Clearing Assessment Report

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Great Central Road Work Package 3 – SLK 52 to SLK 205
Great Central Road (Outback Way)
Goldfields-Esperance Region
2520

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1 PROPOSAL

1.1 Purpose and Justification

The purpose of this Clearing Assessment Report (CAR) is to provide a report detailing the assessment of 500 ha of native vegetation clearing that is proposed to be undertaken using a Native Vegetation Clearing Permit (NVCP) application. 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.

Main Roads Western Australia (Main Roads) proposes to upgrade 153 km of the Great Central Road between Straight Line Kilometres (SLK) 52 to SLK 205, north of Laverton townsite. The Great Central Road forms part of the iconic Outback Way route, also known as Australia's Longest Shortcut, which spans from the town of Laverton in Western Australia to Winton in Queensland, via Alice Springs. The 2,800-km route is predominantly unsealed, with sealing plans to be completed in stages through to the year 2032.

The Great Central Road is a section within Western Australia, which spans 872 km from Laverton to the Western Australia/Northern Territory border, of which 736 km is currently unsealed.

The road upgrades will improve the transport network across Western Australia, the Northern Territory, and Queensland. There will be improved access to health care and social services for the local communities, increased regional connectivity and reduced travel times, and improved road safety. In addition, new local jobs and contract opportunities will be created along with employment of Aboriginal peoples through the Wongutha Way Alliance Program. The upgrade will allow for opportunities to open for local businesses to compete for interstate work and create new routes for mine sites and businesses through the middle of Australia.

1.1.1 Main Roads Approach to Road Safety and the Environment

Main Roads is committed to minimising the environmental impacts of all of its activities and manages the State road network to achieve balanced economic, social, safety and environmental benefits for the community. Main Roads recognises that Western Australia's environment is significant from a global perspective and the unique conservation values that are contained within its road reserve. Main Roads road network often adjoins natural areas and, in some locations, the reserve itself hosts remnant vegetation with high environmental values. Although the reserves were not established for this purpose, Main Roads recognises that it has a responsibility to conserve the environmental values that occur within the State's road network and minimise the impact its proposals have on the environment. In addition to providing a safe and efficient road network for all people using the roads under its control, Main Roads is also committed to protecting the natural environment.

In accordance with National and State Government road safety policies, Main Roads is also committed to substantially reducing road trauma on the road network through Safe System principles. The Safe System approach acknowledges that more than two thirds of all serious crashes are due to human error rather than deliberate risk taking (e.g. speeding or drink driving) and seeks to improve behaviour through education and enforcement while managing the safety of vehicles, speeds and the road and road infrastructure. It is shown that improving sub-optimal road formation will substantially reduce the likelihood and severity of road crashes. For example, according to the Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured numbers by more than 50%.

As the statutory authority responsible for providing and managing a safe and efficient main road network in Western Australia, Main Roads focuses on improving road safety by thoroughly considering all environmental, economic and community benefits and impacts. It operates on a hierarchy of avoiding, minimising, reducing and then, if required, offsetting our environmental impacts. This has been achieved through changes in proposal scope and design. Main Roads regularly reduces its clearing footprint by restricting earthworks limits for proposals, steepening batters, installing barriers, establishing borrow pits in cleared paddocks and avoiding temporary clearing for storage, stockpiles and turn around bays to avoid and minimise its impacts.

Further details on measures to avoid, minimise and reduce are provided in Section 1.5.

1.2 Proposal Scope

Main Roads proposes to upgrade a 153 km section of the Great Central Road north of Laverton townsite with a 10 m seal and 10 m pavement. The Proposal will comprise of the following components:

- Upgrading 153 km of gravel road to sealed surface, including road construction and widening, and intersection upgrades.
- Parking/resting areas.
- Establishment of material pits and borrow pits (including geotechnical investigations).
- Construction of water bores and a turkey's nest for water extraction.
- Establishment of laydown areas.
- Construction Camp.
- Construction of drainage infrastructure including floodways, table drains, offshoot drains and culverts.

1.3 Proposal Location

The Development Envelope is located on the Great Central Road SLK 52 to SLK 205 north of the town of Laverton and within the Local Government Authority of Laverton as shown in Figure 1. The central coordinate of the proposal is 123.2796580°E 27.9155559°S.

- Start
  - Longitude: 122.7069039°E
  - Latitude: -28.2658670°S
- End
  - Longitude: 123.9960742°E
  - Latitude: -27.7822259°S

The location of the proposal is shown in Figure 1.

1.4 Clearing Details

Proposed Clearing:

Main Roads is proposing to clear up to 500 ha of native vegetation within a 4,094.88 ha Development Envelope. This clearing will be undertaken using a Native Vegetation Clearing Permit (NVCP) application.

Type of Native Vegetation:

The Development Envelope is dominated by Mallee Woodland and Shrubland. Further information on the types of native vegetation proposed to be cleared are provided in Table 2 and Table 3.

