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WESTERN AUSTRALIA

Clearing Desktop Report– CPS 818

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Western Australia.*

Midland Rd (M028) SLK 24,79 – 61.30 Low-Cost Shoulder
Sealing works (LCSS)
Midland Rd (M028)
Wheatbelt
2704

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Document Control

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1 PROPOSAL

1.1 Purpose and Justification

The purpose of this Clearing Desktop Report (CDR) is to detail the assessment of native vegetation clearing proposed to be undertaken using the Statewide Clearing Permit CPS 818/17 issued to Main Roads Western Australia (Main Roads).

Main Roads is proposing to upgrade Midlands Road (M028) between Straight Line Kilometre (SLK) 24.79 to 61.30, by extending the existing road seal (6.8 m) to 9.0 m on the existing road formation (8.6 – 9.4 m) (the Proposal). Proposed works fall under Main Roads WA Low Cost Shoulder Sealing (LCSS) Program and align with Main Road's Towards Zero Roads Safety Strategy of a minimum 1.0 m sealed shoulder. LCSS works and associated culvert extensions will improve road safety and reduce the risk of serious injuries or death caused by vehicle run off.

This report outlines the key activities associated with the Proposal, the existing environment and an assessment of native vegetation clearing. The assessment evaluates the vegetation clearing impacts associated with the Proposal using the Ten Clearing Principles, and the strategies to be implemented to manage and mitigate the impacts of the proposed vegetation clearing.

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 Proposal involves extending the existing road seal along Midlands Road between SLK 24.79 to 61.30, and associated culvert extension works. The Proposal will involve land acquisition and clearing of vegetation, and may involve groundwater abstraction/dewatering, excavation of soils for construction, and re-instating table drains and offshoot drains.

Due to project planning employing avoidance and minimisation measures, total clearing of native vegetation associated with the Proposal requiring approval has been limited to 0.024 ha).

1.3 Proposal Location

The Native Vegetation Clearing Area is located on Midlands Road (M028), between SLK 24.98 and SLK 46.07, within the Shire of Moora as shown in Figure 1. The central coordinate of the proposal is 116.0206024°E 30.5661851°S.

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818/17: Up to 0.024 ha of native vegetation will be cleared under CPS818 (Figure 1).

Areas of Native Vegetation Clearing:

The areas of native vegetation to be cleared (the Native Vegetation Clearing Area) are shown in Figure 1.

Type of Native Vegetation:

Clearing of native vegetation for the Proposal comprises 0.019 ha of native vegetation (CoEwpEv AaAsLp Rd, EvEs AhAeRd AeTd, and CoEv RdTITp) and 0.005 ha of Cleared* areas (Biologic, 2023). The vegetation types within the Native Vegetation Clearing Area are shown in Figure 2.

*Whilst sections of vegetation to be cleared has been mapped as 'cleared', the entire 0.024 ha extent of the Native Vegetation Clearing Area is considered to be native vegetation for the purpose of this CDR, since the area comprises the canopies of isolated mature trees and the radius of stumps, within otherwise cleared areas. Where a tree canopy has been mapped to comprise multiple vegetation units (e.g. SLK 30.77 intersects half mapped native vegetation 'CoEwpEv AaAsLp Rd' and half 'Cleared' area), a conservative approach has been undertaken, and the entire tree canopy is considered to comprise the dominant vegetation type.

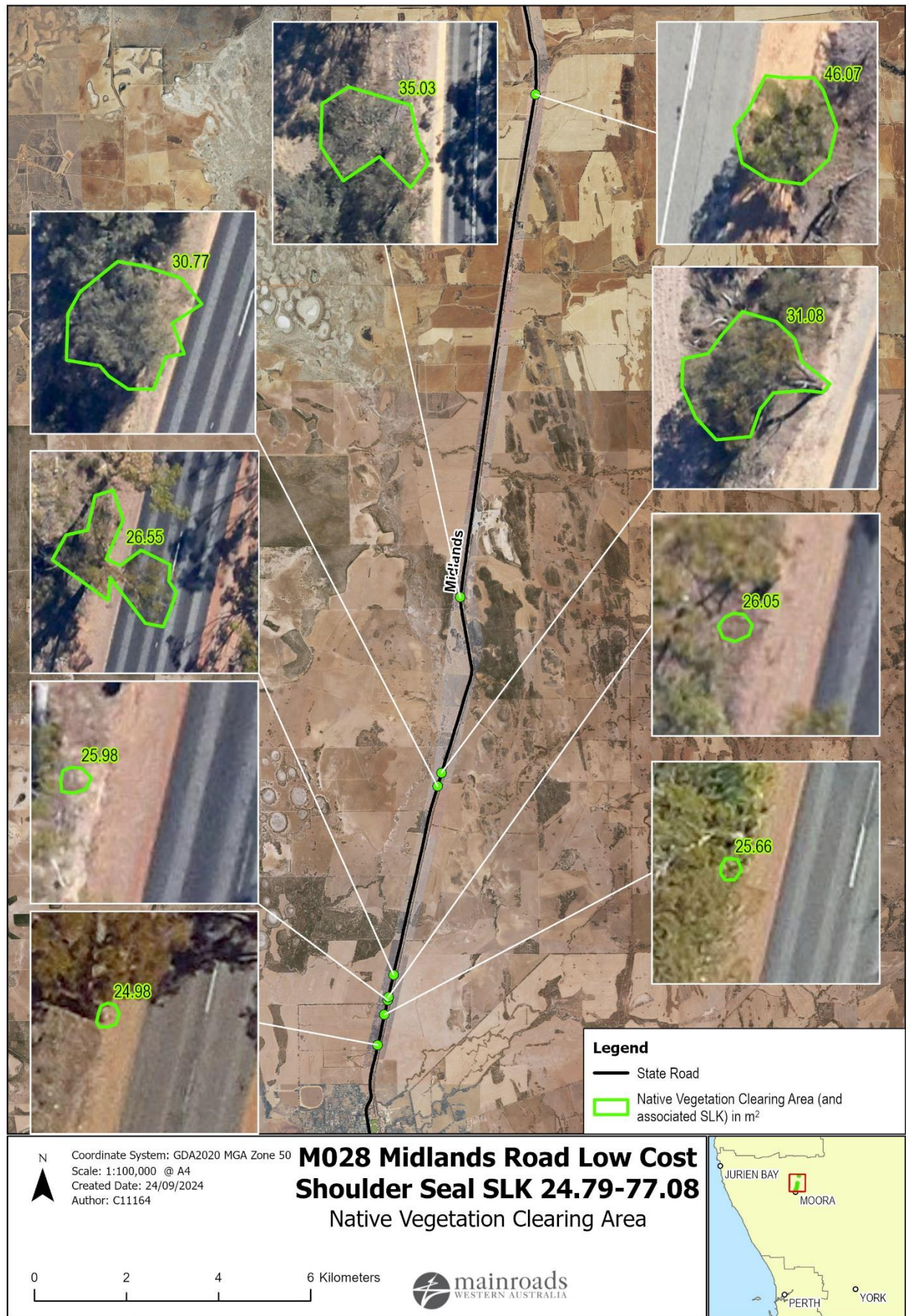


Figure 1. Native Vegetation Clearing Area

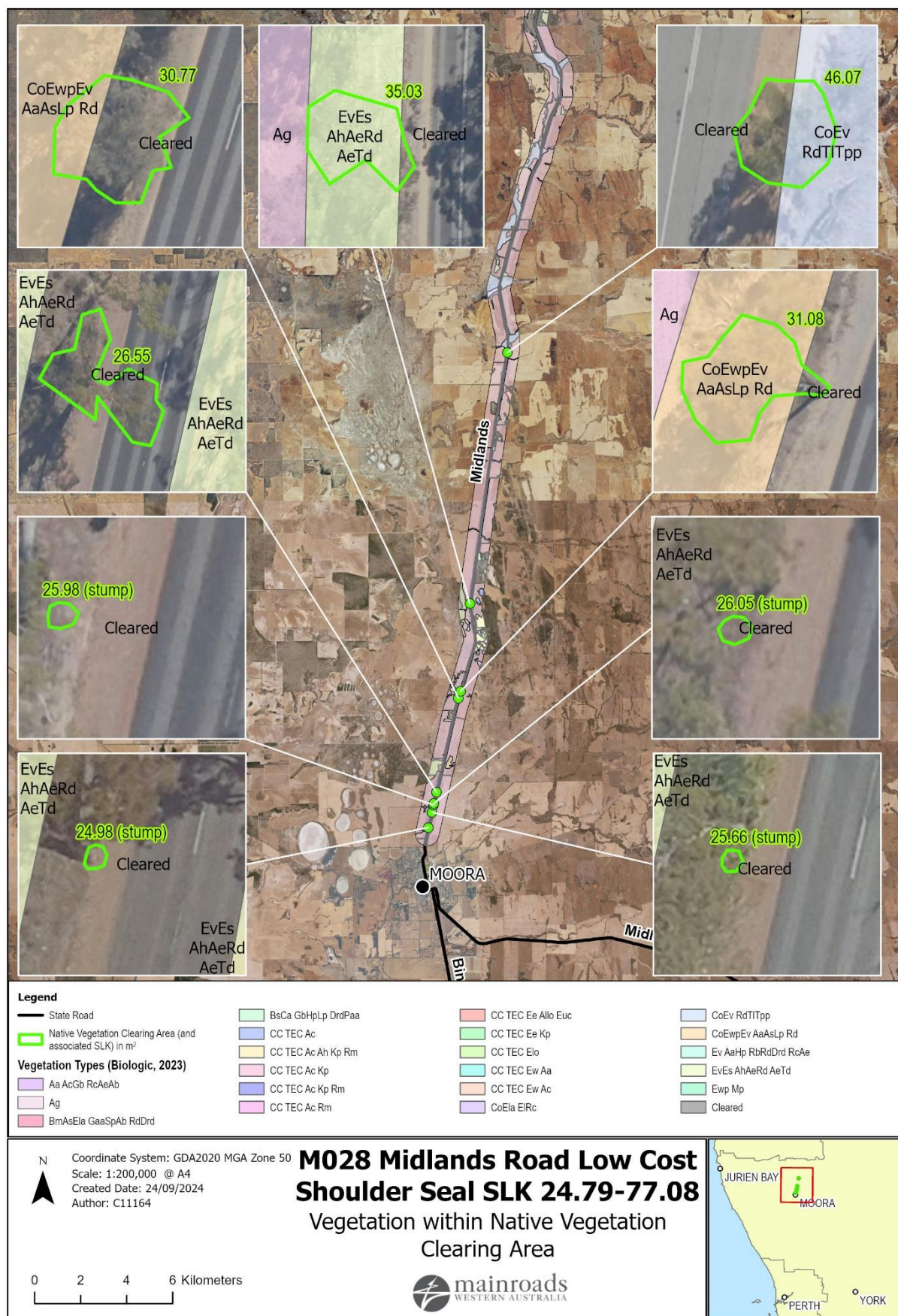


Figure 2. Vegetation within Native Vegetation Clearing Area (Biologic, 2023)

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 the Proposal, 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

Design or Management Measure	Discussion and Justification
Alignment to one side of existing road	The Proposal involves sealing the road by 1 m either side of the current road centreline. Deviation from the current centreline would likely require additional clearing and earthworks to deliver a road formation to the equivalent standard of the proposed formation and will require the clearing of more trees adjacent to the maintenance zone. Widening of the road symmetrically on the current road centreline is therefore deemed to be the minimal amount of clearing required for the works to proceed and maintain improved road user safety.
Alternative alignment located within pasture or degraded areas	Initially 33 trees were identified within 6 m of the centreline of the road and proposed to be cleared. A site inspection by Main Roads Environment Officers (EO's) reduced the number of trees to be cleared to nine and avoided clearing as many mature trees as possible. The remainder of the trees (24) will be retained, of which eight trees will have a separate Safety Assessment undertaken post-construction. Areas proposed to be cleared are mainly in a Completely Degraded to Degraded condition, and within the existing maintenance zone of the road reserve.
Simplification of design to reduce number of lanes and/or complexity of intersections	Due to the traffic counts, design speed and number of heavy vehicles, the scope of works for the shoulder sealing and culvert extensions cannot be further simplified whilst retaining the necessary safety benefits. However, clearing has been reduced wherever possible and will only occur within the maintenance zone of the road reserve.
Use of existing cleared areas for access tracks, construction storage and stockpiling	There are minimal areas of existing cleared or disturbed land available for use due to the nature of the proposal location. Where existing cleared areas are present these have been used and included in the design. No temporary clearing is required to undertake the works outlined in the Proposal.

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
- Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community (TSSC, 2016)
- Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt (DoE, 2015)
- *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo*. Canberra, Australian Capital Territory (DAWE, 2022).

The Proposal is predominantly located within the Main Roads' road reserve and/or land zoned for rail, and intersects Crown land at two occurrences. Main Roads Lands and Property team will be advised of the requirements for a land take and further discussions will be had prior to commencing works. A Development Application is not required.

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 Desktop Report (CDR).

The CDR 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 (0.024 ha).
- **Survey Area** – A 156 ha area covered by Biologic (2023) Biological Survey, which covers the Native Vegetation Clearing Area (Figure 3).
- **Contextual Area** – A 5,297 ha area extrapolated by Biologic (2023) based on the survey of the Survey Area, aerial imagery, and desktop assessment (Figure 3).

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 8.

2.3 Surveys and Assessments

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

- Biologic (2023) M028 Midlands Road Low-Cost Widening (SLK 24.79 – 77.08) Biologic Survey; and
- An inspection by Main Roads Environmental Officers on 12 April 2024.

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 3.1.

