Appendix F: Vasse-Wonnerup Ramsar Wetland Site Environmental Management Plan

Bussell Highway Duplication Stage 2 - Hutton to Sabina EPBC 2020/8800

Vasse-Wonnerup System Environmental Management Plan

January 2021

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January 2021

EXECUTIVE SUMMARY

Bussell Highway Duplication Stage 2 Hutton to Sabina Proposal

Main Roads Western Australia (Main Roads) is proposing to construct and operate the Bussell Highway Duplication Stage 2 Hutton to Sabina Proposal (the Bussell Highway Duplication).

To provide dual carriageway access along the entire 46 km portion of the highway between Bunbury and Busselton, Main Roads is planning to construct a second carriageway along the existing two-lane single carriageway section. The Bussell Highway Duplication will be undertaken in two stages with Stage 1, comprising a 5.55 km distance between Capel and Hutton Road, already under construction.

The Proposal comprises Stage 2, which involves the construction of the remaining 12.8 kilometre (km) two-lane carriageway (southbound) to duplicate the existing carriageway effectively between Hutton Road and the Sabina River bridge and other road infrastructure, including but not limited to bridges, culverts, lighting, noise barriers, fencing, landscaping, road safety barriers and signs.

The Proposal occurs within the City of Busselton and Shire of Capel. Construction of the Proposal is anticipated to commence in June 2021 and continue for a period of up to approximately three years.

The Proposal development envelope, describing the maximum extent of potential disturbance, is 128 hectares (ha). Within this envelope, a proposed Clearing area, containing 27.3 ha of mixed native, non-native and regrowth vegetation, was defined based on the current road design.

Proposal design has sought to minimise the required clearing through the use of existing cleared areas where possible. Approximately 83% of the development envelope comprises cleared land.

The Proposal was formally referred to the Department of Agriculture, Water and the Environment (DAWE) on 1 October 2020 (EPBC number 2020/8800) as a potential Controlled Action under the *Environmental Protection and Biodiversity Conservation Act 1999* due to impacts on Matters of Nation Environmental Significance.

DAWE provided advice on 12 November 2020 that the Proposal is considered a Controlled Action and that it would be assessed by Preliminary Documentation (DAWE, 2020).

Purpose of this EMP

This EMP has been developed to support documentation prepared to address the DAWE request of 12 November 2020 for further information for assessment of the Proposal (DAWE, 2020).

This EMP sets out the environmental management actions proposed to manage, monitor and mitigate the direct and potential indirect impacts of the Proposal on the Vasse-Wonnerup wetland system Ramsar site (Vasse-Wonnerup System).

This EMP has been prepared consistent with the *Environmental Management Plan Guidelines* (Department of the Environment (2014)).

Environmental management and monitoring

As outlined within this EMP, the key environmental management and monitoring actions for the Proposal are identified in Table E-1.

Table E-1 Environmental management measures

Timing	Management Actions	Performance Target
Prior to construction	• As part of the contractor's CEMP, development of a Hygiene Management Plan to prevent the spread of dieback and weeds to adjacent vegetation. The CEMP will include procedures such as machinery/vehicle clean down, weed treatments and restrictions on vehicle/machinery movements • As part of the contractor's CEMP, development of a Fire Management Plan	• No indirect impacts to the Vasse-Wonnerup System
During construction	• Contractor induction will include familiarisation with and discussion of the Vasse-Wonnerup System, riparian vegetation and hygiene management • Long-term hydrocarbon storage (i.e. hydrocarbons which shall not be used that day or not stored within equipment waiting to be used) or re-fuelling of equipment (with the exception of stationary plant) will not be permitted within 100 m of riparian vegetation • The Construction Contractor will prepare a Spill Response Procedure for oil, chemical or hazardous material spill events to ensure any spill is contained effectively and cleaned up appropriately and efficiently with approved materials • Implement standard construction drainage management as detailed under Main Roads Specification 204 • As part of the contractor's CEMP, the construction contractor will prepare a Fire Management Plan to minimise risk of ignition from construction activities and effectively manage any resulting fire/wildfire • All Department of Fire and Emergency Services (DFES) and Local Government Authority (LGA) restrictions on fire and machinery movement will be strictly adhered to	• No indirect impacts to the Vasse-Wonnerup System
Post construction	• Not applicable (monitoring and as-needed corrective action activities only)	• Not applicable

GLOSSARY OF TERMS

Defined Terms	
Term	**Definitions**
Main Roads	Main Roads Western Australia
Proposal	Main Roads proposes to construct the Bussell Highway Duplication Hutton to Sabina Stage 2, in the South West Region of Western Australia (WA) (referred to as the Proposal)
Proposal Area/Development Envelope	The Proposal Area, also referred to as the Development Envelope, is located within the City of Busselton and Shire of Capel. It extends along the existing Bussell highway carriageway for approximately 12.8 km between Hutton Road and the Sabina River. The Proposal Area covers 128 hectares (ha) and includes the existing road reserve, portions of which contain native vegetation.
Site	The Vasse-Wonnerup wetland system Ramsar site
Standard construction management	Measures that have been applied successfully to other large scale projects that are considered appropriate in minimising the environmental impacts. These measures ensure that clearing is implemented properly, that erosion does not occur, and that spills are minimised and managed appropriately
Acronyms	
ANZECC	Australian and New Zealand Environment and Conservation Council
BC Act	*Biodiversity Conservation Act 2016*
CCW	Conservation Category Wetland
CEMP	Construction environmental management plan
DAWE	Department of Agriculture, Water and the Environment
DPaW	Department of Parks and Wildlife
EMP	Environmental Management Plan
EP Act	*Environmental Protection Act 1986*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Area
MNES	Matters of National Environmental Significance
WA	Western Australia

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APPENDICES

Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	Senior Environment Officer	Draft v1	11/12/2020
Reviewer:	Senior Environment Officer	Draft v2	13/01/2021
Author:	Senior Environment Officer	Rev 0	19/01/2021

COVER PAGE AND DECLARATION OF ACCURACY

- **EPBC number**: 2020/8800
- **Project name**: Bussell Highway Duplication Hutton to Sabina Stage 2
- **Environmental management plan title**: Bussell Highway Duplication Hutton to Sabina Stage 2 Vasse-Wonnerup System Environmental Management Plan
- **Proponent / approval holder and ACN or ABN**: Main Roads Western Australia, ABN 50860676021
- **Proposed / approved action**: Construction and operation of Bussell Highway Duplication Proposal Stage 2
- **Location of the action**: Bussell Highway between Hutton Road and the Sabina River, within the Shire of Capel and City of Busselton
- **Date of preparation of the action management plan**: January 2021
- **Person accepting responsibility for the action management plan**: Martine Scheltema, Manager Environment, Main Roads Western Australia

Declaration of accuracy

I declare that to the best of my knowledge, all the information contained in, or accompanying this document is complete, current and correct. I am duly authorised to sign this declaration on behalf of the proponent / approval holder. I am aware that:

a) giving false or misleading information is a serious offence under section 137. 1 of the Criminal Code Act 1995 (Cth)

b) section 137.2 of the Criminal Code Act 1995 (Cth) makes it an offence for a person to produce a document to another person in compliance or purported compliance with a law of the Commonwealth where the person knows that the document is false or misleading;

c) section 490 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading; and

d) section 491 of the EPBC Act makes it an offence for a person to provide information or documents to specified persons who are known by the person to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth) (EPBC Regulations) where the person knows the information or document is false or misleading.

Signed: _____
Full name: Martine Scheltema, Manager Environment
Organisation: Main Roads Western Australia (ABN 50 860 676 021)
Date _____/_____/_____

Election to have an action management plan approved

Note: Pursuant to section 132B of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), this election must be given to the Minister before the Minister grants an approval of the proposed action under section 133 of the EPBC Act.

