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WESTERN AUSTRALIA

# Clearing Assessment Report/ Vegetation Management Plan (VMP)

—  
**CPS 818**

*We're working for  
Western Australia.*

Collie Lake King Road Construction of  
Climbing Lane SLK 90.45 to 93.6 Westbound  
Collie Lake King Road (M037)  
Wheatbelt Region  
EOS 3338

D25#678840  
October 2025

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## Document Control

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# 1 PROPOSAL

## 1.1 Purpose and Justification

The Freight Vehicle Productivity Improvement Program (Main Roads, 2024) identified several road projects around the State that required upgrading to reduce current constraints to freight efficiency across the State Road network. The construction of a climbing lane on Collie Lake King Road, before Darkan was one of the projects identified.

Key benefits of this program include:

- Improved freight movements and efficiency by optimising roadside stopping places to better fit industry needs in terms of key locations, parking capacity, safe access, and facilities.
- Improve access for oversized vehicles.
- Improved road safety for heavy vehicles through better fatigue management options, and provision of auxiliary lanes with a resultant savings in crash costs and community trauma.
- Provide significant benefits for local and regional economies, particularly the resource, heavy transport and freight industries that transport mining products, mining equipment, fuel, explosives, and other general freight between projects across regions
- Reduced overall operating costs.
- Improved driver experience

Westbound traffic on Collie Lake King Road, west of Darkan, is often impeded by slow moving heavy vehicles that lose acceleration traversing a 4% incline between SLK 93.5 to 91.9. At the crest, heavy vehicles are often doing less than 20 km/h. This creates a potential safety hazard as inadequate sight distances make it unsafe for light vehicles to overtake heavy vehicles. Twelve years of data show that between the towns of Collie and Lake King, crashes have resulted in one fatality, two hospital admissions and two requiring medical attention. The construction of a west-bound climbing (passing) lane will improve the flow of traffic and reduce the risk of traffic crashes from unsafe overtaking attempts.

### 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 construct a westbound passing lane and upgrade the road for an approximately 3 km section of the Collie Lake King Road, west of the town of Darkan. The proposed works will comprise the following components:

- Construction of a passing lane between SLK 90.45 to 93.60.
- Two new culverts.

## 1.3 Proposal Location

The Clearing area is located on Collie Lake King Road (M037), west of Darkan, SLK 90.45 to 93.60, in the Shire of West Arthur, as shown in Figure 1. The central coordinate of the Proposal is -33.352196°, 116.692774°.

## 1.4 Clearing Details

**Proposed Clearing to be undertaken using CPS 818:** 1.26 ha

### **Areas of Native Vegetation Clearing:**

The areas of native vegetation to be cleared are shown in Figure 1, and in Appendix 2 Figure 2 to 5.

### **Type of Native Vegetation:**

The four mapped vegetation types to be cleared under this Proposal are described in Section 4.1.2 and shown in Appendix 2 Figure 6 to 9.

### **Condition of Native Vegetation:**

The condition of the vegetation to be cleared under this Proposal are described in Section 4.1.2 and shown in Appendix 2 Figures 10 to 13.

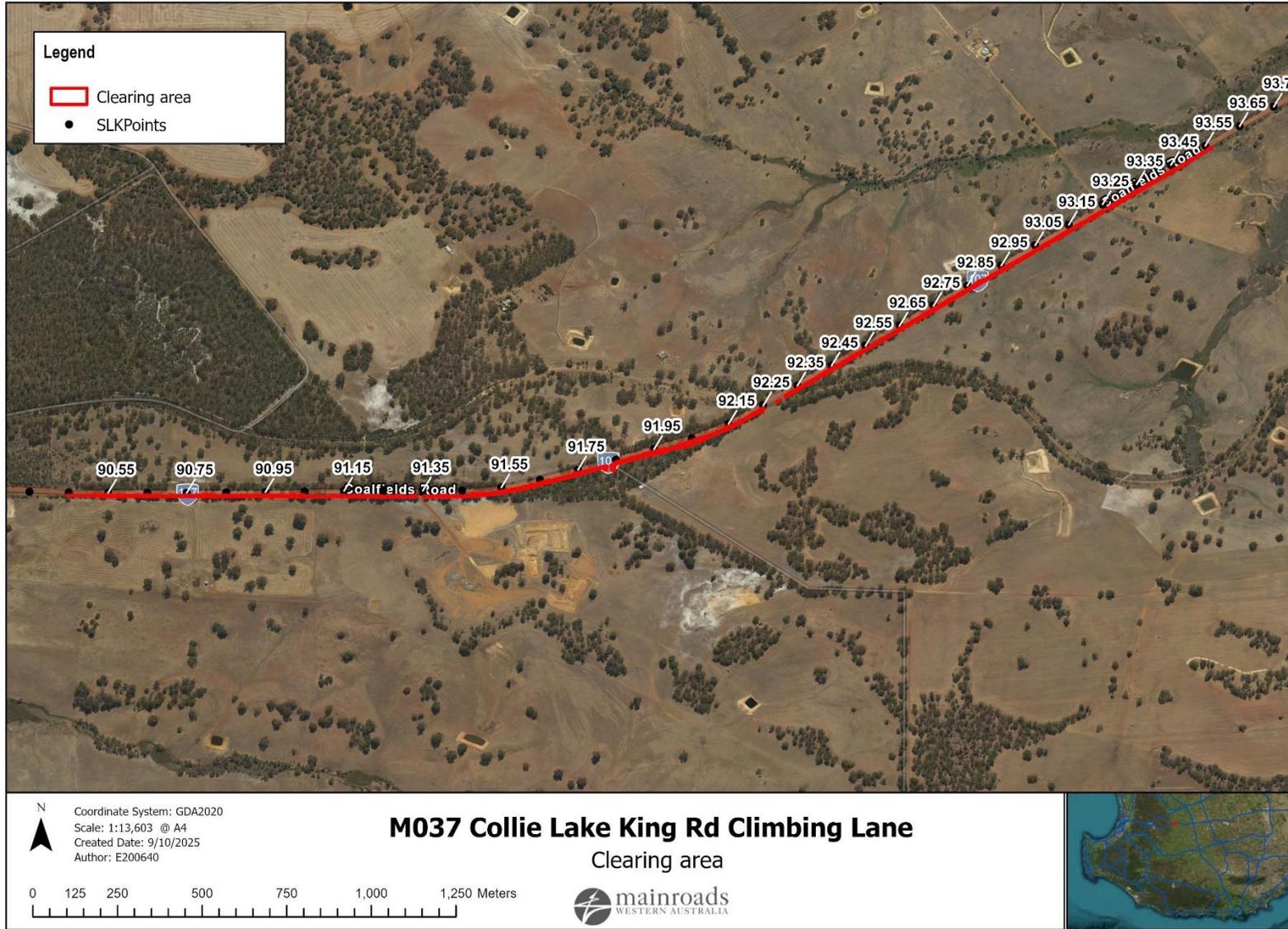


Figure 1. M37 Collie Lake King Road Climb Lane Clearing Area Overview Map.

## 1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

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

- Preferentially locating the new alignment in cleared pasture areas over the existing road reserve, however this was considered cost prohibitive e.g. due to cost of resumption of farmland and construction of completely new road rather than widening in existing alignment and premature redundancy of State road asset, lack of adequate funding, stakeholder engagement, resource requirements. Under this option, clearing would still be required for tie-ins to the existing road network.
- Upgrading other alternative routes that are less vegetated and environmentally constrained; however, these are not suitable due to longer travel times, sensitive local receptors (such as residences) or other planning issues.
- Do not upgrade the road; however, this will potentially result in a poorer safety outcome and may result in future fatalities or serious injuries and further degradation of the State road asset.
- Main Roads retains frangible vegetation where a clear zone is to be established for road projects. 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 nor 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 provided in Table 1.

**Table 1. Measures Undertaken to Avoid, Minimise, Reduce and Manage the Proposal Clearing Impacts**

<b>Design or Management Measure</b>	<b>Discussion and Justification</b>
<b>Alignment to one side of existing road</b>	The passing lane has been aligned to only impact vegetation on the south of the existing road. Although this results in an impact to some good condition remnant vegetation, it retains vegetation and significant DBH trees on the north side of the road.
<b>Alternative alignment located within pasture or degraded areas</b>	Alignment within adjacent farmland was not feasible and cost prohibitive as the proposed works are a short passing lane on the existing alignment only. Cleared areas are utilised where possible for all other associated requirements for the works.
<b>Simplification of design to reduce number of lanes and/or complexity of intersections</b>	The construction of a passing lane will result in an improved regional road. Only the southern side (westbound) part of the road will be upgraded, that is, no clearing is required on the north (eastbound) side of the road. If the proposed works were not undertaken, this may result in potential accidents, which is unacceptable to Main Roads on this dangerous stretch of road network.
<b>Steepen batter slopes</b>	As the majority of the Clearing area is in 'cut', meaning that material needs to be removed to construct the climbing lanes, the design has been amended to increase the backslope batter to minimise the amount of clearing required.
<b>Installation of barriers</b>	As the Proposal is primarily within an area of cut, the installation of safety barriers would not reduce the clearing footprint due to the requirements of roadside drainage. Thus, this is not a suitable measure to avoid.
<b>Installation of kerbing</b>	Kerbing will have limited impact on the construction footprint at the trees' locations due to the offsets required for road safety and drainage requirements.
<b>Use of existing cleared areas for access tracks, construction storage and stockpiling</b>	Clearing has been reduced as the site office, materials storage areas, construction vehicles/machinery and access tracks will be located on previously disturbed or cleared areas.
<b>Drainage modification</b>	Drainage has been considered and will be upgraded to meet current standards, although will not affect the hydraulic load to nearby vegetated areas.

## 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*
- *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 (Government of WA, December 2014)
- Procedure: Native vegetation clearing permits (Government of WA, October 2019)
- 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.
- Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt (Department of the Environment, 2015)
- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan (Department of Parks and Wildlife, 2013)
- Referral guideline for 3 WA threatened Black Cockatoo species (DCCEEW, 2022)

## 2 SCOPE AND METHODOLOGY ASSESSMENT OF CLEARING

Native vegetation will be cleared to accommodate this Proposal. This clearing will be undertaken using the Main Roads Statewide Clearing Permit CPS 818/17. To comply with CPS 818/17, Main Roads must prepare a Clearing Assessment Report (CAR).

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.
- **Study area** – Area covered by the Desktop Assessment. The Study area is a 20 km radius of the Clearing area.
- **Survey area** – Area covered by the Biological Survey, which is typically larger than the Clearing area.

## 2.2 Desktop Assessment

A desktop assessment of the Clearing area 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 10.

## 2.3 Surveys and Assessments

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

- Detailed and targeted flora and vegetation survey (Ecoedge 2025).
- Basic Fauna Survey and Targeted Black Cockatoo Assessment (Harewood 2025).

Biological and targeted surveys conducted for the proposal are outlined in Table 2 and a summary of the findings in these reports are presented in Section 0.

Biological surveys were conducted for a Survey area wider than the Clearing area. Ecoedge (2025) conducted a flora and vegetation survey, and Harewood (2025) conducted a basic fauna survey and targeted Black Cockatoo assessment. A site inspection was also conducted to assess the environmental values of the Clearing area with a view of minimisation of impacts and total clearing (1.26 ha).

Using LiDAR, Main Roads Western Australia (Main Roads) has mapped the edge of the maintenance zone, delineating the line between the maintenance zone and remnant vegetation (the vegetation disturbance line). This method is markedly more accurate than mapping from aerial imagery, which Ecoedge (2025) and Harewood (2025) have utilised. When comparing areas mapped as vegetated versus those mapped by Ecoedge and Harewood, these reports have underestimated the amount of remnant vegetation/fauna habitat along the roadside of the Clearing area by several metres (as seen in Plate 1 below).



**Plate 1. Extrapolation of Vegetation Type / Fauna Habitat within the Clearing area.**

As such, Main Roads has assumed that anywhere beyond the VD Line is vegetated, where (in some instances) Ecoedge (2025) and Harewood (2025) have mapped as Cleared. This extrapolation mapping has been conducted using the adjacent vegetation type/fauna habitat, and condition, as mapped by Ecoedge (2025) and Harewood (2025). As such, values presented in this report, are not consistent with those present in the biological reports conducted for the proposed activities, with the increased accuracy of the Main Roads data reflecting a higher disturbance figure.

**Table 2. Summary of Biological and Targeted Surveys Relevant to the Proposal**

Consultant and Survey Name	Survey Details
Ecoedge (2025) Detailed and Targeted Flora and Vegetation survey of M037 Collie Lake King Road 86-94 SLK Passing Lanes Project	<b>Survey area:</b> 41.5 ha <b>Type:</b> Detailed and Targeted flora and vegetation survey <b>Timing:</b> 13 September to 3 October 2024. <b>Survey Results Shapefile TRIM Ref:</b> D25#619108 <b>Document TRIM Ref:</b> D25#619139
Harewood (2025) Fauna Assessment. Collie-Lake King Road SLK 86-94 Passing Lanes Project.	<b>Survey area:</b> 41.5 ha <b>Type:</b> Basic Fauna Survey and Black Cockatoo Habitat Assessment <b>Timing:</b> 28 and 28 October and 21 December 2024 <b>Survey Results Shapefile TRIM Ref:</b> D25#236248 <b>Document TRIM Ref:</b> D25#231083
Main Roads (2025) Environmental Site Inspection Report - Collie Lake King Climbing Lane 90.45 – 93.6 SLK	<b>Survey area:</b> 41.5 ha <b>Type:</b> Targeted flora survey <b>Timing:</b> 26 September 2025 <b>Document TRIM Ref:</b> D25#993708

### 3 DESKTOP ASSESSMENT OF VEGETATION

#### 3.1 Interim Biographic Region of Australia (IBRA)

The Clearing area is located within the Jarrah Forest IBRA Region and Northern Jarrah Forest Sub-region. The local area comprises the transitional zone between the Northern Jarrah Forest and the Avon Wheatbelt, the boundary of which is located 29.3 km to the East.

#### 3.2 Pre-European Vegetation Associations

Table 3 provides details of the Pre-European Vegetation Associations which intersect the Clearing area.

**Table 3. 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)
<b>East Darling Veg Assoc No 3</b>	<b>Statewide</b>	2,661,405	1,803,437	68	55
	<b>IBRA Bioregion</b> Jarrah Forest	2,309,592	1,604,102	67	54
	<b>IBRA Sub-region</b> Northern Jarrah Forest	908,100	723,446	80	67
	<b>Local Area (10km)</b>	15,912	7,404	35.38	-
<b>Williams Veg Assoc No 4</b>	<b>Statewide</b>	1,054,280	284,102	68	6
	<b>IBRA Bioregion</b> Jarrah Forest	1,022,713	277,088	27	6
	<b>IBRA Sub-region</b> Northern Jarrah Forest	614,201	197,904	32	9.85
	<b>Local Area (10km)</b>	17,717	7,404	41.79	-

Vegetation associations are well represented at all scales, including within a 10km local area buffer of the Clearing area, with greater than 30% of the pre-European extent of each vegetation association remaining.

#### 3.3 Vegetation Complexes and Representation

Webb et al. (2016) has consolidated the previous mapping by Heddle et al. (1980) and Mattiske and Havel (1990) mapping for the Swan Coastal Plan and Southwest Forest regions. The vegetation complexes within the Native Vegetation Clearing area are detailed in Table 4. The Clearing area is entirely within the Southwest Forest region dataset; however, the extent of vegetation complex mapping ends approximately 4.13 ha to the east of the Clearing area. Therefore, the extent of vegetation complexes within the 10 km local area is not an accurate reflection of vegetation within the region as they have not been mapped to this degree. Table 4 presents the current extent of vegetation complexes which intersect the Clearing area.

**Table 4. Vegetation Complexes within the Clearing area**

Vegetation Complex	Pre-European Extent (ha)	Current Extent (ha)	% Remaining
Yalanbee Y5	126,610	83,829	66
Pindalup, Pn	167,151	128,358	77
Darkan, Dk3	7,535	996	13

## 4 SURVEY RESULTS

In accordance with CPS 818/17 condition 8 (e) (iii), a copy of the relevant sections of the executive summary and report conclusions from the biological survey and/or field assessments are provided in [Appendix 1](#).

