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Clearing Assessment Report – CPS 818

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Brand Highway Passing Lane Extension
Brand Highway (H004) – SLK 188
Mid-West - Gascoyne
EOS 2716

D24#1000411
September 2024

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1 PROPOSAL

1.1 Purpose and Justification

Main Roads Western Australia (Main Roads) is proposing to extend the length of a southbound passing lane located between SLK 187-190 on Brand Highway (the Proposal). The extension involves up to 0.83 hectares (ha) of clearing of native vegetation between SLK 187-189 to develop the proposed lane. The existing passing lane's length is insufficient for overtaking slow vehicles on a steep slope. Extending the length of the passing lane is required to enhance freight efficiency on Brand Highway. Main Roads has determined that development of this passing lane is top priority to enhance freight efficiency on the highway.

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 will involve widening of existing road and the construction of new foundation, table drains, sub-grade, base course, bitumen seal, and audible edge lines. Culverts at SLK 187.56, 187.86, and 187.95 will be extended. Machinery will involve road graders, large excavators, loaders, trucks,

rollers, and stabiliser. The result will be a longer passing lane, permitting the overtaking of slow vehicles.

1.3 Proposal Location

The Proposal is located on Brand Highway (SLK 187-189), approximately 32 km south of Eneabba and 35 km northwest of Badgingarra, within the Shire of Coorow as shown in Figure 1. The central coordinate of the Proposal is:

- Latitude: -30.1195°
- Longitude: 115.3513°

The location and boundaries of the Proposal Development Envelope (DE) are shown in Figure 1.

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818:

Up to 0.83 ha of native vegetation is required to be cleared within a 0.89 ha DE.

Areas of Native Vegetation Clearing:

The areas of native vegetation to be cleared are shown in Figure 2, Figure 3, Figure 4 and Figure 5.

Type of Native Vegetation:

Clearing of native vegetation for the proposal comprises two vegetation types (Astron 2023):

- *Calothamnus sanguineus*, *Banksia glaucifolia* and *Petrophile shuttleworthiana* open shrubland – 0.26 ha
- *Xylomelum angustifolium* and *Nuytsia floribunda* tall open shrubland – 0.57 ha.

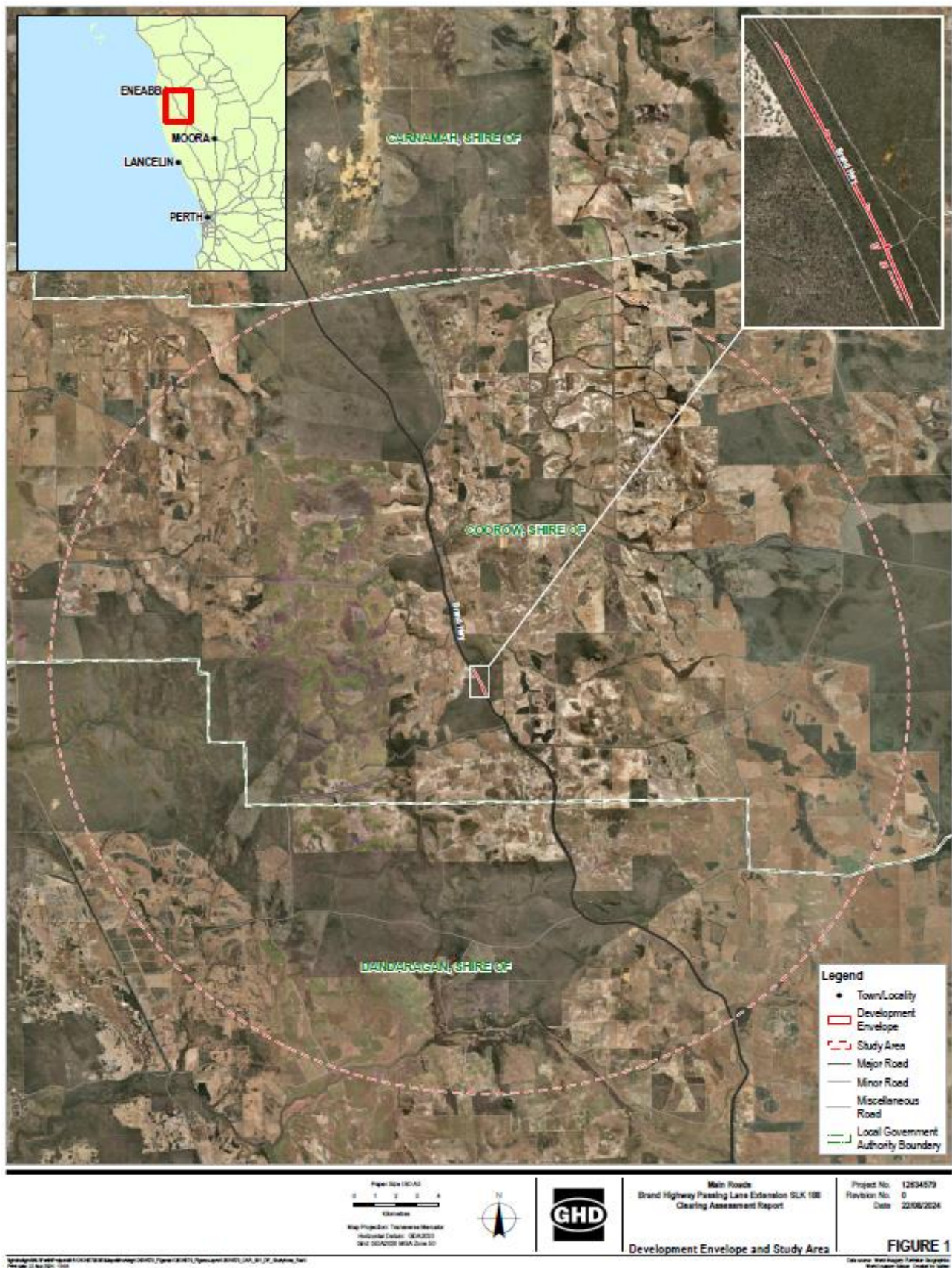
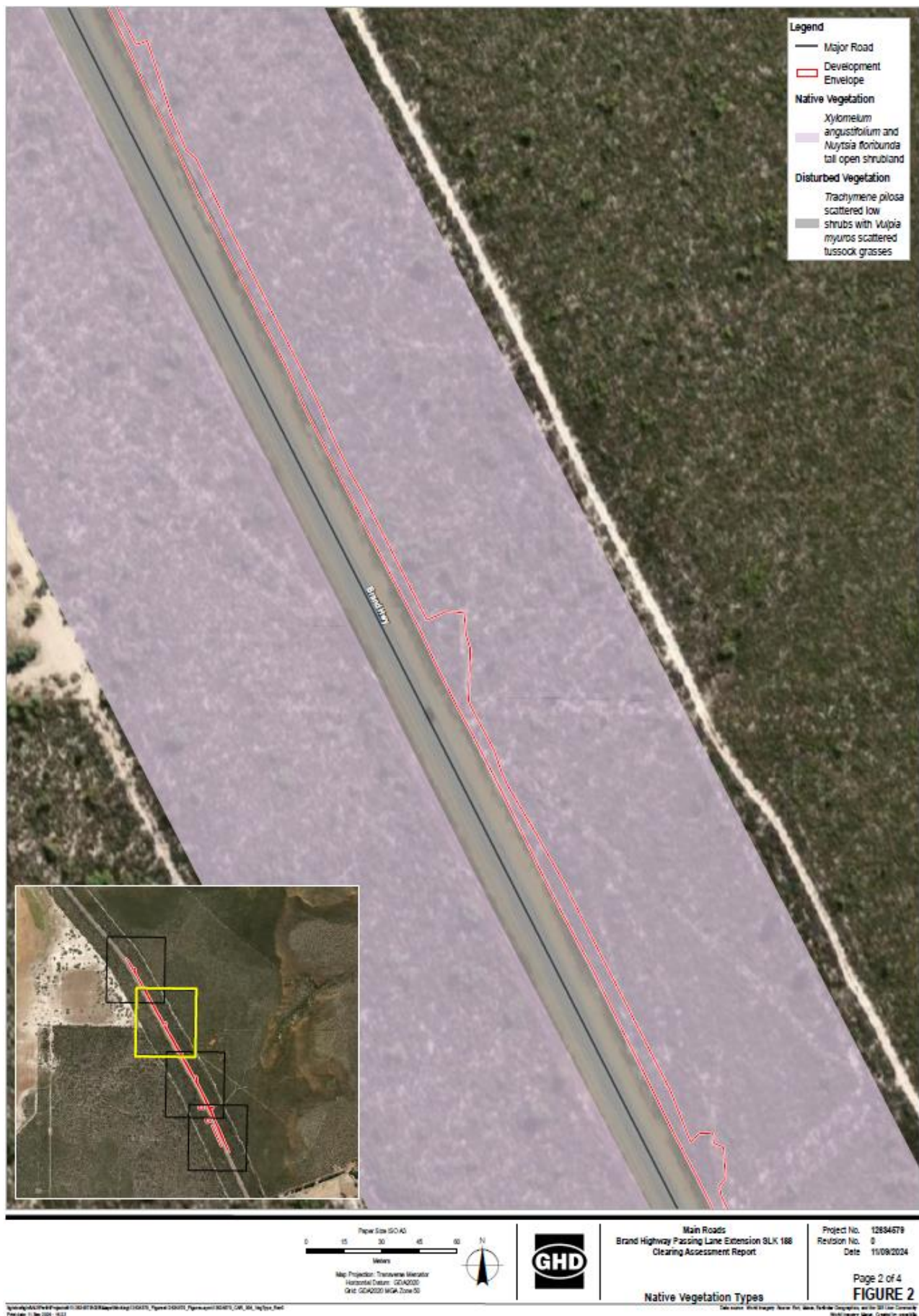


