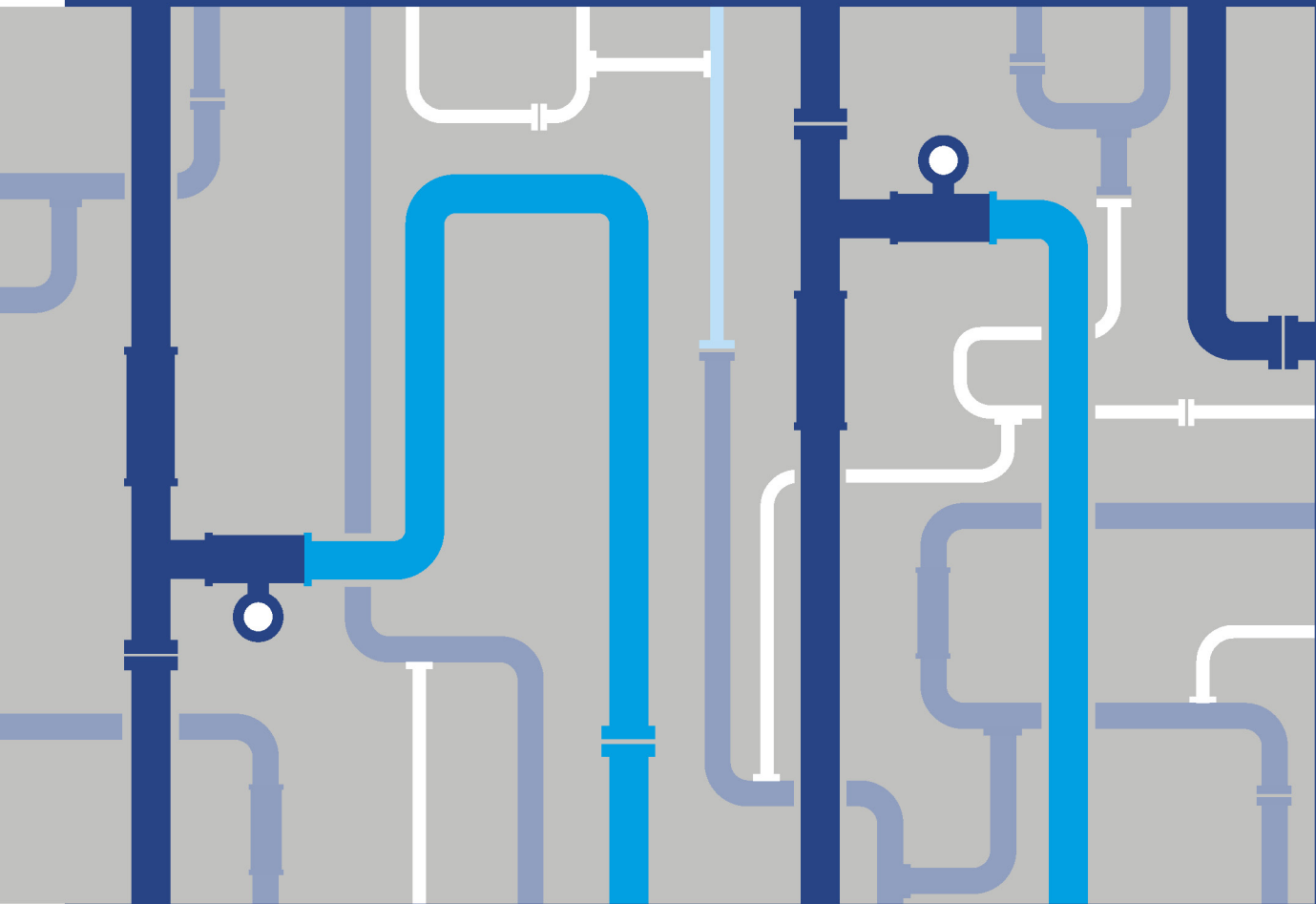




chapter 19

environmental management framework.



Environment Effects Statement | May 2021

western outer
ring main

a project of



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19.1 Introduction

19.1.1 Overview

This chapter presents the environmental management framework for the Western Outer Ring Main (WORM) Gas Pipeline Project (the Project), in response to Section 3.7 of the EES scoping requirements. The purpose of this chapter is to set out the statutory approvals and agreements that underpin the environmental management plans and measures required to manage the environmental effects identified in the EES. It also sets out the Environmental Management System to be adopted, environmental monitoring requirements, an overview of environmental management plans and environmental management measures (EMMs), and the proposed approach to evaluating and reporting environmental outcomes and performance.

Note that where the conditional tense is used throughout the EES and this chapter (such as the use of the word 'would' rather than 'will'), this reflects that the Project proceeding is conditional on receiving the required approvals. If the Project proceeds, the environmental management measures outlined in this section will be implemented.

The development of this chapter including the EMMs has been informed by relevant legislation, policy, guidelines, specialist technical reports completed as part of the EES as well as APA systems and processes.

19.1.2 Scoping requirements

This Environmental Management Framework (EMF) chapter responds to the EES scoping requirements which require the following:

'The EMF will articulate clear accountabilities for managing and monitoring environmental effects and risks associated with construction and operation phases of the project, including for offsite infrastructure.'

The EMF is required to describe the baseline environmental conditions to be used to monitor and evaluate the efficacy of applied environmental management and contingency measures, as well as the residual environmental effects of the project. The EMF needs to cover all aspects of the project including any offsite infrastructure and associated impacts.'

This chapter addresses this objective by setting out the proposed environmental management arrangements for Project delivery. Table 19-1 lists the specific scoping requirements for the EMF and the section of the chapter that addresses each requirement.

Table 19-1 EES Scoping Requirements for the EMF

EES scoping requirements for the EMF (Scoping requirements section 3.7)	EMF response and section
<i>The context of required approvals and consents, including any anticipated requirements for related environmental management plans, whether for project phases or elements.</i>	Environmental management plans and other management documentation to manage environmental risks and impacts through design, construction and operation are described in Section 19.6.

EES scoping requirements for the EMF (Scoping requirements section 3.7)	EMF response and section
<i>The environmental management system to be adopted.</i>	Requirements for environmental management during the planning, implementation, evaluation and review of the Project including the environmental management system to be adopted are described in Section 19.3.
<i>Organisational responsibilities and accountabilities for environmental management.</i>	Organisational responsibilities and accountability arrangements are described in Section 19.2.
<i>A register of environmental risks associated with each phase of the project which is to be maintained during project implementation. This can be provided as an attachment to the EES.</i>	Requirements for identification, assessment and management of environmental risks and an overview of the risk assessments undertaken as a part of the EES are described in Section 19.5. A risk register associated with project delivery forms part of the Construction Environmental Management Plan (CEMP).
<i>The environmental management measures proposed in the EES to address specific issues, including commitments to mitigate adverse effects and enhance environmental outcomes and timing of implementation. This consolidated list can be provided as an attachment to the EES.</i>	The environmental management measures (EMMs) proposed to address specific issues, including commitments to mitigate adverse effects and enhance environmental outcomes and timing of implementation, are listed in Section 19.9.
<i>Arrangements for management of, and access to, baseline and monitoring data to ensure the transparency and accountability of environmental management and to contribute to the improvement of environmental knowledge.</i>	The approach to management of baseline and monitoring data is described in Section 19.7.1 The approach to management of environmental incidents and emergencies is described in Section 19.7.2.
<i>The framework for management of any environmental incidents and emergencies.</i>	
<p><i>The proposed objectives, indicators and monitoring requirements (including parameters, locations and frequency) for managing (at least):</i></p> <ul style="list-style-type: none"> • <i>Biodiversity (including MNES) values on and near the project area</i> • <i>Biodiversity (including MNES) offsets to be established and managed offsite</i> • <i>Noise, vibration, and emissions to air, including dust and greenhouse gases</i> • <i>Public health and safety</i> • <i>Groundwater and surface water functions, including behaviour and quality, stormwater runoff, erosion and sediment control, and flood risk</i> • <i>Solid and liquid waste, including recycling and handling of potentially hazardous or contaminated waste, potential acid sulphate soils (PASS) and other excavated spoil</i> • <i>Aboriginal cultural heritage values</i> • <i>Historic heritage values</i> • <i>Traffic during construction, including managing temporary disruption and changed accessibility</i> • <i>Disruption of and hazard to existing infrastructure</i> • <i>Socioeconomic and land use values</i> • <i>Landscape and visual values</i> • <i>Landform and slope stability</i> • <i>Traffic and road management measures</i> • <i>Project area rehabilitation, including handling of topsoil</i> • <i>Emergency management.</i> 	The approach to monitoring is outlined in Section 19.7.1.

19.2 Responsibilities and accountabilities

This section outlines the proposed roles, responsibilities and accountabilities for environmental management during the delivery of the Project.

APA VTS (Operations) Pty Ltd is accountable for delivering the Project and ensuring compliance with the Project's statutory approvals. APA VTS (Operations) Pty Ltd is a wholly owned subsidiary of the APA Group (together referred to as APA). APA is a public company listed on the Australian Stock Exchange (ASX: APA).

APA's overarching responsibilities for delivery of the Project, include:

- Engaging the contractors and consultants required for the detailed Project design for construction
- Pre-construction site investigations
- Obtaining approvals and supervising the contractor(s) compliance with relevant statutory approvals
- Reporting on compliance and/or environmental management performance to relevant regulators as necessary
- Procurement
- Construction delivery
- Commissioning and operation of the Project.

Table 19-2 describes the key roles and responsibilities for environmental management of the Project. The CEMP would describe specific roles and responsibilities for environmental management within APA.

Table 19-2 Roles and responsibilities for environmental management

Organisation	Role	Responsibility
Minister for Planning	Assessment	Undertake an assessment of the environmental effects of the Project as a part of the Minister's assessment. This will determine whether the likely environmental effects of the Project are acceptable based on the EES and proposed environmental management measures within the context of applicable legislation, policy, strategies and guidelines. The Minister's assessment of the EES will inform decision making by relevant regulatory agencies on statutory approvals.
Approval authorities Commonwealth Minister for Environment Minister for Energy, Environment and Climate Change Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation (WWCHAC) Aboriginal Victoria (AV) Councils	Regulation	Administer and enforce statutory approvals and consents. Review and approve, where necessary, relevant environmental management plans.

Organisation	Role	Responsibility
APA	Proponent	<p>Obtain applicable statutory approvals for the Project including:</p> <ul style="list-style-type: none"> Approval under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) (EPBC Act) A Pipeline Licence under the <i>Pipelines Act 2005</i> (Pipelines Act) Approved Cultural Heritage Management Plans (CHMP 16594 and CHMP 16593). <p>Prepare and implement a CEMP, and obtain approval for the CEMP from the Minister for Environment, Energy and Climate Change.</p> <p>Update, if required, and implement the existing Victorian Transmission System Operation Environmental Management Plan (OEMP) and obtain approval for changes to the VTS OEMP from the Minister for Environment, Energy and Climate Change.</p> <p>Require contractors to comply with relevant legislation, approval conditions and the CEMP.</p> <p>Review and approve contractors' environmental management plans.</p> <p>Monitor contractors' compliance with approved mitigation measures and approvals conditions as outlined in the CEMP and take, or require the contractor to take, corrective action where required.</p> <p>Monitor and report on environmental performance and compliance with the statutory approvals and the CEMP to relevant regulators as required.</p>
Project contractors and consultants	Detailed design and construction	<p>Project contractors prepare management plans in accordance with APA tender documents, the CEMP and other relevant legislative requirements, and statutory approvals conditions.</p> <p>Comply with approved CEMP during project delivery and take corrective action where required.</p> <p>Report on compliance with approved CEMP and statutory approvals conditions to APA.</p> <p>Obtain secondary approvals on behalf of APA where required.</p>
HSE Advisor	Environmental management advice	<p>A suitably qualified APA HSE Advisor would be responsible for assessing the contractor's compliance with the CEMP during construction.</p>
Independent environmental auditor	Independent environmental auditor	<p>APA would engage a suitably qualified external auditor, independent of the works, to audit compliance with the CEMP. The auditor appointment and the audit plan, schedule and scopes would be subject to approval under the Pipelines Act.</p>

19.2.1 Contractor management

APA would engage contractors for the construction of the Project. Contractor responsibilities would be included as contractual conditions in the Project contracts.

Tender documentation used for the appointment of contractors would require that contractors demonstrate compliance with all requirements specified in the relevant statutory approvals and associated documentation and management plans. Contractors would be responsible for reporting compliance with statutory approvals conditions to APA. APA would be responsible for reporting compliance to regulators as required.

Contractors would be required to prepare their own environmental management plans that comply with APA's CEMP. This would include preparation of detailed plans for management of specific sites, activities or issues.

Contractor management plans would be reviewed by APA to check they are compliant with the obligations and requirements of relevant statutory approvals and the CEMP, prior to works covered by the plan commencing, to the satisfaction of statutory regulators.

