Clearing Assessment Report – CPS 818

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Broome-Cape Leveque Road SLK 163-207 LCSW – Line of Sight Improvements, Laydowns/Turnarounds & Sandpits

Broome-Cape Leveque Road M076
Kimberley Region
EOS 3303

D25#481030
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Contents

List of Figures

List of Tables

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1 PROPOSAL

1.1 Purpose and Justification

Kimberley Region is delivering shoulder widening works to enhance public safety on the Broome-Cape Leveque (BCL) Road between SLK 163-207 on the northern section of the Dampier Peninsular in the Shire of Broome. As a part of the shoulder widening works to enhance public safety, works proposed under this application included:

- improving line-of-sight distances to increase visibility through bends on the road;
- upgrading the existing offshoot drainage network;
- establishing turnarounds to provide serviceability infrastructure for the provision of efficient and safe gravel haulage operations to the worksite; and
- sand pits are also required to rebuild the embankment which has been compromised due to table drain erosion following extreme rainfall events.

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

Line of Sight Improvements

Native vegetation clearing is proposed to improve line of sight distances on road bends and mitigate the risk of falling vegetation disrupting traffic flow or causing accidents/injury. Clearing is required up to 16m from centreline on horizontal curves, within the approved clearing limit at the following SLK locations along BCL Road:

- 191.65 - 191.85
- 193.43 – 193.63
- 201.40 - 201.60
- 203.87 - 204.07
- 205.63 - 205.83

Sight line improvement areas comprise 3.64 ha of the development envelope.

Turnarounds / Laydown Areas

The construction of 5 x turnaround / laydown areas (150m length x 30m width) at the following SLK locations along the BCL Rd are proposed:

- SLK **164.10 LHS** – is located at the start of the project. A previous used borrow pit is located just west of the selected envelope for this turnaround/ laydown (0.45ha).
- SLK **170.21 RHS** – This location will facilitate flexibility and safe location on a straight section of BCLR for double road trains. The left side of the road is not suitable as the fibre optic cable runs this length (0.45 ha).
- SLK **176.03 LHS** - This location will provide flexibility and safe location on a straight section of BCLR for double road trains. A previously used borrow pit is located east of this location (0.45 ha).
- SLK **189.50 LHS** - This location will provide flexibility and safe location on a straight section of BCLR for double road trains. The right side of the road is not suitable as the fibre optic cable runs this length (0.45 ha).
- SLK **194.94 RHS** – To utilise a previously cleared area for a turnaround/ laydown (0.59 ha).

Installation of 5 x turnarounds / laydown areas comprise 2.39 ha of the development envelope.

Sandpits

Two Sandspits have been proposed at BCL SLK [REDACTED] and [REDACTED] comprising 1.45 ha of the development envelope. A degraded area adjacent to an existing informal rubbish tip has been selected for Sandpits. This area has been selected to minimise environmental impacts, including waterways and heritage constraints (contaminated rubbish disposal areas will be avoided).

1.3 Proposal Location

The Project is located on Broome-Cape Leveque (BCL) Rd between SLK 163-207 on the northern section of the Dampier Peninsular in the Shire of Broome as shown in Figure 1. The central coordinate of the proposal is:

Latitude: 17.1269476°S
Longitude: 122.5910023°E

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818: 6.2 ha of native vegetation within a 7.5 ha development envelope.

Areas of Native Vegetation Clearing:
The areas of native vegetation to be cleared are shown in Figure 2.

Type of Native Vegetation:
The types of vegetation to be cleared under this Proposal are listed below and the map is shown in Figure 2:

- ***Corymbia*** **Low Woodland (CbAtCp) –** described as **"***Corymbia bella, Terminalia ferdinandiana/latipes, Brachychiton diversifolius* subsp. *diversifolius* low woodland; *Acacia tumida* var. *tumida, Terminalia canescens* tall sparse shrubland; *Chrysopogon pallidus, Sorghum stipoideum, Triodia acutispicula* low tussock/hummock grassland".

- ***Eucalyptus*** **Low Woodland (EmAtCp) –** described as "*Eucalyptus miniata, Corymbia greeniana, Brachychiton diversifolius* subsp. *diversifolius* low woodland; *Acacia tumida* var. *tumida, Hakea macrocarpa* tall open shrubland; *Chrysopogon pallidus, Glycine tomentella, Gossypium rotundifo*lium low tussock grassland/herbland".

Figure 1. Project Location and Study Area

Figure 2A. Project Clearing Footprint (Proposed Laydown/Turnaround BCLR SLK 164.10)

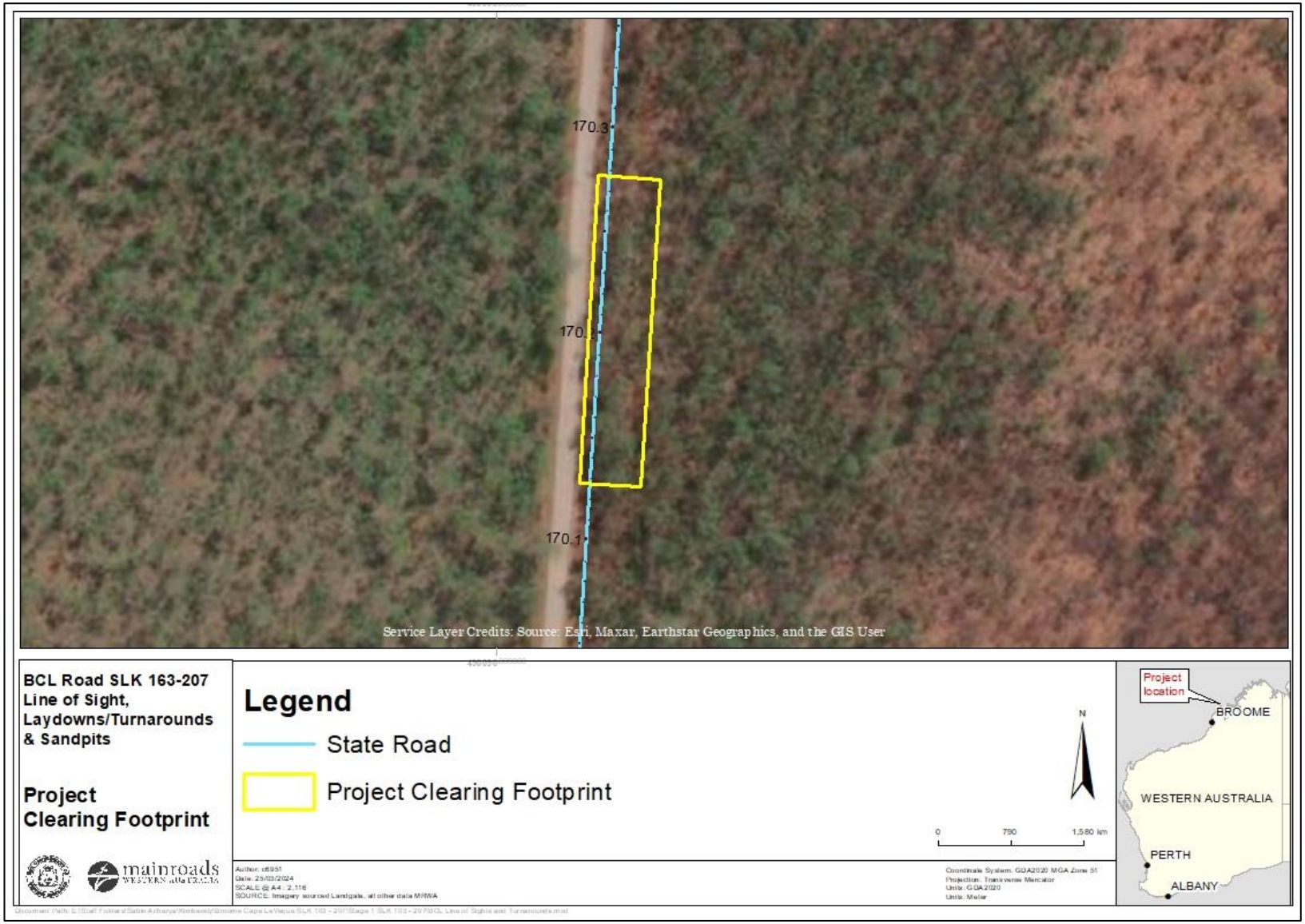

Figure 3B. Project Clearing Footprint (Proposed Laydown/Turnaround BCLR SLK 170.21)

