GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9937/1

File Number: DWERVT11304

Duration of Permit: From 19 June 2024 to 19 June 2027

ADVICE NOTE

In relation to condition 4 of this permit
It is noted that 8.062 hectares of Crown Reserve 3203 will be attributed to the offset for this project. The remaining balance of the property may be used as a banked offset for other projects. The nominated 8.062-hectare area is a significant remnant within an extensively cleared landscape and contains foraging and breeding habitat for Carnaby's black cockatoo, in addition to other environmental values.

PERMIT HOLDER

Shire of Northam

LAND ON WHICH CLEARING IS TO BE DONE

Jennapullin Road Reserve (PINs 11441249 and 11441008), Malabaine

AUTHORISED ACTIVITY

The permit holder must not clear more than 31 native trees within the area cross-hatched yellow in Figure 1a and 1b of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any native vegetation after 19 June 2026.

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. Offset – Crown Reserve 3203

Within 12 months of the commencement of clearing authorized under this permit and no later than 19 June 2027, the permit holder must provide to the *CEO* a copy of the executed change in purpose of the area cross-hatched red in Figure 1 of Schedule 2 within Crown Reserve 3203 from 'Sand and Gravel Quarry' to 'Recreation and Conservation'.

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 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3; and (g) actions taken in accordance with condition 4.

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.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of *Phytophthora* species on native vegetation.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
fill	means material used to increase the ground level, or to fill a depression
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.
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
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

27 May 2024

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the maps below (Figure 1a and 1b).

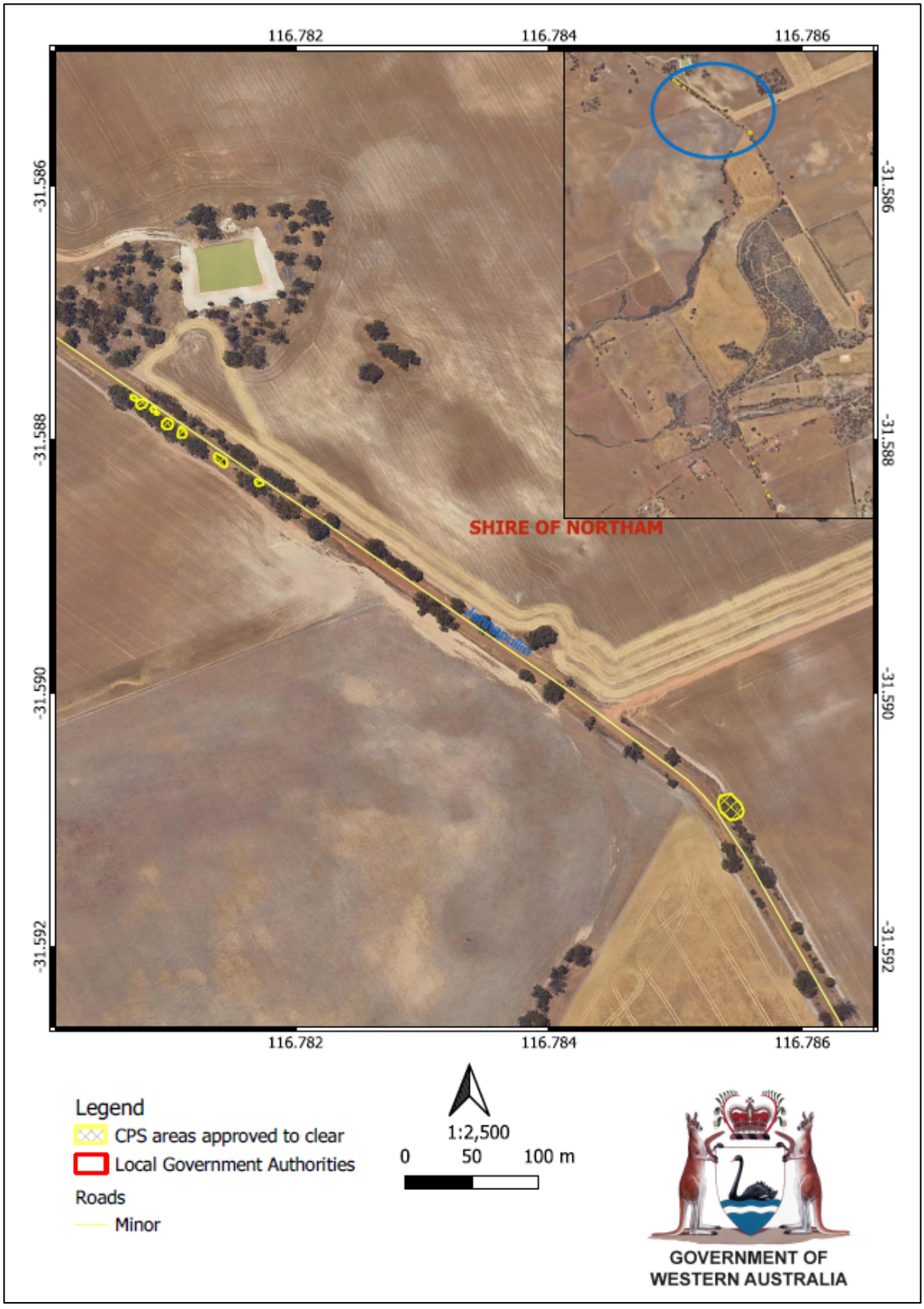


Figure 1a: Map of the boundary of the areas within which clearing may occur

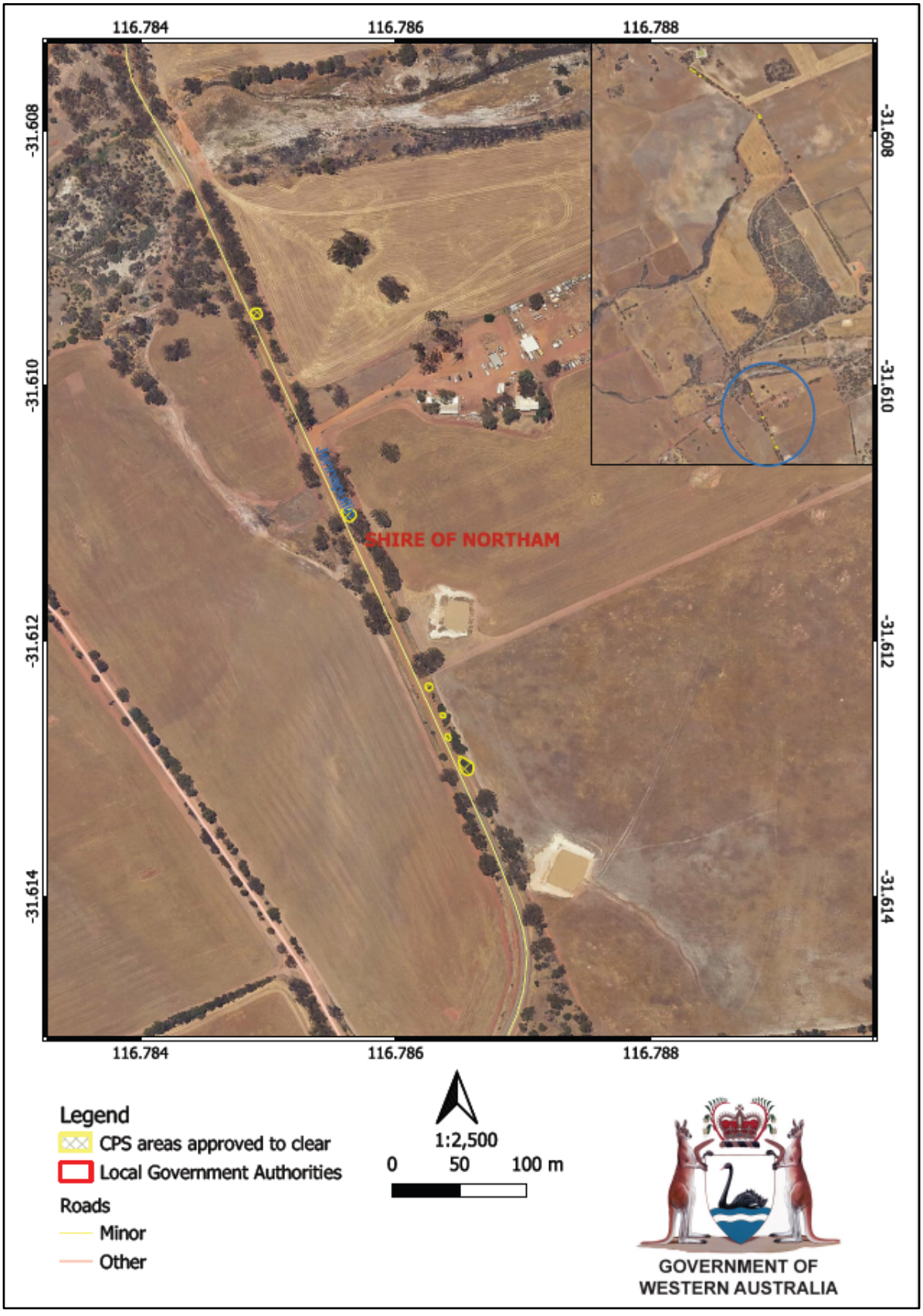


Figure 2b: Map of the boundary of the areas within which clearing may occur

SCHEDULE 2

The boundary of the areas where conditions apply is shown in the map below.