19.2.2 Competency and awareness

All project personnel, contractors, consultants and visitors would receive inductions into APA's Health, Safety and Environment (HSE) Management System, Safeguard, and key environmental obligations prior to commencing work. This would include a standard APA HSE induction to cover overall business-wide requirements and a project specific induction. The project specific HSE inductions would include:

- APA's HSE Management System, Safeguard
- Requirements of the CEMP and VTS OEMP, as relevant to the project stage
- Native vegetation clearing and No Go Zone rules and locations
- Awareness of FFG and EPBC Act-listed communities and species that may be present
- Requirements for working near waterways, dewatering, soil management standards, dust management, weed/pathogen controls and general environmental management expectations
- Community awareness
- Chemical and fuel management
- Soil management and soil contamination awareness
- Operating hours including criteria for noise and vibration
- Vehicle operation rules – speed limits, inspections, hygiene
- Smoking, hot works and fire hazard awareness
- General and regulated waste management.

A separate cultural heritage induction would be delivered by representatives of Traditional Owners of the area and/or a cultural heritage advisor, as required by the CHMPs. The cultural heritage induction would include:

- The location and types of heritage features identified in the area
- The unexpected finds protocol to be followed if further heritage items are unearthed discovered during construction
- Specific requirements of the CHMPs (CHMP 16594 and CHMP 16593) including management conditions to preserve registered and unidentified Aboriginal cultural heritage places and values.

Job specific competency training would be undertaken and required to be current prior to the mobilisation of personnel and equipment to the site.

19.3 APA management systems

APA would deliver the Project in accordance with APA’s existing HSE Management system and HSE Policy.

APA operates in accordance with a corporate HSE Management System, known as Safeguard. Safeguard is designed to ensure that information on environmental requirements is provided to personnel in a relevant, accessible and understandable form.

Figure 19-1 shows the elements of APA's HSE Management System. As a part of Safeguard, APA has an environmental procedure for Management Plan Process and Design (APA HSE EP 13.01.03) which defines the requirements for environmental management planning process and design.

Figure 19-1 Safeguard risk management system



APA is committed to responsible environmental management and has formalised this commitment in a Health, Safety and Environment Policy. All personnel are required to work in line with APA’s HSE Policy which will be displayed in the site offices during Project activities.

19.4 Statutory approvals and consents

Table 19-3 provides an overview of the key statutory approvals and consents required for the Project to proceed. Further information on the regulatory framework for the Project is provided in Chapter 5 *Evaluation and assessment framework*.

Conditions of these statutory approvals would be incorporated into and addressed through measures within the CEMP and VTS OEMP. Compliance with approval conditions would be monitored and evaluated as required by the statutory approval authority and as described in section 19.7.

Table 19-3 Key statutory approvals and consents

Legislation	Statutory approval authority	Statutory approval
<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)	Commonwealth Minister for the Environment	Approval for the Project as a controlled action.
<i>Aboriginal Heritage Act 2006</i> (Vic)	Aboriginal Victoria (AV)	Cultural Heritage Management Plans (CHMP) including: <ul style="list-style-type: none"> CHMP 16593: covers KP 8.29 to KP 51.04 and is being undertaken with the Registered Aboriginal Party WWCHAC CHMP 16594 covers KP 0 to KP 8.29 and is being undertaken in consultation with Aboriginal Victoria (AV) and Traditional Owners.
<i>Flora and Fauna Guarantee Act 1988</i> (Vic) (FFG Act)	Department of Environment, Land, Water and Planning (DELWP)	Approval for the removal of FFG Act listed species on public land.
<i>Gas Safety Act 1997</i> (Vic)	Energy Safe Victoria (ESV)	Approved Safety Case for the Project.
<i>Heritage Act 2017</i> (Vic)	Heritage Victoria	A Heritage Act Consent for construction activities near the Holden Cobbled Stone Road site.
<i>Melbourne Strategic Assessment (Environmental Mitigation Levy) Act 2020</i> (Vic)	Minister for Energy, Environment and Climate Change	Works in Conservation Area approval is required for any works within the Biodiversity Conservation Strategy conservation areas.
<i>Pipelines Act 2005</i> (Vic)	Minister for Energy, Environment and Climate Change	Licence for pipeline construction and operation including: <ul style="list-style-type: none"> Environmental Management Plan Safety Management Plan (SMP) Consultation Plan.
<i>Water Act 1989</i> (Vic)	Relevant waterway manager	Approval for works at waterway crossings.

19.5 Risk assessment

An environmental risk assessment was carried out to inform the technical studies undertaken to support the EES and pipeline licence application and the development of the environmental mitigation measures. For the delivery (construction) phase, a draft risk register has been developed and would be maintained as part of the CEMP.

19.5.1 EES risk assessment

As part of the preparation of the EES and pipeline licence application, an environmental risk assessment was completed to assist in identifying key matters for the technical studies to assess, and to assist in identifying management measures and measuring their ability to produce the desired outcome. This risk assessment is documented within the technical reports.

As part of this process the technical studies considered stakeholder feedback that was provided via a range of engagement activities (see Chapter 6 *Community and stakeholder consultation*).

The mitigation measures outlined in Section 19.9 have been developed through the EES risk and impact assessment process to avoid, mitigate and where required offset, potential environmental, social and safety impacts.

19.5.2 APA corporate risk framework and delivery risk assessment

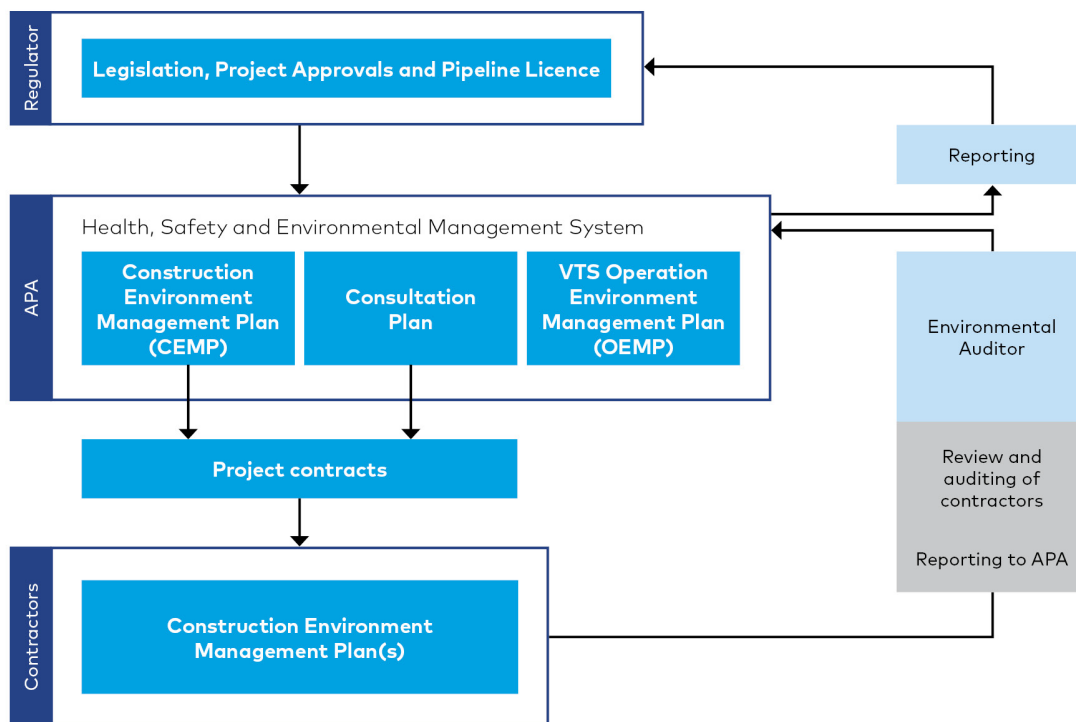
The risk assessment for the delivery phase risk register has been carried out using APA's Corporate risk framework to integrate with APA's business objectives during delivery of the Project. This risk assessment was completed as part of the CEMP preparation, as required under Section 133(1)(a) of the Pipelines Act. The CEMP incorporates the delivery risk register and is included with the Pipeline Licence Application documents exhibited with the EES.

APA's approach to identification and management of Project risks aligns with Australian Standard AS/NZS ISO 31000:2009, Risk management – Principles and guidelines and AS2885.1:2012: Pipelines-Gas and Liquid Petroleum-Design & Construction. The delivery risk register would be regularly reviewed during construction, in particular in response to any changes in legislation, proposed changes to activities or construction methods, or non-conformances or incidents. As the risk register forms part of the CEMP, any proposed changes to the risk register would be reviewed and endorsed by the APA Project Manager and APA HSE Advisor and would require approval under the Pipelines Act prior to taking effect.

19.6 Environmental management documents

The conditions of statutory approvals and consents that are required for the Project to proceed would be implemented through a series of environmental management plans. These are described below. Figure 19-2 provides an overview of the key environmental management documentation, and associated review and reporting requirements.

Figure 19-2 Key environmental management documentation



19.6.1 CEMP and OEMP

APA would develop, implement and maintain environmental management plans for both the construction and operation of the Project. These would address the requirements of the statutory approvals and consents and contain processes, procedures and requirements to protect environmental and social values potentially impacted by the Project.

Under Section 133(1) of the Pipelines Act, APA is required to develop an environmental management plan for the Project for approval by the Minister for Energy, Environment and Climate Change. The CEMP and VTS OEMP would therefore need to address the requirements of the Pipelines Act and Regulations.

The CEMP for the Project would include requirements to comply with the EMMs developed during the EES process and measures to manage environmental aspects including:

- Biosecurity
- Cultural heritage

- Dust and air quality
- Flora and fauna including native vegetation and rehabilitation management
- Greenhouse gas
- Groundwater
- Land use
- Landscape and visual
- Noise and vibration during construction hours and 24/7 construction events
- Sodic soils, ground movement and land stability
- Social
- Spoil and contamination
- Surface water management and discharges
- Traffic management and site access
- Waste management.

A draft version of the CEMP has been prepared and is included with the Pipeline Licence Application documents exhibited with the EES. This draft CEMP would be updated following the EES process and submitted to the Minister for Energy, Environment and Climate Change for approval.

The existing VTS OEMP would apply to the operational phase of the Project. The VTS OEMP includes requirements for managing potential impacts on:

- Vegetation and fauna
- Soils and water
- Heritage.

It also contains requirements for stakeholder engagement.

The CEMP and the VTS OEMP would describe the procedures for monitoring compliance with approval conditions and environmental management measures, and for reviewing the effectiveness of the plans for continuous improvement.

19.6.2 Contractor environmental management plans

Contractors would be responsible for developing and implementing detailed site environmental management plans that describe how the requirements of the CEMP and/or VTS OEMP would be complied with and implemented for specific locations and activities. These would include site specific maps and controls.

Contractor environmental management plans would require approval from APA, and in some cases from relevant approval authorities or agencies, prior to contractor works relevant to that plan commencing.

19.6.3 Other management plans

In accordance with Section 126(1) of the Pipelines Act, a Safety Management Plan has been prepared. The Safety Management Plan must be approved by Energy Safe Victoria prior to commencing any pipeline operations.

Sections 17(1) and (2) of the Pipelines Act, require a Consultation Plan to be prepared for approval by the Minister for Energy, Environment and Climate Change. APA has developed a Consultation Plan in accordance with the Pipelines Act, setting out the information to be provided to owners and occupiers of land to whom notice must be given under Division 2 or 3 of the Pipelines Act. This information includes general information about the types of activities to be undertaken for the purpose of the construction and operation of the pipeline, and management of any potential adverse impacts. The appointed contractors for the Project would be required to prepare Construction Consultation Plan(s) based on the APA Project Consultation Plan describing specific activities to be undertaken relating to their works.

The EMMs and CEMP require a range of other plans to be prepared by APA and its construction contractor. These plans would be prepared and approved prior to relevant works commencing. The CEMP lists responsibilities for preparing and approving each plan.

19.6.4 Change management

The CEMP and VTS OEMP are controlled documents. Any revisions would be subject to an approval process. A need to review, and if identified as required by the review, update, the CEMP and VTS OEMP may arise due to:

- Alteration of Project schedule
- Modification of work methods or locations at which specific work methods are applied
- Adjustment of environmental monitoring response levels
- Changes to Project description, alignment or work methods
- Environmental incidents, non-conformances or audit findings.

The CEMP and VTS OEMP may also require review and update in response to opportunities for continuous improvement.

The VTS OEMP is reviewed every five years from the date of the VTS risk assessment workshop.

The initial CEMP and VTS OEMP and subsequent revisions require approval by the Minister for Energy, Environment and Climate Change.

All contractor plans and documentation would be prepared and approved by APA prior to any works commencing, with any changes also requiring APA approval.

19.7 Evaluating compliance

Compliance would be evaluated and reported through the following activities:

- Monitoring programs
- Environmental incident and emergency response
- Complaints management
- Auditing
- Reporting.

Implementing these activities would inform the continuous improvement of the Project's environmental performance.

19.7.1 Monitoring

Monitoring

A range of monitoring programs would be implemented to monitor compliance with the required environmental mitigation measures and statutory approvals conditions. Monitoring indicators, frequency, locations and monitoring parameters would be informed by regulatory requirements, the detailed construction methods, and scale of environmental risk. Monitoring would also include periodic inspections of construction work areas and the operation of Project elements constructed. All records of pipeline inspections must be kept in accordance with the requirements of the CEMP and VTS OEMP.

The monitoring programs would be subject to regular review to verify that:

- The monitoring frequency is sufficient to identify non-conformance(s) with the mitigation measures, statutory approvals conditions, management documents and applicable legislation
- The indicators and range of parameters being monitored are adequate (this is particularly relevant if an activity has led to an incident or complaint)
- Monitoring programs are appropriate for the construction and operational activities occurring.