Figure 1. Development Envelope and Study Area



Figure 2. Native vegetation types



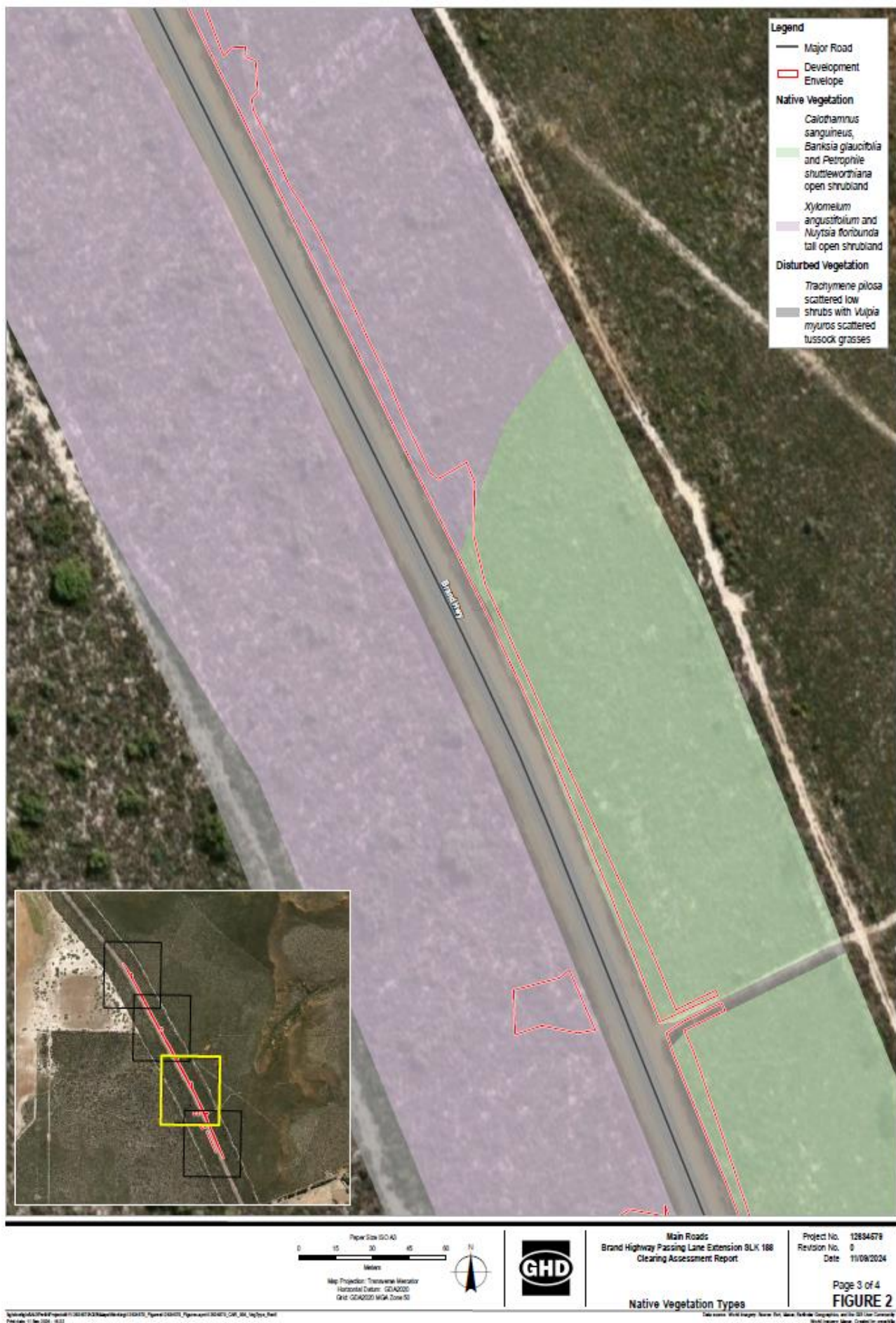


Figure 4. Native vegetation types



Figure 5. Native vegetation types

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

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

- Preferentially locating the new alignment in cleared pasture areas over the existing road reserve, however this was considered cost prohibitive e.g. due to cost of resumption of farmland and construction of completely new road rather than widening in existing alignment and premature redundancy of State road asset, lack of adequate funding, stakeholder engagement, resource requirements. Under this option, clearing would still be required for tie-ins to the existing road network.
- Upgrading other alternative routes that are less vegetated and environmentally constrained, however these are not suitable due to longer travel times, sensitive local receptors (such as residences) or other planning issues.
- Do not upgrade the road, however this will potentially result in a poorer safety outcome and may result in future fatalities or serious injuries and further degradation of the State road asset.
- Main Roads retains frangible vegetation where a clear zone is to be established for road projects. For this 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	Applied to Current Design	Discussion and Justification
Steepen batter slopes	N/A	Batter steepening is not applicable as the DE comprises flat sandplain country.
Installation of safety barriers	N/A	The installation of safety barriers is not required within the design and integration would not reduce the DE or clearing impacts.
Alignment to one side of existing road	Yes	The alignment follows the existing road, with the inclusion of an extended overtaking lane. The DE includes the existing road maintenance zone, which is completely degraded. The majority of the DE is on the northern side of the existing Brand highway.
Alternative alignment to follow existing road (or) to preferentially locate within pasture or degraded areas	No	The alignment follows the existing road, with the inclusion of an extended overtaking lane. The DE includes the existing road maintenance zone, which is completely degraded. Alternative alignment would require an increased DE and clearing area.
Installation of kerbing	N/A	The installation of kerbing is not required within the design and integration would not reduce the DE or clearing impacts as additional surface water management design aspects would need to be incorporated into the Proposal.
Simplification of design to reduce number of lanes and/or complexity of intersections	Yes	Design of the overtaking lane will be consistent with the existing design.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	Yes	Previously disturbed areas (maintenance zone) have been considered in the design and are included in the alignment. Two existing, cleared material pits (with existing pit Management Plans) on nearby Banovich Rd may be used as laydown areas to support the Proposal
Drainage modification	No	Road surface water drainage will be maintained and will be in keeping with the existing drainage.

1.7 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the *Environmental Protection Act 1986* (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.
- Referral guideline for 3 WA threatened black cockatoo species (DAWE 2022)
- Dibbler (*Parantechinus apicalis*) Recovery Plan (Friend 2004)

The DE is contained entirely within the road reserve and hence no Development Application is 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.

To comply with CPS 818, Main Roads must prepare a Clearing Assessment Report (CAR).

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

2.1 Report Terminology and Sources

The following terms are used in this Clearing Report:

- **Development Envelope (DE)** – The maximum extent within which the clearing of native vegetation will be located. This envelope is larger than the expected disturbance footprint for the works to allow for minor changes to the Proposal footprint as the design process continues, and to account for minor and unexpected changes that may occur during construction. This flexibility allows the site personnel to make modifications to the Proposal to avoid areas that may contain better environmental values. The CAR has assessed all environmental values within the Development Envelope as though all of these values will be impacted.
- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 20km radius.
- **Survey Area** – Area covered by the Biological Survey, which is larger than the Development Envelope.