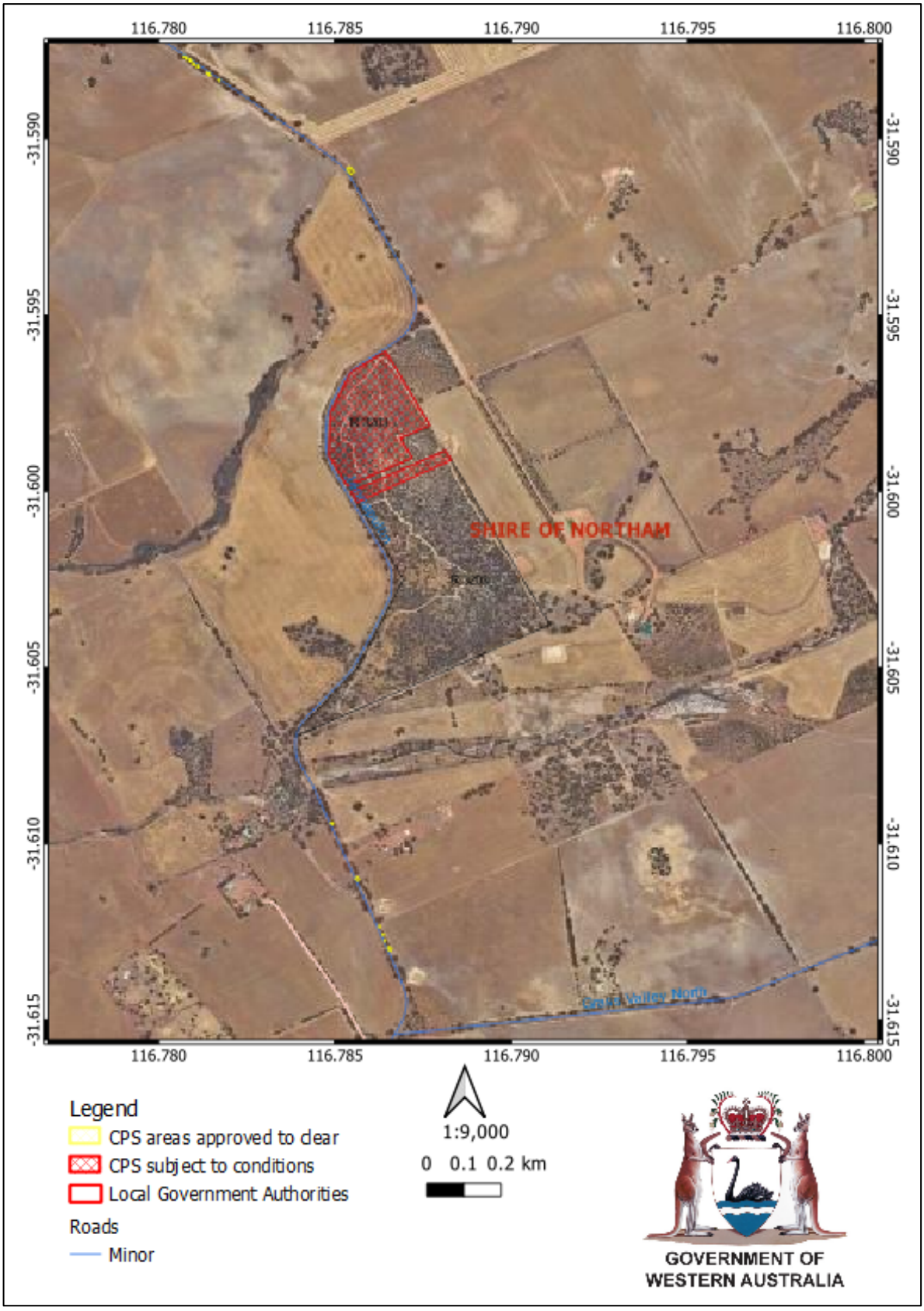


Figure 1: Map of the offset boundary area to be managed as an offset, subject to condition 4 (within Reserve 3203)

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 9937/1
Permit type:	Area permit
Applicant name:	Shire of Northam
Application received:	1 November 2022
Application area:	31 native trees
Purpose of clearing:	Road widening and drainage construction
Method of clearing:	Mechanical
Property:	Jennapullin Road Reserve (PINs 11441249 and 11441008)
Location (LGA area/s):	Shire of Northam
Localities (suburb/s):	Malabaine

1.2. Description of clearing activities

The vegetation proposed to be cleared is composed of 31 native trees, including 10 jam wattle (*Acacia acuminata*) trees, 17 York gum (*Eucalyptus loxophleba*) trees, 3 wandoo (*Eucalyptus wandoo*) trees and 1 dead tree (as revised - see Appendix G), along the Jennapullin Road in the Shire of Northam (see Figure 1, Section 1.5).

The purpose of clearing these trees is to facilitate the Jennapullin Road widening and drainage construction project. This project is part-funded by the Regional Road Group funding stream, in accordance with the State Road Funds to Local Government Agreement, and addresses the following key principles:

- Promote and apply a safe systems approach for road safety to road infrastructure.
- Facilitate the efficient movement of freight and people.

The proposed works will address inadequate road widths, geometry issues, and drainage, and is therefore, of critical importance to road safety and asset preservation (Shire of Northam, 2023b).

1.3. Decision on application

Decision:	Granted
Decision date:	27 May 2024
Decision area:	31 native trees, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received. When the application was revised with adjusted application area, DWER advertised the revised application for seven 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 photos of the trees proposed to be cleared (see Appendix G) and a site inspection (DWER, 2023), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the necessity of the proposed works to improve road safety.

The assessment identified that the proposed clearing will result in:

- the loss of 20 wandoo and York gum trees that provide foraging and future breeding habitat for Carnaby's cockatoo;
- the loss of 31 trees that are a part of a significant remnant within an extensively cleared landscape; and
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that the potential introduction and spread of weeds and dieback into adjacent vegetation can be minimised and managed to unlikely to lead to an unacceptable risk to environmental values through permit conditioning. However, impacts on suitable habitat for Carnaby's black cockatoos and significant remnant within an extensively cleared landscape remained significant even after the application of minimisation and mitigation measures and constituted a significant residual impact.

In accordance with the Government of Western Australia's *Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014), the Delegated Officer determined that the change in Crown Reserve 3203 from 'sand and gravel quarry' to 'recreation and conservation', comprising following land acquisition offsets are required to address the above significant residual impacts:

- Conservation of 2.652 hectares of the habitat type Open *Eucalyptus* woodland mapped as Very Good and Good condition.
- Conservation of 1.96 hectares of the habitat type *Allocasuarina*/*Acacia*/*Banksia* Low Woodland mapped as Very Good, Good condition and Degraded condition with Good black cockatoo foraging habitat.
- Conservation of 2.512 hectares of the habitat type *Allocasuarina*/*Acacia* Low Woodland mapped as Good condition.

The Delegated Officer determined that the above offset was sufficient to counterbalance the significant residual impacts associated with this project. Further information on the suitability of the offsets provided are summarised in Section 4.

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 and dieback;
- Provide offsets, as outlined above, to address significant residual impacts of the proposed clearing.