Person Proposing to Take Action

Name and Title:	Martine Scheltema, Manager Environment
Organisation:	Main Roads Western Australia
EPBC Referral Number:	EPBC 2020/8800
ACN/ABN:	ABN 50860676021
Postal Address:	PO Box 6202 EAST PERTH WA 6002
Telephone:	138 138
Email:	enquiries@mainroads.wa.gov.au

☑ I elect to submit an action management plan(s) for approval in accordance with section 132B of the Environment Protection and Biodiversity Conservation Act 1999. I understand that a fee of $2,690 may apply under the cost recovery arrangements.

Declaration:

☑ I declare that to the best of my knowledge the information I have given on this form is complete, current and correct.

☑ I understand that giving false or misleading information is a serious offence.

Signed:	_____
Full name:	Martine Scheltema, Manager Environment
Organisation:	Main Roads Western Australia (ABN 50 860 676 021)
Date	_____/_____/_____

1 PROPOSAL DESCRIPTION

1.1 Bussell Highway Duplication Stage 2 Hutton to Sabina Proposal

Main Roads Western Australia (Main Roads) is proposing to construct and operate the Bussell Highway Duplication Stage 2 Hutton to Sabina Proposal (the Bussell Highway Duplication).

To provide dual carriageway access along the entire 46 km portion of the highway between Bunbury and Busselton, Main Roads is planning to construct a second carriageway along the existing two-lane single carriageway section. The Bussell Highway Duplication will be undertaken in two stages with Stage 1, comprising a 5.55 km distance between Capel and Hutton Road, already under construction.

The Proposal comprises Stage 2, which involves the construction of the remaining 12.8 kilometre (km) two-lane carriageway (southbound) to duplicate the existing carriageway effectively between Hutton Road and the Sabina River bridge (Figure 1, Appendix A) and other road infrastructure, including but not limited to bridges, culverts, lighting, noise barriers, fencing, landscaping, road safety barriers and signs. The new carriageway will lie approximately 25 m east, south or south east of the existing carriageway.

The Proposal will upgrade this section of Bussell Highway to a four-lane highway with lane widths of 3.5 m across the two lanes. The left shoulder width is to be 2.5 m and will be fully sealed. The right shoulder width is to be 1.5 m fully sealed. The total median width from edge to edge is to be a minimum of 27 m with a target width of 31 m.

The Proposal occurs within the City of Busselton and Shire of Capel. Construction of the Proposal is anticipated to commence in June 2021 and continue for a period of up to approximately three years.

The Proposal development envelope, describing the maximum extent of potential disturbance, is 128 hectares (ha). Within this envelope, a proposed Clearing area, containing 27.3 ha of mixed native, non-native and regrowth vegetation, was defined based on the current road design.

The Proposal design will minimise the required clearing through the use of existing cleared areas where possible. Approximately 83% of the development envelope comprises cleared land.

1.2 Environmental assessment and management

The Proposal was formally referred to the Department of Agriculture, Water and the Environment (DAWE) on 1 October 2020 (EPBC number 2020/8800) as a potential Controlled Action under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to impacts on Matters of Nation Environmental Significance (MNES).

DAWE provided advice on 12 November 2020 that the Proposal is considered a Controlled Action and that it would be assessed by Preliminary Documentation (DAWE, 2020).

This Environmental Management Plan (EMP) has been prepared to support the documentation prepared to address the DAWE request for further information. The DAWE request identified a requirement for Main Roads to detail the proposed management measures relating to potential impacts on the Ramsar-listed Vasse-Wonnerup wetland system (Vasse-Wonnerup System).

This EMP sets out the environmental management actions to manage, monitor and mitigate the direct and potential indirect impacts of the Proposal on the Vasse-Wonnerup System.

This EMP has been prepared consistent with the *Environmental Management Plan Guidelines* (Department of the Environment (DotE) (2014)).

1.3 Vasse-Wonnerup System

1.3.1 Description

The following description is taken form the Australian Wetlands Database (DAWE, 2020).

The Vasse-Wonnerup System is situated in the Perth Basin, south-western Western Australia (Figure 2, Appendix A). It is an extensive, shallow, nutrient-enriched wetland system of highly varied salinities. Large areas of the wetland dry out in late summer.

The site is located on a narrow, flat plain separated from the ocean by a narrow system of low dunes. The system is comprised of two former estuaries - the Vasse and Wonnerup Lagoons, with inflows of seawater managed by floodgates (weirs) since early 1900s. Water in the Vasse-Wonnerup System is fresh in winter and becomes saline in summer due to leakage past the floodgates and, since 1988, some seawater being allowed to enter.

Vasse-Wonnerup System is fringed by samphire and rushes with some melaleuca woodlands on higher ground. The Tuart Forest National Park component of the site is dominated by open-forest of mature Tuart trees and Western Australian Peppermint trees.

The Vasse-Wonnerup System supports tens of thousands of resident and migrant waterbirds of a wide variety of species. More than 80 species of waterbird have been recorded in the System such as Red-necked Avocets and Black-winged Stilts, Wood Sandpiper, Sharp-tailed Sandpiper, Long-toed Stint, Curlew Sandpiper and Common Greenshank. Thirteen waterbird species are also known to breed at the Ramsar site, including the largest regular breeding colony of Black Swans in south-western Australia.

The Sabina and Abba Rivers of the Ramsar site are important indigenous cultural heritage sites and the Ramsar site would have traditionally been used by indigenous people of the area.

The Ramsar site is used mostly for conservation, nature-based activities, residential areas, farming and tourism. The site is used as a compensating basin for discharge from four rivers; the Vasse, Abba, Sabina and Ludlow rivers (DPaW, 2014a).

1.3.2 Conservation status

The Vasse-Wonnerup System Ramsar site was designated on 7 June 1990 (DPaW, 2014a). As a Ramsar site, the System is considered MNES and is protected under the EPBC Act. Large expanses of the System are also mapped as Conservation Category Wetlands (CCW) (GoWA, 2020a), which are protected at the state level as declared Environmentally Sensitive Areas (ESA) (GoWA, 2005).

The Ramsar site covers an area of 1,109 ha. The boundary includes part of Crown Reserve 31188 known as Sabina Nature Reserve, the majority of Nature Reserve 41568 and the part of Crown Reserve 40250 known as Tuart Forest National Park west of Tuart Drive Ludlow. Various parcels of Unallocated Crown Land are also included. It includes parts of the Sabina River and a length of the Abba River. All road reserves are excluded from the Ramsar site (DPaW, 2014a). The Tuart Forest National Park and various Nature Reserves were added to the site in 2001. These contribute substantially to the conservation values of the site by providing protected buffer zones for wetlands (DPaW, 2014).

The System meets two of the nine Ramsar criteria:

- Criterion 5: *A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds***.**

  More than 33,000 waterbirds have been counted at the Vasse-Wonnerup System. Waterbird data indicate that more than 20,000 waterbirds use the Ramsar site each year, suggesting

that the wetland regularly supports 20,000 waterfowl. This includes species such as Red-necked Avocets and Black-winged Stilts, Wood Sandpiper, Sharp-tailed Sandpiper, Long-toed Stint, Curlew Sandpiper and Common Greenshank.

- Criterion 6: *A wetland should be considered internationally important if it regularly supports one per cent of the individuals in a population of one species or subspecies of waterbird.*

  At least 1% of the Australian population of Black-winged Stilt and at least 1% of the world population of Red-necked Avocet use Vasse-Wonnerup System in most years.

The site supports the largest regular breeding colony of Black Swan (*Cygnus atratus*) in southwestern Australia. More than 150 pairs of swans nest in most years and breeding is often successful.

The site's migratory shorebirds are listed under the Japan–Australia Migratory Bird Agreement (JAMBA), the China–Australia Migratory Bird Agreement (CAMBA), the Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA), Convention on the Conservation of Migratory Species of Wild Animals (Bonn) and are specially protected under the EPBC Act.

There are no nationally rare, threatened or endemic wetland plants known at the site. Problematic invasive plants including Bulrush *Typha orientalis* and Arum Lily *Zantedeschia aethiopica* are established in and around the Sabina and Abba Rivers.

2 OBJECTIVES

2.1 Purpose

This EMP has been developed to support documentation prepared to address the DAWE request of 12 November 2020 for further information for assessment of the Proposal (DAWE, 2020).