### 4.1 Summary and Analysis of Flora and Vegetation Surveys

#### 4.1.1 Flora

Ecoedge (2025) conducted a Detailed and Targeted Flora and Vegetation Survey of the Clearing area and surrounds in October 2024. Two hundred and eighty-five vascular flora were identified within the Survey area, sixty-two of which were introduced species. The most represented plant families were Fabaceae (47 taxa, including ten introduced species), Poaceae (26 taxa, comprising 15 introduced species), and Asteraceae (25 taxa, including eight introduced species).

No Threatened flora at a Commonwealth or State level or Priority flora were found within the Survey area.

The post survey likelihood of occurrence assessment by Ecoedge (2025) determined that *Caladenia validinervia* (P1), *Caladenia leucochila* (T) and *Diuris micrantha* (T) had a Possible-but-low likelihood of occurring. This rating was for Good or better condition habitat areas. It is considered Unlikely that they would occur in Degraded areas.

Main Roads (2025) then conducted a targeted flora survey for the three species that Ecoedge advised had a Possible-but-low likelihood of occurring, *Caladenia validinervia* (P1), *Caladenia leucochila* (T) and *Diuris micrantha* (T). The targeted flora survey was conducted in optimal flowering time for the species. No individuals of these three species were located. Seasonally moist areas contained within the Clearing area which may provide potential habitat for the Threatened species were found to be in a Degraded condition, displaying significant levels of weed incursion (Vegetation Type D3, Table 5 and Plate 2). Therefore, as there is no suitable habitat in a Good or better condition in the Clearing area, in line with the Ecoedge (2025) conclusion *Caladenia leucochila* (T) and *Diuris micrantha* (T) are unlikely to occur in the Clearing area.

The lack of records of these species despite targeted searches over multiple years in optimal flowering time further reduces the likelihood of occurrence. Subsequently, the three species are considered highly unlikely to occur.

#### 4.1.2 Vegetation

Ecoedge (2025) identified nine vegetation types within their Survey area.

- Wetland /low-lying damp land communities associated with predominantly clay based soils (vegetation units D1, D2, and D3)
- Lower slope community associated with loamy soils (vegetation unit A)
- Middle and upper slope communities on gravelly loam to gravel-dominated soils (vegetation units B1, B2, Bd and C).
- Revegetation (RV)

For a full description of the existing vegetation, refer to the Ecoedge (2025) Flora and Vegetation report. Only four are within the Clearing area as outlined in Table 5.

**Table 5. Vegetation Types within the Clearing areas (Ecoedge 2025)**

Vegetation Type	Description	Survey area (ha)	Clearing area (ha)
B1	Woodland of <i>Eucalyptus wandoo</i> , ( <i>Eucalyptus marginata</i> ) over isolated low trees of woodland of <i>Acacia acuminata</i> and <i>Santalum acuminatum</i> over very open tall shrubland of <i>Hakea prostrata</i> over open low shrubland of <i>Banksia dallanneyi</i> , <i>Bossiaea eriocarpa</i> , <i>Bossiaea ornata</i> over open forbland of <i>Agrostocrinum hirsutum</i> , <i>Brachyscome iberidifolia</i> , <i>Chamaescilla corymbosa</i> , <i>Dianella revoluta</i> , <i>Desmocladius fasciculatus</i> <i>Lagenophora huegeli</i> , <i>Rhodanthe citrina</i> , <i>Patersonia occidentalis</i> over open low grassland of * <i>Briza maxima</i> , <i>Neurachne alopecuroidea</i> , <i>Themeda triandra</i> and isolated sedges of <i>Morelotia octandra</i> and <i>Netrostylis</i> sp. Jarrah Forest (R. Davis 7391 on grey-brown gravelly loam.	4.02	0.25
B2	Mid open forest of <i>Eucalyptus marginata</i> and <i>Corymbia calophylla</i> over open tall shrubland of <i>Banksia sessilis</i> var. <i>sessilis</i> over low/ mid open shrubland including <i>Bossiaea eriocarpa</i> , <i>Hibbertia commutata</i> , <i>Lysiandra calycina</i> , <i>Trymalium ledifolium</i> and <i>Xanthorrhoea preissii</i> over open low shrubland of <i>Gompholobium marginatum</i> , <i>G. preissii</i> , <i>Scaevola calliptera</i> , very open sedgeland of <i>Lepidosperma leptostachyum</i> , <i>L. tenue</i> and <i>Netrostylis</i> sp. Jarrah Forest (R. Davis 7391), and very open forbland including <i>Conostylis aculeata</i> , <i>Desmocladius asper</i> , <i>Glischrocaryon aureum</i> , <i>Hyalosperma cotula</i> , <i>Lagenophora huegeli</i> , <i>Lawrencella rosea</i> , <i>Loxocarya cinerea</i> , <i>Rhodanthe citrina</i> , <i>Ptilotus manglesii</i> , <i>Stackhousia monogyna</i> , <i>Stylidium piliferum</i> and <i>Trichocline spathulata</i> and scattered grasses including <i>Neurachne alopecuroidea</i> and <i>Poa drummondiana</i> on grey-brown or red-brown gravelly loam.	4.01	0.11
C	Mid open forest of <i>Corymbia calophylla</i> , <i>Eucalyptus marginata</i> over very open tall shrubland of <i>Banksia sessilis</i> over mid open shrubland of <i>Bossiaea linophylla</i> , <i>Gastrolobium praemorsum</i> , <i>Jacksonia sternbergiana</i> , <i>Macrozamia riedlei</i> over isolated low shrubs of <i>Kennedia prostrata</i> , <i>Lysiandra calycina</i> and <i>Muehlenbeckia adpressa</i> , <i>Scaevola calliptera</i> over open forbland including <i>Conostylis aculeata</i> , <i>Dampiera linearis</i> , <i>Desmocladius asper</i> , <i>Geranium solanderi</i> , <i>Patersonia occidentalis</i> , <i>Sowerbaea laxiflora</i> , <i>Stypandra glauca</i> and open grassland including * <i>Ehrharta longiflora</i> and <i>Microlaena stipoides</i> on grey-brown gravelly loam.	2.92	0.51
D3	Woodland to open woodland of <i>Eucalyptus rudis</i> with isolated tall shrubs of <i>Acacia acuminata</i> , <i>Acacia saligna</i> , <i>Viminaria juncea</i> over * <i>Asparagus asparagoides</i> , <i>Muehlenbeckia adpressa</i> isolated climbers, open forbland of <i>Dianella revoluta</i> , * <i>Romulea rosea</i> and <i>Stypandra glauca</i> and variable grassland including * <i>Ehrharta longiflora</i> , * <i>Ehrharta calycina</i> , * <i>Eragrostis curvula</i> , <i>Themeda triandra</i> and patches of * <i>Juncus acutus</i> , * <i>Juncus microcephalus</i> rushland on grey-brown clay loam.	2.41	0.39
Cleared	This included roads, verges, and hardstands, as well as isolated trees over almost entirely introduced species, mostly exotic grasses.	18.84	N/A

As outlined in Section 2.3, Main Roads analysed the vegetation mapping as conducted by Ecoedge (2025) and noted inaccuracies due to the broader scale mapping over a larger Survey area than the Clearing area. Further refinement to the vegetation mapping within the Clearing area has been conducted by Main Roads to provide a more accurate reflection of disturbance. This has resulted in an increase of the areas of vegetation within the Clearing area when compared to the Ecoedge (2025) survey spatial data as provided to the Index of Biodiversity Surveys for Assessments (IBSA). The areas

in Table 5 and used throughout this report reflect the increased areas of disturbance identified during this analysis.

Where it intersects the Clearing area, the vegetation mapped as D3 “Wetland /low-lying damp land communities associated with predominantly clay based soils” comprises vegetation in a roadside drain which receives surface water runoff from an adjacent low hill as displayed in Plate 2 below. This vegetation is not considered to be growing in association with a watercourse or wetland.



**Plate 2: Vegetation type D3 within the Clearing area**

The condition of the vegetation was predominately in a Degraded condition (61.11%), with some patches in Good or better condition (Table 6, Appendix 2 Figure 10 to Figure 13).

**Table 6. Vegetation Condition within the Clearing area and Surrounds (Ecoedge 2025).**

Vegetation Condition	Survey area (ha) (%)	Clearing area (ha)(%)
<b>Excellent</b>	1.02 (2.46%)	0.01 (0.87%)
<b>Very Good</b>	3.57 (8.60%)	0.25 (19.66%)
<b>Good</b>	3.96 (9.54%)	0.13 (10.66%)
<b>Degraded to Good</b>	1.79 (4.31%)	0.09 (7.32%)
<b>Degraded</b>	12.2 (29.40%)	0.77 (61.11%)
<b>Completely Degraded</b>	0.12 (0.29%)	0.00 (0.00%)
<b>Cleared</b>	18.84 (45.40%)	N/A
<b>Total (Excl. Cleared)</b>	22.66	1.26

Ecoedge (2025) undertook patch assessments for Eucalypt Woodlands of the West Australian Wheatbelt (Wheatbelt Woodlands TEC) on advice from Main Roads within the Darkan Soil Landscape systems (DPIRD-064) GIS layer east of the 600 mm rainfall isohyet. Ecoedge (2025) concluded that two patches of the Wheatbelt Woodlands TEC occur within their Survey area to a total of 0.78 ha. Within the patches, 0.6 ha was in Degraded to Good condition, 0.09 ha in Good condition and 0.1 ha in Very Good condition. The Proposal intersects one of the patches – Patch 2. Patch 2 is in Degraded to Good condition at the east to Very Good condition heading towards the west. Total intersection of the of the Clearing area with the mapped occurrence of this TEC is 0.127 ha.

Due to the location of the Clearing area within the Northan Jarrah forest IBRA sub-region and the co-dominance of Marri and Jarrah, there was some uncertainty regarding classification of the vegetation as the Wheatbelt Woodlands TEC. The local area comprises the transitional zone between the Northern Jarrah Forest and the Avon Wheatbelt, the boundary of which is located 29.3 km to the East. However, for the purposes of this assessment it has been conservatively classified as TEC. Plate 3 displays areas of the TEC within the Clearing area.



**Plate 3. Street View Images of Proposed Clearing in Ecoedge (2025) assigned Wheatbelt Woodlands TEC – note presence of Marri/Jarrah trees and forest canopy.**

## 4.2 Summary and Analysis of Fauna Surveys

### 4.2.1 Fauna

Harewood (2025) conducted a Basic Fauna Survey and a Targeted Black Cockatoo survey for a wider Survey area from SLK 86-94. Harewood (2025) reported that 21 species were recorded or potentially occur within the Survey area. Forty-five fauna species (mainly common bird species) were observed or secondary evidence of their presence recorded during fauna surveys (Harewood 2025). Evidence of two significant fauna species was recorded, an historic observation of Baudin's cockatoo was recorded in 2014 (individuals and chewed marri fruits) and the forest red-tailed Black Cockatoo (individuals and foraging activity) were recorded during both surveys (Harewood 2025).

Harewood (2025) identified 10 broad habitat units within the wider Survey area which aligned with the vegetation types as mapped by Ecoedge (2025). With respect to fauna habitat values, vegetation within the broader survey area has the capacity to support a range of native fauna species known to frequent the wider area. The relatively small size of the survey area itself and the limited range of habitat types would however limit the overall fauna biodiversity. To put these areas into perspective there is approximately 60,000 ha of remnant native vegetation within 20 km of the survey area (Harewood 2025). The limited clearing of a narrow strip of roadside vegetation further reduces the value to fauna of the vegetation within the Clearing area. Four habitats occur within the Clearing area as detailed further in Table 7 below.

**Table 7. Fauna Habitats within the Survey and Clearing area (Harewood 2025).**

Fauna Habitat	Description	Survey area (ha)	Clearing area (ha)
B1	Woodland of Wandoo and occasional Jarrah over isolated Acacia low woodland over very open tall shrubland over open low shrubland of over open forbland over open low grassland and isolated sedges on grey-brown gravelly loam.	4.02	0.25
B2	Mid open forest of Jarrah & Marri over open tall shrubland of Parrot Bush over mid open shrubland over open low shrubland, very open sedgeland and very open forbland and scattered grasses on grey-brown or red- brown gravelly loam.	4.01	0.11
C	Mid open forest of Marri & Jarrah over very open tall shrubland of Parrot Bush over mid open shrubland over isolated low shrubs over open forbland and open grassland on grey-brown gravelly loam.	2.92	0.51
D3	Woodland to open woodland of Flooded Gum with isolated tall shrubs, isolated climbers, open forbland and variable grassland and patches of rushland on grey-brown clay loam.	2.41	0.39
Cleared	Existing cleared areas.	18.84	-
<b>Total</b>			<b>1.26</b>

The remaining significant fauna identified from desktop assessment were not considered likely to occur except for Carnaby's Cockatoo and the Peregrine Falcon. All other fauna species are not considered likely to occur within the Clearing area primarily due to a complete lack of suitable habitat (quality and extent) and/or known local/regional extinction (Harewood 2025).

### 4.2.2 Black Cockatoo

The Black Cockatoo assessment recorded 468 DBH trees with a DBH of >50cm (or >30cm *Eucalyptus wandoo*) as potential Black Cockatoo trees. Most trees (443) appeared not to contain hollows of any size. Twenty-four (24) trees contained apparent or obvious hollows, all of which were unlikely to be suitable for Black Cockatoos nesting. One tree (wpt141- *Eucalyptus wandoo*) contains an upward-facing spout-type hollow that appears suitable but shows no signs of actual use (past or present) by

Black Cockatoos. This tree is outside of the Clearing Area and will not be impacted. A total of 111 DBH trees (Wandoo >30cm DBH, all other species >50cm DBH) are located within the Clearing area comprising:

- Marri – 46
- Wandoo – 44
- Jarrah – 17
- Flooded Gum – 2
- Dead Wandoo – 1
- Dead Jarrah - 1

Harewood (2025) conducted a Black Cockatoo foraging habitat analysis of the fauna habitat types as identified above. Table 8 displays the Black Cockatoo foraging values (out of 10) determined for the habitat types located within the Clearing area

**Table 8: Black Cockatoo Foraging Habitat within the Clearing area**

Habitat Type	Black Cockatoo Foraging Value	Extent within Clearing area (ha)	% within Clearing area
B1	4	0.25	20.19
B2	5	0.11	8.56
C	5	0.51	40.23
D3	0	0.39	30.64
<b>Total</b>		<b>1.26</b>	

As can be seen from the above, 0.87 ha of moderate foraging habitat is located in the Clearing area, of which 0.62 ha (71.26%) is scored 5 out of 10 and 0.25 ha (28.74%) is scored 4 out of 10.

## 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 Principles b and d, maybe at variance to principle e, not likely at variance to Principle a, and not at variance with 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 at variance to this Principle.

##### Assessment

Ecoedge (2025) conducted a Detailed and Targeted Flora and Vegetation Survey of the Clearing area and surrounds in October 2024. Two hundred and eighty-five vascular flora were identified within the Survey area, sixty-two of which were introduced species. The most represented plant families were Fabaceae (47 taxa, including ten introduced species), Poaceae (26 taxa, comprising 15 introduced species), and Asteraceae (25 taxa, including eight introduced species).

##### Significant flora

A desktop search of ArcGIS DBCA Threatened Flora and WA Herbarium layers recorded 25 species of significant flora within the 20 kilometre Study Area (Figure 15). No Threatened or Priority flora were found within the on ground Ecoedge (2025) Survey area. The post survey likelihood of occurrence assessment by Ecoedge (2025) determined that *Caladenia validinervia* (P1), *Caladenia leucochila* (T) and *Diuris micrantha* (T) had a Possible-but-low likelihood of occurring within the Survey area. This rating was for Good or better condition habitat areas. It is considered Unlikely that they would occur in Degraded areas. To further investigate potential occurrence of these species, Main Roads conducted a targeted site inspection of the Clearing Area within the optimal flowering time of the species, none were located.