2.2 Desktop Assessment

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

GIS layer viewing and mapping is done using ArcGIS Pro. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. Government managed databases were searched to locate additional information, which are found under References in Section 10.

2.3 Surveys and Assessments

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

- Biological Survey (Astron 2023)

The Biological Survey conducted for the Proposal is outlined in Table 2 and a summary of the findings in this report are presented in Section 3.1.

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

Consultant & Survey Name	Survey Details
Astron (2023) Brand Highway Passing Lane Extension SLK 186-190 Biological Survey	Survey Area: The Astron survey area comprised approximately 76.4 ha, inclusive of the DE for this Proposal. Type: • Detailed flora and vegetation survey • Basic fauna survey • Targeted flora survey Timing: Detailed flora and vegetation survey and Basic fauna survey conducted 12-17 October 2022. Targeted flora survey conducted 7-11 December 2022. Survey Results Shapefile TRIM Ref: D23#234238 Document TRIM Ref: D23#361026

3 SURVEY RESULTS

In accordance with CPS 818/16 condition 8 (e) (iii), a copy of the relevant sections of the executive summary and report conclusions from the biological survey and/or field assessments are provided in Appendix 1.

3.1 Summary of Survey

The following survey has been completed for the Proposal:

Biological Survey (Astron 2023)

Astron undertook a biological survey in October and December 2022. The 2022 survey extent covered approximately 76.4 ha, inclusive of the 0.89 ha DE for this Proposal.

Flora and vegetation

Four vegetation types were described in the survey area and comprised 63.7 ha (83.4%) of the survey area. None of these represent a Commonwealth or State listed threatened or priority ecological community. Vegetation ranged from Excellent to Good condition.

Two native vegetation types were identified within the DE (Figure 2, Figure 3, Figure 4 and Figure 5) These were:

- *Calothamnus sanguineus*, *Banksia glaucifolia* and *Petrophile shuttleworthiana* open shrubland over low open heath – 0.26 ha;
- *Xylomelum angustifolium* and *Nuytsia floribunda* tall open shrubland over low shrubland – 0.57 ha.

The remaining 0.06 ha was mapped as Disturbed: *Trachymene pilosa* scattered low shrubs with *Vulpia myuros* scattered tussock grasses. This Disturbed area was mapped as Completely Degraded and occurs primarily within the roadside maintenance zone, which is adjacent to the DE.

Vegetation within the DE (including the roadside maintenance zone) was categorised as Completely Degraded, Very Good, or Excellent condition. The majority was Excellent condition (0.62 ha, 70.1%) with almost no disturbance noted through remnant vegetation.

A total of 246 confirmed vascular flora species were recorded within the survey area. Thirty specimens were tentatively identified to species level but could not be confirmed without better material. This included one potential threatened species; *Paracaleana ?dixonii*, and three potential significant species; *Jacksonia ?anthoclada*, *Phlebocarya ?pilosissima* and *Phlebocarya ?pilosissima* subsp. *pilosissima*; as a precautionary measure these specimens have been treated as potential priority flora. Confirmed specimens of each of these species were otherwise recorded in the survey area.

Three State or Commonwealth listed threatened flora were recorded within the survey area; *Eucalyptus johnsoniana* (VU, VU), *Hakea megalosperma* (VU, VU) and *Paracaleana dixonii* (EN, VU). Twenty-one priority flora species were recorded in the survey area, including four P2, 12 P3 and five P4 taxa. Following the field surveys, one priority flora species identified by the desktop assessment was considered likely to occur but was not recorded: *Verticordia aurea* P4.

No Threatened flora taxa were recorded in the DE. Six Priority taxa were recorded within the DE:

- *Banksia nana* – P3

- *Beaufortia bicolor* – P3
- *Hensmania stoniella* – P3
- *Jacksonia anthoclada* – P3
- *Desmocladus elongatus* – P4
- *Hypolaena robusta* – P4

Eighteen additional State and Commonwealth listed significant flora were found in the Astron (2023) survey area, but not within the DE:

- *Eucalyptus johnsoniana* – EPBC Vulnerable, BC Vulnerable
- *Hakea megalosperma* – EPBC Vulnerable, BC Vulnerable
- *Paracaleana dixonii* – EPBC Endangered, BC Vulnerable
- *Catacolea enodis* – P2
- *Comesperma griffinii* – P2
- *Loxocarya gigas* – P2
- *Lyginia excelsa* – P2
- *Banksia pteridifolia* subsp. *vernal* – P3
- *Acacia cummingiana* – P3
- *Arnocrinum gracillimum* – P3
- *Haemodorum loratum* – P3
- *Hypocalymma gardneri* – P3
- *Lepidobolus quadratus* – P3
- *Persoonia filiformis* – P3
- *Phlebocarya pilosissima* subsp. *pilosissima* – P3
- *Banksia chamaephyton* – P4
- *Eucalyptus pendens* – P4
- *Grevillea rudis* – P4

A likelihood of occurrence assessment conducted post field survey concluded that one additional significant species (*Verticordia aurea* – P4) was likely to occur and 29 additional species have potential to occur in the survey area (Astron 2023):

- *Acacia wilsonii* – Threatened
- *Stylidium carnosum* subsp. *Narrow leaves* (J.A. Wege 490) – P1
- *Cyanothamnus ramosus* subsp. *leseuranus* – P2
- *Phlebocarya pilosissima* subsp. *teretifolia* – P2
- *Thelymitra pulcherrima* – P2
- *Boronia scabra* subsp. *condensata* – P2
- *Allocastrum ramosissima* – P3
- *Banksia fraseri* var. *crebra* – P3
- *Banksia nobilis* subsp. *fragrans* – P3
- *Banksia splendida* subsp. *macrocarpa* – P3
- *Centrolepis milleri* – P3
- *Daviesia pteroclada* – P3
- *Desmocladus biformis* – P3
- *Drosera prophylla* – P3
- *Grevillea florida* – P3
- *Hakea longiflora* – P3
- *Leucopogon foliosus* – P3

- *Persoonia rudis* – P3
- *Stylidium nonscadens* – P3
- *Styphelia filamentosa* – P3
- *Verticordia fragrans* – P3
- *Verticordia insignis subsp. eomagis* – P3
- *Verticordia rutilastra* – P3
- *Hakea neurophylla* – P4
- *Schoenus grifonins* – P4
- *Stylidium aeoniodes* – P4
- *Stylidium inversiflorum* – P4
- *Thelymitra apiculata* – P4
- *Xanthosia tomentosa* – P4

However, these species were not located within the survey area or the DE. The likelihood of the above mentioned significant flora occurring within the DE is further reduced by the relatively small extent (0.89ha) when compared to the extent of the survey area.

Eleven weed species were located, none of which are listed as a Weed of National Significance or as a declared pest plant in Western Australia under the *Biosecurity and Agriculture Management Act 2007*.

Fauna

Four fauna habitat types were recorded in the survey area. Two of these fauna habitat types are present in the DE:

- Laterite Rise – 0.26 ha;
- *Xylomelum* (Sandplain Woody Pear) Shrubland – 0.57 ha.

Twenty-six fauna species were opportunistically recorded during the survey, including one reptile species, 21 bird species and four mammal species (including three introduced species). Of the 52 significant fauna species identified in the desktop assessment, one significant fauna species was recorded in association with the DE, flying overhead the survey area:

- Carnaby's Cockatoo (*Zanda latirostris*) – Endangered.

Only one tree (*Eucalyptus accedens*) was recorded, to have the potential to become a breeding tree in the future, and contained no hollows considered suitable for use by Carnaby's cockatoo. This tree was the survey area but outside the DE. The survey area was not considered suitable for night roosting for the Carnaby's cockatoo due to the lack of tall trees.

The DE was assessed as high value foraging habitat for Carnaby's Cockatoo (8/10) (DAWE 2022). 0.83 ha of the DE comprises foraging habitat for the species. There were no trees within the DE that could facilitate breeding or roosting, and no evidence of these behaviours was noted.

A likelihood of occurrence assessment conducted post field survey concluded that one additional species (Black-striped Snake – BC P3) was highly likely to occur and two species (Peregrine Falcon – BC Other Specially Protected Species and Dibbler – Endangered) moderately likely (Astron 2023) within the survey area.

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

The total area of native vegetation mapped within the DE was 0.83 ha. The remaining extent of the DE (0.06 ha) was mapped as ‘Disturbed: *Trachymene pilosa* scattered low shrubs with *Vulpia myurus* scattered tussock grasses’. This area was not considered to be native vegetation (Astron 2023).