This EMP sets out the environmental management actions proposed to manage, monitor and mitigate the direct and potential indirect impacts of the Proposal on the Vasse-Wonnerup System. It has been prepared consistent with the guidance documentation detailed in Section 1.2.

2.2 Objectives

This EMP has been prepared to ensure the impacts of the Proposal to the Vasse-Wonnerup System are acceptable, minimised and managed. It is a 'management-based' EMP to document management actions required during Proposal implementation and operation. Management measures within this EMP include both standard measures and those developed specific to the Proposal.

The following management objective has been identified: To construct and operate the Proposal to avoid and minimise impacts to the Vasse-Wonnerup System.

3 ENVIRONMENTAL MANAGEMENT ROLES AND RESPONSIBILITIES

This EMP identifies the environmental management of activities to be undertaken by Main Roads during the implementation of the Proposal. Main Roads acknowledges that the environmental management actions contained within this EMP are legal requirements to be met by Main Roads.

The Manager Environment at Main Roads will maintain responsibility for implementation of the management actions outlined within this EMP, on behalf of Main Roads' Managing Director. Management actions may be undertaken by employees and / or contractors of Main Roads on behalf of the Managing Director.

Where management actions are undertaken by employees and / or contractors of Main Roads, these will be communicated and documented to the relevant personnel through relevant environmental training (refer to Section 4.2).

4 REPORTING AND ACCOUNTABILITY

4.1 Reporting

Main Roads will report to DAWE on the implementation of this EMP as part of annual compliance reporting under the conditions of approval for the Proposal.

Where compliance audits undertaken by Main Roads identify that the environmental management actions and / or the environmental objectives are not being achieved (i.e. non-compliance or an environmental incident), Main Roads will notify DAWE as soon as reasonably practicable. Consistent with standard document control procedures, Main Roads will maintain copies of all reports submitted to DAWE.

The reporting requirements for this EMP are identified in Table 4-1. A template for the annual compliance report is included in Appendix B.

Table 4-1 Reporting requirements

Aspect	Report From	Report To	Reporting Frequency
Implementation of EMP	Manager Environment	DAWE	Annually (as part of annual compliance reporting)
Non-compliance with EMP or Environmental Incident	Manager Environment	DAWE	As soon as reasonably practicable but not more than seven days

The format and content of annual reporting will be in accordance with the requirements of the annual reporting conditions. The format and content of reporting of a non-compliance event or an environmental incident will be subject to the nature of the non-compliance / incident and will include all requested information from DAWE. In consideration of this, specific templates for reporting these are not provided as part of this EMP.

4.2 Environmental training

Main Roads will ensure that all personnel undertaking works for the Proposal, including visitors, have undertaken a site induction training program, or are escorted to the site. Main Roads will evaluate all personnel undertaking the site induction training program through a written test to ensure that all personnel have an understanding of the environmental requirements for the Proposal.

Where it is identified that personnel have not undertaken the works in accordance with the environmental requirements for the Proposal, Main Roads will require such personnel to repeat the site induction training program.

The general content of the site induction training program for the Proposal is outlined in Table 4-2.

Table 4-2 Site induction training program content

Aspect	Site Induction Training Program Content
Site induction training program	Awareness of Main Roads' Environmental Policy
	Identification of the environmental values in the area of the Proposal
	Identification of key environmental risks associated with the Proposal, and the identification of management requirements to control such risks
	Roles and responsibilities of all personnel in the protection and management of the environment, including identification of key personnel that have specific roles or responsibilities
	Awareness of importance of compliance with the environmental requirements (including penalties for non-conformance with the environmental requirements)

Aspect	Site Induction Training Program Content
	Pegging of the area of works, and other pegging types (for example, trees to be retained)
	Clearing of native vegetation and management of topsoil
	Hygiene procedures for *Phytophthora* Dieback management and weed management
	Appropriate disposal of wastes
	Environmental incidents, including the requirements for management and reporting
	The environmental benefits of improved personal performance

4.3 Emergency contacts and procedures

Emergency contact details will be signposted at appropriate locations within the Proposal Area, to enable immediate contact and response in the event of an emergency/environmental incident observed by Main Roads' personnel, contractors or the public.

Emergency response procedures will be followed in the event of an emergency/environmental incident.

Main Roads' general and emergency contacts for the Proposal are provided in Table 4-3.

Table 4-3 Emergency contact details

Aspect	Contact Details
General contact	• Main Roads Head Office Address: Don Aitken Centre, Waterloo Crescent, EAST PERTH WA 6004 Mail: PO Box 6202, EAST PERTH WA 6002 Email: enquiries@mainroads.wa.gov.au Phone: 138 138 • Main Roads South West Region Address: Robertson Drive, BUNBURY WA 6231 Mail: PO Box 5010, EAST PERTH WA 6231 Email: enquiries@mainroads.wa.gov.au Phone: 138 138 / (08) 9724 5600
Emergency contact	• Manager Environment, Main Roads Email: Martine.Scheltema@mainroads.wa.gov.au Phone: (08) 9323 4614 • Regional Manager, Main Roads South West Region Email: robert.barnsley@mainroads.wa.gov.au Phone: (08) 9724 5600

5 POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS

Main Roads considers that the environmental impacts associated with the construction and operation of Proposal on the Vasse-Wonnerup System are minor, temporary, readily managed. The type of work involved in constructing the bridges over the Ludlow, Abba and Sabina Rivers is work that Main Roads undertakes regularly and well. The agency is responsible for all road bridges within the state and, within the last five years, has successfully managed the construction of new bridge crossings such as the Matagarup Bridge in the Swan River and the replacement of Bow River, Greenough River, Fortescue River, Phillips River, Collie River and Mandurah Bridges.

5.1 Threats to the Vasse-Wonnerup System

The Ecological Character Description prepared for the Vasse-Wonnerup System (Wetland Research & Management, 2007) lists the following four key threats to the System:

- Hyper-eutrophication
- Urban and industrial development
  - increased use of pesticides, herbicides, heavy metals and oils,
  - physical and noise disturbance of waterbirds.
- Changes to the hydrology
  - climate change and rising seawater levels, reduced rainfall and reduced surface/groundwater flows,
  - abstraction from aquifers.
- Acid sulphate soils (ASS).

Past management of water levels in the system has been largely satisfactory for waterbirds (DPaW, 2014a).

With respect to the Proposal, DAWE (2020) note that "…potential impacts are considered most likely to arise through altered hydrological regimes and run-off water contamination (sediment, hydrocarbon spills, etc) that enter the Ludlow, Abba and Sabina Rivers that flow into the Vasse-Wonnerup Ramsar wetland".

A complete assessment of the potential impacts of the Proposal to the Vasse-Wonnerup System is contained within *Bussell Highway Duplication Stage 2 Hutton to Sabina Additional Information for Preliminary Documentation* (Main Roads, 2020).

5.2 Assumptions and uncertainties

This EMP has been prepared on the basis of information provided in the environmental surveys for the Proposal (Table 5-1), and based upon knowledge of Main Roads' construction and operation of similar linear infrastructure works.