The two Threatened flora species are discussed further in Principle c. They are not considered likely to occur following the Main Roads site inspection on 26 September 2025. The Main Roads targeted site inspection determined that the potential habitat for the species within the Clearing area is in a Degraded condition due to significant weed incursion. Therefore, in line with the recommendations of the Ecoedge (2025) report, the Clearing area is highly unlikely to support *Diuris micrantha* (T) and *Caladenia leucochila* (T) (Vegetation type D3 as displayed in Plate 2). *Caladenia leucochila* (T) is also unlikely to occur as it is confined to a small location around Collie. The species mostly occurs on the Coalfields soil landscape system, with some records extending into Darling Plateau and Eulin Upland systems.

*Caladenia validinervia* (P1) is a tuberous orchid that flowers in September and October with three greenish to creamy white flowers with red stripes on the sepals and petals. The nearest observation of the species was made in 1992 and is located over 19 km southwest of the Clearing area. It is only known from an area between Rocky Gully and Collie and is known to occur in jarrah and marri woodland (Ecoedge 2025). Habitat within the Clearing area for *Caladenia validinervia* (P1) is sandy gravelly soils in Marri-Jarrah forest (Brown & Brockman, 2015), which corresponds to vegetation units B1, B2, and C, with the Good and better parts of these units more likely to provide habitat for the species. A total of 11.86 ha of this habitat was mapped within the Survey area, and less than 0.87 ha is present within the Clearing area. Furthermore, less than 0.39 ha of this habitat (B1, B2, and C) is in Good, or better condition within the Clearing area. Given the lack of observations of the species from the Survey area in two Surveys in the local area, the significant distance to the nearest observation, and the minimal amount of suitable habitat within the Clearing area, this species is considered unlikely to occur.

### Vegetation types

Ecoedge (2025) identified nine vegetation types within their Survey area. Only four are within the Clearing area as listed in Table 5. The condition of vegetation within the Survey area and Clearing area is predominantly in a Degraded condition, with some patches in Good or better condition (Table 6).

### Ecological communities

A review of Threatened Ecological Communities (TEC) (DBCA-038) Restricted GIS layer, reveals the closest mapped PEC/TEC is located ~15 km east of the Clearing area. However, Ecoedge (2025) determined that some vegetation within the Clearing area represents the Commonwealth listed Eucalypt Woodland of the Western Australian Wheatbelt TEC (Wheatbelt Woodlands TEC). Two patches were identified in the Survey area, which in their opinion, is Wheatbelt Woodlands TEC. The Proposal intersects a minor 0.127 ha occurrence of this vegetation type within one of the patches – Patch 2 as shown in Figure 14. Due to the location of the Clearing area within the Northan Jarrah forest IBRA sub-region and the co-dominance of Marri and Jarrah, there was some uncertainty regarding classification of the vegetation as the Wheatbelt Woodlands TEC. The local area comprises the transitional zone between the Northern Jarrah Forest and the Avon Wheatbelt, the boundary of which is located 29.3 km to the East. However, for the purposes of this assessment it has been conservatively classified as TEC. The presence of this conservative classification is not an indicator of increased biodiversity when compared to vegetation present in the local area. Much of which is in better condition than the roadside vegetation of the Clearing area which contains 61.11% of vegetation in a Degraded condition.

### Fauna

Harewood (2025) conducted a Basic Fauna Survey and a Targeted Black Cockatoo survey for a wider Survey area from SLK 86-94. Harewood (2025) reported that 21 species were recorded or potentially occur within the Survey area. Forty-five fauna species (mainly common bird species) were observed or secondary evidence of their presence recorded during fauna surveys (Harewood 2025). Evidence of the two fauna species of conservation significance was noted. Baudin's cockatoos were recorded in 2014 (individuals and chewed marri fruits) and the forest red-tailed Black Cockatoo (individuals and foraging activity) were recorded during both surveys (Harewood 2025). The remaining significant fauna were not considered likely to occur except for Carnaby's Cockatoo and the Peregrine Falcon. All other fauna species are not considered to occur within the Clearing area primarily due to a complete lack of suitable habitat (quality and extent) and/or known local/regional extinction (Harewood 2025).

Harewood (2025) identified four broad habitat units in the Clearing area. Harewood (2025) recorded 468 DBH trees within the Survey area with a DBH of >30cm (or 50cm for trees besides *Eucalyptus wandoo*) as potential Black Cockatoo trees. Most trees (443) appeared not to contain hollows of any size. Twenty-four (24) trees contained apparent or obvious hollows, all of which are unlikely to be suitable nesting habitat for Black Cockatoos. No trees with suitable hollows were located in the Clearing area. Black Cockatoos are discussed further in Principle b.

Although the presence of significant fauna species may be an indicator of biodiversity values, the presence of broad habitat features such as foraging habitat for significant species that occupy large home ranges (i.e. Black Cockatoos/ Peregrine Falcon) is not a specific indicator of high biodiversity when compared to other vegetation in the locality which provides similar habitat.

The Clearing area does not form part of an ecological linkage, and the closest one is approximately 2 km to the west in the more forested region of the Northern Jarrah Forest IBRA subregion.

Impacts to fauna species are discussed further in Principle b.

Overall, the values of the Clearing Area are largely consistent with the vegetation expected to occur in the Northern Jarrah Forest IBRA subregion. The Clearing Area is in the eastern portion of the IBRA subregion and presents a transitional vegetation zone in some parts from the wetter forested regions in the west to the drier woodlands in the Wheatbelt.

To be conservative in recognition of the inclusion of potential Wheatbelt Woodlands TEC, the proposed clearing is considered **not likely at variance** to this Principle.

**Methodology**

- Flora and Vegetation Survey (Ecoedge 2025)
- Basic Fauna Survey and Targeted Black Cockatoo Assessment (Harewood 2025)
- DCCEEW Protected Matters Search Tool Report July 2025
- Government GIS Shapefiles:
  - DBCA Threatened Flora and Fauna and Priority Ecological Community database search (Accessed September 2025)
  - DBCA Threatened flora database search (Accessed 9 September 2025)
  - Ecological Linkages (Accessed 9 September 2025)
  - Soil Landscape Mapping – Systems (DPIRD-064) (Accessed 22 September 2025)
  - Soil Landscape Mapping – Zones (DPIRD-017) (Accessed 22 September 2025)
- Newmann and Brown (2025) WA Native Orchid key (Accessed 23 September 2025)
- Main Roads Site Inspection (September 2025)
- Natural Resource Management SLIP Soil Systems (Accessed 9 September 2025)
- Statewide Vegetation Statistics (Government of Western Australia 2018)

**(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 at variance to this Principle.****Assessment**

Harewood (2025) conducted a Basic Fauna Survey and a Targeted Black Cockatoo survey for an area wider than the Clearing area for a Survey area from SLK 86-94. Harewood (2025) reported that 45 fauna species (mainly common bird species) were observed, or secondary evidence of their presence were recorded during fauna surveys (Harewood 2025).

Habitats

Nine broad-scale habitat units were mapped within the Harewood (2025) Survey area which are based on vegetation composition as defined by Ecoedge (2025). Four are located in the Clearing area (Table 7).

Fauna habitats were refined further into their foraging value to Black Cockatoos. Three of the four fauna habitat types represent foraging value to Black Cockatoos, including B1, B2, and C. Habitat D3 does not present foraging habitat value of Black Cockatoos as it is dominated by unsuitable forage species. No roosting habitat was identified, (Harewood 2025).

Significant fauna

A desktop search of conservation significant fauna within the Survey area was conducted by Harewood (2025) using data from DBCA, PMST Search, ALA, Birdlife, and Birdata. Harewood (2025) reported that 21 species were recorded or potentially occur within the Survey area. A PMST search was also conducted and 14 nationally listed threatened fauna species were returned in the database search results:

**Eight birds:**

1. *Calidris ferruginea* (Curlew Sandpiper)
2. *Zanda baudinii* (Baudin's Cockatoo, Baudin's Black-Cockatoo, Long-billed Black-cockatoo)
3. *Zanda latirostris* (Carnaby's Black Cockatoo, Short-billed Black-cockatoo)
4. *Leipoa ocellata* (Malleefowl)
5. *Aphelocephala leucopsis* (Southern Whiteface)
6. *Calidris acuminata* (Sharp-tailed Sandpiper)
7. *Calyptorhynchus banksii naso* (Forest Red-tailed Black-Cockatoo, Karrak)
8. *Falco hypoleucos* (Grey Falcon)

**One fish:**

9. *Nannatherina balstoni* (Balston's Pygmy Perch)

**Four mammals:**

10. *Myrmecobius fasciatus* (Numbat)
11. *Bettongia penicillata ogilbyi* (Woylie)
12. *Phascogale calura* (Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor)
13. *Dasyurus geoffroii* (Chuditch, Western Quoll)

**One Other:**

14. *Westralunio carteri* (Carter's Freshwater Mussel, Freshwater Mussel)

Evidence of the two fauna species of conservation significance was recorded. Baudin's cockatoos were recorded in 2014 (individuals and chewed marri fruits) and the forest red-tailed Black Cockatoo (individuals and foraging activity) were recorded during both surveys (Harewood 2025). The remaining significant fauna were not considered likely to occur with the exception of Carnaby's Cockatoo and the Peregrine Falcon. All other fauna species are not considered to occurring within the Clearing area primarily due to a complete lack of suitable habitat (quality and extent) and/or known local/regional extinction (Harewood 2025).

Potential impact of the proposed clearing on Baudin's Cockatoo, Forest Red-tailed Black Cockatoo, Carnaby's Cockatoo, and Peregrine Falcon is discussed further below.

**Baudin's Cockatoo, Forest Red-tailed Black Cockatoo, and Carnaby's Cockatoo**

Evidence of Black Cockatoos foraging within the Survey area was found in the form of chewed marri fruits at a number of locations.

Hollows and Roosts

Harewood (2025) recorded 468 DBH trees within the Survey area with a DBH of >30 cm (or 50 cm for trees besides *Eucalyptus wandoo*) as potential Black Cockatoo trees. Most trees (443) did not appear to contain hollows of any size. Twenty-four trees contained apparent or obvious hollows, all of which were unlikely to be suitable for Black Cockatoo nesting. A total of 111 DBH trees (Wandoo >30cm DBH, all other species >50cm DBH) are located within the Clearing area.

LeRoux (2017) reported that Black Cockatoo roost in tall (average of > 25 m) tree species that have relatively thick trunks (average DBH of 1 m) and medium foliage density (average of 50 %), and that are not too densely forested amongst other trees (average tree crown connectivity was 20.58 %). Access to water sources, particularly within a 1 and 6 km radius is also considered to be important. Given the surrounding landscape consists of a patchwork of pastoral land and remnant vegetation, small man-made dams are available as a water resource.

A search of the DBCA restricted GIS shapefiles (BC Roost, BC FRTBC Breed and BC WTBC Breed) (Figure 15) recorded the following:

- No White Tailed Black Cockatoo breeding sites are located within 20 km Study area – the closest being 33 km and 35 km south west of the Clearing area;
- No Forest Red Tailed Black Cockatoo breeding sites are located within 20 km Study area. The nearest is 40 km southeast of the Clearing area; and
- Two Black Cockatoo roosting sites – the closest being in Darkan, approximately 3 km to the east and another 7.6 km southeast of the Clearing area.

Foraging

Harewood (2025) used the BCE method (BCE 2020) to calculate the foraging value of each of the identified habitat units for each Black Cockatoo. This includes existing cleared areas and vegetation units dominated by flooded gum.

A moderate score (Total Score 4 or 5 out of 10) has been assigned to habitat types located in the clearing area (Table 8) given the presence of varying densities of marri and/jarrah with some units also containing parrot bush. A total of 0.87 ha of the Clearing area is mapped within moderate foraging Black Cockatoo Habitat (fauna habitat types B1, B2, and C).

The proposed clearing includes approximately 0.87 ha of foraging habitat less than 0.002% (0.87/55,248.35 ha) of remnant vegetation (as mapped by DPIRD-005) within the Study area. A significant proportion of this remnant vegetation is located within DBCA-managed lands, including the Timer Reserve (916 ha) located 1 kilometre south of the Clearing area, and the Muja State Forest (55,248.35 ha) located 8.4

kilometres west of the Clearing area. Given the proximity to DBCA-listed lands within 20 km of the Clearing area, a significant amount of remnant vegetation within close proximity to the Clearing Area, the relatively low amount of foraging habitat in the Clearing area and a narrow linear impact adjacent to a busy road which extends over an approximately 3 km section, foraging resources in the local area is unlikely to be significantly impacted by the proposed activities.

### **Peregrine Falcon**

The Peregrine Falcon occurs throughout Australia and in most habitat types, with the exception of treeless and waterless desert, and dense forests (Birdlife Australia 2012). This species utilises ledges, cliff faces, and large hollows/broken spouts of trees for nesting. It also occasionally uses the abandoned nests of other birds of prey (Johnstone and Storr 1998). The Peregrine Falcon mates for life and pairs maintain a home range of about 20 km to 30 km square throughout the year (Australian Museum 2019). Peregrine falcons feed almost exclusively on birds, especially ducks, parrots, and pigeons. Critical breeding habitat does not occur in the Survey area; however, due to its widespread movements, the species may overfly all habitat types.

The nearest record of the species was made in the year 2000 and is over 18.3 km northeast of the Clearing area. The species may be a vagrant visitor the area. Due to the significant amount of remnant vegetation within the Study area, the large home-range of the species, and lack of nesting habitat (Harewood 2025), no significant impact on the species is anticipated from the proposed activities.

### **Summary**

The values of the Clearing area are largely consistent with the fauna and habitat values expected to occur in the Northern Jarrah Forest IBRA subregion. Clearing a less than 0.003% of remnant vegetation mapped within a 20 km radius is not considered to be regionally significant. However, in recognition of the foraging habitat for the three Black Cockatoo species, the proposed clearing is considered **at variance** to this Principle.

### **Methodology**

- Basic Fauna Survey and Targeted Black Cockatoo Assessment (Harewood 2025)
- DCCEEW Protected Matters Search Tool Report
- Government GIS Shapefiles:
  - DBCA Threatened and Priority fauna database search (Accessed September 2025)
  - Ecological Linkages (Accessed September 2025)
- Main Roads Site Inspection (September 2025)
- Species specific conservation listing advice and recovery plans

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

### **Proposal is not at variance to this Principle.**

#### **Assessment**

A search of ArcGIS DBCA Threatened Flora and WA Herbarium layers recorded 25 significant flora species within the 20km Study area (Figure 15). No Threatened or Priority flora were found within the on ground Ecoedge (2025) Survey area, or the nearby survey conducted by Phoenix (2020) from SLK 70-87.

The post survey likelihood of occurrence assessment by Ecoedge (2025) determined that *Caladenia leucochila* (T) and *Diuris micrantha* (T) had a Possible-but-low likelihood of occurring within the Survey area. These species are discussed further below. This rating was for Good or better condition habitat areas. It is considered Unlikely that they would occur in Degraded areas. To further investigate potential occurrence of these species, Main Roads conducted a targeted site inspection of the Clearing Area within the optimal flowering time of the species, none were located. Seasonally moist areas contained within the Clearing area which may provide potential habitat for the Threatened species were found to be in a Degraded condition, displaying significant levels of weed incursion (Vegetation Type D3, Table 5 and Plate 2).

