



mainroads  
WESTERN AUSTRALIA

# Clearing Assessment Report

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Western Australia.*

Great Central Road Work Package 2 – Warburton  
Great Central Road (Outback Way)  
Goldfields Esperance  
2380

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# 1 PROPOSAL

## 1.1 Purpose and Justification

Main Roads Western Australia (Main Roads) proposes to upgrade the Great Central Road, currently a wide gravel road, between Straight Line Kilometre (SLK) SLK 538 - 551 (Figure 1).

Works for the project include road widening on the Great Central Road, construction of a material pit, and installation of five water bores and associated turkeys nests. A camp and site office are proposed to be located in a disturbed area, approximately 34 km west of the upgrades to Great Central Road.

The proposed upgrade to the Great Central Road will greatly improve the overall road condition and contribute to the safety of road users within the region.

### 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 and enhancing 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

The project will:

- upgrade the drainage infrastructure to improve road drainage;
- seal the road surface for a 13km section (SLK 538 – 551) around the Warburton community to improve access and road user safety;
- upgrade flood crossings, specifically associated with Elder Creek to improve access and road user safety;
- utilise water from licensed bores, Warburton 1 to 4 located on Papulankutja Road, and Warburton 5 on Great Central Road (Figure 1); and
- source quarry material from a borrow pit off the Warburton North Road, SLK 552 (Appendix 2).

## 1.3 Proposal Location

The Development Envelope is located on Great Central Road between SLK 538 - 551 near the town of Warburton, in the Shire of Ngaanyatjarraku (as shown in **Error! Reference source not found.** and Figure 2). The central coordinate of the proposal is 126.5719181°E and 26.1157676°S.

## 1.4 Clearing Details

**Proposed Clearing is to be undertaken using a purpose permit.**

The area of native vegetation proposed to be cleared under Purpose Permit is 137 ha, within a Development Envelope of 299 ha.

**Areas of Native Vegetation Clearing:**

The areas of native vegetation to be cleared are shown in **Error! Reference source not found.** (Maps 1-18).

**Type of Native Vegetation:**

The type of vegetation to be cleared under this proposal is located within the Interim Biogeographic Regionalisation for Australia (IBRA) Central Ranges and Gibson Desert, and respective sub regions of the Mann-Musgrave Block and Lateritic Plain.

The Mann-Musgrave Block (CR1) subregion is described as the 'Giles Botanical District', comprising of sandplains supporting low open woodlands of either Desert Oak or Mulga over *Triodia basedowii* hummock grasslands. Low open woodlands of Ironwood (*Acacia estrophiolata*) and Corkwoods (*Hakea* spp.) over tussock and hummock grasses often fringe ranges. The ranges support mixed wattle scrub or *Callitris glaucophylla* woodlands over hummock and tussock grasslands.

Vegetation of the Lateritic Plain subregion of the Gibson Desert Bioregion is described as 'Carnegie Botanical District', which includes mulga parkland over *Triodia basedowii* on lateritic "buckshot" plains. Mixed shrub steppe of Acacia, Hakea and Grevillea over *Triodia pungens* occur on red sand plains and dune fields. Lateritic uplands support shrub steppe in the north and mulga scrub in the south. Quaternary alluvia associated with palaeo-drainage features support Coolibah woodlands over bunch grasses.

The type of vegetation to be cleared under this proposal is shown in Appendix 2.

