Clearing Assessment Report – CPS 818

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T4 Widening - M002 – Bindoon Moora – SLK 30.50 – SLK 35.00

July 2022

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Contents

Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	Environment Officer	Draft v1	19 July 2022
Reviewer:	Senior Environment Officer	Rev 0	21/07/2022

1 PURPOSE

The purpose of this Clearing Assessment Report (CAR) is to provide a report detailing the assessment of native vegetation clearing that is proposed to be undertaken using the Statewide Clearing Permit CPS 818 issued to Main Roads Western Australia (Main Roads).

The CAR outlines the key activities associated with the project, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the project using the ten Clearing Principles, and the strategies used to manage vegetation clearing.

2 SCOPE

2.1 Project Scope

Project Name: T4 Widening - M002 – Bindoon Moora – SLK 30.50 – SLK 35.00

Project Purpose / Components: The project involves the widening of Bindoon-Moora Road (M002) between 30.5 and 35.00 SLK to increase the current sealed width of 6.2 – 7.2m to 9.0m. The aim of the project is to improve road user safety by attempting to reduce the frequency and severity of crashes.

The proposed clearing undertaking using CPS 818 is : 0.07ha representing nine individual trees (the Clearing Area). Details of the nine trees proposed to be cleared are outlined in **Table 1**.

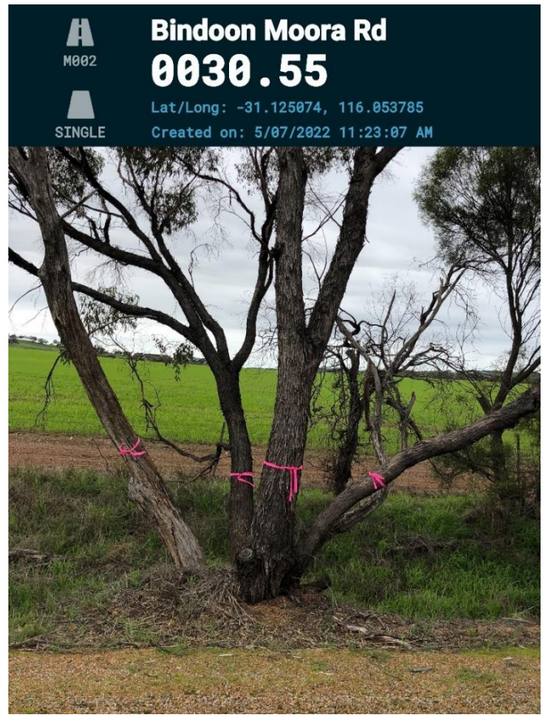
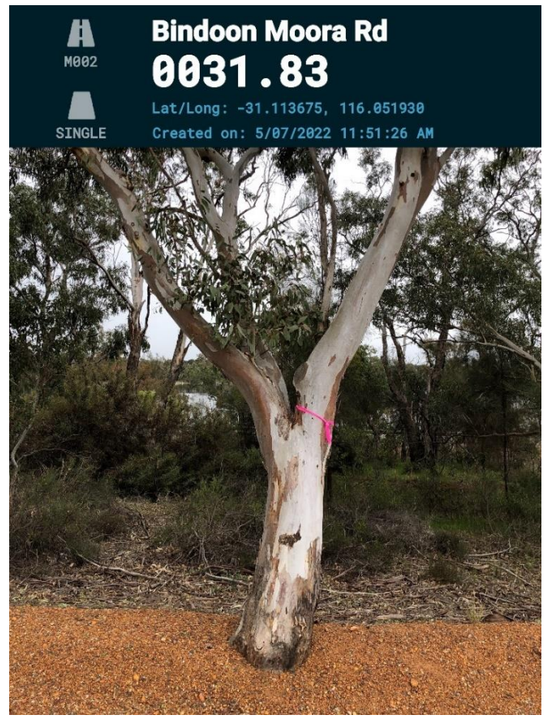
The proposed temporary clearing undertaking using CPS 818 is: 0ha

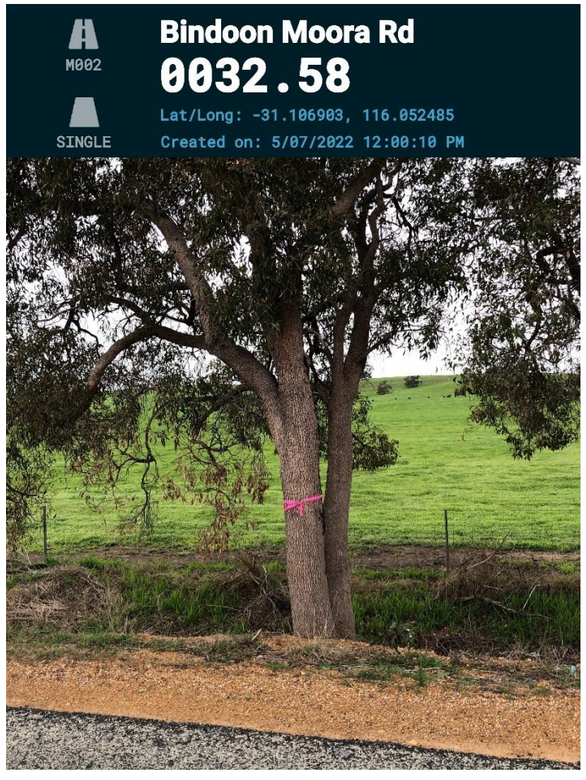
Project Location(s): The project area is located on the Bindoon to Moora Road between SLK 30.5 and 35.0 within the Shire of Chittering as shown in **Figure 1**.

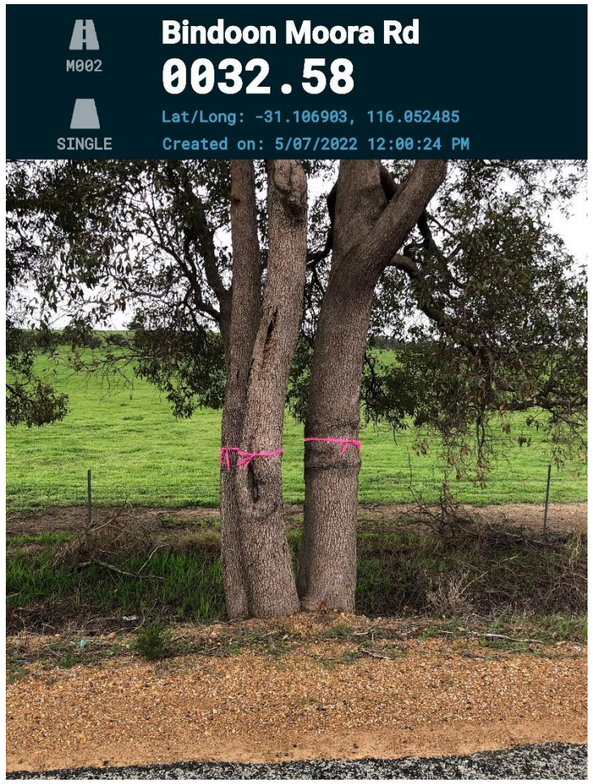
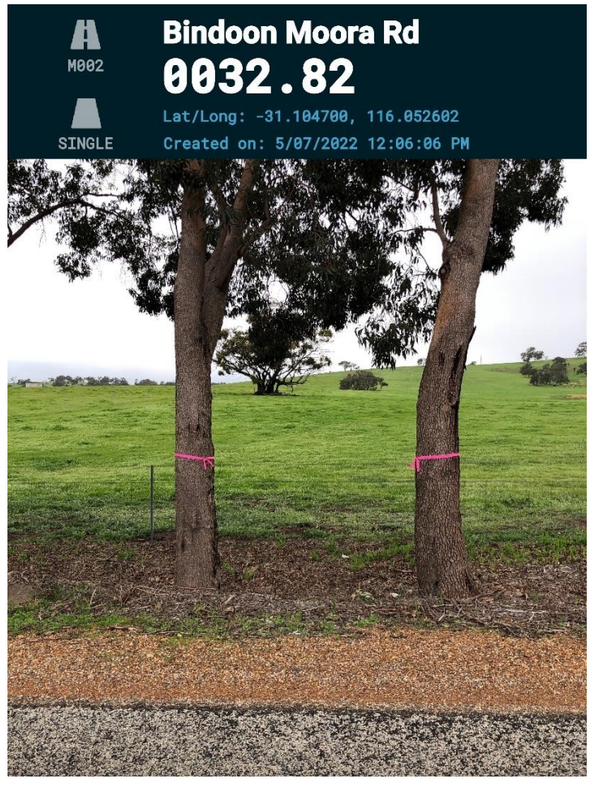
2.2 Assessment Report Scope