*Caladenia leucochila* (T)

*Caladenia leucochila* (T) is a highly restricted spider orchid 20–400 mm high with a hairy leaf 120–200 mm long by 4–11 mm wide and up to two cream, pale yellow or greenish-yellow, red-marked flowers 40–60 mm across. It is known in a small area southeast of Collie, in seasonally moist podzolic soils near laterite associated with Jarrah, Marri and *Allocasuarina fraseriana* that flowers in September and October. *Caladenia leucochila* (T) mostly occurs on the Coalfields soil landscape system, with some records extending into Darling Plateau and Eulin Upland systems. Therefore, the clearing is not likely to be at variance to this Principle. The nearest recorded observation of the species was made in 2024 over 27.2 km southwest of the Clearing area. Ecoedge (2025) documented that neither of the habitats for the known populations is a perfect match for the Survey area; however, the variety of habitats in which the orchid occurs means that it could potentially occur within the Survey area. Ecoedge (2025) conclude that it is possible that *Caladenia leucochila* (T) may have been present but dormant, especially in Good or better condition areas. However, this is regarded as a low possibility, because this species was also not recorded during the Ecoedge (2025) survey, Phoenix (2020) survey, or Main Roads Site Inspection (2025), which were similarly conducted at the optimum observation time for the observation of this species. Due to the distance to the nearest known record of the species (27.2km), an extremely limited distribution and lack of suitable habitat within the Clearing area, and multi-year surveys not locating the species, it is considered unlikely to occur.

*Diuris micrantha* (T)

*Diuris micrantha* (T) is an annual orchid that grows up to 300–600 mm high with two to four smooth, terete leaves 80–150 mm long by 1–2 mm wide and up to six small pale yellow, brown marked flowers 7–10 mm across. *Diuris micrantha* (T) is restricted to sandy clay and clay soils in seasonally wet flats (Department of the Environment, Water, Heritage and the Arts (DEWHA) 2008). The closest record was 1.3 km southwest of the clearing area and was recorded in early October 2024. Ecoedge (2025) determined that suitable habitat may exist in the Survey area. Phoenix (2020) concluded that it was unlikely that the orchid was present in their Survey area, which included generally similar and higher-quality habitats following intensive surveys over two years, 2017 and 2018. All vegetation within vegetation unit D3 in the Clearing area is in areas mapped as Degraded condition. Ecoedge (2025) conclude that the orchid is unlikely to occur in Degraded habitat areas. Due to the lack of suitable habitat in good or better condition, the species is considered unlikely to occur in the Clearing area.

The Main Roads site inspection on 26 September 2025 searched the drainage line (unit D2) vegetation within the Clearing area. This vegetation is in a Degraded condition and no orchids were recorded and considered that it was highly unlikely to support *Diuris micrantha* (T). *Caladenia leucochila* (T) is also unlikely to occur as no spider orchids of any species were recorded in vegetation units B1, B2, and C within the Clearing area.

In consideration of the above, the proposed clearing is **not at variance** to this Principle.

**Methodology**

- Flora and Vegetation Survey (Ecoedge 2025)
- Flora, Vegetation, and Fauna Survey (Phoenix 2020)
- DCCEE Protected Matters Search Tool Report July 2025
- Florabase (Accessed September 2025)
- Newmann and Brown (2025) WA Native Orchid key (Accessed 23 September 2025)
- Government GIS shapefiles:
  - DBCA Threatened flora database search (Accessed 9 September 2025)
- Main Roads Site Inspection (September 2025)
- Species specific conservation listing advice and recovery plans

**(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 at variance to this Principle.**

**Assessment**

A GIS review of the Threatened Ecological Communities (TEC) (DBCA-038) layer determined that the closest mapped PEC/TEC is located ~15 km east of the Clearing area. Ecoedge (2025) conducted a Detailed and Targeted Flora and Vegetation Survey of the Clearing area and surrounds in October 2024. Ecoedge (2025) identified nine vegetation types within their Survey area. Only four are within the Clearing area.

Ecoedge (2025) determined that some vegetation within the Clearing area represents the Commonwealth listed Eucalypt Woodland of the Western Australian Wheatbelt TEC (Wheatbelt Woodlands TEC). Ecoedge (2025) undertook patch assessments for Wheatbelt Woodlands TEC on advice from Main Roads within the Darkan Soil Landscape systems (DPIRD-064) GIS layer which was east of the 600 mm rainfall isohyet. Two patches were identified in their Survey area which in their opinion represents Wheatbelt Woodlands TEC. The Clearing area intersects one of the patches – Patch 2 as shown in Figure 14. A Main Roads site inspection was conducted and determined that the vegetation is unlikely to be representative of the Wheatbelt Woodlands TEC for several reasons being:

- It is located within the Eastern Darling Range Soil landscape quality zone (DPIRD-017) and therefore considered to be within the Darling Range and not considered to be the TEC according to the conservation advice (Department of Environment 2016).
- It is within the Webb et al. (2016) consolidated vegetation mapping (DBCA-047) of the Heddle et al. (1980) and Mattiske and Havel (1990) mapping for the Swan Coastal Plan and Southwest Forest regions. The boundary of this mapping is approximately 4 km to the east.
- Canopy cover is greater than 40% in both patches. There are some exceptions in the conservation advice to the canopy cover, but this is largely restricted to regenerating communities post fire (see page 20 of Department of Environment (2016). Ecoedge (2025) reference Harvey and Keighery (2012) and utilise it to support their conclusions, yet this is not necessarily the conclusions of the conservation advice.
- The community is mostly co-dominated by either Jarrah (south side of road) or Marri (north side of road). Many of the Jarrah trees were not in a healthy condition and therefore did not have a full canopy, potentially impacting the overall cover and therefore TEC estimates.
- Some parts of the patch appear to be in worse condition, such as the eastern end of Patch 2 that is mostly young wandoo over weeds.

Ecoedge (2025) have a different conclusion on the maximum canopy of the Wheatbelt Woodlands TEC and also the co-dominance of Marri and Jarrah in the vegetation.

Despite this uncertainty, Main Roads have employed a conservative approach and for the purpose of this assessment the proposed clearing will impact a maximum of 0.127 ha of Wheatbelt Woodlands TEC as described by Ecoedge (2025). Clearing will result in the reduction in the patch size, but it will not detrimentally impact the remaining vegetation as clearing is limited to immediately adjacent to the existing road formation in a thin narrow strip. Plate 3 provides a visual representation of the mapped TEC within the Clearing area.

Based on the above, the proposed clearing is **at variance** to this principle, but it is not considered significant as it is located within the transitional zone between the forested Northern Jarrah Forest and the more open woodlands of the Avon Wheatbelt, the boundary of which is located 29.3 km to the East.

**Methodology**

- Flora and Vegetation Survey (Ecoedge 2025)
- Community specific conservation listing advice and recovery plans
- Government GIS shapefiles:
  - DBCA Threatened Ecological Community layer (DBCA-038) (Accessed September 2025)
  - Soil Landscape Mapping – Systems (DPIRD-064) (Accessed September 2025)
  - Soil Landscape Mapping – Zones (DPIRD-017) (Accessed September 2025)

- Vegetation Complexes – South West Forest Region of Western Australia (DBCA047) (Accessed September 2025)
- Main Roads Site Inspection (September 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 may be at variance to this Principle.**

**Assessment**

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.

There are two Vegetation Associations within the Clearing area:

- East Darling Vegetation Association 3
- Williams Vegetation Association 4

The East Darling Vegetation Association is well represented at all levels and is represented within DBCA Managed Land at greater than 54%. The Williams Vegetation Association is generally well represented at a state and IBRA subregion level, but slightly below the 30% target at the Jarrah Forest IBRA region level of 27%. Vegetation associations are well represented at all scales, including within a 10km local area buffer of the Clearing area, with greater than 30% of the pre-European extent of each vegetation associations located in the Clearing area remaining within the 10km local area. The Ecoedge (2025) vegetation communities reasonably correlate to the two vegetation associations mapped by Webb et al. (2016). However, the dampland vegetation type D3, dominated by *Eucalyptus rudis*, are not represented within association mapping. The large-scale mapping did not pick up the finer-scale occurrences of these communities.

The vegetation complexes within the Native Vegetation Clearing area are detailed in Table 4. The Clearing area is entirely within the Southwest Forest region dataset; however, the extent of vegetation complex mapping ends approximately 4.13 ha to the east of the Clearing area. Therefore, the extent of vegetation complexes within the 10 km local area is not an accurate reflection of vegetation within the region as they have not been mapped to this degree.

Most of the Clearing area (0.57 ha) is in the Yalanbee 5 Vegetation Complex as mapped by Webb et al. (2016) as detailed in Table 5. There is over 66% of this complex remaining. There is 77% of the Pindalup (Pn) Vegetation Complex remaining, and 0.004% (0.31 ha) is located within the Clearing area. Only one Vegetation Complex within the Clearing area has been extensively cleared, the Darkan (Dk3) Vegetation Complex in the eastern portion of the Clearing area, where only 13% is remaining. However, as outlined above the true extent of this vegetation complex is unknown as the southwest forest region mapping ceases in close proximity to the Clearing area.

Only 0.39 ha of the Darken 3 Vegetation Complex is proposed to be cleared. Occurrence of this vegetation within the Clearing area is in a Degraded condition.

Due to the small scale nature of clearing over 3 km in a thin narrow strip adjacent to an existing State road, the proposed clearing is not considered to be significant. Due to uncertainties in the pre-European extent of the Darken 3 vegetation complex the proposed clearing **may be** at variance to this principle.

**Methodology**

- Aerial photography
- Flora and Vegetation Survey (Ecoedge 2025)
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed September 2025)
  - Vegetation complexes (Accessed September 2025)
- Statewide Vegetation Statistics (Government of Western Australia 2018)

**(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.**

**Assessment**

A search of ArcGIS shapefiles indicates that an ephemeral creek (UFI 315 and 319) crosses Collie Lake King Road around SLK 93.65 to 93.85, outside the Clearing area. There are no significant wetlands (Ramsar, geomorphic, etc.) within 100 metres of the Clearing area.

No clearing of riparian vegetation is proposed. Vegetation to be cleared is not associated with a watercourse or wetland.

Where it intersects the Clearing area, the vegetation mapped as D3 "*Wetland /low-lying damp land communities associated with predominantly clay based soils*" comprises vegetation in a roadside drain which receives surface water runoff from an adjacent low hill as displayed in Plate 2. This vegetation is not considered to be growing in association with a watercourse or wetland.

The proposed clearing **is not at** variance to this Principle.

**Methodology**

- Biological Survey (Ecoedge 2025)
- Government GIS shapefiles:
  - Geoscience Australia Surface Hydrology Lines (Regional) (Accessed 8 July 2025)
  - Geomorphic Wetlands Darkan Duranillin (Accessed 8 July 2025)
  - Ramsar Wetlands (Accessed 8 July 2025)
  - Important Wetlands (Accessed 8 July 2025)
  - RIWI Act Rivers (Accessed 8 July 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 at variance to this Principle.**

**Assessment**

Natural Resource Management Soil Systems and CSIRO risk mapping indicates the soils of the Clearing Area have a:

- low risk of land instability,
- moderate risk of wind erosion,
- low risk of water erosion,
- low to moderate risk of salinity,
- low risk of flood hazard,
- low risk of waterlogging and inundation,
- low risk of surface acidity, and
- low to extremely low risk of acid sulphate soils.

Given the linear nature of the clearing and sealing of areas for road construction, the proposed clearing is not likely to cause appreciable land degradation. 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 at variance** to this Principle.

**Methodology**

- Government GIS Shapefiles (NRInfo):
  - Soil landscape land quality – Water Erosion Risk (Accessed 24 September 2025)
  - Soil landscape land quality – Wind Erosion Risk (Accessed 24 September 2025)
  - Soil landscape land quality – Salinity Risk (Accessed 24 September 2025)
  - Soil landscape land quality – Surface Acidity (Accessed 24 September 2025)
  - Soil landscape land quality – Waterlogging Risk (Accessed 24 September 2025)
  - Soil landscape land quality – Flood Risk (Accessed 24 September 2025)
- Government GIS Shapefiles:
  - Acid Sulfate Soil risk mapping (Accessed 24 September 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.**

**Assessment**

The nearest DBCA-managed land is the Boolading Nature Reserve (Class A), approximately 4 km to the west of the Clearing area.

No direct or indirect impacts are anticipated due to the proposed clearing and it is considered that the proposed clearing is **not at variance** to this Principle.

**Methodology**

Government GIS Shapefiles: DBCA Legislated Lands and Waters & Lands of Interest (Accessed 8 July 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 at variance to this Principle.**

**Assessment**

The western half of the Clearing area is within the CAWSA Wellington Dam Surface Water Catchment area (DWER-004) and the Collie River Irrigation District Sub-Area No. 2 Surface Water Area (DWER-037).

As works are planned to occur during summer months in dry conditions, there is a low risk of clearing impacting on the water quality from runoff from the Clearing area.

A review of the CSRIO/ASRIS National Acid Sulfate Soil database identified the clearing area is in the Cn(p4) (Extremely Low Probability of Occurrence) Acid Sulphate Soils area. Based on the nature of proposed works, the risk of excavation of ASS is low.

A review of the Salinity Risk layer (DPIRD-009) identified the western end of the Clearing area (90.55-91.55 SLK) has a medium risk whilst the rest of the Clearing area (91.55-93.65 SLK) has a low risk of salinity.

The proposed clearing of 1.26 ha of native vegetation along 3 km of road is not likely to cause deterioration in the quality of surface or underground water.

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

**Methodology**

- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 9 July 2025)

- CAWSA Part 2A Clearing Control Catchments (Accessed 9 July 2025)
- RIWI Act, Groundwater Areas (Accessed 9 July 2025)
- Medium Scale Topo Water layer (LGATE-018) (Accessed 24 September 2025)
- Salinity Risk layer (DPIRD-009) (Accessed 24 September 2025)
- Acid Sulfate Soil risk mapping (Accessed 24 September 2025)

### **(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 at variance to this Principle.**

##### **Assessment**

The Clearing area (Darkan – 15 km east) averages 546 mm of rainfall per year (BOM, 2025). Natural Resource Management Soil Systems risk mapping (NRInfo) indicates the soils of the Clearing area have a:

- low risk of water erosion,
- low risk of flood hazard, and
- low risk of waterlogging and inundation.

No riparian vegetation is proposed to be cleared and all drainage associated with the road will be reinstated.

Due to the linear nature of clearing, undulating terrain, and relatively low rainfall, clearing is unlikely to cause or exacerbate the incidence or intensity of flooding.

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

##### **Methodology**

- BoM Website (Accessed 24 September 2025)
- Government GIS Layers (NRInfo):
  - Soil landscape land quality – water erosion (Accessed 24 September 2025)
  - Soil landscape land quality – wind erosion (Accessed 24 September 2025)
  - Soil landscape land quality - Waterlogging Risk (Accessed 24 September 2025)
  - Soil landscape land quality - Flood Risk (Accessed 24 September 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. A Vegetation Management Plan (VMP) has been developed to manage and minimise vegetation clearing for the Proposal (refer to Appendix 3).

## **7 REHABILITATION, REVEGETATION AND OFFSETS**

### **7.1 Revegetation and Rehabilitation**

No temporary clearing will be undertaken as part of the Proposal activities and therefore no revegetation or rehabilitation will be conducted under CPS 818.

### **7.2 Offset Proposal**

In accordance with CPS 818/17 condition 11(a), to offset the residual impacts from clearing 1.26 ha of Moderate Black Cockatoo habitat, Main Roads is developing an offset in accordance the current WA environmental offsets Policy. Details of the proposed offset will be developed in consultation with DWER and submitted for approval.

## **8 STAKEHOLDER CONSULTATION**

Main Roads will undertake stakeholder consultation in accordance with CPS 818/17 Condition 8.

## 9 COMPLIANCE WITH CPS818/17

Table 9 summarises what further pre-clearing impact assessment is required in accordance with CPS 818/17.