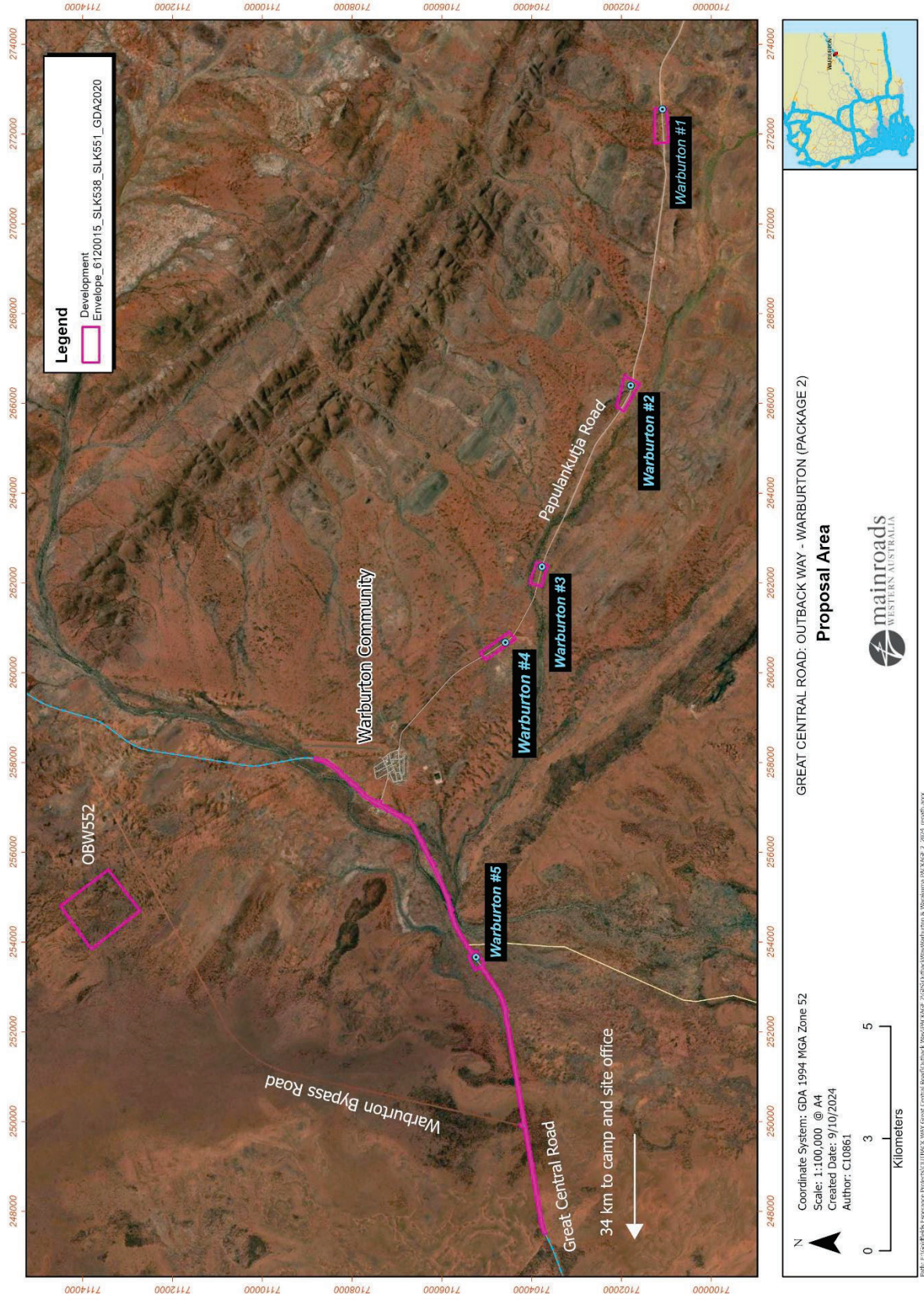


Figure 1. Outback Way Package 2\_Warburton Development Envelope

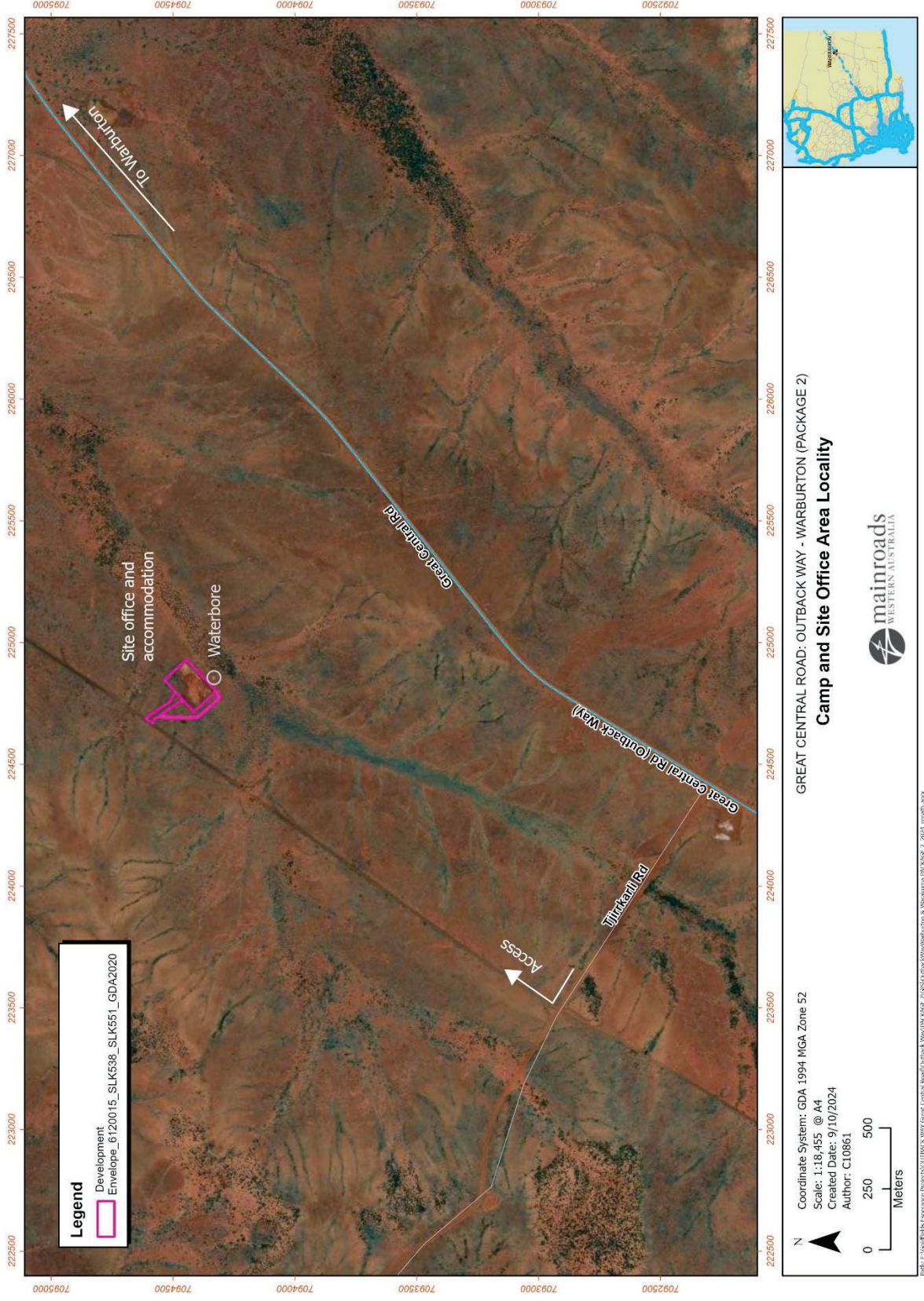


Figure 2. Outback Way Package 2\_Camp and Site Office Locality



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

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

- 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 heritage) or other planning constraints.
- 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 **Error! Reference source not found.**

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

Design or Management Measure	Discussion and Justification
<b>Alignment to one side of existing road</b>	The proposal has been strategically designed to encompass an already cleared gravel road, with maximum usage of cleared areas alongside the existing route.
<b>Alternative alignment located within pasture or degraded areas</b>	The design has been developed to utilise the existing road alignment. An alternate route would significantly add to the quantity of clearing.
<b>Steeper batter slopes</b>	Batter slope angles to reduce clearing whilst remaining effective have been considered in the design and implemented where possible and appropriate.

<b>Design or Management Measure</b>	<b>Discussion and Justification</b>
<b>Installation of barriers</b>	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>Use of existing cleared areas for access tracks, construction storage and stockpiling</b>	The location of water bores, water standpipes, laydown and camp infrastructure have all been located in existing cleared areas.
<b>Drainage modification</b>	The floodway at Elder Creek will be upgraded to decrease flooding. Along the alignment, culverts are being installed to maintain the existing hydrological regime.

## 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&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.

## 2 SCOPE AND METHODOLOGY ASSESSMENT OF CLEARING

Native vegetation will be cleared to accommodate this Proposal. This clearing will be undertaken using a Purpose Permit.

This Clearing Assessment Report (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** - 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.
- **Development Envelope** – The maximum extent within which the Clearing Area will be located. This envelope is larger than the Clearing Area to allow for minor changes to the Proposal footprint as the design process continues, and to account for minor and unexpected changes that may occur during construction, such as working to avoid a large tree or encountering buried boulders or services. This flexibility allows the site personnel to make modifications to the Proposal to avoid areas that may contain better environmental values. The CAR has assessed all environmental values within the Development Envelope as though all of these values will be impacted, up to the amount specified within the Clearing Area.
- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 40 km radius.
- **Survey Area** – Area covered by the Biological Survey, which is typically larger than the Development Envelope.

### 2.2 Desktop Assessment

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

GIS layer viewing and mapping is done using ArcMap and/or Main Roads corporate mapping system known as iMaps. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. Government managed databases were searched to locate additional information, which are found under References in Section 9.

## 2.3 Surveys and Assessments

The following survey was undertaken to inform this CAR:

- Botanica Consulting Great Central Road Warburton & Warakurna Biological Survey (2022).

The biological survey conducted for the proposal is outlined in **Error! Reference source not found.** and a summary of the findings in this report are presented in Sections 3.1 to 3.2.

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

Consultant & Survey Name	Survey Details
<p><b>Botanica Consulting (April 2022)</b> Great Central Road Warburton &amp; Warakurna Biological Survey</p>	<p><b>Survey Area:</b> The broader survey area is located along two sections of Great Central Highway, near the communities of Warburton and Warakurna in the Shire of Ngaanyatjaraku. The survey details relevant to this proposal comprised:</p> <ul style="list-style-type: none"> <li>• Warburton section: five potential water source locations (80 hectares (ha), one gravel pit location (159 ha) and an area 10 metres (m) on either side of the current road alignment (37 ha).</li> </ul> <p><b>Type:</b> Botanica Consulting (2022) performed:</p> <ul style="list-style-type: none"> <li>• a desktop assessment within a 40 km radius of the Warburton section.</li> <li>• a basic fauna survey covering an area of 779 ha, and</li> <li>• a targeted flora survey and detailed flora and vegetation survey of the Great Central Road, covering an area of approximately 779 ha.</li> </ul> <p><b>Timing:</b> The fieldwork survey was conducted 31 October to 2 November 2021.</p> <p><b>Survey Results Shapefile TRIM Ref:</b> D21#888942 <b>Document TRIM Ref:</b> D22#406599</p>
<p><b>Botanica Consulting (September 2024)</b></p>	<p><b>Survey Area:</b> The mapping area is located adjacent to previous biological surveys, SLK 539 to SLK 559 (114 ha) near the community of Warburton. This approximates 30 m additional width along the current alignment. The details relevant to this proposal include extrapolation mapping of:</p> <ul style="list-style-type: none"> <li>• vegetation association,</li> <li>• vegetation condition and</li> <li>• fauna habitat.</li> </ul> <p><b>Type:</b> a desktop-based mapping extrapolation within approximately 30 m width along the Great Central Road Warburton alignment.</p> <p><b>Timing:</b> The extrapolation mapping was conducted September 2024.</p> <p><b>Survey Results Shapefile TRIM Ref:</b> D24#1178542 <b>Document TRIM Ref:</b> D24#1172348</p>

### 3 SURVEY RESULTS

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](#).

#### 3.1 Summary of Flora and Vegetation Surveys

The targeted flora survey and detailed flora and vegetation survey was carried out by Botanica (2022) along the Great Central Road, Warburton Section SLK 539 – 559. To accommodate for sections of the road design, outside the surveyed area, Botanica (2024) completed extrapolation mapping in August 2024, totalling 114 ha.

The Botanica (2022, 2024) survey area was dominated by two major vegetation groups, Acacia Forest and Woodland (>30% survey area), and Mallee Woodland and Shrubland (>27% of survey area). The majority of vegetation was rated as 'good'. Disturbance in the area was attributed to recent and/or frequent fires and road siding of the Great Central Road. Three introduced flora taxa were identified within the survey area, however none of these taxa are a Declared Pest under the BAM Act or Weed of National Significance (WoNS) by the Commonwealth DAWE.

The survey mapped six vegetation types, excluding the cleared area, within three landform systems and five vegetation groups. The vegetation types are represented by 20 families, 43 genera and 82 taxa.

The Warburton Development Envelope comprises four native vegetation types as described by Botanica (2022, 2024), covering 299 ha, inclusive of 42.40 ha considered clear of vegetation.

The results of the flora survey identified no Priority Flora, listed on the Department of Biodiversity, Conservation and Attractions (DBCAs) database, occurring within the survey area. The desktop assessment identified one Threatened Flora taxon as possibly occurring in the survey area based on broad habitat descriptions. The field assessment identified one Threatened Flora taxon within the survey area, however this taxon, *Seringia exastia*, has since been de-listed as a Threatened Flora taxon under the BC Act. No Priority Flora taxa were identified within the survey area. After the on-ground survey, six of the nine Priority Flora identified as 'possible to occur' from the desktop assessment were considered 'possible to occur' post on-ground field surveys. The remaining three Priority Flora were considered 'unlikely to occur' within the survey area.

No TEC or PEC, restricted vegetation, vegetation providing important refuge or significant ecological function was identified within the survey area.

#### 3.2 Summary of Fauna Surveys

Three fauna habitats were identified within the survey area. Results of the literature review identified 3 amphibians, 21 mammals, 99 bird and 55 reptile species as having been previously recorded in the desktop study area, some of which have the potential to occur within the survey area. A total of 62 fauna taxa were observed during the field survey.