Table 5-1 Environmental and geotechnical surveys relevant to this EMP

Survey/Report Name	Location/Extent of Survey	Methodology
Bridge 1763 - Bussell Highway Over Sabina River Geotechnical Factual, Interpretive and Design Report (AECOM, 2016a)	Survey conducted over the Sabina River bridge site	Geotechnical field survey and laboratory analysis of samples
Bridge 1762 - Bussell Highway Over Abba River Geotechnical Factual,	Survey conducted over the Abba River bridge site	Geotechnical field survey and laboratory analysis of samples

Survey/Report Name	Location/Extent of Survey	Methodology
Interpretive and Design Report (AECOM, 2016b)		
Bridge 1761 - Bussell Highway over Ludlow River Geotechnical Factual, Interpretive and Design Report (AECOM, 2016c)	Survey conducted over the Ludlow River bridge site	Geotechnical field survey and laboratory analysis of samples
Geotechnical Investigation. Duplication of Bussell Highway Hutton Road to Sabina River (WML, 2017)	Survey along the proposed centreline of the new alignment (35m offset from the existing edgeline)	Geotechnical field survey and laboratory analysis of samples
Detailed and Targeted Flora and Vegetation Survey along Bussell Highway, Hutton Road to Sabina River (Ecoedge, 2020b)	Flora and vegetation survey conducted over ~72.4 ha to identify vegetation types and vegetation condition for the Proposal	Detailed and targeted field surveys conducted between spring 2013 and spring/summer 2020 in accordance with relevant State and Commonwealth survey guidelines
Targeted Vegetation Survey of Threatened and Priority Ecological Communities Hutton Road to Sabina River, Capel	Targeted TEC/PEC survey conducted over ~72.4 ha to confirm TEC/PEC presence within the Proposal Area	Targeted survey conducted in November and December 2020 in accordance with relevant State and Commonwealth survey guidelines

The key assumptions and uncertainties relevant to the Proposal and the Vasse-Wonnerup System are:

- Environmental survey reports have not been independently verified. These surveys were undertaken by suitably qualified individuals experienced in flora, vegetation, and fauna ecology and in geotechnical survey are therefore assumed to have accurately recorded site conditions and characteristics; and
- The Proposal may have the potential for indirect impacts to the Vasse-Wonnerup System.

More information on the key assumptions and uncertainties are provided in the appendices of Main Roads (2020).

5.3 Potential impacts

The proposed Clearing area intersects three waterways, the Sabina, Abba and Ludlow Rivers. These rivers flow into the Vasse-Wonnerup System when flowing (generally in the wetter months), which is located approximately 700 m north of the development envelope at its nearest point (the Tuart Forest National Park component of the System), with the wetlands themselves approximately 1.5 km separation distance at the nearest point (Ecoedge, 2020a).

No known adverse impacts have been recorded on the Vasse-Wonnerup System as a result of the construction and operation of the existing carriageway. The new carriageway will be similar in scale and nature to the existing carriageway, with the new carriageway located further away from the wetland.

As outlined in Main Roads (2020), implementation of the Proposal will result in clearing of up to 27.3 ha of mixed native and non-native vegetation. Of this, approximately 0.26 ha is riparian vegetation associated with the Sabina, Abba and Ludlow rivers (Figure 2).

5.3.1 Direct impacts

Due to the relatively small scale and long narrow footprint of clearing and earthworks required for the Proposal, and the substantial separation distance of the development envelope to the Vasse-Wonnerup System, no direct impacts to the System are expected to result from Proposal implementation.

5.3.2 Indirect impacts

Potential indirect impacts resulting from the Proposal are expected to be limited to run-off water contamination (sediment and hydrocarbon spills), exposure of ASS and bushfires generated as a result of Proposal construction. Impacts to the Vasse-Wonnerup System from changes to hydrological regimes are not expected.

Changes to hydrological regimes

Land within the development envelope generally falls to the north west and is drained by the Ludlow, Abba and Sabina rivers into the System and adjacent wetlands. Except on the higher Bassendean dunes and deep sand mine site rehabilitation, the flat terrain and high water table causes the area to be prone to flooding and waterlogging in winter (WML, 2017).

Groundwater was present during the April 2016 geotechnical investigation in a number of boreholes, typically 2-3 m below the surface. These levels were monitored with temporary monitoring wells that were installed over the route. At time of the survey, the groundwater would still have been near its seasonal low. The majority of the drains contain flowing water throughout winter resulting in groundwater typically within 1 m of the surface (WML, 2016).

Works in areas prone to flooding and waterlogging in winter will be delayed to the summer months to allow the groundwater to recede. This will allow for effective site remediation, services and culvert installation. However, some localised areas may still require temporary dewatering in summer.

Dewatering for Proposal construction will be of a minor scale and short duration. Temporary dewatering will be required during bridge construction, which is intended to be undertaken during summer/autumn months when water levels and flows are low. As all three river systems are ephemeral, an impact to flows from these rivers into the System as a result of dewatering activities at this time of year is not expected. In regard to localised dewatering that may be required at other non-bridge sites, due to the substantial separation distance (>1 km) of the development envelope to the wetland, impacts from these dewatering activities are not expected. Impacts to the System from changes to hydrological regimes are not expected to result from implementation of the Proposal.

Monitoring for localised dewatering impacts will be conducted where remnant native vegetation remains adjacent to dewatering sites, including at the three bridge sites. Monitoring will comprise of monthly plant health/stress assessments during and for three months post- dewatering activities. Should an impact be observed that is attributable to the dewatering activity, dewatering will ceased until appropriate mitigation measures can be implemented.

Run-off water contamination

Construction

If not managed properly, construction works may have the potential to release sediment into riparian areas via run-off from cleared construction areas or during bridge construction works. Given the distances involved and the scale and nature of the work, there is a very low likelihood that this would in turn impact the Vasse-Wonnerup System.

The Proposal requires the duplication of the existing carriageway following the alignment of and immediately adjacent to the existing carriageway. The new carriageway will lie approximately 25 m upstream of the existing carriageway, which is the side of the existing carriageway furthest from the Vasse-Wonnerup System.

The Proposal will maintain the existing drainage regime through standard engineering design with no change to water flows. Proposal design incorporates table drains and flat-bottomed swale drains to facilitate infiltration of surface water runoff at source. Where culverts exist on the existing alignment, these will be duplicated on the new carriageway to maintain existing flow paths.

The Proposal will require the construction of a bridge at each river crossing. Clear span bridges (removing the requirement for piers within the channel) will be constructed at all three crossings, with footings situated outside of the bed and banks of the channel.

It is intended that construction of bridge foundations (abutments and rock pitching) will be undertaken during summer/autumn months, when water levels and flows are low. Silt curtains will be installed where required during bridge construction to minimise the risk of sedimentation. Hydrocarbon booms will be used down gradient of works to contain and enable mitigation of any potential spills during construction.

The Proposal will require the storage and use of common hazardous materials (e.g. vehicle fuels and oils, bitumen) required for road construction works. In accordance with standard operational controls, all hazardous materials will be stored and used in accordance with the relevant Materials Safety Data Sheet. Neither hydrocarbon storage nor the installation of re-fuelling equipment will occur within 100 m of the Sabina, Abba or Ludlow Rivers.

Rainfall events (1 year ARI) have the potential to mobilise spilled or leaked contaminants such as hydrocarbons and mobilise loose topsoil and sand disturbed during construction. The contamination of surface or underground water will be prevented through the best practice storage of hazardous materials and bunding of hydrocarbon storage and re-fuelling areas to prevent contaminated runoff. Mobilisation of suspended solids during frequent rainfall events will be managed via the implementation of best management practice techniques including:

- Incorporation of stormwater management measures into road design such as temporary detention storages, drop structures and rock lined/pitched drainage channels; and
- Implementation of temporary drainage infrastructure during construction to promote sediment fall out and prevent erosion.

No impacts to surface or groundwater are expected to result from the use of hazardous substances during construction of the Proposal.

<u>Operation</u>

Via the construction of a second carriageway, the Proposal will double the area over which the existing traffic travels. The new carriageway will lie approximately 25 m east, south or south east of the existing carriageway, which is the side of the existing carriageway furthest from the Vasse-Wonnerup System.

Existing road drainage infrastructure will also be duplicated for the second carriageway, which will improve drainage along this section of the highway, resulting in greater opportunity for at-source infiltration and less likelihood of overland flow. Drainage for the Proposal will be managed through standard engineering design to ensure no change to local drainage water flows.

Under current conditions, traffic along the existing single carriageway is high-volume, often congested and does not free-flow. Duplication of the existing carriageway will reduce traffic

congestion, allowing for more consistent cruising conditions and free-flowing traffic. This will result in a corresponding reduction in the quantum and concentration of motor vehicle emissions and pollutants potentially ending up in roadside drains.

Bridge design will ensure drainage from the bridge surface to the roadside table drains. In high rainfall events, overland flows into the rivers may occur, as occurs along the existing Bussell Highway. The quantum of this potential impact is not expected to increase as a result of Proposal implementation and may in fact decrease due to the decreased concentration of contaminants.