1.5. Site maps

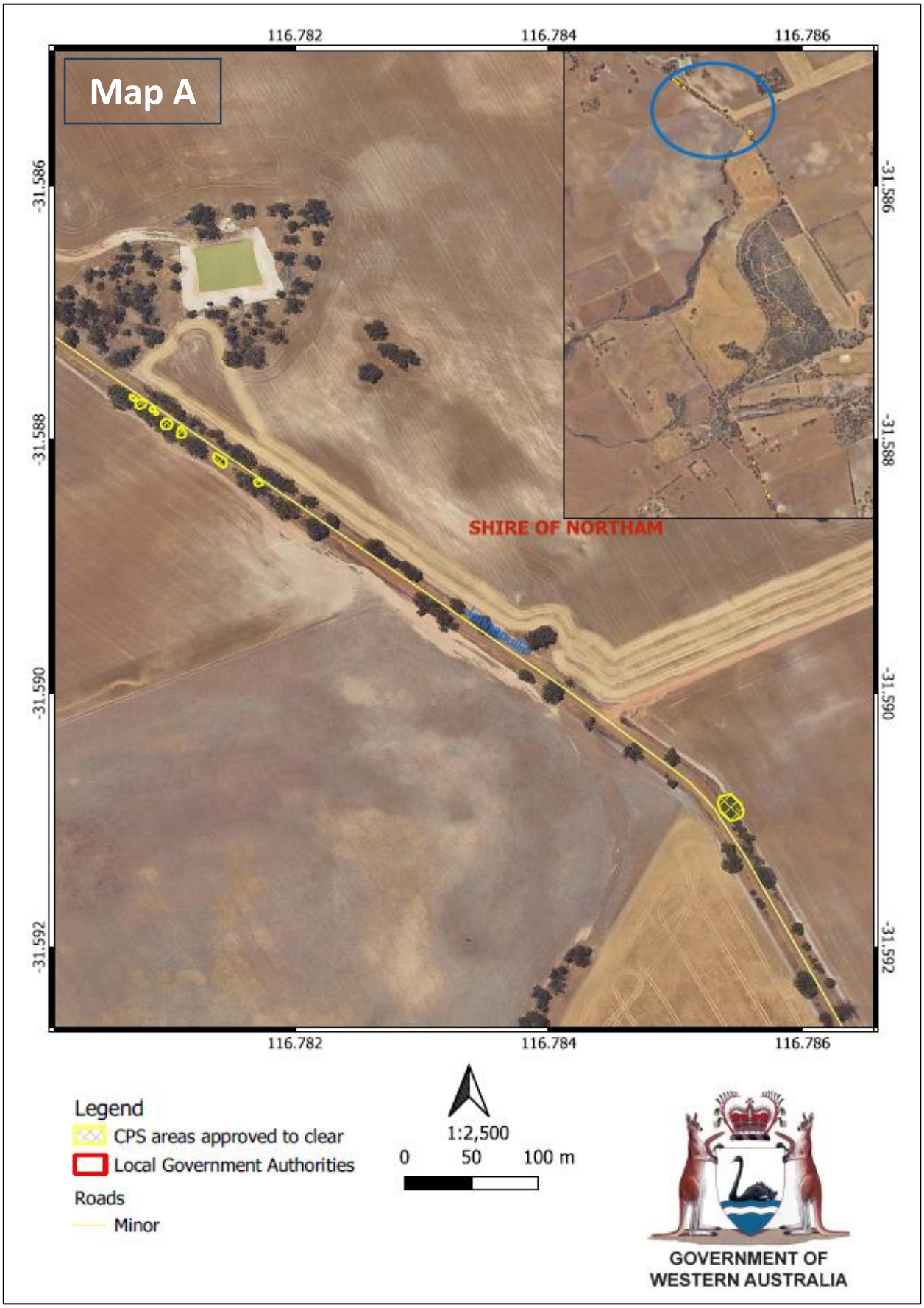


Figure 1a Map of the application area

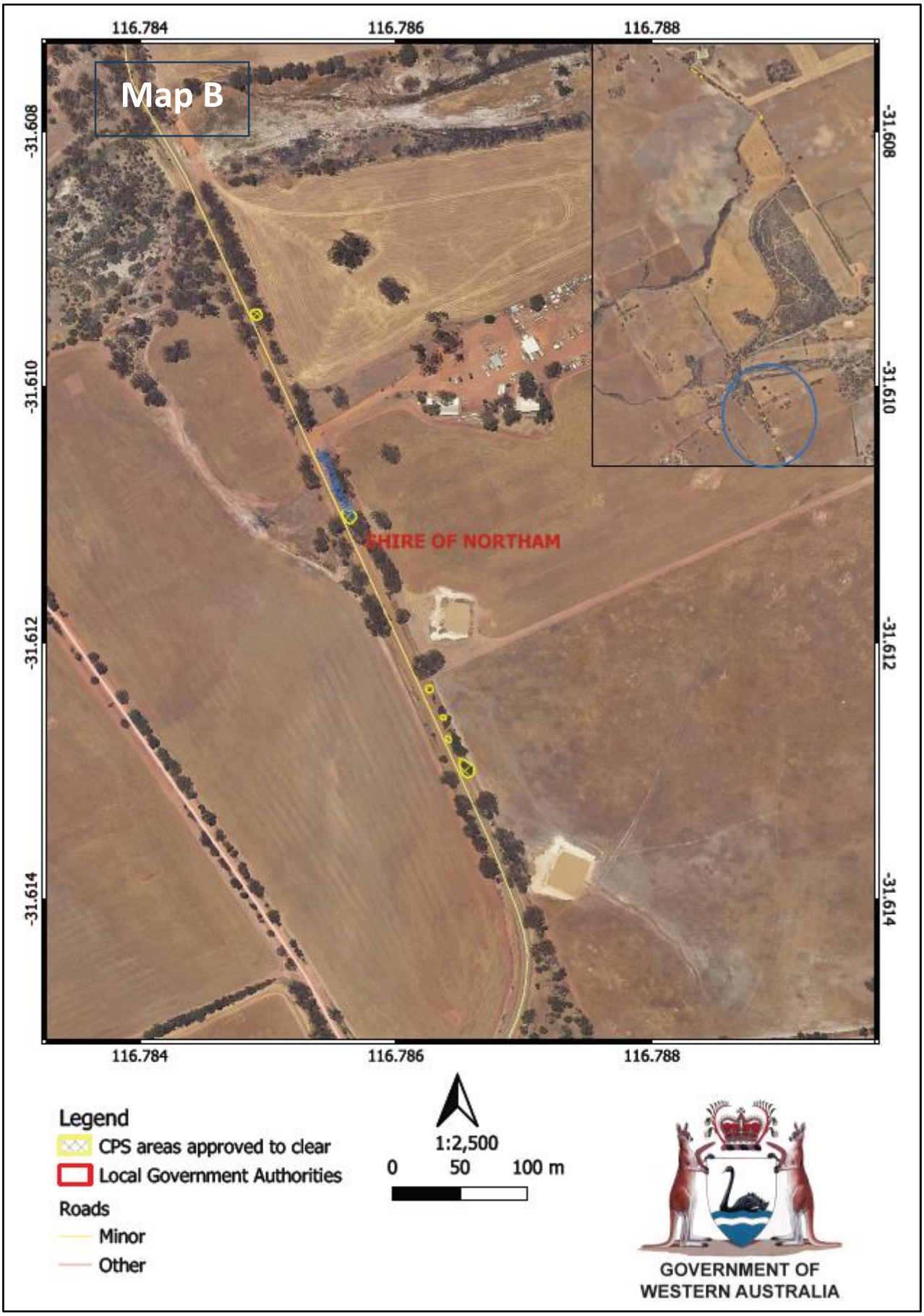


Figure 1 Map of the application area

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

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Rights in Water and Irrigation Act 1994* (RiWI Act)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The application was revised during the assessment process, in response to the Department of Water and Environmental Regulation's request on efforts to avoid and/or mitigate significant environmental impacts resulting from the proposed clearing.

Further information was submitted by the applicant (Shire of Northam, 2023a), demonstrating that the applicant has modified the road drainage design and then the application footprint to avoid clearing several large trees which had been proposed to be cleared in the initial application (DWER, 2023). The changes included the avoidance of clearing seven large York gum (*Eucalyptus loxophleba*) trees and ten large wandoo (*Eucalyptus wandoo*) trees. Photographs of the large trees being avoided due to the design modification are shown below (Figure 2).

Four trees of *Eucalyptus loxophleba*

One tree of *Eucalyptus loxophleba*

Three trees of *Eucalyptus wandoo* with potential hollow(s)

One tree of *Eucalyptus loxophleba*

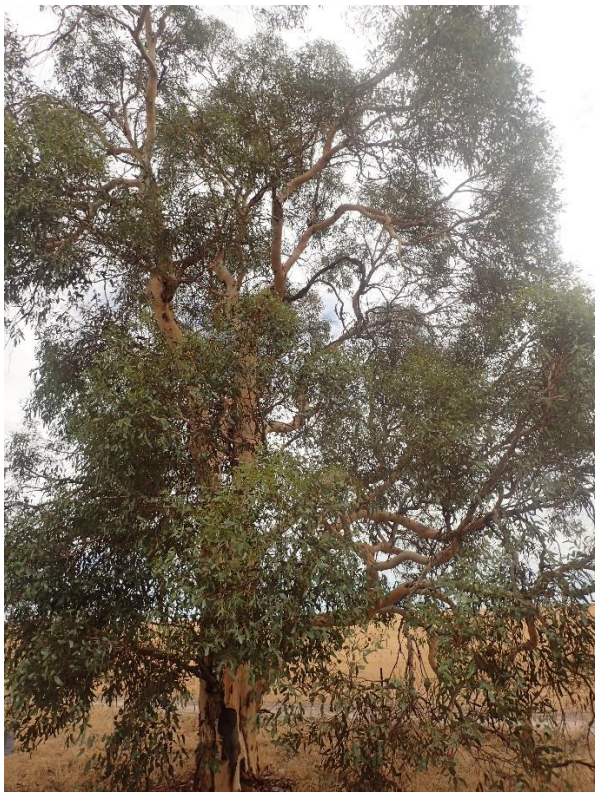
One tree of *Eucalyptus loxophleba*

One tree of *Eucalyptus wandoo*

One tree of *Eucalyptus wandoo*

Two trees of *Eucalyptus wandoo*

One tree of *Eucalyptus loxophleba*



One tree of *Eucalyptus wandoo*

One tree of *Eucalyptus wandoo*

Figure 2. Large trees being avoided owing to the design modification (marked by the pink ribbons - compared to the initial application)

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

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

Assessment

According to available databases, six conservation significant fauna species have been recorded in the local area. In forming a view on the likelihood of each species occurring within the application area, the following was considered:

- the preferred habitat and vegetation types of the species,
- their recorded proximity to the application, and
- the total number of records within the local area.

Vegetation in the proposal clearing area contains tree species of wandoo (*Eucalyptus wandoo*), York gum (*Eucalyptus loxophleba*) and jam wattle (*Acacia acuminata*) occurs in a degraded to completely degraded (Keighery, 1994) condition.