Five significant fauna were identified as potentially occurring within the survey area based on their habitat preferences:

- Grey Falcon (*Falco hypoleucos*) - Threatened (Vulnerable EPBC Act and BC Act);
- Princess Parrot (*Polytelis alexandrae*) - Threatened (Vulnerable EPBC Act) and Priority 4;
- Peregrine Falcon (*Falco peregrinus*) – Other specially protected species;
- Striated Grasswren (inland) (*Amytornis striatus* subsp. *striatus*) – (Critically Endangered EPBC Act) and Priority 4 BC Act; and

- Great Desert Skink (*Liopholis kintorei*) - Threatened (Vulnerable EPBC Act and BC Act).

No Threatened fauna or other specially protected species as listed under the Western Australian BC Act or the Commonwealth EPBC Act were identified within the survey area. No Priority fauna as listed by DBCA were recorded within the survey area.

There are no Wetlands of International Importance (Ramsar Wetlands) or national importance (Australian Nature Conservation Agency Wetlands) within the survey area nor proposed or gazetted conservation reserves within the survey area.

## 4 VEGETATION DETAILS

### 4.1 Proposal Site Vegetation Description

The survey area is located within the pre-European vegetation association of Central Ranges, Gibson Desert and Great Victoria Desert systems of the Mann-Musgrave Block, and Lateritic Plain subregions. The vegetation in the Warburton Development Envelope has been mapped as pre-European vegetation associations Central Ranges 18 and 39, and Gibson Desert 18 and 139. According to the statewide pre-European vegetation statistic (2018), at least 99% of the pre-European vegetation associations remain at all the levels. The pre-European and current extent of the vegetation association are provided in Table 4.

**Table 3. Pre-European Vegetation Representation**

Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
<b>Veg Assoc No. 18</b>	<b>Statewide</b>	19892306	19843148	99.75	6.62
	<b>IBRA Bioregion</b> <i>Central Ranges</i>	1075927	1075162	99.93	-
	<b>IBRA Sub-region</b> <i>Mann-Musgrave Block</i>	1075928	1075162	99.93	-
	<b>Local Government Authority</b> <i>Shire of Ngaanyatjarraku</i>	1263268	1262496	99.94	-
<b>Veg Assoc No. 18</b>	<b>Statewide</b>	19892306	19843148	99.75	6.62
	<b>IBRA Bioregion</b> <i>Gibson Desert</i>	136968	136968	100	-
	<b>IBRA Sub-region</b> <i>Lateritic Plain</i>	48162	48162	100	-
	<b>Local Government Authority</b> <i>Shire of Ngaanyatjarraku</i>	1263268	1262496	99.94	-
<b>Veg Assoc No. 39</b>	<b>Statewide</b>	6613567	6602578	99.83	12.02
	<b>IBRA Bioregion</b> <i>Central Ranges</i>	404689	404689	100	-
	<b>IBRA Sub-region</b> <i>Mann-Musgrave Block</i>	404689	404689	100	-
	<b>Local Government Authority</b> <i>Shire of Ngaanyatjarraku</i>	1198871	1198871	100	-
<b>Veg Assoc No. 139</b> (Camp/Site office)	<b>Statewide</b>	7101373	7101373	100	15.89
	<b>IBRA Bioregion</b> <i>Gibson Desert</i>	7010391	7010390	100	16.10
	<b>IBRA Sub-region</b> <i>Lateritic Plain</i>	6992395	6992395	100	16.14



	<b>Local Government Authority</b> <i>Shire of Ngaanyatjarraku</i>	4852060	4852060	100	23.26
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According to Botanica (2022, 2024), six vegetation types occur within the survey area. These vegetation types represent five major NVIS vegetation groups: Acacia Forest and Woodland (MVG 6), Other Forest and Woodland (MVG 10), Eucalypt Woodland (MVG 5), Acacia Forest and Woodland (MVG 6), and Mallee Woodland and Shrubland (MVG 13). To accommodate for some areas of the road design being outside the Botanica Consulting surveyed area; in September 2024, Botanica Consulting completed a total of 107 ha extrapolation mapping. The Botanica Consulting mapping (2022) was amended to incorporate this data, equating to a total of 886 ha.

The Development Envelope intersects four vegetation types and is dominated by vegetation type CLP-AFW1, covering almost 130 ha (Table 4). The vegetation condition of the Development Envelope is mapped as ranging from 'Good to Very Good' with almost all areas surveyed considered to be in 'Good' condition (83.69%) (Table 5).

**Table 4. Summary of Vegetation Types within the Warburton Development Envelope**

Vegetation Code	Vegetation Type	Extent within Warburton Development Envelope (ha)	Total Extent Mapped (ha) within Survey Area
CLP-AFW1	Acacia Forest and Woodland (MVG 6)  Low woodland of <i>Acacia aptaneura</i> / <i>A. incurvaneura</i> / <i>A. paraneura</i> over mid shrubland of <i>Eremophila latrobei</i> / <i>Ptilotus obovatus</i> / <i>Senna artemisioides</i> and tussock grassland of <i>Aristida contorta</i> / <i>Eragrostis eriopoda</i> on clay-loam plain	129.84	304
CLP-OFW1	Other Forest and Woodland (MVG 10)  Mid woodland of <i>Corymbia opaca</i> over low woodland of <i>Acacia incurvaneura</i> and tussock grassland of <i>Aristida contorta</i> on clay-loam plain	31.82	52.9
OD-EW1	Eucalypt Woodland (MVG 5)  Mid woodland of <i>Eucalyptus camaldulensis</i> subsp. <i>obtusata</i> over mid shrubland of <i>Acacia victoriae</i> subsp. <i>victoriae</i> / <i>Eremophila longifolia</i> and tussock grassland of <i>Cenchrus ciliaris</i> in drainage line	3.06	9.53
SP-AFW1	Acacia Forest and Woodland (MVG 6)  Low woodland <i>Acacia incurvaneura</i> / <i>A. pruinocarpa</i> over <i>Eremophila latrobei</i> / <i>Acacia paraneura</i> and hummock grassland of <i>Triodia basedowii</i> / <i>T. melvillei</i> on sandplain	91.87	144
CLP-AFW2	Acacia Forest and Woodland (MVG 6)  Low woodland of <i>Acacia caesaneura</i> / <i>A. incurvaneura</i> over mid shrubland of <i>Eremophila latrobei</i> / <i>Senna artemisioides</i> and low shrubland of <i>Ptilotus obovatus</i> on clay-loam plain	-	66.7

SP-MWS1	Mallee Woodland and Shrubland (MGV 13)  Mid mallee woodland of <i>Eucalyptus gamophylla</i> over low woodland of <i>Acacia paraneura</i> and hummock grassland of <i>Triodia basedowii</i> on sandplain	-	212
CV	Cleared Vegetation	42.40	96.4
<b>Total</b>		<b>299</b>	<b>886</b>

**Table 5: Vegetation condition rating within the survey area\***

Condition rating	Description (EPA, 2016a)	Area (ha)	Area (%)
Very Good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.	6.37	2.13
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.	250.22	83.69
Cleared Vegetation	Existing Clearing (Great Central Road)	42.40	14.18
<b>TOTAL</b>		<b>299</b>	<b>100</b>

Three introduced flora taxa were identified within the Warburton Development Envelope including *Cenchrus ciliaris*, *Cucumis myriocarpus* and *Rumex vesicarius*. None of these taxa are listed as a Declared Pest under the BAM Act or a Weed of National Significance (WoNS) by the Commonwealth DAWE.

## 5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

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

The proposed clearing is at variance to Principle (f) only and not at or not likely to be at variance with the remaining nine Clearing Principles.

**Table 6. Assessment Against Ten Clearing Principles**

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

#### Proposed clearing is not at variance to this Principle.

##### Assessment

The Development Envelope is located within the Central Ranges and Gibson Desert bioregions (Government of Western Australia 2018). The following pre-European Beard vegetation associations are mapped as occurring within the Development Envelope:

- GID/CER 18: Low woodland; mulga (*Acacia aneura*);
- CER 39: Shrublands; mulga scrub; and
- GIB139: Hummock Grasslands; triodia.

The vegetation associations within the Development Envelope have more than 99% of their pre-European extent remaining intact at all levels.

Botanica (2022, 2024) mapped four vegetation types that intersect the Development Envelope, including:

- CLP-AFW1;
- CLP-OFW1;
- OD-EW1; and
- SP-AFW1.

All vegetation types are widely available beyond the Development Envelope (Table 4).

Approximately 98% of the vegetation condition mapped by Botanica (2022, 2024) was rated as 'Good'.

No Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) (as listed by DBCA) were identified within the Development Envelope, or within close proximity of the Development Envelope.

A desktop assessment performed by Botanica (2022) identified one Threatened Flora and nine Priority Flora taxa as possibly occurring within the survey area. Post survey desktop assessments identified six of these Priority Flora as 'possible to occur' within the survey area, however these

taxa were not recorded during the field survey and therefore, are not likely to utilise the Development Envelope as core habitat or be significantly impacted by the proposed clearing.

One Threatened Flora taxon, *Seringia exastia*, was recorded during the survey and at the time was listed as Critically Endangered under the Western Australian *Biodiversity Conservation (BC) Act 2016* and Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. This species has now been delisted under the BC Act. While this species remains listed under the EPBC Act, taxonomic work has identified that *Seringia exastia* is conspecific with (the same as) *Seringia elliptica*, a taxon widespread across northern and central WA, Northern Territory and extending into South Australia (Binks et al., 2020). Synonymised under the name *Seringia exastia*, this species is now considered a common, widespread species that no longer meets the criteria for Threatened status under either of the aforementioned Acts. It is expected that this taxon will be delisted on a Commonwealth level in the near future given its delisting in WA (Coultas, D. 2022).