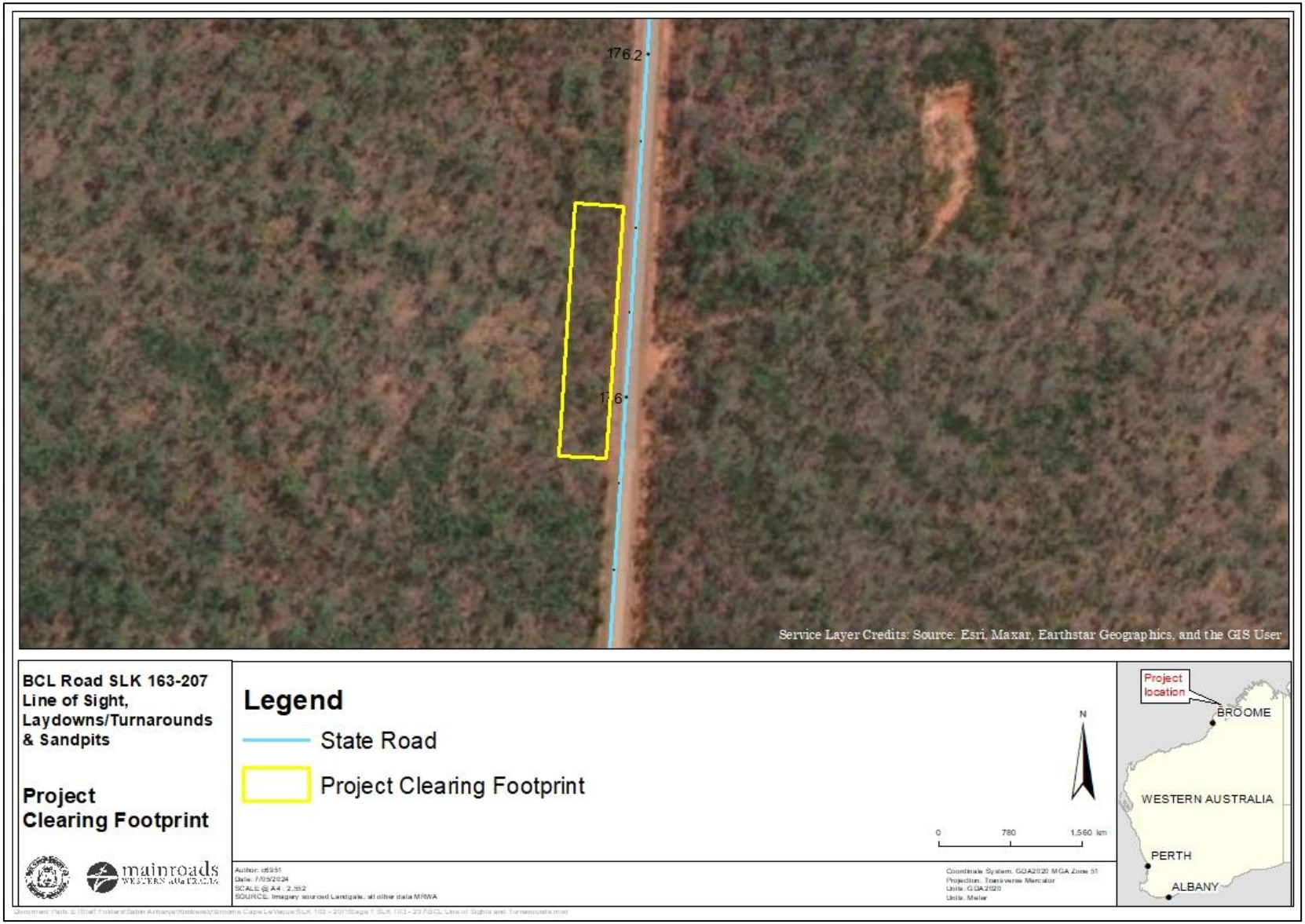

Figure 4C. Project Clearing Footprint (Proposed Laydown/Turnaround BCLR SLK 176.03)

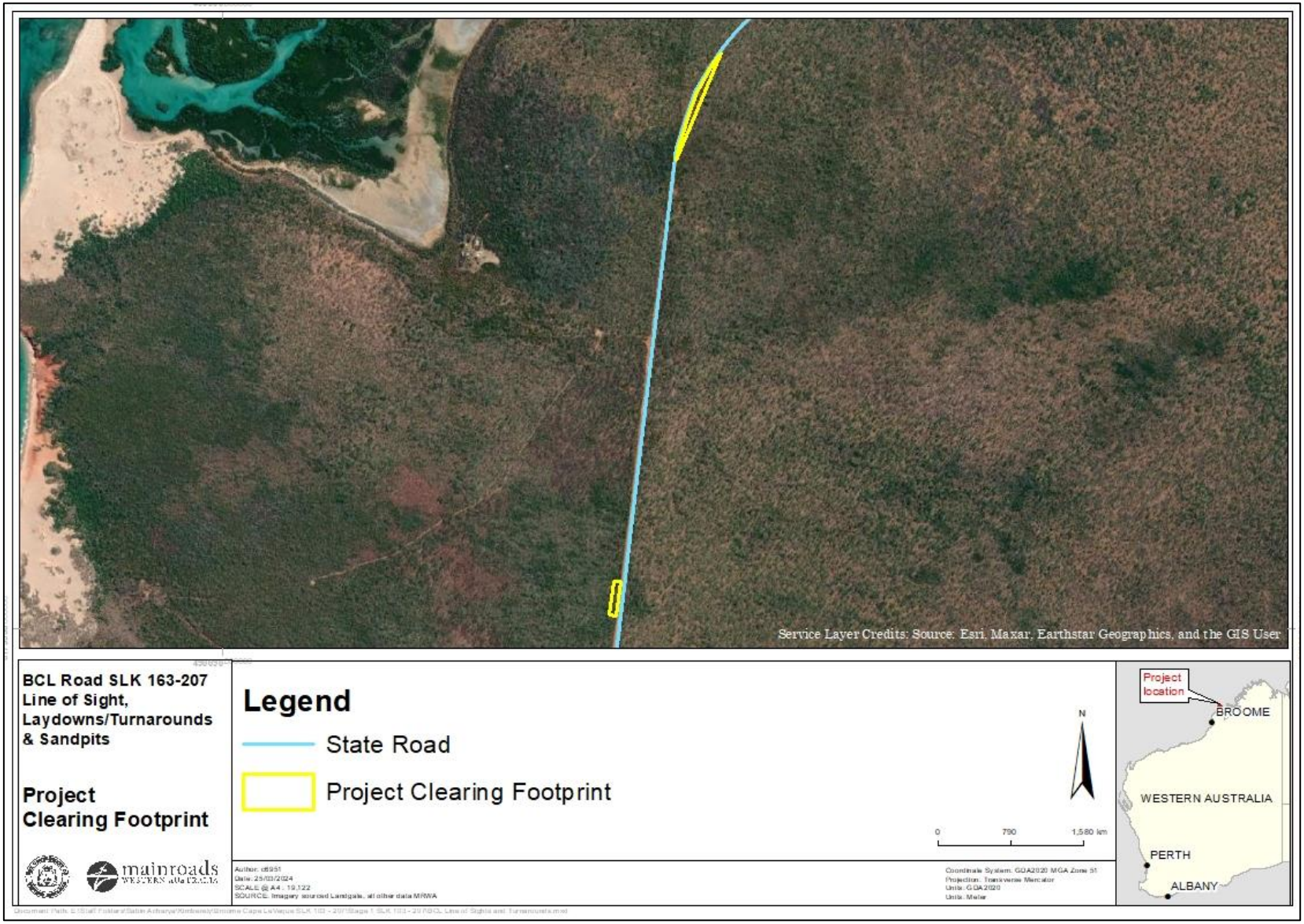

Figure 5D. Project Clearing Footprint (Proposed Laydown/Turnaround BCLR SLK 189.50 and Line of Sight Improvement SLK 191.65 - 191.85)

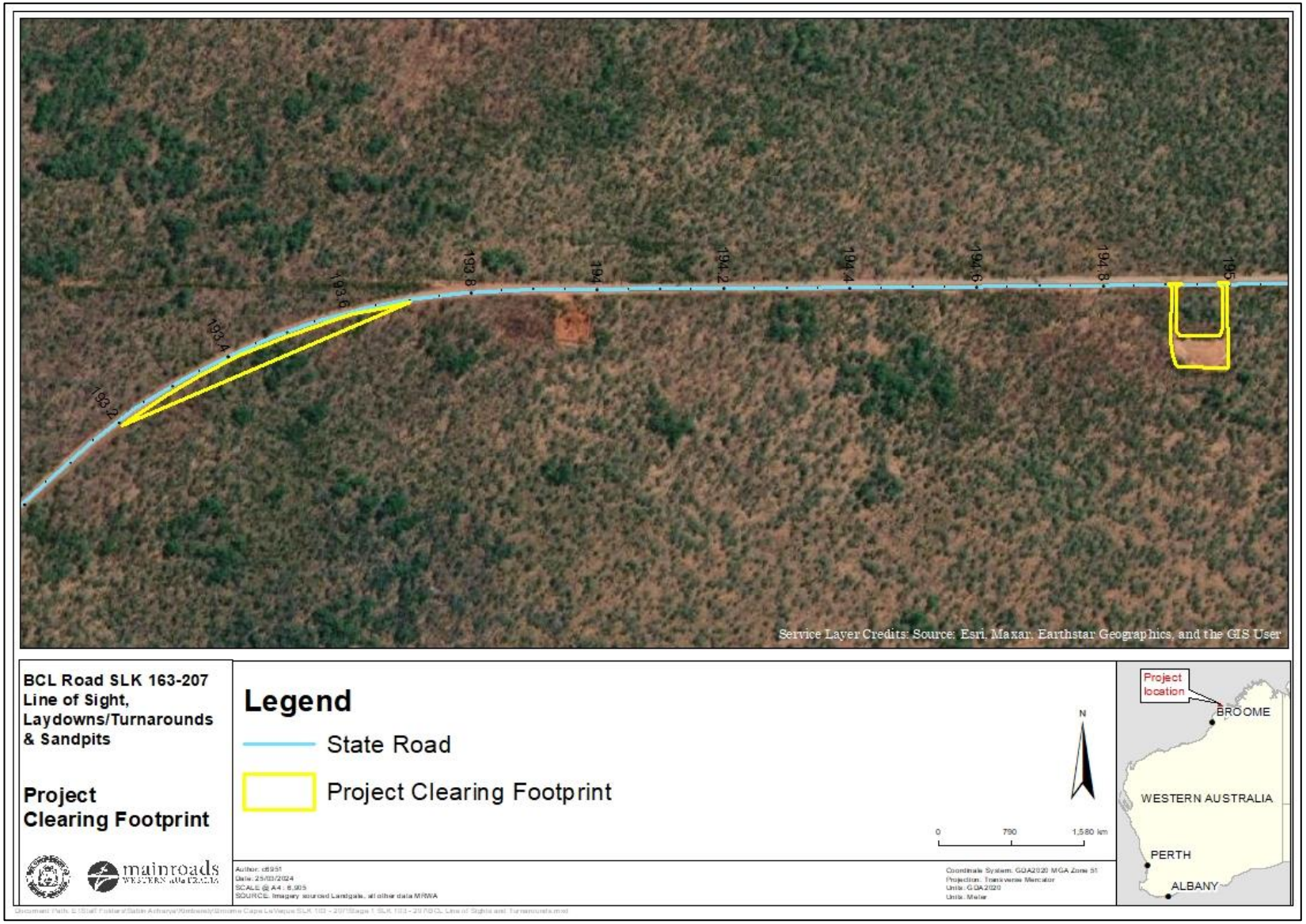

Figure 6E. Project Clearing Footprint (Proposed Line of Sight Improvement BCLR SLK 193.43 – 193.63and Laydown/Turnaround SLK 194.94)