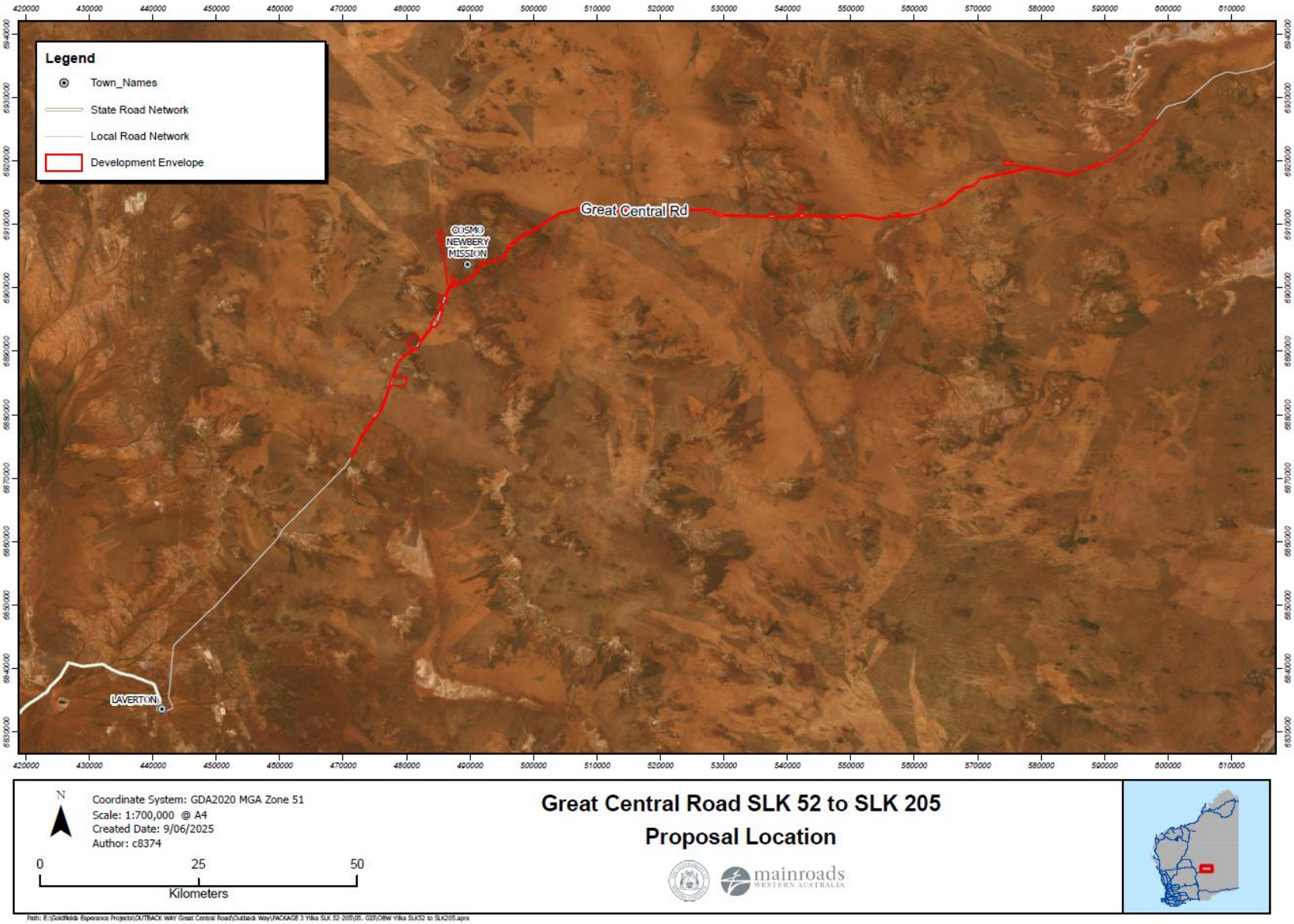

Figure 1. Proposal Location

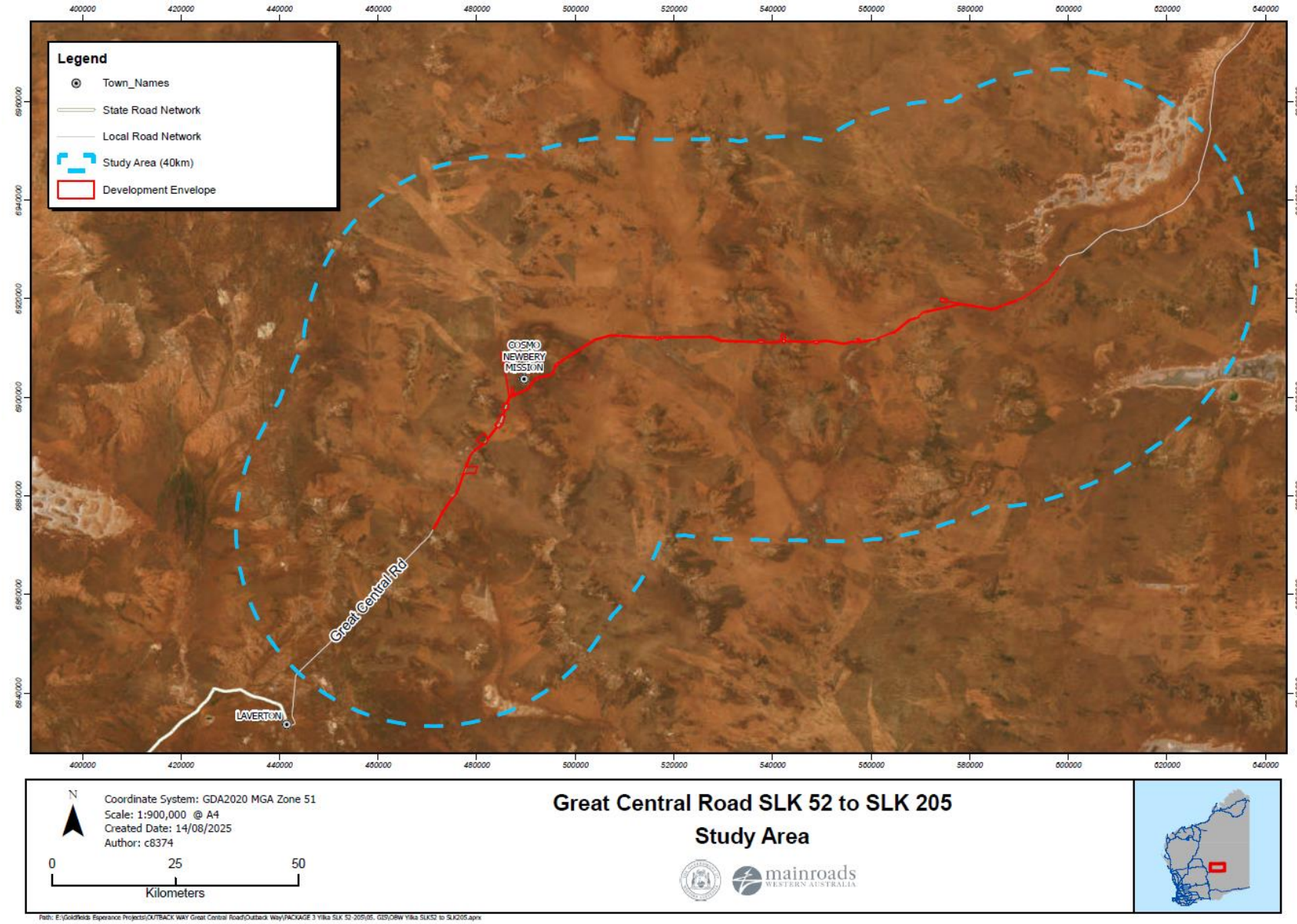

Figure 2: Study Area

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

The following alternatives to clearing were considered during the development of the proposal:

- **Do not upgrade the road**. However, this may result in a poorer safety outcome with possible future fatalities or serious injuries and further degradation of the State Road asset.
- **Main Roads retains frangible vegetation in 'clear zones'**. For this project; however, clearing will only be required to accommodate the road formation, with no clear zone being established. Accordingly, the retention of frangible vegetation does not apply to this proposal.
- **Reducing the speed limit to minimise clearing requirements**, while still balancing safety (driver fatigue) and freight efficiency. Speed Limits are an essential mechanism to ensure the safe and efficient operation of road networks. The application of appropriate speed limits and other traffic management measures is a key mechanism in managing vehicle speeds to achieve desired safety, mobility, traffic management, local amenity, and road user expectations. There are several factors involved in road safety, including road conditions, driver behaviour and overall road design. Except in special situations, reducing speed limits below national standards on state and national roads is not typically supported as it has the potential to contribute to driver frustration, impatience, tiredness and recklessness. The environmental values protected by reducing the speed limit do not justify the impacts on freight efficiencies or road user safety. Accordingly, the reduction of the speed limits to avoid clearing of native vegetation for this proposal is not proposed.

1.6 Measures to Avoid, Minimise, Reduce and Manage Proposal Clearing Impacts

The design and management measures implemented to avoid and minimise the potential clearing impacts of the Proposal are as below:

- Proposal has been aligned along an existing gravel road that has already been cleared.
- Location of material pits and water bores identified within the existing cleared areas.
- Minimising clearing as much as possible during proposal execution.

1.7 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, Main Roads has also had regard to the below instruments where relevant.

Other Legislation potentially relevant 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 and D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Rights in Water and Irrigation Act 1914* (WA) (RIWI Act)
- *Aboriginal Heritage Act 1972* (WA).

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 (DER, 2014)
- Procedure: Native vegetation clearing permits (DWER, 2021)
- Environmental Offsets Guidelines (Government of Western Australia, 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.

2 SCOPE AND METHODOLOGY ASSESSMENT OF CLEARING

Native vegetation will be cleared to accommodate this Proposal. This clearing will be undertaken using a project-specific Clearing Permit.