Three native vegetation types were mapped within the DE. Table 3 provides a summary of the vegetation types within the DE. The dominant native vegetation type across the DE was *Xylomelum angustifolium* and *Nuytsia floribunda* tall open shrubland over low shrubland. Native vegetation within the DE is of Very Good and Excellent condition (Astron 2023). The minimal disturbances impacting the native vegetation in the DE include edge effects from the existing road and weed infestation.

Table 3. Summary of Vegetation Types within Development Envelope

Vegetation Type	Extent within Development Envelope (ha)	Total Extent Mapped (ha) within Survey Area
<i>Calothamnus sanguineus</i> , <i>Banksia glaucifolia</i> and <i>Petrophile shuttleworthiana</i> open shrubland over low open heath	0.26	14.53
<i>Xylomelum angustifolium</i> and <i>Nuytsia floribunda</i> tall open shrubland over low shrubland	0.57	35.83

The DE is located within the Geraldton Sandplains Interim Biogeographic Regionalisation of Australia (IBRA) region and the Lesueur Sandplain subregion (GES02) (GoWA 2024).

Geraldton Sandplains is described as ‘Mainly proteaceous scrub-heaths, rich in endemics, on the sandy earths of an extensive, undulating, lateritic sandplain mantling Permian to Cretaceous strata. Extensive York Gum and Jam woodlands occur on outwash plains associated drainage. The climate is regarded as semi-arid (Dry) warm Mediterranean’ (DCCEEW 2024a).

The Lesueur Sandplain subregion is characterised by Proteaceous scrub heath dominates the undulating sandplain lying over the Permian and Cretaceous strata. Outwash plains associated with the drainage lines are dominated by York Gum and Jam woodlands. The lateritic mesas, sandplains, coastal sandplains, and limestone are rich in shrub-heaths (Desmond and Chant 2001).

There is one Vegetation Association within the DE. Table 4 provides details of the Vegetation Association and the remaining extent of this association.

Table 4. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of pre-European Extent)
Veg Assoc No. 1031	Statewide WA	269 490.91	88 668.30	32.90	42.66
	IBRA Bioregion Geraldton Sandplains	241 349.97	83 217.27	34.48	44.52
	IBRA Sub-region Lesueur Sandplain	241 349.97	83 217.27	34.48	44.52
	Local Government Authority Shire of Coorow	38 591.71	20 529.08	53.20	9.94

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

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

The proposed clearing is at variance to Principle (a), is at variance with clearing principle (b) due to the presence of Black Cockatoo foraging habitat and is not at or not likely to be at variance to the remaining clearing principles.

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

Proposed clearing is at variance to this Principle.

Assessment

Vegetation

The vegetation within the DE is consistent and contiguous with the native vegetation in the surrounding area. The vegetation present is also expected to be represented within nearby conservation tenure including Nature Reserve 46713 (4 km north).

The total area of native vegetation mapped in the DE was 0.83 ha, as presented in the below table (Astron 2023).

Vegetation Type Description	Extent (ha) and proportion of DE (%)
<i>Calothamnus sanguineus</i> , <i>Banksia glaucifolia</i> and <i>Petrophile shuttleworthiana</i> open shrubland over <i>Lambertia multiflora</i> var. <i>multiflora</i> , <i>Banksia shuttleworthiana</i> and <i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i> low open heath	0.26 ha 29.57%
<i>Xylomelum angustifolium</i> and <i>Nuytsia floribunda</i> tall open shrubland over <i>Banksia grossa</i> , <i>Banksia candolleana</i> , <i>Adenanthos cygnorum</i> shrubland over <i>Melaleuca clavifolia</i> , <i>Hibbertia hypericoides</i> subsp. <i>septentrionalis</i> and <i>Callitris acuminata</i> low shrubland	0.57 ha 63.84%

Native vegetation within the DE is of Excellent or Very Good condition (Astron 2023). The majority of the DE (70.1%) was in Excellent condition. Vegetation condition ratings and extents are listed below.

Vegetation condition	Total mapped area within the DE (ha)	Proportion of DE (%)
Excellent	0.62	70.1
Very Good	0.21	23.3
Completely Degraded	0.06	6.6
Total	0.89	100

Threatened and Priority Ecological Communities

The PMST identified no potential Threatened Ecological Communities (TECs) within the study area.

Three TECs listed by the State under the *Biodiversity Conservation Act 2016* (BC Act) have been previously recorded within the study area:

- Lesueur-Coomallo Floristic Community D1 – Critically Endangered
- Lesueur-Coomallo Floristic Community A1.2 – Endangered
- Ferricrete floristic community (Rocky Springs Type) – Vulnerable

Three State listed Priority Ecological Communities (PECs) have been previously recorded within the study area:

- Lesueur-Coomallo Floristic Community DFGH – Priority 1
- Lesueur-Coomallo Floristic Community M2 (*Melaleuca preissiana* woodland) – Priority 1
- *Petrophile chrysantha* low heath on Lesueur dissected uplands (Gp200-170) – Priority 2

None of these intersect the DE.

The Astron (2023) field survey did not identify any vegetation within the DE that is representative of PECs and/or TECs.

Significant flora

A total of 246 confirmed vascular flora species were recorded within the survey area (Astron 2023).

Three State or Commonwealth listed threatened flora were recorded within the survey area; *Eucalyptus johnsoniana* (VU, VU), *Hakea megalosperma* (VU, VU) and *Paracaleana dixonii* (EN, VU). Twenty-one priority flora species were recorded in the survey area, including four P2, 12 P3 and five P4 taxa.

No Threatened flora species were recorded within the DE; however, six DBCA Priority species were recorded within the DE:

- *Banksia nana* – P3
- *Beaufortia bicolor* – P3
- *Hensmania stoniella* – P3
- *Jacksonia anthoclada* – P3
- *Desmocladius elongatus* – P4
- *Hypolaena robusta* – P4.

Recorded species:

Banksia nana – P3

One individual of *Banksia nana* was recorded in the DE, with a further 360 recorded in the survey area (Astron 2023). The clearing of one individual represents a loss of only 0.27% of individuals known in the immediate area. Considering the low proportion of individuals to be lost, and that the species is not known to be under threat, the clearing is not considered likely to significantly impact this species.

Beaufortia bicolor – P3

Eight individuals of *Beaufortia bicolor* were recorded in the DE, with a further 6,296 recorded in the field survey area (Astron 2023). The clearing of eight individuals represents a loss of only 0.12% of individuals known in the immediate area. Considering the low proportion of individuals to be lost, and that the species is not known to be under threat, the clearing is not considered likely to significantly impact this species.

Desmocladus elongatus – P4

Three individuals of *Desmocladus elongatus* were recorded in the DE, with a further 195 recorded in the field survey area (Astron 2023). The clearing of three individuals represents a loss of only 1.54% of individuals known in the immediate area. Considering the low proportion of individuals to be lost, and that the species is not known to be under threat, the clearing is not considered likely to significantly impact this species.

Hensmania stoniella – P3

One individual of *Hensmania stoniella* was recorded in the DE, with a further 461 recorded in the field survey area (Astron 2023). The clearing of one individual represents a loss of only 0.21% of individuals known in the immediate area. Considering the low proportion of individuals to be lost, and that the species is not known to be under threat, the clearing is not considered likely to significantly impact this species.

Hypolaena robusta – P4

One individual of *Hypolaena robusta* was recorded in the DE, with a further 1,156 recorded in the field survey area (Astron 2023). The clearing of one individual represents a loss of only 0.08% of individuals known in the immediate area. Considering the low proportion of individuals to be lost, and that the species is not known to be under threat, the clearing is not considered likely to significantly impact this species.

Jacksonia anthoclada – P3

Eight individuals of *Jacksonia anthoclada* were recorded in the DE, with a further 1,262 recorded in the field survey area (Astron 2023). The loss of eight individuals represents a loss of only 0.63% of individuals known in the immediate area. Considering the low proportion of individuals to be lost, and that the species is not known to be under threat, the clearing is not considered likely to significantly impact this species.

Considering the thin area of clearing, the substantial surrounding remnant vegetation, and that no individuals were recorded in field survey, it is unlikely that the Proposal will significantly impact these species.

Fauna Habitat

Two native fauna habitats were recorded within the DE (Astron 2023):

- Laterite Rise – 0.26 ha
- Xylomelum Shrubland – 0.57 ha.