Acid Sulphate Soils

Mapping of Acid Sulphate Soils (ASS) Risk on the Swan Coastal Plain indicates that there is a 'high to moderate risk of ASS occurring within 3 m of natural soil's surface' in areas where the development envelope intersects the foreshore and banks of the Ludlow, Sabina and Abba Rivers. All remaining areas of the development envelope are mapped as 'moderate to low risk of ASS occurring within 3 m of natural soil's surface'.

The existing highway and proposed alignment of the second carriageway generally follow the Bassendean Sand ridge that has been mined and rehabilitated. There are also small 'marsh' areas comprising Peaty Clay (Cps1) - dark grey and soft, variable organic content, variable quartz sand content, of lacustrine origin dark grey and soft, variable organic (WML, 2017).

Based on the test results from the investigation (WML, 2017; AECOM, 2016a; 2016b; 2016c), ASS is present at four sites along the development envelope, being at the bridge sites crossing each of the three rivers and one (site CH35230) near the intersection with the Eros Creek crossing.

An ASS Management Plan detailing soil management procedures to be undertaken during bridge and embankment construction works will be prepared as part of the contractor's CEMP. ASS remediation measures will be undertaken should any excavation be required at the known ASS locations. It is likely that ASS management options will be limited to either on-site treatment (lime neutralisation) of cuttings prior to re-use or removal of cuttings off-site (within 18 hours) to a licenced soil treatment facility.

ASS is commonly and successfully managed for many road projects that occur on the Swan Coastal Plain. The implementation of the ASS Management Plan will ensure no adverse impacts occur as a result of ASS.

Weeds and *Phytophthora* dieback

Arum Lily (*Zantedeschia aethiopica*), which is a Declared pest plant under the *Biosecurity and Agriculture Management Act 2007* is established in and around the Sabina and Abba Rivers. Should individuals of this species be present within the development envelope near to these or the Ludlow rivers during construction, they will be controlled. This management action will be included in the Proposal Hygiene Management Plan.

5.4 Risk assessment

DotE (2014) identifies a requirement for a risk assessment to assess the likelihood and consequence of each potential impact in order to ensure that risks are translated into controls, mitigation and management actions.

Main Roads applies a standard risk assessment matrix to its operations, whereby the 'likelihood' and 'consequence' of events is considered, with monitoring and management actions identified to control the level of risk.

Main Roads has completed a risk assessment in preparation of this EMP. The likelihood and consequence assessment, with the resulting 'risk outcome', have been based upon the residual risk levels after management and monitoring activities are implemented. The assessment has applied the definitions for both likelihood and consequence as prescribed within DotE (2014).

The outcome of the risk assessment for the Vasse-Wonnerup System is shown in Table 5-2.

Table 5-2 Risk assessment

Objective: To construct and operate the Proposal to avoid and minimise impacts to the Vasse-Wonnerup System. Key Environmental Values: The Vasse-Wonnerup System Ramsar site				
Environmental Objective	**Risk**	**Post Control Risk Assessment**	**Management**	**Monitoring**
Minimise impacts to the Vasse-Wonnerup System	Hydrocarbon spill near the Sabina, Abba or Ludlow rivers during construction	Likelihood: Unlikely Consequence: Minor Risk outcome: Low	Management required during construction for risk of impact to Sabina, Abba and Ludlow rivers	Monitoring of hydrocarbon use and storage during construction Monitoring of water quality in the case of a spill
	Erosion or sedimentation as a result of construction that impacts the Sabina, Abba or Ludlow rivers	Likelihood: Unlikely Consequence: Minor Risk outcome: Low	Standard construction management to control erosion and sedimentation	Standard construction monitoring for incidents of erosion or sedimentation
	ASS contamination as a result of construction that impacts the Sabina, Abba or Ludlow rivers	Likelihood: Unlikely Consequence: Minor Risk outcome: Low	Standard construction management to control ASS	Standard construction monitoring for incidents of ASS contamination
	Bushfire occurrence as a result of construction causing loss of adjacent riparian vegetation	Likelihood: Possible Consequence: Minor Risk outcome: Low	Standard construction management to control potential ignition sources construction clearing	Standard construction monitoring to verify management of potential ignition sources and fire response during construction

6 ENVIRONMENTAL MANAGEMENT MEASURES

In order to comply with relevant environmental legislation and manage impacts to the local environment, Main Roads has defined objectives, outcomes and management based provisions to ensure that impacts to the Vasse-Wonnerup System are avoided and minimised as far as practicable during the implementation of the Proposal.

6.1 Environmental management activities, controls and performance targets

As identified in Section 5.3, no direct impacts to the Vasse-Wonnerup System are expected to result from Proposal implementation.

Main Roads has taken a 'hierarchical approach' to the mitigation of potential impacts associated with the Proposal. Where impacts cannot be avoided, Main Roads has designed the Proposal to reduce the intensity and/or extent of impacts on the Vasse-Wonnerup System.

Main Roads has identified a range of management actions to be implemented to control and minimise potential indirect impacts of the Proposal to the System. These have been informed by the results of field studies (Table 5-1), best practice and recent experience on similar road projects in Western Australia. These will minimise potential residual impacts and achieve the identified management target.

The following documents have informed the development of this EMP:

- Wetland Research & Management (2007). *Ecological Character Description for the Vasse-Wonnerup Wetlands Ramsar Site in South-west Western Australia*. Unpublished report to the Department of Environment and Conservation and Geographe Catchment Council Inc.
- Department of Parks and Wildlife (2016). *Swan Coastal Plain South Management Plan 2016. Management Plan Number 85*. Department of Parks and Wildlife, Perth.
- Department of Parks and Wildlife (2014b). *Tuart Forest National Park Management Plan 2014. Management plan number 79*. Department of Parks and Wildlife, Perth.

Based on the controls identified in Table 5-2 above and associated proposed management actions, Main Roads has developed a performance target to identify the outcomes sought from the management actions. These, along with the proposed management actions, are identified in Table 6-1.

Table 6-1 Management actions and performance targets

Timing	Management Actions	Performance Target
Prior to construction	• As part of the contractor's CEMP, development of a Hygiene Management Plan to prevent the spread of dieback and weeds to adjacent vegetation. The CEMP will include procedures such as machinery / vehicle clean down, weed treatments and restrictions on vehicle / machinery movements • As part of the contractor's CEMP, development of a Fire Management Plan	Avoid indirect impacts to the Vasse-Wonnerup System
During construction	• Contractor induction will include familiarisation with and discussion of the Vasse-Wonnerup System, riparian vegetation, *Phytophthora* dieback management and hygiene management • Long-term hydrocarbon storage (i.e. hydrocarbons which shall not be used that day or not stored within equipment waiting to be used) or re-fuelling of equipment (with the exception of stationary plant) will not be permitted within 100 m of riparian vegetation • The Construction Contractor will prepare a Spill Response Procedure for oil, chemical or hazardous material spill events to ensure any spill is contained effectively and cleaned up appropriately and efficiently with approved materials • Implement standard construction drainage management as detailed under Main Roads Specification 204 • As part of the contractor's CEMP, the construction contractor will prepare a Fire Management Plan to minimise risk of ignition from construction activities and effectively manage any resulting fire / wildfire • All Department of Fire and Emergency Services (DFES) and Local Government Authority (LGA) restrictions on fire and machinery movement will be strictly adhered to • Implement ASS Management Plan as part of the contractor's CEMP	Avoid indirect impacts to the Vasse-Wonnerup System
Post construction	Not applicable (monitoring and as-needed corrective action activities only)	Not applicable

6.1.1 SMART performance standards

The DAWE additional information request (2020) specified the need for this EMP to conform to 'SMART' (specific, measurable, achievable, relevant and time-bound) principles.

SMART performance standards are intended to relate to measurable (numerical) values which can be applied to a Proposal, rather than qualitatively measured management / monitoring actions. They may include measurements such as 'threshold criteria', 'performance indicators', 'corrective actions' and 'completion criteria'.