The CAR outlines the key activities associated with the Proposal, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the Proposal using the ten Clearing Principles listed under s51 of the *Environmental Protection Act 1986* (EP Act) and strategies used to manage vegetation clearing.

2.1 Report Terminology and Sources

The following terms are used in this Clearing Report:

- **Native Vegetation Clearing Area (Clearing Area)** – The maximum amount of native vegetation to be cleared for the Proposal that will accommodate the designed earthworks and, typically, a nominal buffer to allow for the safe movement of machinery during construction. The Clearing Area for this Proposal is 500 ha.

- **Development Envelope** – The maximum extent within which the Clearing Area will be located. This envelope is larger than the Clearing Area to allow for minor changes to the Proposal footprint as the design process continues, and to account for minor and unexpected changes that may occur during construction, such as working to avoid a large tree or encountering buried boulders or services. This flexibility allows the site personnel to make modifications to the Proposal to avoid areas that may contain better environmental values. The CAR has assessed all environmental values within the Development Envelope as though all of these values will be impacted, up to the amount specified within the Clearing Area. The Development Envelope for this Proposal is 4,094.88 ha.

- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 40 km radius.

- **Survey Area** – Area covered by the Biological Survey, which is typically larger that the Development Envelope.

2.2 Desktop Assessment

A desktop assessment of the Development Envelope was undertaken by viewing internal datasets and other government agency managed databases, and consulting with relevant stakeholders where necessary.

GIS layer viewing and mapping is done using ArcMap and/or Main Roads corporate mapping system known as iMaps. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. Government managed databases were searched to locate additional information, which are found under References in Section 0.

2.3 Surveys and Assessments

The following surveys/assessments were undertaken to inform this CAR:

- Biological Survey (Botanica Consulting 2022)
- Biological Survey (Botanica Consulting 2023)

Biological and targeted surveys conducted for the proposal are outlined in Table 1 and a summary of the findings in these reports are presented in Sections 3.1 to 3.2.

Table 1. Summary of Biological and Targeted Surveys Relevant to the Proposal

Consultant and Survey Name	Survey Details
Botanica Consulting (2022) Great Central Road (SLK 52.2-101) Biological Survey	**Survey Area:** Survey comprised 1,779 ha area along the 34 km Great Central Road and 9 km along the Cosmo bypass road near Cosmo Newberry community in the Shire of Laverton. The survey was within Great Central Road reserve from SLK 52.2-101. **Type:** Basic fauna survey, targeted flora survey and detailed flora and vegetation survey. The survey identified and mapped the dominant vegetation types, assessed vegetation condition, completed targeted searches for significant flora, completed opportunistic, low intensity sampling of fauna, mapped ecological communities and fauna habitats. **Timing:** Fieldwork conducted from 12-13 of December 2021. **Survey Results Shapefile TRIM Ref:** D25#888307 **Document TRIM Ref:** D22#867343
Botanica Consulting (2023) Great Central Road (Outback Way) (SLK 87-205) Biological Survey	**Survey Area:** Survey comprised 2,929.9 ha area along the 118 km Great Central Road in the Shire of Laverton. The survey was within Great Central Road reserve from SLK 87-205. **Type:** Basic fauna survey, targeted flora survey and detailed flora and vegetation survey. The survey identified and mapped the dominant vegetation types, assessed vegetation condition, completed targeted searches for significant flora, completed opportunistic, low intensity sampling of fauna, mapped ecological communities and fauna habitats. **Timing:** Fieldwork conducted from 2-3 of August 2023. **Survey Results Shapefile TRIM Ref:** D24#1376259 **Document TRIM Ref:** D23#522092

3 SURVEY RESULTS

3.1 Summary and Analysis of Flora and Vegetation Surveys

Botanica (2022) conducted a detailed flora and vegetation survey and targeted flora survey along the Great Central Road between SLK 52.2-101. The Botanica (2022) survey area was dominated by Mallee Woodland and Shrubland. The vegetation condition ranged from 'poor' to 'very good' with the majority of vegetation rated as 'good'. Disturbance in the area was attributed to recent and/or frequent fires and road siding of the Great Central Road. No introduced flora taxa were identified within the survey area.

Botanica (2022) mapped six vegetation types, excluding the cleared area, within two landform systems and four vegetation groups. The vegetation types are represented by 19 families, 33 genera and 68 taxa.

No Threatened flora listed under the EPBC Act or BC Act, nor any Priority flora listed by the Department of Biodiversity, Conservation and Attractions (DBCA) were recorded within the survey area. In the post-survey assessment, no significant species were considered likely to occur.

No Threatened Ecological Communities (TEC) listed under the EPBC Act or BC Act, Priority Ecological Communities (PEC) listed by DBCA, restricted vegetation, highly disturbed vegetation, vegetation providing important refuge or significant ecological function was identified within the survey area.

A second targeted flora survey and detailed flora and vegetation survey was carried out by Botanica (2023) along the Great Central Road between SLK 87-205. The Botanica (2023) survey area was dominated by Mallee Woodland and Shrubland. The vegetation condition ranged from 'degraded' to 'very good'. Disturbance in the area was attributed to recent and/or frequent fires and road siding of the Great Central Road. No significant weed presence was identified within the survey area.

Botanica (2023) mapped eight vegetation types, excluding the cleared area, within three landform systems and five vegetation groups. The vegetation types are represented by 29 families, 57 genera and 110 taxa.

No Threatened flora listed under the EPBC Act or BC Act, nor any Priority flora listed by DBCA were recorded within the survey area. Seven significant species have known records within proximity to the survey area, consisting of one Priority 3 and one Priority 4 within the survey area, as well as three Priority 3 and two Priority 4 within proximity to the survey area. These species were to be affected by fire and not observed at the time of survey. These populations may recover over time.

No TECs listed under the EPBC Act or BC Act, PECs listed by DBCA, restricted vegetation, highly disturbed vegetation, vegetation providing important refuge or significant ecological function was identified within the survey area.

3.2 Summary and Analysis of Fauna Surveys

Botanica (2022) identified two fauna habitat types, the Clay-Loam Plain comprising Acacia Woodland and Sandplain comprising Acacia Woodland/Eucalypt Woodland/Mallee Woodland within the survey area. An additional fauna habitat type, Sand Dune comprising Eucalyptus Woodland and Mallee Woodland was recorded within the Botanica (2023) survey. The 2022 survey recorded 259 fauna species comprising 10 amphibians, 38 mammals, 102 birds and 109 reptile species (Botanica 2022). The 2023 survey recorded 207 fauna species comprising of 6 amphibians, 15 mammals, 105 birds, and 81 reptile species.

Seven significant fauna species were identified as potentially occurring within the survey area based on their habitat preferences and pre-European vegetation types:

- Grey Falcon (*Falco hypoleucos*) (listed as Vulnerable under the EPBC Act and BC Act).
- Southern Whiteface (*Aphelocephala leucopsis*) (listed as Vulnerable under the EPBC Act and BC Act).
- Princess Parrot (*Polytelis alexandrae*) (listed as Vulnerable under the EPBC Act and as Priority 4 by DBCA).
- Peregrine Falcon (*Falco peregrinus*) (Other specially protected species under the BC Act).
- Sandhill Grasswren (*Amytornis oweni oweni*) (listed as Priority 4 by DBCA) (Note: This species underwent a taxonomic name change from *Amytornis striatus striatus* (striated grasswren) to *Amytornis oweni oweni* (sandhill grasswren) on 8 January 2025.
- Great Desert Skink (*Liopholis kintorei*) (listed as Vulnerable under the EPBC Act and BC Act).
- Brush-tailed Mulgara (*Dasycercus blythi*) (listed as Priority 4 by DBCA).