[REDACTED]

Figure 7F. Project Clearing Footprint (Proposed Sandpits BCLR SLK 196.6 and SLK 197.0)

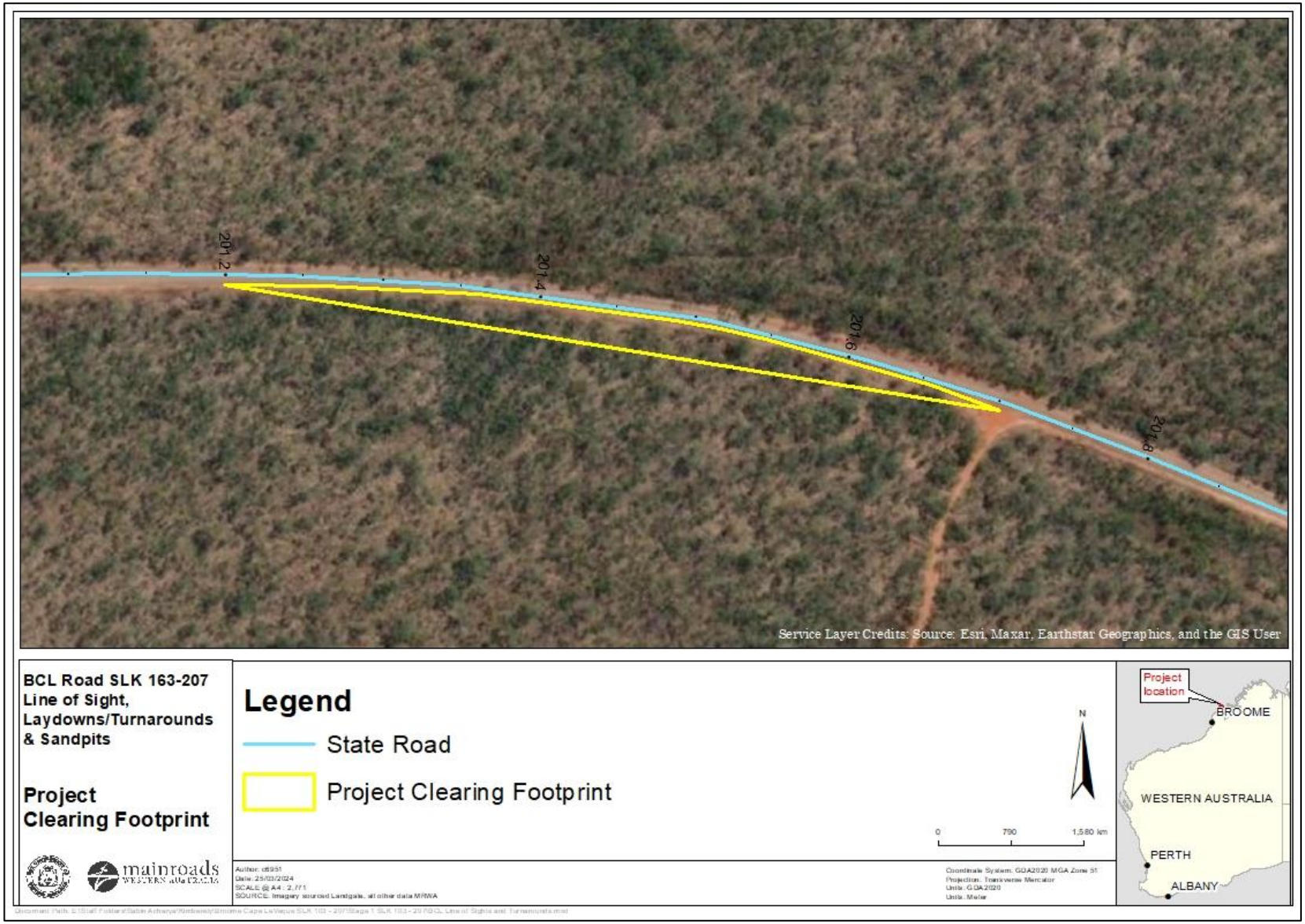

Figure 8G. Project Clearing Footprint (Proposed Line of Sight Improvements BCLR SLK 201.40 - 201.60)

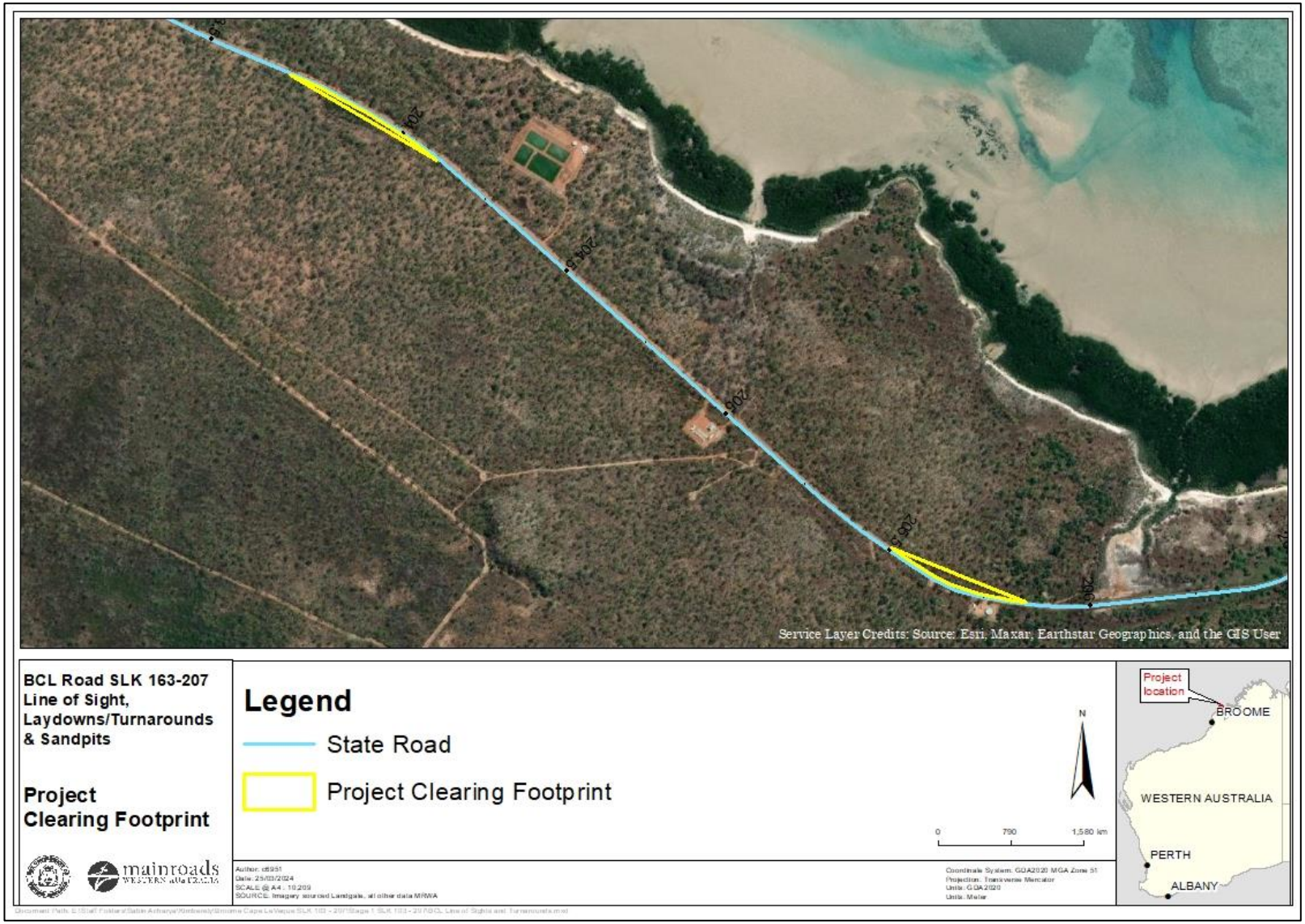

Figure 9H. Project Clearing Footprint (Proposed Line of Sight Improvements BCLR SLK 203.87 - 204.07 and SLK 205.63 - 205.83)

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

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

- Do not upgrade the road, however this will potentially result in a poorer safety outcome and may result in future fatalities or serious injuries and further degradation of the State road asset.
- Main Roads retains frangible vegetation where a clear zone is to be established for road projects. For this project, however, clearing will only be required to accommodate the road formation, with no clear zone being established. Accordingly, the retention of frangible vegetation does not apply to this proposal.
- Reducing the speed limit to minimise clearing requirements, while still balancing safety (driver fatigue) and freight efficiency. Speed Limits are an essential mechanism to ensure the safe and efficient operation of road networks. The application of appropriate speed limits and other traffic management measures is a key mechanism in managing vehicle speeds to achieve desired safety, mobility, traffic management, local amenity, and road user expectations. There are several factors involved in road safety, including road conditions, driver behaviour and overall road design. Except in special situations, reducing speed limits below national standards on state and national roads is not typically supported as it has the potential to contribute to driver frustration, impatience, tiredness and recklessness. The environmental values protected by reducing the speed limit, do not justify the impacts on freight efficiencies nor road user safety. Accordingly, the reduction of the speed limits to avoid clearing of native vegetation for this proposal is not proposed.
- A larger project design was initially requested but was reduced due to potential environmental impacts.