The dominant native fauna habitat within the DE was 'Xylomelum Shrubland'. This habitat contains high to moderate understory vegetation and leaf litter suitable as sheltering or foraging resources for the dibbler. The shrubland provided foraging potential for some bird species, including Black Cockatoos. The sandy substrate is suitable for burrowing species and good habitat for the Black-striped Snake (Astron 2023).

The Proposal will require the clearing of 0.83 ha of native fauna habitat, which comprises thin, linear areas adjacent to the existing road. Given the thin, linear nature of the clearing required for the Proposal, and the proximity of the Proposal to the existing road, it is considered unlikely that the DE represents key habitat for any significant fauna species. The DE is located amid agricultural lands, rendering the surrounding landscape fragmented.

The native vegetation to be cleared is comprised of vegetation types and taxa typical to the region. Native vegetation within the DE is well represented outside of the DE, with areas of conservation tenure in close proximity. The clearing is not likely to significantly impact any significant flora or fauna species. The Geraldton Sandplain Bioregion within which the DE is located is considered to be a region of high biodiversity. However, the native vegetation is not considered to comprise a high level of biological diversity compared to the surrounding area.

Therefore, it is considered that proposed clearing is at variance to this Principle.

Methodology

- Biological Survey (Astron 2023)
- DCCEEW Protected Matters Search Tool Report (DCCEEW 2024b)
- Dandjoo Database Search (DBCA 2024)
- Government GIS Shapefiles:
 - DBCA Threatened and Priority Ecological Community database search (Accessed March 2024)
 - DBCA Threatened and Priority flora database search (Accessed March 2024)
 - DBCA Threatened and Priority fauna database search (Accessed March 2024)
 - WA Herbarium Threatened and Priority flora (Accessed March 2024)
- Statewide Vegetation Statistics (Government of Western Australia)

(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 at variance to this Principle.

Assessment

The Proposal will result in the direct loss of fauna habitat via the clearing of up to 0.69 ha of native vegetation.

Fauna Habitat

Three native fauna habitats were recorded within the DE (Astron 2023):

- Laterite Rise – 0.26 ha
- Xylomelum Shrubland – 0.57 ha.

The dominant native fauna habitat within the DE was 'Xylomelum Shrubland'. This habitat contains high to moderate understory vegetation and leaf litter suitable as sheltering or foraging resources for the dibbler. The shrubland provided foraging potential for some bird species, including Black Cockatoos. The sandy substrate is suitable for burrowing species and good habitat for the Black-striped Snake (Astron 2023).

The Proposal will require the clearing of 0.83 ha of native fauna habitat, which comprises thin, linear areas adjacent to the existing road. Given the thin, linear nature of the clearing required for the Proposal, and the proximity of the Proposal to the existing road, it is considered unlikely that the DE represents key habitat for any significant fauna species. The DE is located amid agricultural lands, rendering the surrounding landscape fragmented.

Fauna

A Dandjoo database search identified 47 fauna species recorded in the study area within the past 20 years. This comprised:

- 19 invertebrates
- 16 reptiles
- 6 mammals
- 5 birds
- One amphibian

Desktop assessment (PMST and DBCA) identified the potential presence of 19 significant fauna species within the study area.

- Australian Painted Snipe – Endangered
- Black-striped Snake – P3
- Brush Bronzewing – P4
- Carnaby's Cockatoo – Endangered
- Common Greenshank – Migratory
- Curlew Sandpiper – Critically Endangered, Migratory
- Dibbler – Endangered
- Dwarf Bearded Dragon – Vulnerable
- Eastern Curlew – Critically Endangered, Migratory
- Ghost Bat – Vulnerable
- Gilled Slender Blue-tongue – Vulnerable
- Grey Falcon – Vulnerable
- Grey Plover – Migratory

- Malleefowl – Vulnerable
- Peregrine Falcon – Other Specially Protected
- Sanderling – Migratory
- Wedge-tailed Shearwater – Migratory
- Western Brush Wallaby – P4
- Western Spiny-tailed Skink – Endangered

The Astron (2023) field survey identified one significant fauna species flying overhead the vicinity of the DE:

- Carnaby's Cockatoo (*Zanda latirostris*) – Endangered – EPBC Act/BC Act

A post survey likelihood of occurrence assessment concluded one significant species (Black-striped snake (*Neelaps calonotos*) – DBCA Priority 3) was highly likely to occur, two species (Peregrine falcon (*Falco peregrinus*) – DBCA Other Specially Protected Species and Dibbler (*Parantechinus apicalis*) – Endangered) moderately likely, and the remaining species identified in the desktop assessment had a low likelihood of occurring in the study area (Astron 2023). Low likelihood of occurrence was assigned to species with no suitable habitat within the DE. These species are not expected to occur and hence no impacts are anticipated.

Carnaby's Cockatoos

Carnaby's Cockatoo was recorded flying overhead the area of the DE during the Astron survey (Astron 2023). The DE survey area was assessed as high value foraging habitat (8 out of 10), containing known foraging resource species (Astron 2023). All native vegetation types were considered foraging habitat for Carnaby's Cockatoo (0.83 ha). No evidence of foraging was found in the DE during the Astron (2023) survey.

Clearing of up to 0.83 ha of high value Carnaby's Cockatoo habitat required for the Proposal represents a <0.01% reduction in potential foraging and breeding habitat for the species within a 10 km radius (based on an extent of 10,033 ha) (GoWA 2024).

The DE is located within the modelled breeding range of the Carnaby's Cockatoo (DPaW 2013). One tree with suitable DBH (≥ 500 mm DBH) was identified approximately 800m northwest of the DE (no suitable hollows) (Astron 2023). There were no trees located within the DE that could facilitate breeding or roosting (Astron 2023). The nearest previously recorded Carnaby's Cockatoo roost area is approximately 4 km north of the DE, and nearest breeding area approximately 12 km west of the DE.

Main Roads obtained further information from Murdoch University on the use of habitat within the DE by Black Cockatoos. Information obtained identifies habitat utilisation to the north and south, but not within the DE. Due to the absence of records of use of potential foraging habitat within the DE, this area is not deemed to represent critical habitat for Black Cockatoos, with preferred and utilised habitat located outside of the DE.

The Proposal is unlikely to significantly impact Carnaby's Cockatoos, considering the thin area of clearing immediately adjacent to the existing road and maintenance zone, the absence of trees or hollows, that Black Cockatoos are highly mobile, and the lack of utilisation.

Black-striped Snake

No individuals were recorded in the DE or survey area (Astron 2023). Although there are no recent records or previous records from within the survey area, the species is still considered to have a high likelihood of occurrence given there is suitable habitat present within the *Xylomelum* Shrubland habitat of the DE. The 0.83 ha of native vegetation in the DE would comprise suitable habitat for the Black-striped Snake; however, is not considered solely reliant on habitat within the DE, as there is substantial suitable habitat for this species in the surrounding area (Astron 2023).

The Proposal is unlikely to significantly impact the Black-striped Snake considering the thin area of clearing and that substantial suitable habitat for the species will be retained in the surrounding area.

Peregrine Falcon

A Peregrine Falcon was previously recorded within 10km of the survey area. The Peregrine Falcon may utilise the area for foraging but are highly mobile and not reliant on the habitat within the DE as no breeding habitat is present within the DE (Astron 2023). The Peregrine Falcon is uncommon and has a wide and patchy distribution. No individuals were recorded in the DE or survey area (Astron 2023).

The Proposal is unlikely to significant impact the Peregrine Falcon considering the thin area of clearing, and that they are highly mobile and are not reliant on habitat within the DE.

Dibbler

The *Xylomelum* Shrubland comprise suitable sheltering and foraging resources for the Dibbler. Although the survey area overlaps an area where species habitat may be present, there have been no recent records within 20 km of the survey area (Astron 2023). No individuals were recorded in the DE or survey area (Astron 2023).

The Proposal is unlikely to significantly impact the Dibbler considering they are not known to occur in the DE, the thin area of clearing, and that substantial habitat for the species will be retained in the surrounding area.

The proposed clearing will impact on suitable native habitat for fauna indigenous to WA. However, significant fauna species are unlikely to be solely reliant on the native habitats within the DE. The native habitat is considered to be high value as the habitat provides food resources, shelter and habitat linkage for birds, reptiles, and mammals. However, given the thin, linear nature of the clearing required for the Proposal, the proximity of the Proposal to existing road and existing cleared area, and the relatively small scale of clearing required, it is considered highly unlikely that the DE represents key habitat for any significant fauna species. The scale of the proposed clearing is also small on a regional and local level when compared to available habitat in the surrounding area. Based on the above information, the vegetation proposed to be cleared is not likely to be necessary for the maintenance of local fauna species; however, represents foraging habitat for Black Cockatoos.