Botanica (2022, 2024) mapped three broad scale terrestrial fauna habitats (not including cleared vegetation) within the survey area, including:

- Clay-Loam Plain Acacia Woodland/ Corymbia Woodland - Clay-loam plain comprising of Acacia/ Corymbia woodland over low mixed shrubs and tussock grassland.
- Open Depression Eucalypt Woodland - Ephemeral creekline comprising of Eucalypt woodland over low mixed shrubs and Buffel Grass.
- Sandplain Acacia Woodland/ Mallee Woodland - Sandplain comprising of Acacia/ Mallee woodland over low mixed shrubs and spinifex grassland.

The Botanica (2022) desktop survey identified 3 amphibians, 21 mammals, 99 bird and 55 reptile species as having been previously recorded in the desktop study area.

A total of 62 fauna taxa were observed during the field surveys. None of these species are considered conservation significant species. Five species of conservation significance have been regarded through desktop assessment as 'possibly occurring' within the Development Envelope based on the presence of possibly suitable habitats and recent nearby records (Botanica, 2022, 2024). These include:

- Grey Falcon (*Falco hypoleucos*) - Threatened (Vulnerable EPBC Act and BC Act);
- Princess Parrot (*Polytelis alexandrae*) - Threatened (Vulnerable EPBC Act) and Priority 4;
- Peregrine Falcon (*Falco peregrinus*) - Other specially protected species;
- Striated Grasswren (inland) (*Amytornis striatus* subsp. *striatus*) - Priority 4; and
- Great Desert Skink (*Liopholis kintorei*) - Threatened (Vulnerable EPBC Act and BC Act).

No Threatened fauna or other specially protected species as listed under the BC Act or the EPBC Act were recorded during the field survey.

Botanica (2022, 2024) concluded that all fauna species considered as possibly occurring may in fact only visit the area for short periods as infrequent vagrants. Furthermore, as discussed in Principle (b), each of these species are considered to have a low probability of occurrence within the Warburton Development Envelope.

### **Summary**

The Development Envelope contains vegetation assemblages and fauna habitat types that are well represented both locally and regionally, with no restricted vegetation or habitat types

recorded. The Development Envelope does not comprise significant habitat for fauna and is not part of an important ecological linkage.

Based on the above information, the Development Envelope does not comprise of a high level of biological diversity.

The proposed clearing is not at variance to this Principle.

### **Methodology**

- Botanica Consulting (2022) Great Central Road Warburton & Warakurna Biological Survey
- Botanica Consulting (2024) Great Central Road Warburton & Warakurna Biological Survey Addendum
- DCCEEW Protected Matters Search Tool Report
- Department of Natural Resources and Environment (2002)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (Accessed 10/4/2024)
  - DBCA Threatened and Priority flora database search (Accessed 10/4/2024)
  - Bush Forever (Region Scheme - Special Areas) (Accessed 10/4/2024)
  - Ecological Linkages (Accessed 10/4/2024)
- 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 not at variance to this Principle.**

**Assessment**

Botanica's desktop assessment (2022) identified 3 amphibians, 21 mammals, 99 bird and 55 reptile species as having been previously recorded in the desktop study area.

Three well represented fauna habitats were identified within the Warburton Development Envelope including:

- Clay-Loam Plain comprising Acacia woodland/Corymbia Woodland over low mixed shrubs and tussock grassland;
- Ephemeral creekline comprising of Eucalypt woodland over low mixed shrubs and Buffel Grass; and
- Sandplain containing Acacia and Mallee Woodland over low mixed shrubs and spinifex grassland.

A total of 62 fauna taxa were observed during the field survey, none are listed as conservation significant species. A likelihood of occurrence assessment of significant species occurring within the Development Envelope, suggests that five significant fauna may 'possibly occur' within the survey area based on their habitat preferences including hummock grassland, sandplains and creeklines (Botanica, 2024, 2024).

- **Grey Falcon (*Falco hypoleucos*)** - Vulnerable (EPBC Act and BC Act)

The Grey Falcon occurs across inland Australia at low densities. Its habitat consists of Acacia shrublands that are crossed by tree-lined watercourses and frequent tussock grasslands and open woodlands. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter. While breeding, Grey Falcons feed almost exclusively on birds. The survey area may form part of a large and wider home range and has the potential to pass through the Warburton Development Envelope. The Grey Falcon has not been recorded within a 40 km radius of the Warburton Development Envelope. This species is unlikely to breed in the Development Envelope as there are no possible nest sites. This species is unlikely to be impacted by the proposed clearing with habitat of higher value located outside of the Development Envelope.

- **Princess Parrot (*Polytelis alexandrae*)** – Vulnerable (EPBC Act) Priority 4 (DBCAs)

The Princess Parrot's main distribution is arid regions of Western Australia, Northern Territory and South Australia. It occupies sand dune and sand flat areas as well as occurring in open savanna woodlands and shrublands that usually consist of *Eucalyptus* species, *Casuarina* or *Allocasuarina* trees; an understorey of shrubs such as *Acacia* (especially *A. aneura*), *Cassia*, *Eremophila*, *Grevillea*, *Hakea* and *Senna*; and a ground cover dominated by *Triodia* species (DCCEW 2024). The sandplain and Eucalypt woodland represent potential suitable habitat and potential breeding habitat for this species. As this species has a wide-ranging distribution, it is considered as possibly occurring, but this occurrence would only be 'occasional' and for short periods (Botanica 2022). The Princess Parrot has not been recorded within a 40 km radius of the Warburton Development Envelope. This species is unlikely to be impacted by the proposed clearing with habitat of higher value located outside of the Development Envelope.

- **Peregrine Falcon (*Falco peregrinus*)** – Other Specially Protected Species (BC Act)

The Peregrine Falcon is found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings (Birdlife Australia, 2018). Open air space over all areas represents possible foraging areas for this species. Some areas of the survey area could be used by this species as part of a broader home range. The species has not been recorded within 40 km of the Warburton Development Envelope. This species is unlikely to be impacted by the proposed clearing with habitat of higher value located outside of the Development Envelope.

- **Striated Grasswren (inland) (*Amytornis striatus* subsp. *Striatus*)** – Priority 4 (DFCA)

Habitat mainly includes spinifex, with or without low shrubs and herbage, on sandy or loamy plains, also, bushy Acacias on sand ridges and interdunes, usually with Spinifex. Potential habitat within the survey area includes Spinifex covered sandplains and some shrublands (Botanica 2022). The species has not been recorded within 40 km of the Warburton Development Envelope. This species is unlikely to be impacted by the proposed clearing with habitat of higher value located outside of the Development Envelope.

- **Great Desert Skink (*Liopholis kintorei*)** – Vulnerable (EPBC Act and BC Act)

The Great Desert Skink has widespread connected populations throughout the eastern interior of Western Australia (DCCEEW, 2024). The sandplains within the survey area represent possible suitable habitat for this species. The species generally occurs on red sandplains and sand ridges. Vegetation usually consists of hummock grassland (*Triodia basedowii*, *Triodia pungens* and *Triodia schinzii*), with some scattered shrubs and occasional trees (e.g. *Acacia* spp., *Eucalyptus* spp., *Hakea* spp., *Grevillea* spp. and *Allocasuarina decaisneana*). The closest known records are historic, identifying that the Great Desert Skink has occurred approximately 1 km east of the Warburton Development Envelope, near Warburton Airport. Four additional records from 1997 and 2013, recorded occurrence approximately 16 km north of the material pit. No recent records support the occurrence of this species within the Development Envelope. This species is unlikely to be impacted by the proposed clearing with habitat of higher value located outside of the Development Envelope.

### **Summary**

None of the above conservation significant fauna identified in the desktop assessment were recorded during the field survey within the Development Envelope. Furthermore, Botanica (2022) surmised that "...It should be noted that while habitats onsite for the species listed above are considered possibly suitable, some or all may be marginal in extent/quality and therefore the fauna species considered as 'possibly occurring' may in fact only visit the area for short periods as infrequent vagrants. The result of the literature review and observations made during the field survey suggest that the probability of any of the above-mentioned fauna species occurring within the Development Envelope would be low."

The Development Envelope contains fauna habitat types that are well represented both locally and regionally, with no restricted habitat types recorded. The Development Envelope does not comprise significant habitat for fauna and is not part of an important ecological linkage. Therefore, the Development Envelope does not comprise the whole or a part of and is not necessary for maintenance of a significant habitat for fauna.

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

**Methodology**

- Botanica Consulting (2022). Great Central Road Warburton & Warakurna Biological Survey
- Botanica Consulting (2024) Great Central Road Warburton & Warakurna Biological Survey Addendum
- DCCEEW Protected Matters Search Tool Report
- Government GIS Shapefiles:
  - DBCA Threatened and Priority fauna database search (Accessed 10/4/2024)
  - Ecological Linkages (Accessed 10/4/2024)
- 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**

Botanica’s 2022 desktop assessment and field survey identified one Threatened flora species, *Seringia exastia*, within the Warburton Development Envelope, however this species has since been delisted under the BC Act. No current Threatened flora species are present or may be impacted by the proposed clearing.