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 Broome-Cape Leveque Road is surrounded remnant vegetation. Works have been planned to utilise existing areas of disturbance and minimise the environmental footprint.
Alternative alignment located within pasture or degraded areas	There are no alternative road alignment options available. Realignment of the road would result in significant environmental impact.
Simplification of design to reduce number of lanes and/or complexity of intersections	The design to improve sightlines, laydowns/turnaround areas and material pits has been tailored to the site conditions with the intent of minimising the environmental impact.
Steepen batter slopes	Batter slopes are currently too steep in places, with the embankment being compromised due to table drain erosion.
Installation of barriers	Not Applicable to this proposal, which aims to improve the infrastructure of the road to undertake maintenance works.
Installation of kerbing	Not Applicable to this proposal, which aims to improve the infrastructure of the road to undertake maintenance works.
Use of existing cleared areas for access tracks, construction storage and stockpiling	Existing cleared areas have been utilised where possible.
Drainage modification	Additional drainage improvements have been undertaken as part of a separate project component
Modification of Project Clearing Footprint	Proposed works have been modified to minimise impacts to Priority Flora and avoid culturally significant areas.
Pre-clearance survey	A preclearance Bilby survey will be conducted in all areas of potential Bilby habitat to ensure no Bilby are impacted by the proposed clearing.

1.7 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act, Main Roads has also had regard to the below instruments where relevant.

Other Legislation potentially relevant for assessment of clearing and planning/other matters:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Rights in Water and Irrigation Act 1914*
- *Aboriginal Heritage Act 1972* (WA).

Environmental Protection Policies:

- Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992
- Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011.

Other relevant policies and guidance documents:

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (Government of WA, December 2014)
- Procedure: Native vegetation clearing permits (Government of WA, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, 2014)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020)
- Approved conservation advice under section 266B of the EPBC Act for threatened flora/fauna/vegetation communities.

2 SCOPE AND METHODOLOGY ASSESSMENT OF CLEARING

Native vegetation will be cleared to accommodate this Proposal. This clearing will be undertaken using 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 *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:

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

2.2 Desktop Assessment

A desktop assessment of the Project Clearing Footprint was undertaken by viewing internal datasets and other government agency managed databases, and consulting with relevant stakeholders where necessary. Results from searches can be found in Appendix 3.

GIS layer viewing and mapping is done using ArcMap and/or Main Roads corporate mapping system known as iMaps. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. Government managed databases were searched to locate additional information, which are found under References in Section 10.

2.3 Surveys and Assessments

The following surveys were undertaken to inform this CAR:

- Craigie, A., McCabe, T. and Plant S., (2023). Main Roads Western Australia Broome-Cape Leveque Road (SLK 103.6 – 207) Biological Survey. Ecologia Environment. February 2023.

- 360 Environmental Pty Ltd., (2023). Broome to Cape Leveque Road Upgrade Targeted Flora Survey. Prepared for Main Roads Western Australia, August 2023.

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 Sections 3.1 to 3.2.

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

Consultant & Survey Name	Survey Details
Craigie, A., McCabe, T. and Plant S., (2023). Main Roads Western Australia Broome-Cape Leveque Road (SLK 103.6 – 207) Biological Survey. Ecologia Environment.	**Survey Area:** Main Roads WA engaged Ecologia Environment in 2022 to conduct a Biological Survey along a linear corridor of 40 m on either side of the Broome-Cape Leveque Rd between SLK 103.6 – 207 covering approximately 885 ha that also included laydown areas, dam and water bores, turnaround areas and material pits beyond this corridor. **Type:** A Detailed Flora and Vegetation Assessment and A Basic Vertebrate Fauna and Fauna Habitat Assessment. **Timing:** 26 July to 4 August 2022. **Survey Results Shapefile TRIM Ref:** D22#1214404 **Document TRIM Ref:** D22#1214451
360 Environmental Pty Ltd., (2023). Broome to Cape Leveque Road Upgrade Targeted Flora Survey. Prepared for Main Roads Western Australia, August 2023.	**Survey Area:** Main Roads commissioned 360 Environmental in 2023 to undertake a Targeted Flora Survey along a linear corridor of 40 m on either side of Broome-Cape Leveque Rd between SLK 103.6 – 207 covering approximately 885 ha in area. The targeted survey area constituted the same areas as previously surveyed by Ecologia in July/August 2022. **Type:** A follow up targeted survey for significant flora identified during previous surveys. **Timing:** February and March 2023. **Survey Results Shapefile TRIM Ref:** D23#681451 **Document TRIM Ref:** D23#679746

3 SURVEY RESULTS

In accordance with CPS 818 condition 8 (e) (iii), a copy of the executive summary from the biological and targeted surveys and are provided in Appendix 1.

3.1 Biological Survey Executive Summary (Ecologia Environment, 2023)

The survey area constitutes a mostly linear corridor covering approximately 885 ha. Ecologia was engaged by Main Roads to conduct biological surveys of the survey area, including a detailed and targeted flora and vegetation survey and basic and targeted fauna habitat survey, between July and August 2022.

Flora and Vegetation Assessment

A total of 255 vascular plant taxa representing 74 families and 169 genera were recorded during the survey. Seven Department of Biodiversity, Conservation and Attractions (DBCA) listed Priority species were recorded within and immediately adjacent to the survey area: *Byblis guehoi* (P1), *Haemodorum capitatum* (P1), *Parsonsia kimberleyensis* (P1), *Aphyllodium glossocarpum* (P3), *Nymphoides beaglensis* (P3), *Stylidium pindanicum* (P3), and *Triodia acutispicula* (P3). Of these taxa, only

Aphyllodium glossocarpum (P3), *Haemodorum capitatum* (P1), and *Triodia acutispicula* (P3) were recorded within the survey area.

Of the above, four priority species were located in the development envelope:

- *Jacquemontia* sp. Broome (A.A.Mitchell 3028) (P1)
- *Bonamia oblongifolia (*P3)
- *Polymeria* sp. Broome (K.F.Kenneally 9759) (P3)
- *Triodia acutispicula* (P3)

No *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Biodiversity Conservation Act 2016* (BC Act) Threatened species were recorded. Ten introduced plant species were recorded, none of which are listed as Declared Pests or Weeds of National Significance (WONS).

Hierarchical agglomerative clustering and ordination analyses were conducted on floristic data from 50 sampling sites (49 quadrats and 1 relevé), resulting in the classification of nine vegetation types within the survey area. Two additional vegetation types were described on the basis of vegetation structure and dominant species. Vegetation within the survey area consists primarily of five eucalypt woodland vegetation types dominated by *Corymbia bella, C. polycarpa, C. greeniana, Eucalyptus miniata*, and *E. tectifica*, that occur on sandplains associated with the Reeves, Wanganut, and Yeeda land systems, and account for over 90% of the vegetated part of the survey area.

Within the development envelope, only two vegetation associations were recorded:

- Corymbia Low Woodland (CbAtCp); and
- Eucalyptus Low Woodland (EmAtCp)

The remainder of the development envelope comprises cleared areas.

Vegetation condition ranged from 'Degraded' to 'Excellent', with the majority of the survey area in 'Excellent' condition.

There were no plant communities observed that corresponded to any state (BC Act) or Commonwealth (EPBC Act) listed Threatened Ecological Community (TEC), although the 'Monsoon (vine) thickets on coastal sand dunes of Dampier Peninsula' TEC occurs adjacent to the survey area at two locations. One state listed Priority Ecological Community (PEC) ('Kimberley Vegetation Association 67' Priority 3) was recorded and accounts for 19.02 ha (2.15%) of the survey area. However, this PEC was not located in the development envelope. Four vegetation types occurring within the survey area are potentially restricted, each accounting for less than 1% of the total mapped area and may be considered locally significant.

Fauna and Fauna Habitat Assessment

Fauna habitat assessments were undertaken at 45 sites to describe representative fauna habitat types present within the survey area. Four habitat types were identified within the survey area: Eucalypt Woodland (70.3%), Seasonal Wetlands/Minor Creeks (2.2%), Shrubland (2%) and Saline Flats (0.05%).

Only the Eucalypt Woodland habitat type was located in the development envelope.