The proposed clearing is at variance to this Principle, due to the presence of Black Cockatoo foraging habitat.

Methodology

- Biological Survey (Astron 2023)
- DCCEEW Protected Matters Search Tool Report (DCCEEW 2024b)
- Dandjoo Database Search (DBCA 2024)
- Government GIS Shapefiles:
 - DBCA Threatened and Priority fauna database search (Accessed March 2024)
- Referral guideline for 3 WA threatened Black Cockatoo species (DAWE 2022)
- Species specific conservation listing advice and recovery plans
- Dibbler (*Parantechinus apicalis*) Recovery Plan (Friend 2004)

(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.

The Astron (2023) desktop searches and literature review identified the presence/potential presence of 28 Threatened flora within a 20 km radius of the DE.

Three Threatened flora taxa was located in the Astron (2023) survey area:

- *Paracaleana dixonii* – EPBC Endangered, BC Vulnerable.
- *Eucalyptus johnsoniana* – EPBC Vulnerable, BC Vulnerable
- *Hakea megalosperma* – EPBC Vulnerable, BC Vulnerable

No Threatened species were recorded within the DE.

Clearing of vegetation for this Proposal will not impact on any known Threatened flora. The DE is part of contiguous vegetation that is not considered more diverse or in better condition than the surrounding vegetation. The species that are likely to occur are not considered to be significantly impacted by the proposal given the limited extent of the clearing and the DE being immediately adjacent to the existing road and maintenance zone which will not create isolated patches of vegetation. Therefore, clearing is not likely to be at variance to this principle.

Methodology

- Biological Survey (Astron 2023)
- DCCEEW Protected Matters Search Tool Report (DCCEEW 2024b)
- Florabase (Accessed May 2024)
- Government GIS shapefiles:
 - DBCA Threatened flora database search (Accessed March 2024)
 - WA Herbarium Threatened and Priority flora (Accessed March 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

The PMST identified no potential Threatened Ecological Communities (TECs) within the study area.

Three TECs listed by the State under the Biodiversity Conservation Act 2016 (BC Act) have been previously recorded within the study area:

- Lesueur-Coomallo Floristic Community D1 – Critically Endangered
- Lesueur-Coomallo Floristic Community A1.2 – Endangered
- Ferricrete floristic community (Rocky Springs Type) – Vulnerable

None of these intersect the DE.

The Astron (2023) field survey did not identify any vegetation within the DE that is representative of TECs.

The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Astron 2023)
- DCCEE Protected Matters Search Tool Report (DCCEE 2024b)
- Government GIS shapefiles:
 - DBCA Threatened Ecological Community database search (Accessed March 2024)

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

Proposed clearing is not at variance to this Principle.

Assessment

Vegetation Association

The DE is located within the Geraldton Sandplains IBRA region and the Lesueur Sandplain subregion (GES02). The vegetation within the DE has been broadly mapped as Vegetation Association 1031 described as Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath. The table below summarises the extent or pre-European Vegetation Association 1031 within the DE.

Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of pre-European Extent)
Veg Assoc No. 1031	Statewide WA	269 490.91	88 668.30	32.90	42.66
	IBRA Bioregion Geraldton Sandplains	241 349.97	83 217.27	34.48	44.52
	IBRA Sub-region Lesueur Sandplain	241 349.97	83 217.27	34.48	44.52
	Local Government Authority Shire of Coorow	38 591.71	20 529.08	53.20	9.94

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 1031 is higher than 30% for pre-European extent at all scales (Statewide, IBRA Bioregion, IBRA Subregion, LGA). Native vegetation clearing for the Proposal is occurring in an area that has not been extensively cleared at a local and regional scale and therefore is not significant as remnant.

Vegetation proposed to be cleared is not significant as a remnant of native vegetation. The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Astron 2023)
- Government GIS shapefiles:
- Pre-European vegetation (Accessed March 2024)
- Statewide Vegetation Statistics (Government of Western Australia 2018)

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**Proposed clearing is not at variance to this Principle.****Assessment**

The DE is not located within, and does not intersect:

- An Internationally Important Wetland (RAMSAR)
- A Nationally Important Wetland
- A surface water area that is proclaimed under the RIWI Act (GoWA 2024)

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

The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Astron 2023)
- Government GIS shapefiles:
 - Geomorphic Wetlands (Accessed March 2024)
 - Ramsar Wetlands (Accessed March 2024)
 - Important Wetlands (Accessed March 2024)
 - Watercourses (Accessed March 2024)
 - RIWI Act Rivers (Accessed March 2024)

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**Proposed clearing is not at variance to this Principle.****Assessment**

The underlying soil type is primarily deep sand. Review of the CSIRO database indicates the DE is located within an area that has an extremely low possibility of ASS occurrence (GoWA 2024) and clearing will not involve disturbance of soil below the water table. It is highly unlikely the clearing of a small area of vegetation immediately adjacent to the existing road, within a thin linear strip, will increase the potential for erosion resulting in appreciable land degradation.

The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Astron 2023)
- CSIRO Atlas of Acid Sulfate Soils (Accessed March 2024)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Proposed clearing is not at variance to this Principle.

Assessment

The DE does not intersect a conservation area. The DE does not contain any ESAs as declared under the EP Act.

The closest conservation area is Lesueur National Park, located approximately 8.5 km west of the DE. No clearing will be undertaken within this conservation area. The scale and location of clearing will not indirectly impact the environmental values of Lesueur National Park.

The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Astron 2023)
- DCCEE Protected Matters Search Tool Report (DCCEE 2024b)
- Government GIS Shapefiles:
 - DBCA Legislated Lands and Waters & Lands of Interest (Accessed March 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 at variance to this Principle.****Assessment**

The DE 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 DE. No major watercourses or rivers intersect the DE.

The DE is located within the Arrowsmith Groundwater Area and within the Moore-Hill River basin of the Hill River catchment.

Clearing of 0.83 ha of native vegetation in a thin linear strip immediately adjacent to the existing road is not likely to cause deterioration in the quality of surface or underground water.

The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Astron 2023)
- Government GIS Shapefiles:
 - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed March 2024)
 - RIWI Act, Groundwater Areas (Accessed March 2024)
 - Public Drinking Water Source Areas (Accessed March 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**

The underlying soil in the DE is typically sandy acidic yellow mottled soils.

The area receives an average rainfall of 523 mm per year (Warradarge weather station, site number: 8278) (BoM 2024).

The DE is flat and adjacent to an existing road. It is unlikely the clearing will result in any significant changes to the local incidence or intensity of flooding, particularly given the small extent of clearing adjacent to existing road, within a thin linear strip.

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

Methodology

- Biological Survey (Astron 2023)
- BoM Website (Accessed March 2024)

6 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. A Vegetation Management Plan (VMP) has been developed to manage and minimise vegetation clearing for the Proposal (refer to Appendix 2).

7 REHABILITATION, REVEGETATION AND OFFSETS

In accordance with CPS 818 condition 11(a), to offset the residual impacts from clearing 0.83 ha of Moderate quality foraging habitat for Carnaby's Black Cockatoo, Main Roads has developed an offset proposal in accordance the current WA environmental offsets Policy. The offset entails the revegetation of 1.66 ha within Lot 1, 1395 Banovich Road, Hill River with vegetation that comprises significant foraging habitat for Carnaby's Black Cockatoo in the Mid West – Gascoyne Region.

8 STAKEHOLDER CONSULTATION

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

9 COMPLIANCE WITH CPS 818

Table 5 summarises what further pre-clearing impact assessment is required in accordance with CPS 818.

Table 5. Summary of Additional Management Actions Required by CPS 818

Impact of Clearing	Yes/No or NA	Further Action Required
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.	Yes	1. Clearing Report to be published on website and submissions sought for 21 days. 2. Submissions invited from relevant parties, including the LGA, the owner or occupier of the land and other stakeholders in accordance with Condition 8 of CPS 818. 3. VMP has been completed, refer to Appendix 2. 4. An offset proposal for approval by DWER will be prepared. 5. Summary of submissions and a statement addressing each of those submissions to be published on website.
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding.	No	No further action required.
3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality and (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.	Yes	Comply with the Dieback Management Process D20#56909 and Management Plan D24#892330.
5b. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	No	No 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.