In relation to the Vasse-Wonnerup System, Main Roads has prepared SMART performance standards directly related to the potential risks of the Proposal as identified in Table 5-2. These SMART performance standards complement the management actions and performance targets identified in Table 6-1. The proposed SMART performance standards for the Proposal are identified in

Table 6-2. Proposed monitoring and corrective actions are identified in Table 6-3 and Table 6-4 respectively.

The 'threshold criteria' and 'completion criteria' are considered to be achievable, with the risk potential of not achieving the proposed SMART performance standards captured by the risk assessment presented in Table 5-2.

As the proposed SMART performance standards for 'threshold criteria' and 'completion criteria' relate to physical measures which can be readily controlled through standard construction management processes, it is considered the proposed SMART performance standards have a low level of uncertainty, with additional margins for safety not required.

The SMART performance standards do not require detailed statistical analysis to determine if the 'threshold criteria' and 'completion criteria' have been met, nor require statistical power to detect change (for example, seasonal or climatic variability), nor control or reference sites (for comparative purposes).

Table 6-2 SMART performance standards

Threshold Criteria	Performance Indicators	Corrective Actions	Completion Criteria
ANZECC guidelines Vol 1 standard triggers[1] in two monitoring periods	Water quality	• Investigate cause and raise an incident report if necessary • Remedial action controls will be undertaken if required – to be determined based on likely cause e.g. spills, sedimentation or erosion • Conduct review of management measures and/or further education of staff/contractors to ensure that all possible steps are taken to prevent any reoccurrence • Preventative actions such as modifications to infrastructure and additional engineering post-construction will be taken to prevent further non-compliance • Monitor outcomes	Water quality levels are maintained within specified guidelines
Erosion/ sedimentation cause has not been remediated within 8 days of detection	Number of days before erosion/ sedimentation is remediated after detection	• Investigate cause and raise an incident report if necessary • Remedial action controls will be undertaken immediately to repair damage if required • Preventative actions such as modifications to infrastructure and additional engineering post-construction will be taken to prevent further non-compliance. These may include: - Application of fill/mulch - Installation of gabion cages - Installation of jute matting to secure bank. • Conduct review of management measures and/or further education of staff/contractors to ensure that all possible steps are taken to prevent any reoccurrence • Monitor outcomes	Sedimentation no longer detected or observed
ASS contamination has not been remediated within 8 days of detection	Number of days before ASS contamination is remediated after detection	• Investigate cause and raise an incident report if necessary • Remedial action controls will be undertaken immediately to repair damage if required • Preventative actions such as modifications to infrastructure and additional engineering post-construction will be taken to prevent further non-compliance • Conduct review of management measures and/or further education of staff/contractors to ensure that all possible steps are taken to prevent any reoccurrence • Monitor outcomes	Water quality levels are maintained within specified guidelines
Clear span bridges not installed at the Sabina, Abba and Ludlow rivers	Bridges not within design specification	• Investigate cause and raise an incident report if necessary • Implement contingency actions which may include: - Review practicality and relevant of management measures - Improve training and education for all personnel - Improve and implement increased protective measures/controls as necessary - Review monitoring frequency and method • Monitor outcomes	Installation of bridges as per specification

[1] For toxicants at 95% level of protection (Table 3.4.1) and Tables 3.3.6 – 3.3.7 default trigger values for physical and chemical stressors for south-west Australia for slightly disturbed ecosystems.

6.2 Environmental monitoring

Main Roads has identified key monitoring actions to monitor the potential indirect impacts of the Proposal to the Vasse-Wonnerup System during and post construction.

Monitoring will be undertaken by suitably qualified individuals for the methodology type specified. The proposed monitoring program for the Proposal is identified in Table 6-3.

Table 6-3 Proposed monitoring program

Performance Target	Parameter To Be Monitored	Methodology	Frequency	Recording And Reporting
Avoid indirect impacts to the Vasse-Wonnerup System	Presence of erosion or sedimentation at or near to the Sabina, Abba or Ludlow rivers	Visual inspection	During construction: Post each clearing event near rivers, daily during bridge construction and opportunistically Post construction: Not applicable	Erosion and/or sedimentation incidents at or near rivers recorded by construction contractor and reported to Manager Environment within 24 hours of incident occurring Report annually to DAWE as part of annual compliance reporting or in response to exceedance of an agreed trigger or threshold
	Location of hydrocarbon storage and re-fuelling facilities	Visual inspection	During construction: Weekly and opportunistically Post construction: Not applicable	Report annually to DAWE as part of annual compliance reporting or in response to exceedance of an agreed trigger or threshold
	Water quality (only required in the event of a hydrocarbon spill or erosion/sedimentation incident that directly impacts the Sabina, Abba or Ludlow rivers)	Sampling using appropriate water quality meters and/or laboratory analysis Location: downstream of the impacted bridge site	During construction: Weekly during bridge construction and three months post- bridge construction, and opportunistically Post construction: Not applicable	Incidents potentially impacting water quality in any of the three listed rivers recorded by construction contractor and reported to Manager Environment within 24 hours of incident occurring Report annually to DAWE as part of annual compliance reporting or in response to exceedance of an agreed trigger or threshold
	ASS contamination	Visual inspection	During construction: Daily during bridge construction and opportunistically Post construction: Not applicable	Occurrences of ASS contamination recorded by construction contractor and reported to Manager Environment monthly Report annually to DAWE as part of annual compliance reporting or in response to exceedance of an agreed trigger or threshold
	Appropriate management of potential ignition sources and fire response	Visual inspection	During construction: Daily and opportunistically	Bushfire incidents impacting riparian vegetation or the Vasse-Wonnerup System Ramsar site reported to Manager Environment monthly Report annually to DAWE as part of annual compliance reporting or in response to exceedance of an agreed trigger or threshold

6.3 Corrective actions

Consistent with the DotE (2014) guideline, triggers and corrective actions have been considered in the event that monitoring/observation identifies that the management actions have not achieved the environmental objectives.

The purpose of the corrective actions is to provide an appropriate remedy to the environmental objectives not being met, and may include changes to equipment, processes and/or management measures. The degree to which the corrective actions will be implemented may depend upon various factors, such as the type and severity of the trigger, the location and condition of the surrounding environment, and the specific location/nature of the works being undertaken for the Proposal.

Changes to processes and/or management may require this EMP to be updated, with additional environmental training to be provided to site personnel.

Corrective actions may incorporate the identification, investigation and reporting of an environmental incident. Environmental incidents are to be reported to the Manager Environment (or delegate) by the person responsible for the incident or the first person to observe the incident. The type and severity of an environmental incident will be assessed in accordance with Main Roads' standard incident procedures. In the event that an environmental incident has resulted in a significant environmental impact to the Vasse-Wonnerup System, the environmental incident will be reported to DAWE (as identified within Section 4.1).

The proposed corrective actions are identified in Table 6-4.

Table 6-4 Corrective actions

Aspect	Trigger	Corrective Action
Water quality in the Sabina, Abba and Ludlow rivers Bushfire risk	Hydrocarbon spill or ASS contamination incident attributable to the Proposal that results in contamination of the Sabina, Abba or Ludlow rivers	• Stop works (temporary) • Record environmental incident • Investigate cause • Initiate water quality monitoring program • Update environmental training of personnel (if appropriate) • Report incident to DAWE • Undertake remediation works (if appropriate, following consultation with DAWE) • Initiate water quality monitoring program
	Evidence of bank instability or new erosion/sedimentation attributable to the Proposal that impacts the Sabina, Abba or Ludlow rivers	• Investigate cause and raise an incident report if necessary • Remedial action controls will be undertaken immediately to repair damage if required • Preventative actions such as modifications to infrastructure and additional engineering post-construction will be taken to prevent further non-compliance. These may include: - Application of fill/mulch - Installation of gabion cages - Installation of jute matting to secure bank • Initiate water quality monitoring program • Conduct review of management measures and/or further education of staff/contractors to ensure that all possible steps are taken to prevent any reoccurrence • Monitor outcomes
	Clear span bridges not installed at the Sabina, Abba and Ludlow Rivers	• Investigate cause and raise an incident report if necessary • Construct and install clear span bridges at the Sabina, Abba and Ludlow Rivers • Monitor outcomes

7 AUDIT AND REVIEW

This EMP adopts an 'adaptive management' approach which seeks to embed a cycle of monitoring, reporting and implementing change, where required. Accordingly, it is intended that this EMP may be updated (as required) over the life of the Proposal to reflect changes in the monitoring and management practices, subject to the results of the monitoring to identify that the environmental objectives are being achieved. The EMP may also be revised to address learnings from the implementation of corrective actions, should this occur.