**Table 9. 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.	<b>Yes</b>	<ol style="list-style-type: none"> <li>1. Clearing Report to be published on website and submissions sought for 21 days.</li> <li>2. Submissions invited from relevant parties, including the LGA, the owner or occupier of the land and other stakeholders in accordance with Condition 8 of CPS 818/17.</li> <li>3. VMP has been completed, refer to Appendix 3.</li> <li>4. An offset proposal for approval by DWER will be prepared.</li> <li>5. Summary of submissions and a statement addressing each of those submissions to be published on website.</li> </ol>
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality <b>or</b> (j) the incidence of flooding.	<b>No</b>	
3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality <b>and</b> (j) the incidence of flooding.	<b>No</b>	
4. The Proposal involves clearing for temporary works (as defined by CPS 818).	<b>No</b>	
<b>5a.</b> Proposal is within a Region that: <ul style="list-style-type: none"> <li>• has rainfall greater than 400mm; and,</li> <li>• is South of the 26<sup>th</sup> parallel; and,</li> <li>• works are necessary in 'Other than dry conditions'; and,</li> <li>• works have potential for <b>uninfested</b> areas to be impacted.</li> </ul>	<b>No</b>	Standard Vehicle and Plant management actions from Annexure 204B (TABLE 204B.9.1) and <u>Hygiene Checklists (D17#859669)</u> will be applied.
<b>5b.</b> Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	<b>No</b>	
6. 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.	<b>No</b>	
7. Weeds are likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.	<b>No</b>	CEMP requires that all vehicles and machinery arrive on site clean and that weed infested mulch is removed from site, therefore there is a low risk of weed spread.
8. Did an environmental specialist conduct the survey or field assessment?	<b>Yes</b>	The Environmental Specialist undertaking the biological assessments was suitably qualified and had more than three years' experience.

Impact of Clearing	Yes/No or NA	Further Action Required
<p><b>9.</b> Did an environmental specialist prepare the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal?</p>	<p><b>Yes</b></p>	<p>The Environmental Specialist preparing the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal was suitably qualified and had more than three years' experience.</p>

## 10 REFERENCES

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## 11 APPENDICES

### Appendix 1: CPS 818 condition 8 (e) (iii) Biological Surveys and Field Assessment Executive Summary and Report Conclusions

#### Flora and Vegetation Survey – Ecoedge 2025

##### Executive Summary

Ecoedge Environmental Services (Ecoedge) was engaged by Main Roads Western Australia (Main Roads) in July 2024 to undertake a Detailed and Targeted flora and vegetation survey of an eight-kilometre (km) section of the Collie-Lake King Road SLK 86 - 94 within the Shire of West Arthur. Main Roads is planning to install passing lanes to enhance road safety along this section and has commissioned the survey to assess the environmental values that may be affected by the proposal.

The Survey area was approximately 41.5 ha, of which 18.7 hectares (ha) is native vegetation (and an additional 6.53 ha of revegetated areas).

The survey was conducted in September and October 2024, in accordance with the Environmental Protection Authority (EPA) Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016).

Two hundred and eighty-five vascular flora taxa were identified within the Survey area, 62 of which were introduced species.

No Threatened flora at a federal or state level or any State-listed Priority flora were found within the Survey area.

Three species, all orchids, *Caladenia validinervia* (P1), *C. leucochila* (T EN) *Diuris micrantha* (T VU), were given a Possible-but-low post survey likelihood of occurrence rating, with the balance (30) of potentially occurring Threatened and Priority flora species given an Unlikely rating. The Possible-but-low rating was given because, whilst the orchids were not observed during the survey, there is a chance that they may have been present as dormant tubers. This rating was for Good or better condition habitat areas. It is considered Unlikely that they would occur in Degraded areas. The Unlikely rating for the balance of species was given because, whilst suitable habitat was present in the Survey area, a thorough search at an appropriate time of year failed to find the taxon.

Within the Survey area, three significant weed species were recorded. These included two Declared Pest Plants under the *Biosecurity and Agriculture Management Act 2007*: *Asparagus asparagoides* (Bridal Creeper), which is also listed as a Weed of National Significance (WONS), and *Moraea flaccida* (One-leaf Cape Tulip). Additionally, *Genista linifolia* (Flax-leaved Broom), another WONS, was also identified within the area.

Nine vegetation units were identified within the Survey area. Eight of these were naturally occurring native units, with one unit (RV) comprised of revegetated areas. Three units D1, D2 and D3 were associated with wetland communities with *Eucalyptus rudis* as a dominant tree.

One unit, unit A dominated by *Eucalyptus wandoo*, was associated with loamy soils on the lower slopes. Four units B1, B2, Bd and C, dominated by varying proportions of *Eucalyptus marginata*, *E. wandoo* and *Corymbia calophylla*, occurred on the middle to upper slopes on more gravelly soils.

The Survey area intersected two patches of vegetation in the eastern part, meeting the key DoTE (2015) diagnostics and roadside area thresholds of the EPBC-listed WheatbeltWoodland TEC and the State-listed PEC of the same name. The Degraded to Good and better portions of these patches met the minimum condition Wheatbelt TEC PEC thresholds and are regarded as occurrences of the TEC PEC.

The total area of the TEC PEC within the Survey area is 0.83 ha, comprising 0.63 ha in Degraded to Good condition, 0.09 ha in Good condition, and 0.12 ha in Very Good condition.

There are possible occurrences of this community in this section of the Survey area within the 100 m vegetation unit extrapolation area; however, these were not ground-truthed.

One vegetation unit, D1, was investigated as a potential occurrence of the Federally listed Claypans of the SCP TEC and state-listed SCP07 / SCP08 claypan TECs; however, it was in a Degraded condition and did not meet the minimum Good condition threshold for the TEC (DEC, 2017).

There were no other vegetation units resembling a State or EPBC listed TEC or State listed PEC within the Survey area.

The three vegetation complexes mapped for the Survey area—the Darkin 3, Pindalup, and Yalanbee Y5 complexes—provide a reasonably good match for the Survey area's vegetation in terms of dominant tree type, structure, and location. The Darkin 3 complex in the more cleared, eastern portion of the survey, has only 13.22% of its pre-European extent remaining across its mapped distribution, whilst the Pindalup and Yalanbee Y5 complexes exceed the 30% minimum retention target at 76.79% and 66.21 % respectively.

The Survey area vegetation units characteristic of dryland communities (Units A, B1, B2 and C) are reasonable match for the two vegetation associations mapped across the Survey area, Association 3 Medium forest; jarrah-marri and 4 Medium woodland; marri & wandoo. However, the wetland group dominated by *Eucalyptus rudis*, comprising units D1, D2 and D3, are not represented within association mapping. Association 3 (67.76%) has more than 30% of its pre-European extent vegetation remaining, whilst Association 4, which occurs in the more cleared portion, has less than 30% remaining (26.95%).

There are no formally mapped ESAs in close proximity to the Survey area, nor within the 20 km Study area (DWER 2021). There is, however, a mapped occurrence of Threatened flora approximately 269 m to the west of the Survey area, which would be regarded as an ESA.

The Survey area is located on the fringe of a Regional Ecological Linkage identified by Molloy et al. (2009), with one linkage axis intersecting its western edge along tributaries of the Collie River. While no formal linkage proximity ratings have been assigned within the area, the vegetation is likely to hold high connectivity value—potentially rated 1a or 1b—due to its association with the linkage axis and surrounding native vegetation.

### Targeted Flora Survey – Main Roads 2025

Site walkdown to assess presence of Conservation Significant Flora, primarily *Diuris micrantha* (T) (Dwarf Bee Orchid), *Caladenia validinervia* (P1) (Lake Muir Spider Orchid) and *Caladenia leucochila* (T) (Collie Spider Orchid).

Ecoedge (2025) documented that neither of the habitats for the known populations is a perfect match for the Survey area; however, the variety of habitats in which the orchid occurs means that it could potentially occur within the Survey area and were given a Possible-but-low post survey likelihood of occurrence rating.

Flowering times for the three orchids are all September/October.

The Clearing area was walked in sections, and searched for the presence of orchids. Observations of weed load, and vegetation structure. Observations of orchids were photographed where observed used GPS SLK App.

The search did not identify any of the targeted Significant Flora.

## Fauna Surveys – Harewood 2025

### Summary

This report details the results of a "biological survey" for the Collie-Lake King Road SLK 86 - 94 Passing Lanes Project between Collie and Darkan, in the Shire of West Arthur (the Survey area).

Main Roads requires a fauna survey to delineate key fauna and potential sensitivity to impact from the proposal. The outcome of the survey and information supplied in the fauna survey report will be used to inform the environmental assessment and approvals process. The results of the fauna survey may also assist in the preparation of Environmental Impact Assessment documentation.

The assessment has included a literature review and several daytime reconnaissance surveys. Field work at the site was carried out on the 28 and 29 October and the 21 December 2024. All survey work and reporting has been carried out by Greg Harewood (Zoologist).

### Key Findings

The 41.5 ha Survey area contains ten broad scale habitat units, nine of which are primarily based on vegetation composition as defined by Ecoedge (2025). Just under half (19.4 ha, ~47%) of the Survey area is represented by existing cleared areas including the road and other highly disturbed areas. About thirteen percent (~5.2 ha) of the Survey area contains areas subject to revegetation carried out after the construction of the original road diversion and an existing passing lane. The balance of the Survey area contains remnant native vegetation dominated by woodlands of either wandoo (Units A and B1 - 6.1 ha/~15%), jarrah and/or marri (Units B2, Bd and C - 7.5 ha/~18%) or flooded gum (Units D1, D2 and D3 - 3.3 ha/~7.9%). Unit D1 borders a small seasonal tributary of the Collie River East.

To put these areas of vegetation into perspective there is approximately 60,000 ha of remnant native vegetation within 20 km of the Survey area (DPIRD 2025).

With respect to fauna habitat values, the majority of the vegetation appears to be in good to very good condition and would therefore have the capacity to support a range of native fauna species known to frequent the wider area. The small size of the Survey area and the limited range of habitat types would however limit the overall fauna biodiversity. The fact that vegetation within the Survey area is continuous with the Tone River Nature Reserve and extensive areas of state forest increases the probability that some species which would otherwise not persist may at least occasionally be present.

The black cockatoo breeding habitat assessment identified 468 trees within the Survey area with a DBH of >30cm (or 50cm for trees besides wandoo). Most of these trees (443) appeared to not contain hollows of any size. Twenty-four (24) trees contained apparent or obvious hollows, all of which were assessed as being unlikely to be suitable for black cockatoos to currently use for nesting purposes, due to the hollows apparent small size, unsuitable orientation and/or low height above ground level.

One tree (wpt141- a wandoo) contains an upward facing spout type hollow that appears suitable but shows no signs of actual use (past or present) by black cockatoos.

Using the BCE method (BCE 2020) method the foraging values of each of the identified vegetation/habitat units for each black cockatoo species has been calculated. The majority of the Survey area (~24.4 ha/59%) has been assessed as being of negligible/low foraging value to all three species of black cockatoo (Total Score 0 out of 10). This includes existing cleared areas and vegetation units dominated by flooded gum.

A moderate score (Total Score 4 or 5 out of 10) has been assigned to the balance of the Survey area (~17.1 ha/41%) primarily given the presence of varying densities of marri and/jarraah with some units also containing parrot bush. The actual value of these units is tempered a certain degree by the fact that they make up much less than 0.1% of the of remnant native vegetation within 15 km of the Survey area (i.e. site context score = 0 out of 3).

No evidence of black cockatoos roosting within trees located within the Survey area was observed during the survey period. A review of the 2022 Great Cocky Count database shows no documented roost sites within the Survey area with the closest identified active roost being situated approximately 40 kilometres southwest.

Despite the lack of records there are likely to be undocumented roost sites in the general area given the presence of fresh black cockatoo foraging debris within the Survey area along with several sightings of forest red-tailed black cockatoos.

Twenty-four hollow bearing trees were recorded in the Survey area. Some of these hollows may be suitable for south-western brush-tailed phascogale to use for daytime refuge and/or denning however this is very difficult to specifically determine for each hollow. No evidence of the presence of south-western brush-tailed phascogale (i.e. scats, individuals) was observed.

Forty-five species (mainly common bird species) were observed or secondary evidence of their presence recorded during the 2014 and 2024 field surveys. In summary two vertebrate fauna species of conservation significance were positively identified as utilising the Survey area:

- Forest Red-tailed Black Cockatoo - Vulnerable (WA/Federal), and
- Baudin's Cockatoo - Endangered (WA/Federal).

Several additional species of conservation significance may also utilise the Survey area, though, as no evidence of their presence was identified during the field survey, their status in the area remains uncertain:

- Carnaby's Cockatoo - Endangered (WA/Federal), and
- Peregrine Falcon - OS (WA).

The specific nature of the proposed road works has not been finalised and therefore it is difficult to determine likely impacts. In cases where some habitat is present and available information indicates at least some probability of the species occurrence, likely impacts are anticipated to most likely to be related to the loss of a small area of habitat and the potential for some species to be killed or injured during clearing.

This in particular relates to those species that utilise hollow bearing trees for daytime refuge and some ground-based species that seek daytime refuge in burrows, fallen hollow logs/log piles or dense undergrowth.

Management of actions that will affect fauna and fauna habitat may therefore be required to minimise any potential impacts to acceptable levels. Potential impacts on fauna should be reviewed as planning progresses.

Appendix 2: Supporting Maps



Figure 2. M037 Collie Lake King Road Climbing Lane Clearing area SLK 90.45 – 91.35. Map 1 of 4.

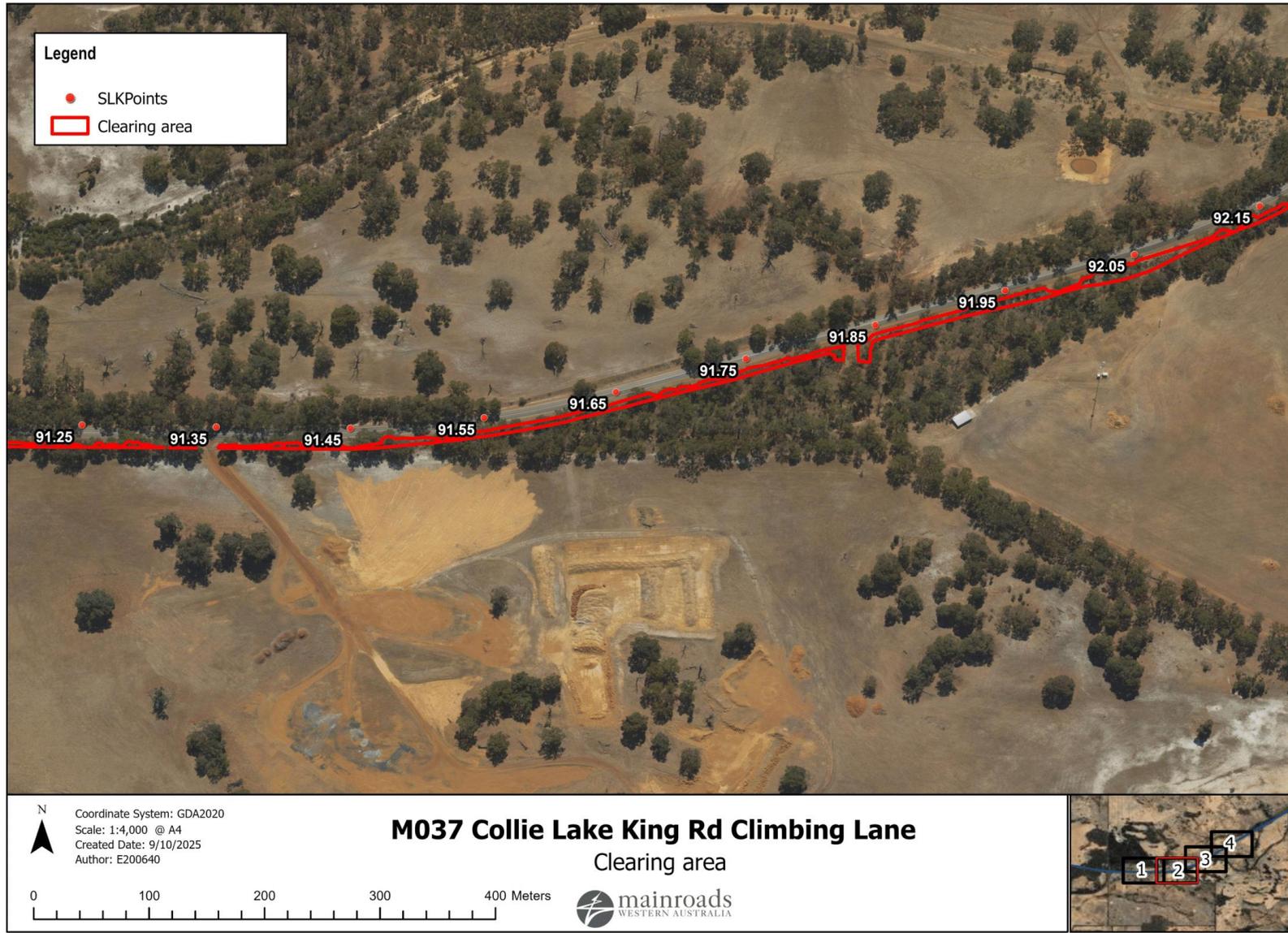


Figure 3. M037 Collie Lake King Road Climbing Lane Clearing area SLK 91.25 – 92.15. Map 2 of 4.