The Eucalypt Woodland habitat type provides suitable habitat for the bilby, particularly in the south of the survey area in the vicinity of Beagle Bay, where they have previously been recorded near the survey area. Eucalypt woodlands may occasionally be used by the Gouldian finch in the north of the

survey area near monsoon vine thickets and water sources. When inundated, the Seasonal Wetland/Minor Creeks habitat type provides suitable habitat for migratory wading birds. However, this habitat type was not located the Development Envelope. All habitat types identified within the survey area are considered widespread at a local and regional level, with no habitats confined exclusively to the survey area. Habitat condition ranged from 'Good' to 'Excellent'.

Seventy-four vertebrate fauna species were recorded during the survey, including five reptiles, five mammals (three introduced), and 64 birds. Three introduced mammal species were recorded during the survey, including two herbivores (cattle, donkey) and one introduced feral predator (cat). Targeted searches were undertaken for the bilby and Gouldian finch; however, no primary (visual observation) or secondary signs (tracks, scats, diggings or calls) of either of these species was observed. The peregrine falcon [(*Falco peregrinus*) (OS, BC Act)] was recorded overflying the Seasonal Wetlands/Minor Creeks habitat and the common greenshank [(*Tringa nebularia*) MI, EPBC Act & BC Act)] has previously been recorded within the survey area in the Seasonal Wetlands/Minor Creeks habitat. Based on a likelihood of occurrence assessment, three significant birds (common sandpiper, Gouldian finch and osprey) and two mammals (bilby and north-western free-tailed bat) are considered 'Likely' to occur within the broader survey area. An additional 33 species (30 birds, one mammal, and two reptiles) possibly occur within the survey area based on the presence of potentially suitable habitat and/or the recency of records in the vicinity of the survey area.

3.2 Targeted Survey Executive Summary (360 Environmental, 2023)

Main Roads Western Australia (Main Roads) commissioned 360 Environmental Pty Ltd (360 Environmental) part of SLR Consulting (SLR) to undertake a Targeted Flora survey for Cape Leveque Road SLK 103.6 - 207, approximately 102 km north of Broome, Western Australia.

The purpose of the works was to conduct a Targeted survey to determine the location and estimated population size of significant flora previously identified by Ecologia (Ecologia, 2023). This prior survey consisted of a larger area encompassing the current Survey Area – as well as the extent of these populations outside the Survey Area.

Based on previous survey results Main Roads identified a total of 10 Priority flora (four Priority 1 and six Priority 3 taxa) that were expected to occur; these taxa, plus an additional 10 taxa identified through the likelihood assessment as having some potential to occur, formed the target for the survey. Of these, three Priority 1 flora and six Priority 3 flora were recorded by the systematic subsampling, while one additional Priority 1 taxon that was not included in the likelihood assessment (due to its distribution occurring a significant distance outside the database search area) was recorded:

- Priority 1: *Byblis guehoi, Haemodorum capitatum, Jacquemontia sp.* Broome (A.A.Mitchell 3028), and *Nymphoides parvifolia*.
- Priority 3: A*phyllodium glossocarpum, Bonamia oblongifolia, Nymphoides beaglensis, Paranotis halfordii, Polymeria sp*. Broome (K.F.Kenneally 9759), and *Triodia acutispicula.*

Of the above only four priority flora taxa were recorded in the Development Envelope

- *Jacquemontia* sp. Broome (A.A.Mitchell 3028) (P1) 15 individuals
- *Bonamia oblongifolia* (P3) 1 individual

- *Polymeria* sp. Broome (K.F.Kenneally 9759) (P3) 3 individuals
- *Triodia acutispicula* (P3) 330 individuals

A post survey likelihood of occurrence assessment indicated that most targeted taxa that were not recorded during the survey were considered highly unlikely to occur within the Survey Area. Two Priority 1 taxa and three Priority 3 taxa were considered to still have potential to occur due to their habitat preferences for seasonally inundated damp areas:

- Priority 1: *Utricularia stellaris* and *Utricularia tubulata*
- Priority 3: *Stylidium costulatum, Stylidium pindanicum*, and *Utricularia bidentata*.

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

The Biological Survey by Ecologia Environment (2023) recorded two vegetation types from within the Project Clearing Footprint as presented in the Table 3 below:

Table 3. Summary of Vegetation Types within Project Clearing Footprint

Vegetation Type	Extent within Project Clearing Footpint (ha)	Extent within Mapped area (ha)
***Corymbia* Low Woodland (CbAtCp) –** described as "*Corymbia bella, Terminalia ferdinandiana/latipes, Brachychiton diversifolius* subsp. *diversifolius* low woodland; *Acacia tumida* var. *tumida, Terminalia canescens* tall sparse shrubland; *Chrysopogon pallidus, Sorghum stipoideum, Triodia acutispicula* low tussock/hummock grassland".	**1.22 (0.2% of mapped extent)**	**606.7**
***Eucalyptus* Low Woodland (EmAtCp) –** described as "*Eucalyptus miniata, Corymbia greeniana, Brachychiton diversifolius* subsp. *diversifolius* low woodland; *Acacia tumida* var. *tumida, Hakea macrocarpa* tall open shrubland; *Chrysopogon pallidus, Glycine tomentella, Gossypium rotundifo*lium low tussock grassland/herbland".	**4.98 (0.068% of mapped extent)**	**7,274.8**

In addition to the above, the development envelope contains 1.28ha of cleared areas.

The vegetation condition within the Project Clearing Footprint was mostly in Excellent Condition, with only 1.28 ha in Degraded Condition, representing the previously cleared areas. No plant communities observed within the Project Clearing Footprint corresponded to state (DBCA) or Commonwealth (EPBC Act) listed TECs or PECs.

Table 4 below provides details of the remaining extents pre-European Vegetation Associations:

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. 771	**Statewide**	35,671.30	34,884.39	97.79	-
	IBRA Bioregion Dampierland	34,907.23	34,672.53	99.33	-
	IBRA Sub-region Pindandland	34,907.23	34,672.53	99.33	-
	Local Government Authority Shire of Broome	35,671.30	34,884.39	97.79	-
Veg Assoc No. 750	**Statewide**	1,231,155.50	1,225,687.52	99.56	2.78
	IBRA Bioregion Dampierland	1,229,182.16	1,225,280.52	99.68	2.78
	IBRA Sub-region Pindanland	1,221,734.45	1,217,843.72	99.68	2.80

Pre-European Vegetation Association	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of pre-European Extent)
	Local Government Authority Shire of Broome	1,115,559.36	1,110,131.18	99.51	3.07

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 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 at variance to this Principle.

Vegetation

No Threatened or Priority Ecological Communities (TECs/PECs) listed under the EPBC Act or BC Act or listed by DBCA were recorded within the Project Clearing Footprint. The desktop assessment shows the project is located within a broadly mapped Environmentally Sensitive Area (ESA) representing the buffer of the State and Commonwealth listed Endangered "Monsoon (vine) Thickets on Coastal Sand Dunes of Dampier Peninsula TEC". However, the biological survey by Ecologia Environment in 2023 did not record any vegetation types representing this significant vegetation community. This TEC and associated ESA are therefore not present with in the Project Clearing Footprint.

Two Vegetation Types were recorded from the Project Clearing Footprint, mostly in an excellent condition as listed below:

- *Corymbia* Low Woodland (CbAtCp)
- *Eucalyptus* Low Woodland (EmAtCp)

As evident from Table 3 above, these vegetation types are widespread in the area and only 0.2% or less of the mapped extent are proposed to be cleared.

Similarly, as shown in Table 4, the broad scale pre-European vegetations observed within the clearing footprint are widespread and well represented locally and regionally, with more than 97% of pre-European extent remaining at all levels (State IBRA Bioregion, IBRA Subregion, LGA).

Flora

No EPBC Act or BC Act listed Threatened flora species were recorded from the Project Clearing Footprint or the larger survey area during the Biological Survey and a follow up Targeted Flora Survey carried out by Ecologia Environment (2023) and 360 Environmental (2023) respectively.

Four priority species were recorded from the Project Clearing Footprint as assessed below:

Priority Species	Abundance within Project Clearing Footprint (% of the surveyed populations)	Abundance within the Survey Area and Immediate Outside
Jacquemontia sp. Broome (A.A.Mitchell 3028) (P1)	15 (1.94%)	773
Bonamia oblongifolia (P3)	1 (0.075%)	1,326
Polymeria sp. Broome (K.F.Kenneally 9759) (P3)	3 (0.09%)	3,300
Triodia acutispicula (P3)	330 (1.83%)	17,982

Based on the assessment above, the priority species are not likely to be significantly impacted given only less than 2% of the surveyed populations are required to be cleared. Also, these species are common in the Kimberley Region having previously been recorded outside the survey area along the Broome Cape Leveque Rd (Biota Environmental Sciences, 2018) and in the overall Dampierland IBRA region [Woodman Environmental, (2008); GHD, (2016); Phoenix, (2018)].

Fauna

Targeted searches were undertaken for Bilby and Gouldian finch; however, no primary (visual observation) or secondary signs (tracks, scats, diggings or calls) of either of these species was observed. The Eucalypt Woodland habitat type is suitable for bilby for foraging (Craigie, A., McCabe, T. and Plant S., 2023). However, only a small portion (1% of mapped 622.3 ha) of this habitat type is proposed to be cleared. This species is known to occur in a variety of habitats and habitat for which this species displays a greater preference occurs outside the clearing footprint. However, as a precautionary measure, a pre-clearance survey will be conducted before the commencement of the clearing. If a burrow is found, a 30 m exclusion zone will be implemented within which no new clearing will be undertaken.