Table 19-4 provides an overview of the proposed monitoring programs. Further information regarding proposed monitoring is provided in the EES chapters and technical reports, as relevant. Monitoring requirements are embedded in the EMMs and would be included in the CEMP and OEMP.

Table 19-4 Proposed monitoring programs

Environmental aspect	Proposed monitoring															
Air quality	<p>Existing conditions for air quality are described in EES Chapter 11 <i>Air quality</i> and Section 6 – Existing conditions of Technical report G <i>Air quality</i>.</p> <p>Proposed monitoring of air quality is described in EES Chapter 11 <i>Air quality</i> and Section 10.1 – Environmental management measures of Technical report G <i>Air quality</i>.</p> <p>Construction dust monitoring</p> <p><u>Objective:</u> Inform management and mitigation of construction dust impacts</p> <p><u>Indicators/monitoring criteria:</u> In accordance with the Mining PEM¹, PM₁₀ is the appropriate indicator for downwind sensitive receptor locations. The relevant criteria/indicators are identified below:</p> <table border="1" data-bbox="470 712 1401 891"> <thead> <tr> <th data-bbox="470 712 683 754">Indicator</th> <th data-bbox="683 712 911 754">Criteria (µg/m³)</th> <th data-bbox="911 712 1139 754">Averaging period</th> <th data-bbox="1139 712 1401 754">Source</th> </tr> </thead> <tbody> <tr> <td colspan="4" data-bbox="470 754 1401 797">Construction phase</td> </tr> <tr> <td data-bbox="470 797 683 840" rowspan="2">PM₁₀</td> <td data-bbox="683 797 911 840">60</td> <td data-bbox="911 797 1139 840">24 hour average</td> <td data-bbox="1139 797 1401 840">SEPP AQM/Mining PEM</td> </tr> <tr> <td data-bbox="683 840 911 882">50</td> <td data-bbox="911 840 1139 882">24 hour average</td> <td data-bbox="1139 840 1401 882">SEPP AAQ</td> </tr> </tbody> </table> <p>Real-time dust monitoring instruments that monitor fine dust particles (PM₁₀) include an alarm sounded when 15 minute average PM₁₀ levels exceed a trigger level of 100 ug/m³, as this is a forewarning that the daily 24-hour PM₁₀ criterion above the NEPM (Ambient Air Quality) standard may be approached.</p> <p><u>Parameters:</u> PM₁₀ monitoring using real-time dust monitoring instruments (with 15 minute averages).</p> <p><u>Locations:</u> Real-time dust monitoring instruments measuring PM₁₀ particles will be used for each day where sensitive receptors (such as isolated rural residences or rows of housing that abut the construction corridor) are within 35 m of construction activity. The locations of these sensitive receptors are identified in the Environmental Line List attached to the Construction Environment Management Plan.</p> <p>Visual observation of dust levels is required at an overall site level and would occur when construction activities are being undertaken, at all locations along the construction corridor.</p> <p><u>Frequency:</u> Real-time dust monitoring each day where sensitive receptors are within 35 m of construction activity.</p> <p>Visual observations each day in the area where construction works are progressing.</p>	Indicator	Criteria (µg/m ³)	Averaging period	Source	Construction phase				PM ₁₀	60	24 hour average	SEPP AQM/Mining PEM	50	24 hour average	SEPP AAQ
Indicator	Criteria (µg/m ³)	Averaging period	Source													
Construction phase																
PM ₁₀	60	24 hour average	SEPP AQM/Mining PEM													
	50	24 hour average	SEPP AAQ													

¹ EPA Victoria 2007, Protocol for Environmental Management: Mining and extractive industries. Publication 1191, December 2007.

Environmental aspect	Proposed monitoring																
	<p>Operation emissions monitoring</p> <p><u>Objective:</u> Assess emissions for compliance with SEPP (AQM)</p> <p><u>Indicators/monitoring criteria:</u> The relevant criteria /indicators are identified below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #1a3d54; color: white;">Indicator</th> <th style="background-color: #1a3d54; color: white;">Criteria (µg/m³)</th> <th style="background-color: #1a3d54; color: white;">Averaging period</th> <th style="background-color: #1a3d54; color: white;">Source</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="background-color: #e0e0e0;">Operation phase</td> </tr> <tr> <td>CO</td> <td>29,000</td> <td>1 hour</td> <td>SEPP AQM</td> </tr> <tr> <td>NOx as NO₂</td> <td>190</td> <td>1 hour</td> <td>99.9% Class 1 toxic SEPP AQM</td> </tr> </tbody> </table> <p><u>Parameters:</u> Parameters monitored would include flow rate, temperature and gas concentrations.</p> <p><u>Locations:</u> Wollert Compressor Station existing designated test points.</p> <p><u>Frequency:</u> Periodic (annually at a minimum) stack testing of the discharge points at the Wollert Compressor Station, as is currently done for the existing facility.</p>	Indicator	Criteria (µg/m ³)	Averaging period	Source	Operation phase				CO	29,000	1 hour	SEPP AQM	NOx as NO ₂	190	1 hour	99.9% Class 1 toxic SEPP AQM
Indicator	Criteria (µg/m ³)	Averaging period	Source														
Operation phase																	
CO	29,000	1 hour	SEPP AQM														
NOx as NO ₂	190	1 hour	99.9% Class 1 toxic SEPP AQM														
Biodiversity	<p>Existing conditions for botanical, fauna and aquatic ecology are described in EES Chapter 7 <i>Biodiversity</i> and Section 7 – Existing conditions of Technical report A <i>Biodiversity</i>.</p> <p>Proposed monitoring of biodiversity values and offsets and aquatic ecology values is described in EES Chapter 7 <i>Biodiversity</i> and Section 14 of Technical report A <i>Biodiversity</i>.</p> <p>Monitoring of biodiversity values on and near the construction corridor</p> <p><u>Objective:</u> Evaluate the residual impact of the Project on botanical values and the effectiveness of reinstatement and provide recommendations for management as required.</p> <p><u>Indicators/monitoring criteria:</u> Following reinstatement after Project construction and considering offsets, biodiversity values equal to or better than the baseline conditions (refer existing conditions in of Technical report A <i>Biodiversity</i>).</p> <p><u>Parameters:</u> A comprehensive body of survey data exists that would be used as a benchmark to evaluate the residual impact of the Project on botanical values. To monitor potential adverse residual effects on flora and vegetation, the monitoring program would:</p> <ul style="list-style-type: none"> • Set objectives for vegetation recovery using baseline data (reinstated vegetation should meet or exceed the condition of pre-construction vegetation) • Prior to construction, undertake an inspection to identify, mark out and fence off the location of the Tough Scurf-pea population at the Wollert Compressor Station site. The fencing will be maintained during construction. An inspection will occur post-construction to assess the population of Tough Scurf-pea at the Wollert Compressor Station site and determine the likelihood of any adverse impacts from construction, or any other changed conditions that may impact its survival • Prior to construction, undertake an inspection to identify, mark out and fence off the location of the Matted Flax-lily located at Craigieburn road reserve. Following construction, an inspection will be carried out to confirm survival of Matted Flax-lily and evaluate the effectiveness of protection during construction. This inspection will occur at the conclusion of the construction works in the proceeding springs (when it is flowering and most visible) • Evaluate the progress of reinstatement. 																

Environmental aspect	Proposed monitoring
	<p><u>Locations and frequency:</u> EMM B2 requires the evaluation of disturbed areas post-construction, and that remedial measures be implemented as required within a reasonable timeframe.</p> <p>Operation: Routine inspections of the easement and facilities would be undertaken in accordance with the OEMP VTS and in consultation with landowners (EMM B13).</p> <p>Inspection of Matted Flax-lily to occur at the conclusion of the construction works in the proceeding spring (when it is flowering and most visible).</p> <p>At the end of the reinstatement period evaluate whether monitoring should be extended (pending landowner agreement).</p> <p>Monitoring of biodiversity offsets to be established</p> <p><u>Objective:</u> Monitor offset condition and compliance with offset requirements</p> <p><u>Indicators/monitoring criteria:</u> As defined in the Offset Management Plan</p> <p><u>Parameters, locations and frequency:</u> An offset strategy has been prepared to address the EPBC Act Environmental Offsets Policy (DSEWPAC 2012) and the policy objectives of the Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017a). The methods of monitoring, frequency and parameters would be outlined within the Offset Management Plan when it is developed:</p> <p>Independent annual monitoring to inform the annual compliance reports to be provided to DAWE by APA (unless otherwise advised by the Minister)</p> <p>Continuous monitoring undertaken by the offset landowner to understand general site conditions</p> <p>Audits will be undertaken by the approval holder (APA) as defined in the Offset Management Plan and agreed with DAWE.</p> <p>Aquatic ecology values</p> <p>Monitoring of waterways where open cut construction is planned would occur as per EMM SW5. Refer to the surface water discussion below for further detail.</p> <p>As per EMM B22 a survey for the presence of burrows within the Project Area on Jacksons Creek would be undertaken prior to open cut trenching.</p>
Contamination and waste management	<p>Existing conditions for contamination are described in EES Chapter 10 <i>Waste</i> and Section 6 – Existing conditions of Technical report E <i>Contamination</i>. Further testing would be undertaken prior to construction as described in Technical report E <i>Contamination</i>.</p> <p>Proposed monitoring requirements are described in EES Chapter 10 <i>Waste</i> and Section 10 of Technical report E <i>Contamination</i>.</p> <p>Management of solid and liquid waste</p> <p><u>Objective:</u> Minimise generation of wastes from the project during construction and operation.</p> <p><u>Indicators/monitoring criteria:</u> Implementation of waste management hierarchy and consideration of EPA requirements</p> <p><u>Parameters:</u> Manage wastes generated during the construction phase of the Project to consider waste elimination/ reduction and opportunities for the reuse and recycling of construction waste</p> <p>Develop and implement a process for recording and tracking waste.</p> <p><u>Locations:</u> On-site designated facilities for waste management.</p> <p><u>Frequency:</u> Construction: monthly visual inspections of designated facilities. Operation: As per the VTS OEMP.</p> <p>Construction spoil management</p> <p><u>Objective:</u> Minimise potential impacts on human health and the environment associated with excavation of spoil during construction.</p>

Environmental aspect	Proposed monitoring
	<p><u>Indicators/monitoring criteria:</u> EPA Publication 1834 <i>Civil construction, building and demolition guide</i> and building and demolition guide and EPA Publication 1895 <i>Managing Stockpiles</i>. Spoil management measures must be developed in consultation with the EPA Victoria and include processes and measures to manage all spoil types.</p> <p><u>Parameters:</u> General spoil: during construction assess and record any material imported to the site for use as backfill in accordance with IWRG 621 and 702.</p> <p>Contaminated spoil: during construction record and tracking of contaminated soil and other waste. Includes trucking and destination tracking, and sampling results (EMM C1).</p> <p>Regular monitoring of weather conditions and planning works accordingly to avoid or minimise impact to sensitive receptors from works during adverse weather (ie runoff from rainfall).</p> <p><u>Locations and frequency:</u> Sites identified as potentially contaminated soils are identified in the Environmental Line List attached to the Construction Environment Management Plan.</p> <p>Testing requirements defined in accordance with EPA IWRG 621 and 702.</p> <p>Acid sulfate soils</p> <p><u>Objective:</u> Minimise potential impacts from disturbance of acid sulfate soils during construction.</p> <p><u>Indicators/monitoring criteria:</u> Compliance with EPA requirements including Industrial Waste Management Policy (Waste Acid Sulfate Soils), EPA Victoria Publication 655.1 Acid Sulfate Soil and Rock.</p> <p><u>Parameters:</u> Undertake further investigations to determine presence of acid sulfate soils at Jacksons and Merri Creek. Incorporate mitigation measures to minimise any potential impacts from disturbance of acid sulfate soils during construction.</p> <p><u>Locations:</u> Jacksons Creek and Merri Creek.</p> <p><u>Frequency:</u> Prior to construction commencing at Jacksons Creek and Merri Creek (once off if investigation provides sufficient information).</p> <p>Landfill gas and vapour</p> <p><u>Objective:</u> Minimise potential impacts during construction from vapour and ground gas intrusion.</p> <p><u>Indicators/monitoring criteria:</u> The spoil management measures must include requirements for assessment, monitoring and management of intrusive vapour, including potentially flammable or explosive conditions, in enclosed spaces within 500 metres of the Bulla Landfill (approx. KP 15–KP 16) and Diggers Rest (KP 9.95–KP 10.14) property and trenches in those areas.</p> <p><u>Parameters, locations and frequency:</u></p> <p>Monitoring and management in enclosed spaces within 500 metres of the Bulla Landfill (KP 154-KP 16) must consider the following:</p> <ul style="list-style-type: none"> • Continuous monitoring of landfill gas conditions when any person is in the trench or during hot works or works that could potentially produce a spark within the trench • Setting of applicable trigger values that require action within areas being trenched (KP 15.4–KP 16) and including any temporary structures utilised for construction within the vicinity of the landfill. These must be developed in accordance with relevant sections of the EPA Victoria Publication 788 Best Practice Management; Siting, design, operation and rehabilitation of landfills (landfill BPEM) for monitoring and relevant occupational health and safety regulations and compliance codes • Contingencies to address any breaches of trigger values including temporary cessation of work until a reappraisal of risks is conducted, additional monitoring at a higher frequency, implementation of additional safety measures and/or vapour extraction systems in response to the risk assessment.