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

**Methodology**

- Botanica Consulting (2022) Great Central Road Warburton & Warakurna Biological Survey
- Botanica Consulting (2024) Great Central Road Warburton & Warakurna Biological Survey Addendum
- Government GIS shapefiles:
  - DBCA Threatened flora database search (Accessed 10/4/2024)
- 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 not at variance to this Principle.**

**Assessment**

The Desktop assessment undertaken by Botanica (2022) did not identify any known records of State or Federally listed Threatened Ecological Communities (TECs) within the study area. There are no TECs recorded within 400km of the Development Envelope.

The vegetation types recorded in the survey area were not representative of TECs and are not necessary for the maintenance of any TEC.

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

**Methodology**

- Botanica Consulting (2022) Great Central Road Warburton & Warakurna Biological Survey
- Botanica Consulting (2024) Great Central Road Warburton & Warakurna Biological Survey Addendum
- Community specific conservation listing advice and recovery plans
- Government GIS shapefiles:
  - DBCA Threatened Ecological Community database search (Accessed 10/4/2024)

**(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.**

**Proposed clearing is not at variance to this Principle.**

**Assessment**

The survey area is located within the pre-European vegetation association of Central Ranges, Gibson Desert and Great Victoria Desert systems of the Mann-Musgrave Block, and Lateritic Plain subregions.

The vegetation in the Warburton Development Envelope has been mapped as pre-European vegetation associations Central Ranges 18 and 39, Gibson Desert 18 and 139.

According to the statewide pre-European vegetation statistic (2018), at least 99% of the pre-European vegetation associations remain at all the levels. The pre-European and current extent of the vegetation association are provided below. As a result, the project is not located in an area with regionally significant remnant vegetation. Given that the vegetation associations are widespread throughout the area and are well-represented locally and regionally, impacts due to clearing for the proposal will not be significant.

Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
<b>Veg Assoc No. 18</b>	<b>Statewide</b>	19892306	19843148	99.75	6.62
	<b>IBRA Bioregion</b> <i>Central Ranges</i>	1075927	1075162	99.93	-
	<b>IBRA Sub-region</b> <i>Mann-Musgrave Block</i>	1075928	1075162	99.93	-
	<b>Local Government Authority</b> <i>Shire of Ngaanyatjarraku</i>	1263268	1262496	99.94	-
<b>Veg Assoc No. 18</b>	<b>Statewide</b>	19892306	19843148	99.75	6.62
	<b>IBRA Bioregion</b> <i>Gibson Desert</i>	136968	136968	100	-
	<b>IBRA Sub-region</b> <i>Lateritic Plain</i>	48162	48162	100	-
	<b>Local Government Authority</b> <i>Shire of Ngaanyatjarraku</i>	1263268	1262496	99.94	-
<b>Veg Assoc No. 39</b>	<b>Statewide</b>	6613567	6602578	99.83	12.02
	<b>IBRA Bioregion</b> <i>Central Ranges</i>	404689	404689	100	-
	<b>IBRA Sub-region</b> <i>Mann-Musgrave Block</i>	404689	404689	100	-
	<b>Local Government Authority</b> <i>Shire of Ngaanyatjarraku</i>	1198871	1198871	100	-

<b>Veg Assoc No.</b> <b>139</b> (Camp/Site office)	<b>Statewide</b>	7101373	7101373	100	15.89
	<b>IBRA Bioregion</b> <i>Gibson Desert</i>	7010391	7010390	100	16.10
	<b>IBRA Sub-region</b> <i>Lateritic Plain</i>	6992395	6992395	100	16.14
	<b>Local Government Authority</b> <i>Shire of Ngaanyatjaraku</i>	4852060	4852060	100	23.26

Four vegetation groups were mapped by Botanica (2022, 2024) with the majority of the Warburton Development Envelope dominated by vegetation type CLP-AFW1, Low woodland of *Acacia aptaneura*/*A. incurvaneura*/*A. paraneura* over mid shrubland of *Eremophila latrobei*/*Ptilotus obovatus*/*Senna artemisioides* and tussock grassland of *Aristida contorta*/*Eragrostis eriopoda* on clay-loam plain.

The vegetation condition mapped by Botanica (2022, 2024) ranged from 'Good to Very Good' with almost all areas surveyed in the Warburton Development Envelope considered to be in 'Good' condition. Disturbance in the area is associated with frequent fires. All vegetation mapped is well represented outside of the Development Envelope and not considered significant as a remnant of native vegetation in an extensively cleared area.

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

#### Methodology

- Aerial photography
- Botanica Consulting (2022) Great Central Road Warburton & Warakurna Biological Survey
- Botanica Consulting (2024) Great Central Road Warburton & Warakurna Biological Survey Addendum
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed 14/3/2024)
- 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 at variance to this Principle.**

**Assessment**

According to the Geoscience Australia database (2015) the Development Envelope intersects two minor non-perennial watercourses (drainage lines) and a major non-perennial watercourse named Elder Creek. Vegetation at the Elder Creek crossing was mapped as 'Mid woodland of *Eucalyptus camaldulensis* subsp. *obtusa* over mid shrubland of *Acacia victoriae* subsp. *victoriae*/*Eremophila longifolia* and tussock grassland of *Cenchrus ciliaris* in drainage line. A total of 3.06 ha of this vegetation type is proposed to be cleared to complete the drainage upgrades between SLK 545.6 - 546.4. The proposed clearing where Elder Creek intersects the existing road alignment, is directly adjacent to the existing road. Vegetation of this type extends well beyond the Development Envelope as mapped by Botanica (2022, 2024), along an approximate 20 km length of Elder Creek. The proposed clearing will not significantly impact the availability of vegetation associated with the watercourse.

The *Atlas of Groundwater Dependent Ecosystems* (BoM, 2021) database and Geoscience Australia database indicates low potential of occurrence of two terrestrial GDEs within the Development Envelope, however, Botanica (2022) concluded that there are no known or potential GDEs (aquatic and terrestrial) within the Development Envelope and no potential GDE vegetation was identified during the field survey.

No conservation significant wetlands occur within the Development Envelope.

The proposed clearing is at variance to this Principle.

**Methodology**

- Botanica Consulting (2022) Great Central Road Warburton & Warakurna Biological Survey
- Botanica Consulting (2024) Great Central Road Warburton & Warakurna Biological Survey Addendum
- Government GIS shapefiles:
  - Geomorphic Wetlands (Accessed 14/3/2024)
  - Ramsar Wetlands (Accessed 14/3/2024)
  - Important Wetlands (Accessed 16/4/2024)
  - Watercourses (Accessed 16/4/2024)
  - RIWI Act Rivers (Accessed 16/4/2024)

**(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**

Based on the geographic information provided by DPIRD, the Development Envelope is mapped as being in the Western Region soil landscape within Warburton Range Zone (619), Paterson Sandplain Zone (613), and Kennedy Range Zone (192).

The climate in the Development Envelope is characterised as arid with an annual rainfall of 200mm (Graham & Cowan, 2001; Graham, Barton & Cowan, 2001; Barton & Cowan, 2001). Rainfall data for the Warburton Airfield weather station (#13011) is collected adjacent to the Warburton section of the survey area (Botanica, 2022).

DPIRD (2023) mapping indicates that the Development Envelope presents the following land degradation risk:

Risk Percentage	Information
1%	Very poor to poor drainage potential
1%	Very high to extreme water erosion hazard
1%	High to extreme wind erosion hazard
1%	Moderate salinity hazard
0%	Has pHCa <4.5 surface acidity
1%	Moderate to very high waterlogging Risk
1%	Moderate to high flood hazard

Given the proposed clearing occurs along the existing road in an area with very low risk levels of land degradation, the proposed clearing is not likely to cause appreciable land degradation.

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

**Methodology**

- Botanica Consulting (2022). Great Central Road Warburton & Warakurna Biological Survey
- Government GIS Shapefiles:
  - Acid Sulphate Soil Risk Map (Accessed 18/4/2024)
  - Soil landscape land quality – Water Erosion Risk (Accessed 18/4/2024)
  - Soil landscape land quality – Wind Erosion Risk (Accessed 18/4/2024)
  - Soil landscape land quality – Salinity Risk (Accessed 18/4/2024)
  - Soil landscape land quality – Surface Acidity (Accessed 18/4/2024)
  - Soil landscape land quality – Waterlogging Risk (Accessed 18/4/2024)
  - Soil landscape land quality – Flood Risk (DPIRD-007) (Accessed 18/4/2024)
- Topographic map – Warburton. <https://en-au.topographic-map.com/map-l4gjzs/Warburton/?center=-26.14142%2C126.80587&zoom=15> (Accessed 18/4/2024)

**(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 Development Envelope does not intersect any conservation areas. Pila Nature Reserve is the nearest reserve to the Development Envelope, located approximately 70 km north-north west.