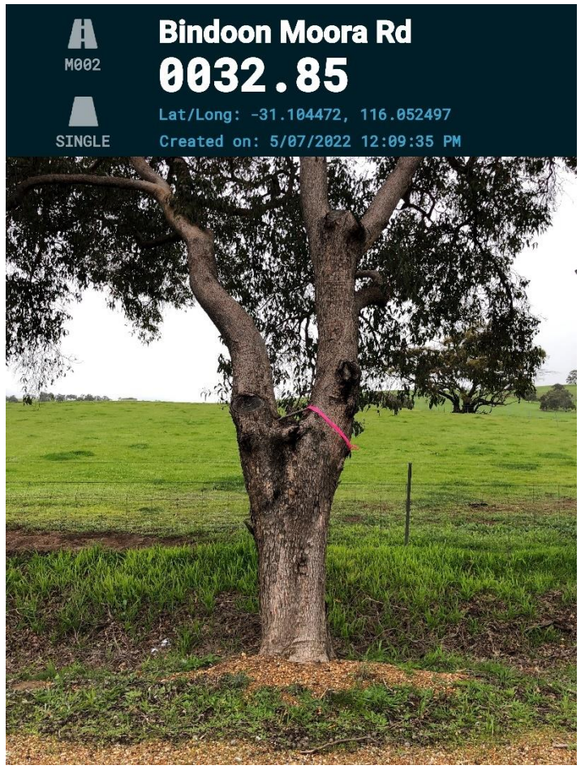
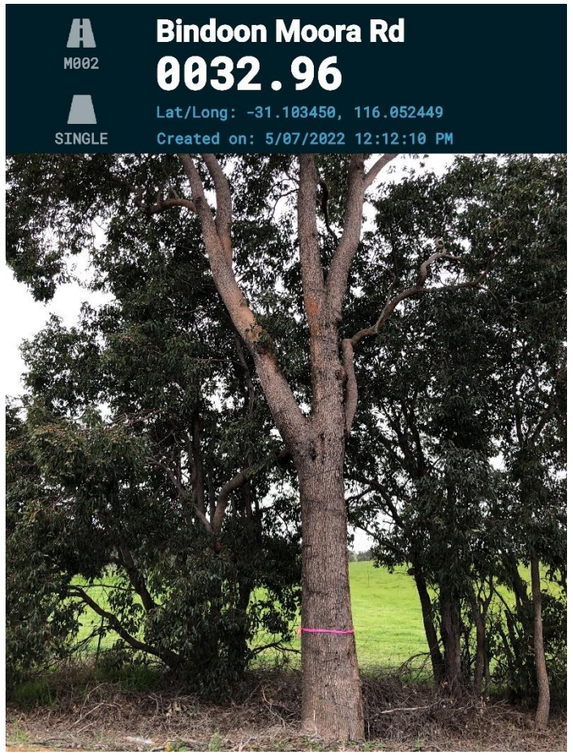
The assessment area, see **Figure 2**, is confined to a local area of a 10km radius.

Table 1: Trees affected by the proposed works

TREE NO.	SLK	PROPOSED WORKS	PHOTO
TREES PROPOSED TO BE CLEARED			
1	30.55	**Clearing of one tree** – *Eucalyptus rudis* (Flooded Gum) Site inspection noted a multi-trunk tree comprising five trunks. Of these trunks two were dead. None of the stems displayed a Diameter at Breast Height (DBH) of >30cm. No hollows were observed. Tree located within 'Completely degraded' vegetation with the understorey comprising introduced weeds and grass species.	
2	31.83	**Clearing of one tree** - *Eucalyptus wandoo* Site inspection noted a single trunk tree displaying a DBH of >30cm. No hollows were observed. Tree located within 'Completely degraded' vegetation with the understorey comprising introduced weeds and grass species. Due to the proximity of Tree Number 2 and Tree Number 3 at the same recorded SLK, they have been grouped where their location has been illustrated in **Figure 1**.	

3	31.83	**Clearing of one tree** - *Eucalyptus wandoo* Site inspection noted a multi-trunk tree comprising three trunks. Two of the trunks displayed a DBH of >30cm and one a DBH of greater than >50cm. All trunks are required to be cleared. No hollows were observed. Tree located within 'Completely degraded' vegetation with the understorey comprising introduced weeds and grass species. Due to the proximity of Tree Number 2 and Tree Number 3 at the same recorded SLK, they have been grouped where their location has been illustrated in **Figure 1**.	
4	32.58	**Clearing of one tree** - *Corymbia calophylla* (Marri) Site inspection noted a multi-trunk tree comprising two trunks. One of the trunks displayed a DBH of >30cm and one a DBH of <30cm. Only the trunk closest to the road is required to be cleared (DBH >30cm). No hollows were observed. Tree located within 'Completely degraded' vegetation with the understorey comprising introduced weeds and grass species. Due to the proximity of Tree Number 4 and Tree Number 5 at the same recorded SLK, they have been grouped where their location has been illustrated in **Figure 1**.	

5	32.58	**Clearing of one tree** - *Corymbia calophylla* (Marri) Site inspection noted a multi-trunk tree comprising three trunks. Two of the trunks displayed a DBH of >30cm and one a DBH of <30cm. All of the trunks are required to be cleared. No hollows were observed. Tree located within 'Completely degraded' vegetation with the understorey comprising introduced weeds and grass species. Due to the proximity of Tree Number 4 and Tree Number 5 at the same recorded SLK, they have been grouped where their location has been illustrated in **Figure 1**.	
6 - 7	32.82	**Clearing of two trees** - *Corymbia calophylla* (Marri) Site inspection noted two, single trunk trees displaying a DBH of >30cm. No hollows were observed. Tree located within 'Completely degraded' vegetation with the understorey comprising introduced weeds and grass species. Due to the proximity of Tree Number 6 and Tree Number 7 at the same recorded SLK, they have been grouped where their location has been illustrated in **Figure 1**.	