No significant fauna species were recorded (directly or indirectly) in the 2022 or 2023 survey areas.

4 DESKTOP ASSESSMENT OF VEGETATION

4.1 Desktop Vegetation Description

According to the broad scale mapping undertaken by Beard (Sheperd et al 2001), the Development Envelope is mapped as occurring within eight pre-European vegetation associations. As outlined in Table 2, all eight vegetation associations have greater than 95% of their pre-European extent remaining at the State, IBRA Bioregion, IBRA Sub-region and Local Government Authority scales.

Table 2. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of pre-European Extent)
Veg Assoc No. 1239	**Statewide**	2,234,315.35	2,234,315.35	100	11.85
	IBRA Bioregion Great Victorian Desert	2,233,684.98	2,233,684.98	100	11.85
	IBRA Sub-region Shield (GVD01)	1,393,809.72	1,393,809.72	100	2.46
	Local Government Authority Shire of Laverton	1,972,954.44	1,972,954.44	100	13.42
Veg Assoc No. 18	**Statewide**	19,892,306.46	19,843,148.07	99.75	6.62
	IBRA Bioregion Great Victorian Desert	1,954,628.44	1,954,625.28	100	9.22
	IBRA Sub-region Shield (GVD01)	502,397.19	502,397.19	100	0.28
	Local Government Authority Shire of Laverton	2,878,673.28	2,867,359.23	99.61	6.47
Veg Assoc 24	**Statewide**	263,147.66	263,128.56	99.99	1.37
	IBRA Bioregion Great Victorian Desert	226,362.03	226,362.03	100.00	-
	IBRA Sub-region Shield (GVD01)	22,083.14	22,083.14	100.00	-
	Local Government Authority Shire of Laverton	209,307.60	209,307.60	100.00	-
Veg Assoc 45	**Statewide**	224,862.26	224,672.21	99.92	4.32
	IBRA Bioregion Great Victorian Desert	170,379.67	170,379.67	100.00	5.70
	IBRA Sub-region Shield (GVD01)	73,640.13	73,640.13	100.00	-
	IBRA Sub-region Central (GVD02)	96,739.54	96,739.54	100.00	10.04
	Local Government Authority Shire of Laverton	124,446.62	124,446.62	100.00	7.80

Pre-European Vegetation Association	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of pre-European Extent)
Veg Assoc 39	**Statewide**	6,613,567.48	6,602,578.44	99.83	12.02
	IBRA Bioregion Great Victorian Desert	1,183,999.19	1,183,999.19	100.00	2.96
	IBRA Sub-region Shield (GVD01)	151,986.17	151,986.17	100.00	-
	Local Government Authority Shire of Laverton	826,833.70	826,456.13	99.95	4.23
Veg Ass 84	**Statewide**	1,799,366.05	1,799,366.05	100.00	9.23
	IBRA Bioregion Great Victorian Desert	1,781,533.03	1,781,533.03	100.00	9.32
	IBRA Sub-region Shield (GVD01)	876,290.53	876,290.53	100.00	15.16
	Local Government Authority Shire of Laverton	491,980.20	491,980.20	100.00	5.17
Veg Ass 85	**Statewide**	6,372,798.24	6,366,416.51	99.90	14.31
	IBRA Bioregion Great Victorian Desert	6,351,699.56	6,349,770.63	99.97	14.34
	IBRA Sub-region Shield (GVD01)	788,439.02	788,439.02	100.00	8.56
	Local Government Authority Shire of Laverton	5,302,079.46	5,300,149.46	99.96	9.46
Veg Ass 676	**Statewide**	2,063,413.95	1,963,881.55	95.18	14.69
	IBRA Bioregion Great Victorian Desert	206,634.58	206,522.57	99.95	14.10
	IBRA Sub-region Shield (GVD01)	40,329.39	40,329.39	100.00	-
	Local Government Authority Shire of Laverton	233,756.65	233,591.10	99.93	8.03

Botanica (2022; 2023) recorded 3,574.36 ha of native vegetation within the Development Envelope, comprising of eleven vegetation types. The Development Envelope is dominated by Mallee Woodland and Shrubland covering about 1,530.44 ha.

The vegetation condition is mapped as ranging from 'cleared' to 'very good' with the majority (59%) in 'good' condition. No introduced species were identified within the Development Envelope.

Table 4 provides details of the condition within the Development Envelope.

Table 3 and Table 4 provide details of the vegetation types and their condition within the Development Envelope and the remaining extent of these vegetation types.

Table 3. Vegetation types within the Development Envelope

Vegetation group	Veg Code	Vegetation Type	Area (ha)
Acacia Forest and Woodlnd	CLP-AFW1	Low woodland of *Acacia caesaneura/ A. aptaneura/ A. incurvaneura* over mid shrubland of *Senna artemisioides* subsp. *X artemisioides/ Senna artemisioides* subsp. *helmsii* and low shrubland of *Ptilotus obovatus* on clay-loam plain.	378.19
Acacia Forest and Woodland	S-AFW2	Low woodland of *Acacia incurvaneura/ A. quadrimarginea* over mid open shrubland of *Eremophila latrobei* subsp. *glabra/ Eremophila latrobei* subsp. *latrobei* and hummock grassland of *Triodia basedowii* on sandplain.	373.10
	S-AFW1	*Acacia caesaneura*, *A. incurvaneura* low open woodland over *Triodia basedowii* closed hummock grassland.	165.23
Acacia Open Woodland	CLP-AOW1	Low open woodland of *Acacia caesaneura/A. incurvaneura* over mid shrubland of *Senna artemisioides* subsp. *x artemisioides/ Senna artemisioides* subsp. *helmsii* and low shrubland of *Ptilotus obovatus* on clay-loam plain.	2.82
Acacia Open Woodland	S-AOW1	*Acacia caesaneura*, *A incurvaneura* low open woodland over *Senna artemisioides* subsp. *filifolia*, *Eremophila latrobei* subsp. *latrobei* mid open shrubland over *Triodia basedowii* hummock grassland.	510.26
Casuarina Forests and Woodland	S-CFW1	Low open woodland of *Acacia burkittii, Allocasuarina helmsii* over *Eremophila latrobei* mid open shrubland over *Triodia basedowii* hummock grassland.	45.09
Eucalypt Woodland	S-EW1	Low woodland of *Eucalyptus gongylocarpa* over mid shrubland of *Acacia ligulata* and hummock grassland of *Triodia basedowii* on sandplain.	565.08
Mallee Woodland and Shrubland	S-MWS1	Open mallee woodland of *Eucalyptus youngiana* over hummock grassland of *Triodia basedowii* on sandplain.	1452.87
	S-MWS3	*Eucalyptus concinna* open mallee woodland over *Eremophila latrobei* subsp. *glabra* mid open shrubland over *Triodia irritans* hummock grassland.	55.96
	S-MWS4	Open mallee woodland of *Eucalyptus trivalva* over mid shrubland of *Acacia desertorum* and hummock grassland of *Triodia basedowii* on sandplain.	21.62
Eucalyptus Open Woodland (MVG 11)	SD-EW/MWS1	*Eucalyptus gongylocarpa* low open woodland over *Eucalyptus youngiana* open mallee shrubland over *Triodia basedowii* hummock grassland.	4.13
NA		Cleared vegetation	520.52

Vegetation group	Veg Code	Vegetation Type	Area (ha)
Total			**4094.88**

Table 4. Summary of Vegetation Condition within Development Envelope

Vegetation Condition	Extent within Development Envelope (ha)
Very Good	1393.00
Good	2116.50
Poor	52.11
Degraded	12.76
Cleared	520.51
Total	**4094.88**

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

Each principle has been assessed in accordance with the former Department of Environment Regulation (now Department of Water and Environmental Regulation (DWER) '*A Guide to the Assessment of Applications to Clear Native Vegetation*' (Department of Environment Regulation, 2014) and other relevant clearing permit application decision reports prepared by DWER.