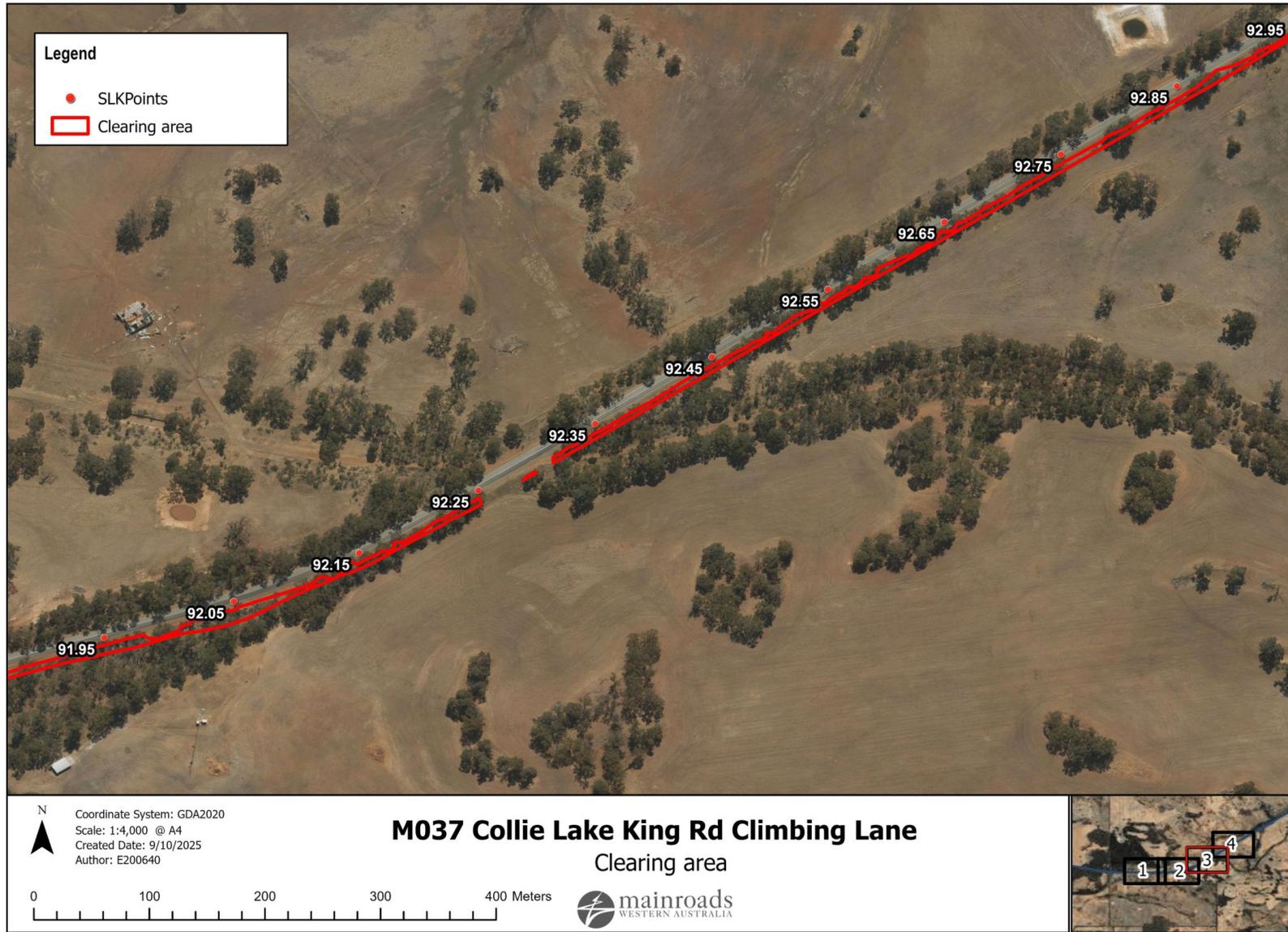


Figure 4. M037 Collie Lake King Road Climbing Lane Clearing area SLK 91.95 – 92.95. Map 3 of 4.



Figure 5. M037 Collie Lake King Road Climbing Lane Clearing area SLK 92.65 – 93.55. Map 4 of 4.

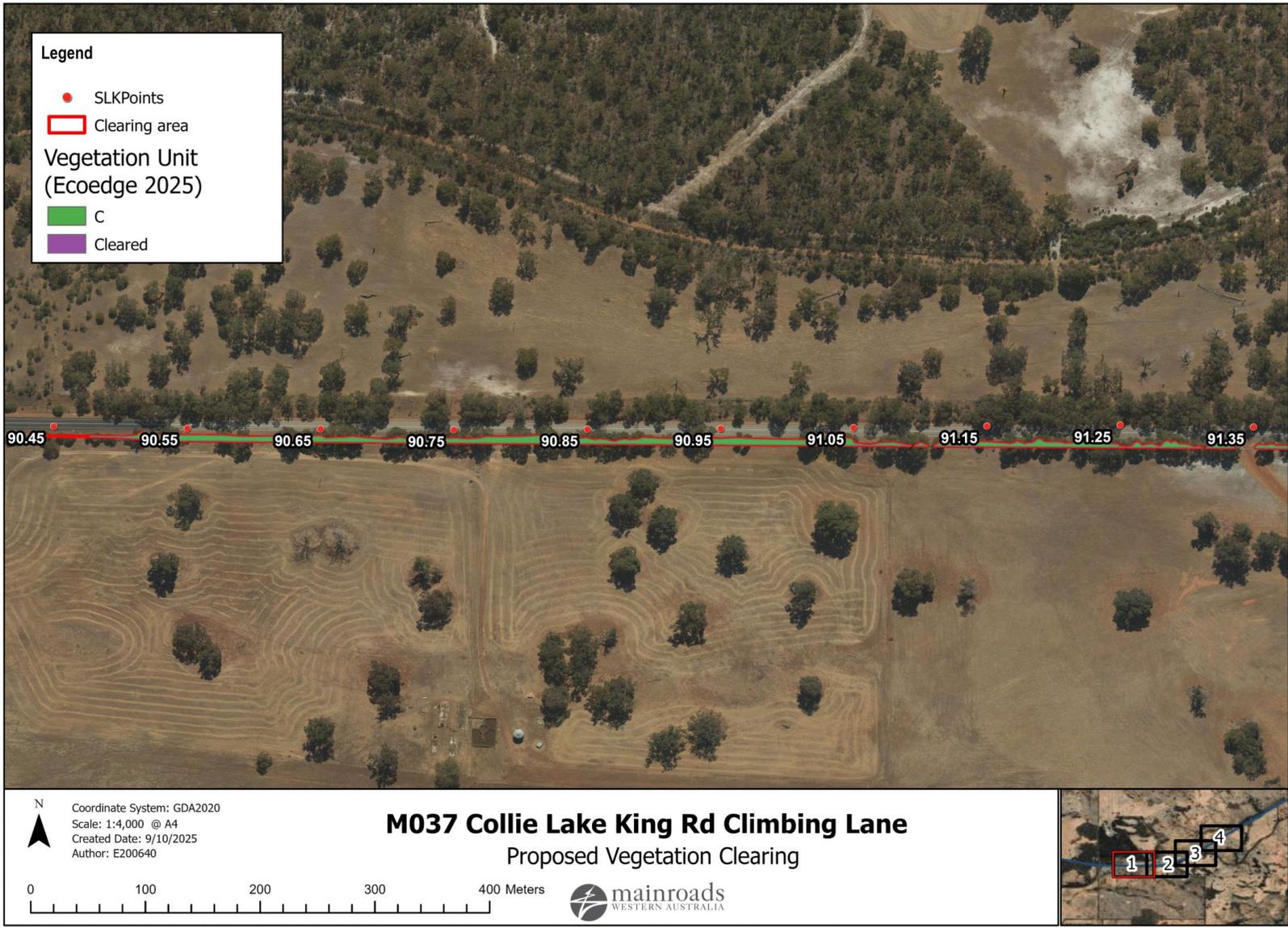


Figure 6. M037 Collie Lake King Road Climbing Lane Proposed Vegetation Types SLK 90.45 – 91.35. Map 1 of 4.

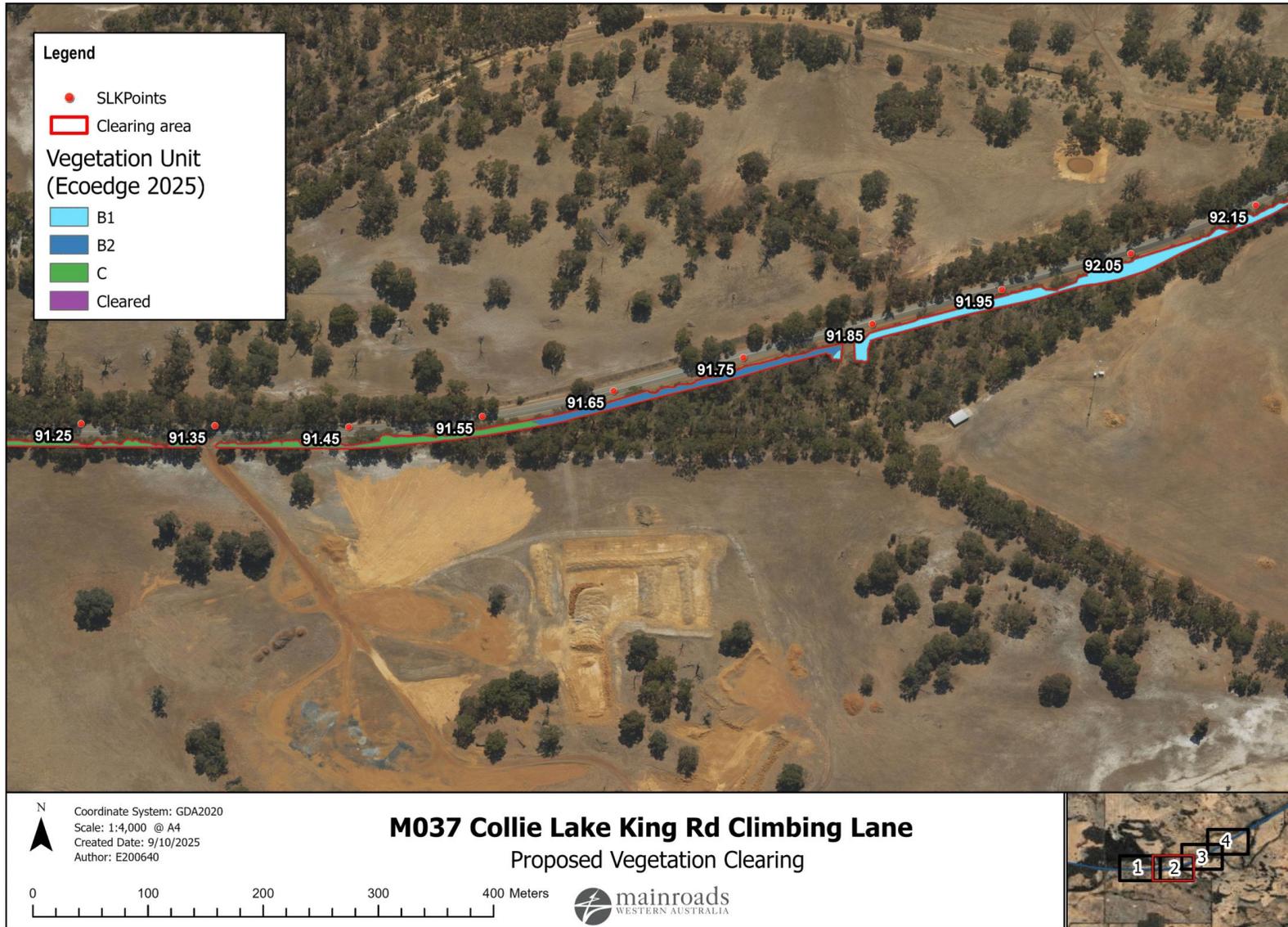


Figure 7. M037 Collie Lake King Road Climbing Lane Proposed Vegetation Types SLK 91.25 – 92.15. Map 2 of 4.

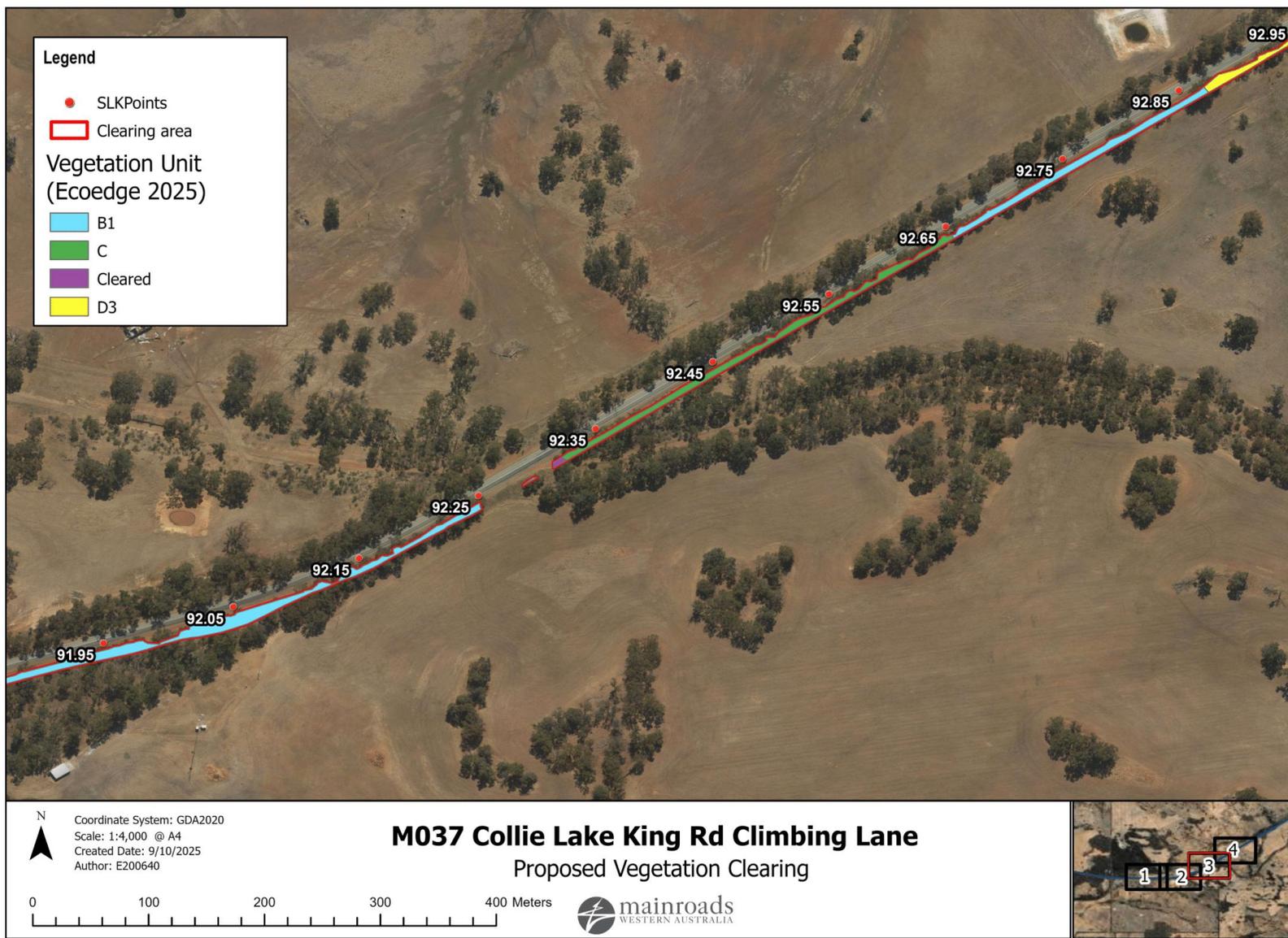


Figure 8. M037 Collie Lake King Road Climbing Lane Proposed Vegetation Types SLK 91.95 – 92.95. Map 3 of 4.