Gouldian finch prefers rocky hills with hollow-bearing, smooth-barked gums that are close to small waterholes or springs that persist through the dry season (Craigie, A., McCabe, T. and Plant S., 2023). No suitable habitat is present in the clearing footprint. They may occasionally move through the Eucalypt Woodland habitat when moving through the landscape. However, impact to these species due to minor clearing is unlikely to be significant.

The peregrine falcon [(*Falco peregrinus*) (OS, BC Act)] was recorded overflying the larger survey area in a Seasonal Wetlands/Minor Creeks habitat and the common greenshank [(*Tringa nebularia*) MI, EPBC Act & BC Act)] has previously been recorded within the survey area in the Seasonal Wetlands/Minor Creeks habitat (Craigie, A., McCabe, T. and Plant S., 2023). This habit type does not occur in the project clearing footprint.

Based on a likelihood of occurrence assessment by Ecologia, (2023), common sandpiper, osprey and north-western free-tailed bat were considered 'Likely' to occur within the survey area. However, they may cross the clearing footprint only in a fly over nature. North-western Free-tailed Bat are usually restricted to mangrove forests (Craigie, A., McCabe, T. and Plant S., 2023). Suitable habitat for this species is not present in the clearing footprint.

An additional 33 species were considered 'possible' to occur in the survey area due to presence of potentially suitable habitat or recent records in the vicinity of the survey area. However, the fauna habitat within the clearing footprint is limited and does not represent critical habitat for any of these species. Given the availability of more favourable habitat outside, these species are unlikely to be impacted by the project activities.

Ecological Linkages

There are no known conservation areas, DBCA managed lands, Ramsar Sites or Important Wetlands within the immediate vicinity of the Project Clearing Footprint. The relatively small scale clearing for the project in a region where remanent native vegetation is widespread is unlikely to fragment the landscape. Due to the proximity of the project to the coastal area, migratory marine and wetland bird species may occasionally be present within the clearing footprint, however, only in a fly over nature. Habitat critical for these species do not occur in the footprint.

Based on above, the project is unlikely to be at variance to this principle.

Methodology

- 360 Environmental Pty Ltd., (2023)
- Biota Environmental Sciences, (2018)
- Craigie, A., McCabe, T. and Plant S., (2023)
- DCCEEW, (2024a)
- DCCEEW, (2024b)
- GHD, (2016)
- Government of Western Australia, (2019)
- Phoenix, (2018)
- WAFlorabase (Accessed 26/03/2024)
- Woodman Environmental, (2008)
- Government GIS shapefiles:
  - DBCA Threatened flora and Fauna database search (Accessed 22/03/2024)
  - DBCA Threatened Ecological Community database search (Accessed 21/03/2024)
  - Pre-European vegetation (Accessed 21/03/2024)

(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 at variance to this Principle.

Fauna Habitat

Only one fauna habitat type was described from the Project Clearing Footprint:

Eucalypt Woodland: Associated with the Yeeda Land System this habitat type generally has red sandplains supporting pindan vegetation with *Eucalyptus* and *Corymbia* woodland over *Acacia* shrubland over tussock grasses. Hollow bearing trees, leaf litter and woody debris provide niches for fauna to occupy. The bilby is known to occupy this habitat type in the Kimberley. A total of 622.3 ha of this habitat type was recorded form the survey area of which only 1% is proposed to be cleared. Since this habitat type is well represented outside the clearing footprint, the relatively minor cleaning for the project is unlikely to have any significant impacts on the availability of this habitat type for local fauna species.

Fauna

Targeted searches were undertaken for Bilby and Gouldian finch by Ecologia Environment (2023); however, no primary (visual observation) or secondary signs (tracks, scats, diggings or calls) of either of these species was observed from the larger survey area:

- **Bilby** [(*Macrotis lagotis*) VU, EPBC Act & BC Act] – The closest known record of Bilby is 160 m of the clearing footprint from the year 1975. Despite targeted searches in the larger survey area where bilbies have previously been recorded (latest records being in 2015 from BCL road around SLK 138 more than 22 km from project clearing footprint), no diggings or secondary signs of this species were observed. The Eucalypt Woodland habitat type may provide suitable Bilby foraging habitat. However, only a small portion (1%) of the mapped habitat is proposed to be cleared. This species is known to occur in a variety of habitats and more favourable habitat for the species occurs outside the Project Clearing Footprint. As such impacts to this species due to project activities is unlikely to be significant. However, as a precautionary measure, a pre-clearance survey will be conducted before the commencement of the

clearing. If a burrow is found, a 30 m exclusion zone will be implemented within which no new clearing will be undertaken.

- **Gouldian finch** [(*Erythrura gouldiae*) EN & P4, EPBC & BC Act] – The closest known record is within one km of the clearing footprint in the proximity of the coast. Their preferred habitat is rocky hills with hollow-bearing, smooth-barked gums that are close to small waterholes or springs that persist through the dry season (Craigie, A., McCabe, T. and Plant S., 2023). No such habitat is present in the clearing footprint. The species may occasionally move through the Eucalypt Woodland habitat when moving through the landscape. However, impact to this species as a result of proposed minor clearing is unlikely to be significant.

The **Peregrine Falcon** [(*Falco peregrinus*) (OS, BC Act)] was recorded overflying the larger survey area in a Seasonal Wetlands/Minor Creeks habitat and the **Common Greenshank** [(*Tringa nebularia*) MI, EPBC Act & BC Act)] has previously been recorded within the survey area in the Seasonal Wetlands/Minor Creeks habitat. This habitat type does not occur in the clearing footprint. No cliffs or tree hollows occur in the clearing footprint for Peregrine Falcon to use for nesting (Craigie, A., McCabe, T. and Plant S., 2023).

Based on a likelihood of occurrence assessment by Ecologia, (2023), bird species the Common Sandpiper and Osprey, and a single mammal the North-western Free-tailed Bat were considered 'Likely' to occur within the survey area. Further analysis specific to the clearing footprint is presented below:

- **Common Sandpiper** [(*Actitis hypoleucos*) – MI, EPBC & BC Act] – This species prefers shallow waters and bare, soft mud at edges of saline, sheltered wetlands, often with protruding rock and mangrove roots. The species may venture into grassy areas adjoining wetlands (Craigie, A., McCabe, T. and Plant S., 2023). Habitat suitable for this species do not occur in the project cleaning footprint and therefore is unlikely to occur other than in an overfly nature.
- **Osprey** [(*Pandion cristatus*) – MI, EPBC & BC Act] – This species prefers coastal areas, favouring mangroves, rivers, estuaries and inshore seas as well as coastal islands. The species nests in treetops, on prominent headlands or tall infrastructure such as communication towers (Craigie, A., McCabe, T. and Plant S., 2023). There are number of known records of the species along the coast within the 40 km radius of the Project. Habitat suitable for this species do not occur in the project cleaning footprint and therefore is unlikely to occur other than in an overfly nature.
- **North-western Free-tailed Bat** [(*Mormopterus cobourgianus*) - P1, BC Act] – The species usually roosts in mangroves and primarily restricted to mangrove forests, adjacent areas of monsoon forest along larger waterways and semi-deciduous vine thickets (Craigie, A., McCabe, T. and Plant S., 2023 Habitat suitable for this species do not occur in the project cleaning footprint. There are multiple records of the north-western free-tailed bat within the project 40 km radius. However, they may only forage or overfly but are unlikely to roost in the clearing footprint.

As the preferred habitat for the above species does not occur in the development envelope, these species are assessed as possibly occurring as overfly or occasional visitors only.

An additional 33 species (30 birds, one mammal, and two reptiles) were considered possible to occur within the survey area due to presence of potentially suitable habitat or recent records in the vicinity of the survey area. Twenty-seven of the thirty bird species assessed as 'Possible' are Migratory wading birds. This is due to near-coastal location of the project. Habitat suitable for these species do not occur in the Project Clearing Footprint.

Two Priority 2 reptiles - **Dampierland Plain Slider** (*Lerista separanda*) and **Dampierland Burrowing Snake** (*Simoselaps minimus*) have known records along the western coast, closest records being 14 km and 3.5 km from the clearing footprint for each species respectively. These species have the potential to occur within the Eucalypt Woodland habitat type in areas with sandy substrates (Craigie, A., McCabe, T. and Plant S.,

2023). These species were not located in the biological surveys, habitat favourable to these species occurs outside the clearing footprint and therefore no impacts to the species are anticipated.

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

Methodology

- Craigie, A., McCabe, T. and Plant S., (2023)
- DCCEEW, (2024a)
- DCCEEW, (2024b)
- Government GIS shapefiles:
  - DBCA Threatened flora and Fauna database search (Accessed 22/03/2024)

(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.

No Threatened flora species pursuant to the EPBC Act and/or gazetted as Threatened flora pursuant to the BC Act were recorded during the Biological Survey and a follow up Targeted Flora Survey carried out by Ecologia Environment (2023) and 360 Environmental (2023) respectively.

The Desktop Database Searches (PMST report and Government GIS Shapefiles) also identified no known records of listed Threatened flora taxa from the Project's 40km radius Study Area.

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

Methodology

- 360 Environmental Pty Ltd., (2023).
- Craigie, A., McCabe, T. and Plant S., (2023)
- DCCEEW, (2024a)
- Government GIS shapefiles:
  - DBCA Threatened flora database search (Accessed 22/03/2024)

(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.

The Biological Survey by Ecologia Environment did not record any vegetation communities within the Project Clearing Footprint that corresponds to any state (DBCA) or Commonwealth (EPBC Act) listed Threatened Ecological Communities (TECs).