Environmental aspect	Proposed monitoring
	<p>Monitoring and management relevant to the Diggers Rest property (approx. KP 9.95–KP 10.14):</p> <ul style="list-style-type: none"> Investigation of soils within the construction corridor to assess for the presence contamination including metals, TRHs, BTEX, PAHs and solvents. <p>If volatile contamination is identified a risk assessment to determine the risk from vapours to construction workers during open cut trench construction may be required.</p> <p>Management of chemicals, fuels and hazardous materials</p> <p><u>Objective:</u> Prevent adverse environmental and human health effects associated with the use of chemicals, fuels and materials during construction and operation:</p> <p><u>Indicators/monitoring criteria:</u> Compliance with relevant guidelines as detailed in EMM C6 (construction) and the VTS OEMP (operation).</p> <p><u>Parameters:</u> During construction, as required by EMM C6:</p> <ul style="list-style-type: none"> Creating and maintaining a dangerous goods register Contingency and emergency response procedures to handle fuel and chemical spills, including availability of on-site hydrocarbon spill kits. <p>During operation, as per the VTS OEMP (EMM C10), including:</p> <ul style="list-style-type: none"> Regular inspections of spill controls/bunding Pre-start checks of plant, equipment and vehicles to check for oil leaks. <p><u>Locations:</u> Construction: Construction corridor and designated laydown areas. Operation: Wollert Compressor Station.</p> <p><u>Frequency:</u> Construction: daily inspections. Operation: In accordance with VTS OEMP.</p>
Aboriginal and historic heritage	<p>Existing conditions for Aboriginal and historic heritage are described in EES Chapter 13 <i>Heritage</i> and Section 6 - Existing conditions of Technical report I <i>Aboriginal and historic heritage</i>.</p> <p>Proposed monitoring requirements are described in EES Chapter 13 <i>Heritage</i> and Section 9.1 of Technical report I <i>Aboriginal and historic heritage</i>.</p> <p>Aboriginal and historic heritage monitoring requirements</p> <p><u>Objective:</u> Minimise risk of harm to heritage values.</p> <p><u>Indicators/monitoring criteria:</u> Compliance with CHMP and Heritage Consent conditions.</p> <p><u>Parameters, locations and frequency:</u></p> <ul style="list-style-type: none"> Relevant monitoring, recording and contingencies would be documented in and carried out in accordance with the conditions of the CHMP under the Aboriginal Heritage Act and Consent application under the Heritage Act The unexpected finds protocol in the CHMP requirements would be followed should an unknown historic heritage site, value or object be discovered during construction.
Greenhouse gas	<p>Existing conditions for greenhouse gas are described in EES Chapter 10 <i>Waste</i> and Section 6 - Existing conditions of Technical report H <i>Greenhouse gas</i>.</p> <p>The proposed monitoring requirements are required by EMMs GG1 and GG2.</p> <p>Proposed monitoring requirements are described in EES Chapter 10 <i>Waste</i> and Section 9.1 of Technical report H <i>Greenhouse gas</i>.</p> <p>Greenhouse gas audit and assurance processes</p> <p><u>Objective:</u> Assess amount of greenhouse gas emissions generated by the Project.</p> <p><u>Indicators/monitoring criteria:</u> CO_{2-e} emissions monitored via reporting of data.</p> <p><u>Parameters:</u> CO_{2-e} emissions (NGER data) during construction and operation at Wollert Compressor Station.</p>

Environmental aspect	Proposed monitoring
	<p><u>Frequency:</u> NGER data would be provided by the contractor to APA monthly.</p> <p>Other measures required include:</p> <ul style="list-style-type: none"> • Provision of construction greenhouse gas data as per NGER requirements (Scope 1 emissions) to APA by contractors • Quarterly audits during the construction period to assess compliance with the Project’s CEMP. Quarterly audits will be undertaken by APA HSE Advisors • An audit at the end of the construction period (undertaken by APA) to confirm NGER Reporting requirements. <p>Operation greenhouse gas emissions would be monitored via audit/monitoring processes undertaken by a suitably qualified APA HSE Advisor, which include:</p> <ul style="list-style-type: none"> • Annual reporting of operation emissions or as per the requirements of the VTS OEMP. <p>Annual assurance audit in accordance with the NGER Act. This audit would be undertaken by an independent auditor and includes all APA assets.</p>
Groundwater	<p>Existing conditions for groundwater are described in EES Chapter 8 <i>Water</i> and Section 6 – Existing conditions of Technical report C <i>Groundwater</i>. The inform the groundwater impact assessment (Technical report C <i>Groundwater</i>) a groundwater monitoring program was set up which included:</p> <ul style="list-style-type: none"> • Six monitoring bores were set up at Jacksons Creek (one bore), Deep Creek (two bores), Gunns Gully Road (one bore), Merri Creek (two bores). Groundwater gauging, sampling and aquifer testing was undertaken • Automated dataloggers were installed in June 2020 at the six monitoring bores. The dataloggers were deployed in order to start capturing groundwater level information at regular intervals • An additional 11 monitoring bores were installed at selected locations along the alignment in July – August 2020 to collect groundwater level and quality information and slug testing. The network generally focused on the areas where groundwater depth was expected to be less than 5 metres and therefore where there may be interaction with the pipeline. Locations are identified in Table 22 of Technical report C <i>Groundwater</i>. <p>Further groundwater monitoring would be undertaken prior to construction as follows:</p> <ul style="list-style-type: none"> • Quarterly groundwater monitoring at areas of groundwater impact along the Project alignment. This includes sites listed in the section below refer ‘locations’. <p>Groundwater quality and level monitoring</p> <p><u>Objective:</u> Manage groundwater discharge in accordance with SEPP (Waters) and minimise the risk of impacts to groundwater during construction.</p> <p><u>Indicators/monitoring criteria:</u> Groundwater quality and levels as set out in the groundwater monitoring plan in accordance with SEPP (Waters). The information from the groundwater monitoring program undertaken prior to construction would provide a baseline for consideration of construction impacts.</p> <p><u>Parameters:</u> During construction, a groundwater monitoring plan would be developed as part of the CEMP and implemented to:</p> <ul style="list-style-type: none"> • Assess any impacts from construction activities (ie from drawdown during construction and recovery) which includes measuring groundwater levels and quality at key groundwater interaction areas when construction works are progressing in the immediate area (locations identified below), particularly the open trench creek crossings (Jacksons and Merri Creek) • Monitor groundwater quality during construction. Any dewatering to comply with the site-specific groundwater disposal management plan and SEPP (Waters) requirements. Monitoring to assess any site variability of the groundwater quality (eg from the baseline investigations and there is no variations that require additional management measures such as changing pH or salinity). Parameters to be measured include: groundwater levels, salinity, pH, EC, major ions, ammonia, nitrate, nitrite, total nitrogen and total kjeldahl nitrogen).

Environmental aspect	Proposed monitoring
	<p><u>Locations:</u> At locations of dewatering and sites that are identified as areas of groundwater impact along the Project alignment in Technical report C <i>Groundwater</i>. This includes:</p> <ul style="list-style-type: none"> • Bendigo rail: KP 8.288–8.326 • Unknown Creek/Tame St drain: KP 8.406–8.411 • Jacksons Creek: 13.863–13.898 • Deep Creek: 16.828–16.85 • Donovans Lane: 40–41 • North east Rail reserve: 40.925–40.959 • Merri Creek: 42.639–42.655 • Donnybrook Road: 46.5–47.5. <p><u>Frequency:</u> When dewatering occurs at locations identified above, monitoring of groundwater levels and quality would be required for the duration of dewatering works as defined in the groundwater monitoring plan.</p>
<p>Land stability and ground movement</p>	<p>Existing conditions for land stability and ground movement are described in EES Chapter 9 <i>Land stability and ground movement</i> and Section 6 – Existing conditions of Technical report D <i>Land stability and ground movement</i>.</p> <p>Proposed monitoring requirements are described in EES Chapter 9 <i>Land stability and ground movement</i> and Section 9.2 of Technical report D <i>Land stability and ground movement</i>.</p> <p>Monitoring of land stability and ground movement</p> <p><u>Objective:</u> Minimise risk of trench collapse or slope failure.</p> <p><u>Indicators/monitoring criteria and parameters:</u> For ground movement, application of EMM GM1 requires the construction contractor to identify and prove all third party services potentially impacted, prior to construction and liaise with asset owners to confirm asset clearance and other mitigation, protection or contingency requirements, including possible settlement monitoring at the railway crossings.</p> <p>For land stability during construction:</p> <ul style="list-style-type: none"> • The contractor would be required to meet performance criteria in the contractor CEMP for the installation of trench support based on the prevailing conditions during construction (EMM GM3) as well as meeting the Safe Work Australia (2018) requirements for trench excavation. Performance criteria would require the contractor to install support where necessary so that the impact associated with trench instability or slope failure is avoided. The contractor's CEMP is also to include methods for contingency response in the case of trench or slope failure that may include, for example, requirements for temporary shoring (eg wall support) and rehabilitation of the disturbed soil (EMM GM3) • Develop, document within the CEMP and implement minimum requirements to be put in place to manage dispersive/sodic soils during construction and operation. Management measures may be proportional to the level of risk identified by the additional site investigations and in general accordance with the guidelines contained within Best Practice Erosion and Sediment Control, Appendix P (IECA, 2008) where applicable. <p>For land stability during operation:</p> <ul style="list-style-type: none"> • Routine inspection and monitoring of the construction area (easement patrols) must be undertaken throughout operation as per the VTS OEMP to identify any issues such as ongoing erosion, ground movement, slope creep or other adverse effects on land use. Management, monitoring and identification of issues may be in accordance with IECA Best Practice Erosion and Sediment Control (2008). <p><u>Locations:</u> Construction: settlement monitoring at rail crossings where required as per discussions with the asset owners. Land stability measures to be employed where potentially unstable ground may compromise the stability of the trench as assessed by a suitably qualified geotechnical engineer (EMM GM3).</p> <p>Operation: construction area.</p>

Environmental aspect	Proposed monitoring
	<p>Frequency: Construction: as required to be determined in the contractors CEMP. Operation: as per the VTS OEMP</p>
<p>Land use and site rehabilitation</p>	<p>Existing conditions for land use are described in EES Chapter 15 <i>Land use</i> and Section 6 - Existing conditions of Technical report K <i>Land use</i>. Proposed monitoring requirements are described in EES Chapter 15 <i>Land use</i> and Section 9.2 of Technical report K <i>Land use</i>.</p> <p>Monitoring of rehabilitation</p> <p>Objective: Assess the success of rehabilitation and implement corrective action where required.</p> <p>Indicators/monitoring criteria: CEMP requirements for rehabilitation. APA would work with local councils to build awareness of the Landscaping Guidelines within APA easements.</p> <p>Locations: Within construction corridor.</p> <p>Frequency: APA would monitor the success of rehabilitation between 12–24 months following rehabilitation activities.</p>
<p>Landscape and visual</p>	<p>Existing conditions for landscape and visual are described in EES Chapter 14 <i>Landscape and visual</i> and Section 6 – Existing landscape and visual environment of Technical report J <i>Landscape and visual</i>. Proposed monitoring requirements are described in EES Chapter 14 <i>Landscape and visual</i> and Section 12.1 of Technical report J <i>Landscape and visual</i>.</p> <p>Monitoring of planting and remediation</p> <p>Objective: To communicate any removal of screening trees on private property with landowners and confirm remediation requirements for the planting and remediation plan.</p> <p>Indicators/monitoring criteria: As defined in the Planting and Remediation Plan.</p> <p>Parameters, location and frequency: The planting and remediation plan (EMM LV7) would include requirements for monitoring the effectiveness of planting and remediation post construction and implementing corrective actions where required. This would include details of the parameters, location and frequency of monitoring.</p>
<p>Noise and vibration</p>	<p>Existing conditions for noise and vibration are described in EES Chapter 12 <i>Noise and vibration</i> and Section 6 - Existing conditions of Technical report F <i>Noise and vibration</i>. Proposed monitoring requirements are described in EES Chapter 12 <i>Noise and vibration</i> and Section 9.4 of Technical report F <i>Noise and vibration</i>.</p> <p>Construction noise and vibration monitoring</p> <p>Objective: Inform measures to minimise noise and vibration impacts during construction.</p> <p>Indicators/monitoring criteria: Noise and vibration criteria as defined in EMM NV10.</p> <p>Parameters: Noise: dB(A), LA_{eq} and LA₉₀, Vibration: vibration velocity (PPV) in mm/s.</p> <p>Locations and frequency: The requirements for and locations of noise monitoring will be informed by construction methods, proximity to sensitive receptors and scheduling of works (including any works outside of normal working hours) and will be detailed in the construction contractors Construction Noise and Vibration Plan. At a minimum, monitoring of noise will be undertaken:</p> <ul style="list-style-type: none"> • Daily at the nearest noise sensitive receptor (or group of sensitive receptors) where works are undertaken outside of normal working hours (as defined by EPA Publication 1834) to confirm compliance with the project noise criteria as identified in EMM NV10 • In the event of a complaint regarding noise in relation to an ongoing activity if required in accordance with the complaint management procedure in Construction Noise and Vibration Plan.