The proposed clearing is at variance to Principle (f) and is not at variance, or not likely to be at variance, to the remaining 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.

The Development Envelope falls within the Great Victoria Desert bioregion, within the Shield (GVD-01) and Central (GVD-02) subregions (Government of Western Australia, 2019).

Vegetation

Eight Beard *et al.* (2013) pre-European vegetation associations are mapped within the Development Envelope:

- GVD18 - Low woodland, open low woodland or sparse woodland; Mulga (*Acacia aneura*) and associated species.
- GVD24 - Low woodland or open low woodland; Other acacia, banksia, peppermint, cypress pine, casuarina, York gum Acacia spp., Banksia spp., *Agonis flexuosa*, Callitris spp., Allocasuarina spp., *Eucalyptus loxophleba*
- GVD39 - Wattle, teatree & other species Acacia spp. Melaleuca spp.
- GVD45 - Eucalypt shrubland *Eucalyptus eremophila*, *E. redunca*, E. spp.
- GVD84 - Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (*Eucalyptus youngiana*) over hard spinifex *Triodia basedowii* between sandhills
- GVD85 - Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (*Eucalyptus youngiana*) over hard spinifex on sandplain
- GVD676 – Samphire; Tecticornia spp. communities in saline areas
- GVD1239 - Hummock grasslands, open medium tree and mallee steppe; marble gum and mallee (*Eucalyptus youngiana*) over hard spinifex *Triodia basedowii*.

These vegetation associations have more than 95% of their pre-European extent remaining intact at the State, bioregion and local government levels.

Main Roads engaged Botanica to survey the Development Envelope in 2022 and 2023. Botanica (2022; 2023) mapped a total of 3,574.36 ha of native vegetation within the Development Envelope, comprising 11 vegetation types. All vegetation types identified are common, with the dominant vegetation type being open mallee woodland and shrubland. The vegetation condition within the Development Envelope ranges from 'degraded to very good' with majority (59%) in 'good' condition.

During their desktop assessments, Botanica (2022; 2023) identified three significant ecological communities known to occur within 100 km of the Development Envelope, as listed below:

- Priority 1 Laverton Downs calcrete groundwater assemblage type on Carey palaeodrainage on Laverton Downs Station (PEC), located about 45 km from the Development Envelope to the southwest.
- Priority 3 Mount Jumbo Range vegetation complex, located about 56 km southwest of the Development Envelope.
- Priority 1 Mount Morgan calcrete groundwater assemblage type on Carey palaeodrainage on Mount Weld Station, located about 69 km southwest of the Development Envelope.

None of these ecological communities were considered to have potential to occur within the survey areas.

Field surveys conducted on both survey areas confirmed that no Threatened Ecological Communities (TECs) listed under the EPBC Act or BC Act, or Priority Ecological Communities (PECs) classified by DBCA, are present within the Development Envelope.

Flora

In their desktop assessments, Botanica (2022; 2023) identified 207 and 372 flora species within 40 km of the Development Envelope, respectively. None of these species are listed as Threatened under the BC Act. However, eight species are classified as Priority by the DBCA, as listed below:

- *Lechenaultia aphylla* – Priority 1
- *Bossiaea eremaea* – Priority 3
- *Grevillea obliquistigma* subsp. *cullenii* – Priority 3
- *Melaleuca apostiba* – Priority 3
- *Sauropus* sp. Woolgorong (M. Officer s.n. 10/8/24) – Priority 3
- *Comesperma viscidulum* – Priority 4
- *Conospermum toddii* – Priority 4
- *Grevillea secunda* – Priority 4.

Botanica (2022; 2023) identified 68 and 110 vascular flora taxa in the 2022 and 2023 surveys, respectively. Botanica (2022; 2023) did not locate any Priority flora species during the survey and the post-survey likelihood of occurrence assessment rated all but four of these species as unlikely to occur. The following species were deemed post-survey as possibly occurring by Botanica (2023):

- *Bossiaea eremaea* (P3) - Only one record (dated 2011) of the species is present within the 40 km Study Area (WA Herbarium dataset). This record is approximately 15 km north of Great Central Road on the Cosmo Bypass Road. *B. eremaea* is known from 19 WAHerb records (0 TPFL records) and has a relatively wide distribution, with records spanning over 400 km west-east and approximately 200 km south-north. The species is known from the Great Victoria Desert and Murchison IBRA bioregions and has records in five Local Government Authorities (Laverton, Leonora, Menzies, Sandstone and Wiluna). At least one record of this species occurs in conservation estate (Wanjarri Nature Reserve). Given the extent of uncleared potentially suitable habitat for this species in a local and regional context, it is unlikely the Development Envelope would constitute significant habitat for this species.

- *Grevillea obliquistigma* subsp. *cullenii* (P3) – Only one record of the species is present within the 40 km Study Area, located 4.3 km north of the Development Envelope. The record is historic, dated 1975 and as such the species may no longer be present / its location is likely to be inaccurate. This species is known from five WAHerb records (0 TPFL records), three of which are in the Charles Darwin Reserve, approximately 100 km south-east of Morawa and one in Mt Gibson Wildlife Sanctuary. These four records from the Avon Wheatbelt IBRA bioregion are relatively contemporary (2008, 2015 and two from 2019), in comparison to the outlier 1975 record in the Study Area which is over 700 km north-east of the other four records. Botanica (2023) noted it is a perennial species and whilst suitable habitat is present within the survey area and Development Envelope, no individuals were recorded. Potential habitat was impacted by fire. Based on the above, the risk of the proposal to this species is considered low.

- *Melaleuca apostiba* (P3) – Only one record of the species is present within the 40 km Study Area, located 800 m from the Development Envelope. The record is historic, from 1963 and as such the species may no longer be present / its exact location is likely to be inaccurate. *Melaleuca apostiba* is known from 14 WAHerb records (0 TPFL records) and occurs in the Great Victoria Desert and Murchison IBRA bioregions (Laverton and Menzies Local Government Areas). Records span a distance of approximately 300 km north-south and approximately 100 km east-west. This species habitat records indicate it occurs at the edges of salt lakes, saline depressions and occurs on red sand / deep red sand. Given the extent of uncleared potentially suitable habitat for this species in a local and regional context, it is unlikely the Development Envelope would constitute significant habitat for this species.

- *Comesperma viscidulum* (P4) - Three records of this species are present within the 40 km Study Area. All three records are located within or adjacent to the Development Envelope. No individuals were identified by Botanica (2022; 2023) during field surveys. *Comesperma viscidulum* is known from 21 WAHerb records (0 TPFL records) and occurs in five IBRA bioregions (Central Ranges, Great Sandy Desert, Great Victoria Desert, Little Sandy Desert and Murchison). The species has a broad distribution, with records spanning approximately 400 km north-south and over 1,000 km west-east. It has been recorded on a range of landform and soil types including on red sandplains, yellow sand dunes, hills and sandstone breakaway complex. Botanica (2023) noted that the three local records are from 2000 and 2001; however, they are located on the highway surface so are not accurate indications of actual locations. Potential habitat for this species was impacted by fire at the time of survey. However, given the extent of uncleared potentially suitable habitat for this species in a local and regional context, it is unlikely the Development Envelope would constitute significant habitat for this species.