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

Consultant & Survey Name	Survey Details
Biologic (2023) M028 Midlands Road Low-Cost Widening (SLK 24.79 – 77.08): Biological Survey	Survey Area: Survey Area comprised approximately 156 ha adjacent to Midland Road 2 km north of Moora (SLK 24.79 to 77.08). Type: Desktop assessment, Detailed Flora and Vegetation Survey, Basic Vertebrate Fauna Survey, and Black Cockatoo Habitat Assessment. The survey identified and mapped the dominant vegetation units, assessed vegetation condition and completed opportunistic searches for conservation significant ecological communities and flora and fauna taxa. Timing: A single-season detailed flora and vegetation survey (including targeted searches for flora and ecological communities) was undertaken from the 5–10 of October 2022. A basic vertebrate fauna survey and a targeted Black Cockatoo habitat assessment was undertaken from the 7th to 11th of November 2022. Survey Results Shapefile TRIM Ref: D23#411443 Document TRIM Ref: D23#403865

3 SURVEY RESULTS

3.1 Summary of Biological Surveys

A biological survey was undertaken in 2022 and 2023 by Biologic (2023) along the road reserve of Midlands Road from SLK 24.79 to 77.08, approximately 2 km north of Moora, and included: a single-season detailed flora and vegetation survey, targeted flora survey, basic fauna survey and a Black Cockatoo habitat assessment.

The Survey Area (the Biologic (2023) survey extent) covered 15 m either side of Midlands Road centreline between SLK 24.79 and SLK 77.08, spanning 156 ha. An additional 500 m either side was extrapolated (the Contextual Area) spanning 5,297 ha (Figure 3).

Vegetation

Fifteen naturally occurring native vegetation types were identified and mapped within the Biologic (2023) Survey Area, representing 73.31 ha of native vegetation (as defined in the *Environmental Protection Act 1986* (EP Act)). These were:

- Aa AcGb RcAeAb - *Acacia acuminata* low open woodland over *Allocasuarina campestris*, *Grevillea bitermata* tall shrubland over *Rytidosperma caespitosum*, *Austrostipa elegantissima*, **Avena barbata* tussock grassland (2.06 ha);
- Ac LpCssMc ScBsCs - *Allocasuarina campestris* tall open shrubland over *Lepidobolus preissianus*, *Conospermum stoechadis* subsp. *stoechadis*, *Melaleuca calyptroides* mid shrubland over *Schoenus clandestinus*, *Borya sphaerocephala*, *Calytrix strigosa* low sparse shrubland/sedgeland (0.63 ha);
- AdAc McVbBff AcSaSb - *Allocasuarina drummondiana*, *A. campestris* tall shrubland over *Melaleuca cordata*, *Verticordia brachypoda*, *Banksia fraseri* subsp. *fraseri* low open shrubland over *Amphipogon caricinus*, *Schoenus armeria*, *S. brevisetis* low open grassland/sedgeland (0.30 ha);
- BmAsEla GaaSpAb Rd - *Banksia menziesii*, *Acacia saligna*, *Eucalyptus leptopoda* subsp. *arctata* low woodland over *Grevillea amplexans* subsp. *amplexans*, *Scholtzia parviflora*,

- Acacia blakelyi* mid open shrubland over *Rhagodia drummondii* low open shrubland (0.23 ha);
- BsCa GbHpLp DrdPaa - *Banksia sessilis*, *Callitris arenaria* tall shrubland over *Grevillea bitermata*, *Hakea psilorrhyncha*, *Leptomeria preissiana* mid/tall open shrubland over *Dianella revoluta* var. *divaricata* tall sparse herbs and *Podolepis aristata* subsp. *aristata* mid herbland (4.60 ha);
 - CoEla ElRc - *Casuarina obesa*, mid woodland with *Eucalyptus leptopoda*, subsp. *arctata*, low isolated mallees or *Acacia saligna* tall isolated shrubs over *Enchylaena lanata* or *E. tomentosa* low shrubland, over *Rytidosperma caespitosum* open tussock grassland (2.32 ha);
 - CoEv RdTITpp - *Casuarina obesa*, and frequently *Eucalyptus virella* mid open woodland over *Rhagodia drummondii*, *Tecticornia lepidosperma*, *T. pergranulata* subsp. *pergranulata* low shrubland (4.06 ha);
 - CoEwpEv AaAsLp Rd - *Casuarina obesa* mid woodland with *Eucalyptus ?wandoo* subsp. *pulverea* and/ or *E. virella* isolated trees over *Acacia acuminata*, *A. saligna*, *Leptomeria preissiana* tall open shrubland over *Rhagodia drummondii* low shrubland and *Rytidosperma caespitosum* tussock grassland (6.86 ha);
 - Ee AcSaHi NaTpDh - *Eucalyptus eudesmioides* low sparse mallee woodland over *Allocasuarina campestris*, *Santalum acuminatum* and *Hakea invaginata* mid shrubland over *Neurachne alopecuroidea*, *Trachymene pilosa* and *Dioscorea hastifolia* low sparse grassland/forbland (3.13 ha);
 - Ev AaHp RbRdDrb RcAe - *Eucalyptus virella* low open woodland over *Acacia acuminata*, *Hakea psilorrhyncha* mid-tall sparse shrubland over *Rhagodia baccata*, *R. drummondii*, *Dianella revoluta* subsp. *divaricata* low sparse shrubland over *Rytidosperma caespitosum*, *Austrostipa elegantissima* low open tussock grasses (4.32 ha);
 - EvEs AhAeRd AeTd - *Eucalyptus virella*, *E. salmonophloia* low open woodland over *Acacia hemiteles*, *A. erinacea*, *Rhagodia drummondii* low-mid sparse shrubs over *Austrostipa elegantissima*, *Triodia danthonioides* sparse tussock grassland (40.22 ha);
 - Ewp Mp - *Eucalyptus wandoo* subsp. *pulverea* isolated trees over *Mesomelaena preissii* low sedgeland (2.40 ha);
 - EwpEv GbHpDi DrdRdEl AeRcTd CcEcWn - *Eucalyptus ?wandoo* subsp. *pulverea*, *E. virella* low open woodland over *Grevillea bitermata*, *Hakea psilorrhyncha*, *Dodonaea inaequifolia* mid-tall sparse shrubland over *Dianella revoluta* var. *divaricata*, *Rhagodia drummondii*, *Enchylaena lanata* low open shrubland over *Austrostipa elegantissima*, *Rytidosperma caespitosa*, *Triodia danthonioides* sparse tussock grassland over *Waitzia nitida*, *Erodium cygnorum*, *Calandrinia calytrata* sparse forbland (5.62 ha);
 - TITppFp SmCcMn - *Tecticornia lepidosperma*, *T. pergranulata* subsp. *pergranulata* low samphire shrubland with low saline-tolerant shrubs such as *Frankenia pauciflora* and forbs such as *Spergularia marina*, **Cotula coronopifolia*, **Mesembryanthemum nodiflorum* (0.02 ha); and
 - Xa CaAc PpCs LpSc - *Xylomelum angustifolium* low open woodland over *Callitris arenaria*, *Allocasuarina campestris* tall shrubland over *Pileanthus peduncularis*, *Calytrix strigosa* low sparse shrubland and *Lepidobolus preissianus*, *Schoenus clandestinus* low-mid sedgeland (2.08 ha).

The remaining portions of the Survey Area were mapped as Agricultural (land cleared for agricultural purposes including stock grazing and cropping; 9.24 ha) and Cleared (land cleared for roads, tracks and infrastructure; 73.85 ha).

Broadscale mapping by Biologic (2023) identified 0.019 ha of native vegetation units (CoEwpEv AaAsLp Rd, EvEs AhAeRd AeTd, and CoEv RdTITp) and 0.005 ha of Cleared area within the Native

Vegetation Clearing Area (the subject of this CDR) (Figure 2). However, the entire 0.024 ha of the Native Vegetation Clearing Area is considered to be native vegetation for the purpose of this CDR, since the area comprises the canopies of isolated mature trees and the radius of stumps, within otherwise cleared areas. Where a tree canopy has been mapped to comprise multiple vegetation units (e.g. SLK 30.77 intersects half mapped native vegetation 'CoEwpEv AaAsLp Rd' and half 'Cleared' area), a conservative approach has been applied, and thus the entire tree canopy is considered to comprise the dominant vegetation type.

The vegetation condition within the Survey Area ranged from Excellent to Completely Degraded. Previous disturbances such as tracks, weeds, edge-effects and rubbish dumping have reduced the vegetation condition in some areas. Historical clearing for roads and farming have influenced the structure and composition of the remaining native vegetation in the road reserves.

The Condition rating of the 0.024 ha within the Native Vegetation Clearing Area (Figure 4) comprises:

- Good Condition (0.003 ha);
- Degraded Condition (0.017 ha); and
- Completely Degraded Condition (0.007 ha).

Areas of vegetation within the Survey Area that were considered to potentially align with significant ecological communities (TECs and PECs) were assessed in the field against the key diagnostic characteristics and condition thresholds for the relevant community (Biologic, 2023). The Biologic (2023) survey identified two TECs/PECs within the Survey Area, including:

- Eucalypt woodlands of the Western Australian Wheatbelt – listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Priority 3 with DBCA [henceforth referred to as the Wheatbelt Woodlands TEC]; and
- Banksia Woodlands of the Swan Coastal Plain ecological community (Endangered under the EPBC Act and Priority 3 with DBCA; henceforth referred to as the Banksia Woodlands TEC).

Biologic (2023) recorded sixteen patches of woodland within and adjacent to the Survey Area as likely to meet the criteria for recognition as the Wheatbelt Woodlands TEC, of which patch size was comprehensively assessed on-ground. Note that the Biologic (2023) report did not provide the patch assessment or mapping for Wheatbelt Woodlands TEC.

Small patches of Banksia woodlands vegetation that may potentially align with the Banksia Woodlands of the Swan Coastal Plain ecological community (Endangered under the EPBC Act and Priority 3 with DBCA; henceforth referred to as the Banksia Woodlands TEC) were identified within the Survey Area in appropriately well drained, low nutrient soils on sandplain landforms, with species of Banksia present that correspond to those accepted for recognition as part of the Banksia Woodlands TEC (Biologic, 2023). These areas were assessed against the key diagnostic characteristics for Banksia Woodlands TEC, but no statistical floristic analyses were performed. Correspondence from Biologic (10/09/2024) confirmed the occurrence of Banksia vegetation in the is located within in the Leseur Sandplains subregion, and therefore, the occurrence of Banksia woodlands in the Survey Area and Context Area cannot be considered to represent Banksia Woodlands TEC.

The Native Vegetation Clearing Area does not intersect or occur adjacent to any mapped occurrences of significant vegetation (Figure 5Figure 4) (Biologic, 2023). Based on the Biologic (2023) survey, aerial and google street review, and the site inspection, it can be concluded that actual representations of Wheatbelt Woodlands TEC and Coomberdale Chert TEC do not occur within the Native Vegetation Clearing Area.

Flora

Up to 306 vascular flora taxa (including subspecies and varieties) representing 64 families and 172 genera were recorded from the Biologic (2023) Survey Area. This total comprised 242 native species and 51 introduced (exotic) species, including planted species.

Two Threatened and three Priority-listed flora taxa were recorded within the Biologic (2023) Survey Area. These species included:

- *Acacia cochlocarpa* subsp. *Cochlocarpa* (Critically Endangered under BC Act, Endangered under EPBC Act)
- *Gastrolobium hamulosum* (Critically Endangered under BC Act, Endangered under EPBC Act)
- *Beyeria gardneri* (P3)
- *Grevillea thyrsoides* subsp. *pustulata* (P3)
- *Melaleuca sclerophylla* (P3).

An additional Department of Biodiversity, Conservation and Attractions (DBCA) Priority 4 listed taxon, *Calothamnus accedens*, was observed at a known location in the context area (Biologic, 2023). However, it was not formally recorded as it was an existing location. No individuals of *Calothamnus accedens* were located in the Biologic (2023) Survey Area itself.

Following the field survey, a post-likelihood of occurrence assessment for all significant flora taxa identified in the desktop assessment was undertaken by Biologic (2023) for the wider Survey Area. The assessment concluded: five flora taxa are confirmed to occur, one flora taxa is considered likely to occur, two flora taxa are considered possible to occur, 18 flora taxa are considered unlikely to occur, and two flora taxa are considered highly unlikely to occur. Flora considered possible to occur or higher within the Biologic (2023) Survey Area include:

- *Acacia cochlocarpa* subsp. *cochlocarpa* (T) – confirmed;
- *Gastrolobium hamulosum* (T) – confirmed;
- *Beyeria gardneri* (P3) – confirmed;
- *Grevillea thyrsoides* subsp. *pustulata* (P3) – confirmed;
- *Melaleuca sclerophylla* (P3) – confirmed;
- *Calothamnus accedens* (P4) – likely;
- *Diuris recurve* (P4) – possible; and
- *Grevillea christineae* (T) – possible.

Of the above listed species, none were recorded within or adjacent to the Native Vegetation Clearing Area.

Of the fifty-one introduced flora taxa recorded within the Survey Area, none are listed as Weeds of National Significance (WoNS) or Declared Plants (DP) under the BAM Act 2007, or on DBCA's priority list for the Avon Wheatbelt Region. The relatively high diversity of weed taxa is expected in vegetation occurring on road verge adjacent to a major road and agricultural land.

Fauna

Forty-three vertebrate fauna species, including, 35 birds, five mammals and three reptiles were recorded within the Survey Area. Biologic (2023) recorded one significant fauna species within the Survey Area: Carnaby's Cockatoo (*Zanda latirostris*) (EPBC Act & BC Act listed Endangered).