8	32.85	**Clearing of one tree** - *Corymbia calophylla* (Marri) Site inspection noted a single-trunk tree with a DBH of >40cm. No hollows were observed. Tree located within 'Completely degraded' vegetation with the understorey comprising introduced weeds and grass species.	
9	32.96	**Clearing of one tree** - *Corymbia calophylla* (Marri) Site inspection noted a single-trunk tree with a DBH of >40cm. No hollows were observed. Tree located within 'Completely degraded' vegetation with the understorey comprising introduced weeds and grass species.	

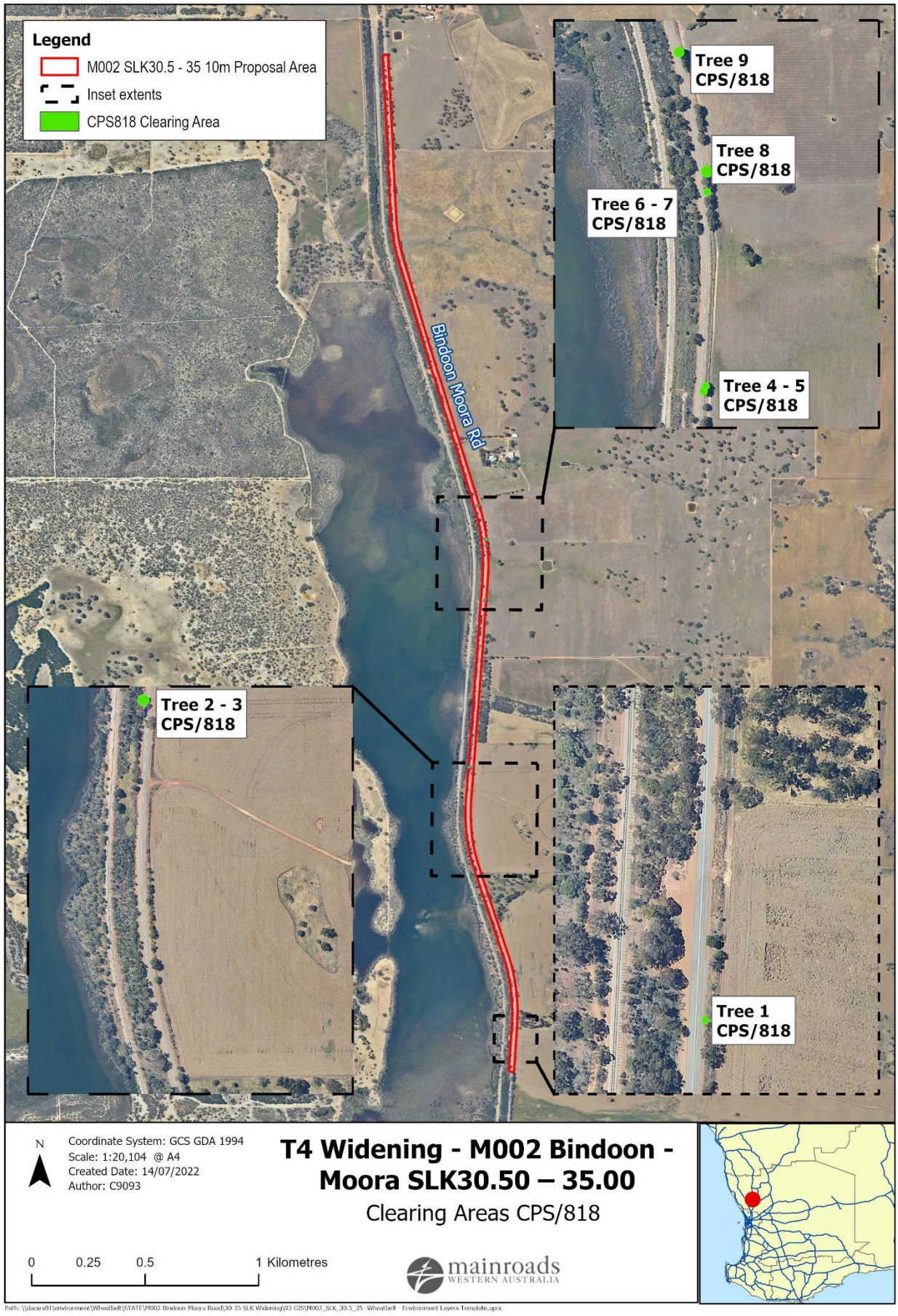


Figure 1: Clearing Area – Individual Tree Clearing Locations

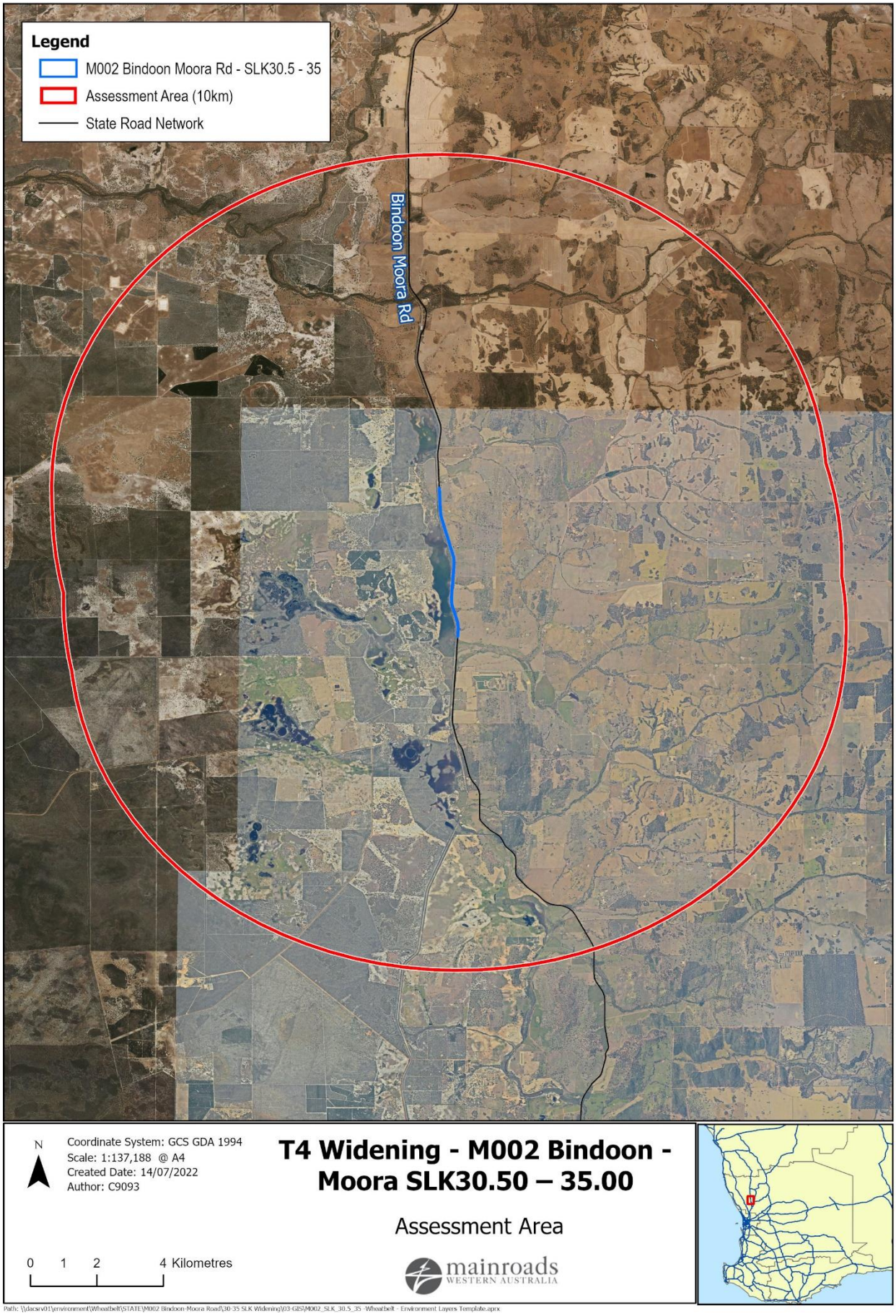


Figure 2: Assessment Area (10km)

2.3 Alternatives to clearing

This section is to be widened on both sides as part of the Blackspot programme following several fatalities and serious crashes along this section in recent years. As the project will require the clearing to achieve a 9.5 m wide sealed formation on an alignment, no alternatives to clearing exist.