It is noted that Botanica (2022) deemed *Bossiaea eremaea*, *Melaleuca apostiba* and *Comosperma viscidulum* as unlikely to occur within the survey area of SLK 52-101. With regard to *Bossiaea eremaea*, Botanica (2022) noted that the preferred habitat for this taxon is deep red sand which was not present within the survey area. It is a non-cryptic and perennial species that was actively searched for during the field assessment and not located. With regard to *Comosperma viscidulum*, Botanica (2022) noted that the preferred habitat for this taxon includes sandplain, sand dune, lateritic plain and sandstone breakaway complex. Sandplain habitat was present within the survey area, however, it is a non-cryptic and perennial species that was actively searched for during the field assessment and not located. With regard to *Melaleuca apostiba*, Botanica (2022) noted the

species has previously been recorded approximately 20 km north east of the survey area; however, its preferred habitat (red clayey sand, edge of salt lake/wetland) is unlikely to be present. *Grevillea obliquistigma* subsp. *cullenii* was not identified in the Botanica (2022) desktop Study Area, with no nearby records.

No Threatened or Priority flora were recorded within the Development Envelope during field assessments (Botanica, 2022; 2023).

Fauna

Through their desktop assessments, Botanica (2022; 2023) identified 259 and 207 fauna species, as potentially occurring within the survey areas, respectively. This total includes seven conservation significant species, as listed below:

- Grey Falcon (*Falco hypoleucos*) (Vulnerable – EPBC Act and BC Act).
- Southern Whiteface (*Aphelocephala leucopsis*) (Vulnerable – EPBC Act and BC Act).
- Great Desert Skink (*Liopholis kintorei*) (Vulnerable – EPBC and BC Act).
- Peregrine Falcon (*Falco peregrinus*) (Other specially protected – BC Act).
- Princess Parrot (*Polytelis alexandrae*) (Vulnerable – EPBC Act and DBCA Priority 4).
- Sandhill Grasswren (*Amytornis oweni oweni*) (DBCA Priority 4).
- Brush-tailed Mulgara (*Dasycercus blythi*) (DBCA Priority 4).

No significant fauna were recorded during the field surveys (Botanica 2022; 2023). Botanica (2022; 2023) concluded that all fauna species considered as possibly occurring within the Development Envelope may in fact only visit the area for short periods as infrequent vagrants.

Eight fauna habitats were recorded within the Development Envelope (Botanica 2022; 2023) comprising:

- Clay-Loam Plain containing *Acacia* woodland over low mixed shrubs.
- Sand Plain containing *Acacia*, *Eucalyptus* Woodland, Mallee woodland over low mixed shrubs and spinifex grassland.
- Clay-loam Plain containing Acacia woodland over *Ptilotus* low open shrubland.
- Sand Plain containing *Acacia* woodland over *Triodia* hummock grassland.
- Sand Plain containing *Acacia/Allocasuarina* woodland over *Triodia* hummock grassland.
- Sand Plain containing *Eucalyptus* mallee woodland over *Triodia* hummock grassland.
- Sand Plain containing *Eucalyptus* woodland over *Acacia* shrubland over *Triodia* hummock grassland.
- Sand Dune containing *Eucalyptus* woodland/ mallee woodland over *Triodia* hummock grassland.

Based on the above information, the vegetation and fauna habitat within the Development Envelope is considered common throughout the region and did not include any unique landforms likely to support a high level of biological diversity in comparison to surrounding uncleared areas both locally and regionally.

The proposed clearing is therefore not likely to be at variance to this Principle.

Methodology

- Botanica (2022)
- Botanica (2023)
- DCCEEW Protected Matters Search Tool Report
- Government of Western Australia (2019)

(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.

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

Botanica (2022; 2023) identified 259 and 207 native vertebrate fauna species in their desktop assessments in 2022 and 2023 study areas, respectively. Of these, seven species are of conservation significance. These species are discussed further in the Table below.

Significant fauna identified in pre-survey desktop assessment with the potential to occur within the Development Envelope

Fauna Species & Conservation Status	Discussion	Closest record
Liopholis kintorei (Great Desert Skink) Vulnerable – EPBC Act and BC Act	The sandplains within the Development Envelope represent possible suitable habitat for this species. The Great Desert Skink generally occurs on red sandplains and sand ridges. Vegetation usually consists of hummock grassland (*Triodia basedowii, Triodia pungens* and *Triodia schinzii*), with some scattered shrubs and occasional trees (e.g. *Acacia* spp., *Eucalyptus* spp., *Hakea* spp., *Grevillea* spp. and *Allocasuarina decaisneana*).	~60 km north near Lake Wells
Apholocephala leucopsis (Southern Whiteface) Vulnerable – EPBC Act and BC Act	Critical habitat includes relatively undisturbed open woodlands and shrublands with an understorey of grasses and/or shrubs, habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat, and living and dead trees with hollows and crevices which are essential for roosting and nesting. These vegetation features were not widely present within the survey area, and post-survey likelihood of occurrence deemed this species unlikely to occur.	Development Envelope may form part of larger home range
Falco hypoleucos (Grey Falcon) Vulnerable – EPBC Act and BC Act	The Grey Falcon inhabits *Acacia* shrublands that are crossed by tree-lined water courses and frequent tussock grasslands and open woodlands. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter. The Development Envelope may form part of a large and wider home range and has the potential to pass through. This species is unlikely to breed within the Development Envelope as there are no possible nest sites.	Development Envelope may form part of larger home range
Polytelis alexandrae (Princess Parrot) Vulnerable – EPBC Act and DBCA Priority 4	The Princess Parrot occupies sand dune and sand flat areas as well as occurring in open savanna woodlands and shrublands. The sandplain and Eucalypt woodland represent potential suitable habitat and potential breeding habitat for this species. As this species has a wide-ranging distribution, it is considered as possibly occurring but would only be occasionally and for short periods (Botanica, 2022).	~80 km southeast
Amytornis oweni oweni (Sandhill Grasswren) DBCA Priority 4	Habitat mainly includes spinifex, with or without low shrubs and herbage, on sandy or loamy plains, also, bushy *Acacias* on sandridges and interdunes, usually with spinifex. Potential habitat within the survey area includes spinifex covered sandplains and some shrublands (Botanica, 2022).	No recent records

Dasycercus blythi (Brush-tailed Mulgara) DBCA Priority 4	Occurs on sand dunes with sparse cover of sandhill caingrass or areas around salt lakes. The sandplains within the survey area provide possible marginal habitat for this species (Botanica, 2022).	~60 km north near Lake Wells
Falco peregrinus (Peregrine Falcon) Other Specially Protected – BC Act	The Peregrine Falcon requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings (Birdlife Australia, 2018). Open air space over all areas represents possible foraging areas for this species. Some areas of the survey area could be used by this species as part of a broader home range; however, records of presence of this species in this area is rare and therefore it is likely that the species may only be present occasionally.	~60 km southeast of the western end of the Development Envelope

No significant fauna were recorded (directly or indirectly) during the Botanica (2022; 2023) field surveys.