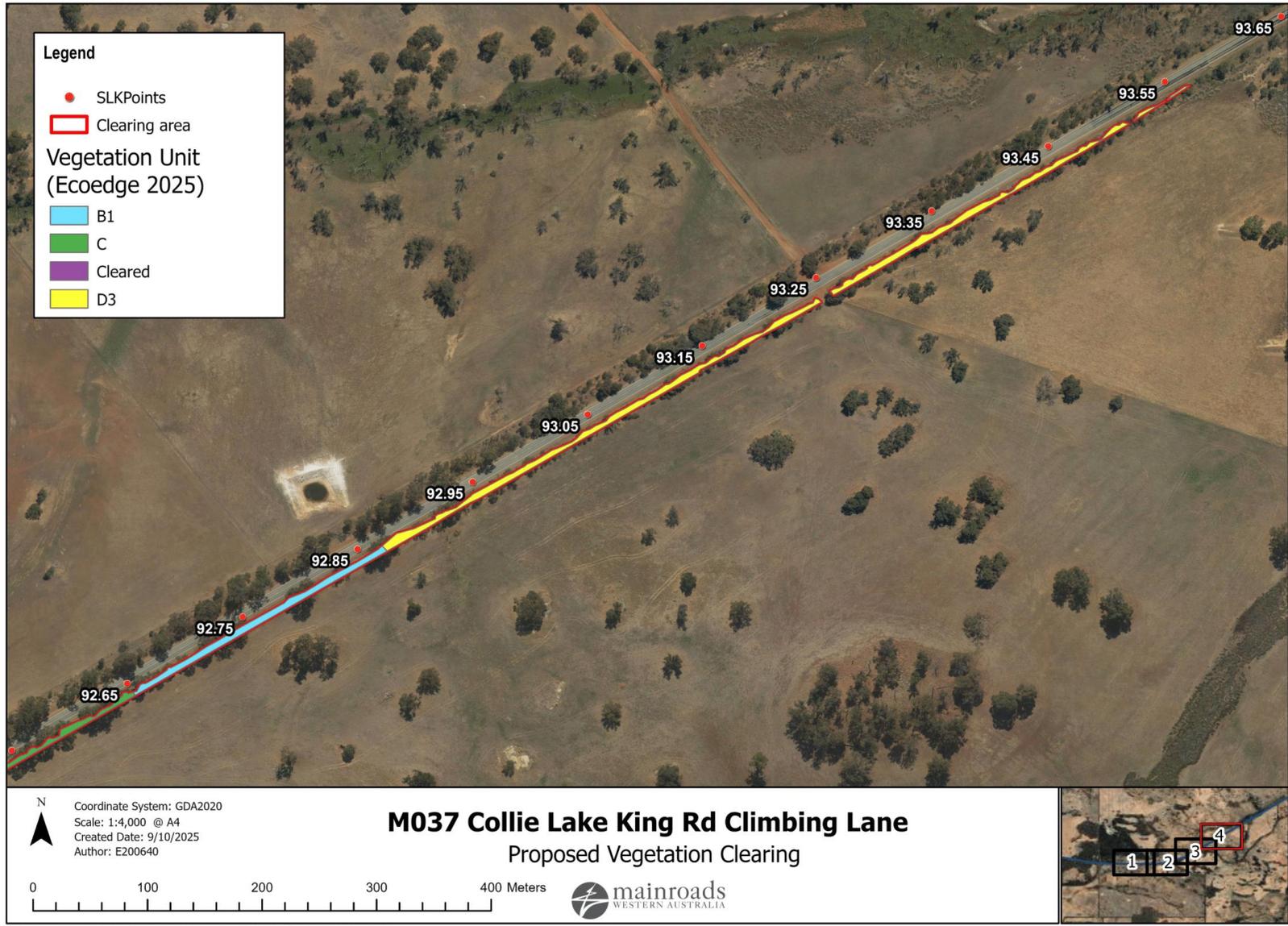


Figure 9. M037 Collie Lake King Road Climbing Lane Proposed Vegetation Types SLK 92.65 – 93.55. Map 4 of 4.



Figure 10. M037 Collie Lake King Road Climbing Lane Proposed Vegetation Condition SLK 92.65 – 93.55. Map 1 of 4.

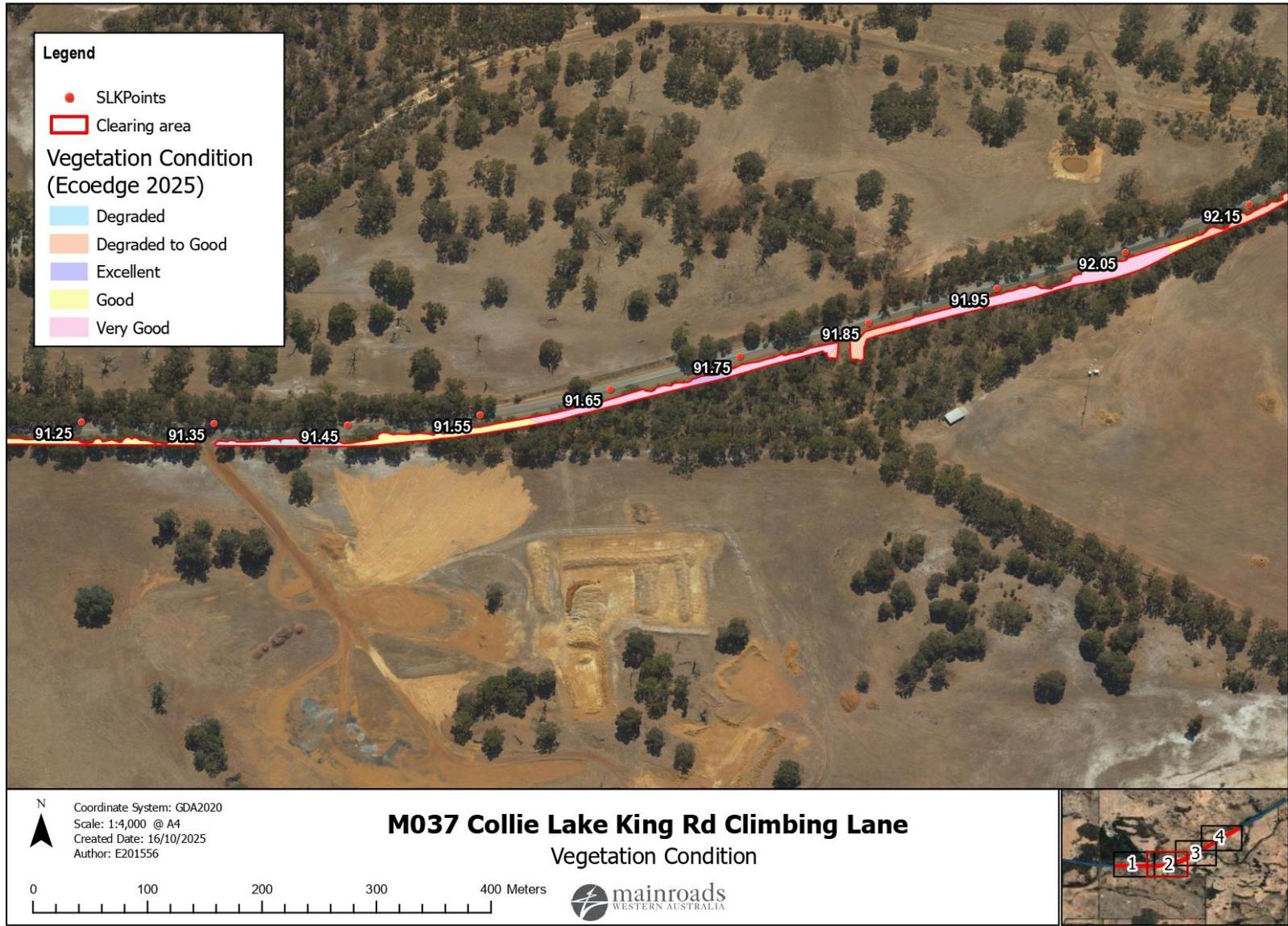


Figure 11. M037 Collie Lake King Road Climbing Lane Proposed Vegetation Condition SLK 92.65 – 93.55. Map 2 of 4.

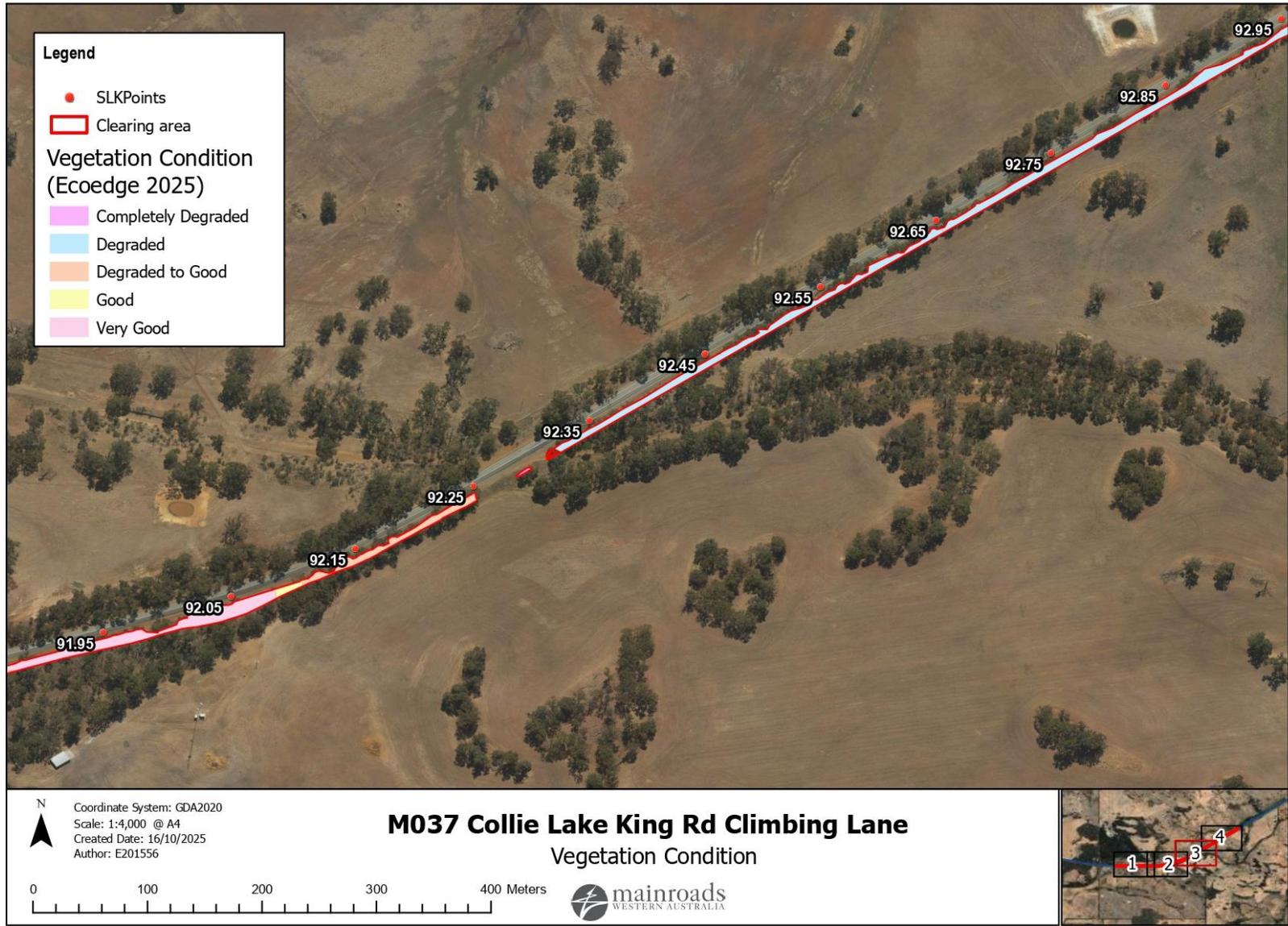


Figure 12. M037 Collie Lake King Road Climbing Lane Proposed Vegetation Condition SLK 92.65 – 93.55. Map 3 of 4.

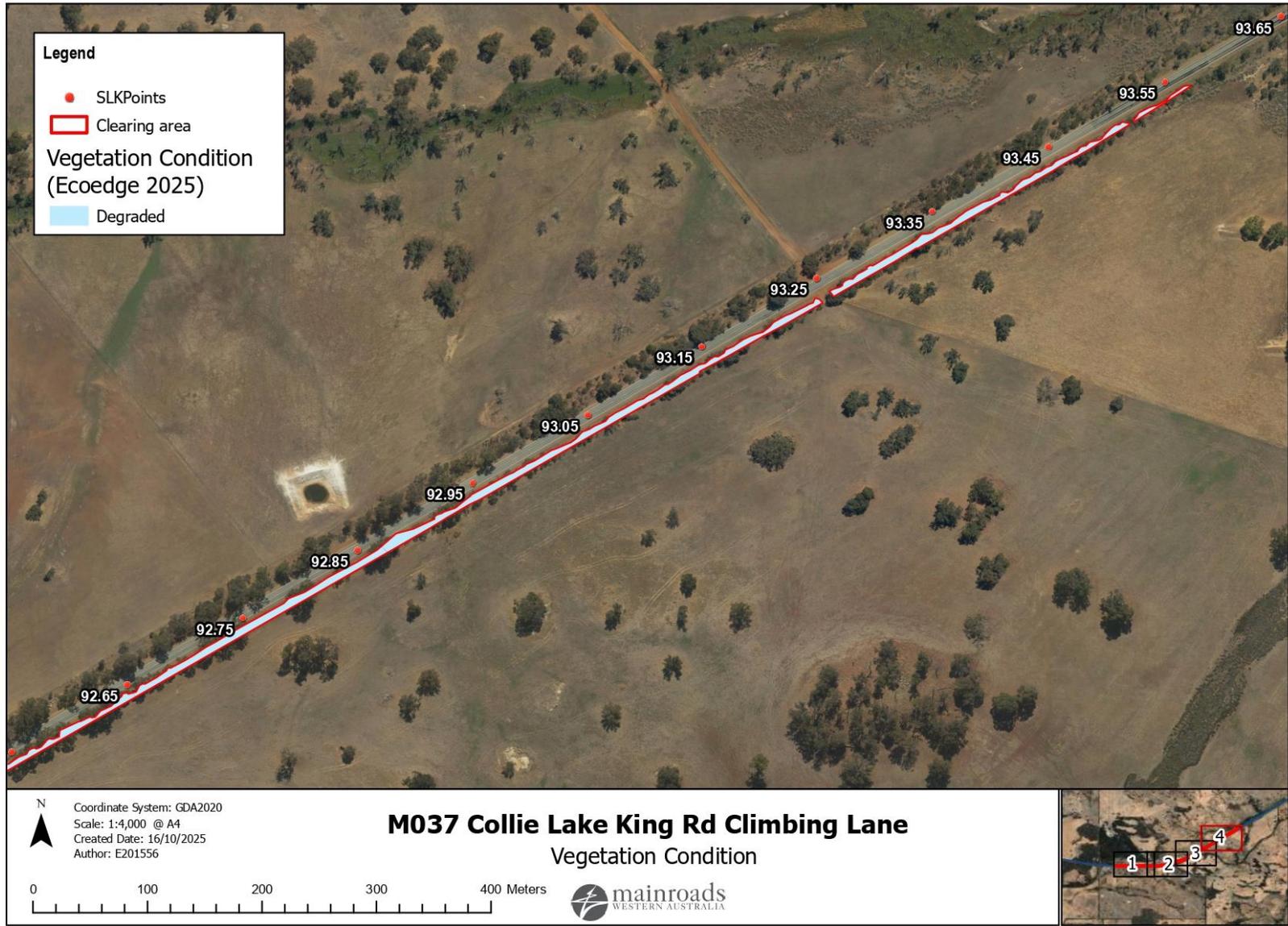


Figure 13. M037 Collie Lake King Road Climbing Lane Proposed Vegetation Condition SLK 92.65 – 93.55. Map 4 of 4.