2.4 Measures to Avoid, Minimise, Reduce and Manage Project Clearing Impacts

The design and management measures implemented to avoid and minimise the clearing impacts by the project are provided in **Table 2**.

In addition, impacts to vegetation will be minimised through the implementation of the following measures:

- the Clearing Area will be demarcated prior to the commencement of native vegetation clearing;
- where possible vegetation will be pruned as opposed to removed;
- further Project clearing will be avoided as the site office, materials storage areas, construction vehicles/machinery and access tracks will be located on previously disturbed or cleared areas; and
- development and implementation of a site-specific CEMP which will establish the following vegetation management actions including:
    - clearing and access control measures (such as demarcation of clearing boundaries);
    - weed and dieback management;
    - erosion and sediment control;
    - waste and fire management;
    - topsoil management;
    - dust control; and
    - tree and vegetation retention where possible.

Table 2: Measures undertaken to Avoid, Minimise, Reduce and Manage the Project Clearing Impacts

Design or Management Measure	Discussion and Justification
Steepen batter slopes	The widened seal is proposed to stay within the existing road formation. Batters will be steepened as required to achieve the target seal width.
Installation of safety barriers	The nine trees are too close to the road to allow for the safe and effective use of safety barriers.
Alignment to one side of existing road	The widened seal is proposed to stay within the existing road formation which occurs on either side of the seal.

2.5 Approved Policies and Planning Instruments

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 1.3), Main Roads has also had regard to the below instruments.

Other Legislation of relevance for assessment of clearing and planning/other matters

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Rights in Water and Irrigation Act 1914*
- *Aboriginal Heritage Act 1972* (WA)
- *Town Planning and Development Act 1928*

Environmental Protection Policies

- Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992;
- Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011

Other Relevant policies and guidance documents:

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (DEC, December 2014)
- Procedure: Native vegetation clearing permits (DWER, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, August 2014)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020)
- Approved conservation advice under section 266B of the EPBC Act for threatened flora/fauna/vegetation communities
- Approved Recovery Plans for threatened species
- EPBC Act Referral guidelines for the three threatened black cockatoo species
- Strategic advice - EPA

3 SUMMARY OF SURVEYS

3.1 Biological Survey

A flora, vegetation and fauna survey was conducted over the Clearing Area on 13 October 2021 by Strategen-JBS&G. The resultant report *Bindoon-Moora Road (M002) Widening SLK 30-35 Biological Survey* (Strategen JBS&G 2022) has been used to inform the environmental assessment. The Survey Area covers the entirety of the Clearing Area.

Section 3.1.1 contains the summary of the survey.

3.1.1 Summary of Biological Survey

Strategen JBS&G (2022) did not locate any Threatened flora species as listed under section 178 of the *Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)* or section 19(1) of the *Biodiversity Conservation Act 2016 (WA)* within the Clearing Area. Furthermore, no conservation significant flora species were identified.

A desktop assessment conducted by Strategen JBS&G (2022) identified 9 threatened and 58 Priority Flora species with potential to occur within the Clearing Area based on general habitat requirements.

The survey was conducted during the main flowering season for flora of the southwest botanical region (i.e. spring), including the Threatened and Priority species with potential to occur in the Clearing Area. This is the optimal time to detect the majority of species present.

As no conservation significant species were recorded during the survey, the species identified by the desktop assessment with potential to occur do not occur within the Clearing Area (Strategen JBS&G 2022).

Nineteen introduced flora taxa (weeds) within the survey. None of the identified species are Declared Plant species in Western Australia pursuant to section 22 of the *Biosecurity and Agriculture Management Act 2007*.

An analysis of the Main Roads TEC/PEC layer identifies that the Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (EPBC Act Endangered, BC Act P3) may potentially overlap the Clearing Area. However, from the results of the field survey, none of the native vegetation within the Clearing Area is considered to form part of a TEC or PEC (Strategen JBS&G 2022).

Within the Strategen JBS&G (2022) Survey, Carnaby's Cockatoo was recorded flying over the Survey Area, and evidence of Forest Red-tailed Black-Cockatoo foraging was observed.

No roosts were identified during the assessment, however, the Clearing Area contained potential roosting habitat in the form of tall Marri and Wandoo trees. Strategen JBS&G (2022) conducted a black cockatoo foraging habitat assessment of vegetation within the Clearing Area. Based on the composition, structure and condition of the vegetation assessed, the foraging habitat identified within the Clearing Area was classified as moderate foraging value for Marri habitat and low to moderate foraging value for Wandoo habitats.

No hollows were located within the Clearing Area.

Strategen JBS&G (2022) did not locate any other conservation significant fauna within the field survey.

3.2 Site Investigation

A site inspection was undertaken by a Senior Environment Officer on 5 July 2022. Photos and observations of trees which will be affected by the proposal are summarised in **Table 1.** Each of the nine trees were assessed for:

- the presence of hollows which may be suitable for black cockatoo species;
- the DBH of the tree to determine likelihood of future hollow creation; and
- a condition assessment was conducted on the vegetation within which each of the trees were located.

In summary:

- no hollows were observed;
- one tree was recorded with a DNH of >50cm;
- all trees were located within a 'Completely degraded' environment due to the lack of understory or midstory strata layers, with trees growing associated with the road shoulder within the already cleared maintenance zone.

3.3 Assessment of Dieback Risk

The land surrounding the Clearing Area receives an annual mean rainfall of 620.7mm (recorded from the closest BOM weather station, Gingin Aero (Site No. 009178)) (BOM, 2022). As the Clearing Area is south of the 26th parallel and has rainfall is over 400mm/yr, there is a possibility that *Phytophthora dieback* host species may be present.

The Clearing Area has not been the subject of a specific dieback survey; however, a dieback survey has been conducted within the road reserve on the area directly adjacent to the South (26.4 SLK to 30.6SLK) (Glenvan Consulting 2022). No dieback infestations were observed in this assessment. Glenvan Consulting (2022) considered the majority of the study area 'excluded and unprotectable' due to being degraded and devoid of vegetation. This includes the section adjacent to Lake Wannamal Nature Reserve, which featured vegetation dominated by *Allocasuarina huegeliana* with little or no understorey, and all areas located on the eastern side of the road adjacent to cleared farmland.

The above information can be used to inform the risk of dieback occurrence within the Clearing Area associated with this proposal.

Dieback is not considered to be an issue. While the Project is located below the 26th parallel and is an area that receives more than 400mm of annual rainfall per year, it is not within or adjacent to DBCA Estate and there are no known occurrences of dieback within the immediate locality.