The proposed clearing is not at variance to this Principle.

**Methodology**

- Botanica Consulting (2022) Great Central Road Warburton & Warakurna Biological Survey
- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters & Lands of Interest (Accessed 14/4/2024)
  - Geomorphic Wetlands (conservation category wetlands only) (Accessed 14/4/2024)
  - Ramsar Wetlands (Accessed 14/4/2024)
  - Important Wetlands (Accessed 14/4/2024)

**(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

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

**Assessment**

The Development Envelope is located within the Proclaimed East Murchison Groundwater Area under the *Rights in Water Irrigation Act 1914* (RIWI Act). The Development Envelope is not located within a Public Drinking Water Source Area (PDWSA) or within any of the controlled catchment areas under the *Country Areas Water Supply Act 1947* (CAWS Act).

There is no associated perennial surface water however, two minor non-perennial drainage lines and one major non-perennial watercourse intersect the Development Envelope. Clearing of vegetation for the proposal has the potential to impact water quality through sedimentation, when the flow occurs along these drainage lines, however, given that the flow is intermittent, and the disturbance will occur primarily in a linear nature in areas directly adjacent to an existing road and within disturbed areas, it is unlikely that the proposed clearing will cause deterioration in the quality of surface or groundwater.

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

**Methodology**

- Botanica Consulting (2022) Great Central Road Warburton & Warakurna Biological Survey
- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 14/4/2024)
  - CAWSA Part 2A Clearing Control Catchments (Accessed 14/4/2024)
  - RIWI Act, Groundwater Areas (Accessed 14/4/2024)
  - Soil landscape land quality - Salinity Risk (Accessed 14/4/2024)
  - Groundwater Salinity Statewide (Accessed 14/4/2024)
  - Geoscience Australia database (Accessed 4/4/2024)
  - Atlas of Australian Acid Sulfate Soils (CSIRO 2013)
  - Australian Soil Resource Information System (ASRIS)



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

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

**Assessment**

The proposal intersects a major non-perennial watercourse named Elder Creek and two unnamed minor non perennial drainage lines.

Soil landscape systems of the Development Envelope are covered mostly by two systems, the Warburton Range Zone and Kennedy Range Zone. The Warburton Range Zone (MY109) is characterised by outwash plains and dissected fan and terrace formations flanking ranges of sedimentary and some metamorphic, volcanic, and granitic rocks, while the Kennedy Range Zone (AB47) is characterised by plains and dunes longitudinal and ring dunes with interdune corridors and plains with occasional salt pans. Soils include red loamy earths and red sandy earths with some red-brown hardpan shallow loams, calcareous shallow loams and stony soils.

DPIRD (2023) mapping indicates that the Development Envelope presents a 1% risk percentage of moderate to very high waterlogging risk and 1% risk percentage of moderate to high flood hazard. Given the arid climate, with annual rainfall ranging between 200mm to 250mm, and soil type in the Development Envelope, the risk of flooding is considered low.

Given the soil type and climatic condition, low risk of waterlogging and flood hazard, and primarily linear clearing of vegetation in areas directly adjacent to an existing road and within disturbed areas, the proposed clearing is not likely to cause or exacerbate the incidence or intensity of flooding.

The proposal is not likely to be at variance to this Principle.

**Methodology**

Botanica Consulting (2022) Great Central Road Warburton & Warakurna Biological Survey

BoM Website (Accessed 18/4/2024)

Government GIS Shapefiles:

Geoscience Australia database (Accessed 4/4/2024)

Atlas of Australian Acid Sulfate Soils (CSIRO 2013)

Australian Soil Resource Information System (ASRIS)

## **6 VEGETATION MANAGEMENT**

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

## **7 REHABILITATION, REVEGETATION & OFFSETS**

### **7.1 Revegetation and Rehabilitation**

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

### **7.2 Offset Proposal**

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

## **8 STAKEHOLDER CONSULTATION**

Main Roads will undertake stakeholder consultation as required.

## 9 REFERENCES

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## 10 APPENDICES

### Appendix 1: Ecologica (2022) Biological Survey - Executive Summary and Report Conclusions

#### Executive Summary

Main Roads Western Australia (Main Roads) is proposing to reconstruct and upgrade two sections of Great Central Road near the communities of Warburton and Warakurna in the Shire of Ngaanyatjaraku. Works for the project include road widening on the Great Central Road, construction of material and borrow pits, and installation of water bores and turkey nests. The Warburton section is from SLK 539 – 559 and includes five potential water source locations (80 hectares (ha)), one gravel pit location (159 ha), and an area 10 metres (m) on either side of the current road alignment (37 ha). The Warakurna section is from SLK 762 – 800.05 and includes five potential water source locations (364 ha), one gravel pit location (30 ha), one borrow pit location (26 ha), and an area 10 m on either side of the current road alignment (20 ha).

Botanica Consulting Pty Ltd (Botanica) was commissioned by Main Roads to undertake the following assessments of the Great Central Road Warburton & Warakurna (referred to as the 'study area'):

- Desktop assessment within a 40-kilometre (km) radius of the Great Central Road Warburton & Warakurna survey area (referred to as the 'desktop study area');
- Basic fauna survey of the Great Central Road Warburton & Warakurna, covering an area of approximately 779 ha (referred to as the 'survey area'); and
- Targeted flora survey and detailed flora and vegetation survey of the Great Central Road Warburton & Warakurna, covering an area of approximately 779 ha (referred to as the 'survey area').

The survey was conducted from the 31<sup>st</sup> of October to 2<sup>nd</sup> November 2021. Thirty-eight quadrats (50 m X 50 m) were established during the survey.

Six vegetation types were identified within the survey area which were representative of two pre-European vegetation associations (association 8 and 230) of the Central Ranges and Gibson Desert System. These vegetation types were identified within three landform types and comprised of five major vegetation groups, which were represented by a total of 20 families, 43 genera and 82 taxa. One Threatened Flora taxon (*Seringia exastia*) listed as Critically Endangered under the Western Australian *Biodiversity Conservation (BC) Act 2016* and Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* was identified within the survey area. This taxon is currently being nominated to be de-listed as a Threatened Flora taxon under the BC Act. No Threatened Ecological Communities as listed under the Western Australian BC Act or Commonwealth EPBC Act were identified within the survey area.

Based on the vegetation condition rating scale specified in the Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment – December 2016 (EPA, 2016a), vegetation ranged from 'good' to 'very good' with the majority of vegetation rated as 'good'. Disturbance in the area was a result of recent and/ or frequent fires and road siding of the Great Central Road. Three introduced flora taxa were identified within the survey area, none of which are listed as a Declared Pest or Weed of National Significance; *Cenchrus ciliaris* (Buffel Grass), *Cucumis myriocarpus* (Prickly Paddy Melon) and *Rumex vesicarius* (Ruby Dock).

No Priority Flora were listed on the Department of Biodiversity, Conservation and Attractions (DBCA) database as occurring within the survey area. The desktop assessment identified one Threatened Flora and nine<sup>1</sup> Priority Flora taxa as possibly occurring within the survey area based on their broad habitat descriptions/ soil types including sand, gravelly soils of sandplains and creeklines. Based on the field assessment, one Threatened Flora taxon was identified within the survey area. No Priority Flora taxa were identified within the survey area. Six of the nine Priority Flora identified as possible to occur from the desktop assessment were considered to be unlikely to occur within the survey area. The remaining three Priority Flora were identified as possible to occur within the survey area, however these taxa were not recorded during the field survey. No Priority Ecological Communities (as listed by DBCA) were identified within the survey area or the desktop study area.

Three fauna habitats were identified within the survey area. Results of the literature review identified 3 amphibians, 21 mammals, 99 bird and 55 reptile species as having been previously recorded in the desktop study area, some of which have the potential to occur within the survey area. A total of 62 fauna taxa were observed during the field survey.

Five significant fauna were identified as potentially occurring within the survey area based on their habitat preferences including hummock grassland, sandplains and creeklines:

1. Grey Falcon (*Falco hypoleucos*)-Threatened (Vulnerable EPBC Act and BC Act)
2. Princess Parrot (*Polytelis alexandrae*)-Threatened (Vulnerable EPBC Act) and Priority 4
3. Peregrine Falcon (*Falco peregrinus*)-Other specially protected species
4. Striated Grasswren (inland) (*Amytornis striatus* subsp. *striatus*)-Priority 4
5. Great Desert Skink (*Liopholis kintorei*)-Threatened (Vulnerable EPBC Act and BC Act)

No Threatened fauna or other specially protected species as listed under the Western Australian BC Act or the Commonwealth EPBC Act was identified within the survey area. No Priority fauna as listed by DBCA were recorded within the survey area.

There are no wetlands of international importance (Ramsar Wetlands) or national importance (Australian Nature Conservation Agency Wetlands) within the survey area nor proposed or gazetted conservation reserves within the survey area.

## Report Conclusions

One significant flora taxon was identified within the survey area; *Seringia exastia*. This taxon is listed as Critically Endangered under the EPBC Act and BC Act. This taxon is currently being nominated to be de-listed as a Threatened Flora taxon under the BC Act. Within a 50m radius of each plant is protected as an Environmentally Sensitive Area under the EP Act. No significant fauna or vegetation were identified during the field survey. There are no areas of significance (conservation wetlands, DBCA managed lands) located within the survey area.