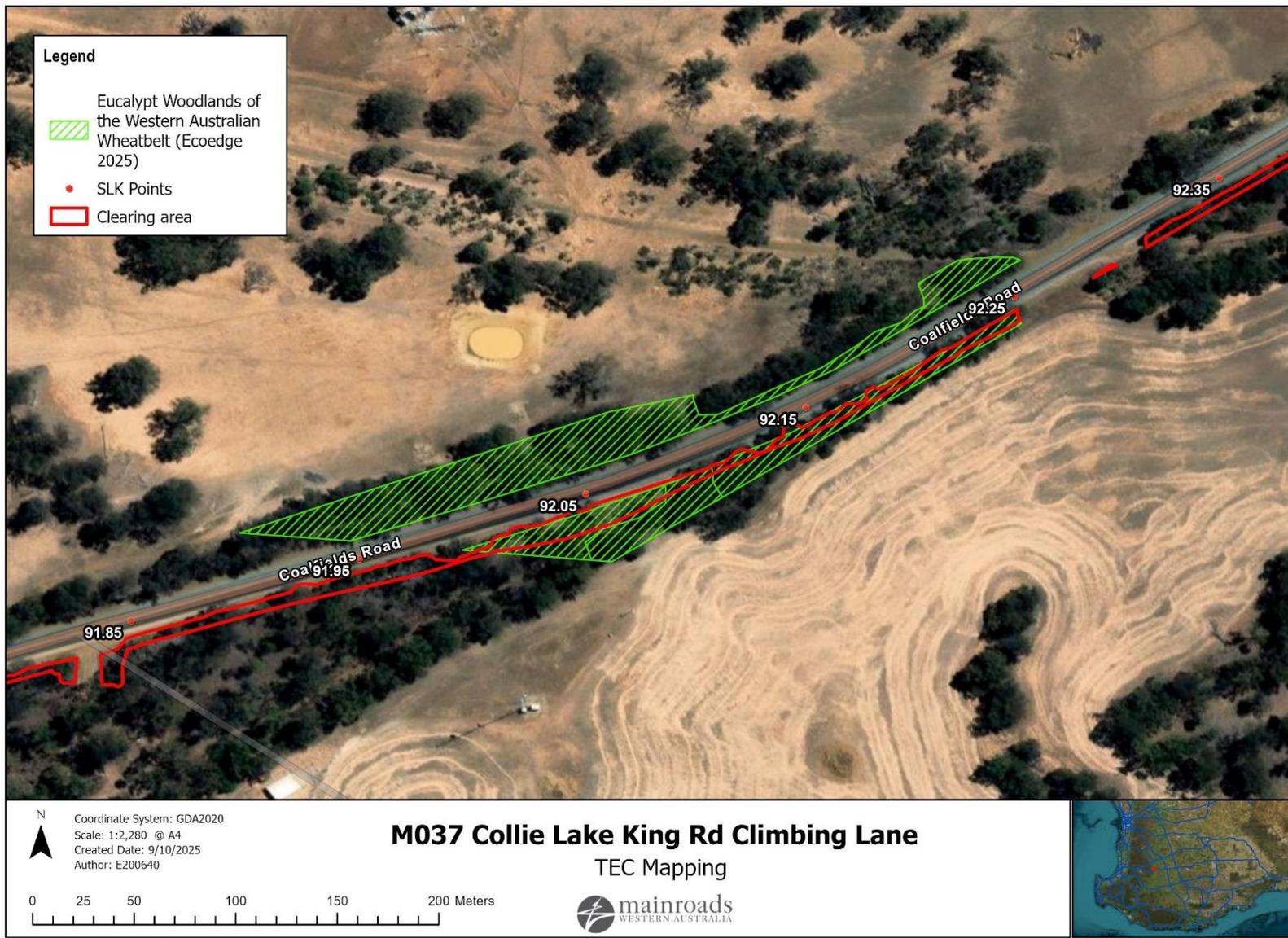


Figure 14. M037 Collie Lake King Road Climbing Lane Threatened Ecological Communities mapped within the Clearing area.

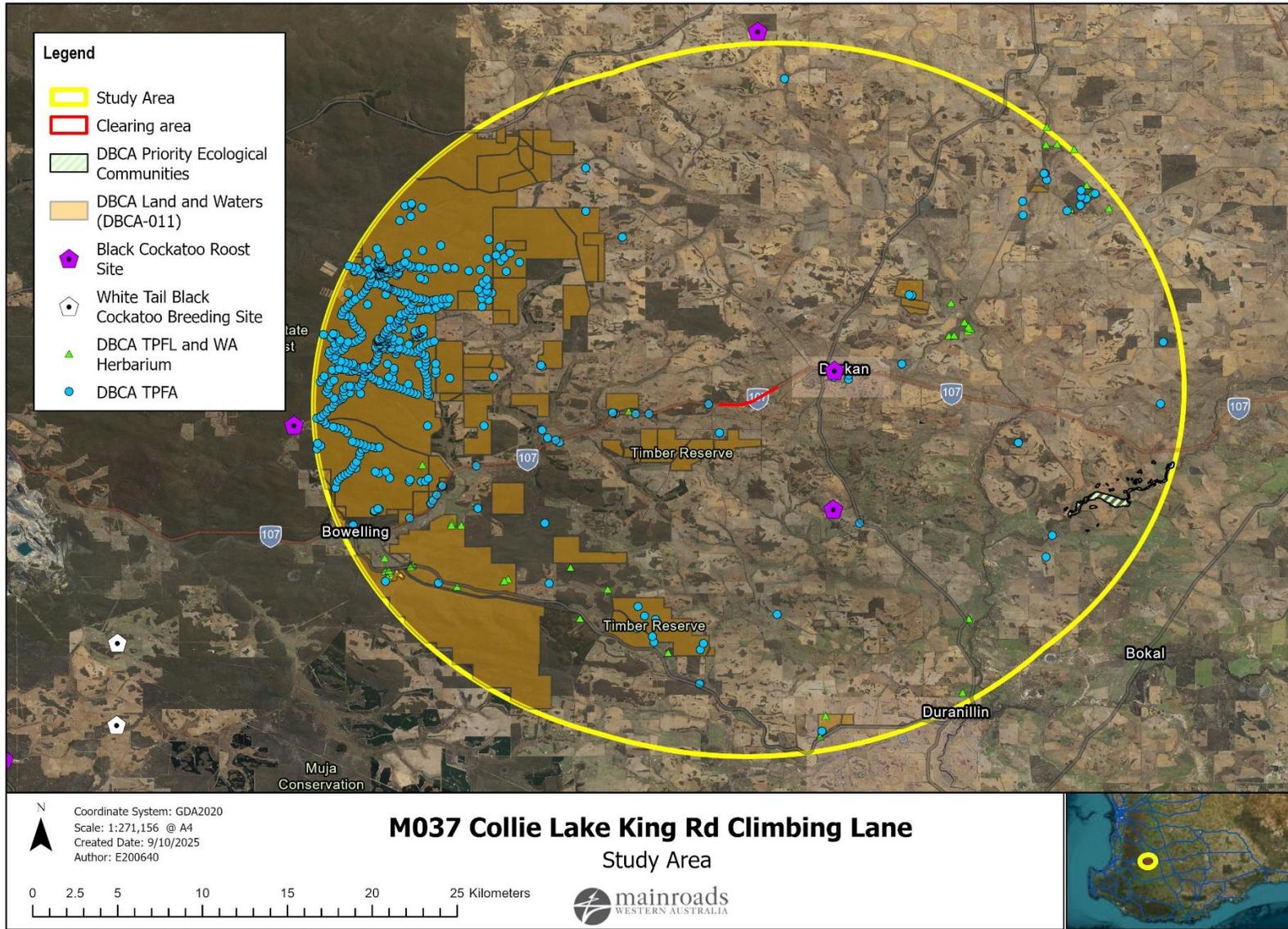


Figure 15. M037 Collie Lake King Road Climbing Lane SLK 90.45 - 93.60 Study area.

## Appendix 3: Vegetation Management Plan

### COLLIE LAKE KING ROAD CONSTRUCTION OF CLIMBING LANE SLK 90.45 TO 93.60 WESTBOUND

#### Purpose and Scope

This Vegetation Management Plan (VMP) has been prepared by Main Roads for the purpose of managing native vegetation clearing impacts associated with the Collie Lake King Road Construction of Climbing Lane SLK 90.45 to 93.60 Westbound.

Westbound traffic on Collie Lake King Road, west of Darkan, is often impeded by slow moving heavy vehicles that lose acceleration traversing a 4% incline between SLK 93.5 to 91.9. At the crest, heavy vehicles are often doing less than 20 km/h. This creates a potential safety hazard as inadequate sight distances make it unsafe for light vehicles to overtake heavy vehicles. Twelve years of data show that between the towns of Collie and Lake King, crashes have resulted in one fatality, two hospital admissions and two requiring medical attention. The construction of a west-bound climbing passing lane will improve the flow of traffic and reduce the risk of traffic crashes from unsafe overtaking attempts.

Key benefits of this program include:

- Improved freight movements and efficiency by optimising roadside stopping places to better fit industry needs in terms of key locations, parking capacity, safe access, and facilities.
- Improve access for oversized vehicles.
- Improved road safety for heavy vehicles through better fatigue management options, and provision of auxiliary lanes with a resultant savings in crash costs and community trauma.
- Provide significant benefits for local and regional economies, particularly the resource, heavy transport and freight industries that transport mining products, mining equipment, fuel, explosives, and other general freight between projects across regions. Reduced overall operating costs.
- Improved driver experience

In specified circumstances, Main Roads VMP is required to be approved by Department of Water and Environmental Regulation (DWER) as a condition of the Main Roads Statewide Clearing Permit CPS 818.

Actions, and their relevant timeframes, from this VMP will be documented within the relevant Tender Documentation (Specifications), such as:

- Specification 204 Environmental Management
- Specification 301 Vegetation Clearing and Demolition
- Specification 303 Materials and Water
- Specification 304 Revegetation
- Specification 304 Rehabilitation of Disturbed Areas.

Once the Contract has been awarded, the Superintendent's Contract Management Team (or equivalent roles) are to ensure that the requirements are implemented by the Contractor.

### **Avoiding, Mitigating and Managing the Impacts of Clearing**

A number of measures were undertaken to during the development and design of the proposal to reduce its impact the environment.

For further information on the alternatives that were considered during the proposal development, please go to Section 1.5 of the Clearing Assessment Report for the proposal.

For further information on the measures undertaken to avoid, minimise, reduce and manage the proposal's clearing impacts, please go to Section 1.6 of the Clearing Assessment Report for the Proposal.

### **VMP Actions**

General vegetation management actions to be undertaken is shown in Appendix 4.1: General Vegetation Management Actions for Clearing.

### Appendix 4.1: General vegetation management actions for clearing

Management Action	Responsibility	Timing
The Contractor must ensure plant, machinery and equipment, is cleaned down prior to arrival to the site.	Superintendent	During construction
Vehicle hygiene inspection checklists will be utilised to manage potential weed/dieback spread on earth-moving machinery.	Superintendent	During construction
No known dieback infested soil, mulch, fill or other material will be permitted into the works area.	Superintendent	During construction
All Clearing must be undertaken in such a way to allow fauna to move out of the Clearing area.	Superintendent	During construction
The Limits of Vegetation Clearing will be demarcated on site prior to the commencement of clearing to prevent entry into areas of native vegetation.	Superintendent	During construction
Natural drainage pathways will not be obstructed from stockpile gravel, crushed rock and excavated material.	Superintendent	During construction
All recently cleared, exposed and loose surface areas shall be protected from wind, water and soil erosion.	Superintendent	During construction
The Contractor will ensure that clearing of native vegetation is only undertaken in dry conditions, unless otherwise approved and / or directed by the Superintendent.	Superintendent	During construction
All Special Environmental Areas will be pegged in accordance with Main Roads' <a href="https://www.mainroads.wa.gov.au/globalassets/technical-commercial/technical-library/standard-contract-drawings/vegetation/construction-environmental-management/201928-0001-construction-peg-colour-code-drawing.pdf?v=49bd3b">Drawing 201928-0001-1 Construction Peg Colour Code</a> ( <a href="https://www.mainroads.wa.gov.au/globalassets/technical-commercial/technical-library/standard-contract-drawings/vegetation/construction-environmental-management/201928-0001-construction-peg-colour-code-drawing.pdf?v=49bd3b">https://www.mainroads.wa.gov.au/globalassets/technical-commercial/technical-library/standard-contract-drawings/vegetation/construction-environmental-management/201928-0001-construction-peg-colour-code-drawing.pdf?v=49bd3b</a> ).	Superintendent	During construction
The Contractor must develop and detail a Site induction training program as part of the CEMP that includes as a minimum, the significant environmental impacts, actual or potential, of work activities associated with the Contract	Superintendent	During construction

The following specific actions shall also be implemented and will be the responsibility of the Superintendent to ensure they are completed prior to clearing commencing, unless otherwise specified:

- Engage an environmental specialist (fauna) to undertake a preclearance check of conservation significant fauna residences (where applicable).
- prepare a weed control program, for nominated weed species for control and disposal.

The above actions will be documented within Specifications 204 and 301.

Main Roads' preclearing **Hold Point** applies to all projects that require vegetation clearing, as documented within Specification 301 (301.12 PRE-CLEARING PROCESS). Accordingly, all Hold Point actions must be signed off prior to clearing commencing. This Hold Point comprises the following actions:

Prior to the commencement of any clearing operations, the Contractor must certify for the Superintendent's verification and approval that the following activities have been completed in accordance with the relevant specification:

- a) The pegging of limits of vegetation clearing has been undertaken.
- b) The pegged vegetation clearing area does not exceed the Limits of Vegetation Clearing.
- c) Mature trees have been conserved as far as practicable.
- d) The pegging of special environmental areas has been undertaken.
- e) All pre-clearing weed control has been undertaken.
- f) All pre-clearing fauna operational controls have been undertaken.
- g) All pre-clearing dieback operational controls have been undertaken.
- h) Suitable and unsuitable topsoil zones have been identified.
- i) Vegetation and topsoil stockpile locations have been identified.
- j) All clearing machinery is compliant with controls

### **Monitoring and Maintenance Program**

The Superintendent's Contract Management Team shall monitor the implementation of management actions that are a **Hold Point**. **Hold Point** actions must be signed off by the Superintendent's Representative to confirm it has occurred and recorded within the Superintendent's Contract Management Plan.

### **Non-Compliance**

Non-compliance with management actions will trigger corrective actions, preventative actions and/or an incident investigation. Non-compliances will be recorded with Main Roads incident management system and reviewed by Main Roads Manager Environment.

The need for reporting non-compliances with VMP management actions to DWER will be determined as part of an incident investigation.

### **Revegetation**

Revegetation will be undertaken in accordance with Condition 9 of CPS 818. Relevant requirements from Condition 9 have been incorporated into Project Revegetation Plan Template. The elements to be implemented by the Contractor will be incorporated into the relevant Specification 304.