The Lake Wannamal Nature Reserve is located to the West of the Clearing Area, however, is separated by an ~80m distance by a railway reserve and another road reserve. This physical separation prevents any potential impacts to DBCA managed estate from the implementation of the Project.

It was also noted within Glenvan Consulting (2022) that the train line running parallel to Bindoon-Moora Road effectively acts as a barrier which would almost certainly prevent the spread of disease (should it be present) from the Clearing Area into the nature reserve.

Activities associated with the Project are confined to the previously impacted maintenance zone. Trees proposed to be cleared are growing in association with the shoulder of the road, not within the areas of remnant vegetation located further to the west within the railroad reserve. As machinery movement will be limited to these already impacted areas, the risk of spreading dieback into uninfested areas is avoided. **Plate 1** displays an example of a trees to be cleared (Tree 2 and Tree 3), their location within the road shoulder, the separation from areas of remnant vegetation and the nature reserve on the other side of the raised railway line.

Plate 1: Tree 7 and Tree 8 located within the previously impacted road shoulder

Furthermore, the following steps to minimise the risk of introduction and spread of dieback will be implemented:

- clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- ensure that no known dieback-affected soil, mulch, fill or other material are brought into an area that is not affected by dieback; and
- restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

By implementing the above measures, the Project will not introduce or spread dieback into uninfested areas.

Proposal is to proceed using Main Roads relevant Principal Environmental Management Requirements in Specification 204 Environmental Management.

4 VEGETATION DETAILS

4.1.1 Project Site Vegetation Description

The vegetation proposed to be cleared comprised nine trees located on the shoulder of the Bindoon to Moora Road. The trees are located within a 'Completely degraded' landscape with any understory comprising introduced weeds and grass species. Identified tree species are *Eucalyptus wandoo*, *Corymbia calophylla* (Marri) and *Eucalyptus rudis*.

A description of the vegetation proposed to be cleared (nine trees) is provided in **Table 1**.

Table 3 and **Table 4** provide details of the Pre-European Vegetation Associations with the Clearing Area and the remaining extents of these associations.

Table 3: Summary of Project Area's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Mogumber 4 - *Medium woodland; marri & wandoo* (Government of Western Australia, 2017)	Clearing of up to nine trees (**0.07 ha**) for road widening on Bindoon to Moora Road..	Completely Degraded (EPA 2016)	Vegetation description and condition determined from Main Roads site visit on 5 July 2022

Table 4: Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No.4	**Statewide**	1,054,279.89	284,102.41	26.95	6.43
	IBRA Bioregion Jarrah Forest	1,022,712.69	277,087.18	27.09	6.45
	IBRA Sub-region Northern Jarrah Forest	614,200.82	197,903.81	32.22	9.85
	Local Government Authority Shire of Chittering	54,209.63	13,971.91	25.77	1.26

4.1.2 Vegetation Complexes and Representation

Swan Coastal Plain and Southwest (Perth, Peel and Warren), vegetation has been mapped at a finer scale than Beard's map series of the State. **Table 5** presents the Heddle/Mattiske Vegetation complexes intersecting the Clearing Area.

Table 5: Vegetation Complexes (Heddle/Mattiske) within the Project Area

Heddle/Mattiske Veg Complex	Pre-European Extent (ha)	2017 Vegetation Extent	% Remaining
Wannamal Complex	2,492.00	1,263.49	50.70
Michibin	168,040.13	42,998.36	25.59

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

In assessing whether the project's proposed clearing is likely to have a significant impact on the environment, the project was assessed against the ten Clearing Principles (*Environmental Protection Act 1986,* Schedule 5).

Each principle has been assessed in accordance with DWER's 'A Guide to the Assessment of Applications to Clear Native Vegetation' and other relevant CPS Decision Reports prepared by DWER.

The proposed clearing is not likely to be at variance with the 10 Clearing Principles.

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Proposed clearing is not likely to be at variance to this Principle

Comment

Flora and Vegetation

The Proposal requires the clearing of 0.07ha of Native Vegetation representing nine individual trees. The tree species proposed to be cleared are *Eucalyptus wandoo* (two trees), *Corymbia calophylla* (Marri) (six trees) and *Eucalyptus rudis* (one tree). The clearing of nine individuals across three species represents a low level of biodiversity.

Activities associated with the Proposal are confined to the previously impacted maintenance zone. Trees proposed to be cleared are growing in association with the shoulder of the road, not within the areas of remnant vegetation located further to the west within the railroad reserve. The condition of the vegetation has therefore been assessed to be 'Completely degraded' due to the complete lack of mid or understory native vegetation within the Clearing Area.

Threatened and Priority Ecological Communities and Flora Species

An analysis of the Main Roads TEC/PEC layer identifies that the Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (EPBC Act Endangered, BC Act P3) may potentially overlap the Clearing Area. However, from the results of the field survey, none of the native vegetation within the Clearing Area is considered to form part of a TEC or PEC (Strategen JBS&G 2022).

Strategen JBS&G (2022) did not locate any Threatened flora species as listed under section 178 of the *Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)* or section 19(1) of the *Biodiversity Conservation Act 2016 (WA)* within the Clearing Area. Furthermore, no conservation significant flora species were identified.

Reserves and Linkages

A search of ArcGIS shapefiles indicates the Lake Wannamal Nature Reserve is located approximately 82m to the West of the Clearing Area. Separating the Clearing Area and the Lake Wannamal Nature Reserve is a ~30m wide strip of remnant vegetation, then a railway line, then another ~40m wide strip of Native Vegetation. Due to the separation distance, the physical barrier created by the railway line, and the low impact nature of the road widening activities, no impacts are anticipated by the implementation of the Proposal.

The Bindoon to Moora Road provides a north-south linkage through an area that has been subject to clearing for farmland. The Proposal will necessitate the removal of nine trees from the maintenance zone within the road reserve. Considering the relatively small amount of vegetation to be removed, and noting the presence of the Lake Wannamal Nature Reserve, it is unlikely that the Proposal will significantly impact the function of Bindoon to Moora Road reserve as a linkage within the regional area.

Fauna

A desktop assessment conducted by Strategen JBS&G (2022) identified 49 conservation significant vertebrate species (including Priority species). These were comprised of 7 reptiles, 31 birds, and 8 mammals. Wetland avifauna and marine mammals were removed from the list due to the lack of available habitat within the Clearing Area. With the aforementioned species removed, a total of 9 conservation significant species retrieved from the database searches were considered as either likely or possible to occur in the Clearing Area based on known distribution and broad habitat preference.

A revised assessment of impact was conducted based on available habitat within the Clearing Area, the Completely Degraded condition of the understory present in the Clearing Area and the small size of the impact area (0.07ha). These factors further reduce the likelihood of occurrence of species.

Following this review, 2 species were considered likely to occur (Forest Red-tailed Black-Cockatoo and Carnaby's Cockatoo) and the remaining 7 species unlikely to occur within the Clearing Area. Within the Strategen JBS&G (2022) Survey, Carnaby's Cockatoo was recorded flying over the Survey Area, and evidence of Forest Red-tailed Black-Cockatoo foraging was observed. Black cockatoo species are further discussed below.

Strategen JBS&G (2022) did not locate any other conservation significant fauna within the field survey.