Impact of Clearing	Yes/No or NA	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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11 APPENDICES

Appendix 1: CPS 818/16 condition 8 (e) (iii) Biological Surveys and Field Assessment Executive Summary and Report Conclusions

Flora, vegetation and fauna survey

Executive Summary

Main Roads Western Australia engaged Astron Environmental Services to undertake a biological survey including flora, vegetation, fauna, soil and wetland values, to facilitate the proposed extension of an existing passing lane on Brand Highway. The survey area is located between 186 to 190 Straight Line Kilometres (SLK) on Brand Highway, approximately 32 km south of Eneabba and 35 km northwest of Badgingarra and comprises 76.4 ha.

Four vegetation types were described in the survey area and comprised 63.7 ha (83.4%) of the survey area. None of these represent a Commonwealth or State listed threatened or priority ecological community. Vegetation ranged from Excellent to Good condition.

The remaining 12.7 ha (16.6%) of the survey area was Disturbed/Cleared. The Disturbed/Cleared vegetation type was associated with cleared roadside vegetation, tracks and the highway. There is good connectivity between the survey area and patches of remnant vegetation to the north and south as well as nature reserves in the vicinity.

A total of 246 confirmed vascular flora species were recorded within the survey area. Thirty specimens were tentatively identified to species level but could not be confirmed without better material. This included one potential threatened species; *Paracaleana ?dixonii*, and three potential significant species; *Jacksonia ?anthoclada*, *Phlebocarya ?pilosissima* and *Phlebocarya ?pilosissima* subsp. *pilosissima*; as a precautionary measure these specimens have been treated as potential priority flora. Confirmed specimens of each of these species were otherwise recorded in the survey area.

Three State or Commonwealth listed threatened flora were recorded within the survey area; *Eucalyptus johnsoniana* (VU, VU), *Hakea megalosperma* (VU, VU) and *Paracaleana dixonii* (EN, VU). Twenty-one priority flora species were recorded in the survey area, including four P2, 12 P3 and five P4 taxa. Following the field surveys, one priority flora species identified by the desktop assessment was considered likely to occur but was not recorded: *Verticordia aurea* P4. Eleven weed species were located, none of which are listed as a Weed of National Significance or as a declared pest plant in Western Australia under the *Biosecurity and Agriculture Management Act 2007*.

Four fauna habitat types were recorded in the survey area. The *Banksia* Woodland habitat within the survey area would be considered of high importance due to tree and large shrub species important to significant fauna species, including Carnaby's cockatoo (*Zanda latirostris*), listed as Endangered under State and Commonwealth legislation. *Xylomelum* (Sandplain Woody Pear) Shrubland, Laterite Rise and Drainage Plain habitat types also contained suitable Carnaby's cockatoo foraging habitat, but to a lesser extent.

Twenty-six fauna species were opportunistically recorded during the survey, including one reptile species, 21 bird species and four mammal species (including three introduced species). Of the 52 significant fauna species identified in the desktop assessment, one species was recorded: Carnaby's cockatoo. One species, the black-striped snake (*Neelaps calonotos*) (P3), was considered to have a

high likelihood of occurrence, and one species the peregrine falcon (*Falco peregrinus*) (Other Specially Protected Species) was considered to have a moderate likelihood of occurrence.

The black-striped snake favours sandy substrates and all of the habitats within the survey area, except for the Laterite Rise habitat and Disturbed/Cleared areas, would be considered suitable habitat. This species is not solely reliant on any of the fauna habitats within the survey area.

The peregrine falcon is a highly mobile species and may utilise the survey area for foraging purposes or as a transient visitor, but is not reliant on any habitat within the survey area, as no breeding habitat is present within the survey area.

Based upon the current distributions for the three threatened species of black cockatoo, the survey area is within the breeding range of Carnaby's cockatoo (*Zanda latirostris*). Only one tree (*Eucalyptus accedens*) was recorded to have the potential to become a breeding tree in the future, and contained no hollows considered suitable for use by Carnaby's cockatoo. The survey area was not considered suitable for night roosting for the Carnaby's cockatoo due to the lack of tall trees. Individuals were sighted during the December 2022 survey. Seven known foraging resource species for the Carnaby's cockatoo were recorded within the survey area and high-quality potential foraging habitat occurred within 63.7 ha (83.4 %) of the survey area, scoring eight using the referral guidelines foraging quality scoring tool. A subtraction of two was applied as no foraging evidence was recorded from within the survey area.

Report Conclusions

Vegetation

The survey area is a 3.7 km linear corridor from 186 to 190 SLK along Brand Highway. The survey area was broadly characterised by sandplains and low lateritic rises, with a small sandy drainage plain or depression occurring in the north-western end (vegetation type VT4). This depression is likely the remnant outskirt of a larger shallow depression in farmland to the south-west; the drainage and vegetation here has likely been affected by a surrounding fence-line, track and roadside bund. The sandplains were broadly characterised by emergent *Eucalyptus todtiana*/*Xylomelum angustifolium*/*Nuytsia floribunda* over mixed *Banksia* spp. Shrublands over species diverse low shrublands (vegetation types VT1 and VT3). The low laterite hills were typified by species rich low open heath dominated by Proteaceae and Fabaceae species (vegetation type VT2). The sandy depression was predominately a *Mesomelanena pseudostygia* sedgeland with *Leptospermum oligandrum* characterising the upper stratum.

Native vegetation accounted for 63.7 ha (83.4%) of the survey area, with 12.7 ha (16.6%) Disturbed/Cleared. Four vegetation types were mapped. These vegetation types are generally in alignment with the pre-European vegetation association recorded for the area, and what would be expected in association with other environmental factors such as underlying soils and geology in the Lesueur Sandplains subregion.

Vegetation in the survey area was generally of very high quality, with few disturbances noted. It ranged from Excellent to Completely Degraded condition, with the majority considered to be in Excellent (70.1%) condition. The portion (12.7 ha) of the survey area in Completely Degraded condition was associated with the highway, tracks, firebreaks and cleared roadside verge.

No Commonwealth or State listed TECs or PECs were recorded in the survey area. Vegetation type VT1 has characteristics analogous with the *Banksia woodlands of the Swan Coastal Plain* TEC, but

the survey area is outside the known distribution of this TEC (i.e. does not occur on the Geraldton Sandplain); therefore, it is not considered to represent this TEC.

The status of native ecosystems and the level of protection they are awarded in the National Reserve System is assessed by the according IBRA bioregion and subregion (Natural Resource Management Ministerial Council 2009). IBRA is used to monitor progress in building a Comprehensive, Adequate and Representative (CAR) reserve system (Department of Agriculture, Water and the Environment 2021a). An underrepresented bioregion or subregion has less than 10% protected in the CAR reserve system. The Geraldton Sandplains bioregion and the Lesueur Sandplain subregion have 15.4% and 17.8% of their current areas protected within IUCN Class I-IV Reserves (i.e. National Parks, Nature Reserves), respectively, and are therefore not considered to be an under represented bioregion or subregion.

The Australian and New Zealand Environment and Conservation Council published the National Objectives and targets for Biodiversity Conservation 2001-2005 which recognises that a retention of 30% or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected (Commonwealth of Australia 2001). The survey area is located in the Le Sueur 1031 vegetation association which meets the 30% retention target with an extent of 34.5% remaining on the Geraldton Sandplains (Government of Western Australia 2019).

Flora

The survey area is considered very species rich, with a high floristic diversity. A total of 246 vascular flora species, from 41 families and 119 genera, were recorded. Thirty specimens were tentatively identified to species level, but could not be confirmed without better material. This included one potential threatened species, *Paracaleana ?dixonii* (T), as well as the potential priority species *Jacksonia ?anthoclada* (P4) and *Phlebocarya ?pilosissima* subsp. *pilosissima* (P2 or P3). As a precautionary measure, these records have been treated as potential priority flora.

There was high diversity and abundance of listed flora species, with 24 threatened/priority flora accounting for over 10,000 significant flora records within the survey area. Three EPBC Act listed flora were recorded; *Eucalyptus johnsoniana* T, *Hakea megalosperma* T, *Paracaleana dixonii* T. Twenty-one confirmed priority flora species were recorded within the survey area, comprising four P2, 12 P3, and five P4 species. Priority flora records were distributed throughout the survey area and almost all occurred on either the sand plain or lateritic rises habitats that dominated the survey area.