Eight fauna habitats were recorded within the Development Envelope, being:

- Clay-Loam Plain containing Acacia woodland over low mixed shrubs.
- Sand Plain containing Acacia, Eucalyptus Woodland, Mallee woodland over low mixed shrubs and spinifex grassland.
- Clay-loam Plain containing Acacia woodland over Ptilotus low open shrubland.
- Sand Plain containing Acacia woodland over Triodia hummock grassland.
- Sand Plain containing Acacia/Allocasuarina woodland over Triodia hummock grassland.
- Sand Plain containing Eucalyptus mallee woodland over Triodia hummock grassland.
- Sand Plain containing Eucalyptus woodland over Acacia shrubland over Triodia hummock grassland.
- Sand Dune containing Eucalyptus woodland/ mallee woodland over Triodia hummock grassland.

All eight fauna habitat types recorded within the Development Envelope are well represented both locally and regionally, with no restricted habitat types recorded. The survey areas do not comprise the whole or part of a habitat necessary for maintenance of a significant habitat for fauna. While the habitats identified are suitable for the species considered, some or all may be of marginal extent or quality. These fauna species may only visit the area infrequently and for short periods, making their occurrence within the survey areas unlikely.

Whilst Botanica (2022, 2023) considered Malleefowl (*Leipoa ocellata*) unlikely to occur due to habitat being marginal and unsuitable for breeding, there are several DBCA records of the species within the Study Area. Malleefowl are found in arid and semi-arid areas dominated by mallee eucalypts on sandy soils. They are known to also occur in Mulga (*Acacia aneura*), Broombush (*Melaleuca uncinata*), Scrub Pine (*Callitris verrucosa*), eucalypt woodlands and coastal heathlands. Malleefowl require abundant leaf litter and a sandy substrate for the successful construction of nest mounds (Department of Parks and Wildlife, 2016).

The Great Victoria Desert is Australia's largest desert, stretching from east of Kalgoorlie in Western Australia to west of Coober Pedy in South Australia (Department of Parks and Wildlife, 2016). Suitable Malleefowl habitat within the Development Envelope is unlikely to be critical for Malleefowl survival, given the vastness of the Great Victoria Desert and the sporadic breeding patterns of Malleefowl in response to unpredictable rainfall in arid environments. As a precautionary measure to avoid and minimise potential impacts to Malleefowl breeding, Main

Roads will undertake pre-clearance surveys for the presence of Malleefowl mounds within areas of suitable habitat during the breeding season (conservatively estimated as 1 September to 31 January). No clearing will occur within 50 m of any identified active mounds during the breeding season. In the unlikely scenario that active mounds cannot be avoided, they would only be cleared outside of the breeding season and following appropriate authorisation being obtained (i.e. section 40 under the BC Act).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

- Birdlife Australia (2018)
- Botanica (2022)
- Botanica (2023)
- Department of Parks and Wildlife (2016)
- Government GIS shapefiles:
    - DBCA Threatened fauna database search (Accessed 03/09/2025)

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

Proposed clearing is not at variance to this Principle.

A search of DBCA and Western Australian Herbarium datasets did not identify any Threatened Flora species within the 40 km Study Area.

No Threatened flora species were recorded within the Development Envelope during the field surveys undertaken by Botanica (2022; 2023) and none were considered likely to occur in the post survey Likelihood of Occurrence assessment.

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology

- Botanica (2022)
- Botanica (2023)
- Government GIS shapefiles:
    - WAHerb (Restricted) (Accessed 03/09/2025)
    - TPFL (Restricted) (Accessed 03/09/2025)

(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.

Botanica (2022; 2023) did not identify any known desktop records of State or Federally listed TECs within the Development Envelope.

No vegetation communities representative of TEC's were recorded during the biological field surveys (Botanica, 2022; 2023).

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology

- Botanica (2022)
- Botanica (2023)
- Government GIS shapefiles:
    - DBCA Threatened Ecological Community database search (Accessed 03/09/ 2025)

(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 at variance to this Principle.

The National Objectives and Targets for Biodiversity Conservation recognise that the retention of 30% 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) except in constrained areas (Perth and Peel) where 10% representation should be maintained.

The Development Envelope occurs within Great Victoria Desert (GVD) bioregion and Shield (GDV01) subregion. The vegetation in the Development Envelope has been mapped with the following pre-European Beard vegetation associations:

- **GVD18** - Low woodland, open low woodland or sparse woodland; Mulga (*Acacia aneura*) and associated species.
- **GVD24** - Low woodland or open low woodland; Other acacia, banksia, peppermint, cypress pine, casuarina, York gum Acacia spp., Banksia spp., *Agonis flexuosa*, Callitris spp., Allocasuarina spp., *Eucalyptus loxophleba*.
- **GVD39** - Wattle, teatree & other species Acacia spp. Melaleuca spp.
- **GVD45** - Eucalypt shrubland *Eucalyptus eremophila*, *E. redunca*, E. spp.
- **GVD84** - Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (*Eucalyptus youngiana*) over hard spinifex *Triodia basedowii* between sandhills
- **GVD85** - Hummock grasslands, open low tree & mallee steppe; marble gum & mallee (*Eucalyptus youngiana*) over hard spinifex on sandplain
- **GVD676** – Samphire; Tecticornia spp. communities in saline areas
- **GVD1239** - Hummock grasslands, open medium tree and mallee steppe; marble gum and mallee (*Eucalyptus youngiana*) over hard spinifex *Triodia basedowii*.

These vegetation associations have more than 95% of their pre-European extent remaining intact at all levels as shown in Table 2.

Given that the vegetation associations are widespread throughout the area, are well-represented locally and regionally and the landscape surrounding the Development Envelope is uncleared, the native vegetation proposed for clearing is not significant as a remnant in an area that has been extensively cleared.

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology

- Commonwealth of Australia (2001)
- Government of Western Australia (2019)
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed 03/09/2025)

(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 at variance to this Principle.

According to GIS databases, no perennial waterbodies, including DBCA mapped Wetlands, Ramsar Sites or Wetlands of National Importance occur within the Development Envelope.

Two wetlands of national importance (Australian Nature Conservation Agency Wetlands) were identified within the 40 km radius Study Area by the desktop assessment; Yeo Lake and Lake Throssell. At its closest point, Lake Throssell is located 1.2 km north of the Development Envelope and Lake Yeo is located 25 km south of the Development Envelope.

Numerous non-perennial drainage lines and un-named non-perennial inland water bodies (Geoscience Australia database, 2015) are located within 40 km of the Development Envelope. However, only a few non-perennial drainage lines (and no inland waters) intersect the Development Envelope (Botanica, 2022; 2023).

Vegetation types S-CFW1 and S-MWS3 are associated with the minor non-perennial watercourses, with 45.09 ha and 55.96 ha respectively mapped within the Development Envelope. Whilst both vegetation types will be impacted by the proposed clearing, they are not restricted to the Development Envelope and extend well beyond the project into the surrounding Study Area.

Whilst no DBCA Conservation Category Wetlands, Ramsar sites or Wetlands of National Importance occur within the Development Envelope, two vegetation types growing in association with non-perennial watercourses will be impacted by the proposed clearing. As such, the proposed clearing is at variance to this Principle.