Among six significant fauna species have been recorded in the local area, two species may occur in the application area, including:

- *Zanda latirostris* (Carnaby's black cockatoo)
- *Falco peregrinus* (Peregrine falcon)

Carnaby's black cockatoo

Carnaby's black cockatoos (BC) (*Zanda latirostris*) (Endangered) are listed as endangered under the *Biodiversity Conservation Act 2016* (BC Act). The application area is mapped within in a likely Carnaby's cockatoo distribution area. There is only one record of Carnaby's cockatoos mapped within the local area which was recorded in 1979, with the distance of approximately 2.7 kilometres from the application area.

According to the referral guideline for threatened black cockatoo species (DCCEEW, 2022), habitat critical for recovery of black cockatoos include foraging habitat (including remnant patches of vegetation), night roosting habitat and nesting trees for breeding. Suitable breeding habitat for black cockatoos includes trees which have a suitable nest hollow (DCCEEW, 2022).

The proposed clearing includes 20 trees of Wandoo and York gum which provide suitable foraging/nesting habitat for Carnaby's BC. Even though the closest known roosting/breeding site is more than 30 kilometres away from the application area and no signs of fauna have been observed during the site inspection, the proposed clearing area is still considered to provide significant habitat for Carnaby's BC, considering the extensively cleared landscape of the Wheatbelt region where foraging habitat for this species is scarce.

Peregrine falcon

The peregrine falcon (*Falco peregrinus*) (Other Specially Protected Fauna) is found Australia-wide and occurs in a range of habitats including woodlands, grasslands and coastal cliffs, usually near watercourses (DAWE, 2020). Preferred roosting and breeding habitat for the peregrine falcon includes granite outcrops and coastal cliffs, but in the absence of these habitats, the species has been known to utilise the nests of other bird species or tree hollows for breeding (Marchant et al., 2006). Four records of this species have been mapped within the local area, with the closest distance of 2.7 kilometres from the application area. It is considered that the habitat present within the application area may also provide suitable transient foraging habitat for this species as individuals migrate through the landscape. As such, the peregrine falcon is likely to be a transient visitor to the application area. However, noting that the peregrine falcon is a highly mobile species with a large home range that does not rely on special niche habitats, it is unlikely that the application area represents significant habitat for the species.

Ecological linkages

The application area includes remnant native vegetation that partly form linkages along roadsides. This roadside vegetation was assessed as part of the Roadside Conservation Committee's (RCC's) roadside conservation value mapping program and was considered to have medium low (map A) to low (map B) conservation value as a roadside remnant (DBCA, 2023). Given the extensively cleared local area, it is likely that the application area is contributing to the ecological function of the roadside linkages and providing dispersal habitat between larger remnants in the local area including several Eucalyptus woodlands of the Western Australia Wheatbelt threatened ecological community areas mapped along the subject road. However, as outlined in the assessments above, the application area is in degraded to completely degraded (Keighery, 1994) condition and comprises 15 separate areas ranging in size from 0.001 hectares to 0.03 hectares which have limited understorey. Given the condition of the vegetation and patchiness of connectivity, as well as the vegetation's low roadside conservation values, it is considered unlikely that the proposed clearing will significantly reduce connectivity between remnant vegetation in the landscape or result in significant impacts to fauna dispersal through the local area.

Conclusion

Based on the above assessment, the application area is likely to impacts to 20 trees (equivalent to 0.2 hectares) of significant habitat for Carnaby's black cockatoos.

Conditions

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

- Offset the significant residual impacts on habitat for Carnaby's black cockatoos

3.2.2. Significant remnant vegetation - Clearing Principles (e)

Assessment

The National Objectives and Targets for Biodiversity Conservation 2001-2005 includes a target to have clearing controls in place that prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e., pre-European settlement). This is the threshold level below which species loss appears to accelerate exponentially (Commonwealth of Australia, 2001).

The application area is located within the Avon Wheatbelt IBRA Bioregion which retains approximately 18.5 per cent of its pre-European vegetation extent (Appendix C.2.) (Government of Western Australia, 2019). The application area is mapped within the Beard vegetation association 352, which vegetation extent falls below the national target with approximately 17.3 per cent of its pre-European vegetation extent (Government of Western Australia, 2019). The vegetation within the application area is considered to be partly consistent with the description of this community. The vegetation extent within the local area retains approximately 6.4 per cent of pre-European vegetation extent.

It is also noted that there is potential the proposed clearing could impact on the remnant native vegetation through the introduction or spread of weeds and dieback into adjacent vegetation.

Conclusion

Based on the above assessment, the proposed clearing will result in loss of 31 trees (equivalent to 0.31 hectares of native vegetation), that is a significant remnant within an extensively cleared landscape. The application area is not considered to be fully representative of the mapped Beard vegetation association 352.

There is potential the proposed clearing activities could result in the introduction or spread of weeds and dieback into adjacent vegetation.

Conditions

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

- Avoidance and minimisation to reduce the impacts and extent of clearing;
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback to adjacent vegetation;
- Offset the significant residual impacts of clearing a significant remnant in an extensively cleared landscape.

3.3. Relevant planning instruments and other matters

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* 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:

- The loss of 20 wandoo and York gum trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo; and
- The loss of 31 trees (entire application area), equivalent to 0.31 hectares, that are a part of a significant remnant within an extensively cleared landscape.

The applicant informed that the existing road reserve along Jennapullin Road cannot accommodate additional vegetation due to the requirement for open drainage, therefore an offset by revegetation is not achievable (Shire of Northam (Shire of Northam, 2023b). The applicant proposed an environmental offset by changing the land vesting of the Reserve 3203 from "Sand and gravel quarry" to "Recreation and Conservation" (Shire of Northam, 2023b). The Shire has been working with the Department of Planning, Land and Heritage (DPLH) about the vesting changing (Shire of Northam, 2024a). This reserve is located on one side of Jennapullin Road, close to the application area. Context map showing the location of application area and proposed offset site is presented in the below figure.

Figure 3. Context map showing the application area (yellow) and offset site Reserve 3203 (green)

A site assessment for the proposed offset site was undertaken in February 2024 (Aurora, 2024), showing that Reserve 3203 with a total area of 32.262 hectares includes following environmental values:

- Four fauna habitat types:
  - Approximately 12.07 hectares of Open *Eucalyptus* Woodland;
  - Approximately 2.51 hectares of *Acacia/Allocassuarina* Low Open Woodland;
  - Approximately 9.15 hectares of *Allocassuarina* Low Woodland; and
  - Approximately 6.91 hectares of *Allocassuarina/Acacia/Banksia* Low Woodland.
- Approximately 11.1 hectares of BC foraging habitat in Good to Very Good conditions.
- 251 potential BC habitat trees, with 33 trees having large hollows that appeared suitable for BC and 91 trees containing small hollows.

Based on the above information, the proposed offset site at Reserve 3203 is considered to be appropriate to offset the significant residual impact of the proposed clearing as it contains similar tree species proposed to be cleared (*Acacia* and *Eucalyptus*) and foraging and breeding habitat for Carnaby's BC.

The Shire proposed to utilize an area of 8.062 hectares (green area) shown in Figure 4 as an offset for this application. The proposed offset areas include all abovementioned fauna habitat types. Details on condition, area and the suitability for offset of each fauna habitat type are presented in the below table.

Table 1. Suitability of fauna habitat types in the proposed offset area. Vegetation condition and black cockatoo foraging habitat condition are derived from the site report (Aurora, 2024).

Fauna habitat	Vegetation condition	Black cockatoo (BC) foraging habitat condition	Area (ha)	Included in BC habitat offset	Included in Extensive cleared offset
Open Eucalyptus Woodland	Very Good	Good to Very Good	1.861	Yes, cal 1.1	Yes, cal 2.1
	Good		0.791	Yes, cal 1.2	Yes, cal 2.2
	Degraded		0.111	No	No
Allocasuarina/Acacia/Banksia Low Woodland	Very Good	Good to Very Good	0.472	Yes, cal 1.3	Yes, cal 2.1
	Good	Good to Very Good	1.024	Yes, cal 1.2	Yes, cal 2.2
	Degraded	Good	0.464	Yes, cal 1.2	No
	Degraded		0.001	No	No
Acacia/Allocasuarina Low Open Woodland	Good		2.512	No	Yes, cal 2.2
Allocasuarina Low Woodland	Degraded		0.826	No	No
Total			**8.062**		

Note: Vegetation area with degraded condition is considered not suitable. However, the area of Allocasuarina/Acacia/Banksia Low Woodland in degraded condition but with good BC foraging habitat was included in the relevant offset calculation.

In assessing whether the proposed offset is adequately proportionate to the significance of the Carnaby BC habitat and remnant vegetation values being impacted, DWER undertook a calculation using the WA Environmental Offsets Metric. The calculations have determined that the proposed offset area would offset:

- the loss of 20 wandoo and York gum trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo by 103.1% (See calculations 1.1, 1.2 and 1.3 – Appendix F)
- the loss of 31 trees (entire application area), equivalent to 0.31 hectares, that are a part of a significant remnant within an extensively cleared landscape by 101.8% (see calculations 2.1 and 2.2 – Appendix F).

In summary, to mitigate 100% significant residual impacts of the proposed clearing, the offset required includes:

- Conservation of 2.652 hectares of the habitat type Open *Eucalyptus* woodland mapped as Very Good and Good condition.
- Conservation of 1.96 hectares of the habitat type *Allocasuarina/Acacia/Banksia* Low Woodland mapped as Very Good, Good condition and Degraded condition with Good black cockatoo foraging habitat.
- Conservation of 2.512 hectares of the habitat type *Allocasuarina/Acacia* Low Woodland mapped as Good condition.