Environmental aspect	Proposed monitoring
	<p>Monitoring of vibration from intensive construction operations (such as plant and equipment (eg dozer) used during the clear and grade and trenching phase causing high levels of vibration), will at a minimum include:</p> <ul style="list-style-type: none"> Initial monitoring of a vibration intensive activity at the nearest sensitive receptor (or group of sensitive receptors) that is within 100 metres of that activity. Should the results from the initial monitoring determine that the vibration intensive activity is below the project vibration criteria as identified in EMM NV10, then further monitoring at that particular location for that activity would not be required. If the results from the initial monitoring determine that the vibration from that activity is the same as or exceeds the project vibration criteria as identified in EMM NV10, then additional mitigation measures would be required (EMM NV2, NV4, NV6 and NV7) and follow up monitoring would be undertaken to confirm compliance. <p>In the event of a complaint regarding vibration in relation to an ongoing activity (in accordance with the complaint management procedure in Construction Noise and Vibration Plan).</p> <p>Monitoring of blasting will at a minimum include:</p> <ul style="list-style-type: none"> Initial monitoring at the nearest sensitive receptor (or group of sensitive receptors) if the detailed blast study identifies locations where the air blast or vibration may be the same as or exceed the human comfort or structural damage criteria as detailed in Table 12-6 of Chapter 12 <i>Noise and vibration</i>. Should the results from the initial monitoring determine that the blasting is below the criteria as identified in Table 12-6 of Chapter 12 <i>Noise and vibration</i>, then further monitoring at that particular location would not be required. If the results from the initial monitoring determine that the air blast or vibration is the same as or exceeds the criteria as identified in Table 12-6 of Chapter 12 <i>Noise and vibration</i>, then control management measures identified in the blast impact management plan will be implemented.
<p>Safety (including emergency management)</p>	<p>Existing conditions for safety are described in EES Chapter 17 <i>Safety</i> and Section 6 – Existing conditions of Technical report M <i>Safety</i>.</p> <p>Proposed monitoring requirements are described in EES Chapter 17 <i>Safety</i> and Section 11.2 of Technical report M <i>Safety</i>.</p> <p>Safety monitoring</p> <p><u>Objective:</u> Assess compliance with the Health and Safety Management Plan and implement controls or additional measures as required.</p> <p><u>Indicators/monitoring criteria:</u> Safety Management Plan (during construction) and the Project Safety Case (during operation).</p> <p><u>Parameters:</u> The Health and Safety Management Plan (construction) and the Safety Case (operations) outlines monitoring requirements (attached to the Pipeline Licence Application). This includes:</p> <ul style="list-style-type: none"> HSE workplace inspections, as defined in the Health and Safety Management Plan including planned inspections and observations performed by a competent and experienced person. Inspections to follow an agreed format, timeframes and be documented Project audits: regular HSE assessments conducted by APA and the construction contractor. Audits to verify compliance against the Health and Safety Management Plan Performance reporting: data collected by the construction contractor for monthly reports. <p>An automated process control system would monitor operation, with the capability of initiating an emergency shutdown, local alarms and remote alarms (EMM SA2).</p> <p><u>Frequency:</u> The frequency of workplace inspections <u>would be</u> predetermined prior to construction. Project data to be collected and provided on a monthly basis.</p>

Environmental aspect	Proposed monitoring
Social (including traffic)	<p>Existing conditions for social are described in EES Chapter 16 <i>Social</i> and Section 6 and 7 – Existing conditions of Technical report L <i>Social</i>.</p> <p>Proposed monitoring requirements are described in EES Chapter 16 <i>Social</i> and Section 11.2 of Technical report L <i>Social</i>.</p> <ul style="list-style-type: none"> Monitoring of social impacts would be informed by the other monitoring programs described in this table and the EMMs Complaints data collected in accordance with EMM S6 would be collated and reported as part of monthly Project reporting process and used to inform a review of the efficacy of existing management and mitigation measures A general compliance report will be made available publicly on our Project website (www.apa.com.au/worm). This may be in the form of a tally table with general categories and record of complaints or incidents.
Surface water	<p>Existing conditions for surface water are described in EES Chapter 8 <i>Water (surface water and groundwater)</i> and Section 6 – Existing conditions of Technical report B <i>Surface water</i>.</p> <p>Proposed monitoring requirements are described in EES Chapter 8 <i>Water (surface water and groundwater)</i> and Section 9.1.1 of Technical report B <i>Surface water</i>.</p> <p>Surface water monitoring requirements</p> <p><u>Objective:</u> To protect waterway health and biodiversity values during construction.</p> <p><u>Indicators/monitoring criteria:</u> Physical and chemical, toxicant and biodiversity indicators in accordance with SEPP (Waters) and Australian and New Zealand Guidelines (ANZG) for Fresh and Marine Water Quality (2018).</p> <p><u>Parameters and frequency:</u> As required by EMM SW5, monitor the performance of management measures in protection of the waterway health and biodiversity values. This will require monitoring to be undertaken before, during and after construction. This requires:</p> <p>Water quality monitoring:</p> <ul style="list-style-type: none"> Water quality indicators to be monitored will include physical and chemical stressors (PC) and toxicants as per ANZG (2018). Specific parameters for these water quality indicators will need to be selected appropriately with consideration of site conditions and potential impacts due to the works (eg turbidity, nutrients, dissolved oxygen, pH, temperature, toxicants water and toxicant sediments). Water quality monitoring will occur immediately prior to construction to establish background conditions. Monitoring will be repeated post-construction to identify any potential impacts from the construction and rehabilitation works. This will include both in-situ monitoring (ie turbidity, temperature, dissolved oxygen, pH, salinity) and laboratory testing (ie nutrients and heavy metals). During construction activities directly in the watercourse, daily in-situ monitoring will occur for indicators such as turbidity, temperature, dissolved oxygen, pH, and salinity upstream and downstream from works. Comparisons of upstream and downstream conditions will be used to infer if there are downstream impacts. <p>Biodiversity monitoring</p> <ul style="list-style-type: none"> Biodiversity response indicator to be monitored will include macroinvertebrate communities as per ANZG (2018) The biodiversity monitoring will occur immediately prior to construction to establish background conditions, subject to available flows. Monitoring will be repeated post-construction to identify any potential impacts from the construction and rehabilitation works. <p><u>Locations:</u> Jacksons Creek and Merri Creek, upstream and downstream (up to approximately 200 metres of construction). Water quality monitoring should consider potential variability within the upstream and downstream locations. This may require multiple recordings within each location to ensure results are representative of the overall waterway condition.</p>

Baseline and monitoring data

APA would be responsible for verifying that all baseline and monitoring data meets the specified monitoring requirements as well as ensuring that all datasets are maintained and accessible, in accordance with the conditions of approval, licences and permits and other applicable regulatory requirements. Additional baseline data will be collected prior to construction as referenced in the EMMs and EES technical studies. During the operation phase, APA would send annual reports to DELWP under the Pipeline Regulations 2017.

APA also acknowledges that baseline data collected during the EES investigations could contribute to the improvement of environmental knowledge in the region. The EES technical studies and reporting will be exhibited as part of the EES process and hence will become publicly available.

APA is committed to transparency in relation to availability of compliance monitoring data once the Project is operational. APA would work with relevant stakeholders to assess the best approach to providing monitoring data.

19.7.2 Environmental incidents and emergencies

APA would implement incident and emergency response procedures to facilitate an efficient and effective response to unexpected environmental events that could arise during Project construction and operation, such as fuel or chemical spills. Emergencies would be managed in accordance with APA's Project Health and Safety Management Plan 18035-PL-HSE-0003 and National Emergency Response Management Plan 320-PL-ER-0001. The contractor would be required to develop an Emergency Response Plan for construction works.

Environmental incidents and hazards, including pollution would be reported and recorded. This requirement would be included in inductions and reinforced during Project delivery. In accordance with Regulation 20 of the Pipelines Regulations, APA would notify the Minister for Energy, Environment and Climate Change and Energy Safe Victoria in writing of all reportable environmental incidents no later than two hours after the incident occurs, or two hours after APA becomes aware of the incident.

Incident reporting would adhere to the process and incident reporting requirements identified in APA's Incident Reporting Procedure (APA HSE GP 07.01). All reportable incidents will be investigated in line with APA's Incident Reporting Procedure (APA HSE GP 07.01).

Incidents, including pollution events that cause or threaten to cause material harm to the environment or human health as required under the *Environment Protection Act 2017* (due to commence 1 July 2021), and any other emergencies would also be reported where required to other relevant agencies such as emergency services, EPA Victoria, DAWE, DELWP, Aboriginal Victoria, Heritage Victoria, Melbourne Water and relevant councils.

19.7.3 Complaints management

Any complaints from the community regarding noise, waste, air emission or other pipeline construction or operation issues would be investigated and the complainant responded to. Investigation would be undertaken in line with APA's complaint management process described in its Incident Investigation and Analysis Procedure (APA HSE GP 07.02). The complaints procedure is also described in the draft CEMP and would cover matters including:

- Recording of complaints regarding environmental performance in APA's and contractors' registers

- Investigation and close out process, including timeframes for responding to complaints
- Reporting and escalation requirements.

19.7.4 Auditing

APA would engage a suitably qualified external auditor, independent of the works. The auditor would conduct audits at regular intervals to assess compliance with the CEMP and mitigation measures, statutory approvals conditions and relevant legislation and guidelines. The auditor appointment and the audit plan, schedule and scopes would be subject to approval under the Pipelines Act and, in relation to matters regulated by the EPA.

Audits would evaluate:

- Compliance with all relevant mitigation measures contained in the CEMP and VTS OEMP
- Compliance with statutory approvals conditions issued for the Project
- Conformance with any other relevant environmental management documentation
- Responses to non-conformances, complaints and incidents
- Compliance with safety requirements
- Implementation of monitoring programs.

Compliance would be assessed through a combination of inspections, observations of Project works, consultation with APA and contractors, and reviews of records and meeting minutes, as agreed between APA and the independent auditor.

19.7.5 Reporting

APA would be responsible for reporting compliance with the CEMP, VTS OEMP, any other plans required by the EMMs and conditions of Project approvals to regulators. Environment documents and records would be managed in accordance with the APA document control revision and approval process. This includes requirements for document creation, review and approval, and record storage, retention and disposal.

Reporting and external notification requirements would be outlined in detail within the CEMP including which matters require reporting, to which party and the timeframe within which reporting must occur. Reporting requirements depend upon the terms of the statutory approvals but would include:

- Status of current and planned works
- Monitoring results
- Audit findings
- Non-conformances and corrective and preventative actions taken
- Complaints register and responses
- Notifications to the Registered Aboriginal Party and Aboriginal Victoria, if a potential Aboriginal site or artefact is identified
- Notification to Heritage Victoria and DELWP if a heritage artefact is discovered.

Environmental incident notifications as outlined in Section 19.7.2, including reporting of pollution events to EPA Victoria.

Records of compliance would be maintained, with information kept digitally and data recorded spatially where relevant. All relevant documentation demonstrating compliance with the CEMP would be provided to the APA Operations and Environment Teams at the conclusion of construction.

During operation documentation and reporting would be managed in accordance with the existing VTS OEMP.

19.8 Consultation

A program of stakeholder and community engagement has been undertaken for the Project to date, and will continue. This program commenced with consultation activities from mid-2018 before the preferred alignment was announced.

An EES Consultation Plan was prepared specifically for the EES phase as required by the Minister's procedures and requirements applicable to the preparation of the EES and the communications and engagement scoping requirements for the Project.

A Project Consultation Plan is required for the Pipelines Act. Consultation for the construction phase would be targeted for the works and locations related to construction program and documented within the Project Consultation Plan. Consultation for the operation phase would be carried out in accordance with the VTS OEMP.

Chapter 6 *Community and stakeholder consultation* and the Community and stakeholder consultation report attached to the EES, provide further details on the stakeholder and community engagement undertaken for the Project to date and the proposed consultation for the delivery phase.

A number of EMMs require consultation with relevant stakeholders. Relevant stakeholders are generally defined as stakeholders with a role as the responsible authority for the requirement specified, the manager or owner of an asset or land directly affected by the works or requirement, an emergency services agency or other relevant stakeholders identified by APA.

The purpose of continued and evolving consultation and engagement is to enable stakeholder views, requirements and relevant information held by the stakeholder to be considered when implementing the EMMs. Consultation may include meetings, workshops and exchange of documentation and correspondence between stakeholders and APA or its contractors.

Where an EMM is expressed as requiring or being subject to the agreement or requirements of a stakeholder, APA would use reasonable endeavours to reach agreement with that stakeholder. The extent and method of consultation would be documented and communicated to relevant stakeholders for each EMM. Consultation outcomes would be documented to demonstrate compliance with the EMMs. Consultation outcomes would be shared with the relevant stakeholder and feedback provided on how matters raised during consultation have been considered and, where appropriate and reasonable, addressed by APA.

19.9 Environmental management measures

The Project would be delivered in accordance with EMMs. The EMMs contain the environmental commitments made by APA.

The EMMs were developed based on recommendations by technical specialists and commitments by APA in order to avoid, minimise or offset potential environmental, social and safety impacts.

The EMMs are a collation of the management and mitigation measures, environmental performance monitoring and contingency plans for the Project. To respond to the scoping requirements, the EMMs include the following key components as relevant for specific technical aspects:

- An objective – the performance goal
- Application – the Project phase to which the EMM applies
- Environmental controls – measures, monitoring requirements and contingency plans required to support achievement of the objective during Project delivery.