Of the 204 significant flora species identified in the pre-survey desktop assessment and not located during the targeted survey, one is considered likely to occur in the survey area post field survey; *Verticordia aurea* P4. An additional 29 species were considered to have the potential to occur in the post-survey likelihood of occurrence. These taxa may not have been observed, should they occur, due in part to some of these species not being visible at the time of survey due to small size, difficulty of detection in thick vegetation, similarity to common species, or because the surveys were conducted outside of the optimal flowering time.

There is potential that all of the threatened and most of the priority flora species that were recorded in the survey area occur in surrounding remnant vegetation. Extensive remnant vegetation occurs to the east and south-west of the survey area and based on aerial image interpretation and on-ground observations is likely to consist of similar landforms and vegetation communities to those observed in the survey area; these areas, however, were not ground-truthed during this survey. The DBCA database search results provided previous locations in the vicinity for

the recorded threatened flora species: *E. johnsoniana* T (nine records within 1 km to the east and west, however two previous records within the survey area and one immediately adjacent were ground-truthed and the plants could not be located), *H. megalosperma* T (two previous records within 550 m which were not groundtruthed; based on aerial image interpretation one occurs on a questionable associated landform) and *Paracaleana dixonii* T (14 km north-west in South Eneabba Nature Reserve). Following the surveys *Acacia wilsoni* T was still considered potential to occur; this species has been previously recorded approximately 5 km east of the survey area in association with laterite.

No P1 species were recorded in the survey area. Three of the four P2 species that were recorded during the survey may occur in similar habitat adjacent to the survey area. Two of these species, *Catacolea enodis* P2 and *Comesperma griffinii* P2, were listed in the Atlas of Living Australia database search results, but not in the DBCA database results, therefore previous location data was not available. *Comesperma griffinii* P2 occurred in association with a sandy drainage plain, a habitat and vegetation type that was restricted in the survey area and not observed in the surrounding areas. Habitat for the other three recorded P2 species (*C. enodis* P2, *Loxocarya gigas* P2 and *Lyginia excelsa* P2), 12 P3 species and five P4 species has likelihood of extending beyond the survey area and therefore each of these species may have additional occurrence in the immediate vicinity.

The one P1, five P2, 17 P3 and six P4 species that were rated to have potential to occur, but were not recorded within the survey area, all have previous records within 20 km of the survey area (Department of Biodiversity, Conservation and Attractions 2022d) and are associated with either sandy or lateritic soils, which appear to extend beyond the survey area. Given the paucity of previous records in the surrounding remnant vegetation and the high diversity and density of significant flora records in the survey area, it is likely that the surrounding area has not been well surveyed and therefore existing knowledge on the extent of the species that occur is poor.

Eleven weed species were recorded within the survey area, accounting for approximately 4.5% of the total confirmed flora species recorded. No species are listed as WoNS (Australian Weeds Committee 2012) or declared pests in Western Australia under the BAM Act (Department of Agriculture and Food Western Australia 2016).

Fauna

Much of the survey area is high quality native bushland (63.7 ha, 83.4%) with 12.7 ha (16.6%) considered Disturbed/Cleared. Within the remnant vegetation, four fauna habitat types were recorded in the survey area. None of the fauna habitats are restricted to the survey area and are typical of those found at both a local and regional level. However, the *Banksia* Woodland habitat within the survey area would be considered of high importance due to tree and large shrub species important for provision of foraging habitat for Carnaby's cockatoo. *Xylomelum* (Sandplain Woody Pear) Shrubland, Laterite Rise and Drainage Plain habitat types also contained Carnaby's cockatoo foraging habitat but to a lesser extent. There is good habitat connectivity between the survey area and nature reserves to the north and south through remnant vegetation along road reserves.

Twenty-six fauna species were recorded during the survey, including one reptile species, 21 bird species (including one significant species; Carnaby's cockatoo EN, EN) and four mammal species (including three introduced species). Of the introduced mammal species recorded within the survey area, the rabbit (C3 Prohibited) and red fox (C3 Prohibited, C3 Prohibited) are declared pests under the BAM Act. The cat is a declared pest (feral) and/or a permitted species (domestic) (Department of Agriculture and Food Western Australia 2007). The number of species recorded during the survey is likely to be lower than the number of species expected to be present due to the nature of

the survey conducted (Basic fauna survey only based on opportunistic sightings), the cryptic nature of some species and the timing of the survey.

Of the 19 significant vertebrate species identified in the desktop assessment, Carnaby's cockatoos were recorded flying over the survey area in the December 2022 survey. No other vertebrate species of conservation significance were identified during the survey. The black-striped snake was considered to have a high likelihood and the peregrine falcon was considered to have a moderate likelihood. The remaining 16 species were considered to have a low likelihood of occurrence.

The black-striped snake favour sandy substrates and all the habitats within the survey area, except for the Laterite Rise and Disturbed/Cleared areas, would be considered suitable habitat for this reptile species. The black-striped snake is not solely reliant on any of the fauna habitats within the survey area. However, due to its fossorial and non-mobile nature, they are threatened by increasing development within their restricted distribution (Wilson and Swan 2017).

The peregrine falcon is a highly mobile species and may utilise the survey area for foraging purposes or as a transient visitor, but is not reliant on any habitat within survey area, as no breeding habitat is present within the survey area.

Based upon the current distributions for the three threatened species of black cockatoo, the survey area is within the breeding range of Carnaby's cockatoo (*Zanda latirostris*) (EN; EN). Carnaby's cockatoo was recorded from the survey area (flying overhead) and is considered likely to utilise the survey area for foraging purposes only. Individuals were sighted during the December 2022 survey, but not during the October 2022 survey and this may be in part due to the timing of the survey, with Carnaby's cockatoo occurring in inland parts of its distribution during their breeding season from July to December (Department of Parks and Wildlife 2013).

All native vegetation habitat types were considered foraging habitat for Carnaby's cockatoo based on the vegetation description and species presence, with seven known foraging resource species for the Carnaby's cockatoo recorded within the survey area; however, no foraging evidence was recorded within the survey area. High quality potential foraging habitat occurred across the 63.7 ha (83.4 %) of the native vegetation within the survey area, scoring an eight on the referral guidelines foraging quality scoring tool for Carnaby's cockatoo. The foraging habitat for Carnaby's cockatoo within the survey area is 10.9 km west of the nearest known breeding area for Carnaby's cockatoo, within 12 km, which is considered important for providing the amount of food required for breeding birds, to maintain their productivity and ensure survival of their young (Department of Parks and Wildlife 2013).

The survey area contained a single isolated tree and is not considered suitable for night roosting for the Carnaby's cockatoo. The one tree (*Eucalyptus accedens*) was recorded to have the potential to become a breeding tree in the future, however, it contained no hollows considered suitable for use by Carnaby's cockatoo.

Appendix 2: Vegetation Management Plan

BRAND HIGHWAY PASSING LANE EXTENSION

Purpose and Scope

This Vegetation Management Plan (VMP) has been prepared by Main Roads for the purpose of managing native vegetation clearing impacts associated with the Brand Highway Passing Lane Extension.

Main Roads is proposing to extend the length of a southbound passing lane located between SLK 187-190 on Brand Highway (the project). The extension involves up to 0.83 hectares (ha) of clearing of native vegetation between SLK 187-189 to develop the proposed lane. The existing passing lane's length is insufficient for overtaking slow vehicles on a steep slope. Extending the length of the passing lane is required to enhance freight efficiency on Brand Highway. Main Roads has determined that development of this passing lane is top priority to enhance freight efficiency on the highway.

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

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

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

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

Avoiding, Mitigating and Managing the Impacts of Clearing

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

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

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

VMP Actions

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

Appendix 2.1: Vegetation Management

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

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

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

1. Prior to the commencement of any clearing operations, the Contractor must certify for the Superintendent's verification and approval that the following activities have been completed in accordance with the relevant specification:
 - a) The pegging of limits of vegetation clearing has been undertaken.
 - b) The pegged vegetation clearing area does not exceed the Limits of Vegetation Clearing.
 - c) Mature trees have been conserved as far as practicable.
 - d) The pegging of special environmental areas has been undertaken.
 - f) All pre-clearing weed control has been undertaken.
 - g) All pre-clearing fauna operational controls have been undertaken.
 - h) All pre-clearing dieback operational controls have been undertaken.
 - i) Suitable and unsuitable topsoil zones have been identified.
 - j) Vegetation and topsoil stockpile locations have been identified.
 - k) All clearing machinery is compliant with controls.