In addition, auditing and review schedules are necessary to embed a formal process to identify and consider any need to update the EMP in order to achieve improved environmental performance (which may not otherwise be triggered by management or monitoring outcomes).

7.1 Environmental auditing

This EMP will be audited annually by Main Roads during construction to ensure implementation of the management and monitoring measures, and to confirm the management measures specified are achieving the environmental outcomes.

The proposed auditing schedule is identified in Table 7-1.

Table 7-1 Environmental audit schedule

Timing	Action	Schedule
Pre-construction	Review of construction procedures to ensure EMP management / monitoring actions are incorporated within works procedures	Prior to construction (single event)
Construction	Inspections by site environmental personnel to identify compliance with EMP	Periodic (generally weekly)
	Independent 'third-party' audit for assessment of compliance with EMP	Annually (once per calendar year)
Post construction	Independent 'third-party' audit for assessment of compliance with EMP	Annually (once per calendar year for up to 3 years)

The results of the construction and post construction independent 'third-party' audit findings will be reported by Main Roads to DAWE as part of annual compliance reporting as outlined within Section 4.1.

7.2 Environmental review

Main Roads proposes to review this EMP annually in order to:

- consider the management and monitoring actions
- consider opportunities for an improvement in environmental performance (for example, changes to construction methodology or timing)
- identify a need to update this EMP to capture changes to the management and / or monitoring actions
- identify any general need to update this EMP (for example, to capture new information on knowledge or management).

Main Roads acknowledge that a revision to this EMP may trigger a need for additional approval by DAWE prior to implementing any changes to the specified management or monitoring actions.

The proposed EMP review schedule for the Proposal is identified in Table 7-2.

Table 7-2 EMP review schedule

Timing	Action	Schedule
Pre-construction, Construction and Post-construction	Review of EMP management and monitoring actions Review of opportunities for an improvement in environmental performance Revise EMP (if appropriate) and seek approval of DAWE for revised EMP	Annually (once per calendar year)

7.3 Data management

Main Roads will maintain records on the implementation of this EMP in accordance with Main Roads corporate standard document control procedures.

The retention of records held by Main Roads will be maintained and managed in accordance with the Western Australian *State Records Act 2000* (WA).

7.4 External communications / concerns

Main Roads and / or its Contractors will maintain a register of communications (including any public concerns / complaints) for the Proposal. Records to be obtained for external communications will include:

- Contact details for the person making the complaint (name, address and phone number as a minimum)
- Date, time and relevant location (if specific to part of the Proposal)
- Details of the communication (with sufficient detail to enable investigation / response, if appropriate)

The retention of records held by Main Roads (including external communications) will be maintained and managed in accordance with the Western Australian *State Records Act 2000* (WA).

8 REFERENCES

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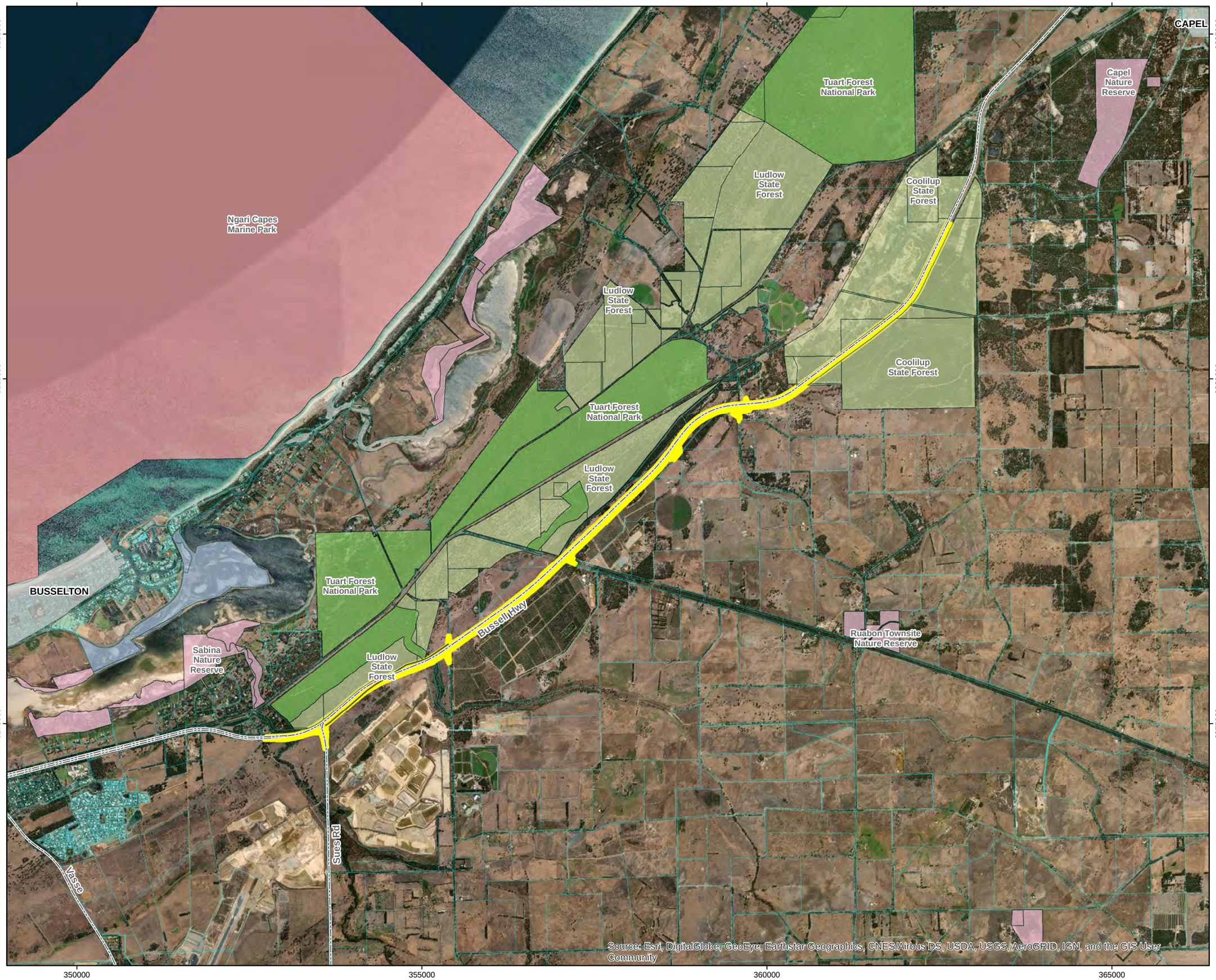
9 APPENDICES

Appendix	Title
Appendix 1	Figures
Appendix 2	Annual Compliance Report Template

Appendix 1: Figures



mainroads WESTERN AUSTRALIA

H043 Bussell Hwy [31.15 to 44.0 SLK] Stage 2

Hutton to Sabina Construct Second Carriageway

Proposal Area Location

Figure 1

Legend

- Proposal Area
- Cadastre
- Built up Areas
- State Roads

DBCA Legislated Lands and Waters

- Marine Park
- National Park
- Nature Reserve
- Section 5(1)(h) Reserve
- State Forest