Requirements of the EMMs relating to construction have been incorporated into the draft APA CEMP prepared with the Pipeline Licence Application.

It is noted the new Environment Protection Act 2017 (Vic) is expected to come into effect on 1 July 2021. This will provide enhanced powers to the EPA to regulate pollution, waste and contamination in Victoria to prevent risks to human health and the environment. The general environmental duty (GED) is a centrepiece of the new laws in which you must take reasonably practicable steps to eliminate or minimise risk. The GED is criminally enforceable. Subordinate legislation will also be released including Regulations to support the Act and Environmental Reference Standards to replace State Environment Protection Policies. In implementing the environmental management measures, APA will have regard to EPA Publication 1856: Reasonably practicable (September, 2020).

The draft CEMP, which will include the design and construction related EMMs, will require review and updating to reflect the new Act, Regulations, Environmental Reference Standard and EPA publications. This includes the GED, waste and contaminated land duties. All works must comply with the new Act and associated legislation and guidelines.

The environmental management measures for the Project are outlined in the tables below according to discipline:

- Air quality
- Biodiversity
- Contamination
- Aboriginal and historic heritage
- Greenhouse gas
- Groundwater
- Land stability and ground movement
- Land use
- Landscape and visual
- Noise and vibration
- Safety
- Social
- Surface water.

Air quality

Table 19-5 Air quality environmental management measures

Discipline: Air quality		Project phase
Objective	To minimise construction and operation air quality impacts	
EMM ID	Environmental controls	
AQ1	<p>Construction dust management</p> <p>Implement management and control measures during construction activities to minimise dust including:</p> <ul style="list-style-type: none"> • Water carts to be used on unsealed work areas as required • Crushed rock to be placed on existing permanent unsealed access tracks where agreed with relevant stakeholders – especially in areas where housing abuts, or may abut by the time construction occurs, the construction corridor • Water spray units to be used, where required, on soil stockpiles and during the loading and unloading of dust generating materials, ie Soil/sand/fill and aggregates • Vehicle loads to be covered when carrying dust (or litter) generating material • Vehicle speed within the construction area must be restricted to 30 km/hr • Dust suppression activities must consider weather patterns, ground cover, ground conditions eg type and moisture content of soil present, and type of activities being conducted as well as proximity to sensitive receptor locations • Undertake a sufficient level of compaction on stockpile surfaces to minimise dust. <p>If all available methods of dust stabilisation fail to suppress dust and dust emissions are evident beyond the site boundary at identified sensitive receptor locations (as identified by real-time reactive monitoring, as required), the contractor must temporarily modify or suspend dust generating activities until conditions subside.</p> <p>Additional controls must be implemented if dust is observed to be causing a hazard (such as a wind barrier where directly impacted residences are located immediately adjacent to the construction corridor). If dust levels cannot be contained works must be modified or stopped until dust hazard is reduced to a manageable level, such that it can be controlled using the standard measures.</p> <p>Construction dust monitoring</p> <p>Reactive dust monitoring instruments must be used during construction where isolated rural residences or rows of housing that abut the construction corridor are within the impact 'footprint' distances identified in Table 23 of Technical Report G Air Quality. Instruments must be consistent with those detailed in the Protocol for Environmental Management: Mining and Extractive Industries and be capable of sending a SMS text message to the contractor. These instruments must be deployed for each work day subject to where the daily work front is in relation to the specific areas where sensitive receptors are located.</p>	Construction

Discipline: Air quality		Project phase
AQ2	<p>Air quality associated with operation of compressor station</p> <p>Emissions of products of combustion (engines burning natural gas) during operation of the compressor station from the stacks must be in compliance with SEPP (Air Quality Management). Key design and operation measures must include:</p> <ul style="list-style-type: none"> • Compressor on a concrete area and surrounded by crushed rock hardstand • Above ground oily water separator with triple interceptor and underground overflow pit with level sensors, serviced annually • Residents notified prior to weed spraying (annual) • Annual stack test monitoring and servicing of compressors • Proposed compressor discharge point to be installed to achieve the SEPP AQM requirements. 	Design/ Operation
AQ3	<p>Odorous soils management</p> <p>In the event that odorous soils (as a result of contamination or acid sulfate soils) are uncovered during construction, standard soil management measures must be undertaken, as outlined in EMM C1 (Implement spoil management measures).</p>	Construction
AQ4	<p>Operational odour management</p> <p>Implement the VTS Pipeline Integrity Management Plan during operation. The VTS Pipeline Integrity Management Plan details the activities that will be taken to ensure the integrity of the VTS pipelines, including avoiding leaks of odours during operation. These are considered measures to minimise fugitive gas emissions. Measures that must be implemented include:</p> <ul style="list-style-type: none"> • Regular pipeline inspections and patrols • Pipelines to be constructed as per AS2885 or standards at time of construction • The pipeline to be identified in the ground via danger marker tape and above ground via pipeline marker sign on the easement • Cathodic protection system to be installed for corrosion resistance, with 24/7 monitoring and 12 month detail survey • Insulation of a series of sacrificial anodes along the pipe for corrosion resistance • Remote SCADA monitoring • Third party engagement ie when working around pipeline, emergency services, government, civil contractors • In line integrity pigging as determined by Pipeline Risk Assessments. <p>Design and construct the Wollert Compressor Station to include a stack that is capable of venting emergency or routine maintenance gas (unburnt natural gas) higher into the atmosphere than simply allowing fugitive emissions at ground level. The existing emergency flaring stack must be used for this purpose.</p>	Operation

Biodiversity

Table 19-6 Biodiversity environmental management measures

Discipline: Biodiversity		Project phase
Objective	To avoid and minimise residual impacts to flora and vegetation, fauna, and aquatic ecology.	
EMM ID	Environmental controls	
B1	<p>Vegetation management (construction)</p> <p>Confine all vegetation clearing works to the defined construction area.</p> <p>Minimise loss of native vegetation, particularly the EPBC Act-listed communities, through detailed design and construction planning including reducing the width of the construction corridor where practicable, in particular at environmentally sensitive locations.</p> <p>Clearly demarcate all buffer zones, no-go zones, tree protection zones, and the boundary of the construction area prior to relevant works commencing.</p> <p>Install and maintain temporary fencing (eg star pickets) along the construction footprint boundary in areas adjacent to sensitive environmental values. The Matted Flax-lily and Tough Scurf-Pea would be protected by temporary fencing (eg star pickets and wire fencing or galvanized temporary construction fencing). For works within conservation areas of the MSA (ie KP 43 and 49) fencing must be compliant with relevant DELWP guidelines specific to these areas.</p> <p>Clearly demarcate and identify on site all environmental features to be retained within or directly adjacent to the construction corridor, prior to relevant works commencing.</p> <p>Any necessary trimming of tree branches located on the edge of the construction corridor and, overhanging into construction/activity areas must be carried out by a qualified arborist.</p> <p>Develop and implement a Tree Management Plan (B23).</p>	Design and construction
B2	<p>Pest plant/animal/pathogen control (construction)</p> <p>Implement the following measures during construction to manage biosecurity risks and address Catchment and Land Protection Act 1994 (CaLP Act) obligations:</p> <ul style="list-style-type: none"> • Locate CaLP Act listed weeds in the construction corridor, and assess the risk of additional spread prior to relocating topsoil, implement measures to manage this risk during clear and grade and reinstatement • To a reasonable extent practicable during the clear and grade phase, ensure that vehicles and plant are free of soil clumps and sods prior to entry and exit from the construction corridor • Evaluate disturbed areas post-construction and implement remedial measures as required within a reasonable timeframe • Manage waste in accordance with EMM C7. 	Construction

Discipline: Biodiversity		Project phase
	<p>Pathogen control</p> <ul style="list-style-type: none"> All vehicles and plant undertaking construction works directly in the watercourse (Merri and Jacksons Creeks) must be cleaned, free of soil sods and sprayed with bleach prior to entrance of each waterway and on exit if working between multiple waterways (excluding vehicles and plant using the constructed access route). 	
B3	<p>Contractor awareness</p> <p>Before commencing site work, all Project personnel must attend an induction that outlines environmental management requirements. This must include:</p> <ul style="list-style-type: none"> No-go zones Biodiversity values of the construction corridor, specifically areas of native vegetation and threatened species habitat Habitat and fauna awareness Location of other environmentally sensitive areas Native vegetation removal regulations and penalties for non-compliance EPBC Act and FFG Act regulations and penalties for non-compliance. 	Construction
B4	<p>GDE mitigation</p> <ul style="list-style-type: none"> Engage an arborist to assess the potential for long-term impacts on native trees based on the expected timeframe for dewatering, depth to which water is modelled to be drawn down, and the proximity of the trees to identified and potential GDEs Develop and implement a Tree Management Plan (B23) Salvage aquatic and terrestrial fauna during open cut dewatering activities within Jacksons and Merri creeks. Measures are to include salvage and relocation protocols which must be outlined within the CEMP and include details regarding: <ul style="list-style-type: none"> Within waterways, undertake checks for the species during dewatering to remove any individuals found Install fauna-proof fencing along the edge of the terrestrial works area once habitat has been made unsuitable and cleared of individuals to prevent individuals recolonising for the period between clearing and construction Handling and relocation protocols, eg animal storage, hygiene controls Locations of suitable habitat (within 100 m for terrestrial fauna and 200 m for fish) to relocate any individuals found A protocol for any individuals found where appropriate release habitat is not available within 100 m or 200 m of capture (dependent on species) Means of treatment or disposal for any individuals injured or killed by works. <p>Measures to manage impacts to GDEs are described in EMM GW1 and EMM GW2.</p>	Construction

Discipline: Biodiversity		Project phase
B5	<p>Lighting impacts to fauna</p> <p>Design and manage lighting in accordance with best practice lighting design as outlined within the National Pollution Guidelines for Wildlife (DAWE 2020) where these do not conflict with construction safety.</p> <p>Where lighting is required, avoid unnecessary light spill into surrounding areas that provide habitat for threatened fauna as far as reasonably practicable.</p>	Construction
B6	<p>Noise impacts to fauna</p> <p>Construction noise and vibration must be managed in accordance with the requirements identified in EMM NV1 and NV2.</p>	Construction
B7	<p>Site rehabilitation after construction</p> <ul style="list-style-type: none"> Reinstate the construction corridor with consideration of native vegetation composition indigenous to the area as applicable to site conditions, adjacent ground surface levels, and in consultation with the landholder and in accordance with any agreement made as part of easement negotiations. In known and assumed Golden Sun Moth and Striped Legless Lizard habitat that contain native patches of grassland, revegetate areas with appropriate native grass seed mix (eg Wallaby Grass, Spear Grass, Kangaroo Grass) that provide habitat and food sources. On private property this will be in consultation with land owners. Rehabilitation of construction areas and all temporary facilities, temporary access tracks and extra works areas would begin as soon as practicable after the completion of the construction activities, with the aim of restoration of ground cover within six months. Rehabilitation activities are estimated to take approximately three months. Any applicable replanting will be undertaken within 12 months of construction completion (subject to seasonal requirements). <p>Subject to landholder agreement the following requirements to return habitat features to the construction area will be considered:</p> <ul style="list-style-type: none"> Return habitat features removed during construction such as large hollow logs and large rocks or rock piles to the construction area during rehabilitation if consistent with rehabilitation objectives at a particular location. Rip soil surfaces that have been compacted due to construction activities, such as those subject to traffic and/or storage areas within the site, to allow the topsoil to bind with the subsoil and increase water filtration, as appropriate, prior to revegetation with indigenous native species. Do not rip areas that are either known or assumed Golden Sun Moth or Striped Legless Lizard habitat and/or contained patches of native vegetation prior to construction. Measures to rehabilitate Jacksons Creek as set out in EMM SW7 (Develop appropriate control measures as part of the CEMP for open cut construction) and EMM SW8 (Site rehabilitation (Jacksons Creek)) will be implemented. <p>Subject to Melbourne Water works on waterway permit conditions, rehabilitation of Jacksons Creek and Merri Creek will take into consideration appropriate instream and terrestrial reinstatement of habitat with regard to Platypus and Growling Grass Frog habitat.</p>	Construction