Following the field survey, a post-likelihood of occurrence assessment for all significant fauna taxa identified in the desktop assessment was undertaken by Biologic (2023) for the wider Survey Area. The assessment concluded: one fauna taxa is confirmed to occur, four fauna taxa are considered possible to occur, and 27 fauna taxa are considered unlikely or highly unlikely to occur. Fauna considered possible to occur or higher within the Biologic (2023) Survey Area include:

- Carnaby's Cockatoo (*Zanda latirostris*) (T) – confirmed;
- Malleefowl (*Leipoa ocellata*) (T) – possible;
- Chuditch (*Dasyurus geoffroii*) (T) – possible;
- Western brush wallaby (*Notamacropus irma*) (P4) – possible; and
- Peregrine Falcon (*Falco peregrinus*) (OS) – possible.

Further assessment of likelihood of occurrence of the above species within the Native Vegetation Clearing Area has been presented Section 5(a) (Principle (b)).

Excluding cleared areas, the Survey Area contains the following fauna habitat types based on the predominant landforms, soil and vegetation structure of the area:

- Mixed Wandoo Woodland - Tall, open woodland habitat with a canopy dominated by wandoo and salmon gum over mid and understory of Acacia (*A. acuminata*, *A. microbotrya*) and Hakea (*H. psilorrhyncha*) shrubland and open grassy expanses. The habitat type includes a mix of young and mature trees with both small and large hollows occurring regularly. Mixed Wandoo Woodland:
 - Corresponds with vegetation types: EvEs AhAeRd AeTd, Ewp Mp, and EwpEv GbHpDi DrdRdEl AeRcTd CcEcWn;
 - Represents critical foraging, night roosting and breeding habitat for Carnaby's Cockatoo; may provide supporting habitat for Chuditch, Peregrine Falcon and Western Brush Wallaby; and
 - Occupies 45.63 ha of the Survey Area.
- Sheoak Woodland - A low, closed woodland of *Allocasuarina campestris* and *Casuarina obesa* over native grasses. The stands of sheoak trees present are the dominant species, with only sparse eucalypts occurring irregularly throughout the habitat. The *Casuarina obesa* Sheoak Woodlands are associated with seasonally wet areas throughout the survey and context area. Sheoak Woodland:
 - Corresponds with vegetation types: Ac LpCssMc ScBsCs, AdAc McVbBff AcSaSb, CoElA ElRc, CoEv RdTITpp, CoEwpEv AaAsLp Rd;
 - Represents critical foraging and night roosting habitat for Carnaby's Cockatoo; may provide supporting habitat for Peregrine Falcon; and
 - Occupies 11.85 ha of the Survey Area.
- Mixed Mallee Woodland - A low, open woodland of mallee-formed trees including *Eucalyptus eudesmioides*, *Eucalyptus virella*, mixed with *Acacia acuminata* and *Allocasuarina campestris* over a mixed shrubland or forbland. The habitat understorey ranges from disconnected patches to dense shrubland. Mixed Mallee Woodland:
 - Corresponds with vegetation types: Ee AcSaHi NaTpDh, Ev AaHp RbRdDrb RcAe;
 - Represents critical foraging and night roosting habitat for Carnaby's Cockatoo; may provide supporting habitat for Chuditch, Malleefowl, Peregrine Falcon and Western Brush Wallaby; and

- Occupies 7.45 ha of the Survey Area.
- Banksia Woodland – This habitat comprises of a low open Banksia woodland (*B. menziesii*) or tall shrubland (*B. sessilis*) with occasional *Acacia* spp. (*A. saligna*, *A. acuminata*) and *Eucalyptus leptopoda* present. The condition of the habitat ranged from Good to Degraded. The Banksia trees present are the dominant species. Banksia Woodland:
 - Corresponds with vegetation types: BmAsEla GaaSpAb Rd, BsCa GbHpLp DrPaa;
 - Represents critical foraging habitat for Carnaby's Cockatoo; may provide supporting habitat for Chuditch, Malleefowl, Peregrine Falcon and Western Brush Wallaby; and
 - Occupies 1.01 ha of the Survey Area.
- Mixed Shrubland – An open woodland of mixed natives (*Acacia acuminata*, *Xylomelum angustifolium*, *Callitris preissii*), over mixed native and non-native grasses. Occasional mature eucalypts (York gum, wandoo) are scattered throughout. Mixed Shrubland:
 - Corresponds with vegetation types: Aa AcGb RcAeAb, Xa CaAc PpCs LpS;
 - Represents critical foraging habitat for Carnaby's Cockatoo; may provide supporting habitat for Chuditch, Malleefowl, Peregrine Falcon and Western Brush Wallaby; and
 - Occupies 4.13 ha of the Survey Area.
- Drainage Area – This habitat comprises open *Casuarina obesa* and *Eucalyptus leptopoda* woodland over macro-drainage features and floodplains. Where water was present or most likely to pool, the habitat was typically low in vegetation cover, comprising tussock grassland and forbland. Drainage Area:
 - Corresponds with vegetation types: CoEla EIRc, CoEv RdTITpp;
 - May provide supporting foraging habitat (water resources) for Carnaby's Cockatoo; may provide supporting habitat for Chuditch, Malleefowl, Peregrine Falcon and Western Brush Wallaby; and
 - Occupies 2.34 ha of the Survey Area.

Similar to vegetation units, broadscale mapping by Biologic (2023) identified 0.019 ha of native fauna habitat units (Sheoak Woodland and Mixed Wandoo Woodland) and 0.005 ha of Cleared area within the Native Vegetation Clearing Area (Figure 6). However, the entire 0.024 ha of the Native Vegetation Clearing Area is considered to be native vegetation for the purpose of this CDR, since the area comprises the canopies of isolated mature trees and the radius of stumps, within otherwise cleared areas.

Black Cockatoo

Carnaby's Cockatoo has been recorded in the vicinity of the Biologic (2023) Survey Area on multiple occasions during previous surveys, including active nests, suitable foraging, and potential night roosting and breeding habitat trees. The Survey Area contains foraging, breeding and potential night roosting habitat for Carnaby's Cockatoo. The Survey Area is not located within the modelled distribution for Baudin's Cockatoo or Forest Red-tailed Black Cockatoo (Biologic, 2023). In total, 154.08 ha of the Survey Area (corresponding to areas mapped as Mixed Wandoo Woodland, Mixed Shrubland, Sheoak Woodland, Banksia Woodland, Drainage Area, Mixed Mallee Woodland and Pasture) was considered to be high-quality foraging habitat for Carnaby's Cockatoo. Note that Pasture has been excluded from this CDR as the fauna habitat type Pasture was classified as non-native vegetation.

Biologic (2023) recorded 1,252 potential breeding trees with a diameter at breast height (DBH) greater than 500 mm within the Survey Area. Of the 1,252 trees, 132 contained one or more hollows (or potential hollows) of various sizes, including eight hollows supporting active Carnaby's Cockatoo nests and five hollows classified as Suitable to support support Black Cockatoo nesting. At the time

of the survey, all eight hollows were being actively used by Carnaby's Cockatoo (Biologic, 2023) (those in vicinity of the Native Vegetation Clearing Area are mapped on Figure 6), and none of the natural active or previously active nests known to occur within the Survey Area from previous surveys (10) showed any sign of occupancy. Thirty-two hollows were occupied by other species and classified as Currently Unsuitable at the time of the survey (Biologic, 2023). There are no known Carnaby's Cockatoo night roosts within 12 km of the Survey Area and no extensive or regular evidence of night roosting activity was recorded within the Survey Area during the Biologic (2023) survey.

Four stumps and five trees were identified to be cleared, the canopy of which comprise the Native Vegetation Clearing Area. Of these, one *Eucalyptus wandoo* tree has a DBH greater than 500 mm, without hollows. One of the stumps to be cleared (SLK 24.98) was also an *Eucalyptus wandoo* DBH tree with a hollow, but that tree has since naturally fallen down and is now classified as a stump.

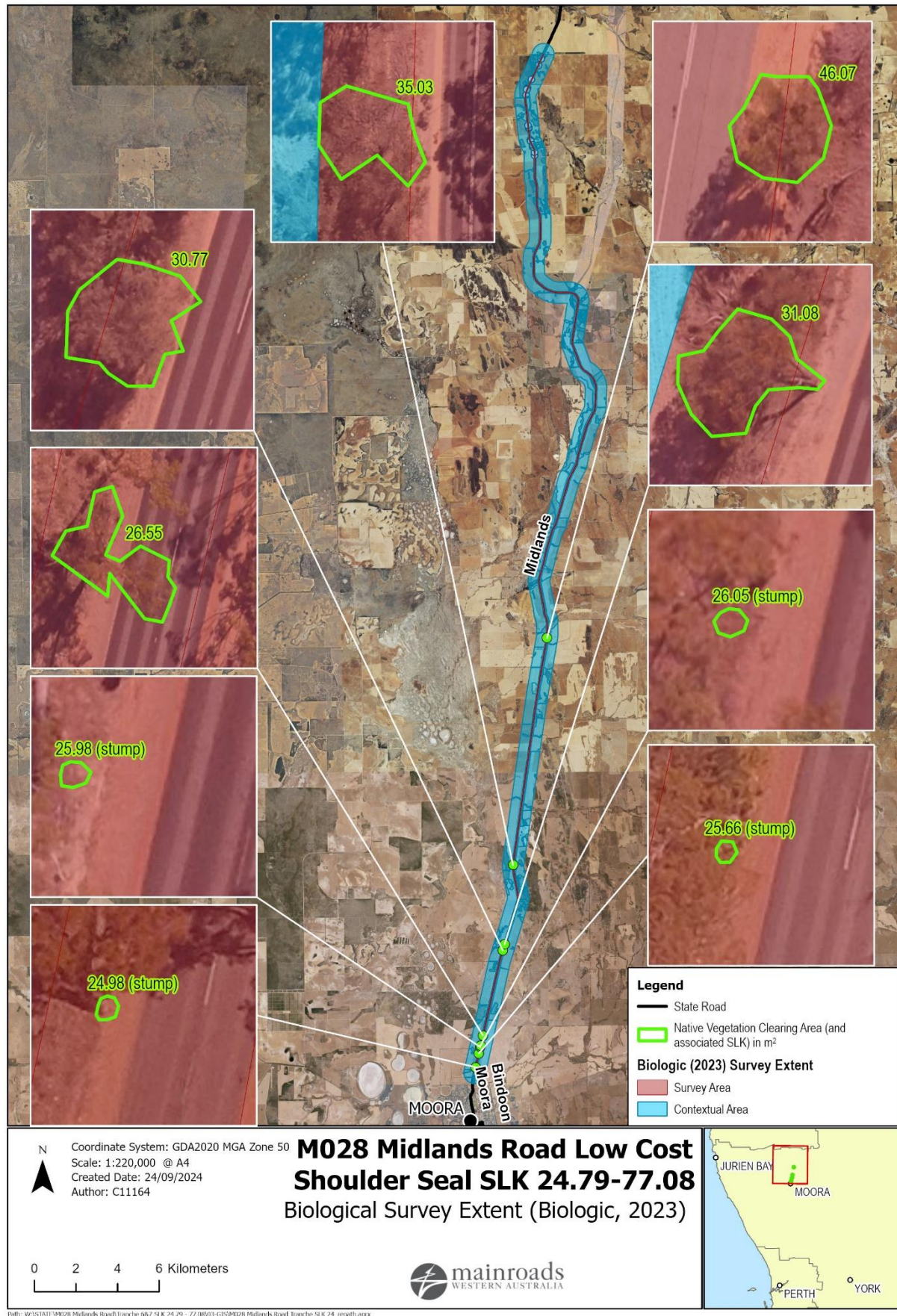


Figure 3. Biological Survey Extent (Biologic, 2023)

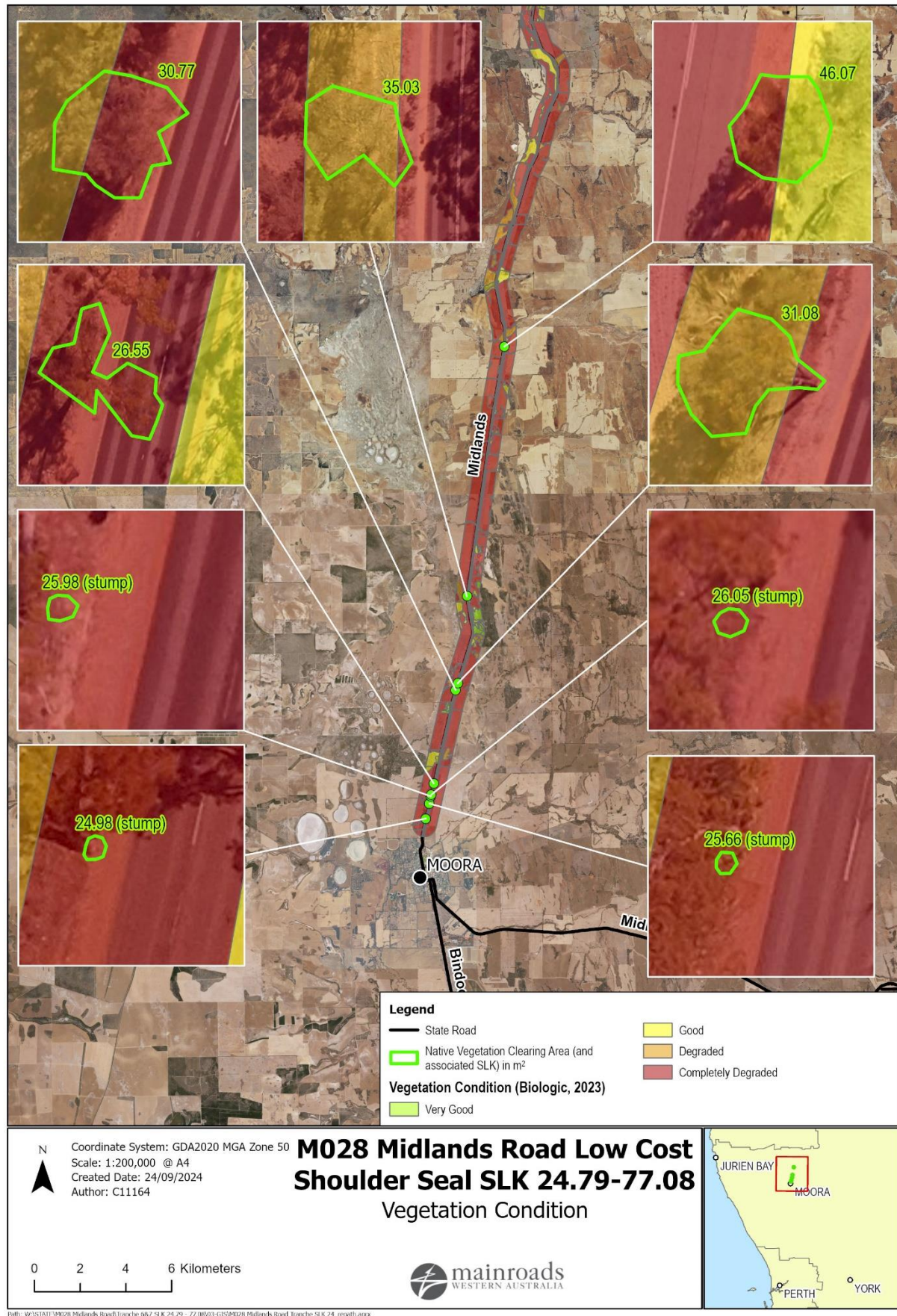


Figure 4. Vegetation Condition (Biologic, 2023)

