zone land.
<i>Risk of loss (%) with offset (habitat/community)</i>	10% - Standard value applied to land that would be subject to a covenant. It is noted that in this case the covenant land is not freehold but a perpetual lease given under the <i>War Service Land Settlement Scheme Act 1954</i> . Therefore the covenant may be registered against the lease rather than the lot itself. This brings a different risk profile, however, it is considered that for the purpose of the offset calculation the additional risk is negligible (based on the history of lease transfers) and it remains appropriate to use the 10%.
<i>Confidence in result (%) – risk of loss (habitat/community)</i>	90% - There is a high level of confidence that entering into a covenant will reduce the risk of loss of that vegetation.
<i>Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)</i>	70% - Based on the available information it is considered that there is a moderate to high level of confidence that fencing and entering into a covenant for the offset area will avert a reduction in quality of 1 over 10 years.
<i>% of impact offset</i>	100.16%

Appendix G. Application area photographs, fauna survey findings (map and photographs) and offset area photographs (Lynch and Lynch, 2020)

Site photos of the application area as provided by the applicant:





Fauna survey records (green dots = common brushtail possum sightings, orange dot = potential black cockatoo nesting tree) (Harewood, 2021):

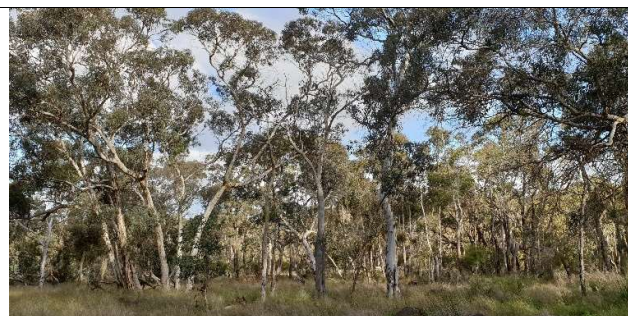


Photos of potential black cockatoo nesting tree (Harewood, 2021):



Site photos of the offset areas as provided by the applicant:





Appendix H. Sources of information

H.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)
- 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)
- DPIRD Conservation Covenants
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- 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)

H.2. References

Commissioner of Soil and Land Conservation (CSLC) (2020) *Land Degradation Advice and Assessment Report for clearing permit application CPS 9094/1*, received 22 December 2020, Department of Primary Industries and Regional Development, Western Australia (DWER Ref: DWERDT395787).

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

Department of Biodiversity, Conservation and Attractions (DBCA) (2021). *Muir's corella management in Western Australia*. Government of Western Australia. URL: <https://www.dpaw.wa.gov.au/plants-and-animals/animals/muir-s-corella-management-in-western-australia> (accessed September 2021).

- Department of Environment and Conservation (DEC) (2008). *Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan*. Department of Environment and Conservation and the Australian Government.
- Department of Environment and Conservation (DEC; 2012). *Fauna Profile Brush-tailed phascogale *Phascogale tapoatafa** (Meyer, 1793). Department of Environment and Conservation, Perth, Western Australia.
- 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 Parks and Wildlife (DPAW) (2013). *Carnaby's cockatoo (*Calyptorhynchus latirostris*) Recovery Plan*. Department of Parks and Wildlife, Perth, Western Australia
- 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 September 2021).
- 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.
- Department of Water and Environmental Regulation (DWER) (2021). *Request for information*. CPS 9094/1. 21 January 2021 (DWER Ref: A1974059).
- Environmental Protection Authority (EPA) (2016). *Technical Guidance – Terrestrial Fauna Surveys*. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf.
- 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>
- Harewood, G. (2021) *Targeted Fauna Survey & Habitat Tree Assessment of Proposed Clearing Areas (CPS 9094/1) Lot 2168 Denmark-Mount Barker Road Denbarker*. Unpublished report prepared for L.N. Lynch and S.J. Lynch. Version 1, June 2021.
- Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Lynch, L.N. & Lynch, S.J. (2020) *Clearing permit application CPS 9094/1 and supporting information including photographs*, received 28 October 2020 (DWER Ref: DWERDT357223, DWERDT357240, DWERDT357386 & A1955954).
- 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.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) *Atlas of Australian Soils*, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) *Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs* Resource Management Technical Report No. 280. Department of Agriculture.

Shedley, E. and Williams, K. (2014). An assessment of habitat for the Western Ringtail Possum on the southern Swan Coastal Plain. Department of Parks and Wildlife, Bunbury, Western 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.

Shire of Plantagenet (2021) *Advice for clearing permit application CPS 9094/1*, received 4 January 2021 (DWER Ref: A1969210).

Submission (2020) *Public submission in relation to clearing permit application CPS 9094/1*, received 11 November 2020 (DWER Ref: DWERDT365548).

Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed January 2021)