Methodology

- Botanica (2022)
- Botanica (2023)
- Government GIS shapefiles:
  - Geomorphic Wetlands (Accessed 03/09/2025)
  - Ramsar Wetlands (Accessed 03/09/2025)
  - Important Wetlands (Accessed 03/09/2025)
  - Watercourses (Accessed 03/09/2025)
  - RIWI Act Rivers (Accessed 03/09/2025)

(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.

The Development Envelope is mapped within the Western Region soil landscape within the Leemans Sandplain Zone (274) and the North-western Great Victorian Desert Zone (122). The project is predominantly located in the Leemans Sandplain which is characterised by sandplains (with some gravel plains, mesas and salt lakes) on granitic rocks of the Yilgarn Craton. The terrain predominantly consists of gently undulating wash plains and sandplains below the mesas and hills. Soils consist of red sandy earths with red loamy earths and some red deep sands, red-brown hardpan shallow loams and calcareous loamy earths.

The Development Envelope occurs within various landscape systems (Darlot system, Bullimore system, Sherwood system, Waguin System, Yanganoo system, Violet System, Bandy System, Laverton System, Ararak System, Gundockerta System, My99 atlas system, Fa7 atlas system, AB47 atlas system, SV10 atlas system, Mx22 atlas system and AB49 atlas system) with the majority in the following three systems:

- Bullimore system - characterised by gently undulating sandplain with occasional linear dunes and stripped surfaces supporting spinifex grasslands and mallees and *Acacia* shrubs.
- My99 atlas system – characterised by plains with extensive gravel pavements and small tracts of longitudinal dunes.
- MX22 atlas system – characterised by plains often flanking areas of regional drainage (unit SV10); some longitudinal sand dunes.

A major portion of the Development Envelope occurs within soil group 445-Red deep sand and classified Tenosols. These types of soil are described to have rapid permeability and low water holding capacity (Schoknecht and Pathan, 2013) and therefore a low risk of water erosion. A small portion of the Development Envelope in the midsection occurs within the soil group 522-Red shallow loam and classified Red Kandosol described moderate permeability and water holding capacity.

The climate in the Development Envelope is characterised as an arid climate and bioclimate described by Beard (1990) as Eremaean (Tille, 2006). Rainfall data for the Laverton weather station (#12305) located approximately 50 km south-west of the Development Envelope recorded annual rainfall of approximately 270 mm (Botanica, 2022).

The Development Envelope is mapped as 'extremely low' risk of containing Acid Sulfate Soils (ASS).

It is unlikely that the proposed clearing will cause appreciable land degradation given that the proposal occurs along the already existing road and road verges. However, given that Main Roads is proposing to clear up to 500 ha of native vegetation, standard erosion and dust management control measures will be implemented during construction to reduce the incidence of wind erosion.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

- Botanica (2022)
- Schoknecht and Pathan (2013)
- Tille (2006)
- Government GIS Shapefiles:
  - Atlas of Australian Acid Sulfate Soils (CSIRO 2013)
  - Australian Soil Resource Information System (ASRIS)
  - Soil landscape Mapping – Systems (DPIRD-064) (accessed 03/09/2025)
  - Soil landscape Mapping – Zones (DPIRD-017) (Accessed 03/09/2025)

(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 at variance to this Principle.

According to GIS databases, the Development Envelope does not intersect with any conservation areas. The nearest conservation area is Yeo Lake Nature Reserve, which at its closest point is located 1.1 km from the eastern end of the Development Envelope.

The Development Envelope does not intersect with any registered offsets or wetlands of international importance (Ramsar) or nationally important wetlands (Government of Western Australia, 2025; GIS Databases).

Given the lack of conservation areas within, adjacent or nearby the Development Envelope, the proposed clearing is not at variance to this Principle.

Methodology

- Government of Western Australia (2025)
- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters & Lands of Interest (Accessed 03/09/2025)
  - Geomorphic Wetlands (conservation category wetlands only) (Accessed 03/09/2025)
  - Ramsar Wetlands (Accessed 03/09/2025)
  - Important Wetlands (Accessed 03/09/2025)

(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.

The Development Envelope does not intersect any perennial surface water or underground water courses (GIS Databases; BoM, 2021).

The Development Envelope does not occur within a Public Drinking Water Source Area (PDWSA) or within any of the controlled catchment areas under the CAWS Act. It is within the Goldfields Groundwater Area, proclaimed under the RIWI Act.

Although there are no perennial surface water bodies, a few minor, non-perennial drainage lines intersect the Development Envelope. Given that surface water flow is intermittent and the majority of clearing will occur adjacent to an existing road within disturbed areas, it is unlikely that the proposed clearing will cause deterioration in the quality of surface water.

Groundwater salinity within 40 km of the Development Envelope ranges from 500 mg/L to >35,000 mg/L and within the Development Envelope from 500 mg/L to 7000 mg/L (DWER, 2018). Groundwater in the region is a local flow system in Precambrian Rocks (Botanica, 2022). Natural Resource Management Soil Systems (DPIRD, 2022) and CSIRO Acid Sulfate Soils risk mapping (CSIRO, 2018) indicates the soil within the Development Envelope to have extremely low probability of sulphide material occurrence..

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

- BoM (2021)
- Botanica (2022)
- CSIRO (2018)
- DWER (2018)
- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 03/09/2025)
  - CAWSA Part 2A Clearing Control Catchments (Accessed 03/09/2025)
  - RIWI Act, Groundwater Areas (Accessed 03/09/2025)
  - Groundwater Salinity Statewide (Accessed 03/09/2025)
  - Geoscience Australia database (Accessed 4/10/2023)
  - Atlas of Australian Acid Sulfate Soils (CSIRO 2018)
  - Australian Soil Resource Information System (ASRIS)

(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.

The Development Envelope is characterised by gently undulating wash plains and sandplains below the mesas and hills. The Development Envelope is characterised by an arid climate and bioclimate described by Beard (1990) as Eremaean (Tille, 2006) with annual rainfall ranging from 200-250 mm. Given the arid climate and soil type in the Development Envelope, risk of flooding is assessed as low.

The majority of the Development Envelope occurs within soil groups 445-Red deep sand and 532-Redbrown hardpan shallow loam. These types of soil are described to have rapid and very slow permeability (respectively) and low water holding capacity (Schoknecht and Pathan, 2013) and therefore lower risk of causing waterlogging. A small portion of the Development Envelope occurs within the soil groups 522-Red shallow loam and 544-Red loamy earth, both of which are described as having moderate permeability and water holding capacity.

Given the absence of perennial watercourses within and in the vicinity of the Development Envelope, soil type and climatic condition, the proposed vegetation clearing is not likely to cause, or exacerbate, the incidence or intensity of flooding.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology

- Schoknecht and Pathan (2013)
- Tille (2006)
- Government GIS Shapefiles:
  - Geoscience Australia database (Accessed 4/10/2023)
  - Australian Soil Resource Information System (ASRIS)
  - Soil landscape Mapping – Zones (DPIRD-017) (03/09/2025)
  - Soil landscape Mapping –Western Australia Attributed by WA Soil Group (DPIRD-076) (17/09/2024 and 14/08/2025)

6 VEGETATION MANAGEMENT

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

7 REHABILITATION, REVEGETATION AND OFFSETS

7.1 Revegetation and Rehabilitation

No temporary clearing will be undertaken as part of the Proposal activities.

7.2 Offset Proposal

No offset proposal is required as the proposed clearing will not result in significant residual impacts to native vegetation within the region.

8 STAKEHOLDER CONSULTATION

Main Roads will undertake stakeholder consultation as required.

9 REFERENCES

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