Discipline: Biodiversity		Project phase
B8	<p>Topsoil management</p> <p>Topsoil imported to site from external locations must be free of weeds and pathogens. Stockpiled topsoil removed from weed-infested sites for the Project must only be re-used, as far as reasonably practicable, in the location that it was originally sourced from. Stockpiled topsoil from weed-infested sites may be reused where soil is sourced from sites supporting Golden Sun Moth where larvae may be present.</p> <p>Stockpiled topsoil from weed-infested sites must not be re-spread over threatened species habitat or where native vegetation is to be reinstated.</p> <p>For impacted areas that are Golden Sun Moth habitat:</p> <p>In areas that are to be disturbed temporarily (ie, reinstated after construction) and that require topsoil removal, the period between pre-trenching topsoil removal and post-trenching topsoil replacement must be minimised to the extent practicable.</p> <p>Where the removal of topsoil is unavoidable appropriate measures to remove, separate (from sub-soils) and replace topsoils in the construction corridor must be undertaken. As far as reasonably practicable, topsoil will be progressively reinstated.</p> <p>Manage dust during the Golden Sun Moth flying season (November to January) in properties that are known or assumed Golden Sun Moth habitat to minimise impacts of dust on flying individuals as per requirements in EMM AQ1.</p>	Construction
B9	<p>Fauna management</p> <p>Measures to mitigate impacts on native fauna must be developed and will be incorporated into a Fauna Management Plan. This must include the following requirements:</p> <ul style="list-style-type: none"> • Woody vegetation, trees and hollows to be removed must be inspected for fauna by a suitably qualified wildlife handler immediately prior to removal. Measures to mitigate impacts on fauna must include: <ul style="list-style-type: none"> – A walk-through/visual inspection of habitat to be removed immediately prior to clearance to flush out fauna and capture and relocate – Wildlife handler to be present during hollow-bearing tree removal and habitat removal for Growling Grass Frog and Striped Legless Lizard – Wildlife handler to provide advice, which must be implemented, that minimise fauna impact, and detailing appropriate measures to manage injured wildlife • Keep records of all fauna interactions, listing the species encountered, date, nature and outcome of the interaction and GPS coordinates. All fauna records will be submitted to the Victorian Biodiversity Atlas • Trench management: Work areas, particularly excavations and trenches left open overnight, must be visually inspected for fauna at the start of each work day. Any trapped fauna to be removed prior to work commencing. Measures are to include egress points along the trench to allow fauna to escape the trench when unattended, protocols for trapped fauna removal and provision of in-trench shelters for sections left open overnight • Native fauna are to be captured, handled and relocated only by a qualified and authorised fauna handler. All fauna handling must be in line with a Wildlife Act Permit Management Authorisation and any conditions within. It is an offence under the Wildlife Act 1975 to handle or disturb fauna without authorisation 	Construction

Discipline: Biodiversity		Project phase
	<ul style="list-style-type: none"> Records of all fauna relocations must be kept Records of all fauna deaths or injuries to be kept and reported to DELWP Exposed pipe ends must be capped each night to prevent fauna entry Prepare and implement Kangaroo management for areas where connectivity for fauna movement will be restricted during construction Temporary strainer assemblies and gateways must be installed at every fence line that is intersected by the construction corridor in agreement with the landowner and in accordance with construction specifications. This must provide security for farmstock during construction. Temporary security fencing must be installed around the construction site in all public open spaces to prevent unauthorised access to the right of way (ROW) and for public safety. When it is determined that there is no further safety risk to members of the public all security fencing will be removed. <p>For all threatened fauna: Any threatened species found within the construction site and needing relocation to avoid harm or death must be relocated to the nearest available suitable habitat. Details of suitable locations and a protocol for release for any locations where this is expected to be in excess of 100 m from the point of capture is required.</p>	
B10	<p>Surface water sedimentation and runoff Manage surface water sedimentation and runoff risks and impacts in accordance with EMM SW4 and EMM SW5.</p>	Construction
B11	<p>Surface water contamination Manage chemicals fuels and hazardous materials in accordance with EMM C6 to mitigate impacts on ecological values.</p>	Construction
B12	<p>Native vegetation management - operation Minimise any chance of accidental damage to vegetation during operation by complying with the requirements in the VTS OEMP and obtaining state and federal permits and approvals as required, if accidental damage to native vegetation occurs within the easement during operation.</p>	Operation
B13	<p>Pest plant/animal/pathogen control - operation Develop and implement weed and pest management in accordance with the VTS OEMP. This must include:</p> <ul style="list-style-type: none"> Taking reasonable steps to prevent the growth and spread of regionally controlled weeds and diseases including, Weeds of National Significance (WoNS), to eradicate regionally prohibited weeds, and to prevent spread of established pest species within the construction corridor Targeted control of weeds undertaken by a qualified pest plant control contractor pending consultation with landowners Limiting access to works areas to the easement and following a designated access route to minimise potential for weed spread, pending consultation with landowners <p>Routine inspections of the easement and facilities including vegetation and weed inspection, in consultation with landowners.</p>	Operation

Discipline: Biodiversity		Project phase
B14	<p>Noise, vibration, lighting (operation) impacts on threatened and non-threatened fauna</p> <p>Minimise noise, dust and lighting impacts on sensitive habitats and fauna, by:</p> <ul style="list-style-type: none"> • Turning off lighting when not required • Setting speed limits and drive conditions to minimise noise and dust impacts • Limiting access to easement and designated access routes to minimise erosion and associated dust. <p>Design and manage lighting in accordance with best practice lighting design as outlined within the National Light Pollution Guidelines for Wildlife (DAWE 2020) where these do not conflict with safety.</p> <p>Where lighting is required, consideration will be given to avoid unnecessary light spill into surrounding areas that provide habitat for threatened fauna.</p>	Operation
B15	<p>Reinstate native vegetation</p> <p>Where natural regeneration of species in situ is not feasible, revegetate the area using seed or nursery stock obtained from within the local area, to support preservation of native vegetation values within the broader area.</p>	Construction
B16	<p>Additional site assessment and management (construction)</p> <p>Any vegetation clearing or damage to plants outside the construction corridor that occurs accidentally or without prior approval must be reported as an incident and works must cease immediately. The accidental clearing area must be subject to:</p> <ul style="list-style-type: none"> • Botanical surveys to assess and map the condition and extent of native vegetation • If site based information of the native vegetation can no longer be observed, DELWP mapped data must be used to determine offset requirements • The extent and condition of accidental vegetation removal must be reported to the relevant authority as soon as reasonably practicable • A qualified arborist must assess any damage to trees and must identify tree protection zones (TPZs) and SRZs • All native vegetation to be retained must be demarcated via fencing, so no-go zones are clearly delineated and noted by workers, and any further accidental loss of vegetation is avoided • Install and maintain temporary fencing along the construction footprint boundary in areas adjacent to sensitive environmental values. For works within conservation areas of the MSA (ie KP 43 and 49) fencing must be compliant with relevant DELWP guidelines specific to these areas. 	Construction

Discipline: Biodiversity		Project phase
B17	<p>Barriers to fish passage and/or migration</p> <p>Minimise the creation of a barrier that impedes native fish passage and /or migration, and the time required for installation of the pipeline during open cut trenching across Jacksons Creek and Merri Creek by using the following approaches:</p> <ul style="list-style-type: none"> • Assemble and prepare the pipeline so it can be installed as soon as reasonably practicable once trenching through the watercourse is complete • Remove all obstructions to flow and passage as soon as reasonably practicable after the pipeline has been laid and backfilled. That is, with the exception of the flume pipe at Merri Creek, which may not be immediately removed after the pipe has been laid • Reinstate the exposed trench within the watercourse and riparian zones as soon as reasonably practicable following the installation of the pipeline • Works on a designated watercourse must have a permit for Works on Waterways from Melbourne Water. All works must be completed in accordance with permit requirements. 	Construction
B18	<p>Value-specific mitigation</p> <p>Develop and implement specific measures to protect EPBC Act and/or FFG Act communities that are impacted, including:</p> <ul style="list-style-type: none"> • Measures required by EMM B1 • Establishing no-go areas around plant populations • Install and maintain temporary fencing along the construction footprint boundary in areas adjacent to sensitive environmental values. For works within conservation areas of the MSA (ie KP 43 and 49) fencing must be compliant with relevant DELWP guidelines • Marking any significant values such as large old trees on site plans • An arborist's assessment to establish no-go areas around retained large old trees close to the construction corridor • On-site supervision by a botanist and/or arborist to avoid accidental damage to retained native vegetation during construction works in GEVVVP • Retention of stockpiled vegetation to be used for site rehabilitation • Rehabilitating disturbed areas as soon as reasonably practicable • A Tree Management Plan must be prepared based on detailed construction drawings and surveyed tree locations (EMM B23). 	Construction

Discipline: Biodiversity		Project phase
B19	<p>Fauna Mitigation – Golden Sun Moth</p> <p>Prepare and implement a Golden Sun Moth Management Plan and obtain approval for the plan from DELWP. The plan must include details regarding:</p> <ul style="list-style-type: none"> • Location of Golden Sun Moth habitat and method for mitigation measures in these areas • Topsoil management (including as outlined within EMM B8) • Rehabilitation measures • Ongoing management and/or monitoring. 	Construction
B20	<p>Fauna Mitigation – Striped Legless Lizard</p> <p>Prepare and implement a Striped Legless Lizard Management Plan and obtain approval for the plan from DELWP. The plan must include the following measures:</p> <ul style="list-style-type: none"> • Undertake active searching of areas identified as Striped Legless Lizard habitat (including rock rolling and lifting debris) prior to slashing • Slash areas of known and assumed habitat one week prior to tyning, to make them less suitable for lizards and encourage lizards to vacate the construction area. Slashing heights to be limited to no lower than 50 mm to minimise risk to individuals • If tyning is delayed, areas may need to be re-slashed to keep the grass short • Tyne areas of known and assumed habitat immediately prior to trenching to salvage and relocate individuals to immediately adjacent suitable habitat • A suitably qualified wildlife handler would be present during all tyning activities to undertake salvage and relocation activities • Once habitat has been made unsuitable and tyning has been completed, install lizard-proof fencing along the construction site boundary (where it meets lizard habitat) to prevent individuals from recolonising the site during construction. Fencing must be a solid material (eg polyethylene sheeting or plastic) that is 400 mm high and dug into the ground at a depth of 100 mm • Develop a record-keeping, storage, treatment and/or disposal protocol for killed or injured individuals, in accordance with DELWP advice. All such records will be reported to DELWP • Management of topsoil as per EMM B7 and B8 is also required. 	Construction

Discipline: Biodiversity		Project phase
B21	<p>Fauna Mitigation – Growling Grass Frog</p> <p>Schedule construction within Jacksons Creek outside the species’ peak active period (November to March).</p> <p>Prepare and implement a salvage and translocation plan for the Growling Grass Frog and obtain approval for the plan from DELWP. The salvage and translocation plan must include details regarding:</p> <ul style="list-style-type: none"> • Making habitat unsuitable for Growling Grass Frog by slashing bank vegetation one week prior to construction to discourage individuals from remaining within the site • Undertaking checks for the species immediately prior to construction to remove any individuals found • For dams proposed for removal that have been identified as habitat, install fauna-proof fencing around the waterbodies once habitat has been made unsuitable and cleared of individuals to prevent individuals recolonising for the period between clearing and construction • For waterways identified as habitat, install fauna-proof fencing along the edge of the terrestrial works area once habitat has been made unsuitable and cleared of individuals to prevent individuals recolonising for the period between clearing and construction • Install fauna-proof fencing within 100 m of areas with habitat known or assumed to support Growling Grass Frog • Handling and relocation protocols eg animal storage, hygiene controls • Locations of suitable habitat (within 100 m) to relocate any individuals found • A protocol for any individuals found where appropriate release habitat is not available within 100 m of capture • Means of treatment or disposal for any individuals injured or killed by works. All deaths or injuries to be recorded and reported to DELWP • Fauna-proof fencing for Growling Grass Frog will be of a suitable structure and material to prevent frog movement from one side of the fence to the other • Minimise the risk of high flow events on Growling Grass Frog habitat through site-specific measures outlined in EMM SW7 and EMM SW9 including but not limited to timing of works, Flood Management Plan and Response Plans. 	Construction
B22	<p>Fauna Mitigation – Platypus</p> <p>Protect Platypus in accordance with the Platypus Management Guidelines (Australian Platypus Conservancy https://platypus.asn.au/management-guidelines/). This must include:</p> <ul style="list-style-type: none"> • A pre-construction survey for the presence of burrows within the construction corridor at Jacksons Creek where open cut trenching is to occur • If the presence of burrows can’t be ruled out, the construction works at Jacksons Creek waterway/banks will be timed to avoid the peak juvenile nesting period between September and beginning of March • If burrows are observed or can’t be ruled out, excavations should proceed carefully using a non-toothed excavator bucket (eg mud or batter bucket) in order to allow any individuals present to escape 	Construction

Discipline: Biodiversity	Project phase
<ul style="list-style-type: none"> • Minimise where practicable activities that involve excavating or driving over banks with heavy machinery and limit these to areas within the construction corridor • To avoid disturbing active platypus, schedule work activities during daylight hours in Jacksons Creek. This excludes the use of pumps to extract water from the construction footprint overnight. Locate pumps as far from the waterway as reasonably practicable with use of noise deflectors to minimise noise impacts • All pumps and pipes to include exclusion grill to prevent Platypus becoming trapped, injured or killed • Egress points should be installed to allow any trapped individuals to escape coffer dams • Install exclusion fencing around coffer dams to reduce risks of predation on Platypus travelling around the coffer dams overland • Manage loose soil from moving from the banks to the channel while works are underway. Areas of bare or disturbed soil are to be replanted as soon as reasonably practicable once works are completed and in accordance with landowner agreements • Implement measures to prevent chemicals or litter associated with work activities from entering waterways and drainage lines • To maintain natural foraging substrates for platypus, concrete must not be substantially used as a binding agent along surface areas of the channel or banks This does not include the subsurface concrete encasement of slab protection considered for pipe protection as part of EMM SW7 • Develop and implement a contingency plan for dealing with any platypus that may be accidentally injured or displaced during work activities. 	
<p>B23</p> <p>Remnant Tree Management Plan</p> <p>Develop and implement a Tree Management Plan to identify all remnant native (non-planted) trees within 15 m of the construction corridor boundary, deemed "lost" through encroachment of their TPZs and specifies:</p> <ul style="list-style-type: none"> • Trees to be impacted as part of the construction activities • The condition and arboricultural value of the trees. <p>Maximise tree retention to the extent practicable through detailed design and selection of construction methods to minimise canopy loss including by retaining trees where practicable and minimising potential impacts to trees.</p> <p>Arboricultural assessments must inform the Tree Management Plan in order to maximise tree retention and long-term viability of individual trees including those deemed "lost" through encroachment of their TPZs or groundwater changes.</p> <p>The Tree Management Plan must be informed by a pre-construction site assessment to confirm the area and number of trees proposed to be impacted.</p> <p>The area and number of trees actually removed are to be confirmed through a post-construction arborist assessment.</p>	<p>Design and construction</p>