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<sup>1</sup> Including one taxon without a habitat description which has been tentatively considered as 'possible to occur'

## Appendix 2: Ecologica (2024) Biological Survey Addendum- Executive Summary and Report Conclusions

### Addendum Context

Botanica Consulting Pty Ltd (Botanica) conducted a previous biological survey of the Great Central Road (The Outback Way) Road number 6120015 realignment upgrades (the Project), Great Central Road Warburton & Warakurna Biological Survey (Botanica, 2022). Following this initial survey, changes to the road design have resulted in some areas of the revised Development Envelope not being covered by flora and fauna field surveys. As such, Main Roads Western Australia (Main Roads) commissioned Botanica to conduct extrapolation of mapping data adjacent to previous biological surveys to delineate vegetation association, vegetation condition and fauna habitat within the Warburton section of the Outback Way SLK 538.6 – 559 Development Envelope (referred to as the 'extrapolation area'). The total survey area (encompassing the existing field survey area and extrapolation area) is shown in **Error! Reference source not found.** and is approximately 886 ha in extent.

### Report Conclusions

Six vegetation types were recorded in the total survey area, four of which were included in the extrapolation area. None of the vegetation types present within the total survey area or extrapolation area are representative of a Threatened Ecological Community, Priority Ecological Community or otherwise significant vegetation as defined by EPA (2016).

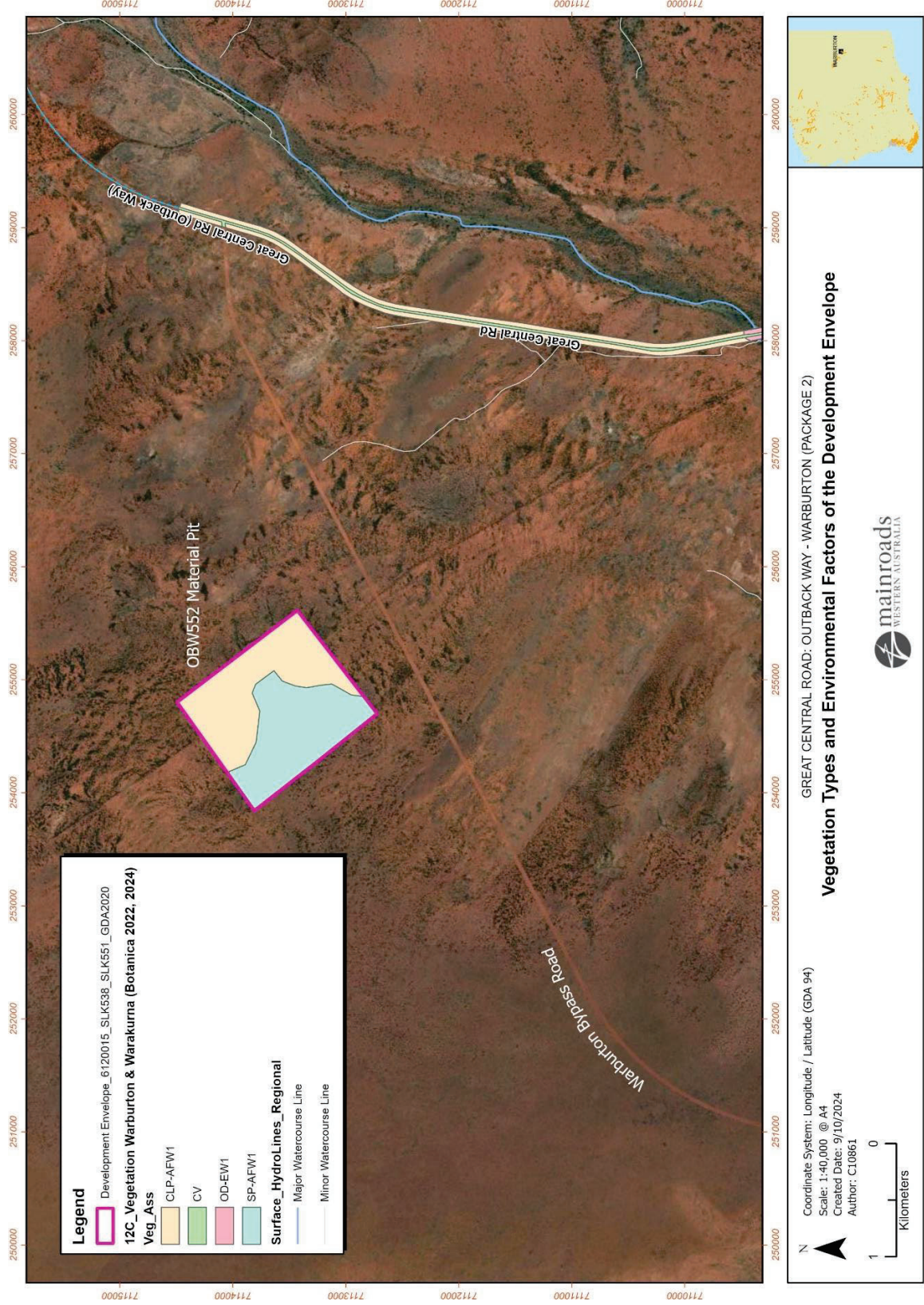
Vegetation within the total survey area and extrapolation area ranged from 'good' to 'very good' with majority of the vegetation (82% of the total survey area) rated as good condition.

One Threatened Flora taxon as listed under the Commonwealth EPBC Act occurs within the existing field survey area and is considered likely to occur within the extrapolation area given the presence of similar vegetation and the current status of this taxon as common, widespread species. Despite this taxon currently being listed as a Threatened species under the EPBC Act, this is likely due to a formality with the delisting process as this taxon no longer meets the criteria for Threatened status. No other significant flora were identified within the field survey area, however six Priority Flora are considered as possible to occur within the extrapolation area based on habitat preferences.

Three fauna habitats were recorded in the total survey area, all of which were included in the extrapolation area. The fauna habitats are typical of those in the wider region with no unique fauna habitats (i.e. caves, rock outcrops, overhangs or crevices) or inland waters within the total survey area.

No significant fauna were recorded within the existing field survey area, and it is unlikely significant fauna will occur within the extrapolation area.

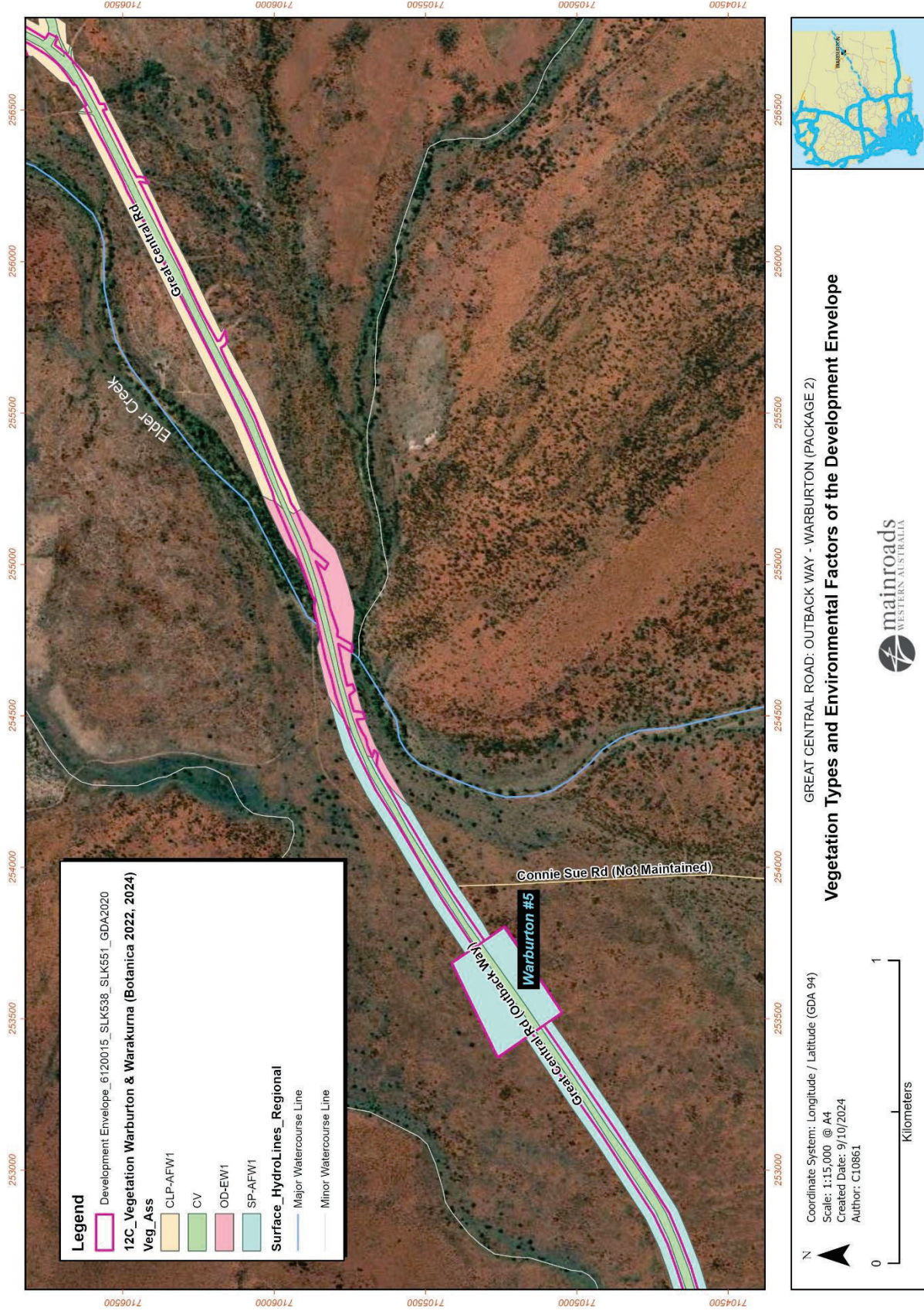
### Appendix 3:- Vegetation Associations mapped within the Development Envelope