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

Methodology

- Craigie, A., McCabe, T. and Plant S., (2023)
- Government GIS shapefiles:
  - DBCA Threatened Ecological Community database search (Accessed 21/03/2024)

(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.

As evident from Table 4 above, the Vegetation Association 771 and 750 both have more than 97% of their pre-European extent remaining intact at all levels (Statewide, IBRA Bioregion and LGA). As such, the project is not located in an area with a regionally significant remnant vegetation. Given that these vegetation associations are widespread throughout the area and are well-represented locally and regionally, impacts due to project clearing is not likely to be significant.

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

Methodology

- Government of Western Australia, (2019).
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed 21/03/2024)

(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.

The Biological Survey carried out by Ecologia Environment did not record any vegetation types within the Project Clearing Footprint that represent wetland or watercourse vegetation.

As such, the proposed clearing is not at variance to this Principle.

Methodology

- Craigie, A., McCabe, T. and Plant S., (2023)

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

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

The project is located in the Cape Leveque Coast Basin catchment. Two land systems are mapped over the project:

- Yeeda System – described as "Red sandplains supporting pindan vegetation with dense acacia shrubs, scattered bloodwood and grey box trees and curly spinifex and ribbon grass".
- Reeves System- described as "Sandplains with scattered sandstone hills and plateaux supporting low pindan woodlands with acacias and eucalypts and curly spinifex-ribbon grass".

These land systems are generally not prone to degradation or erosion if the disturbances such as grazing pressure and frequency of burning are controlled. The Reeves System is considered to have minor susceptibility to wind erosion. The Yeeda system is generally considered not prone to land degradation or erosion (Schoknecht, N, and Payne, A L., 2011).

The project is in an area prone to severe rainfall events, which could contribute to land degradation via flooding and heavy runoff. However, the natural hydrology in the area will not be impacted as a result of clearing. Since no dewatering or soil extraction below the groundwater table is proposed, Acid Sulphate Soils is unlikely to be an issue.

The proposal is in a region where pre-European levels of native vegetation is widespread. The clearing works will be completed in a dry period and interruption of natural surface water flows is not expected. Main Roads Standard management practises will be implemented to ensure any land degradation issues are appropriately managed.

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

Methodology

- Schoknecht, N, and Payne, A L., (2011)
- Government GIS Shapefiles:
  - CSIRO Acid Sulphate Soil Risk Map (Accessed 21/03/2024)
  - Soil Landscape Mapping Systems DPIRD (Accessed 21/03/2024)

(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.

There are no known conservation areas, DBCA managed lands, Ramsar Sites or Important Wetlands within the immediate vicinity of the project. The closest reserve is a Class A Swan Island Nature Reserve (R 34257) vested under the Conservation Commission of WA, more than 8.7 km north of the project clearing. No impacts to the reserve are anticipated.

As such, the proposed clearing is not at variance to this Principle.

Methodology

- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters & Lands of Interest (Accessed 21/03/2024)
  - Ramsar Wetlands (Accessed 21/03/2024)
  - Important Wetlands (Accessed 21/03/2024)

(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.

The project is located in a proclaimed groundwater area – the Canning-Kimberley Groundwater Area. No proclaimed surface water areas or public drinking water source areas are located within the project 40 km desktop suvey area. No watercourse runs through the project area.

The proposed clearing is not considered to disturb or interrupt any natural drainage or cause an alteration to surface water flows. No excavation below the water table, no groundwater extraction, dewatering or drainage modifications are required, hence there is no change to groundwater level or quality. Water requirements for the project are to be sourced from existing Main Roads licensed bores and no changes to currently approved groundwater allocations are proposed.

The project will adhere to Main Roads Standard Management Plan which will incorporate management measures to not to disturb or interrupt any natural drainage and surface run-off patterns. The Plan will have provisions to manage contamination risks such as spill incidents due to fuel leakage during on-ground works. As such the deterioration of quality of surface and groundwater from sedimentation, erosion, or spill contamination because of project activities is unlikely.

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

Methodology

- Government GIS Shapefiles (Accessed 21/03/2024):
  - RIWI Act, Surface Water Areas and Irrigation Districts
  - RIWI Act, Groundwater Areas
  - Acid Sulphate Soil risk mapping
  - Watercourses

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

Proposed clearing is not at variance to this Principle.

The subregional climate is described as dry winter and hot semi-arid summer with an average annual rainfall of 770.3 mm (Cygnet Bay Station, Site ID- 3057) (BoM, 2024). Extreme weather events are a significant component of the Kimberley climate. Tropical cyclones and tropical storms can bring heavy and sustained rainfall, particularly in the months leading up to and during the wet season. It is common for a large proportion of the Region's rainfall to be recorded in one single event, leading to extensive flooding of rivers, creeks and roadways.

The proposed clearing will take place in the dry season with Main Roads standard measures for environmental management in place during on ground works to avoid the potential escalation of flooding, waterlogging or erosion. The clearing is in a region where the pre-European level of native vegetation is widespread. However, no changes to the existing levels of flooding are anticipated given the relatively minor clearing. As noted above, climatic conditions are the main factor influencing flooding and a small amount of proposed clearing will have no measurable influence on flood regimes in the area.

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

Methodology

- BoM Website (Accessed 21/03/2024)

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.

7 REHABILITATION, REVEGETATION & OFFSETS

7.1 Revegetation and Rehabilitation

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

7.2 Offset Proposal

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

8 STAKEHOLDER CONSULTATION

Main Roads will undertake stakeholder consultation 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.	**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 **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.	**No**	Standard Vehicle and Plant management actions from Annexure 204B (TABLE 204B.9.1), Hygiene Checklists will be applied.
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.
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.

10 REFERENCES

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11 APPENDICES

Appendix 1: CPS 818 condition 8 (e) (iii) Biological and Targeted Surveys Executive Summary

Appendix 1A: Biological Survey Executive Summary (Ecologia Environment, 2023)

The Broome-Cape Leveque Road (BCLR) is located in the Shire of Broome and connects the Broome Highway, east of Broome townsite, to the northern Dampier Peninsula over a distance of approximately 207 km. The road is a primary transport link, providing access for Aboriginal communities, outstations, pastoral stations, pearling industries and tourist destinations. In July 2021, Main Roads Western Australia (Main Roads) took over responsibility for the management and maintenance of BCLR and required a biological survey between 103.6 – 207 SLK (the survey area) to support approvals and planning of future works. The survey area constitutes a mostly linear corridor covering approximately 885 ha. Ecologia was engaged by Main Roads to conduct biological surveys of the survey area, including a detailed and targeted flora and vegetation survey and basic and targeted fauna habitat survey, between July and August 2022.

Flora and Vegetation Assessment

A total of 255 vascular plant taxa representing 74 families and 169 genera were recorded during the survey. Seven Department of Biodiversity, Conservation and Attractions (DBCA) listed Priority species were recorded within and immediately adjacent to the survey area: *Byblis guehoi* (P1), *Haemodorum capitatum* (P1), *Parsonsia kimberleyensis* (P1), *Aphyllodium glossocarpum* (P3), *Nymphoides beaglensis* (P3), *Stylidium pindanicum* (P3), and *Triodia acutispicula* (P3). Of these taxa, only *Aphyllodium glossocarpum* (P3), *Haemodorum capitatum* (P1), and *Triodia acutispicula* (P3) were recorded within the survey area. No Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) or Biodiversity Conservation Act 2016 (BC Act) Threatened species were recorded. Ten introduced plant species were recorded, none of which are listed as Declared Pests or Weeds of National Significance (WONS).

Hierarchical agglomerative clustering and ordination analyses were conducted on floristic data from 50 sampling sites (49 quadrats and 1 relevé), resulting in the classification of nine vegetation types within the survey area. Two additional vegetation types were described on the basis of vegetation structure and dominant species. Vegetation within the survey area consists primarily of five eucalypt woodland vegetation types dominated by *Corymbia bella, C. polycarpa, C. greeniana, Eucalyptus miniata*, and *E. tectifica*, that occur on sandplains associated with the Reeves, Wanganut, and Yeeda land systems, and account for over 90% of the vegetated part of the survey area. Vegetation condition ranged from 'Degraded' to 'Excellent', but the majority of the survey area was in 'Excellent' condition.

There were no plant communities observed that corresponded to any state (BC Act) or Commonwealth (EPBC Act) listed Threatened Ecological Community (TEC), although the 'Monsoon (vine) thickets on coastal sand dunes of Dampier Peninsula' TEC occurs adjacent to the survey area at two locations. One state listed Priority Ecological Community (PEC) ('Kimberley Vegetation Association 67' Priority 3) was recorded and accounts for 19.02 ha (2.15%) of the survey area. Four vegetation types occurring within the survey area are potentially restricted, each accounting for less than 1% of the total mapped area and may be considered locally significant.

Fauna and Fauna Habitat Assessment

Fauna habitat assessments were undertaken at 45 sites to describe representative fauna habitat types present within the survey area. Four habitat types were identified within the survey area: Eucalypt Woodland (70.3%), Seasonal Wetlands/Minor Creeks (2.2%), Shrubland (2%) and Saline Flats (0.05%). The Eucalypt Woodland habitat type provides suitable habitat for the bilby, particularly in the south of the survey area in the vicinity of Beagle Bay, where they have previously been recorded near the survey area. Eucalypt woodlands may occasionally be used by the Gouldian finch in the north of the survey area near monsoon vine thickets and water sources. When inundated, the Seasonal Wetland/Minor Creeks habitat type provides suitable habitat for migratory wading birds. All habitat types identified within the survey area are considered widespread at a local and regional level, with no habitats confined exclusively to the survey area. Habitat condition ranged from 'Good' to 'Excellent'.