Black Cockatoo

Strategen JBS&G (2022) conducted a black cockatoo foraging habitat assessment of vegetation within the Clearing Area. Based on the composition, structure and condition of the vegetation assessed, the foraging habitat identified within the Clearing Area was classified as moderate foraging value for Marri habitat and low to moderate foraging value for Wandoo habitats. In the local extent to the Clearing Area (12 km radius) there are extensive areas of foraging habitat comprising 10,351 ha present. The 0.07 ha of foraging habitat within the Clearing Area represents an insignificant 0.000676% of the local extent.

No roosts were identified during the assessment, however, the Clearing Area contained potential roosting habitat in the form of tall Marri and Wandoo trees. A review of the 2019 Great Cocky Count database shows no documented roost sites within 10km of the Clearing Area (Peck *et al*. 2019). The closest roost site is 50km south from the Clearing Area.

Of the nine trees proposed to be cleared, one tree displayed a DBH of >50cm, three trees a DBH of >40cm, seven trees a DBH of >30cm, and the remaining three trees >30cm. No hollows were observed in any of the trees within the Clearing Area. The removal of one tree with a DBH of >50cm, and thus considered suitable for potential future hollow development, is unlikely to have a significant impact on black cockatoo species.

The DBCA threatened fauna database returned 134 records of Carnaby's Cockatoo and 2 records of Forest Red-tailed Black Cockatoo from the vicinity of the Clearing Area (10 km, and therefore it is considered unlikely that the Forest Red-tailed Black Cockatoo would utilise the Clearing Area to the same extent as the Carnaby's Cockatoo.

The Clearing Area is located within the known distribution of Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo, and the vegetation contains species which may provide suitable foraging habitat. However, the removal of nine trees representing a low to moderate foraging value, within the extensive areas of available foraging habitat within the locality, is not anticipated to have any impact on either black cockatoo species.

The lack of identified roosts or hollows in the Clearing Area further reduces the likelihood of potential impacts to the species by the implementation of the Proposal.

Due to the above factors, no impacts to black cockatoo species are anticipated from the implementation of the Proposal.

No impacts to species of conservation significance are anticipated from the implementation of the Proposal.

Assessed Outcome:

Proposal clearing is not likely to be at variance to this Principle.

Methodology
Biological Survey Strategen JBS&G (2022)
DBCA shapefiles

Government of WA (2013) Main Roads Site Inspection (2022) Main Roads GIS Shapefiles

(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 indigenous to Western Australia.

Proposed clearing is not likely to be at variance to this Principle

Comment

A desktop assessment conducted by Strategen JBS&G (2022) identified 49 conservation significant vertebrate species (including Priority species). These were comprised of 7 reptiles, 31 birds, and 8 mammals. Wetland avifauna and marine mammals were removed from the list due to the lack of available habitat within the Clearing Area. With the aforementioned species removed, a total of 9 conservation significant species retrieved from the database searches were considered as either likely or possible to occur in the Clearing Area based on known distribution and broad habitat preference. A revised assessment of impact was conducted based on available habitat within the Clearing Area, the Completely degraded condition of the understory present in the Clearing Area and the small size of the impact area (0.07ha). These factors further reduce the likelihood of occurrence of species.

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Strategen JBS&G (2022) did not locate any other conservation significant fauna within the field survey.

Overall fauna habitat values within the survey area have been severely compromised by the removal of a significant proportion of the original native vegetation and the degradation of remnant patches. Natural attributes have been diminished and much of the Clearing Area would now only be utilised by generally common and widespread fauna species, with non-specific requirements which allow them to persist in disturbed/highly disturbed habitats (with the exception of black cockatoos discussed below).

Black Cockatoo

Strategen JBS&G (2022) conducted a black cockatoo foraging habitat assessment of vegetation within the Clearing Area. Based on the composition, structure and condition of the vegetation assessed, the foraging habitat identified within the Clearing Area was classified as moderate foraging value for Marri habitat and low to moderate foraging value for Wandoo habitats. In the local extent to the Clearing Area (12 km radius) there are extensive areas of foraging habitat comprising 10,351 ha present. The 0.07 ha of foraging habitat within the Clearing Area represents an insignificant 0.000676% of the local extent.

No roosts were identified during the assessment, however, the Clearing Area contained potential roosting habitat in the form of tall Marri and Wandoo trees. A review of the 2019 Great Cocky Count database shows no documented roost sites within 10km of the Clearing Area (Peck *et al*. 2019). The closest roost site is 50km south from the Clearing Area.

Of the nine trees proposed to be cleared, one tree displayed a DBH of >50cm, three trees a DBH of >40cm, seven trees a DBH of >30cm, and the remaining three trees >30cm. No hollows were observed in any of the trees within the Clearing Area. The removal of one tree with a DBH of >50cm, and thus considered suitable for potential future hollow development, is unlikely to have a significant impact on black cockatoo species.

The DBCA threatened fauna database returned 134 records of Carnaby's Cockatoo from the vicinity of the Clearing Area (10 km) and 2 records of Forest Red-tailed Black Cockatoo in the vicinity of the Clearing Area, and therefore it is considered unlikely that the Forest Red-tailed Black Cockatoo would utilise the Clearing Area to the same extent as the Carnaby's Cockatoo.

The Clearing Area is located within the known distribution of Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo, and the vegetation contains species which may provide suitable foraging habitat. However, the removal of nine trees representing a low to moderate foraging value, within the extensive areas of available foraging habitat within the locality, is not anticipated to have any impact on either black cockatoo species.

The lack of identified roosts or hollows in the Clearing Area further reduces the likelihood of potential impacts to the species by the implementation of the Proposal.

Due to the above factors, no impacts to black cockatoo species are anticipated from the implementation of the Proposal.

No impacts to species of conservation significance are anticipated from the implementation of the Proposal.

Assessed Outcome:
Proposal clearing is not likely to be at variance to this Principle.

Methodology
Biological Survey Strategen JBS&G (2022)
DBCA shapefiles
Government of WA (2013)
Main Roads Site Inspection (2022)
Main Roads GIS Shapefiles

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Proposal is not at variance to this Principle

Comment

A desktop assessment conducted by Strategen JBS&G (2022) identified 9 threatened and 58 Priority Flora species with potential to occur within the Clearing Area based on general habitat requirements.

Strategen JBS&G (2022) did not locate any Threatened flora species as listed under section 178 of the *Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)* or section 19(1) of the *Biodiversity Conservation Act 2016 (WA)* within the Clearing Area. Furthermore, no conservation significant flora species were identified.

The survey was conducted during the main flowering season for flora of the southwest botanical region (i.e. spring), including the Threatened and Priority species with potential to occur in the Clearing Area. This is the optimal time to detect the majority of species present.

As no conservation significant species were recorded during the survey, the species identified by the desktop assessment do not occur within the Clearing Area (Strategen JBS&G 2022).

Assessed Outcome:

Proposal clearing is not variance to this Principle.

Methodology
Biological Survey Strategen JBS&G (2022)
Main Roads Site Inspection (2022)
DBCA shapefiles

(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.

Proposed clearing is not at variance to this Principle

Comment

An analysis of the Main Roads TEC/PEC layer identifies that the Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (EPBC Act Endangered, BC Act P3) may potentially overlap the Clearing Area. However, from the results of the field survey, none of the native vegetation within the Clearing Area is considered to form part of a TEC or PEC (Strategen JBS&G 2022).

Assessed Outcome:

Proposal clearing is not at variance to this Principle.

Methodology
Biological Survey Strategen JBS&G (2022)
Main Roads Site Inspection (2022)
DBCA shapefiles EPA (2016)

(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.