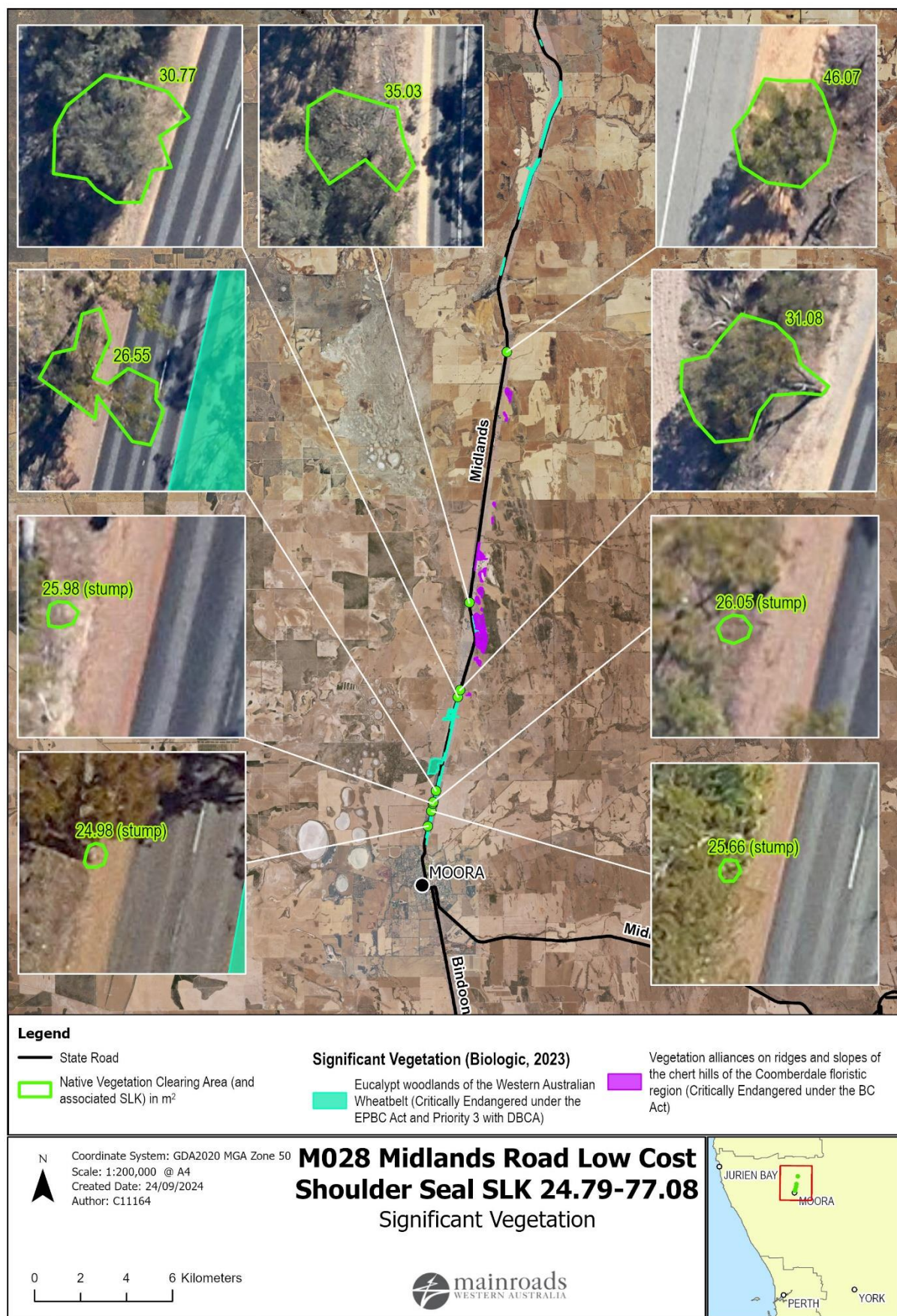


Figure 5. Significant Vegetation (Biologic, 2023)

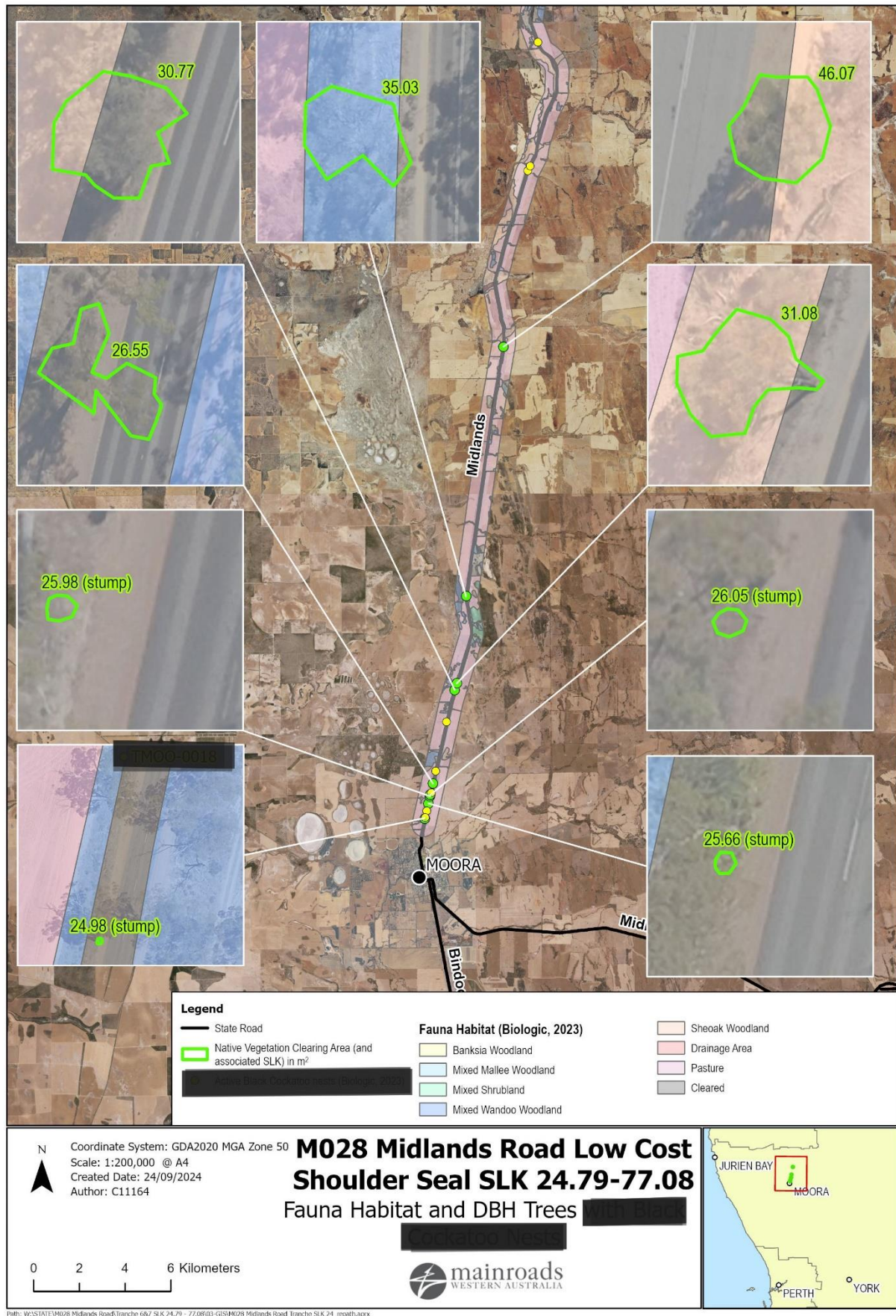


Figure 6. Fauna Habitat and Diameter Breast Height Trees with Black Cockatoo Nests (Biologic, 2023)

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

The Native Vegetation Clearing Area is located within the Southwest Australian Floristic Region, the Avon Wheatbelt bioregion and the Katanning subregion. Vegetation within the Katanning subregion is characterised by woodland of wandoo (*Eucalyptus wandoo* subsp. *wandoo*), York gum (*Eucalyptus loxophleba*) and salmon gum (*Eucalyptus salmonophloia*) with jam (*Acacia acuminata*) and *Casuarina* species (e.g., *Casuarina obesa*) (Biologic, 2023).

There is one Vegetation Association within the Native Vegetation Clearing Area (Table 3). For a full description of the existing vegetation, refer to the Biological Report found at D23#403865.

Table 3. Pre-European Vegetation Representation (Beard 1975)

Pre-European Vegetation Association	Scale	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of pre-European Extent)
Veg Assoc No. 142	Statewide WA	787,948.47	208,347.17	26.44	1.04
	IBRA Bioregion Avon Wheatbelt	637,707.53	79,309.95	12.44	0.37
	IBRA Sub-region Katanning	224,265.61	16,054.80	7.16	0.16
	Local Government Authority Shire of Moora	164,556.36	12,666.00	7.70	0.11

Three naturally occurring native vegetation types were mapped within the Native Vegetation Clearing Area (totalling 0.019 ha), summarised in Table 4, based on broadscale mapping (Biologic, 2023). The remaining 0.005 ha of the Native Vegetation Clearing Area was mapped as Cleared; however, for the purpose of this CDR the entire 0.024 ha of the Native Vegetation Clearing Area is considered to comprise native vegetation, since the area comprises the canopies of isolated mature trees and the radius of stumps, within otherwise cleared areas. Further, where a tree canopy has been mapped to comprise multiple vegetation units (e.g. SLK 30.77 intersects half mapped native vegetation 'CoEwpEv AaAsLp Rd' and half 'Cleared' area), a conservative approach has been undertaken, and the entire tree canopy is considered to comprise the dominant vegetation type.

Table 4. Summary of Vegetation Types within Native Vegetation Clearing Area

Vegetation Type	Extent within Native Vegetation Clearing Area (ha)	Total Extent Mapped (ha) within Survey Area
CoEwpEv AaAsLp Rd	0.009	6.86
EvEs AhAeRd AeTd	0.008	40.22
CoEv RdTITp	0.002	4.06

Native vegetation within the Native Vegetation Clearing Area is predominantly in Degraded to Completely Degraded condition (Figure 4Figure 5), with an evident lack of native understory and introduced weed species (see site visit photos in Appendix A). Possible disturbances impacting the

Native Vegetation Clearing Area include edge effects from the existing road, historic clearing, weed infestation, rubbish dumping and grazing. Of the mapped native vegetation types (0.019 ha) vegetation is predominantly Degraded (0.017 ha) (Table 5). The remaining 0.005 ha of the Native Vegetation Clearing Area was mapped as Cleared in Completely Degraded condition; however, for the purpose of this CDR the entire 0.024 ha of the Native Vegetation Clearing Area is considered to comprise native vegetation.

Table 5. Vegetation Type by Condition in Native Vegetation Clearing Area

Vegetation Type	Vegetation Condition	Area (ha)
CoEwpEv AaAsLp Rd	Degraded	0.009
EvEs AhAeRd AeTd	Degraded	0.008
CoEv RdTITp	Good	0.002

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 not at, or not likely to be at, variance with the ten Clearing Principles.

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

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

Assessment

Vegetation and Flora

The Proposal will impact three naturally occurring native vegetation types (CoEwpEv AaAsLp Rd, EvEs AhAeRd AeTd, and CoEv RdTITp), totalling 0.019 ha (0.009 ha, 0.008 ha and 0.002 ha, respectively), ranging in condition from Good to Degraded, as well as 0.005 ha mapped as Cleared in Completely Degraded condition (Biologic, 2023), that is considered native for the purpose of this CDR.

Vegetation within the 0.005 ha 'Cleared' area comprises four stumps and one *Eucalyptus wandoo* tree (DBH > 500 mm, without hollows). Vegetation within CoEwpEv AaAsLp Rd (0.009 ha) comprises one *Eucalyptus celastroides subsp.virella* and one *Casuarina obesa* tree; one *Eucalyptus celastroides subsp.virella* tree occurs within vegetation type EvEs AhAeRd AeTd (0.008 ha) and one *Acacia sp.?* tree occurs within CoEv RdTITp vegetation type (0.002 ha).

The majority of mapped native vegetation within the Native Vegetation Clearing Area is in Degraded condition (CoEwpEv AaAsLp Rd and EvEs AhAeRd AeTd), and as such these areas are more likely lacking in native species, consisting of trees over introduced weed or crop species, with highly modified structure and minimal species diversity.