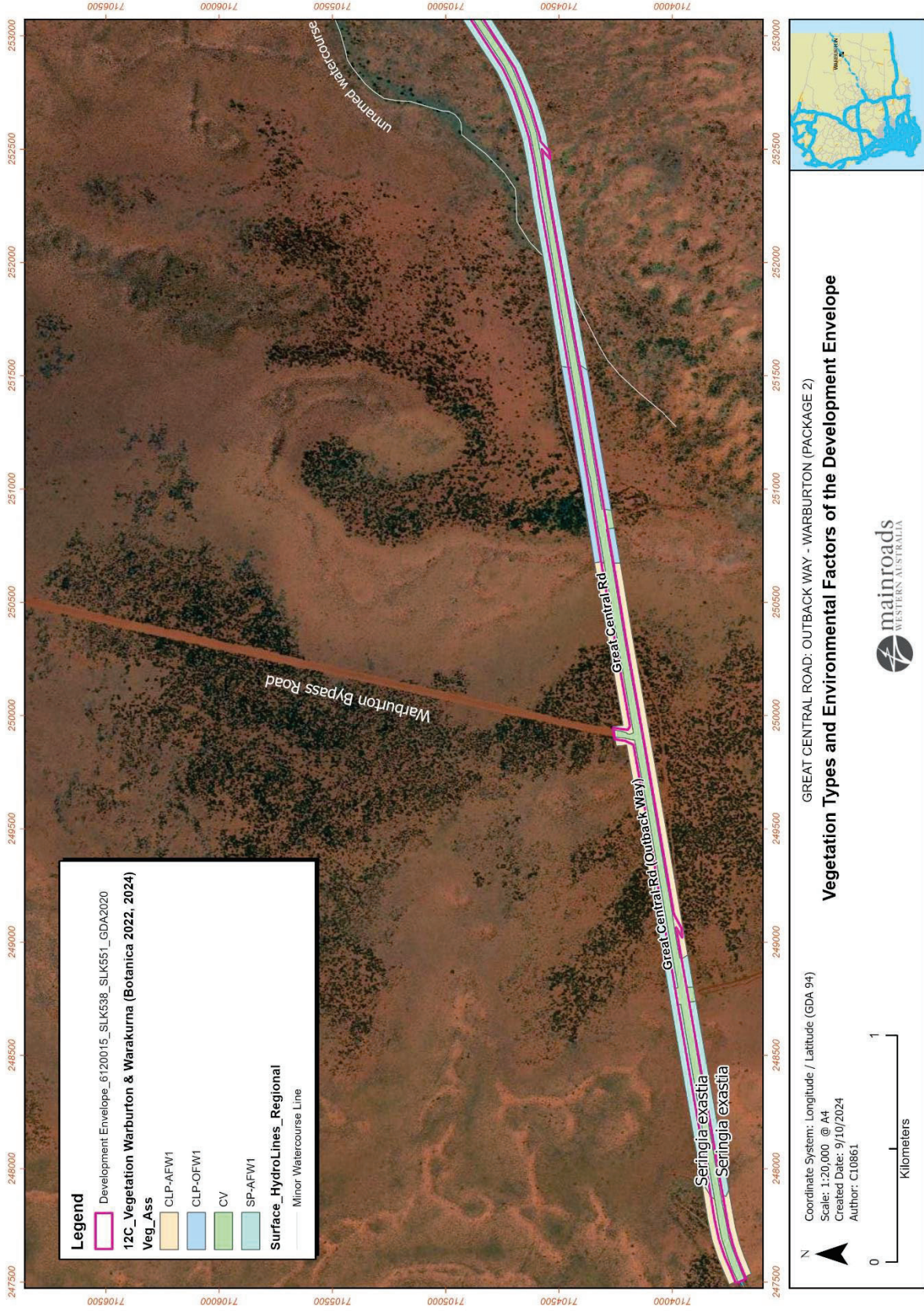




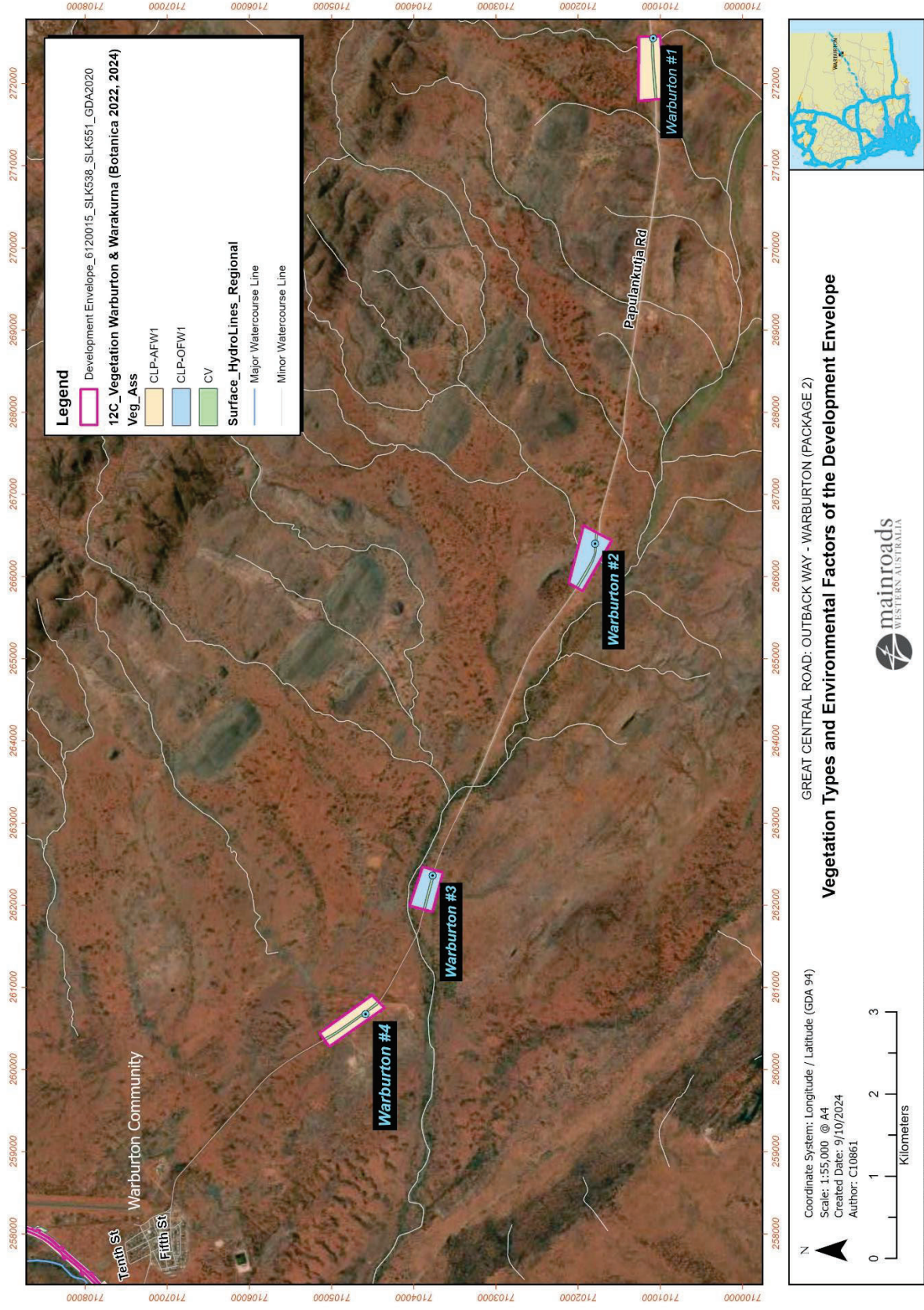
Map 2 – Northern section of Outback Way Package 2: SLK 547.8 to 551



Map 3 –Outback Way Package 2: SLK 543.8 to SLK 547.8



Map 4 –Outback Way Package 2: SLK 538 to 543.8



Map 5 –Outback Way Package 2: Waterbore locations on Patpulkanjuta Road