Proposed clearing is not likely to be at variance to this Principle

Comment
The Proposal is located within the north-western boundary of the Northern Jarrah Forest subregion of the Jarrah Forest biogeographic region. Vegetation Association 4 retains 26.95% of its pre-European extent at the Statewide scale, 27.09% at the IBRA bioregion scale, 32.22 at a Sub-region scale and 25.77% at a LGA level (Government of Western Australia, 2019) as shown in the tables below.

The National Objectives and Targets for Biodiversity Conservation recognise that the retention of 30 per cent or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected (Commonwealth of Australia, 2001).

At the local scale (10 km), approximately 33% (13,329 ha) of remnant native vegetation remains (**Figure 3**).

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Mogumber 4 - *Medium woodland; marri & wandoo* (Government of Western Australia, 2017)	Clearing of up to nine trees (**0.07 ha**) for road widening on Bindoon to Moora Road..	Completely Degraded (EPA 2016)	Vegetation description and condition determined from Main Roads site visit on 5 July 2022

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No.4	**Statewide**	1,054,279.89	284,102.41	26.95	6.43
	IBRA Bioregion Jarrah Forest	1,022,712.69	277,087.18	27.09	6.45
	IBRA Sub-region Northern Jarrah Forest	614,200.82	197,903.81	32.22	9.85
	Local Government Authority	54,209.63	13,971.91	25.77	1.26

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Swan Coastal Plain and Southwest (Perth, Peel and Warren), vegetation has been mapped at a finer scale than Beard's map series of the State. The table below presents the Heddle/Mattiske Vegetation complexes intersecting the Clearing Area.

Heddle/Mattiske Veg Complex	Pre-European Extent (ha)	2013 Vegetation Extent	% Remaining
Wannamal Complex	2,492.00	1,263.49	50.70
Michibin	168,040.13	42,998.36	25.59

Previous granted clearing permits where the application area supported vegetation that retained less than 30% of its extent but was not considered to be a significant remnant by DWER are as follows:

- CPS 7978 – Approximately 10 ha of vegetation in Good to Degraded condition was not considered to be a significant remnant as the majority of the application area was in a Degraded condition;
- CPS 6851 – Approximately 5 ha of vegetation in Degraded to Completely Degraded condition in a linear shape was not considered to be a significant remnant.

The condition of vegetation within which the nine trees proposed to be cleared by this proposal are located is 'Completely degraded'. The nine trees representing the vegetation in the Clearing Area is not considered likely to comprise significant habitat for any ecological communities, but is may provide foraging habitat for black cockatoo. Given the minor extent of clearing, comprising of nine trees adjacent to an existing road within the maintenance zone, it is also considered that clearing of 0.07 ha is unlikely to significantly impact connectivity within other remnant vegetation in the local area or reduce the capacity of the remaining vegetation within the local area to act as an ecological linkage.

The clearing for the Proposal is not likely to have a significant impact on the remaining extent of this Vegetation Association at the subregion, LGA or local (10km) level.

Assessed Outcome:

Proposal clearing is not likely to be at variance to this Principle.

Methodology
Aerial photography
Biological Survey Strategen JBS&G (2022)
Main Roads Site Inspection (2022)
DBCA shapefiles
EPA (2016)
Government of Western Australia (2017)

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is not at variance to this Principle

Comment

One wetland, the Wannamal Lake System is located approximately 80m to the west of the Clearing Area. The 825 ha Wannamal Lake System is listed in the Directory of Important Wetlands in Australia, however, is not RAMSAR listed. The trees to be cleared are not typical wetland species, are located within the maintenance zone and have been assessed as being in a 'Completely degraded' condition.

Due to the separation distance and the physical barrier created by the railway line, and the low impact nature of the road widening activities, no impacts are anticipated by the implementation of the Proposal.

Assessed Outcome:

Proposal clearing is not at variance to this Principle.

Methodology
Biological Survey Strategen JBS&G (2022)
Main Roads Site Inspection (2022)
DBCA shapefiles

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing is not likely to be at variance to this Principle

Comment

The Natural Resource Management risk mapping indicates the soils of the Clearing Area has a low risk of water erosion, a moderate risk of wind erosion, a lot to moderate risk of salinity, and a low to moderate water logging risk.

ASRIS mapping indicates that the Clearing Area is located in an area with an extremely low probability of Acid Sulphate Soils.

Given the small area (0.07 ha) and isolated nature of the clearing associated with sealing of areas for road construction, the proposed clearing is not likely to lead to an appreciable increase in land degradation. Standard erosion and dust management control measures will be implemented during construction to reduce the incidence of wind erosion. As construction is proposed to occur in spring-summer, this will reduce the potential for waterlogging.

Assessed Outcome:

Proposal clearing not likely to be at variance to this Principle.

Methodology
DPIRD Natural Resource Management Information (Accessed July 2022)
CSIRO. (2022). Australian Soil Resource Information System (ASRIS) Database.

(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.

Proposed clearing is not likely to be at variance to this Principle

Comment
A search of ArcGIS shapefiles indicates the Lake Wannamal Nature Reserve is located approximately 82m to the West of the Clearing Area. Separating the Clearing Area and the Lake Wannamal Nature Reserve is a ~30m wide strip of remnant vegetation, then a railway line, then another ~40m wide strip of Native Vegetation. Due to the separation distance, the physical barrier created by the railway line, and the low impact nature of the road widening activities, no impacts are anticipated by the implementation of the Proposal.

The buffer of an Environmentally Sensitive Area (ESA) overlaps the Clearing Area in one location. The ESA is identified as the buffer of a Swan Coastal Plain Wetland, representing Lake Wannamal. Two mature trees which are required to be cleared are located within the mapped extent of this ESA (Tree No. 7 and 8). Tree 7 and Tree 8 are both *Eucalyptus wandoo*, a species which is not associated with wetland habitats.

As the Proposal does not intersect the Lake Wannamal Nature Reserve, is separated by an 80m buffer of native vegetation and a physical barrier in the railroad, and the proposed clearing within the intersection of the ESA and the Clearing Areas comprises two trees which are not associated with wetland habitat, no impacts to the values of the ESA are anticipated.

Assessed Outcome:

Proposal clearing not likely to be at variance to this Principle.

Methodology
Biological Survey Strategen JBS&G (2022)
Main Roads Site Inspection (2022)
DBCA shapefiles

(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.

Proposed clearing is not likely to be at variance to this Principle

Comment

A search of ArcGIS shapefiles has confirmed that only minor localised drainage intersects the Clearing Area. The proposed works will not disturb or interrupt any natural drainage and surface run-off patterns. The Proposal will require clearing of nine trees located within the existing maintenance zone.

Given the 'Completely degraded' nature of the vegetation present, the clearing of this small amount of vegetation is unlikely to cause a deterioration in the quality of surface or underground water. In addition, contract documentation will incorporate management actions to ensure potential indirect and short-term impacts, such as sedimentation and erosion, are managed.

Analysis of GIS databases reveal that the Clearing Area is not located within a:

- RIWI Act Surface Water or Irrigation district;
- Public Drinking Water Source Area; or
- CAWSA Clearing Control Catchment.

The Gingin Ground Water Area proclaimed under the RIWI Act is located to the West adjacent to the Clearing Area, however, does not intersect. Proposal activities are unlikely to impact on these areas as works will remain within the maintenance zone.