The Native Vegetation Clearing Area is located within the Southwest Australian Floristic Region which has a very high degree of species diversity (Hopper & Gioia, 2004) and is known Australia-wide and internationally as having particularly high floristic diversity and levels of endemism (Beecham, 2001; Desmond & Chant, 2001). However, as the Native Vegetation Clearing Area is located within the road reserve of a major road, there is a relatively high diversity of weed taxa.

CoEwpEv AaAsLp Rd vegetation type most closely aligns with the broad floristic community Casuarina mid woodland, which is well represented in the contextual area (47.59 ha), and predominantly in Very Good to Good condition. Two sample sites of CoEwpEv AaAsLp Rd were recorded within the Survey Area, sample site MIDMN-002, which recorded 21 species (including 11 natives), and sample site MIDMN-006, which recorded 30 species (including 20 natives). The occurrences of CoEwpEv AaAsLp Rd within the Native Vegetation Clearing Area are in Degraded condition without an established understory of vegetation, and thus do not represent the same level of biodiversity and species richness as areas of higher quality vegetation in the surrounding area.

EvEs AhAeRd AeTd vegetation type most closely aligns with the broad floristic community Eucalyptus low open woodland, which is well represented in the Survey Area (40.22 ha) and contextual area (379.97 ha), ranging from Good to Degraded condition. Three sample sites of EvEs AhAeRd AeTd were recorded within the Survey Area, sample site MIDMN-023, which recorded 13 species (including five natives), sample site MIDR-004, which recorded 40 species (including 25 natives) and sample site MIDMN-011, which recorded 22 species (including 12 natives). The occurrences of EvEs AhAeRd AeTd within the Native Vegetation Clearing Area are in Degraded condition, without an established understory of vegetation, and thus do not represent the same level of biodiversity and species richness as areas of higher quality vegetation in the surrounding area.

CoEv RdTITp vegetation type most closely aligns with the broad floristic community Casuarina mid woodland, which is well represented in the contextual area (47.59 ha), and predominantly in Very Good to Good condition. One sample site of CoEv RdTITp was recorded within the Survey Area, sample site MIDMN-023, which recorded 20 species (including five natives). The occurrences of CoEv RdTITp within the Native Vegetation Clearing Area are in Good condition, without an established understory of vegetation, and thus do not represent the same level of biodiversity and species richness as areas of higher quality vegetation in the surrounding area.

The Biologic (2023) survey recorded 12.05 ha of Wheatbelt Woodlands TEC within the Survey Area (and 102.96 ha within the Contextual Area) and 105.18 ha of Coomberdale Chert TEC within the Contextual Area only. In addition, the Biologic (2023) survey identified 0.28 ha of Banksia woodland within the Survey Area (and 8.56 ha within the Contextual Area) that may have represented, and as such were assessed against the key diagnostic characteristics for, the Banksia Woodlands TEC. Given the occurrences of Banksia woodlands vegetation in the Survey Area occurred within the Geraldton sandplains (Leseur Sandplains subregion), the occurrence of the Banksia woodlands in the Survey Area and Context Area are not considered to constitute the Banksia Woodlands TEC.

The Native Vegetation Clearing Area does not intersect any mapped occurrences of the Wheatbelt Woodlands TEC (Figure 5). The closest occurrences of Wheatbelt Woodlands TEC occur on the other side of the road to the Native Vegetation Clearing Area (right hand side) between SLK 24.98 and 26.55. Additionally, Biologic (2023) notes there has been significant degradation to the Wheatbelt Woodlands TEC alongside Midlands Road over the years, reducing its extent (e.g., through clearing, infrastructure establishment) and condition (e.g., through invasion and establishments of weeds, exposure to biotic and abiotic disturbances and damage), exacerbated by significant edge effects and its proximity to agricultural activities and species.

Aerial and google street view review of native vegetation present within the Native Vegetation Clearing Area that intersect TEC/PEC buffer areas, consists of roadside vegetation and introduced species-dominated understory too degraded to meet the criteria for Wheatbelt Woodlands TEC. Thus, actual representations of Wheatbelt Woodlands TEC do not occur within or adjacent to the Native Vegetation Clearing Area.

A total of 306 vascular flora taxa (including subspecies and varieties) representing 64 families and 172 genera were recorded from the Biologic (2023) Survey Area. This comprised 242 native species and 51 introduced (exotic) species, including planted species. No Threatened or Priority listed flora taxa were recorded within or adjacent to the Native Vegetation Clearing Area with the closest significant flora species recorded over 23 km north of the Native Vegetation Clearing Area (Biologic, 2023).

Fauna and Fauna Habitat

The Native Vegetation Clearing Area will directly impact 0.019 ha of naturally occurring native fauna habitat (0.011 ha of Sheoak Woodland and 0.008 ha of Mixed Wandoo Woodland), ranging in condition from Good to Degraded, as well as 0.005 ha mapped as Cleared in Completely Degraded condition (Biologic, 2023), that is considered native for the purpose of this CDR.

The Sheoak Woodland covers a small portion (11.85 ha) of the remnant vegetation patches within the Survey Area, and 409.26 ha of the contextual area (Biologic, 2023). The habitat is not of critical value to significant species and does not show extensive connectivity between large patches; however, is considered high value where it occurs as a linkage through the landscape (Biologic, 2023). The mapped occurrences of Sheoak Woodland within the Native Vegetation Clearing Area are limited to one *Casuarina obesa* tree at SLK 30.77, one *Eucalyptus celastroides subsp.virella* tree at SLK 31.08 and one *Acacia sp.?* tree at SLK 46.07, and are not within or adjacent to any large patches providing habitat connectivity and linkage throughout the landscape.

The Mixed Wandoo Woodland covers a large portion (29.75 ha) of the remnant vegetation patches within the Survey Area, and 477.11 ha of the contextual area, and is well represented in Watheroo National Park and local nature reserves (Biologic, 2023). The habitat is one of the most common woodland features along habitat corridors within the Shire of Moora (Roadside Conservation Committee, 2014), and predominantly provide foraging, dispersal, and nesting habitat for both avian and arboreal fauna, via woodland tree canopy (Biologic, 2023). The mapped occurrence of Mixed Wandoo Woodland within the Native Vegetation Clearing Area, comprises one *Eucalyptus celastroides subsp.virella* tree at SLK 35.03, at the southern end of a narrow, linear strip of woodland directly adjacent to the road reserve.

Areas mapped as Cleared (0.005 ha) are noted by Biologic (2023) to be sparsely vegetated or devoid of vegetation, provide very little complexity, cover, and food resources for vertebrate fauna, and are not considered fauna habitat of value. These areas include four stumps (at SLKs 24.98, 25.66, 25.98 and 26.05) and one *Eucalyptus wandoo* tree at SLK 26.55 (DBH > 500 mm, without hollows).

Forty-three vertebrate fauna species, including, 35 birds, five mammals and three reptiles were recorded within the Survey Area. Native vegetation communities and fauna habitat within the Native Vegetation Clearing Area occur on road verge adjacent to major roads and historical landscape cleared for agriculture, and have been impacted by historical and contemporary land clearing, disturbances attributed to proximity to a major road or urban townsite, high weed covers, edge effects, and agricultural and household debris and rubbish dumping (Biologic, 2023). These are likely contributing factors to a low fauna species richness for the Survey Area.

Biologic (2023) recorded one significant fauna species within the Survey Area: Carnaby's Cockatoo (*Zanda latirostris*) (EPBC Act & BC Act listed Endangered). A post survey likelihood of occurrence assessment (Biologic, 2023) identified an additional four significant fauna taxa are 'possible' to occur within the broader Survey Area based on: species' biology, habitat requirements, the quality and availability of suitable habitat as determined during the survey, and records of the species in the locality:

- Malleefowl (*Leipoa ocellata*) (T) – possible;
- Chuditch (*Dasyurus geoffroii*) (T) – possible;
- Western brush wallaby (*Notamacropus irma*) (P4) – possible; and
- Peregrine Falcon (*Falco peregrinus*) (OS)– possible.

Further analysis of species likelihood within the Native Vegetation Clearing Area has been provided in Principle (b) below. The outcome of the further assessment which also considers: distance and observation date of species records, habitat connectivity, and availability of habitat within the locality and region; concludes that no impacts are anticipated to the above species from the proposed clearing of native vegetation.

The Proposal will result in the loss of up to 0.024 ha of naturally occurring native vegetation/fauna habitat, including isolated trees and stumps in cleared areas. At a regional level this loss is very low (less than 0.001% of naturally occurring native vegetation of the remaining extent of Vegetation Association 142 within the Shire of Moora). Furthermore, the Native Vegetation Clearing Area comprises four stumps and five isolated trees along a 21 km road reserve, surrounded by but not adjacent to, larger extents of higher quality intact vegetation.

Due to the predominantly Degraded to Completely degraded nature of the Native Vegetation Clearing Area, the lack of understory vegetation dominated by introduced species, within and adjacent to highly modified, cleared areas, the Native Vegetation Clearing Area does not comprise a high level of biological diversity.

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

Methodology

- Biological Survey (Biological, 2023)
- Protected Matters Search Tool Report (DCCEEW, 2024)
- Government GIS Shapefiles:
 - DBCA restricted Threatened and Priority Ecological Community database search (Accessed September 2024)
 - DBCA restricted Threatened and Priority flora database search (Accessed September 2024)
 - DBCA restricted Threatened and Priority fauna database search (Accessed September 2024).
- Main Roads Site Inspection (12 April 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 indigenous to Western Australia.

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

Assessment

The Proposal will impact two naturally occurring native fauna habitats (Sheoak Woodland and Mixed Wandoo Woodland), totalling 0.019 ha (0.011 ha and 0.008 ha, respectively), ranging in condition from Good to Degraded, as well as 0.005 ha mapped as Cleared in Completely Degraded condition (Biologic, 2023), that is considered native for the purpose of this CDR. The proposed Native Vegetation Clearing Area (Figure 1) comprises four stumps and five isolated trees within the maintenance zone of the road reserve, in cleared areas or areas of degraded vegetation without a native understory. Tree's have been detailed in Table 6 and Appendix A .

Table 6. Summary of Tree species within Native Vegetation Clearing Area (details)

Species	SLK	Distance from Road CL	Habitat Tree	Vegetation Association	Fauna Habitat	Condition	Area (ha)
Stump	24.98	5.4	No	Cleared	Cleared	Completely Degraded	0.0021

Stump	25.66	5.7	No	Cleared	Cleared	Completely Degraded	0.0006
Stump	25.98	5.4	No	Cleared	Cleared	Completely Degraded	0.0003
Stump	26.05	5.3	No	Cleared	Cleared	Completely Degraded	0.0002
<i>Eucalyptus Wandoo</i>	26.55	5.4	Yes	Cleared	Cleared	Completely Degraded	0.0044
<i>Casuarina obesa</i>	30.77	5.5	No	CoEwpEv AaAsLp Rd	Sheaok Woodlan d	Degraded	0.0047
<i>Eucalyptus celastroides subsp. virella</i>	31.08	5.3	No	CoEwpEv AaAsLp Rd	Sheaok Woodlan d	Degraded	0.0043
<i>Eucalyptus celastroides subsp. virella</i>	35.03	4.9	No	EvEs AhAeRd AeTd	Mixed Wandoo Woodlan d	Degraded	0.0077
<i>Acacia sp.?</i>	46.07	5.6	No	CoEv RdTITpp	Sheaok Woodlan d	Good	0.0024

Mapped occurrences of Sheoak Woodland within the Native Vegetation Clearing Area, totalling 0.011 ha, occur at SLK 30.77 (one *Casuarina obesa* tree), SLK 31.08 (one *Eucalyptus celastroides subsp. virella* tree) and SLK 46.07 (one *Acacia sp.?* tree). Sheoak Woodland is not of critical value to significant species and does not show extensive connectivity between large patches (Biologic, 2023), and where it occurs within the Native Vegetation Clearing Area, does not provide habitat connectivity or linkage throughout the landscape. This habitat represents foraging and night roosting habitat for Carnaby's Cockatoo and may provide supporting habitat for Peregrine Falcon (Biologic, 2023).

Mapped occurrences of Mixed Wandoo Woodland within the Native Vegetation Clearing Area, totalling 0.008 ha, occur at SLK 35.03 (one *Eucalyptus celastroides subsp. virella* tree), at the southern end of a narrow, linear strip of woodland directly adjacent to the road reserve. Mixed Wandoo Woodland predominantly provide foraging, dispersal, and nesting habitat for both avian and arboreal fauna, via woodland tree canopy, and represents critical foraging, night roosting and breeding habitat for Carnaby's Cockatoo, as well as potentially providing supporting habitat for the Chuditch, Peregrine Falcon and Western Brush Wallaby (Biologic, 2023).

Areas mapped as Cleared (0.005 ha) are noted by Biologic (2023) to be sparsely vegetated or devoid of vegetation, provide very little complexity, cover, and food resources for vertebrate fauna, and are not considered fauna habitat of value. These areas include four stumps (at SLKs 24.98, 25.66, 25.98 and 26.05) and one *Eucalyptus wandoo* tree at SLK 26.55 (DBH > 500 mm, without hollows).

Biologic (2023) recorded 43 vertebrate fauna species, including, 35 birds, five mammals and three reptiles within the broader Survey Area. This included direct evidence of one significant fauna species: Carnaby's Cockatoo (*Zanda latirostris*) (EPBC Act and BC Act: Endangered).

Carnaby's Cockatoo has been previously recorded in the vicinity of the Biologic (2023) Survey Area on multiple occasions including active nests, suitable foraging, and potential night roosting and breeding habitat trees. The species was recorded a total of 14 times during the Biologic

(2023) survey, comprising seven records of small flocks up to ten individuals and eight records from active nests.