Seventy-four vertebrate fauna species were recorded during the survey, including five reptiles, five mammals (three introduced), and 64 birds. Three introduced mammal species were recorded during the survey, including two herbivores (cattle, donkey) and one introduced feral predator (cat). Targeted searches were undertaken for the bilby and Gouldian finch; however, no primary (visual observation) or secondary signs (tracks, scats, diggings or calls) of either of these species was observed. The peregrine falcon [(*Falco peregrinus*) (OS, BC Act)] was recorded overflying the Seasonal Wetlands/Minor Creeks habitat and the common greenshank [(*Tringa nebularia*) MI, EPBC Act & BC Act)] has previously been recorded within the survey area in the Seasonal Wetlands/Minor Creeks habitat. Based on a likelihood of occurrence assessment, three significant birds (common sandpiper, Gouldian finch and osprey) and two mammals (bilby and north-western free-tailed bat) are considered 'Likely' to occur within the survey area. An additional 33 species (30 birds, one mammal, and two reptiles) possibly occur within the survey area based on the presence of potentially suitable habitat and/or the recency of records in the vicinity of the survey area.

Appendix 1B: Targeted Survey Executive Summary (360 Environmental, 2023)

Main Roads Western Australia (Main Roads) commissioned 360 Environmental Pty Ltd (360 Environmental) part of SLR Consulting (SLR) to undertake a Targeted Flora survey for Cape Leveque Road SLK 103.6 - 207, approximately 102 km north of Broome, Western Australia.

The purpose of the works was to conduct a Targeted survey to determine the location and estimated population size of significant flora previously identified by Ecologia (Ecologia, 2023). This prior survey consisted of a larger area encompassing the current Survey Area – as well as the extent of these populations outside the Survey Area.

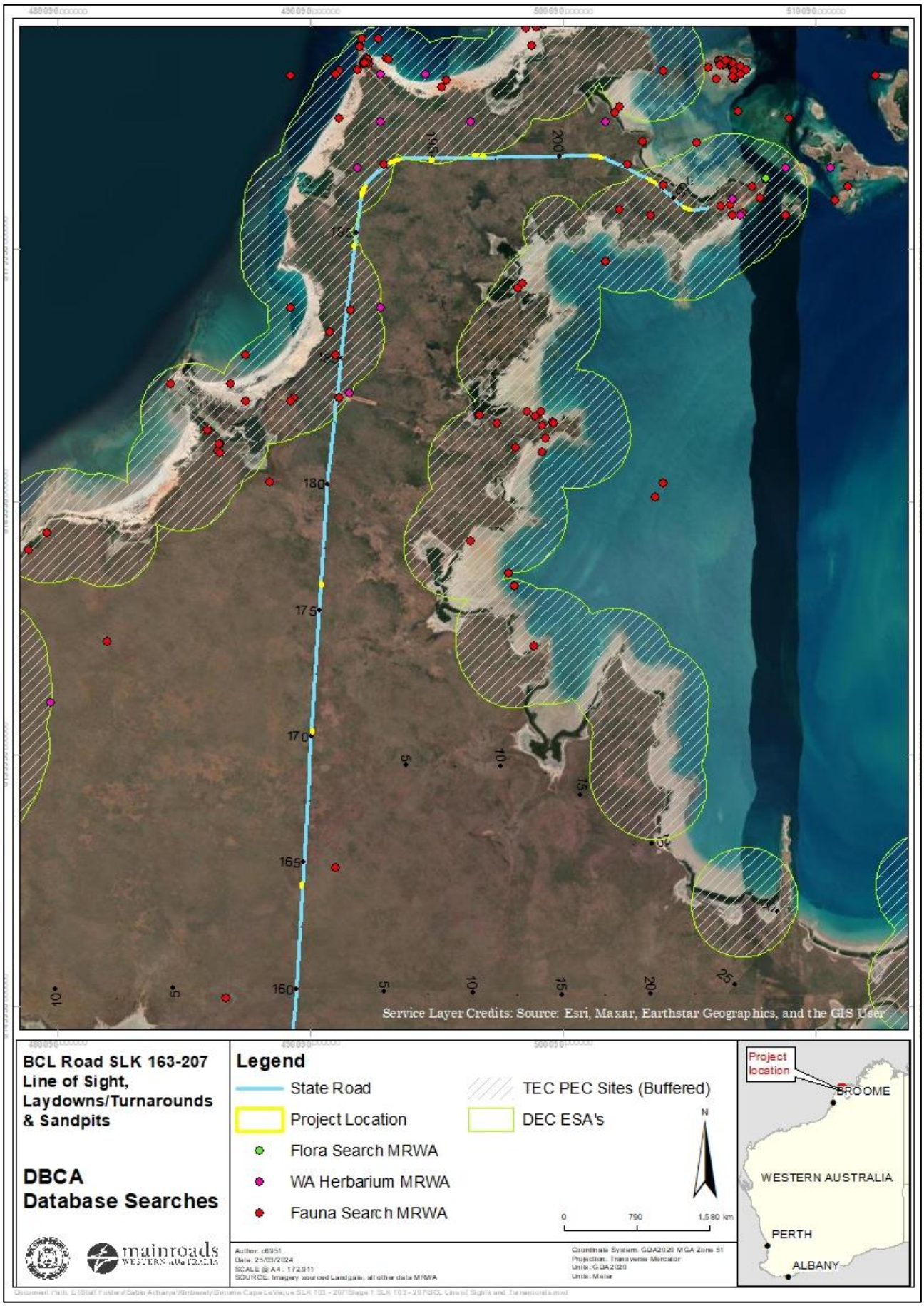
Based on previous survey results Main Roads identified a total of 10 Priority flora (four Priority 1 and six Priority 3 taxa) that were expected to occur; these taxa, plus an additional 10 taxa identified through the likelihood assessment as having some potential to occur, formed the target for the survey. Of these, three Priority 1 flora and six Priority 3 flora were recorded by the systematic subsampling, while one additional Priority 1 taxon that was not included in the likelihood assessment (due to its distribution occurring a significant distance outside the database search area) was recorded:

- Priority 1: *Byblis guehoi, Haemodorum capitatum, Jacquemontia sp.* Broome (A.A.Mitchell 3028), and *Nymphoides parvifolia*.
- Priority 3: A*phyllodium glossocarpum, Bonamia oblongifolia, Nymphoides beaglensis, Paranotis halfordii, Polymeria sp*. Broome (K.F.Kenneally 9759), and *Triodia acutispicula.*

A post survey likelihood of occurrence assessment indicated that most targeted taxa that were not recorded during the survey were considered highly unlikely to occur within the Survey Area. Two Priority 1 taxa and three Priority 3 taxa were considered to still have potential to occur due to their habitat preferences for seasonally inundated damp areas:

- Priority 1: *Utricularia stellaris* and *Utricularia tubulata*
- Priority 3: *Stylidium costulatum, Stylidium pindanicum*, and *Utricularia bidentata.*

Appendix 2: DBCA Threatened Flora and Fauna Database Searches



Appendix 3: EPBC Act Protected Matters Search Report

Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 20-Mar-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	49
Listed Migratory Species:	58

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	1
Commonwealth Heritage Places:	1
Listed Marine Species:	91
Whales and Other Cetaceans:	15
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	2
Habitat Critical to the Survival of Marine Turtles:	2

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	34
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status
Natural		
The West Kimberley	WA	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area
FISH		
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area
MAMMAL		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
REPTILE		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Onychoprion anaethetus		
Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Sterna dougallii		
Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons		
Little Tern [82849]		Breeding known to occur within area
Sula leucogaster		
Brown Booby [1022]		Breeding known to occur within area
Sula sula		
Red-footed Booby [1023]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Foraging, feeding or related behaviour likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands	[Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - YAMPI SOUND TRAINING AREA [50145]	WA

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Natural		
Yampi Defence Area	WA	Listed place

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat likely to occur within area overfly marine area
Limnodromus semipalmatus		
Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area
Fish		
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Foraging, feeding or related behaviour likely to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Congregation or aggregation known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Kimberley	Habitat Protection Zone (IUCN IV)
Kimberley	Multiple Use Zone (IUCN VI)

Habitat Critical to the Survival of Marine Turtles [Resource Information]

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea Olive Ridley Turtle [1767]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Bardi Jawi	Indigenous Protected Area	WA
Swan Island	Nature Reserve	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Ocean Barramundi Expansion Project	2022/09272		Assessment
Controlled action			

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Not controlled action			
Aquaculture - Barramundi grow out, Yampi Sound	2005/2476	Not Controlled Action	Completed
Not controlled action (particular manner)			
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Breeding	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging likely	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging (high density prey)	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Calving	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Foraging likely	Known to occur
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Migration likely	Known to occur
Dugong		
Dugong dugon Dugong [28]	Foraging	Likely to occur
Marine Turtles		
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
River shark		
Pristis clavata Dwarf Sawfish [68447]	Foraging	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Juvenile	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Nursing	Known to occur
Pristis clavata Dwarf Sawfish [68447]	Pupping	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Foraging	Known to occur
Pristis pristis Freshwater Sawfish [60756]	Nursing	Likely to occur
Pristis zijsron Green Sawfish [68442]	Foraging	Known to occur
Pristis zijsron Green Sawfish [68442]	Pupping	Known to occur

Scientific Name	Behaviour	Presence
Seabirds		
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Breeding	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Sula sula Red-footed Booby [1023]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Nursing	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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