Dewatering is not proposed and no change to groundwater level or quality is anticipated from the removal of the trees. Standard operational controls will be implemented with regard to potential spill risks.

Given no dewatering or major drainage modifications are likely to be required and the scale of clearing is relatively minor and linear in nature, no deterioration of surface or underground water levels or quality is expected to result from clearing.

Assessed Outcome:
Proposal clearing not likely to be at variance to this Principle.

Methodology
DWER and DBCA shapefiles
EPA (2016)

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance to this Principle

Comment

The land surrounding the Clearing Area receives an annual mean rainfall of 620.7mm (recorded from the closest BOM weather station, Gingin Aero (Site No. 009178)) (BOM, 2022).

According to DPIRDs Natural Resource Soil Information, the Clearing Area has a low flood hazard risk. The Clearing Area is located in the following soil landscape map units:

- Julimar Leaver gentle slope phase: Gently inclined upper, mid and lower hillslopes; loamy gravel, shallow gravel over duricrust, some sandy and loamy earths on rock;
- Yarawindah 2d gravel phase: Gently inclined hillslopes; loamy earths and loamy gravel, some sandy gravels and rock (mainly granite or dolerite);
- Yarawindah 1 subsystem: Older colluvial slopes, very gently to gently inclined hillslopes and rarely hillcrests; loamy gravel, shallow gravel over duricrust, some loamy earths and duplexes.

All three of the above map units have been assessed as exhibiting a very low risk of poor drainage potential.

The proposed clearing involves the removal of nine trees (0.07ha) with the maintenance zone of an existing road corridor. Given the small, intermittent patches of clearing proposed within a largely vegetated local landscape, clearing is unlikely to exacerbate the incidence or intensity of flooding.

Assessed Outcome:
Proposal clearing not likely to be at variance to this Principle.

Methodology
BOM 2022
DPIRD Natural Resource Management Information (Accessed July 2022)

6 ADDITIONAL ACTIONS REQUIRED

Table 6 summarises what further pre-clearing impact assessment and vegetation management is required in accordance with CPS 818.

Table 6: Summary of Additional Management Actions Required by CPS 818

Impact of Clearing	Yes/No or NA	*Further Action Required*
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles. Where the clearing is at variance or may be at variance to Clearing Principle (f) and no other Clearing Principle, and the area of the proposed clearing is less than 0.5 hectares in size and the Clearing Principle (f) impacts only relate to: (i) a minor non-perennial watercourse(s); (ii) a wetland(s) classed as a multiple use management category wetland(s); and/or (iii) a wetland that is not a defined wetland; the preparation of an Assessment Report, as required by condition 6(e), is not required.	**No**	No further action required.
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding.	**No**	No further action required.
3. The project involves clearing for temporary works (as defined by CPS 818).	**No**	No further action required.
4 a. Project is within Region that: - Has rainfall greater than 400mm and - Is South of the 26th parallel and - Works are in 'Other than dry conditions' and - Works have potential for **uninfested** areas to be impacted	**No**	Proceed with standard Vehicle and Plant management actions from PEMR's and Vehicle and Plant Hygiene Checklists. Dieback management measures will be incorporated in contract documentation.
4b. Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions?	**No**	No further action required.

Impact of Clearing	Yes/No or NA	*Further Action Required*
5. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback	**No**	No further action required.
6. The vegetation within the area to be cleared and/or the surrounding vegetation in a good or better condition and weeds likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition	**No**	No further action required.

7 STAKEHOLDER CONSULTATION

Main Roads is not required to undertake stakeholder consultation in accordance with CPS 818/15 Condition 8.

8 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum.

9 REFERENCES

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10 APPENDICES

Appendix	Title
Appendix 1	Constraints Mapping

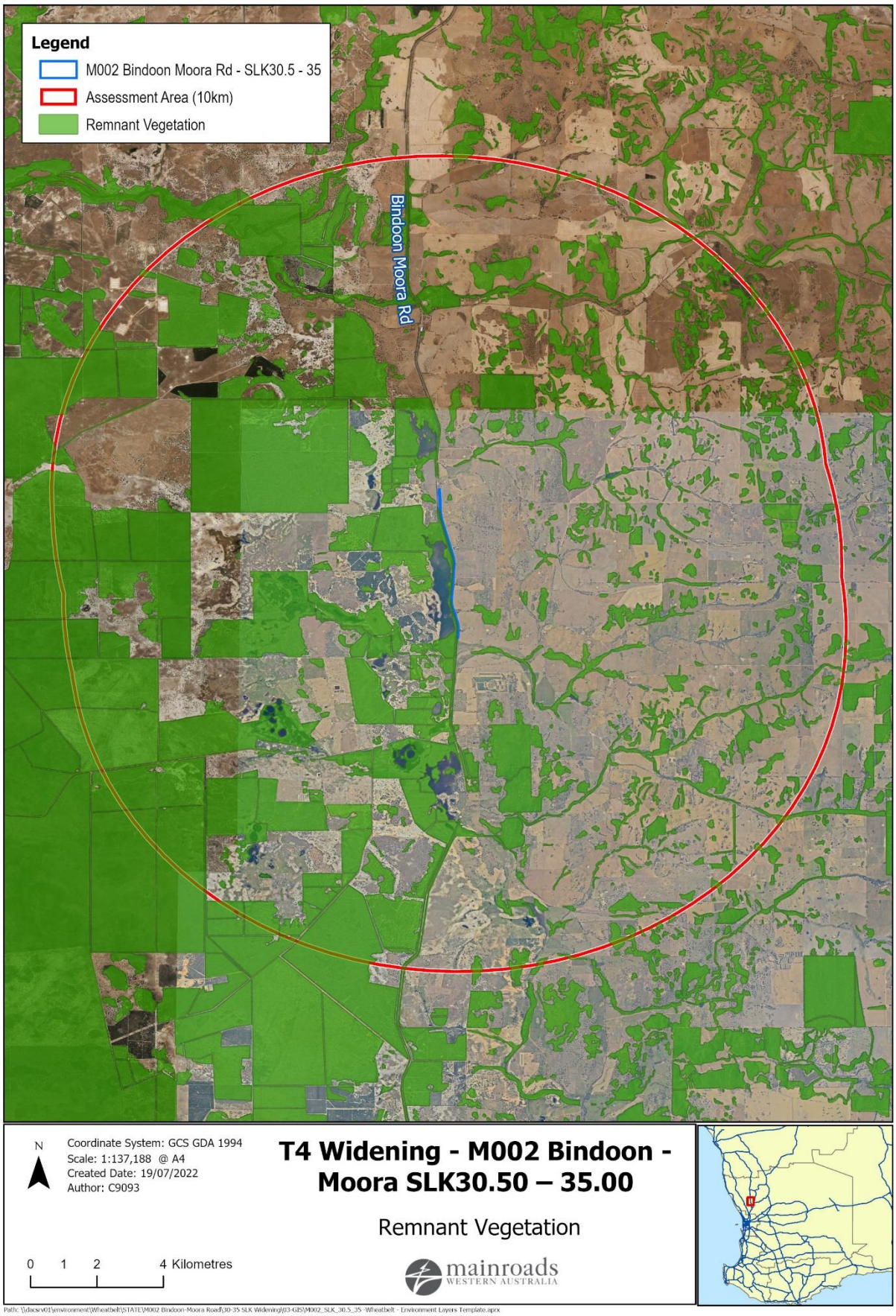

Figure 3: Remnant Vegetation within 10km of the Clearing Area