A post survey likelihood of occurrence desktop assessment (Biologic 2023) determined an additional four fauna taxa are considered possible to occur within the broader Survey Area, based on species' biology, habitat requirements, the quality and availability of suitable habitat as determined during the survey, and records of the species in the locality. These species were:

- Malleefowl (*Leipoa ocellata*) (EPBC Act & BC Act listed Vulnerable);
- Chuditch (*Dasyurus geoffroii*) (EPBC Act & BC Act listed Vulnerable);
- Western brush wallaby (*Notamacropus irma*) (DBCA listed Priority 4 species); and
- Peregrine Falcon (*Falco peregrinus*) (BC Act listed Specifically Protected).

Analysis of the potential for the proposed clearing to impact the above significant species confirmed and likely to occur in the Survey Area is presented below. Further analysis has been conducted on the significant species identified in the Biologic (2023) desktop assessment, with regard to: likelihood of occurrence within the 0.024 ha Native Vegetation Clearing Area, distance to known records of the species, date of occurrence, and potential impacts to species and species habitat in the context of the larger areas of fauna habitat within close proximity.

Black Cockatoos

The Native Vegetation Clearing Area is not located within the modelled distribution for Baudin's Cockatoo or Forest Red-tailed Black Cockatoo, and have not been identified as likely or possible to occur by Biologic (2023) and have thus been excluded from this assessment. The Native Vegetation Clearing Area is located within the modelled feeding distribution for Carnaby's Cockatoo (DAWE, 2022).

Foraging

Foraging resources for Carnaby's Cockatoo species in the Wheatbelt includes heath, Banksia shrubland, Hakea sp., and agricultural crops (Saunders, 1980; Saunders et al., 2014), with York Gum and Wandoo as additional secondary foraging resources (DAWE, 2022). Whilst there was an absence of foraging evidence recorded across the Survey Area during the Biologic (2023) survey, the Banksia Woodland, Mixed Shrubland, and Sheoak Woodland fauna habitats provide some potential primary and secondary foraging resources for Carnaby's Cockatoo. Biologic (2023) mapped 154.08 ha of the Survey Area (corresponding to areas mapped as Mixed Wandoo Woodland, Mixed Shrubland, Sheoak Woodland, Banksia Woodland, Drainage Area, Mixed Mallee Woodland and Pasture) as high-quality foraging habitat for Carnaby's Cockatoo (scoring between six and 6 out of ten against the DAWE (2022) foraging quality score tool for Black Cockatoos. Biologic (2023) quantified the importance of the foraging habitat within the Survey Area as owing to the availability of foraging resources, and the significance of the connectivity between breeding resources and other foraging patches and water sources at a local scale. However, it is worth noting that the biological survey spanned 1 km in width, and the areas mapped within the Native Vegetation Clearing Area are isolated trees and stumps within degraded vegetation with a lack of native understorey, located within the road reserve. Vegetation within the transitional zone between the edge of seal and edge of the road reserve is of lower quality than adjacent vegetation, and has been further analysed below.

The Native Vegetation Clearing Area comprises five trees with a combined canopy of 0.023 ha that may provide foraging habitat for Carnaby's Cockatoo, and include: *Eucalyptus wandoo* (x1), *Eucalyptus celastroides subsp. virella* (x2), *Casuarina obesa* (x1) and *Acacia* sp. (x1) with a

combined canopy of 0.023 ha. According to Groom (2011), *Eucalyptus wandoo* provides foraging value for Carnaby's Cockatoo, as well as other species of *Eucalyptus*, *Casuarina* and *Acacia*. As *Eucalyptus wandoo* predominantly provide breeding habitat for Carnaby's Cockatoo (DAWE, 2022), and *Eucalyptus celastroides* subsp. *virella*, *Casuarina obesa* and *Acacia* sp., were not referenced by either DAWE (2022) or Groom (2011) (but other species of those genus' were), foraging value of the Native Vegetation Clearing Area is likely to be lower value than mapped by Biologic (2023). Clearing of five trees totalling 0.023 ha is unlikely to represent high quality foraging value for Black Cockatoo species, as trees:

- Are predominantly located in vegetation classified as Completely Degraded to Degraded;
- Except for one Wandoo tree, do not represent priority foraging species for Black Cockatoos;
- Predominantly comprise an understory of introduced grass species and weeds; and
- Are not underrepresented or isolated within the road reserve (1,252 potential breeding trees with 279 hollows were recorded during the Biologic (2023) field survey).

Clearing of up to 0.023 ha of recorded high quality Black Cockatoo habitat represents less than a 0.001% reduction in potential habitat for the species within a 12 km radius (based on an extent of 14,238 ha of native vegetation) (DPIRD-005; GoWA 2024).

However, several active nests are located within close proximity to the Native Vegetation Clearing Area, detailed in Table 7, marginally increasing the importance of foraging value of the Native Vegetation Clearing Area for Black Cockatoo species. This increase in importance is marginal and not significant, given the closest nests (TMOO-0018, TMOO-0779, and TMOO-071) all occur between [REDACTED] m of stumps proposed to be cleared, that are not considered to provide any foraging habitat for Black Cockatoo species. Black Cockatoo foraging habitat proposed to be cleared (*Eucalyptus wandoo* at SLK 26.55, *Casuarina obesa* at SLK 30.77, *Eucalyptus celastroides* subsp. *virella* at SLK 31.08 and SLK 35.03, and *Acacia* sp. at SLK 46.07) are greater than [REDACTED] m from the closest active Black Cockatoo nest.

Further, advice provided by Black Cockatoo Specialist Dr Peter Mawson (pers. comm 2024) based on a geospatial investigation of Black Cockatoos admitted to the Perth Zoo Veterinary Department for the period spanning 2011-2020, found a positive correlation between greater road density and percentage of remnant roadside vegetation, resulting in increased vehicle collisions with Black Cockatoos (compared to negative correlation with distance to known roosting sites, and no correlation to percentage of water bodies or traffic volume). Thus, whilst marginal clearing of foraging habitat within the Native Vegetation Clearing Area is proposed, this will not significantly decrease the availability of foraging resources in the area, and will provide a greater separation distance between the road and any bordering native foraging habitat where Black Cockatoos have been known to forage at ground level.

Table 7. Active Black Cockatoo Nests Proximity to Native Vegetation Clearing Area

Species	SLK	Closest active Black Cockatoo nest	Distance to active Black Cockatoo nest (m or km)
Stump	24.98	TMOO-0018	[REDACTED]
Stump	25.66	TMOO-0779	[REDACTED]
Stump	25.98	TMOO-0071	[REDACTED]
Stump	26.05	TMOO-0071	[REDACTED]

<i>Eucalyptus Wandoo</i>	26.55	TMOO-0071	[REDACTED]
<i>Casuarina obesa</i>	30.77	TMOO-0084	[REDACTED]
<i>Eucalyptus celastroides subsp. virella</i>	31.08	TMOO-0084	[REDACTED]
<i>Eucalyptus celastroides subsp. virella</i>	35.03	TMOO-0084	[REDACTED]
<i>Acacia sp.?</i>	46.07	TMOO-0149	[REDACTED]

Roosting

The closest recorded Black Cockatoo roosting site is located over 15 km to the west of the Native Vegetation Clearing Area (GoWA 2024). No evidence of extensive or regular Black Cockatoo night roosting activity was recorded during the Biologic (2023) survey; however, some minor clipped leaves and branches were recorded under seven of the potential breeding trees, indicating roosting may have occurred. Large communal night roosts are infrequently encountered within the Wheatbelt region; however, known breeding areas may also be considered to be night roosting habitat (Biologic, 2023).

Within the Native Vegetation Clearing Area, Mixed Wandoo Woodland (0.008 ha) and Sheoak Woodland (0.011 ha) as critical fauna habitat (and potential night roosting habitat) for Black Cockatoo species. The characteristics of the woodland habitats within the Biologic (2023) Survey Area and surrounds provide suitable areas for Carnaby's Cockatoo to utilise for night roosting, however given the extent, location and condition of the Native Vegetation Clearing Area, suitable night roosting habitat is unlikely to occur within the Native Vegetation Clearing Area. Other large areas of potential habitat surrounding the Biologic (2023) Survey Area and contextual area represent larger areas of potential roosting habitat for the species.

Breeding

The Native Vegetation Clearing Area does lie within a confirmed breeding area for Carnaby's Cockatoo and does intersect Carnaby's Cockatoo breeding sites (buffered to 2 km), in addition to the Black Cockatoo breeding sites recorded in the Biologic (2023) survey (Figure 6).

Within the Biologic (2023) Survey Area, 1,252 potential breeding trees with suitable DBH were recorded, of which 132 trees contained one or more potential hollows of various sizes (totalling 279 hollows). Of the 279 hollows recorded:

- Eight hollows were actively supporting Carnaby's Cockatoo nests;
- Five hollows were classified as Suitable to support Black Cockatoo nesting; and
- Thirty-two hollows were occupied by other species and classified as Currently Unsuitable at the time of the survey.

At the time of the survey, all eight hollows were being actively used by Carnaby's Cockatoo (Biologic, 2023), and none of the natural active or previously active nests known to occur within the Survey Area from previous surveys (10) showed any sign of occupancy.

Within the Native Vegetation Clearing Area there is one *Eucalyptus wandoo* tree with a suitable DBH for Black Cockatoo breeding, at SLK 26.55 (DBH > 500 mm, without hollows). Also within the Native Vegetation Clearing Area at SLK 24.98 is a stump that was previously a suitable DBH tree (*Eucalyptus wandoo*, with a hollow) that has since fallen down. No trees containing hollows are

located within the Native Vegetation Clearing Area, and thus no breeding habitat occurs within the Native Vegetation Clearing Area.

Chuditch

Chuditch are known to occur in a wide range of habitats from woodlands, dry sclerophyll forests of jarrah, marri, and karri, riparian vegetation, beaches and deserts (Department of Environment and Conservation [DEC], 2012). Biologic (2023) assessed the Chuditch as 'Possible' to occur within the Survey Area as an 'Infrequent visitor', as potentially suitable dispersal and foraging habitat is present within the Survey Area (in addition to marginal breeding habitat) and local records of the species occur within the region. However, no Chuditch records or evidence of the species' occurrence was recorded during the Biologic (2023) field survey, with only two DBCA records within 20 km of the Native Vegetation Clearing Area (a day sighting in 1993 approximately 5 km to the south-west, and a dead individual in 1996 approximately 5.5 km to the south-east).

The Survey Area may contain supporting foraging and dispersal habitat for the species, but it is unlikely to represent a core home-range or permanent residence for the species (Biologic, 2023). Within the Native Vegetation Clearing Area, habitat likely to support the species includes Mixed Wandoo Woodland (0.008 ha) as supporting habitat.

As there have been no records of Chuditch within 20 km of the Native Vegetation Clearing Area for the last 27 years, and records of the species are located a significant distance away from the Native Vegetation Clearing Area, the Chuditch is unlikely to occur.

Malleefowl

The preferred habitat for Malleefowl is mallee, mulga or other dense litter forming shrublands, as well as dry *Eucalypt spp.* and *Acacia spp.* dominant forests, with sandy substrate containing leaf litter for nesting mounds (Johnstone & Storr, 1998). Biologic (2023) assessed the Malleefowl as 'Possible' to occur within the Survey Area as an 'Infrequent visitor', as potentially suitable dispersal and foraging habitat is present within the Survey Area and some previous records occur in surrounding nearby nature reserves. However, Malleefowl are likely to only occur in nearby reserves that overlap the survey area in the northern extent (Gunyidi Nature Reserve, located over 26 km north of the Native Vegetation Clearing Area).

No Malleefowl records or evidence of the species' occurrence was recorded during the Biologic (2023) field survey, with the closest record over 20 km north-west of the Native Vegetation Clearing Area (two day sightings in 2010 associated with Watheroo National Park). There is no habitat connectivity between the location of their records and the Native Vegetation Clearing Area.

Despite the proximal presence of species records, it is unlikely the species would be residents within the survey area; rather, the Malleefowl may forage and/ or disperse through habitats directly connected to Gunyidi Nature Reserve in the northern extent (Biologic, 2023). Within the Native Vegetation Clearing Area, no fauna habitat likely to support the species is present. As there have been no records of Malleefowl within 20 km of the Native Vegetation Clearing Area, and the Native Vegetation Clearing Area does not contain habitat for the species, the Malleefowl is unlikely to occur.

Peregrine Falcon

Suitable habitat for the Peregrine Falcon includes cliffs, gorges, timbered watercourses, in association with rivers, wetlands, plains, open woodlands, pylons, spires and buildings (Pizzey & Knight, 2007). Biologic (2023) assessed the Malleefowl as 'Possible' to occur within the Survey Area as an 'Infrequent visitor' within the airspace above all habitats of the survey area, most likely

during foraging and/or migratory activities. However, the frequency of occurrence of the Peregrine Falcon is likely to be dependent on the proximity of nesting to the area (and no records of nesting or breeding evidence has been recorded within 20 km of the Native Vegetation Clearing Area).

No Peregrine Falcon records or evidence of the species' occurrence was recorded during the Biologic (2023) field survey, with only two DBCA records within 20 km of the Native Vegetation Clearing Area (an undefined observation in 2000 approximately 0.6 km to the east, and a day sighting in 2002 approximately 2 km to the south).

It is unlikely the species would be dependent on the habitat present within the survey area unless nesting also occurred, and the survey area would likely form part of a larger home range for a single pair of birds (Biologic, 2023). Within the Native Vegetation Clearing Area, habitat likely to support the species includes Mixed Wandoo Woodland (0.008 ha) and Sheoak Woodland (0.011 ha) as supporting habitat; however, is unlikely to form an integral part of Peregrine Falcon habitat within the area, due to absence of known nesting records.