N

0 0.5 1 2
Kilometers

Scale 1:50,000

Datum: GCS GDA 1994

Projection: GDA 1994 MGA Zone 50

Date:	15/01/2021
Status:	Draft
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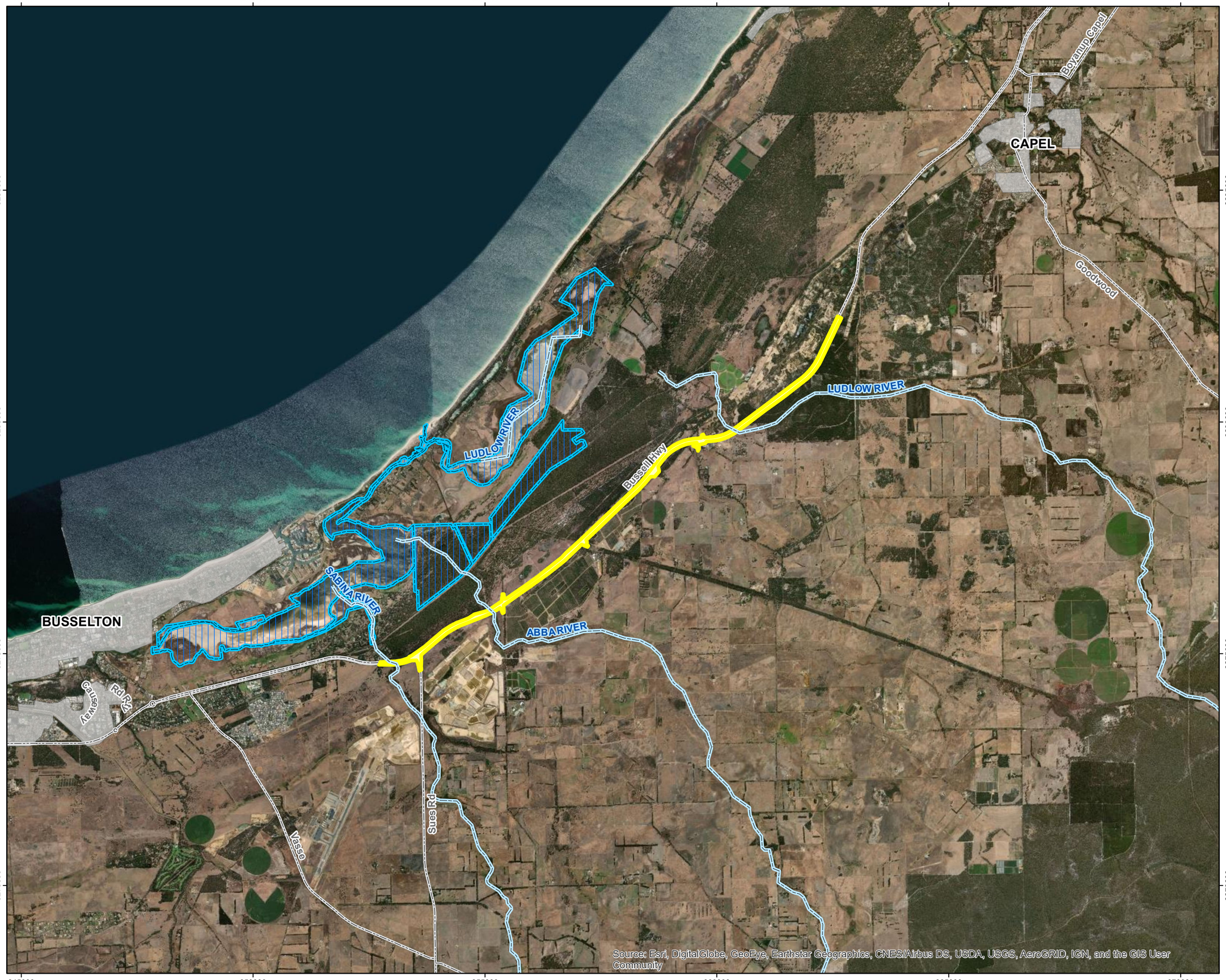
Sheet Size:	A3
Internal Reference:	21108493_1102_001_00 Fig 1
Drawn by:	GSM
Requested by:	MP

Ver.	Comment	App.	Date



mainroads WESTERN AUSTRALIA

H043 Bussell Hwy [31.15 to 44.0 SLK] Stage 2

Hutton to Sabina Construct Second Carriageway

Vasse-Wonnerup Ramsar Wetland System in relation to the Proposal Area

Figure 2

Legend

- Ramsar Wetlands
- Proposal Area
- State Roads
- Builtup Areas

N

0 0.5 1 2 3
Kilometers

Scale 1:75,000

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Projection: GDA 1994 MGA Zone 50

Date:	19/01/2021
Status:	Draft
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Sheet Size:	A3
Internal Reference:	21108493_1102_001_00 Fig 2
Drawn by:	GSM
Requested by:	MP

Ver.	Comment	App.	Date

Appendix 2: Annual Compliance Report Template

We're working for Western Australia.

EPBC 2020/8800
Annual Compliance Report

Bussell Highway Duplication Stage 2
Hutton to Sabina
Month/Year

Contents

1. Introduction

To provide dual carriageway access along the entire 46 km portion of the highway between Bunbury and Busselton, Main Roads Western Australia (Main Roads) is planning to construct a second carriageway along the existing two-lane single carriageway section (the Bussell Highway Duplication). The Bussell Highway Duplication will be undertaken in two stages with Stage 1, comprising a 5.55 km distance between Capel and Hutton Road, already under construction.

The Proposal comprises Stage 2, which involves the construction of the remaining 12.8 km two-lane carriageway (southbound) to duplicate the existing carriageway effectively between Hutton Road and the Sabina River bridge and other road infrastructure, including but not limited to bridges, culverts, lighting, noise barriers, fencing, landscaping, road safety barriers and signs.

The Proposal will upgrade this section of Bussell Highway to a four-lane highway consisting of two carriageways. Once the new southbound carriageway is constructed, the existing single carriageway will become the northbound carriageway. The new carriageway is expected to be typically 31 metres (m) wide and will accommodate:

- A fully sealed 2.5 m wide left shoulder.
- A fully sealed 1.5 m wide right shoulder.
- Two 3.5 m wide lanes.
- Drainage and other infrastructure.

It is anticipated that construction of Stage 2 will commence in July 2021 and be completed in early 2024.

1.1 Approval under the *Environment Protection and Biodiversity Conservation Act 1999*

The Proposal was formally referred to Department of Agriculture, Water and Environment (DAWE) in October 2020 (EPBC Act referral 2020/8800) as a potential Controlled Action under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to impacts on Matters of National Environmental Significance (MNES). On 12 November 2020, DAWE provided advice that the Proposal is considered a Controlled Action.

The Department considered the proposed action likely to have a significant impact on MNES, specifically:

- Black Cockatoos (Carnaby's cockatoo (*Calyptorhynchus latirostris*) (endangered), Baudin's Cockatoo (*Calyptorhynchus baudinii*) (endangered), (FRTBC (*Calyptorhynchus banksii naso)* (vulnerable)) ('Black Cockatoos').
- Western Ringtail Possum (*Pseudocheirus occidentalis*) (critically endangered) ('WRP').
- Tuart (*Eucalyptus gomphocephala*) forests and woodlands of the Swan Coastal Plain Threatened ecological community (critically endangered) ('Tuart Woodlands TEC')).

The Project was assessed through Preliminary Documentation with a request for further information to assist in the assessment of the Proposal. The DAWE issued approval of the Project on Day/Month/Year and included a number of conditions that Main Roads is required to fulfil.

1.2 Purpose of this Report

Construction of the Project commenced on Day/Month/Year. This compliance report has been produced as required by Condition X of EPBC approval 2020/8800. Table 1 of this report outlines the compliance with each approval condition over the past 12 month period, Day/Month/Year to Day/Month/Year. The clearing area of TEC vegetation is shown in Figure 1 and that of conservation significant fauna habitat in Figure 2.

2. Compliance

Table 1: Year - Year compliance with EPBC Approval 2020/8800

Condition Number	Condition Description	Status

Figure 1 Total Clearing of TEC vegetation from Project Area

Figure 2 Total clearing of conservation significant fauna habitat from Project Area

3. Attachments

Attachment	Title
Attachment 1	
Attachment 2	
Attachment 3	
Attachment 4	
Attachment 5	
Attachment 6	
Attachment 7	

Attachment 1:

Attachment 2:

Attachment 3:

Attachment 4:

Attachment 5:

Attachment 6:

Attachment 7: