regional roads victoria

17 Environmental Management Framework

Authorised by the Victorian Government,
1 Treasury Place, Melbourne

VICTORIA'S BIG BUILD

VICTORIA State Government

17.1 Overview **17.1**

17.2 EES objectives **17.1**

17.3 Project delivery structure **17.3**

17.3.1 Roles and responsibilities 17.5

17.4 Statutory approvals and consents **17.7**

17.5 Environmental management plans and documentation **17.8**

17.5.1 Development of key plans 17.8
17.5.2 Approvals and change management 17.13

17.6 Environmental management measures **17.15**

17.6.1 Traffic 17.15
17.6.2 Biodiversity and habitat 17.16
17.6.3 Cultural heritage 17.22
17.6.4 Catchment values and hydrology 17.23
17.6.5 Social 17.27
17.6.6 Land use and economics 17.30
17.6.7 Amenity 17.32
17.6.8 Landscape and visual amenity 17.34
17.6.9 Soils, geology and contaminated land 17.36
17.6.10 Sustainable development 17.38

17.7 Performance management **17.39**

17.7.1 Compliance 17.39
17.7.2 Reporting 17.39

Tables

Table 17.1	EES key issues – Environmental Management Framework	17.2
Table 17.2	EES requirements – Environmental Management Framework	17.2
Table 17.3	Roles and responsibilities for environmental management	17.5
Table 17.4	Statutory approvals	17.7
Table 17.5	Environmental management documentation	17.8
Table 17.6	Environmental management documentation responsibilities	17.13
Table 17.7	Details of mitigation measures – Traffic and transport	17.15
Table 17.8	Details of mitigation measures – Biodiversity and habitat	17.17
Table 17.9	Details of mitigation measures – Cultural heritage	17.22
Table 17.10	Details of mitigation measures – Catchment values and hydrology	17.24
Table 17.11	Details of mitigation measures – Social	17.27
Table 17.12	Details of mitigation measures – Land use and economics	17.30
Table 17.13	Details of mitigation measures – Amenity	17.32
Table 17.14	Details of mitigation measures – Landscape and visual amenity	17.34
Table 17.15	Details of mitigation measures – Soils, geology and contaminated land	17.36

Figures

Figure 17.1	Environmental management structure	17.4

17.1 Overview

This chapter details the Environmental Management Framework that has been developed to support the design, construction and operation of the project. The purpose of this Environmental Management Framework is to provide a transparent framework to manage the environmental effects identified in the EES in order to meet statutory requirements, protect environmental values and sustain stakeholder confidence. This Environmental Management Framework forms one component of the overall governance framework for delivery of the project.

In setting out the proposed governance framework for managing the environmental effects of the project, the Environmental Management Framework outlines clear accountabilities for the environmental requirements for the delivery of the project. This includes compliance with all relevant environmental planning laws, approvals, approval conditions and Environmental Management Plans and procedures to ensure that the environmental effects of the project and any hazards associated with its construction and operation are effectively managed.

The Environmental Management Framework also specifies the processes to be followed in the preparation, review, approval and implementation of Environmental Management Plans and procedures, including the Construction Environmental Management Plan and more detailed Environmental Management Plans. The Environmental Management Framework provides for the regular review and updating of Environmental Management Plans and procedures, as well as independent monitoring, auditing and reporting of compliance.

The approved Environmental Management Framework will contain the final environmental management requirements governing the development and implementation of the project. Compliance with the Environmental Management Framework will also be mandated and enforced by the RRV and MRPV through the contractual arrangements for delivery of the project following project approval. Responsibility for compliance with the approved Environmental Management Framework during the project operation will rest with the Victorian Department of Transport as the Victorian road authority responsible for the management of all non-commercial arterial roads and freeways.

17.2 EES objectives

The development of this Environmental Management Framework and the environmental management measures have been informed by the specialist technical reports completed as part of the EES, as well as relevant legislation, policy and guidelines. This Environmental Management Framework responds to the EES scoping requirements, specifically the objective:

Environmental management framework: *To provide a transparent framework with clear accountabilities for managing the environmental effects and hazards associated with the construction and operation phases of the project, in order to achieve acceptable environmental outcomes.*

The Environmental Management Framework defines:

- roles and responsibilities for environmental management to provide a transparent framework for governing the implementation of the Environmental Management Framework and environmental management measures (Section 17.3)
- a summary of key approvals that would be obtained and complied with (Section 17.4)
- environmental management documentation to be prepared to address the requirements of the Beaufort Bypass Incorporated Document, Environmental Management Framework and environmental management measures, and manage environmental risks and impacts through design, construction and operation (Section 17.5 and 17.6)
- the approach to evaluating compliance with the Environmental Management Framework and environmental management measures, including monitoring, auditing and reporting processes (Section 17.7).

The key issues for the Environmental Management Framework as identified in the scoping requirements are summarised below in Table 17.1.

Table 17.1 EES key issues – Environmental Management Framework

Key issues
Weak management of environmental effects during project construction and operation could result in failure to meet statutory requirements and sustain stakeholder confidence.

Specific aspects to be addressed were also detailed in the scoping requirements. These are detailed in Table 17.2 below.

Table 17.2 EES requirements – Environmental Management Framework

EES requirements
Priorities for characterising the existing environment
Outline the means by which a register of environmental risks associated with the project will be developed and maintained during project implementation (including matters identified in preceding sections in these directions as well as other pertinent risks).
Design and mitigation measures
Proposed framework for managing the risks of adverse environmental effects, including: • the context of required approvals and consents, in particular requirements for related Environmental Management Plans • the Environmental Management System to be adopted, including organisational responsibilities and accountabilities • the environmental management measures proposed in the EES to address specific issues, including commitments to mitigate adverse effects and enhance environmental outcomes • proposed objectives, indicators and monitoring requirements, including for managing or addressing: – traffic during construction – construction noise and dust – noise during project operation – wellbeing of residents, business and farmers during construction – disruption of and hazards to existing infrastructure – landscape and visual amenity – biodiversity values – surface runoff, flood potential and ground water – waste including potentially contaminated materials – Aboriginal and non-Aboriginal cultural heritage values; and greenhouse gas emissions during construction.
Outline Environmental Management Plans for construction and operational phases.
Outline a program for community consultation, stakeholder engagement and communications during the construction and operation of the project, including opportunities for local stakeholders to engage with the proponent to seek responses to issues that might arise when the project is undertaken.
Assessment of likely effects
Evaluate the likely effectiveness of the proposed environmental management framework in controlling adverse effects.
Evaluate the proposed project's energy consumption and greenhouse gas emissions during construction and identify measures to improve energy efficiency and reduce greenhouse gas emissions.

EES requirements
Approach to manage performance
Procedures for verifying or monitoring environmental performance and compliance with requirements; and review of the effectiveness of the environmental management framework for continuous improvement.
Arrangements for management of and access to baseline and monitoring data, to ensure the transparency of environmental management.
Develop a risk assessment process and mitigation measures to minimise the impact.
Priorities for characterising the existing environment.

17.3 Project delivery structure

In 2018 a restructure of VicRoads, the original proponent of the project, occurred and was divided into two new divisions: RRV and MRPV. RRV was formed to focus on '*delivering a safer and smoother regional road network for country Victoria*' (VicRoads 2018), with MRPV being responsible *'the delivery of major road projects'.*

RRV is responsible for the environmental assessment, planning and approvals of the project, with responsibility being transferred to MRPV for the detailed design and overall construction and delivery of the project. MRPV will appoint one or more construction contractors who will be responsible for construction works for the project. MRPV will be responsible for overseeing and managing the progress and compliance of the construction contractor, including compliance with any environmental approvals and requirements detailed in this EES.

Two years after project completion, the operation and maintenance of the bypass will be handed back to RRV who may appoint contractors to complete specific maintenance tasks on an as-required basis during operation. These contracts will be managed in accordance with relevant RRV practices and standards, and the environmental management measures defined in this EES.

The environmental management structure for the project is shown in Figure 17.1. The key roles and responsibilities for the construction and operational phases of the project are listed in Table 17.3.

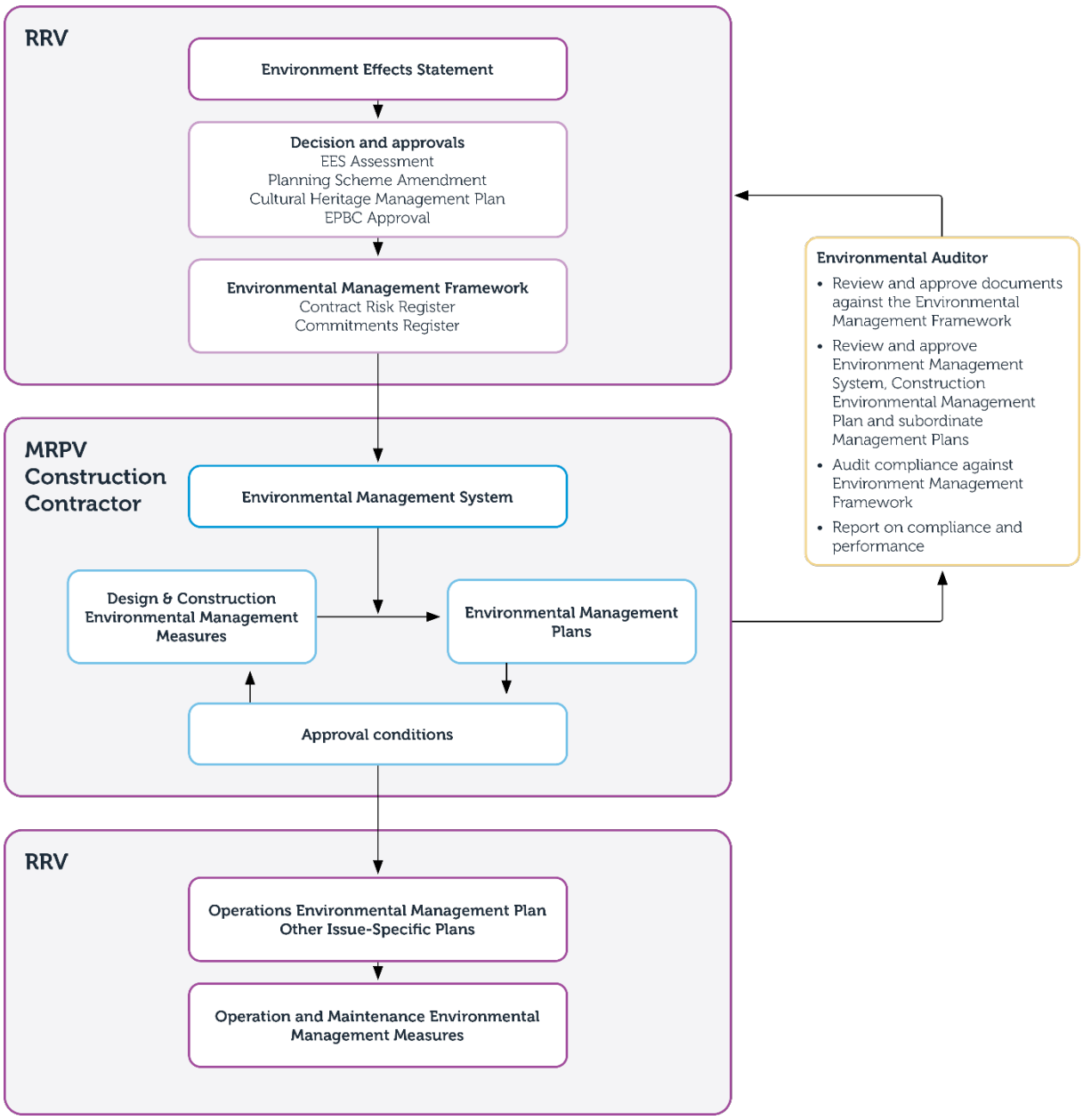

Figure 17.1 Environmental management structure

17.3.1 Roles and responsibilities

RRV are a part of Department of Transport and the nominated proponent for the delivery of the EES and Planning Scheme Amendment. Where RRV are noted as a responsible party throughout the Environmental Management Framework, it is assumed it is the representative of the Department of Transport.

MRPV will be responsible for the detailed design and contract management during construction.

The completed project will be handed over to RRV two years after completion, who will be operational manager for the completed bypass, as consistent with the management of the Western Highway/Freeway either side of Beaufort.

The key roles and responsibilities for the construction and operational phases of the project are listed Table 17.3 below.

Table 17.3 Roles and responsibilities for environmental management

Organisation	Role	Tasks/responsibilities
Minister for Planning	Regulator	• review and assess the Environmental Management Framework including the Environmental management measures and any amendments under the project's Incorporated Document • administer and enforce approved Environmental Management Framework as the responsible authority for the administration and enforcement of the Incorporated Document.
Commonwealth Minister for the Environment	Regulator	• review and make decisions on proposed action on impacts to Matters of National Environmental Significance • administer and enforce conditions of approval under the EPBC Act.
Wadawurrung Traditional Owners Aboriginal Corporation	Registered Aboriginal Party	• review and assess the Cultural Heritage Management Plan • approve conditions and contingencies for the management of Aboriginal cultural heritage • supervise the development and audit implementation of the Cultural Heritage Management Plan.
Regulators and Agencies	Regulator	• administer and assess compliance with project approvals, legislation, regulations, policies, guidelines, codes of practice and applicable industry standards.
Department of Transport	Regulator	• review and approve road design • review and approve traffic and access management strategies.
RRV	Proponent	• ensure that all relevant approvals required for the project are obtained from the relevant authorities, including the Planning Scheme Amendment, Cultural Heritage Management Plan and any approvals under the EPBC Act. • develop the Environmental Management Framework to the satisfaction of the Minister for Planning • develop Operations Environment Management Plan to apply to the operations phase of the project • operate and maintain the road infrastructure • undertake operational phase environmental management monitoring or maintenance requirements as required by the Environmental Management Framework.

Organisation	Role	Tasks/responsibilities
MRPV	Proponent	• ensure compliance with the approved Environmental Management Framework, Environmental Management Plans, conditions of approvals and contract specifications • enforce contractor compliance with the approved Environmental Management Framework, Environmental Management Plans, conditions of approvals and contract specifications • ensure that the contractor's environmental management documentation address the requirements of the Environmental Management Framework • review and approve the contractor's Environmental Management Strategy, Construction Environmental Management Plan and Environmental Management Plans, including for compliance with the approved Environmental Management Framework and approval conditions • receive regular audit reports from the independent environmental auditor as to compliance with the approved Environmental Management Framework, Environmental Management Strategy, Construction Environmental Management Plan and Environmental Management Plans, and take corrective action as appropriate • provide regular audit reports as to compliance with the Environmental Management Framework and other Environmental Management Plans to the Minister for Planning and sub-reports to other approval authorities as appropriate, or as otherwise agreed by the Minister for Planning or approval authority • ensure a commitments register is compiled and is maintained as required • conduct surveillance and audits of works to check compliance with the contract specification and the contractor's Environmental Management Strategy, Construction Environmental Management Plan and Environmental Management Plans • liaise with regulators, stakeholders and community as required • operate and maintain the project for two years post construction.
Design and Construct contractor(s)	Delivery	• develop an Environmental Management Strategy, Construction Environmental Management Plan and Environmental Management Plan in accordance with the Environmental Management Framework and approved conditions and requirements of the contract to the satisfaction of MRPV • effectively implement and manage the Environmental Management Strategy, Construction Environmental Management Plan and Environmental Management Plans to the satisfaction of MRPV • monitor, audit and conduct surveillance of the implementation and effectiveness of the Construction Environmental Management Plan and report their effectiveness to MRPV • implement an Environmental Management System certified to AS/NZS ISO 14001: 2015 for the construction activities for the project • engage an independent, suitably qualified and experienced auditor to audit compliance with the approved Environmental Management Framework, Environmental Management Strategy, Construction Environmental Management Plan and Environmental Management Plans • report environmental incidents to MRPV. Notifiable incidents are reported to relevant statutory authorities. Document actions taken to rectify the situation • take corrective action for any non-compliance identified in the audit reports to the satisfaction of MRPV, regulatory authority or independent environmental auditor as appropriate • inform MRPV of any queries from statutory agencies and respond accordingly • check that contractor's staff and subcontractors have been appropriately trained in environmental awareness • prepare Operations, Maintenance and Monitoring manual at the time of project completion, including a maintenance activity calendar for a 5-year period complying with the Environmental Management Framework and Environmental Management Plans.

Organisation	Role	Tasks/responsibilities
Independent Environmental Auditor	Independent review and compliance auditing	• audit and report compliance with the Environmental Management Framework and associated management plans • provision of six-monthly audit reports to the construction contractor and the Minister for Planning • publication of six-monthly audits on proponent website for up to two years post construction.

17.4 Statutory approvals and consents

RRV will be responsible for obtaining all necessary statutory approvals for the project and ensuring the requirements of these approvals are implemented. MRPV will be responsible for ensuring that the construction contractor complies with the conditions of these approvals and obtains any additional licences or permits that may be required for construction.

Key statutory approvals required for the project are outlined in EES Chapter 3: *Legislative framework and approval requirements.* A summary of statutory approvals is provided in Table 17.4.

Table 17.4 Statutory approvals

Type of permit/approval	Description	Approval authority	Responsible
Planning Scheme Amendment under the *Planning and Environment Act 1987*	Planning Scheme Amendment to permit use and development of the project under the Pyrenees Planning Scheme. This includes the removal of native vegetation in accordance with the DELWP (2017) *Guidelines for the removal, destruction and lopping of native vegetation*. The Planning Scheme Amendment introduces an Incorporated Document that refers to an Environmental Management Framework.	Minister for Planning	RRV
Cultural Heritage Management Plan approval under the *Aboriginal Heritage Act 2006*	Approval of the completed Cultural Heritage Management Plan by the Registered Aboriginal Party to ensure the protection of Aboriginal cultural heritage in the activity area.	Wadawurrung Traditional Owners Aboriginal Corporation	RRV
EPBC Act approval	An EPBC Act referral for the project was submitted to the Commonwealth Minister for the Environment, who has deemed the project a 'controlled action' due to potential impacts to EPBC Act-listed threatened species and communities. The project is to be assessed under a State accredited process (EES).	Commonwealth Minister for the Environment	RRV
Wildlife Act 1975 permit	Permit required to remove fauna, salvage capture or relocate fauna as required by project mitigation measures.	DELWP	Construction contractor
FFG Act permit	Permit required to take (defined by the FFG Act as kill, injure, disturb or collect) flora protected under the FFG Act.	DELWP	Construction contractor

Type of permit/approval	Description	Approval authority	Responsible
Water Act 1989 approval	Obtain approval from Glenelg Hopkins Catchment Management Authority to construct a bridge, crossing or culvert and alter a waterway.	Glenelg Hopkins Catchment Management Authority	Construction contractor
Catchment and Land Protection Act 1994 permit	Permit to transport noxious weeds.	Agriculture Victoria (Department of Jobs, Precincts and Regions)	Construction contractor

17.5 Environmental management plans and documentation

17.5.1 Development of key plans

Table 17.5 describes in more detail the key environmental management documentation that will be required to be prepared for the project, in addition to statutory approvals.

Table 17.5 Environmental management documentation

Documentation	Description	Relevant mitigation ID
RRV		
Environmental Management Framework	The Environmental Management Framework (this document) details the environmental management arrangements for the design, construction and operation of the project. The Environmental Management Framework is an RRV document and will be used to guide environmental management for the project and to track the implementation of overall environmental commitments and approval conditions. The Environmental Management Framework will inform the contract risk register and commitments register as well as containing the environmental management measures and objectives described in this EES. Prior to commencement of works, the Environmental Management Framework will be updated to reflect permit conditions and any other measures or commitments identified through the Minister's Assessment and conditions of subsequent approvals, and consultation. During project delivery, the Environmental Management Framework and project risk register will be reviewed and updated in response to contractor performance reviews, changes in activities and work practices, legislation, aspects and impacts, or as a result of internal or external audit findings, incidents or complaints. Any amendments to the Environmental Management Framework will require approval by the Minister for Planning.	All mitigations
Cultural Heritage Management Plan	A Cultural Heritage Management Plan has been drafted for the project in accordance with the requirements of the *Aboriginal Heritage Act 2006.* The Cultural Heritage Management Plan will be finalised for evaluation by the Registered Aboriginal Party after the Ministers' Assessment of the EES has been issued. The Cultural Heritage Management Plan contains: • results of desktop, standard and complex assessments • management measures for identified artefacts and places • salvage strategy • items to be included in the salvage report • management of cultural heritage material • contingencies for previously unidentified cultural heritage material.	MD10 AH03 AH05

Documentation	Description	Relevant mitigation ID
Native Vegetation Offset Strategy	A Native Vegetation Offset Strategy for required native vegetation offsets under DELWP's (2017) *Guidelines for the removal, destruction or lopping of native vegetation*. The strategy will consider: • sourcing and availability of offsets • alternative offset arrangements – Wimmera Scentbark • offset calculations.	MD07
EPBC Act Offset Management Strategy: Golden Sun Moth	An Offset Management Strategy for offsets under the EPBC Act for identified impacts to the Golden Sun Moth will be prepared and will consider the following: • sourcing and availability of offsets • EPBC Act offset requirements • habitat area losses and quality assessment • offset calculations.	MD08
Design and construction contractor		
Environmental Management System	The construction contractor will implement their Environmental Management System (certified to AS/NZS ISO 14001: 2015 *Environmental management systems – Requirements with guidance for use*) prior to project construction. The Environmental Management System will establish a plan-do-check-act system to identify and manage environmental risks and impacts, and ensure comprehensive and integrated identification and management of environmental risks and issues through project design and construction.	MD03
Construction Environmental Management Plan	The construction contractor will be required, as a condition of the contract, to prepare a project specific Construction Environmental Management Plan. The Construction Environmental Management Plan will be required to address the range of environmental risks and impacts, and proposed management measures identified in the EES. These are summarised in Section 17.6 below. The Construction Environmental Management Plan will contain detailed process and procedures for meeting the requirements of the Environmental Management Framework, including: • assessing risk to inform management requirements for activities covered by the Construction Environmental Management Plan • managing specific activities and risks including controls and mitigation measures to be implemented, including implementation of contingency measures to address the potential for adverse effects to be greater than predicted or permitted • site induction and training and the process for identifying environmental training needs based on identified competency requirements for relevant project personnel • emergency/incident response training • monitoring, reporting and auditing • provision of information to assist in the conduct of audit reports • managing environmental incidents including incident reporting and investigation • management of non-conformances with the Construction Environmental Management Plans, Environmental Management Plan, and primary and secondary approvals • corrective and preventative action. Revisions to the Construction Environmental Management Plan may be required as a result of reviews, changes in activities and work practices, legislation, aspects and impacts, or as a result of internal or external audit findings, incidents or complaints. The construction contractor will be required to submit all major revisions to the Construction Environmental Management Plan to MRPV for approval. Major revisions are defined as changes that affect work practices, roles and responsibilities, environmental impacts and overall project delivery. Minor revisions are defined as addressing typographical errors, formatting and other administrative changes.	MD04 BH05 BH08 BH15 BH16 BH21 BH22 BH24 BH27 BH28 HH03 SW05 SW07 SW08 GW01 AQ02 LV02 SG01

Documentation	Description	Relevant mitigation ID
Threatened Species Management Plan	To satisfy the requirements of the EPBC Act and FFG Act, and following the lodgement of an EPBC Act Referral, a Threatened Species Management Plan[1] will be prepared for the Matted Flax-lily, Ben Major Grevillia, River Swamp, Wallaby Grass, Brolga, Brown Toadlet, Brush-tailed Phascogale, Growling Grass Frog, Golden Sun Moth, Little Galaxias and Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains, Victorian Temperate Woodland Bird Community and White-Box-Yellow Box-Blakely's Red Gum Grassy Woodland. These plans will include: • relevant background information pertinent to the project and the species • location of potentially suitable and known habitats and other ecological requirements for the species relating to the project • potential impacts of the project on the species • objectives of the management plan • timeframes • responsibilities • management actions (pre-, during and post-construction), including: – design principles that demonstrate avoidance/minimisation of impacts on the species and its habitat – habitat protection and enhancement, offsets for lost habitat, habitat creation, buffers and habitat connectivity – pest, predator and disease management – capture and relocation protocols (to be reviewed in consultation with the relevant agencies) – monitoring, including trigger points for additional management or conservation actions.	MD09 BH12 BH17 BH23 BH25 BH32 MD16
Spoil Management Plan	A Spoil Management Plan will be developed to manage soil re-use requirements, stockpile management and potentially contaminated spoil uncovered during construction. The plan will include detail on soil classification, management, disposal, potential contamination sources and potential health risks to construction workers.	MD17 SG04
Acid Sulfate Soil Management Plan	An Acid Sulfate Soil Management Plan will be required if acid sulfate soils are identified as a potential issue during geotechnical works or encountered during construction works. The construction contractor will be required to assess potential for acid sulfate soils during geotechnical surveys, prior to commencing construction works.	MD18 SG03
Occupational Health and Safety Plan	An Occupational Health and Safety Plan will be required for contractor to manage health and safety with specific regard to contaminated soils and construction risks.	MD19

[1] Subject to EPBC referral decision

Documentation	Description	Relevant mitigation ID
Groundwater Management and Monitoring Plan	A Groundwater Management and Monitoring Plan will be developed for the project and will consider the following: • groundwater encountered on site shall be assessed for the opportunity for re-use as a non-potable water source • principal contractor to install a suitable groundwater monitoring network prior to construction as part of the groundwater management plan for monitoring baseline water quality and groundwater levels • install a site-specific groundwater observation bore/s to test water quality and compare against water quality guidelines for ANZECC 2000 (FW 95%), as defined in the project Groundwater Management and Monitoring Plan • collect baseline data quarterly over a period of 2 years, and continue monitoring routinely during and post-construction (1 year) • where water quality impacts are detected (deviations from baseline), apply mitigation measures, potentially including containment, capture and/or dewatering, and treatment to an appropriate level to suit an appropriate disposal/re-use option; potentially including: to local waterways, groundwater recharge, wetlands or off-site disposal, as water quality/treatment dictates.	MD11 GW01
Community and Stakeholder Engagement Plan	A Community and Stakeholder Engagement Plan will be developed and implemented by the construction contractor to set out the specific actions, requirements and processes to engage with the community and other stakeholders (such as local businesses and special interest groups). It will be prepared in line with relevant guidelines and the Victorian Auditor General Office: *Better Practice Guide: Public Participation in Government Decision Making.* The Community and Stakeholder Engagement Plan will set out processes and measures to provide sufficient prior notice to key stakeholders and other potentially affected stakeholders of construction activities (including any staged works, early works, main works, or out of hours works), significant milestones, changed traffic conditions, interruptions to utility services, changed access and parking conditions, and periods of predicted high noise and vibration activities. The construction contractor will also document and implement a complaints management process (including processes and measures for registering, managing and resolving complaints) consistent with *AS/NZS 10002: 2014 Guidelines for Complaint Management in Organisations.*	MD12 S04
Access Management Strategy	An Access Management Strategy will be developed to manage temporary and permanent changes to access created by the project. The plan will be developed during the detailed design phase in consultation with landholders directly and indirectly impacted by temporary and permanent changes to access, to ensure alternative access arrangements are provided during construction and operation. The Access Management Strategy will include strategies for maintaining access to private land, local road network and public amenity. Reinstatement or alteration of access will occur within the project Specific Controls Overlay, in accordance with project approval conditions or as agreed with relevant landholders.	MD06 RE04 S02 T02

Documentation	Description	Relevant mitigation ID
Traffic Management Strategy	A Traffic Management Strategy, consisting of detailed traffic management plans and traffic guidance schemes, will be developed in order to minimise disruptions from the increased construction traffic. The objectives for the management of traffic are to: • minimise the impact on traffic • provide a safe environment for the travelling public and construction personnel • cater for the needs of all traffic • communicate the purpose of the proposed traffic event • communicate the arrangements for and impacts of any event affecting traffic • maintain access to properties during construction.	MD05 T01
Business Disruption Plan	A Business Disruption Plan will be developed to minimise impacts to local businesses. The plan will: • communicate construction phasing and timeframes with local businesses • communicate and co-ordinate road closures and traffic management to minimise impact to local businesses • ensure disruption to transport routes and access to businesses is avoided, minimised or provided suitable alternatives • promote the support to local businesses during construction periods • co-ordinate engagement with local businesses in line with the community and stakeholder engagement plan.	MD13 RE01 S03
Construction Dust Management Plan	A Construction Dust Management Plan will be developed and implemented and will include provisions for: • cover of Loads and Washdown facilities • emission control mechanisms • locate stockpiles away from sensitive receivers, as far as practicable • on dusty stockpiles lasting more than four weeks, use mulch or surfactants to minimise dust generation and material loss • locate haulage routes for rock and soil away from sensitive receivers as much as practicable.	MD14 AQ01 AQ02
Construction Noise and Vibration Management Plan	The Construction Noise and Vibration Management Plan will detail requirements for the management and mitigation of impacts from construction noise and vibration. The plan will provide provisions for engineering controls, such as introduction of less impactful works (e.g. smaller plant), less vibration intensive methods (e.g. rock saws vs. rock-breaking) and will provide management controls such as restricted hours of operation (day time only), community notification of works and hoarding (erection of temporary fencing) in selected locations, in consultation with receivers.	MD15 NV01 NV02 BH07 S06
Landscape Design Plans	The Landscape Design Plans will be developed to minimise the landscape and visual impacts of the project. The plans will be developed at the detailed design phase in consultation with the Registered Aboriginal Party and incorporate local indigenous species, where practicable, to respond to biodiversity and habitat mitigation measures. The plans will illustrate the locations of landscape earthworks, densities and species selection of revegetation species.	MD16 LV03 S05 SW06
Sustainability Management Plan	The Sustainability Management Plan will detail the initiatives to reduce the carbon footprint during road construction, adopt 'avoid, minimise, mitigate and offset' principles and opportunities for continual improvement of environmental performance throughout the construction phase, in line with RRV's Sustainable development policy and strategy.	MD20

Documentation	Description	Relevant mitigation ID
Operations and maintenance (MRPV/RRV)		
Operations and Maintenance Plan	RRV will be responsible for the management and maintenance of the bypass. However, MRPV will be responsible for the maintenance and operation of the project for the first two years post construction after which, the road will be handed back to RRV. To manage its obligations under the *Road Management Act 2004*, RRV currently has in place area-wide contract arrangements for the maintenance of the arterial road network. These contracts include the routine maintenance of pavement, shoulders, roadside areas and drainage on the arterial network and require the contractor to have an Operational Environmental Management Plan in place. The Department of Transport standard maintenance contract has standard clauses that address environmental management principles and legislative requirements associated with ongoing road network operation. The Environmental Management Framework and risk assessment are developed by RRV and MRPV to address maintenance activities for the specific maintenance contract. The Environmental Management Framework address any additional matters to be included in the contract specification and the contractor's Environmental Management Plan. The Operational Environmental Management Plan is subject to regular monitoring, revision, audit, reporting and review. A handover report will be prepared following the completion of the construction contract for the project, detailing specific maintenance requirements or commitments arising from project construction. The risk register for the relevant contract will be reviewed and updated along with the Environmental Management Framework and the contractor's Environmental Management Plan to incorporate specific management measures relating to the project.	MD21 BH10 BH11 BH32 LV04 S04

17.5.2 Approvals and change management

A summary of the review and approval process for the key construction environmental management documents of the Environmental Management Framework is provided in Table 17.6. The plans and documentation required under the Environmental Management Framework will be prepared and approved, with a declaration from the independent environmental auditor stating the documents comply with the Environmental Management Framework before any relevant works commence. All plans prepared by the construction contractor will be prepared in consultation with the relevant stakeholders as required under any statutory approvals and submitted to the approval authority as described in Table 17.6.

Table 17.6 Environmental management documentation responsibilities

ID	Document	Preparation	Authorities with input	Review	Approval
MD01	Environmental Management Framework	RRV	–	–	Minister for Planning
MD02	Contractor's Environmental Management Strategy	Construction contractor	–	MRPV	MRPV
MD03	Contractor's Environmental Management System	Construction contractor	–	MRPV	MRPV
MD04	Construction Environment Management Plan	Construction contractor	–	MRPV	MRPV

ID	Document	Preparation	Authorities with input	Review	Approval
MD05	Traffic Management Strategy	Construction contractor	Department of Transport	MRPV	MRPV
MD06	Access Management Strategy	Construction contractor	Department of Transport Pyrenees Shire Council DELWP	MRPV	MRPV
MD07	Native Vegetation Offset Strategy	Construction contractor	–	MRPV	DELWP
MD08	EPBC Act Offset Management Strategy: Golden Sun Moth	Construction contractor	–	MRPV	Department of Agriculture, Water and the Environment
MD09	Threatened Species Management Plan	Construction contractor	–	MRPV	DELWP
MD10	Cultural Heritage Management Plan	RRV	–	RRV	Wadawurrung Traditional Owners Aboriginal Corporation
MD10	Groundwater Management and Monitoring Plan	Construction contractor	Southern Rural Water	MRPV	MRPV
MD11	Community and Stakeholder Engagement Plan	Construction contractor	Pyrenees Shire Council	MRPV	MRPV
MD13	Business Disruption Plan	Construction contractor	Pyrenees Shire Council	MRPV	MRPV
MD14	Construction Dust Management Plan	Construction contractor	Environment Protection Authority Victoria	MRPV	MRPV
MD15	Construction Noise and Vibration Management Plan	Construction contractor	Environment Protection Authority Victoria	MRPV	MRPV
MD16	Landscape Design Plan	Construction contractor	Wadawurrung Traditional Owners Aboriginal Corporation	MRPV	MRPV
MD17	Spoil Management Plan	Construction contractor	Environment Protection Authority Victoria	MRPV	MRPV
MD18	Acid Sulfate Soil Management Plan	Construction contractor	Environment Protection Authority Victoria	MRPV	MRPV
MD19	Occupational Health and Safety Plan	Construction contractor	–	MRPV	MRPV
MD20	Sustainability Management Plan	Construction contractor	–	MRPV	MRPV
MD21	Operational Environmental Management Plan	Construction contractor	–	MRPV	MRPV

17.6 Environmental management measures

This section documents the specific environmental management measures to be incorporated into the project design, construction and operational phases.

These management measures include both the relevant RRV standard construction contract specification and industry standards and best practice that will be adopted for the project, and the additional management measures to address specific impacts as identified by this EES.

Section 17.6.1 to 17.6.9 and their tables contain a detailed list of all proposed environmental management measures for the project.

17.6.1 Traffic

Traffic and transport related impacts will be managed by the standards and guidance documents described below. Additional management measures for traffic and transport related impacts, through Traffic Management Strategies and Access Management Strategies, are described in Table 17.7. Traffic and transport management measures will be developed in accordance with the following RRV / MRPV standards and specifications including, but not limited to:

- VicRoads Roadside Management Strategy (2011)
- Road Safety (Traffic Management) Regulations 2009
- VicRoads Contract Specifications Section 166 – Traffic Management
- VicRoads Noise Guidelines – Construction and Maintenance Works (2007)
- Traffic Management Strategy (detailed in Table 17.5)
- Access Management Strategy (detailed in Table 17.5)
- Austroads Guide to Road Design
- Austroads Guide to Traffic Management
- AS1742: Manual of uniform control traffic devices
- VicRoads Traffic Engineering Manual Volume 1, 2 and 3.

Mitigation measures related to the management of traffic and transport impacts centre around the development of traffic and access management plans. These are summarised in Table 17.7.

Table 17.7 Details of mitigation measures – Traffic and transport

ID	Description of impact	Mitigation measures	Responsibility
MD05 T01	Construction impacts traffic volumes	During the detailed design phase, a detailed construction Traffic Management Strategy will be developed to the satisfaction of the Department of Transport and Pyrenees Shire Council. Measures for the strategy will include: • ensuring there is a thorough community consultation process and public advertisement of works • co-ordination of heavy vehicle movements with other projects in the region • preparation of Traffic Management Plans.	MRPV Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
MD06 T02 S02 RE04	Construction and operation impact local access	During the detailed design and pre-construction phases, a construction and operational access strategy will be developed to the satisfaction of the Department of Transport, Pyrenees Shire Council and DELWP. Measures for the access strategy will include: • ensuring there is a thorough community and landholder/manager consultation process and public advertisement of works • ensure that alternative access and redirections are provided where existing access is removed, which follows relevant standards and guidelines, including but not limited to: – within project Specific Controls Overlay, in accordance with project approval conditions – AS1742.3 – Manual of uniform traffic control devices – VicRoads Traffic Engineering Manual Vol 2 Part 2.03 – Traffic control devices for works on roads. The access management strategy will include strategies for maintaining access to private land, local road network, public amenity and Crown land.	MRPV Construction contractor

17.6.2 Biodiversity and habitat

Biodiversity and habitat related impacts will be managed by the standards and guidance documents described below. Additional management measures for biodiversity and habitat related impacts through Threatened Species Managements Plan, Construction Environmental Management Plan and Offset Strategies are described in Table 17.5. Biodiversity and habitat management measures will be developed in accordance with relevant RRV / MRPV processes and standard specifications including, but not limited to:

- VicRoads Roadside Management Strategy 2011
- VicRoads Fauna Sensitive Road Design Guidelines
- VicRoads Contract Specifications Section 201 – Site Clearing
- VicRoads Contract Specifications Section 720 – Landscape Works
- VicRoads Contract Specifications Section 750.C – Roadside Maintenance Requirements
- VicRoads Contract Specifications Section 752 – Routine Roadside Maintenance – Vegetation
- VicRoads Contract Specifications Section 177.I – Flora and Fauna
- Environment Protection Authority Victoria Publication No. 275. Construction Techniques for Sediment Pollution Control (1991)
- Environment Protection Authority Victoria Publication No. 480. Environmental Guidelines for Major Construction Sites (1996).

Additional mitigation measures related to the management of biodiversity and habitat impacts centre around the refinement of design and the management of clearing activities. These are summarised below in Table 17.8.

Table 17.8 Details of mitigation measures – Biodiversity and habitat

ID	Description of impact	Mitigation measures	Responsibility
BH01	Design impacts native vegetation	Detailed refinement of design/construction footprint to avoid and minimise vegetation to be removed and further development of no-go zones, defined in EES Chapter 9: *Biodiversity and habitat*. Incentives to contractors to further minimise vegetation and habitat loss.	MRPV Construction contractor
BH02	Design causes loss of connectivity	The use of structures designed to improve connectivity will be used to facilitate safe passage across the road and discourage fauna from crossing the road at grade. The seven broad types of mitigation are: • land bridge • modified drainage structure to include wildlife movement and drainage • canopy rope bridge • extended bridge underpass • dedicated wildlife culvert • strategic revegetation • fencing to prevent wildlife from accessing the roadway and to funnel them towards the crossing structures • culverts and bridges designed to the *Growling Grass Frog Crossing Design Standards* (DELWP 2017). The detailed design of features to mitigate loss of connectivity will be developed in consultation with ecologists, with consideration of the ecology of the relevant species most requiring mitigation. Assessment of proposed types and locations of crossing structures for wildlife is contained within EES Appendix C: *Flora and fauna impact assessment – Appendix K6*. The above listed connectivity measures will be implemented at a minimum in the approximate locations outlined in EES Appendix C: *Flora and fauna impact assessment – Appendix K6*. The precise locations will be determined during the detailed design in consideration with the habitat connectivity assessment completed as part of the flora and fauna impact assessment.	MRPV Construction contractor
BH03	Noise and vibration impacts sensitive fauna	Measures to reduce the effects of noise to areas of ecological sensitivity and value will be designed in the detailed design phase and include: • extending the proposed Camp Hill State Forest noise barrier approximately 150 m east to include a larger area of Camp Hill State Forest, shielding additional habitat not currently protected from the proposed noise barrier • screening of wetland habitat and installing multi-function fauna barriers to attenuate noise effects close to high value Wetland 1.	Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
BH04	Light spill impacts sensitive fauna	Design principles for lighting, in accordance with *Interim Guidance: Artificial lighting and wildlife – Recommendations to help minimise the impact of artificial lighting* (Bat Conservation Trust), VicRoads (2012) *Fauna sensitive road design guidelines*, Florida Fish and Wildlife Conservation Commission – *Wildlife Lighting Criteria*, International Dark-sky Association and *National Light Pollution Guidelines for Wildlife* (Department of Environment and Energy 2020), include: • siting of lights: site away from sites of ecological value to the extent possible, consider lower mounting height for lights, ensure lighting does not shine onto any fauna crossing structures • fixtures: shielded lights or fixtures to direct light down and minimise light spill • wavelengths: use narrow-spectrum light sources, avoid white or blue wavelengths • barriers and/or plantings: low walls and/or plantings should be used where required to prevent headlight and streetlight spill across habitat/sites of ecological value (to be incorporated into the landscape plan, using ecological appropriate species and local native species) • temporary fencing: should vegetation be utilised as an ongoing screening measure, install temporary fencing with screening until vegetation is sufficiently mature. The final detailed lighting design for the project should be developed by a professional lighting designer with experience in minimising impacts on ecological values.	MRPV Construction contractor
MD04 BH05	Construction causes physical habitat disturbance and modification	A Construction Environmental Management Plan will be developed and implemented to address the range of environmental risks and impacts, and proposed management measures identified in the EES. Related to biodiversity and habitat, the Construction Environmental Management Plan will include measures to address: • water quality • air quality • erosion and sediment control • contaminated soils and materials • waste • fuels and chemicals • no-go zones • tree protection • fauna fencing • fauna relocation • weed and pathogen control • monitoring and reporting.	Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
MD04 BH06	Construction causes fauna mortality	All construction personnel must attend a project-specific induction prior to commencing site work. The inductions will include relevant information about the ecological sensitivities of the site and appropriate management measures. Suitably qualified and experienced fauna rescue and welfare contractors will be engaged to salvage and release fauna displaced during construction, including: bats, birds and possums from hollows, lizards, snakes, turtles, and echidnas, and any fish, frogs or aquatic fauna within wetland areas. Suitably qualified, experienced and licensed ecologist will be engaged to identify tree hollows that are likely to support native fauna, to inspect these prior to tree removal, and to supervise removal. A protocol for staged tree clearing and management and relocation of fauna during tree clearing should be developed in consultation with the arborist and a suitably qualified and licenced wildlife handler. Provision of replacement hollows in nearby/retained native vegetation to be retained for use by any displaced fauna will be provided, during two staged clearing.	Construction contractor
MD15 BH07 NV01 S06	Construction activities cause noise and vibration	A Construction Noise and Vibration Management Plan will be developed by the construction contractor in accordance with Environment Protection Authority Victoria Guidelines to ensure that the impacts of construction noise are minimised as far as practicable. The Construction Noise and Vibration Management Plan will be approved by MRPV and relevant stakeholders, and will include: • establishment of project-specific noise targets for construction • a prediction of noise from each construction scenario • an assessment of each scenario to the established targets • mitigation measures to be implemented to control noise levels • requirements for a noise monitoring regime whereby noise levels are measured and recorded • highlight potential unavoidable evening and night works for seeking prior approval from relevant stakeholders including RRV and the Environment Protection Authority Victoria.	Construction contractor
MD04 BH08	Construction activities cause light spill	Light shielding will be installed for any nightworks.	Construction contractor
BH09	Construction causes loss of vegetation and habitat	Penalties for contractors that impact no-go zones or any vegetation/habitat outside of the project area will be incorporated into the contract.	MRPV

ID	Description of impact	Mitigation measures	Responsibility
MD21 BH10	Maintenance causes physical habitat disturbance	Post-construction, MRPV will maintain the road for two years, prior to handing the road management back to RRV. During this time MRPV must adhere to defect liability periods described in LV04 to ensure the establishment of controls in the Environmental Management Framework. In accordance with VicRoads *Contract Specifications Section 163 – Maintenance General, Part F - Environmental Management Plans*, maintenance contractors will be required to develop and implement an Operational Environmental Management Plan, which documents operational controls relating to environmental impacts including water quality and management, and flora and fauna (including weed management). The Operational Environmental Management Plan must include details of approvals, licences and permits necessary to meet statutory requirements.	RRV MRPV Construction contractor
MD16 BH11	Operation of the project causes visual impacts	Ecological restoration will be undertaken in accordance with LV03, which: • focuses on ecological appropriate species and local native species • includes planting of trees and vegetation to screen elevated carriageway from key viewpoints in landscape • includes strategies for integration of habitat corridors and culverts into the detailed design to reduce impacts on flora and fauna habitat connections. RRV will manage and monitor effectiveness of landscape works through their performance requirements within VicRoads standard specifications, *Section 720 – Landscape Works*, which includes regular auditing to ensure contractors meet specified revegetation targets within the defects liability period. Trees not meeting the growth performance requirements will be replaced to achieve the specified planting numbers.	RRV MRPV Construction contractor
MD09 BH12	Design impacts threatened species	A Threatened Species Management Plan will be prepared for Matted Flax-lily, Ben Major Grevillia, River Swamp Wallaby Grass, Brolga, Brown Toadlet, Brush-tailed Phascogale, Growling Grass Frog, Little Galaxias, Seasonal Herbaceous Wetlands (Freshwater) of the Lowland Plains, Victorian Temperate Woodland Bird Community and White-Box-Yellow Box-Blakely's Red Gum Grassy Woodland or as directed by the Department of Agriculture, Water and the Environment. The Threatened Species Management Plan will incorporate the following specific management measures and as described in measures BH13 to BH32.	Construction contractor
MD09 BH13	Design impacts threatened species	Water sensitive road design elements to minimise surface water changes.	MRPV Construction contractor
MD09 BH14	Design impacts threatened species	Design measures to maintain the connectivity for the species through crossings and strategic habitat creation, including at culvert entrances.	MRPV Construction contractor
MD09 BH15	Construction impacts threatened species	No-go zone identification/mapping, fencing and signage to protect retained native vegetation, habitat and threatened species to be included in landscape plan.	Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
MD09 BH16	Construction impacts threatened species	Pre-clearing survey for threatened flora.	Construction contractor
MD09 BH17	Construction impacts threatened species	Translocation and/or restoration plan for any Matted Flax-Lily and River Swamp Wallaby Grass plants which cannot be avoided.	Construction contractor
MD09 BH18	Construction impacts threatened species	Seed collection for River Swamp Wallaby Grass.	Construction contractor
MD09 BH19	Construction impacts threatened species	Weed and disease controls in line with BH05.	Construction contractor
MD09 BH20	Construction impacts threatened species	Dust controls in line with AQ01.	Construction contractor
MD09 BH21	Construction impacts threatened species	Measures to prevent rubbish from entering habitat in line with BH05.	Construction contractor
MD09 BH22	Construction impacts threatened species	Erosion and sedimentation controls to protect wetland habitat in line with SG01.	Construction contractor
MD09 BH23	Construction impacts threatened species	Maintaining connectivity for the Growling Grass Frog and Little Galaxias through crossings and strategic habitat creation, including at culvert entrances in line with *Growling Grass Frog Crossing Design Standards* (DELWP 2017).	Construction contractor
MD09 BH24	Construction impacts threatened species	Salvage of Growling Grass Frog from impacted ponds if required.	Construction contractor
MD09 BH25	Construction impacts threatened species	Appropriate disease controls for Growling Grass Frog to minimise spread of the waterborne fungal pathogen *Batrachochytrium dendrobatidis.*	Construction contractor
MD09 BH26	Construction impacts threatened species	Construction using techniques which minimise impacts on wetlands which are partially within the construction footprint to avoid impacts on the retained potential habitat for Growling Grass Frog.	Construction contractor
MD09 BH27	Construction impacts threatened species	Flow connectivity for Little Galaxias should be maintained and unimpeded along Yam Holes Creek at all times that water is present and/or during flooding events.	Construction contractor
MD09 BH28	Construction impacts threatened species	Store fuel and chemicals outside of flood zones.	Construction contractor
MD09 BH29	Construction impacts threatened species	Revegetation and habitat creation to be included in LV03.	Construction contractor
MD09 BH30	Construction impacts threatened species	Reinstatement of temporary impacts to habitat which may support overwintering or movement.	Construction contractor
MD09 BH31	Construction impacts threatened species	Habitat restoration or creation of habitat around culverts where new crossings are proposed to include wetland vegetation.	Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
MD21 BH32	Construction impacts threatened species	Monitoring program to report on the success and failure of plant translocation and recommend management interventions, as needed.	RRV MRPV Construction contractor

17.6.3 Cultural heritage

The below listed standards set out how the project will comply with relevant legislation and how matters of Aboriginal and Historic cultural heritage will be managed and protected.

- VicRoads Contract Specification Section 177.J - Cultural Heritage
- VicRoads Cultural Heritage Guidelines
- *Aboriginal Heritage Act 2006*
- *Heritage Act 2017*.

All impacts on Aboriginal cultural heritage will be managed appropriately by MRPV and the construction contractor within the framework of the Cultural Heritage Management Plan, once approved by the Wadawurrung Traditional Owners Aboriginal Corporation. An unexpected finds protocol will be incorporated into the Construction Environmental Management Plan in the event unrecorded historic cultural heritage is discovered. If impact occurs within the Nil Desperandum Mine Feature 1 (H7523-0071), the appropriate consents must be obtained from Heritage Victoria under the *Heritage Act 2017*. Outlined in Table 17.9 are the specific design and construction phase management measures to minimise impacts to cultural heritage.

Table 17.9 Details of mitigation measures – Cultural heritage

ID	Description of impact	Mitigation measures	Responsibility
AH01	Design impacts known Aboriginal cultural heritage	During detailed design in consultation with the Registered Aboriginal Party, the design will be optimised to, where possible, avoid harm to Aboriginal cultural heritage (tangible and intangible).	MRPV Construction contractor
AH02		Where harm cannot be avoided, minimise harm where possible by implementing changes such as changing the angles of batters, fly-overs or fill over artefact bearing deposits.	MRPV Construction contractor
MD10 AH03	Design impacts areas of Aboriginal cultural heritage sensitivity	Finalise the Cultural Heritage Management Plan in consultation with the Registered Aboriginal Party and First Peoples - State Relations, including the development of conditions for the Cultural Heritage Management Plan and contingency plans for unknown Aboriginal cultural heritage.	RRV
AH04	Construction impacts known Aboriginal cultural heritage	Prior to construction relocate the Scarred Tree, in consultation with the Registered Aboriginal Party, to a suitable location creating a place for cultural education with interpretive signage incorporating the Wadawurrung's history on country.	MRPV Construction contractor
MD10 AH05	Construction impacts areas of Aboriginal cultural heritage sensitivity	Management of any Aboriginal cultural heritage approved conditions and contingency plan for unknown Aboriginal cultural heritage in the Cultural Heritage Management Plan.	MRPV Construction contractor
HH01	Design impacts known historic cultural heritage	During detailed design, the design will be optimised to, where possible, avoid harm to historic cultural heritage.	MRPV Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
HH02	Design impacts known historic cultural heritage	If the project cannot avoid impacting the Nil Desperandum Mine Feature 1 site, the appropriate consents must be obtained from Heritage Victoria under the *Heritage Act 2017*. This typically involves: • consent to Excavate (to authorise the archaeological investigation or excavation and recording of the site) • consent to Damage (once archaeological work is completed to allow disturbance and development of the project) • analysis of any discoveries made during the fieldwork and preparation of a project report.	MRPV Construction contractor
MD04 HH03	Construction impacts unknown historic cultural heritage	Incorporate relevant contingency plans into the Construction Environmental Management Plan in the case that previously unknown historic heritage is identified during construction.	MRPV Construction contractor

17.6.4 Catchment values and hydrology

The construction and operational phases of the project will be required to comply with the following standards and guidelines in the design, construction and operation of the project for the management and mitigation of catchment values including groundwater and surface water.

- *Environment Protection Act 2017*
- *Planning and Environment Act 1987*
- *Water Act 1989*
- *Catchment and Land Protection Act 1994*
- *Occupational Health and Safety Act 2004*
- General Environmental Duty
- Environmental Reference Standards
- State Environment Protection Policy (Waters)
- Glenelg Hopkins Catchment Management Authority relevant catchment management strategies and guidelines.
- VicRoads Contract Specifications Section 177.B – Water Quality
- VicRoads Contract Specifications Section 177.D – Sediment and Erosion control
- VicRoads Contract Specification Section 177.B2 – Groundwater
- VicRoads Contract Specification Section 177.G1 – Fuels and Chemicals
- VicRoads Contract Specification Section 177.E – Contaminated Soils and Material
- Environment Protection Authority Victoria Publication No. 275. Construction Techniques for Sediment Pollution Control (1991)
- Environment Protection Authority Victoria Publication No. 1834. Civil Construction and Demolition Guide (2020).

Outlined in Table 17.10 are the specific design and construction phase management measures to minimise impacts to catchment values and hydrology.

Table 17.10 Details of mitigation measures – Catchment values and hydrology

ID	Description of impact	Mitigation measures	Responsibility
SW01	Design impacts water quality and wetlands	To ensure water quality impacts are managed a detailed drainage design that incorporates the functional design water sensitive road design principles and includes features such as treatment swales and bioretention systems at all discharge points to protect the downstream water quality regime must be undertaken. The functional design currently includes 14 stormwater treatment measures, primarily consisting of bioretention basins, to remove pollutants from the road runoff prior to discharge to the receiving environment. Where possible integrate the treatment system within the required channel realignments and seek to achieve an appropriate balance between treatment outcomes and disturbance and clearing of existing land and native vegetation as described in BH01. The detailed design phase will produce more developed flooding and water quality models and will demonstrate the performance of the design under present day and future climate scenarios for hydrological, hydraulic and water quality standards set by the legislation and guidelines. The detailed design will include the following elements: • refined sizing and location of cross drainage structures (culverts and bridges), incorporating fauna passage requirements in line with and the *Growling Grass Frog Crossing Design Standards* (DELWP 2017) • fully developed designs for channel realignments and associated environmental enhancements in line with include of Constructed Waterway Design Manual (Melbourne Water 2019) • refined sizing, location and layout of stormwater treatment systems. Development of the detailed drainage design must be undertaken in consultation with Glenelg Hopkins Catchment Management Authority and consider current best practice design guidelines.	MRPV Construction contractor
SW02	Design impacts water quality and wetlands	To ensure potential pollutants from road run off is managed, prepare a spills risk assessment and incorporate spill containment into the road drainage/stormwater treatment system design where required to protect the downstream water quality regime in line with best-practice and water sensitive road design principles. Design measures to mitigate spill risk may include extending and widening existing swales to provide additional storage and increase travel time for any spillage to discharge outside the project boundary.	MRPV Construction contractor
SW03	Design impacts floodplain afflux	To respond to localised afflux in the 1% Annual Exceedance Probability refinement of the cross-drainage design to further minimise and manage flooding impacts as far as practical around the eastern Yam Holes Creek crossing and floodplain in the vicinity of Racecourse Road, with a focus on reducing impact on the trafficability of Racecourse Road and any other sensitive land uses in the area. Consult with affected landowners on the flooding impacts and determine the need for further design refinements during the detailed design. Refine the design to facilitate fauna passage by shortening culverts, replacing culverts with bridges where feasible and inclusion of features such as light wells in long culverts.	MRPV Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
SW04	Design impacts flood velocity and habitat connectivity	Channel realignments to be designed to avoid excessive velocities and depths and scour risk at transitions to downstream watercourses. Designs to incorporate ecological and landscape design principles to provide new or enhance existing aquatic and terrestrial habitats. Measures to incorporated include: • structures/geometric design to limit velocities and avoid scour and erosion at transitions to receiving waterways • aquatic and terrestrial planting (maximising the use of native species) that is appropriate for the existing environment • pool and riffle features and other methods to provide stilling areas Culvert and channel realignments to be designed in accordance with best practice guidelines including Melbourne Water's *Constructed Waterway Design Manual* (Melbourne Water 2019) and DELWP's *Growling Grass Frog Crossing Design Standards* (DELWP 2017). Designs to be sustainable without requiring onerous maintenance and minimising disturbance and clearing of existing land and native vegetation. Consultation with landholders will be undertaken, during detailed design where impacts extend beyond the existing floodplain.	MRPV Construction contractor
MD04 SW05	Construction impacts water quality and wetlands	To manage potential water quality impacts during construction, a Construction Environmental Management Plan that includes best practice measures to manage sedimentation and erosion impacts and temporary flooding impacts during the construction phase in accordance with all relevant guidelines must be prepared. Erosion and sediment controls in line with Environmental Reference Standards and best practice guidelines to manage erosion and sedimentation including: • work near waterways to manage potential water quality impacts and Glenelg Hopkins Catchment Management Authority permit requirements • installation and maintenance of erosion and sedimentation controls, established in accordance with Environment Protection Authority best practice guidelines for the treatment of sediment laden run-off, including measures to address dispersive soils (Emerson class testing to confirm dispersive nature of encountered soils/gypsum treatments) • minimising the amount of exposed erodible surfaces during construction including the staging of works • prompt temporary and/or permanent progressive revegetation of the site as work proceeds • prompt covering of exposed surfaces (including batters and stockpiles). Cover may include mulch, erosion control mat or seeding with sterile grass • installation, stabilisation and maintenance of catch and diversion drains that segregate water runoff from catchments outside of the construction site from water exposed to the construction site • adequately control and route runoff within the construction site to the appropriate sedimentation controls • where trees are required to be removed more than two months in advance of any construction works, remove only that part of the tree that is above ground level and where possible allow the roots to remain intact beneath the ground surface to assist with erosion control	Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
		• use of sedimentation basins during construction to manage sedimentation • construction phase water quality monitoring to confirm effectiveness of established controls and where additional controls may be required in all receiving waterways and wetlands downstream of the construction areas. Erosion and sediment controls will need to extend into operational phases until revegetation and landscaping of exposed surfaces is established.	
MD16 SW06	Construction impacts Water quality and wetlands	Habitat restoration or creation of habitat around culverts where new crossings are proposed to include wetland vegetation.	Construction contractor
MD04 SW07	Construction impacts floodplain	To manage potential floodplain impacts during construction, wherever possible temporary works required for the project should occur outside the extent of the 1% Annual Exceedance Probability floodplain, to reduce the risk of increased inundation of properties. Where construction is required within the 1% Annual Exceedance Probability floodplain the following activities will should be managed and where possible minimised including: • stockpiles • location of equipment and plant • formwork and temporary works • temporary diversions or cofferdams • access and/or working platforms • modifications to banks and levees • any temporary works that disturb or require clearance of existing native vegetation. To minimise the impact of construction work on overland flow paths and floodplains, the works should be carried out in consultation with Glenelg Hopkins Catchment Management Authority and Pyrenees Shire Council.	Construction contractor
MD04 SW08	Construction impacts water flows	Flow connectivity should be maintained and unimpeded along Yam Holes Creek at all times that water is present and/or during flooding events.	Construction contractor
MD11 GW01	Construction impacts groundwater quality	To manage potential groundwater quality impacts, mitigation measures to ensure to groundwater quality are managed during construction and operation will be implemented in accordance with VicRoads environmental management procedures (VicRoads 2014). These measures will include: • nominated fuel and chemical storage areas • nominated points for the refuelling and fluid top up of vehicles and plant • spill kits for cleaning up chemical, oil and fuel spillages • personnel purpose trained. Management of potential impacts on groundwater in accordance with standard contract specifications S177, B2, Groundwater will also be implemented and include: • development of a Groundwater Management and Monitoring Plan • soil excavated in known and suspected saline or contaminated areas to be routinely tested prior to and during earthworks.	Construction contractor

17.6.5 Social

The management of social impacts relies on early, ongoing and transparent engagement with stakeholders and the community. In addition to this, the standard environment controls employed for the management of other environmental values will assist in managing impacts to Beaufort and the surrounding communities.

While there are no standard RRV Contract Specifications that relate directly to the management of social aspects, there are a number of alternative standard controls that have been and will be implemented to minimise the social impacts of the construction and operation of the project.

The alignment has been altered and optimised to minimise impacts on acquisition and access to properties, access to and from Beaufort to communities to the north, and community facilities and values such as biodiversity and habitat and amenity (noise and air quality). A comprehensive communications plan has been developed and is being implemented throughout the EES process. A plan will also be developed by MRPV and the construction contractor to be implemented during the construction phase.

Outlined in Table 17.11 are the specific design and construction phase management measures to minimise impacts to social values.

Table 17.11 Details of mitigation measures – Social

ID	Description of impact	Mitigation measures	Responsibility
S01 RE03	Design requires land acquisition and displacement of residents	To address land acquisition and severance impacts during construction and operation, mitigations will include: • design optimisation to reduce acquisition impacts • continued consultation with affected landowners • compensation in accordance with the *Land Acquisition and Compensation Act 1986*.	RRV
MD06 S02 T02 RE04	Design impacts property access	During the detailed design and pre-construction phases, a construction and operational access strategy will be developed to the satisfaction of the Department of Transport, Pyrenees Shire Council and DELWP. Measures for the access strategy will include: • ensuring there is a thorough community and landholder/manager consultation process and public advertisement of works • ensure that alternative access and redirections are provided where existing access is removed, which follows relevant standards and guidelines, including but not limited to: – within project Specific Controls Overlay, in accordance with project approval conditions – AS1742.3 – Manual of uniform traffic control devices – VicRoads Traffic Engineering Manual Vol 2 Part 2.03 – Traffic control devices for works on roads. The access management strategy will include strategies for maintaining access to private land, local road network, public amenity and Crown land.	RRV MRPV Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
MD13 S03 RE01	Design impacts community facilities	A Business Disruption Plan will be developed to minimise impacts to local businesses. The plan will: • preparation of a construction workforce management plan which seeks to utilises regional accommodation options (such as Ballarat, Ararat, private sector) • communicate construction phasing and timeframes with local businesses • communicate and co-ordinate road closures and traffic management to minimise impact to local businesses • ensure disruption to transport routes and access to businesses is avoided, minimised or provided suitable alternatives • promote the support to local businesses during construction periods • co-ordinate engagement with local businesses in line with the community and stakeholder engagement plan • identify how local businesses will be provided with ongoing support during Beaufort's transition from a highway town to a destination • work with impacted community groups to find appropriate alternative locations for impacted services.	Construction contractor
MD12 S04	Disruption to affected facilities	A Community and Stakeholder Engagement Plan will be prepared and implemented by MRPV to set out the specific actions, requirements and processes to engage with the community and other stakeholders (such as local businesses and special interest groups). The purpose of this plan is to provide means for community enquiries and complaints throughout the construction and operation of the bypass. It will be prepared in line with relevant guidelines and the Victorian Auditor-General Office (2015) *Public Participation in Government Decision-making: Better Practice Guide.*	MRPV
MD16 S05 LV03	Design impacts community visual amenity and wellbeing	Landscape Design Plans must protect and, where practicable, improve access to, and amenity for, potentially affected residents, open spaces, pedestrian and cyclist networks, social and community infrastructure and commercial facilities. The landscape design should: • utilise colours and materials for structural elements which blend in with or complement surrounding landscape character, avoid reflective and bright colours • where possible, retain natural material/geology/earth in cuttings • where noise attenuation is required, consider noise attenuation mounds, as a first option, followed by noise wall and other attenuation techniques • minimise visual impact and overshadowing of bridges, noise walls and associated fill • enhance usability in bridge underpasses for recreation and leisure, to encourage use and increase safety under bridges • locate and design watercourse crossings to minimise loss of riparian vegetation and to accommodate erosion control methods • ensure bridge design minimises visual and landscape impacts and enhance amenity, public use, passive surveillance levels and recreational offer to the extents practicable. This includes all aspects of the bridge design including, materials, noise walls, abutments and embankments.	MRPV Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
		Landscape and architectural elements should be developed in consultation with the Registered Aboriginal Party and consider the application of Indigenous design elements to the project.	
MD15 S06 NV01 BH07	Design impacts community noise and vibration amenity and wellbeing	A Construction Noise and Vibration Management Plan will be developed by the construction contractor in accordance with Environment Protection Authority Victoria Guidelines to ensure that the impacts of construction noise are minimised as far as practicable. The Construction Noise and Vibration Management Plan will be approved by MRPV and relevant stakeholders, and will include: • establishment of project-specific noise targets for construction • a prediction of noise from each construction scenario • an assessment of each scenario to the established targets • mitigation measures to be implemented to control noise levels • requirements for a noise monitoring regime whereby noise levels are measured and recorded • highlight potential unavoidable evening and night works for seeking prior approval from relevant stakeholders including RRV and the Environment Protection Authority Victoria.	Construction contractor
S07 RE05	Construction impacts community wellbeing and amenity	During pre-construction stages, RRV in partnership with Council will identify potential resourcing, capacity building and funding options to support Council with implementation of transitional initiatives to reposition Beaufort from a highway town to a bypassed town to assist its economic and social recovery post bypass. Transitional initiatives identified for Beaufort will be aligned with the *Pyrenees Economic Development Strategy – February 2020* and include, but not limited to: • attracting new and diverse businesses and employment opportunities to Beaufort • planning and design projects to be implemented in support of new and existing business and employment opportunities and population growth within the township • identifying the critical population mass required to enhance the social and economic sustainability of Beaufort • branding and promotion including appropriate signage • public realm and amenity improvements • identify infrastructure improvements that support tourism, investment and the liveability of Beaufort.	RRV
S08 RE02	Employment	In accordance with the percentage targets declared by the Minister for Industry Support and Recovery under the *Local Jobs First Act 2003*, construction contractors will develop local procurement strategies to ensure economic benefits are realised during the construction phase.	MRPV Construction contractor

17.6.6 Land use and economics

The recommended standard controls for land use and economic impacts include:

- the construction contractor shall be responsible for obtaining all necessary permits and approvals from the relevant authorities, other than those already obtained by RRV, in accordance with VicRoads Standard Contract Specification Section 177.A5
- RRV have engaged with community, affected properties and stakeholders throughout the initial planning and approval phases, and will continue to along with MRPV into the construction phase of the project
- the construction contractor will develop and implement relevant management plans (e.g. Traffic Management Plan, noting the oversight of DELWP and similar agencies with approval functions built into these management plans).

Outlined in Table 17.12 are the specific design and construction phase management measures to minimise impacts to land use and economics.

Table 17.12 Details of mitigation measures – Land use and economics

ID	Description of impact	Mitigation measures	Responsibility
LU01	Construction impacts Central Highlands Water sewage treatment plant irrigation infrastructure	Continue consultation with Central Highlands Water to protect utility assets. Including: trunk water mains and wastewater irrigation ponds for future wastewater irrigation requirements. Where possible seek to achieve an appropriate balance between treatment outcomes and disturbance and clearing of existing land and native vegetation as described in BH01.	RRV
MD13 RE01 S03	Construction impacts to future economic growth and development	A Business Disruption Plan will be developed to minimise impacts to local businesses. The plan will: • preparation of a construction workforce management plan which seeks to utilises regional accommodation options (such as Ballarat, Ararat, private sector) • communicate construction phasing and timeframes with local businesses • communicate and co-ordinate road closures and traffic management to minimise impact to local businesses • ensure disruption to transport routes and access to businesses is avoided, minimised or provided suitable alternatives • promote the support to local businesses during construction periods • co-ordinate engagement with local businesses in line with the Community and Stakeholder Engagement Plan. • identify how local businesses will be provided with ongoing support during Beaufort's transition from a highway town to a destination • work with impacted community groups to find appropriate alternative locations for impacted services.	Construction contractor
RE02 S08	Construction impacts to future economic growth and development	In accordance with the percentage targets declared by the Minister for Industry, Support and Recovery under the *Local Jobs First Act 2003*, construction contractors will develop local procurement strategies to ensure economic benefits are realised during the construction phase.	MRPV Construction contractor
RE03 S01	Impacts to land acquisition and severance	To address land acquisition and severance impacts during construction and operation, mitigations will include: • design optimisation to reduce acquisition impacts • continued consultation with affected landowners • compensation in accordance with the *Land Acquisition and Compensation Act 1986*.	RRV

ID	Description of impact	Mitigation measures	Responsibility
MD06 RE04 T02 S02	Construction and operation impact land access	During the detailed design and pre-construction phases, a construction and operational access strategy will be developed to the satisfaction of the Department of Transport, Pyrenees Shire Council and DELWP. Measures for the access strategy will include: • ensuring there is a thorough community and landholder/manager consultation process and public advertisement of works • ensure that alternative access and redirections are provided where existing access is removed, which follows relevant standards and guidelines, including but not limited to: – within project Specific Controls Overlay, in accordance with project approval conditions – AS1742.3 – Manual of uniform traffic control devices – VicRoads Traffic Engineering Manual Vol 2 Part 2.03 – Traffic control devices for works on roads. The access management strategy will include strategies for maintaining access to private land, local road network, public amenity and Crown land.	RRV MRPV Construction contractor
RE05 S07	Operation of the project impacts Beaufort businesses	During pre-construction stages, RRV in partnership with Council will identify potential resourcing, capacity building and funding options to support Council with implementation of transitional initiatives to reposition Beaufort from a highway town to a bypassed town to assist its economic and social recovery post construction. Transitional initiatives identified for Beaufort will be aligned with the *Pyrenees Economic Development Strategy – February 2020* and include, but not limited to: • attracting new and diverse businesses and employment opportunities to Beaufort • planning and design projects to be implemented in support of new and existing business and employment opportunities and population growth within the township • identifying the critical population mass required to enhance the social and economic sustainability of Beaufort • branding and promotion including appropriate signage • public realm and amenity improvements • identify infrastructure improvements that support tourism, investment and the liveability of Beaufort.	RRV

17.6.7 Amenity

The project will be undertaken in accordance with relevant RRV/MRPV processes and standard specifications including, but not limited to:

- VicRoads Air Quality Screening Tool
- VicRoads Contract Specifications Section 177.C – Air Quality
- VicRoads Contract Specification Section 177.H – Noise and Vibration
- VicRoads Contract Specification Section 765 – Noise Attenuation
- VicRoads Traffic Noise Reduction Policy 2005
- VicRoads Technical Guidelines: Noise Guidelines – Construction and Maintenance Works 2007
- Environment Protection Authority Victoria Guideline 1834 Civil Construction and Demolition Guide (2020)
- Implement vibration limits as per DIN 4150-3: Vibration in Buildings – Part 3: Effects on Structures.

These above standards will be complied with through the preparation and implementation of the Construction Dust Management Plan and Construction Noise and Vibration Management Plan described in Table 17.5.

These standards set out how MRPV projects will comply with relevant legislation and how air quality and noise and vibration impacts will be managed. Additional controls identified for the management of impacts with an impact rating of medium or above are detailed below in Table 17.13.

Table 17.13 Details of mitigation measures – Amenity

ID	Description of impact	Mitigation measures	Responsibility
MD14 AQ01	Construction dust and pollutants impact air quality	Develop and implement a site-specific Dust Management Plan that incorporates the VicRoads standard measures, which includes measures such as: • covering of material that may create a hazard or nuisance dust during transport • installation of directional dust gauges alongside each air quality monitoring station. The site-specific Dust Management Plan is also to incorporate the following additional measures: • install three portable dust monitoring stations near receptors within 200 m of the closest trafficked lane, with rapid response to high readings of dust at monitoring stations. These stations should be sited as advised by an air quality expert • high frequency of watering of exposed surfaces (including exposed stockpiles and unsealed roadways) on days with hot north winds to suppress dust generation • reduce activities with high dust generating potential (including heavy excavations and drilling) when strong winds are blowing towards Beaufort • locating stockpiles away from sensitive receivers, as far as practicable • use mulch or surfactants on stockpiles of topsoil to minimise erosion risk. For stockpiles or temporary soil surfaces lasting more than three weeks, use surfactants to reduce dust emissions • extra controls for trucks moving construction materials, including: - restriction of construction vehicle speeds to minimise wheel-generated dust on unsealed roads - locate haulage routes for rock and soil away from sensitive receptors as much as practical - install truck tyre clean stations at site boundaries for earth moving vehicles to minimise off-site transport of material that could cause dust emissions.	Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
MD14 AQ02	Construction emissions impact air quality	Project construction shall comply with the requirements of the VicRoads Contract Specifications, including: • emissions of odorous substances or particulates shall not create or be likely to create objectionable conditions for the public • all heavy-duty diesel engines must be fitted with Selective Catalytic Reduction and diesel particulate filters, where practical • install appropriate emission control mechanisms (e.g. fabric filter on crushers, concrete batchers) to minimise air emissions.	Construction contractor
MD15 NV01 S06 BH07	Construction noise and vibration impacts sensitive receivers	A Construction Noise and Vibration Management Plan will be developed by the construction contractor in accordance with Environment Protection Authority Victoria Guidelines to ensure that the impacts of construction noise are minimised as far as practicable. The Construction Noise and Vibration Management Plan will be approved by MRPV and relevant stakeholders, and will include: • establishment of project-specific noise targets for construction • a prediction of noise from each construction scenario • an assessment of each scenario to the established targets • mitigation measures to be implemented to control noise levels • requirements for a noise monitoring regime whereby noise levels are measured and recorded • highlight potential unavoidable evening and night works for seeking prior approval from relevant stakeholders including RRV and the Environment Protection Authority Victoria.	Construction contractor
MD15 NV02	Vibration impacts buildings	Measures to address construction vibration will include: • dilapidation surveys • vibration monitoring • alternative methods and/or equipment • specific consultation with residents/asset owners.	Construction contractor
NV03	Operational noise impacts sensitive receivers	Measures to manage noise impacts to sensitive receptors during operation include: • alternative road surface (7 mm spray seal) • noise barriers (2 m high) at strategic locations, which significantly reduces the number of properties exceeding the Project Objective Noise Levels • targeted off-reservation treatments to individual buildings with residual noise level exceedances to achieve compliance with the Project Objective Noise Levels such as: – fresh air ventilation treatments – upgraded windows/doors – upgrade window and door seals • targeted sealing of wall vents. Where possible seek to achieve an appropriate balance between treatment outcomes and disturbance and clearing of existing land and native vegetation as described in BH01.	MRPV Construction contractor

17.6.8 Landscape and visual amenity

The project will be undertaken in accordance with relevant RRV/MRPV standard specifications including, but not limited to, the *VicRoads Contract Shell DC1: Design and Construct* (April 2012). The measures have been developed by RRV and provide a level of mitigation appropriate to minimise typical physical impacts on the environment and the community. Landscape and visual amenity mitigations will be developed in accordance with the following specific standard specifications and RRV policy documents:

- VicRoads' Roadside Management Strategy 2011
- VicRoads Fauna Sensitive Road Design Guidelines
- VicRoads Contract Specifications Section 201 – Site Clearing
- VicRoads Contract Specifications Section 720 – Landscape Works
- VicRoads Contract Specifications Section 750.C – Roadside Maintenance Requirements
- VicRoads Contract Specifications Section 752 – Routine Roadside Maintenance – Vegetation
- VicRoads Contract Specifications Section 177.I – Flora and Fauna.

In addition to the above listed standards, additional mitigation measures were identified for the medium or above initial impacts. These are detailed in Table 17.14 below.

Table 17.14 Details of mitigation measures – Landscape and visual amenity

ID	Description of impact	Mitigation measures	Responsibility

LV01	Design impacts landscape character, visual amenity, sensitive sites and views.	A Landscape Management Strategy must be developed and implemented, to the satisfaction of MRPV and in consultation with the Registered Aboriginal Party. The strategy will include:
		• weed management measures
		• fauna sensitive road design principles as described in BH04
		• planting schedule for reinstatement as described in BH10, BH11 and BH29, including:
		  – focus on ecological appropriate species and local endemic/native species
		  – local planting themes where possible to identify 'gateways' within interchange reservation boundaries, in the design of rest areas or to identify other significant landscape elements
		  – planting of trees and vegetation to screen elevated carriageway from key viewpoints in landscape
		  – strategies for integration of habitat corridors and culverts into freeway design to reduce impact upon flora and fauna connections and increase public access
		• screening of adjacent access roads and dwellings using plant and/or landform between the freeway and the right-of-way boundary
		• implementation of the relevant lighting standards, including the AS 4282-1997 *Control of the obtrusive effects of outdoor lighting*, and the UK *Guidance Note 1 for the reduction of obtrusive light 2020*.
		The removal of mature trees, particularly large amenity trees and significant trees as identified should be minimised through design optimisation and siting as described in BH01.
			MRPV
			Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
MD04 LV02	Construction impacts landscape character, visual amenity, sensitive sites and views.	The construction contractor will be required as a condition of the contract to prepare a project specific Construction Environmental Management Plan. The Construction Environmental Management Plan will be required to address the range of environmental impacts, and proposed management measures identified in the EES. Measures to be contained in the Construction Environmental Management Plan should be consistent with LV01 and include: • visual impact of construction compounds is to be mitigated through specially designed hoardings that improve appearance • to mimimise light spillage and protect the amenity of adjacent land uses to the extent practicable. Lighting should meet the typical recommendations (e.g. use of diffusers, shields) identified in the relevant VicRoads and Austroads guidelines and policies and *AS/NZS 1158 Lighting of Roads and Public Spaces* • tree removal, to minimise the removal of mature trees, particularly large amenity trees and significant trees as identified in BH01 • site management, in accordance with RRV's Roadside Management Strategy • trees and vegetation planting.	Construction contractor
MD16 LV03 S05	Construction impacts landscape character, visual amenity, sensitive sites and views.	Landscape Design Plans aligned with LV01 must protect and, where practicable, improve access to, and amenity for, potentially affected residents, open spaces, pedestrian and cyclist networks, social and community infrastructure and commercial facilities. The landscape design should: • utilise colours and materials for structural elements which blend in with or complement surrounding landscape character, avoid reflective and bright colours • where possible, retain natural material/geology/earth in cuttings • where noise attenuation is required, consider noise attenuation mounds, as a first option, followed by noise wall and other attenuation techniques • minimise visual impact and overshadowing of bridges, noise walls and associated fill • enhance usability in bridge underpasses for recreation and leisure, to encourage use and increase safety under bridges • locate and design watercourse crossings to minimise loss of riparian vegetation and to accommodate erosion control methods • ensure bridge design minimises visual and landscape impacts and enhance amenity, public use, passive surveillance levels and recreational offer to the extents practicable. This includes all aspects of the bridge design including, materials, noise walls, abutments and embankments. Landscape and architectural elements should be developed in consultation with the Registered Aboriginal Party and consider the application of Indigenous design elements to the project.	MRPV Construction contractor

ID	Description of impact	Mitigation measures	Responsibility
MD21 LV04	Operation impacts landscape character, visual amenity, sensitive sites and views.	To ensure effectiveness of landscape treatments MPRV will manage and monitor landscape works through their performance requirements within VicRoads standard specifications: • Section 720 – Landscape Works, which includes regular revegetation auditing to ensure contractors meets specified revegetation targets within the defects liability period. Trees not meeting the growth performance requirements will be replaced annually by the contractor to achieve the specified planting numbers.	RRV MRPV Construction contractor

17.6.9 Soils, geology and contaminated land

No specific evaluation objectives were prescribed for soils, geology or contaminated land, however, the following contract specifications and additional mitigations in Table 17.15 are proposed to manage soils, geology and contaminated land impacts:

- VicRoads Contract Specifications Section 177.A – Environmental Management
- VicRoads Contract Specifications Section 177.D – Erosion and Sediment Control
- VicRoads Contract Specifications Section 177.E – Contaminated Soils and Materials.

The proposed measures presented in Table 17.15 are the additional mitigations proposed to manage potential soil, geology and contamination impacts in addition to the key plans associated with the VicRoads Contract Specification Section 177.

Table 17.15 Details of mitigation measures – Soils, geology and contaminated land

ID	Description of Impact	Mitigation measures	Responsibility
MD04 SG01	Construction causes erosion and sedimentation	In accordance with *Section 177 Environmental Management (Major)* (VicRoads 2016), a Construction Environmental Management Plan will be prepared. The Construction Environmental Management Plan will outline the procedures, Environmental Reference Standards and best practice guidelines to manage erosion and sedimentation including: • work near waterways to manage potential water quality impacts and Glenelg Hopkins Catchment Management Authority permit requirements • installation and maintenance of erosion and sedimentation controls, established in accordance with Environment Protection Authority Victoria best practice guidelines for the treatment of sediment laden run-off, including measures to address dispersive soils (Emerson class testing to confirm dispersive nature of encountered soils/gypsum treatments) • minimising the amount of exposed erodible surfaces during construction including the staging of works • prompt temporary and/or permanent progressive revegetation of the site as work proceeds • prompt covering of exposed surfaces (including batters and stockpiles). Cover may include mulch, erosion control mat or seeding with sterile grass • installation, stabilisation and maintenance of catch and diversion drains that segregate water runoff from catchments outside of the construction site from water exposed to the construction site	Construction contractor

ID	Description of Impact	Mitigation measures	Responsibility
		• adequately control and route runoff within the construction site to the appropriate sedimentation controls in accordance with Environment Protection Authority Victoria Publications 275 and 1834 • where trees are required to be removed more than two months in advance of any construction works, remove only that part of the tree that is above ground level and where possible allow the roots to remain intact beneath the ground surface to assist with erosion control • use of sedimentation basins during construction to manage sedimentation. Erosion and sediment controls will need to extend into operational phases until revegetation and landscaping of exposed surfaces is established. The Construction Environmental Management Plan is to be prepared prior to commencement of construction to manage environmental considerations and roles and responsibilities during the construction phase of the project and will be updated based on progressive investigation methods.	
SG02	Construction causes ground settlement	Undertake early works geotechnical investigations to inform the detailed design and determine the specific engineering responses to geological conditions. Investigation to inform development of SG04.	MRPV Construction contractor
MD18 SG03	Construction exposes acid sulfate soils	Additional ground investigation will be undertaken along the alignment as part of the detailed ground investigation, targeting areas of excavation and cut, relevant to the finalised design and confirming the presence or absence of acid sulfate soils with laboratory testing. This investigation will assess the suitability of these soils for reuse as embankment fill or containment within zoned embankments to minimise the volume of imported fill required for the project. If acid sulfate soil is identified during detailed design ground investigations, the Construction Environmental Management Plan will include a specific Acid Sulfate Soil Management Plan in accordance *Industrial Waste Management Policy (Waste Acid Sulfate Soils) 1999* to manage impacts to buildings and structures, and the environment. The Acid Sulfate Soil Management Plan would, wherever possible, require the avoidance of acid sulfate soil excavation. Where this is not possible, the Acid Sulfate Soil Management Plan would require the minimisation of disturbance by: • limiting the amount of excavation of acid sulfate soil required • locating aspects of the project on land where acid sulfate soils are buried deepest, so the amount of acid sulfate soil removed is reduced • using construction methods and site management procedures that do not leave acid sulfate soils exposed to air without treatment • treatment of acid sulfate soil if disturbed.	Construction contractor

ID	Description of Impact	Mitigation measures	Responsibility
MD17 SG04	Construction uncovers contaminated land (incl. landfill) and unsuitable soils	A Spoil Management Plan, a sub-plan of the Construction Environmental Management Plan, is to be prepared prior to commencement of construction based on the soil re-use requirements of the project. In accordance with *Section 177 Environmental Management (Major)* (VicRoads 2016): • all excavated soil not suitable for re-use due to contamination is to be appropriately stored prior to disposal off-site to an appropriately licenced facility in accordance with relevant Environment Protection Authority Victoria regulations • soils stockpiles on-site are placed on plastic and covered to prevent spread of materials via wind and rain. The geometry and location of the stockpile is to be designed to avoid soil erosion and contamination of nearby ecosystems. Prior to re-use or off-site disposal, stockpiles soils or importation of fill are to be assessed in applicable guidelines • if soils are to be reused on site (either structurally or for landscaping), liaise with Environment Protection Authority Victoria to determine soil reuse options in accordance with Environmental Reference Standards and State Environment Protection Policy (Prevention and Management of Contaminated Land). The Spoil Management Plan to include plans for fill requirements for the project including source locations, type of fill and stockpile management.	Construction contractor
MD19 SG05	Construction uncovers contaminated land (including landfill)	Prior to the commencement of construction, an area specific or task specific Occupational Health and Environment Safety Plan is to be prepared so that impacts from specific contaminants can be appropriately managed.	Construction contractor

17.6.10 Sustainable development

RRV has a set of standard environmental protection measures which are typically required to be complied with for the construction of major projects like the Beaufort Bypass project. The standard contract conditions that are applicable to sustainable development are:

- VicRoads Sustainability and Climate Change Policy
- VicRoads Sustainability and Climate Change Strategy 2015–2020.

17.7 Performance management

17.7.1 Compliance

Compliance with the obligations imposed by the identified management documents will be managed through:

- detailed design development and incorporation of design related environmental management measures
- routine audits of project compliance with the approved Environmental Management Framework, Construction Environmental Management Plan, and other environmental plans by an independent environmental auditor during construction, with audit reports to be submitted to MRPV by the contractor
- six-month audits of compliance by MRPV extending past completion of project construction for a period of least two years
- audit reports to be submitted to the Minister for Planning and sub-reports to other statutory approval authorities as required and published on the project website
- ongoing monitoring of compliance against the Environmental Management Strategy, Construction Environmental Management Plan and other environmental plans by MRPV
- monitoring of compliance with the approval conditions by the statutory authorities
- execution of contingency measures under the Construction Environmental Management Plan and other environmental plans, as appropriate, to ensure that harmful effects are adequately controlled if monitoring, auditing or other means determines more significant harmful effects than predicted or permitted, or if issues or risks not anticipated are identified
- implementation of remedial action in the event any non-compliance issue is identified.

This approach will ensure that the effectiveness of the Environmental Management Framework and the various Environmental Management Plans and procedures developed and implemented for the project is monitored, measured, communicated, and the subject of continuous review and improvement.

This approach is furthermore founded on best practice principles in performance management, ensuring that the potential for adverse effects associated with the development and operation of the project are controlled and that beneficial environmental outcomes to be achieved by the project are supported.

17.7.2 Reporting

The construction contractor will be required to report to MRPV regularly on the progress and compliance against the relevant environmental management requirements, including the following:

- status of current and planned works, key environmental issues and management measures
- advice on any proposed changes to the Environmental Management Strategy, Construction Environmental Management Plan and other environmental plans
- records of compliance with Environmental Management Plans and approval conditions and environmental legislation, policies and standards
- copies of applications for consents, licences and approvals and the responses from authorities
- details of complaints or incidents and corrective and preventative actions taken
- summary of any consultation with regulatory authorities or other stakeholders, including summary of key issues raised and how they have been responded to
- a copy of any environmental studies, monitoring results and analysis
- a summary of contingency measures implemented to address adverse effects not permitted, predicted or anticipated
- a copy of audit reports, and any review of the Construction Environmental Management Plan.

MRPV will prepare environmental performance reports through the construction period to the Minister for Planning at least quarterly, or as agreed by the Minister.