Western brush wallaby

The Western brush wallaby inhabits a wide range of habitats including low Banksia woodlands, jarrah/ marri woodlands and moist Melaleuca lowlands, often favouring open, grassy areas (Wann & Bell, 1997; Woinarski et al., 2014). Biologic (2023) assessed the Western brush wallaby as 'Possible' to occur within the Survey Area as an 'Infrequent visitor', as potentially suitable dispersal and foraging habitat is present within the Survey Area and local records of the species occur within the region. However, the Western brush wallaby are most likely to utilise the Survey Area during dispersal events between regional reserves such as Watheroo National Park and Boonanarring Nature Reserve which are over 12 km north-west and 60 km south of the Native Vegetation Clearing Area, respectively.

No Western brush wallaby records or evidence of the species' occurrence was recorded during the Biologic (2023) field survey, with the closest record approximately 28 km to the north-west (a direct sighting in Watheroo National Park in 1979) of the Native Vegetation Clearing Area. There is no habitat connectivity between the location of these records and the Native Vegetation Clearing Area. Within the Native Vegetation Clearing Area, habitat likely to support the species includes Mixed Wandoo Woodland (0.008 ha); however, is unlikely to be part of an individual's core range.

As there have been no records of Western brush wallaby within 20 km of the Native Vegetation Clearing Area, the Western brush wallaby is unlikely to occur.

Impact to Fauna and Fauna Habitat

Given the isolated and predominantly Degraded to Completely Degraded nature of the Native Vegetation Clearing Area, the lack of understory vegetation dominated by introduced species, within and adjacent to highly modified, cleared areas, the Native Vegetation Clearing Area is not likely to act as a crucial contributing factor to any species presence at a local scale.

The proposed clearing will impact on native habitat suitable for fauna indigenous to WA. However, significant fauna species are unlikely to be solely reliant on the habitat within the Native Vegetation Clearing Area, and habitat is unlikely to act as a crucial contributing factor to any species presence at a local scale. The majority of habitat available is considered to be of Degraded to Completely Degraded value as the Native Vegetation Clearing Area is almost completely surrounded by cleared and developed areas, with lack of native understory vegetation that is dominated by introduced species. The Mixed Wandoo Woodland and Sheoak Woodland

habitat types may provide some critical habitat for Carnaby's Cockatoo and some supporting habitat for the Chuditch, Peregrine Falcon and Western brush wallaby. However, given the relatively small scale of clearing required (0.008 ha and 0.011 ha, respectively), of scattered, isolated trees and stumps, with a lack of native understory and prevalence of introduced weed species, within 6 m of the road centreline, it is considered highly unlikely that the proposed clearing will impact significant habitat for fauna indigenous to Western Australia. The absence of species in the Native Vegetation Clearing Area and availability of habitat in areas of less disturbance, locally and within the region, indicate the proposed clearing impacts are likely to be negligible at a local and regional level.

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

Methodology

- Biological Survey (Biological, 2023)
- (Dr Peter Mawson, pers. comm, 2024)
- (Johnstone & Storr, 1998)
- (Pizzey & Knight, 2007)
- (Wann & Bell, 199)
- (Woinarski et al., 2014)
- (DEC, 2012)
- Plant's used by Carnaby's Black Cockatoo. Perth, Western Australia (Groom, C., 2011)
- Protected Matters Search Tool Report (DCCEEW, 2024)
- Government GIS Shapefiles:
 - DBCA restricted Threatened and Priority fauna database search (Accessed September 2024)
 - DBCA restricted Black Cockatoo Roost Sites (Accessed September 2024)
 - DBCA Black Cockatoo Breeding Sites - Buffered (Accessed September 2024)
 - DBCA Legislated Lands and Waters & Lands of Interest (Accessed September 2024)
 - Native Vegetation Extent (Accessed September 2024).
- Main Roads Site Inspection (12 April 2024).

(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

Utilising the EPBC Act Protected Matters Search Tool (DCCEEW, 2024) and the DBCA's Threatened Flora and WA Herbarium databases, there are 177 conservation significant flora species either present or potentially present within 20 km of the Survey Area (Biologic, 2023). This included 72 taxa listed under the EPBC Act and/or Threatened under the BC Act.

Two Threatened flora taxa were recorded within the Biologic (2023) Survey Area: *Acacia cochlocarpa* subsp. *Cochlocarpa* and *Gastrolobium hamulosum*, and one additional Threatened flora taxa is considered possible to occur within the Survey Area (*Grevillea christineae*).

Eleven individuals of *Acacia cochlocarpa* subsp. *Cochlocarpa* (listed as Endangered under the EPBC Act and Critically Endangered under the BC Act) were recorded within the Biologic (2023) Survey Area across five point locations. All individuals were recorded in remnant roadside vegetation on both sides of Midlands Road, between [REDACTED], over 23 km north of the Native Vegetation Clearing Area. *Acacia cochlocarpa* subsp. *cochlocarpa* commonly occur within clayey, sandy, often gravelly soils, and were recorded within vegetation units not present within or adjacent to the

Native Vegetation Clearing Area (Ee AcSaHi NaTpDh and EwpEv GbHpDi DrdRdEI AeRcTd CcEcWn).

Four individuals of *Gastrolobium hamulosum* (listed as Endangered under the EPBC Act and Critically Endangered under the BC Act) were recorded within the Biologic (2023) Survey Area, across four point locations. All individuals were recorded in remnant roadside vegetation on both sides of Midlands Road, between SLK [REDACTED], over 23 km north of the Native Vegetation Clearing Area. *Gastrolobium hamulosum* commonly occur within sandy, often gravelly soils or clay, on flats, slopes, and ridges, and were recorded within vegetation units not present within or adjacent to the Native Vegetation Clearing Area (AdAc McVbBff AcSaSb and EwpEv GbHpDi DrdRdEI AeRcTd CcEcWn).

Grevillea christineae listed as Endangered under the EPBC Act and BC Act) commonly occur within moist clay loam, and sandy clay soils, and were historically recorded within the Survey Area (Biologic, 2023). However, despite a thorough search by Biologic (2023) for the species in a known location of good-quality habitat (remnant bushland at the intersection of Midlands Road and Eagle Hill Road; last recorded in 2004), and the species being an easily distinguishable perennial plant, no records of the species were observed.

No Threatened flora taxa were recorded within or adjacent to the Native Vegetation Clearing Area, with the closest records of both *Acacia cochlocarpa* subsp. *cochlocarpa* and *Gastrolobium hamulosum* over 23 km north of the Native Vegetation Clearing Area (Biologic, 2023).

The lack of records within the Survey Area, the soil type and the degraded and isolated nature of vegetation within the Native Vegetation Clearing Area, greatly reduces the likelihood of *Acacia cochlocarpa* subsp. *cochlocarpa*, *Gastrolobium hamulosum* and *Grevillea christineae* occurrence, and therefore, the above species are considered unlikely to occur within the Native Vegetation Clearing Area.

The proposed clearing does not include, or is not necessary to support the continued existence of Threatened flora.

The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Biological, 2023)
- Government GIS shapefiles:
 - DBCA Threatened flora database search (Accessed September 2024)
 - DBCA WA Herbarium database search (Accessed September 2024).

(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

A desktop search of the Protected Matters Search Tool and the DBCA's TEC/PEC database identified three TECs within the Survey Area (Biologic, 2023):

- Eucalypt woodlands of the Western Australian Wheatbelt – listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Priority 3 with DBCA [henceforth referred to as the Wheatbelt Woodlands TEC];
- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region – listed as Endangered under the EPBC Act and Priority 3 with DBCA [henceforth referred to as the Banksia Woodlands TEC]; and

- Vegetation alliances on ridges and slopes of the chert hills of the Coomberdale floristic region – listed as Critically Endangered under the *Biodiversity Conservation Act 2016* (BC Act) [henceforth referred to as Coomberdale Chert TEC].

The Biologic (2023) survey recorded 12.05 ha of Wheatbelt Woodlands TEC within the Survey Area (and 102.96 ha within the Contextual Area) and 105.18 ha of Coomberdale Chert TEC within the Contextual Area only, and 0.28 ha of Banksia woodland within the Survey Area (and 8.56 ha within the Contextual Area) that may have represented, and as such were assessed against the key diagnostic characteristics for, the Banksia Woodlands TEC.

The overarching physical environment criteria for consideration as Eucalypt woodlands of the Western Australian Wheatbelt Woodlands TEC were met, as the Survey Area is located:

- within the Avon Wheatbelt bioregion;
- in 300 to 600 mm average annual rainfall isohyets;
- on flat and undulating land; and
- within the intensive (agricultural) land use zone (Department of the Environment [DoE], 2015; Main Roads, 2019).

The Native Vegetation Clearing Area does not intersect any mapped occurrences of the Wheatbelt Woodlands TEC (Figure 5). The closest occurrences of Wheatbelt Woodlands TEC occur on the other side of the road to the Native Vegetation Clearing Area (right hand side) between SLK 24.98 and 26.55. Additionally, Biologic (2023) notes there has been significant degradation to the Wheatbelt Woodlands TEC alongside Midlands Road over the years, reducing its extent (e.g., through clearing, infrastructure establishment) and condition (e.g., through invasion and establishments of weeds, exposure to biotic and abiotic disturbances and damage), exacerbated by significant edge effects and its proximity to agricultural activities and species.

Aerial and google street view review of native vegetation present within the Native Vegetation Clearing Area that intersect TEC/PEC buffer areas, consists of roadside vegetation and introduced species-dominated understory too degraded to meet the criteria for Wheatbelt Woodlands TEC. Thus, actual representations of Wheatbelt Woodlands TEC do not occur within or adjacent to the Native Vegetation Clearing Area.

Whilst the Survey Area is not located within the Swan Coastal Plain bioregion, Banksia woodlands vegetation may potentially be representative of the Banksia Woodlands TEC, as the Survey Area is located:

- adjacent to the Dandaragan Plateau subregion;
- on well drained, low nutrient soils on sandplain landforms;
- comprises a low open Banksia woodland structure; and
- the species composition corresponded to those accepted for recognition as part of the TEC.

However, given the occurrences of Banksia woodlands vegetation in the Survey Area occurred within the Geraldton sandplains (Leseur Sandplains subregion), the occurrence of the Banksia woodlands in the Survey Area and Contextual Area are not considered to constitute the TEC.

The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Biological, 2023)
- Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community (TSSC, 2016)
- Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt (DoE, 2015)
- Government GIS shapefiles:

- DBCA Threatened Ecological Community database search (Accessed September 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 likely to be at variance to this Principle.

Assessment

Vegetation Association

The Native Vegetation Clearing Area is located within the Southwest Australian Floristic Region, the Avon Wheatbelt bioregion and the Katanning subregion. The vegetation within the Native Vegetation Clearing Area has been broadly mapped as Vegetation Association 142 described as Medium woodland; York gum & salmon gum. Table 3 in Section 4.1 summarises the extent of pre-European Vegetation Association 142 remaining.

The national objectives and targets for biodiversity conservation Australia have been set to prevent clearance of ecological communities with less than 30% of their pre-European extent, below which species loss appears to accelerate exponentially (Commonwealth of Australia 2001). Given that the Proposal is not within the constrained Swan Coastal Plain area, the retention objective of 30% applies (EPA, 2016).

The current extent of Vegetation Association 142 is lower than 30% for pre-European extent at all scales (Statewide, IBRA Bioregion, IBRA Subregion, LGA). However, Proposed clearing of native vegetation represents less than 0.001% of the current extent present at the LGA level, and comprises isolated, degraded trees that do not represent the composition or structure of the pre-European Vegetation Association which once existed in the area. Clearing of individual trees over a Completely Degraded understory within the road reserve will not accelerate biodiversity loss in the same manner of clearing within large patches of vegetation which retain pre-european vegetaion structure.

Ecological linkages

The area of native vegetation proposed to be cleared comprises scattered, isolated trees and stumps in degraded condition, with a lack of native understory and prevalence of introduced weed species. The closest nature reserves occur over 700 m south of the Native Vegetation Clearing Area at SLK 35.05 (DBCA managed Un-named Class A Reserve (R 47694)), and over 500 m south of the Native Vegetation Clearing Area at SLK 30.77 (Crown un-named Class C Reserve (R 15772)). The Native Vegetation Clearing Area are not within or adjacent to any large patches of vegetation connecting native vegetation remnants throughout the landscape.

The proposed clearing will not fragment or interrupt any ecological linkages connecting native vegetation remnants within the local area. Clearing will not remove the entirety of the area's remnant native vegetation, instead the clearing is limited to isolated trees and stumps within degraded and cleared areas within 6 m of the existing road.

Whilst the proposed clearing occurs in an area that has been extensively cleared at a local and regional scale, proposed clearing will not significantly reduce remnant native vegetation.

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

Methodology

- Biological Survey (Biological, 2023)
- Government GIS shapefiles:
 - Pre-European vegetation (Accessed September 2024).
- Commonwealth of Australia (2001).
- 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

The Native Vegetation Clearing Area is not within, or adjacent to, and does not intersect:

- an Internationally Important Wetland (i.e. RAMSAR);
- a Nationally Important Wetland; or
- a surface water area that is proclaimed under the RIWI Act.

No watercourses or rivers intersect or are in the vicinity of the Native Vegetation Clearing Area. The closest watercourse to the proposed clearing is the mainstream Coonderoo River, approximately 200 m to the west of the Native Vegetation Clearing Area at SLK 31.1. Vegetation proposed to be cleared for the Proposal is not representative of riparian vegetation.

The proposed clearing comprises four stumps and five isolated trees in predominantly degraded condition with a lack of native understory, within the maintenance zone of the road reserve, that is not located in, or growing in association with, a watercourse or wetland.