The Delegated Officer considers that the proposed offset is consistent with the *Environmental Offsets Policy* (2011) and the *Environmental Offsets Guidelines* (2014), and adequately counterbalances the significant residual impacts listed above. The remainder of Reserve 3203 would be banked for future use as an offset by the Shire of Northam. The justification for the values used in the offset calculation is provided in Appendix F.

Figure 4. Areas within Crown Reserve 3203 proposed to be used as offsets for CPS 9937/1 (Shire of Northam, 2024b)

End

Appendix A. Additional information provided by applicant.

Summary of further information provided	Consideration of information
Photos of trees and shapefiles of adjusted application area	This information is presented in Section 3.1 and Appendix G of the Report
Offset proposal including offset site fauna survey report, shapefile of proposed offset area	This information is presented in Section 4 of the Report

Appendix B. Details of public submissions

Summary of comments	Consideration of comment
Request to refer this application for EPA assessment	Any proposal likely to have a significant environmental effect on the environment should be referred to the EPA. The terms 'significance', 'significant impact' and 'significant effect' are not defined in the Act. Therefore, the ordinary or everyday meanings of these terms apply. When considering these terms, the EPA may have regard to, and expects the proponent to have regard to, various matters, as outlined in section 6 of *Statement of environmental principles, factors, objectives and aims of EIA (April 2023).* Amongst these is the extent (intensity, duration, magnitude, and geographic footprint) of the likely impacts and whether other statutory processes can manage and mitigate potential impacts, including under Part V of the EP Act. While it is noted the cumulative impacts of clearing in an extensively cleared landscape such as the Avon Wheatbelt region can be considered 'significant' for smaller scale proposals based on the environmental values present, the department is of the view that the clearing of native vegetation for the proposed roadworks can adequately be managed and mitigated via Part V Division 2 of the EP Act and therefore does not warrant to be assessed by the EPA.
If the road construction is justified and necessary, it must occur on cleared agricultural land	As noted under Section 3.1, the applicant had considered alternatives to clearing where possible. However, considering that the proposed works are to widen an existing road, it is unlikely to be practical to have the works to be done on cleared agricultural land as recommended, when strips of uncleared land remain within the road reserve, between the road and cleared agricultural land.
Remaining vegetation in highly cleared landscapes should be retained in transport corridors	The importance of transport corridors in extensively cleared landscapes is acknowledged and is discussed under Section 3.2.2 of the Decision Report.
The proposed trees have hollows with a suitable size. Retention of mature Eucalyptus trees is essential for Carnaby's black cockatoos	The applicant has modified the application area to exclude most of mature York gum and wandoo trees with suitable size hollows or containing potential hollows. This is presented in Section 3.1. The trees proposed to be cleared (as revised) mostly consists of small trees (see Appendix G).
Should not view this permit as insignificant and small due to the number of trees.	This proposed clearing is assessed to result in significant residual impacts and require an offset. The assessments are presented in Section 3.2 and offset is presented in Section 4.
Recommendation on careful consideration with the incorporation of the past cumulative impacts	The cumulative impacts have been assessed in Section 3.2.2 as significant and thus an offset has been provided.
Further removal of perennial vegetation can increase salinity levels in the Wheatbelt region	The soils within the application area are mapped with low salinity risk. Noting this and the small and linear nature of the application area, the proposed clearing is unlikely to lead to land degradation due to salinity.

Appendix C. Site characteristics

C.1. Site characteristics

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

Characteristic	Details
Local context	The area proposed to be cleared consists of 31 trees along an existing 3.5-metre road in the intensive land use zone of Western Australia. The proposed clearing area is a small isolated remnant in a highly cleared landscape. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains only approximately 6.4 per cent of the original native vegetation cover.
Ecological linkage	The application area lies along roadsides which partly form linkages mapped under the Roadside Conservation layer.
Conservation areas	The nearest conservation area to the application area is an unnamed conservation covenant which is located approximately nine kilometres from the application area
Vegetation description	Photos supplied by the applicant (Shire of Northam, 2023a) and site inspection (DWER, 2023) indicate the vegetation within the proposed clearing area consists of tree species of Wandoo (*Eucalyptus wandoo*), York Gum (*Eucalyptus loxophleba*) and Jam Wattle (*Acacia acuminata*). This is partly consistent with the mapped vegetation type: York_352, which is described as Medium woodland; York gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris, E. oleosa*. Riverine; rivergum *E. camaldulensis*. Tropical; messmate, woolyb *The mapped vegetation type retains approximately 10.4 per cent of the original extent (Government of Western Australia, 2019).*
Vegetation condition	Photographs supplied by the applicant and the site inspection report indicate the vegetation within the proposed clearing area is in is degraded to completely degraded (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix E. Photos of trees proposed to be cleared are available in Appendix G.
Climate and landform	Climate: Mean maximum temperature is 25.4 degrees Celsius. Mean minimum temperature is 11.0 degrees Celsius. Rainfall: Mean annual rainfall is 424.3 millimetres. (BOM, 2024) Landform: Gently undulating to undulating rises with few undulated hills
Soil description	The soils are mapped as: • 256MbES1 - Hillslopes containing sand and loamy sand over yellowish clay soils, with some gravel ridges, and some heavier soils that often occur immediately below a breakaway (For map A area); • 256JcYO - Areas of soils derived from freshly exposed rock (For map B area).
Land degradation risk	The soil types within the application area are mapped as having a low risk of land degradation resulting from water erosion, salinity, and flooding; as having low to moderate risk of wind erosion, water logging and phosphorous export; but as having a high to extreme risk of subsurface acidification (DPIRD, 2021).

Characteristic	Details
Waterbodies	The desktop assessment and aerial imagery indicated that no wetlands or waterbodies transecting the application area. The application area located along a nonperennial branch of the Mortlock River, with the distances from proposed removed trees to the river branch ranging from 30 to 190 metres.
Hydrogeography	The application area is located within the Avon River Catchment Area proclaimed under the RiWI Act. Groundwater salinity within the application area is mapped as from 14000 to 35000 milligrams per litre total dissolved solids.
Flora	Records of eight conservation significant flora species have been mapped within the local area, including one threatened species, *Acacia aphylla*, which was identified 6.6 kilometres away from the application area. No threatened or priory flora species were identified during the site inspection (DWER, 2023)
Ecological communities	The desktop assessment identified that there are 247 areas of the threatened ecological community (TEC) 'Eucalypt woodlands of the Western Australian Wheatbelt' scattering in the local area. The closest TEC is mapped on the Pennajullin Road, 30 metres away from the application area.
Fauna	The desktop assessment identified that a total of six threatened or priority fauna species have been recorded within the local area, including three threatened fauna species, two priority fauna species, and one specially protected fauna species. The application area is located within the distribution of Carnaby's BC (*Zanda latirostris*). The closest record of BC is mapped approximately 2.7 kilometres from the proposed clearing.

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*					
Avon Wheatbelt	9,517,109.95	1,761,187.42	18.51	174,980.68	1.84
Vegetation complex					
Beard vegetation association 352	630,577.61	108,887.52	17.27	10,191.45	1.62
Local area					
10km radius	37,658.57	2,412.19	6.41	-	-

*Government of Western Australia (2019)

C.3. Land degradation risk table

Risk categories	*Soil unit 256MbES1*	*Soil unit 256JcYO*
Wind erosion	M2: 30-50% of map unit has a high to extreme wind erosion risk	L2: 3-10% of map unit has a high to extreme wind erosion risk
Water erosion	L1: <3% of map unit has a high to extreme water erosion risk	L2: 3-10% of map unit has a high to extreme water erosion risk
Salinity	L2: 3-10% of map unit has a high to extreme salinity risk	L1: <3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid	H2: >70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	L2: 3-10% of the map unit has a moderate to high flood risk	L1: <3% of the map unit has a moderate to high flood risk
Water logging	M1: 10-30% of map unit has a moderate to very high waterlogging risk	L1: <3% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	M1: 10-30% of map unit has a high to extreme phosphorus export risk	L2: 3-10% of map unit has a high to extreme phosphorus export risk

Appendix D. 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 not contain threatened/priority flora species but consists of significant habitat for conservation significant fauna. However, noting the degraded to completely degraded condition of the vegetation proposed to be cleared, the clearing area is considered as not comprise a high level of biodiversity.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
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 significant habitat for conservation significant fauna.	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 The area proposed to be cleared does not contain threatened flora species (DWER, 2023).	Not at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The area proposed to be cleared does not contain species that can indicate a threatened ecological community.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
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 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 a significant ecological linkage in the local area.	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 (nine kilometres from the application 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: Given no water courses or wetlands are recorded within the application area, the proposed clearing does not impact an environment associated with a watercourse or wetland.	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: The mapped soils are highly susceptible to subsurface acidification. However, noting the relatively small extent of clearing and the degraded to completely degraded conditions of the vegetation proposed to be cleared, the proposed clearing is not likely to have an appreciable impact on land degradation.	Not likely to be at variance	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: Given no watercourses / wetlands are recorded within the application area, the proposed clearing does not impact surface water quality. Noting the relatively small size of trees proposed to be cleared, the proposed clearing is unlikely to impact the underground water.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The mapped 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.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given no water courses / wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.		

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 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 F. Offset calculator value justification

WA Environmental Offsets Calculator
Rationale for scores used in the offset calculator

Calculation 1: Carnaby's black cockatoos (CBC)
Calculation 1.1. CBC habitat – Open Eucalyptus Woodland in Very Good condition

Environmental value (step 1)	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	Significant impact (step 2, part A)	31.20
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	31.14

***Area* (offset site)**

Offset calculation *Area*							
Offsets calculation	Description	Proposed offset (area in hectares)	1.86	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.07
	Conservation of remnant native vegetation	Current quality of offset site (scale)	8.00	Time until offset site secured (years)	2.00	What-if Analysis	51.9%
		Future quality WITHOUT offset (scale)	8.00	Risk of future loss WITHOUT offset (%)	15.0%		
		Future quality WITH offset (scale)	8.00	Risk of future loss WITH offset (%)	10.0%	What-if Analysis / Reinstate Formula	
		Time until ecological benefit (years)	1.00				
		Confidence in offset result (%)	90.0%			OFFSET ADEQUATE?	NO

Calculation	Score (Feature)	Rationale
Conservation significance		
Description	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	The applicant proposed to clear 31 trees of a vegetation complex having 17% extent remaining, in a local area with 6.4% vegetation extent remaining. The trees proposed to clear provides some foraging value and future breeding value for Carnaby's black cockatoo.
Type of environmental value	Species (flora/fauna)	Carnaby's BC is listed as a threatened fauna species under the Commonwealth EPBC Act and state BC Act.
Conservation significance of environmental value	Rare/threatened species - endangered	Endangered
Landscape-level value impacted	yes/no	Yes, area provides local linkage values
Significant impact		
Description	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	20 trees include 17 York gum trees and 3 Wandoo trees
Significant impact (hectares) / Type of feature	0.20	20 trees are equivalent to 0.20 hectare (1 tree = 0.01 hectare)
Quality (scale) / Number	7.00	The application area is within the Carnaby's BC distribution area. There is one record of Carnaby BC in the local area and the closest roosting/breeding site is over 30 km away. No signs of fauna has been observed during the DWER site inspection. The size of trees proposed to clear is relatively small, with many juvenile trees. However, noting application area is in the Wheatbelt region where foraging habitat is scarce, the application area is considered as significant habitat for Carnaby's BC.
Rehabilitation credit		
N/A	N/A	None
Offset		
Description	Conservation of remnant native vegetation	The applicant proposed to use the Reserve 3203 located on the subject road, adjacent to the proposed works as an offset site. The Reserve 3203 vesting will be changed from "Sand & gravel quarry" to "Recreation/Conservation"
Proposed offset (area in hectares)	1.86	The area of fauna habitat Open *Eucalyptus* woodland (Aurora, 2024) in very good condition within the proposed offset area, with suitable foraging and breeding habitat for CBC. This area can mitigate 51.9% of the significant residual impact.
Current quality of offset site / Start number (of type of feature)	8.00	The vegetation of the offset site is in very good condition. In addition to Eucalyptus species, the offset site consists of Banksia species which is foraging source for CBC.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	8.00	Assuming that the vegetation condition will be unchanged without offset

Calculation	Score (Feature)	Rationale
Future quality WITH offset (scale) / Future number WITH offset	8.00	Assuming that the vegetation condition will be unchanged with offset, noting that no further management is proposed.
Time until ecological benefit (years)	1.00	As the land parcel is already vegetated the time until ecological benefit score is a 1.
Confidence in offset result (%)	0.9	The high confidence is applied for land vesting changing noting the Shire's commitment. The Shire has been working with DPLH about the vesting changing.
Duration of offset implementation (maximum 20 years)	20.00	The duration of 20 years is applied for land acquisition offset, as per DWER's Guideline for quantifying environmental offsets.
Time until offset site secured (years)	2.00	The Shire proposed the offset site which is currently vested to the Shire. It is assumed to take two years for paperwork procedure to change the land vesting
Risk of future loss without offset (%)	15	The offset site is currently vested for sand and gravel extraction. Therefore, the risk of loss is higher.
Risk of future loss with offset (%)	10	The offset site will be changed to "Recreation/Conservation". This will reduce the risk of loss.

Calculation 1.2. CBC habitat – Open Eucalyptus Woodland in Good condition, Allocasuarina/Acacia/ Banksia Low Woodland in Good condition, and Allocasuarina/Acacia/ Banksia Low Woodland in Degraded condition but with good CBC foraging habitat

Environmental value (step 1)	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	Significant impact (step 2, part A)	31.20
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	31.14

***Area* (offset site)**

Offset calculation *Area*							
Offsets calculation	Description	Proposed offset (area in hectares)	2.28	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.06
	Conservation of remnant native vegetation	Current quality of offset site (scale)	5.00	Time until offset site secured (years)	2.00	What-if Analysis	39.7%
		Future quality WITHOUT offset (scale)	5.00	Risk of future loss WITHOUT offset (%)	15.0%		
		Future quality WITH offset (scale)	5.00	Risk of future loss WITH offset (%)	10.0%	What-if Analysis Reinstate Formula	
		Time until ecological benefit (years)	1.00				
		Confidence in offset result (%)	90.0%			OFFSET ADEQUATE?	NO

Calculation	Score (Feature)	Rationale
Conservation significance		
Description	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	The applicant proposed to clear 31 trees of a vegetation complex having 17% extent remaining, in a local area with 6.4% vegetation extent remaining. The trees proposed to clear provides some foraging value and future breeding value for Carnaby's black cockatoo.
Type of environmental value	Species (flora/fauna)	Carnaby's BC is listed as a threatened fauna species under the Commonwealth EPBC Act and state BC Act.
Conservation significance of environmental value	Rare/threatened species - endangered	Endangered
Landscape-level value impacted	yes/no	Yes, area provides local linkage values
Significant impact		
Description	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	20 trees include 17 York gum trees and 3 Wandoo trees
Significant impact (hectares) / Type of feature	0.20	20 trees are equivalent to 0.20 hectare (1 tree = 0.01 hectare)
Quality (scale) / Number	7.00	The application area is within the Carnaby's BC distribution area. There is one record of Carnaby BC in the local area and the closest roosting/breeding site is over 30 km away. No signs of fauna has been observed during the DWER site inspection. The size of trees proposed to clear is relatively small, with many juvenile trees. However, noting application area is in the Wheatbelt region where foraging habitat is scarce, the application area is considered as significant habitat for Carnaby's BC.
Rehabilitation credit		
N/A	N/A	None
Offset		
Description	Conservation of remnant native vegetation	The applicant proposed to use the Reserve 3203 located on the subject road, adjacent to the proposed works as an offset site. The Reserve 3203 vesting will be changed from "Sand & gravel quarry" to "Recreation/Conservation"
Proposed offset (area in hectares)	2.28	The area of fauna habitat Open *Eucalyptus* woodland and *Allocasuarina/Acacia/Banksia* Low Woodland in good condition, with good to very good foraging habitat for CBC (Aurora, 2024); and an area of *Allocasuarina/Acacia/Banksia* Low Woodland in degraded condition but with good BC foraging habiat (Aurora, 2024). This area can mitigate 39.7% of the significant residual impact (SRI).
Current quality of offset site / Start number (of type of feature)	5.00	The offset area consists of Eucalyptus and Banksia species which is foraging source for CBC. The vegetation/habitat is in good condition (Aurora, 2024).
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	5.00	Assuming that the vegetation condition will be unchanged without offset

Calculation	Score (Feature)	Rationale
Future quality WITH offset (scale) / Future number WITH offset	5.00	Assuming that the vegetation condition will be unchanged with offset, noting that no further management is proposed.
Time until ecological benefit (years)	1.00	As the land parcel is already vegetated the time until ecological benefit score is a 1.
Confidence in offset result (%)	0.9	The high confidence is applied for land vesting changing noting the Shire's commitment. The Shire has been working with DPLH about the vesting changing.
Duration of offset implementation (maximum 20 years)	20.00	The duration of 20 years is applied for land acquisition offset, as per DWER's Guideline for quantifying environmental offsets.
Time until offset site secured (years)	2.00	The Shire proposed the offset site which is currently vested to the Shire. It is assumed to take two years for paperwork procedure to change the land vesting
Risk of future loss without offset (%)	15	The offset site is currently vested for sand and gravel extraction. Therefore, the risk of loss is higher.
Risk of future loss with offset (%)	10	The offset site will be changed to "Recreation/Conservation". This will reduce the risk of loss.

Calculation 1.3. CBC habitat – Allocasuarina/Acacia/ Banksia Low Woodland in Very Good condition

Environmental value (step 1)	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	Significant impact (step 2, part A)	31.20
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	31.14

***Area* (offset site)**

Offset calculation *Area*							
Offsets calculation	Description	Proposed offset (area in hectares)	0.47	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.02
	Conservation of remnant native vegetation	Current quality of offset site (scale)	7.00	Time until offset site secured (years)	2.00	What-if Analysis	11.5%
		Future quality WITHOUT offset (scale)	7.00	Risk of future loss WITHOUT offset (%)	15.0%		
		Future quality WITH offset (scale)	7.00	Risk of future loss WITH offset (%)	10.0%	What-if Analysis Reinstate Formula	
		Time until ecological benefit (years)	1.00				
		Confidence in offset result (%)	90.0%			OFFSET ADEQUATE?	NO

Calculation	Score (Feature)	Rationale
Conservation significance		
Description	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	The applicant proposed to clear 31 trees of a vegetation complex having 17% extent remaining, in a local area with 6.4% vegetation extent remaining. The trees proposed to clear provides some foraging value and future breeding value for Carnaby's black cockatoo.
Type of environmental value	Species (flora/fauna)	Carnaby's BC is listed as a threatened fauna species under the Commonwealth EPBC Act and state BC Act.
Conservation significance of environmental value	Rare/threatened species - endangered	Endangered
Landscape-level value impacted	yes/no	Yes, area provides local linkage values
Significant impact		
Description	Twenty (20) trees, equivalent to 0.20 hectares, that provide foraging and future breeding habitat for Carnaby's cockatoo	20 trees include 17 York gum trees and 3 Wandoo trees
Significant impact (hectares) / Type of feature	0.20	20 trees are equivalent to 0.20 hectare (1 tree = 0.01 hectare)
Quality (scale) / Number	7.00	The application area is within the Carnaby's BC distribution area. There is one record of Carnaby BC in the local area and the closest roosting/breeding site is over 30 km away. No signs of fauna has been observed during the DWER site inspection. The size of trees proposed to clear is relatively small, with many juvenile trees. However, noting application area is in the Wheatbelt region where foraging habitat is scarce, the application area is considered as significant habitat for Carnaby's BC.
Rehabilitation credit		
N/A	N/A	None
Offset		
Description	Conservation of remnant native vegetation	The applicant proposed to use the Reserve 3203 located on the subject road, adjacent to the proposed works as an offset site. The Reserve 3203 vesting will be changed from "Sand & gravel quarry" to "Recreation/Conservation"
Proposed offset (area in hectares)	0.47	The area of fauna habitat Allocasuarina/Acacia/Banksia Low Woodland (Aurora, 2024) in very good condition within the proposed offset area, with suitable foraging habitat for CBC in good to very good condition. This area can mitigate 11.5% of the significant residual impact.
Current quality of offset site / Start number (of type of feature)	7.00	The vegetation of the offset are is in very good condition. The offset site consists of Banksia species which is foraging source for CBC. Foraging habitat is considered good to very good condition (Aurora, 2024).
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	7.00	Assuming that the vegetation condition will be unchanged without offset

Calculation	Score (Feature)	Rationale
Future quality WITH offset (scale) / Future number WITH offset	7.00	Assuming that the vegetation condition will be unchanged with offset, noting that no further management is proposed.
Time until ecological benefit (years)	1.00	As the land parcel is already vegetated the time until ecological benefit score is a 1.
Confidence in offset result (%)	0.9	The high confidence is applied for land vesting changing noting the Shire's commitment. The Shire has been working with DPLH about the vesting changing.
Duration of offset implementation (maximum 20 years)	20.00	The duration of 20 years is applied for land acquisition offset, as per DWER's Guideline for quantifying environmental offsets.
Time until offset site secured (years)	2.00	The Shire proposed the offset site which is currently vested to the Shire. It is assumed to take two years for paperwork procedure to change the land vesting
Risk of future loss without offset (%)	15	The offset site is currently vested for sand and gravel extraction. Therefore, the risk of loss is higher.
Risk of future loss with offset (%)	10	The offset site will be changed to "Recreation/Conservation". This will reduce the risk of loss.

Calculation 2: Significant remnant within an extensively cleared landscape

Calculation 2.1. Extensively cleared landscape – Open Eucalyptus Woodland and Allocasuarina/Acacia/ Banksia Low Woodland in Very Good condition

Environmental value (step 1)	Thirty one (31) trees, equivalent to 0.31 hectares, that are a part of a significant remnant within an extensively cleared landscape	Significant impact (step 2, part A)	31.31
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	31.19

***Area* (offset site)**

Offset calculation *Area*							
Offsets calculation	Description	Proposed offset (area in hectares)	2.33	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.08
	Conservation of remnant native vegetation	Current quality of offset site (scale)	7.00	Time until offset site secured (years)	2.00	What-if Analysis	43.8%
		Future quality WITHOUT offset (scale)	7.00	Risk of future loss WITHOUT offset (%)	15.0%		
		Future quality WITH offset (scale)	7.00	Risk of future loss WITH offset (%)	10.0%	What-if Analysis Reinstate Formula	
		Time until ecological benefit (years)	1.00				
		Confidence in offset result (%)	90.0%			OFFSET ADEQUATE?	NO

Calculation	Score (Feature)	Rationale
Conservation significance		
Description	Thirty-one (31) trees, equivalent to 0.31 hectares, that are a part of a significant remnant within an extensively cleared landscape	The applicant proposed to clear 31 trees of a vegetation complex having 17% extent remaining, in a local area with 6.4% vegetation extent remaining. The trees proposed to clear provides some foraging value and future breeding value for Carnaby's black cockatoo.
Type of environmental value	Vegetation/habitat	As above
Conservation significance of environmental value	Terrestrial native vegetation complex - <30% extent remaining in the bioregion	
Landscape-level value impacted	yes/no	Yes, area provides local linkage values
Significant impact		
Description	Thirty-one (31) trees, equivalent to 0.31 hectares, that are a part of a significant remnant within an extensively cleared landscape	Trees proposed for clearing include 10 Acacia trees, 17 York gum trees, 3 Wandoo trees, 1 dead tree (maybe York gum)
Significant impact (hectares) / Type of feature	0.31	31 trees are equivalent to 0.31 hectare (1 tree = 0.01 hectare)
Quality (scale) / Number	6.00	The applicant proposed to clear 31 trees of a vegetation complex having 17% extent remaining, in a local area with 6.4% vegetation extent remaining. The trees proposed to clear provides some foraging value and future breeding value for Carnaby's black cockatoo. The application area consists of trees along a road. The understory is disturbed, consisting of invasive weeds. There is no middle storey present. However, noting site context, and the extensively cleared landscape, the proposed clearing is considered to have a moderate quality score.
Rehabilitation credit		
N/A	N/A	None
Offset		
Description	Conservation of remnant native vegetation	The applicant proposed to use the Reserve 3203 located on the subject road, adjacent to the proposed works as an offset site. The Reserve 3203 vesting will be changed from "Sand & gravel quarry" to "Recreation/Conservation"
Proposed offset (area in hectares)	2.33	The area of Open Eucalyptus woodland and Allocasuarina/Acacia/Banksia Low Woodland (Aurora, 2024) in very good condition within the proposed offset area, with Eucalyptus and Acacia species similar to area proposed to be cleared. This area can mitigate 43.8% of the significant residual impact.
Current quality of offset site / Start number (of type of feature)	7.00	The vegetation of the offset site is in very good condition.

Calculation	Score (Feature)	Rationale
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	7.00	Assuming that the vegetation condition will be unchanged without offset
Future quality WITH offset (scale) / Future number WITH offset	7.00	Assuming that the vegetation condition will be unchanged with offset, noting that no further management is proposed.
Time until ecological benefit (years)	1.00	As the land parcel is already vegetated the time until ecological benefit score is a 1.
Confidence in offset result (%)	0.9	The high confidence is applied for land vesting changing noting the Shire's commitment. The Shire has been working with DPLH about the vesting changing.
Duration of offset implementation (maximum 20 years)	20.00	The duration of 20 years is applied for land acquisition offset, as per DWER's Guideline for quantifying environmental offsets.
Time until offset site secured (years)	2.00	The Shire proposed the offset site which is currently vested to the Shire. It is assumed to take two years for paperwork procedure to change the land vesting
Risk of future loss without offset (%)	15	The offset site is currently vested for and and gravel extraction. Therefore, the risk of loss is higher.
Risk of future loss with offset (%)	10	The offset site will be changed to "Recreation/Conservation". This will reduce the risk of loss.

Calculation 2.2. Extensively cleared landscape – Open Eucalyptus woodland, Acacia/Allocasuarina Low Open Woodland and Allocasuarina/Acacia/Banksia Low Woodland (Aurora, 2024) in Good condition

Environmental value (step 1)	Thirty one (31) trees, equivalent to 0.31 hectares, that are a part of a significant remnant within an extensively cleared landscape	Significant impact (step 2, part A)	31.31
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	31.19

***Area* (offset site)**

Offset calculation *Area*							
Offsets calculation	Description	Proposed offset (area in hectares)	4.33	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.11
	Conservation of remnant native vegetation	Current quality of offset site (scale)	5.00	Time until offset site secured (years)	2.00	What-if Analysis	58.0%
		Future quality WITHOUT offset (scale)	5.00	Risk of future loss WITHOUT offset (%)	15.0%		
		Future quality WITH offset (scale)	5.00	Risk of future loss WITH offset (%)	10.0%	What-if Analysis Reinstate Formula	
		Time until ecological benefit (years)	1.00				
		Confidence in offset result (%)	90.0%			OFFSET ADEQUATE?	NO

Calculation	Score (Feature)	Rationale
Conservation significance		
Description	Thirty-one (31) trees, equivalent to 0.31 hectares, that are a part of a significant remnant within an extensively cleared landscape	The applicant proposed to clear 31 trees of a vegetation complex having 17% extent remaining, in a local area with 6.4% vegetation extent remaining. The trees proposed to clear provides some foraging value and future breeding value for Carnaby's black cockatoo.
Type of environmental value	Vegetation/habitat	As above
Conservation significance of environmental value	Terrestrial native vegetation complex - <30% extent remaining in the bioregion	
Landscape-level value impacted	yes/no	Yes, area provides local linkage values
Significant impact		
Description	Thirty-one (31) trees, equivalent to 0.31 hectares, that are a part of a significant remnant within an extensively cleared landscape	Trees proposed for clearing include 10 Acacia trees, 17 York gum trees, 3 Wandoo trees, 1 dead tree (maybe York gum)
Significant impact (hectares) / Type of feature	0.31	31 trees are equivalent to 0.31 hectare (1 tree = 0.01 hectare)
Quality (scale) / Number	6.00	The applicant proposed to clear 31 trees of a vegetation complex having 17% extent remaining, in a local area with 6.4% vegetation extent remaining. The trees proposed to clear provides some foraging value and future breeding value for Carnaby's black cockatoo. The application area consists of trees along a road. The understory is disturbed, consisting of invasive weeds. There is no middle storey present. However, noting site context, and the extensively cleared landscape, the proposed clearing is considered to have a moderate quality score.
Rehabilitation credit		
N/A	N/A	None
Offset		
Description	Conservation of remnant native vegetation	The applicant proposed to use the Reserve 3203 located on the subject road, adjacent to the proposed works as an offset site. The Reserve 3203 vesting will be changed from "Sand & gravel quarry" to "Recreation/Conservation"
Proposed offset (area in hectares)	4.33	The area of Open Eucalyptus woodland and Allocasuarina/Acacia/Banksia Low Woodland (Aurora, 2024) in very good condition within the proposed offset area, with Eucalyptus and Acacia species similar to area proposed to be cleared. This area can mitigate 43.8% of the significant residual impact.
Current quality of offset site / Start number (of type of feature)	5.00	The vegetation of the offset site is in good condition.

Calculation	Score (Feature)	Rationale
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	5.00	Assuming that the vegetation condition will be unchanged without offset
Future quality WITH offset (scale) / Future number WITH offset	5.00	Assuming that the vegetation condition will be unchanged with offset, noting that no further management is proposed.
Time until ecological benefit (years)	1.00	As the land parcel is already vegetated the time until ecological benefit score is a 1.
Confidence in offset result (%)	0.9	The high confidence is applied for land vesting changing noting the Shire's commitment. The Shire has been working with DPLH about the vesting changing.
Duration of offset implementation (maximum 20 years)	20.00	The duration of 20 years is applied for land acquisition offset, as per DWER's Guideline for quantifying environmental offsets.
Time until offset site secured (years)	2.00	The Shire proposed the offset site which is currently vested to the Shire. It is assumed to take two years for paperwork procedure to change the land vesting
Risk of future loss without offset (%)	15	The offset site is currently vested for sand and gravel extraction. Therefore, the risk of loss is higher.
Risk of future loss with offset (%)	10	The offset site will be changed to "Recreation/Conservation". This will reduce the risk of loss.

Appendix G. Photographs of the vegetation

Photos of trees proposed to be cleared (pointed by red arrows). Trees pointed by green arrows are maintained thanks to the adjustment of the drainage design (refer to Section 3.1)

Photo 1: Eight (8) Acacia trees,
unhealthy with varying proportion of dead matters

Photo 2: One (1) Acacia tree,
unhealthy within proposed drainage area

Photo 3: One (1) Acacia, unhealthy, within proposed drainage area

Photo 4: One (1) York gum

Photo 5: One (1) York gum, situated in shoulder area

Photo 6: One (1) York gum, unhealthy, front with poor historic pruning, situated in shoulder area

Photo 7: One (1) York gum, near corner, safety concern

Photo 8: One (1) dead tree

Photo 9: Two (2) York gum trees

Photo 10: Two (2) York gum and one (1) Wandoo trees

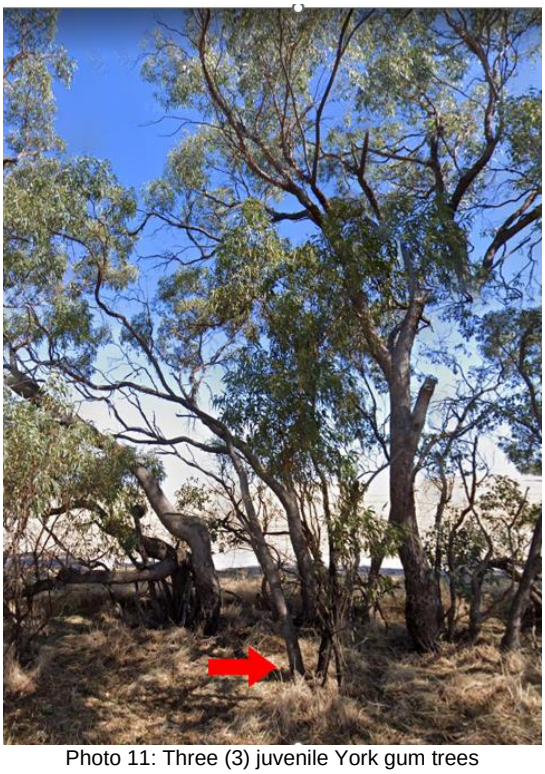


Photo 11: Three (3) juvenile York gum trees

Photo 12: Two (2) York gum trees

Photo 13: One (1) York gum tree, with 6 stems, situated in the central area of proposed drain

Photo 14: Two (2) York gum trees

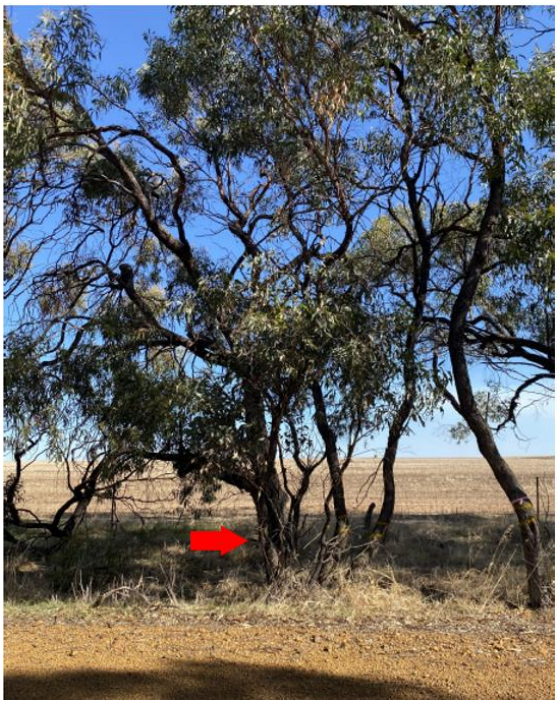


Photo 15: One (1) York gum, multi stems
due to epicormic growth and poor pruning previously

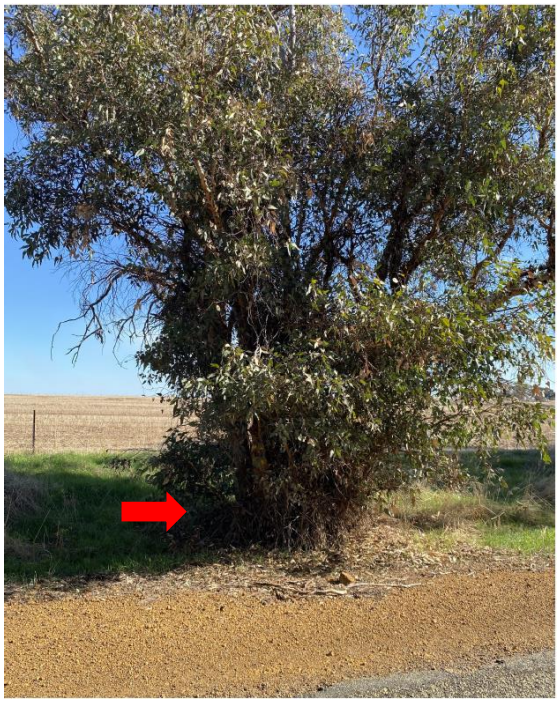


Photo 16: One (1) Wandoo tree

Photo 17: One (1) Wandoo + one (1) York gum trees, situated in the central area of proposed drain

Appendix H. Sources of information

H.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Contours (DPIRD-073)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- 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
- 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

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Shire of Northam (2023a) *Response to the Request for further information for clearing permit application CPS 9937/1*, received 19 May 2023, 1 June 2023 and 30 June 2023 (DWER Ref: DWERDT786596, DWERDT790191 and DWERDT799334).

Shire of Northam (2023b) *Response to the Notification of intent to refuse for clearing permit application CPS 9937/1*, received 28 November 2023 (DWER Ref: DWERDT873686).

Shire of Northam (2024a) *Summarizing progress of clearing permit application CPS 9937/1 and proposal to change the vesting of Reserve 3203.* Received 18 January 2023 (DWER Ref: DWERDT906523).

Shire of Northam (2024a) *The Shire's agreement on the revised offset area for the clearing permit application CPS 9937/1.* Received 03 May 2024 (DWER Ref: DWERDT946342).

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