The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Biological, 2023)
- Government GIS shapefiles:
 - Geomorphic Wetlands (Accessed September 2024)
 - Ramsar Wetlands (Accessed September 2024)
 - Important Wetlands (Accessed September 2024)
 - Watercourses (Accessed September 2024)
 - RIWI Act Rivers (Accessed September 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 likely to be at variance to this Principle.

Assessment

The Native Vegetation Clearing Area is located within the Ranfurly Soil Landscape System, comprised of low hills (being a replaced flood plain) which has been partially rejuvenated; and a primary substrate of loamy earths and clays with minor evidence of duplexes produce from alluvium (Biologic, 2023). One soil landscape was mapped within the Native Vegetation Clearing

Area (GoWA, 2024): 256Ra_1 – Ranfurly 1 subsystem - Alluvial plain of Moore river; loamy earths, clays and minor sandy earths.

The Native Vegetation Clearing Area is mapped as having:

- a moderate to high salinity risk (i.e. 30-50% of map unit has a moderate to high salinity risk or is presently saline);
- a flood risk code H2 (i.e. >70% of map unit has a moderate to high flood risk);
- a waterlogging risk rating of H2 (i.e. >70% of map unit has a high water repellence (waterlogging) risk);
- a water erosion risk code L1 (i.e. <3% of map unit has a high to extreme water erosion risk); and
- a wind erosion risk rating of L1 (i.e. <3% of map unit has a high to extreme wind erosion risk).

A review of the Australian Soil Resource Information System (ASRIS) Acid Sulfate Soils (ASS) risk mapping indicates the Native Vegetation Clearing Area is predominantly mapped as B4 (Low Probability/Very Low confidence) ASS areas and as C4 (Extremely Low Probability/Very Low confidence) ASS areas.

The proposed clearing will temporarily expose the natural soils which may increase the risks related to erosion. Cleared vegetation is mulched and placed back into the road reserve protecting any soils temporarily exposed. The minimal amount of clearing proposed, is not likely to cause appreciable land degradation.

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

Methodology

- Biological Survey (Biological, 2023)
- Government GIS Shapefiles:
 - Acid Sulphate Soil risk mapping (Accessed September 2024)
 - Soil landscape land quality – Water Erosion Risk (Accessed September 2024)
 - Soil landscape land quality – Wind Erosion Risk (Accessed September 2024)
 - Soil landscape land quality - Salinity Risk (Accessed September 2024)
 - Soil landscape land quality – Waterlogging Risk (Accessed September 2024)
 - Soil landscape land quality – Flood Risk (DPIRD-007) (Accessed September 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 likely to be at variance to this Principle.

Assessment

The proposed clearing will not impact ecological linkages connecting native vegetation remnants, or DBCA managed lands. The closest DBCA managed reserve is the Un-named Class A Reserve (R 47694), located more than 700 m south of the Native Vegetation Clearing Area at SLK 35.05, and 1.7 km north of the Native Vegetation Clearing Area at SLK 31.08. The closest Crown Reserve land is the un-named Class C Reserve (R 15772), located more than 500 m south of the Native Vegetation Clearing Area at SLK 30.77.

Analysis of GIS shapefiles reveals that the buffer of an Environmentally Sensitive Area (ESA) overlaps the Native Vegetation Clearing Area at SLK 35.05. The ESA spans across both sides of the road, from SLK 32.1 to SLK 36.9, and has been mapped as associated with the buffer of a DBCA mapped TEC/PEC. Comparison against the restricted DBCA TEC/PEC actual boundaries dataset and

buffered boundaries (500 m buffer) dataset, reveals this ESA is likely associated with Wheatbelt Woodlands TEC or Coomberdale Chert TEC. However, the biological survey (Biologic, 2023) did not identify the Wheatbelt Woodlands TEC or Coomberdale Chert TEC (or any other significant vegetation), within or surrounding the Native Vegetation Clearing Area.

Further, the Environmental Protection (Environmentally Sensitive Areas) Notice 2005 - Reg 4 (4) states:

An area that would otherwise be an environmentally sensitive area because of this clause is not an environmentally sensitive area to the extent to which the area is within the maintenance area of a stretch of road or railway.

Therefore, as the Native Vegetation Clearing Area comprises isolated trees within 6 m of the road centerline and within the maintenance zone of the road reserve, the incidences of the mapped ESA which intersect the Native Vegetation Clearing Area are not considered to be an ESA in accordance with the above Regulation.

The proposed clearing of 0.024 ha of isolated trees in predominantly degraded condition with a lack of native understory, within the maintenance zone of the road reserve, will not directly impact any mapped ESA's or conservation reserves, nor will it fragment any nearby areas of naturally occurring native vegetation communities.

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

Methodology

- Biological Survey (Biologic, 2023)
- Government GIS Shapefiles:
 - DBCA Legislated Lands and Waters & Lands of Interest (Accessed September 2024)
 - Clearing Regulations – Environmentally Sensitive Areas (Accessed September 2024)
 - Reserves (Accessed September 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 Native Vegetation Clearing Area is not located within a surface water area that is proclaimed under the RIWI Act (GoWA, 2024). There are no RAMSAR or Nationally Important Wetlands within the Native Vegetation Clearing Area.

No watercourses or rivers intersect or are in the vicinity of the Native Vegetation Clearing Area (GoWA, 2024). The closest watercourse to the proposed clearing is the mainstream Coonderoo River, approximately 200 m to the west of the Native Vegetation Clearing Area at SLK 31.1.

The ASRIS ASS risk mapping indicates the Native Vegetation Clearing Area is predominantly mapped as B4 (Low Probability/Very Low confidence) ASS areas and as C4 (Extremely Low Probability/Very Low confidence) ASS areas.

The Native Vegetation Clearing Area is mapped as having a moderate to high salinity risk (i.e. 30-50% of map unit has a moderate to high salinity risk or is presently saline) (GoWA, 2024). In addition, the Native Vegetation Clearing Area has a high risk of subsurface acidity (i.e. 50-70% of map unit has a high subsurface acidification risk or is presently acidic (pH_{Ca} <4.5)) (GoWA, 2024).

The Native Vegetation Clearing Area intersects the Proclaimed Jurien Groundwater Area, and is located within 50 m of the Proclaimed Gingin Groundwater Area (GoWA, 2024). However, the proposed clearing of 0.024 ha is unlikely to result in deterioration to the quality of groundwater given there will not be any clearing of groundwater dependent vegetation, and the extent of native vegetation remaining beyond the Native Vegetation Clearing Area.

The Native Vegetation Clearing Area does not intersect any Public Drinking Water Source Area's (PDWSA's) or surface water catchment area's (GoWA, 2024). The Proposal is located in an area that is highly disturbed and degraded as a result of the existing agricultural activities, development and roads. The small area of clearing proposed is unlikely to cause direct or indirect deterioration in surface or groundwater quality.

Given the small area of native vegetation proposed to be cleared (0.024 ha), the distance to the nearest watercourse and the Native Vegetation Clearing Area is not located within, or in proximity of, a sensitive surface water area, the clearing is not likely to cause deterioration in surface water or groundwater quality.

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

Methodology

- Biological Survey (Biological, 2023)
- Government GIS Shapefiles:
 - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed September 2024)
 - RIWI Act, Groundwater Areas (Accessed September 2024)
 - Soil landscape land quality - Salinity Risk (Accessed September 2024)
 - Acid Sulphate Soil risk mapping (Accessed September 2024)
 - Soil landscape land quality - Subsurface Acidification Risk (Accessed September 2024)
 - Public Drinking Water Source Areas (Accessed September 2024).

(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

Based on climate data from the nearby Bureau of Meteorology (BoM) Barberton weather station (Site number: 008005) the region receives an annual average of 445.0 mm, with most of the rainfall occurring during the winter months of June, July and August (BoM, 2024).

The Native Vegetation Clearing Area intersects one soil landscape map unit (GoWA 2024): 256Ra_1 – Ranfurly 1 subsystem - Alluvial plain of Moore river; loamy earths, clays and minor sandy earths.

The majority of the Native Vegetation Clearing Area is mapped as having a high waterlogging risk (i.e. >70% of map unit has a high water repellence (waterlogging) risk) and a moderate to high flood risk (i.e. >70% of map unit has a moderate to high flood risk). Contour mapping depicts the Native Vegetation Clearing Area within a higher elevation, ranging from approximately 210 m AHD and 225 m AHD.

Due to the small amount of clearing, the distance to the nearest watercourse (200 m) and no intersection or proximity to wetlands, the proposed clearing is unlikely to cause or exacerbate the incidence or intensity of flooding.

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

Methodology

- Biological Survey (Biological, 2023)
- BoM Website (Accessed September 2024)
- Government GIS Shapefiles:
 - Soil Mapping (Accessed September 2024)
 - Contours (Accessed September 2024)
 - Soil landscape land quality - Waterlogging Risk (Accessed September 2024)
 - Soil landscape land quality - Flood Risk (Accessed September 2024).

6 REHABILITATION, REVEGETATION & OFFSETS

6.1 Revegetation and Rehabilitation

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

6.2 Offset Proposal

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

7 COMPLIANCE WITH CPS 818

The clearing associated with the Proposal is unlikely or not at variance with the Clearing Principles. Additional management actions under CPS 818 are detailed in Table 8.

Table 8. Summary of Additional Management Actions Required by CPS 818

Impact of Clearing	Yes/No or NA	Further Action Required
1. The CDR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.	No	No further action required.
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality <u>or</u> (j) the incidence of flooding.	No	No further action required.
3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality <u>and</u> (j) the incidence of flooding.	No	No further action required.
4. The Proposal involves clearing for temporary works (as defined by CPS 818).	No	No further action required.
5a. Proposal is within a Region that: - has rainfall greater than 400mm; and, - is South of the 26th parallel; and, - works are necessary in 'Other than dry conditions'; and, - works have potential for uninfested areas to be impacted.	No	Standard Vehicle and Plant management actions from Annexure 204B (TABLE 204B.9.1), <u>Hygiene Checklists (D17#859669)</u> and <u>Vehicle, Plant and Machinery Hygiene Register Template (D23#179551)</u> will be applied (<i>which include relevant sections of Condition 10</i>).
5b. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	No	No further action required.

Impact of Clearing	Yes/No or NA	Further Action Required
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.	No	No further action required.
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.	No	No further action required.
8. Did an environmental specialist conduct the survey or field assessment?	Yes	The Environmental Specialist undertaking the biological assessments was suitably qualified and had more than three years' experience.
9. Did an environmental specialist prepare the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal?	Yes	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.

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9 APPENDIX A

Trees to be removed

SLK	Description of tree and surrounding vegetation	Roadside or Culvert	Photo
SLK 24.98 (LHS)	<i>Wandoo (Eucalyptus wandoo).</i> DBH 800 mm One hollow. Degraded. 5.4 m from centreline. Has fallen over, now a stump.	Roadside	

SLK 25.66 (LHS)	Dead; stump. Completely Degraded. 5.7 m from centreline.	Roadside	M028 SINGLE Midlands Rd 0025.66 Lat/Long: -30.610823, 116.008224 Created on: 17/11/2022 9:41:02 AM 	M028 SINGLE Midlands Rd 0025.66 Lat/Long: -30.610823, 116.008224 Created on: 17/11/2022 9:41:17 AM 
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SLK 25.98 (LHS)	Dead; stump. Completely Degraded. 5.4 m from centreline.	Roadside	M028 SINGLE Midlands Rd 0025.98 Lat/Long: -30.608050, 116.008911 Created on: 17/11/2022 9:51:58 AM 	M028 SINGLE Midlands Rd 0025.98 Lat/Long: -30.608050, 116.008911 Created on: 17/11/2022 9:51:46 AM 
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SLK 26.05 (LHS)	Dead; stump. Completely Degraded. 5.3 m from centreline.	Roadside	M028 SINGLE Midlands Rd 0026.05 Lat/Long: -30.607401, 116.009110 Created on: 17/11/2022 9:55:35 AM 	M028 SINGLE Midlands Rd 0026.05 Lat/Long: -30.607401, 116.009110 Created on: 17/11/2022 9:55:25 AM 
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SLK 26.55 (LHS)	<i>Wandoo (Eucalyptus wandoo).</i> DBH 520 mm No observable hollows. Completely Degraded. 5.4 m from centreline.	Roadside	M028 SINGLE Midlands Rd 0026.55 Lat/Long: -30.603040, 116.010360 Created on: 17/11/2022 10:09:08 AM 	
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SLK 30.77 (LHS)	<i>Casurina obesa</i> . No observable hollows. Completely Degraded. 5.5 m from centreline.	Roadside	M028 SINGLE Midlands Rd 0030.77 Lat/Long: -30.566233, 116.020620 Created on: 17/11/2022 10:49:34 AM  
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SLK 31.08 (LHS)	<i>Eucalyptus celastroides</i> subsp. <i>virella</i> No observable hollows. Degraded. 5.3 m from centreline.	Roadside	M028 SINGLE Midlands Rd 0031.08 Lat/Long: -30.563527, 116.021612 Created on: 17/11/2022 10:34:12 AM 	
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SLK 35.03 (LHS)	<i>Eucalyptus celastroides subsp. Virella</i> No observable hollows. Degraded. 4.9 m from centreline.	Roadside	M028 SINGLE Midlands Rd 0035.03 Lat/Long: -30.529485, 116.026191 Created on: 17/11/2022 10:55:17 AM 	
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SLK 46.07 (RHS)	<i>Acacia</i> sp.? No observable hollows. Good. 5.6 m from centreline.	Roadside	M028 SINGLE Midlands Rd 0046.07 Lat/Long: -30.430915, 116.044089 Created on: 15/09/2022 11:21:07 AM 	M028 SINGLE Midlands Rd 0046.07 Lat/Long: -30.430915, 116.044089 Created on: 15/09/2022 11:20:45 AM 
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