Contamination

Table 19-7 Contamination environmental management measures

Discipline: Contamination		Project phase
Objective	To avoid or minimise impacts to human health and the environment associated with contaminated materials and wastes.	
EMM ID	Environmental controls	
C1	<p>Implement spoil management measures</p> <p>Prepare and implement spoil management measures in accordance with relevant regulations, standards and guidelines including EPA Publication 1834 Civil construction, building and demolition guide. The spoil management measures must be developed in consultation with the EPA Victoria and include processes and measures to manage all spoil types ie all excavated material. The main spoil types would include mostly uncontaminated soils and potentially small volumes of prescribed industrial waste (PIW) in the vicinity of the potential sources noted in Technical report E <i>Contamination</i>.</p> <p>The spoil management measures must define roles and responsibilities and include requirements and methods for:</p> <p>General</p> <ul style="list-style-type: none"> • Complying with applicable regulatory requirements including EPA Publication 1834 Civil construction, building and demolition guide and SEPP (Prevention and Management of Contaminated Land) • Investigations in accordance with the Australian Standard AS 4482.1:2005 Guide to the investigation and sampling of sites with potentially contaminated soil, the ASC NEPM and the EPA Victoria Industrial Waste Resource Guidelines (IWRGs) • Leaving contaminated soils in-situ to the extent possible • Assessment of any material imported to the site for use as backfill in accordance with IWRG 621 and 702. Imported material must meet the 'Fill Material' criteria as defined in Table 2 of IWRG621. <p>Assessment</p> <ul style="list-style-type: none"> • Completing further soil investigations to assess soil quality for the analysis detailed in Technical report E <i>Contamination</i> prior to construction in order to inform the CEMP: <ul style="list-style-type: none"> – At the Diggers Rest (KP 9.95–KP10.14), which is being used to store hundreds of wrecked cars – A possible former quarry in Beveridge (KP 37.5) along the construction corridor to ascertain if the former quarry extents encroaches onto the Project – The retarding basin (KP 34-35.5) prior to any excavation in these areas. – Wollert Compressor Station (KP 50.78–KP 51.045) – Shallow sediments in Jacksons Creek. 	Construction

Discipline: Contamination	Project phase
<ul style="list-style-type: none"> • Following these further investigations, updating the CEMP to include areas of potential contaminated soils • Identifying where any contaminated or hazardous material is exposed during construction and how it would be made safe for the site owner and the environment. Beneficial uses of land and ASC NEPM guidance on criteria protective of those beneficial uses must be considered for the land uses in these areas. <p>Unexpected contamination</p> <ul style="list-style-type: none"> • Identifying, containing and managing unexpected contamination in accordance with applicable regulatory requirements including EPA IWRG 621 and 702 <p>Handling, stockpiling and transport</p> <ul style="list-style-type: none"> • Conducting all spoil handling and transport for offsite disposal in accordance with the EPA IWRGs • Managing construction works during wet weather, which can lead to runoff of contaminated and uncontaminated soil from stockpiles and excavations into nearby waterways, in accordance with SW1 and SW4 • Regularly monitoring weather conditions and planning works accordingly to avoid or minimise impact to sensitive receptors from works during adverse weather (ie runoff from rainfall) • Implementing personal protective equipment and standard hygiene practices when handling contaminated spoil • Separating stockpiles of trench spoil into contaminated and uncontaminated soil. As both of these waste types can adversely impact the environment (eg through runoff to waterways), all stockpiles must be managed in accordance with EPA Victoria Publication 1834 Civil construction, building and demolition guide and EPA Publication 1895 Managing Stockpiles, 2020 • Where it is necessary to excavate contaminated soils, stockpiling these separately, with containment and treatment measures appropriate to the type of contamination present. This must include. <ul style="list-style-type: none"> – All stockpiles of potentially contaminated spoil must be appropriately secured, lined and bunded to prevent leaching – All stockpiles of potentially contaminated spoil must be appropriately covered and bunded to limit rainwater ingress, dust generation and contact by fauna – Stockpiling of contaminated soil must be kept to a minimum and removed to landfill or other use at the earliest opportunity • Handling and transport of contaminated spoil for off-site treatment/disposal in accordance with Environment Protection (Industrial Waste Resource) Regulations 2009. Transport companies must be licensed by EPA Victoria to carry contaminated soil • Managing PFAS-impacted soil (if any) in accordance with the PFAS NEMP and EPA guidance • Monitoring, recording and tracking spoil and other waste handling including but not limited to stockpile management, trucking and destination tracking, and sampling results. 	

Discipline: Contamination		Project phase
	<p>Reuse or Disposal</p> <ul style="list-style-type: none"> Assessing potentially contaminated spoil, which is to be disposed of offsite, in accordance with IWRG 621 and 702. Considering the waste management hierarchy including opportunities for reuse, with spoil that is unable to be reused to be removed from site via designated haulage routes Disposing drilling muds in accordance with Environment Protection (Industrial Waste Resource) Regulations 2009 and EPA Victoria Industrial Waste – Classification for Drilling Mud, Victoria Government Gazette G37. 	
C2	<p>Managing any unknown contamination</p> <p>The spoil management measures referenced in EMM C1 must include requirements and methods to address and manage any contamination that was not expected during construction.</p> <p>Such material may be identified by visual or olfactory observations, the presence of asbestos and other anthropogenic material. The spoil management measures must include contingency plans and appropriate responses in accordance with EPA guidelines. These must include, as a minimum:</p> <ul style="list-style-type: none"> Cease ground disturbance at the unknown contamination location and within the immediate vicinity Assess site contamination and identify appropriate management action. 	Construction
C3	<p>Minimise impacts from disturbance of acid sulfate soil</p> <p>PASS may be present in saturated alluvium beneath and within close proximity to the creeks. Carry out further assessment where dewatering of alluvium may occur, specifically at Jacksons Creek and Merri Creek.</p> <p>The spoil management measures referenced in EMM C1 must include requirements and methods to minimise impacts from disturbance of acid sulfate soil, including but not limited to:</p> <ul style="list-style-type: none"> Characterising acid sulfate soil and rock prior to excavation in accordance with EPA Publication 655.1 Acid sulfate soil and rock Developing appropriate stockpile areas including lining, covering and runoff collection to prevent release of acid to the environment Identifying suitable sites for re-use, management or disposal of acid sulfate soil Preventing oxidation that could lead to acid formation if practicable, through cover and/or scheduling practices, for example by minimising the length of time that acid sulfate soil is left in stockpiles as far as reasonably practicable and/or addition of neutralising compounds Completing further acid sulfate soil assessment prior to construction in order to inform the CEMP at: <ul style="list-style-type: none"> Jacksons Creek Merri Creek. Requirements and methods must be in accordance with the Industrial Waste Management Policy (Waste Acid Sulfate Soils), EPA Victoria Publication 655.1 Acid Sulfate Soil and Rock, and the Department of Sustainability and Environment’s Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soil. 	Construction

Discipline: Contamination		Project phase
C4	<p>Minimise risks from contaminated groundwater</p> <p>Develop and implement groundwater management measures in accordance with EMM G3.</p>	Construction
C5	<p>Minimise risks from vapour and ground gas intrusion</p> <p>Relevant sections of the Project must consider vapours and gases associated with any construction that interfaces with landfill sites (within 500 metres of the boundary of the boundary of the waste) or contaminated areas. These include the sections of the alignment adjacent to the Bulla Landfill (approx. KP 15–KP 16) and near the Diggers Rest property (approx. KP 9.95–KP 10.14).</p> <p>The spoil management measures referenced in EMM C1 must include requirements for assessment, monitoring and management of intrusive vapour, including potentially flammable or explosive conditions, in enclosed spaces within 500 metres of the Bulla Landfill (approx. KP 15–KP 16) and Diggers Rest (approx. KP 9.95–KP 10.14) property and trenches in those areas.</p> <p>The spoil management measures must address vapour risks associated with excavation of impacted soils, extraction of impacted groundwater, open excavations and stockpiles and gases.</p> <p>Specifically associated with the Bulla Landfill (KP 15–KP 16), this must include, where relevant:</p> <ul style="list-style-type: none"> • Securing of the excavation and stockpile area from the public and livestock including signage warning of open excavations • Continuous monitoring of landfill gas conditions when any person is in the trench or during hot works or works that could potentially produce a spark within the trench • Setting of trigger values that require action within areas being trenched and including any temporary structures within the vicinity of the landfill. These must be developed in accordance with EPA Victoria Publication 788 Best Practice Management; Siting, design, operation and rehabilitation of landfills (landfill BPEM) and relevant occupational health and safety regulations and compliance codes. • Contingencies to address any breaches of trigger values including temporary cessation of work until a reappraisal of risks is conducted, additional monitoring at a higher frequency, implementation of additional safety measures and or vapour extraction systems in response to the risk assessment. <p>Specifically relevant to the Diggers Rest property (approx. KP 9.95–KP 10.14), this must include, prior to construction to inform the CEMP:</p> <ul style="list-style-type: none"> • Investigation of soils within the construction corridor to assess for the presence contamination including metals, TRHs, BTEX, PAHs and solvents • If volatile contamination is identified a risk assessment to determine the risk from vapours to construction workers during trenching may be required. 	Construction

Discipline: Contamination	Project phase
<p>C6 Manage chemicals, fuels and hazardous materials</p> <p>The spoil management measures must include requirements for management of chemicals, fuels and hazardous materials including to:</p> <ul style="list-style-type: none"> • Minimise chemical and fuel storage on site and store hazardous materials and dangerous goods in accordance with the relevant guidelines and requirements • Comply with the Victorian WorkCover Authority and Australian Standard AS1940 Storage Handling of Flammable and Combustible Liquids and EPA Victoria publications 1834 Civil construction, building and demolition guide and Publication 1698: Liquid storage and handling guidelines – EPA Victoria • Develop and implement management measures for dangerous substances, including: <ul style="list-style-type: none"> – Creating and maintaining a dangerous goods register – Disposing of any hazardous materials, including asbestos, in accordance with Industrial Waste Management Policies, regulations and relevant guidelines – Implementing requirements for the installation of bunds and precautions to reduce the risk of spills • Develop and implement contingency and emergency response procedures to handle fuel and chemical spills, including availability of on-site hydrocarbon spill kits • Make spill kits available at all locations where machinery/plant are operating, refuelling points and fuel and chemical storage locations • Limit the type and volume of liquid material (fuel, oil, lubricant) stored on-site for construction activities to only that which is required. Liquid material must not be stored within 50 metres of waterways. 	<p>Construction</p>

Discipline: Contamination		Project phase
C7	<p>Management of waste streams</p> <p>Implement the following measures to manage non hazardous waste:</p> <ul style="list-style-type: none"> • Manage wastes in accordance with the IWR Regulations • Undertake an assessment of potential wastes to be generated for the construction phase of the project that identifies waste elimination, reduction measures and opportunities for the re-use and recycle of construction waste • Use appropriately designated/designed facilities to handle the identified waste streams including necessary segregation and storage requirements. This must include dedicated and labelled on site disposal locations, which segregates wastes into streams for offsite disposal or recycling • Locate waste facilities away from natural drainage systems and low-lying areas • PIW (such as waste oils, oily water mixtures, oily rags and oil filters, etc) must be segregated, labelled and securely stored and transported to a facility licensed to accept these wastes • Classify and dispose waste in accordance with the IWR Regulations including by using a licensed waste contractor and completing waste transport certificates for PIW • Carry out a toolbox meeting including specific awareness on chemical management/refuelling and differences between waste types to facilitate correct segregation, storage and disposal • Sufficiently enclose putrescible wastes for odour control (eg use of suitable bins) • No PIW shall be comingled with other waste streams • Document and implement a detailed process for monitoring, recording and tracking waste handling. 	Construction
C8	<p>Management of hydrostatic test water</p> <p>Implement measures for management of hydrostatic testing water including:</p> <ul style="list-style-type: none"> • Manage hydrostatic test water in accordance with SEPP (Waters) • Sample water to be used for hydrostatic testing to determine water quality prior to use • Prior to hydrostatic testing, pre-clean the pipeline to remove weld debris, dust and surface scale • Reuse water where practicable to minimise the number of discharge locations and conserve water • Only discharge hydrostatic test water discharge where water designated for release into the environment is of a quality that is within relevant statutory water quality guidelines. Relevant landholder(s) must be consulted prior to any discharge of hydrostatic test water to land • Any discharge of hydrostatic test water must not result in soil erosion or sedimentation of land or water. Sediment control devices to remove suspended solids such as geotextile fabric filters must be used • Direct discharge must not occur to watercourses or drains. 	Construction

Discipline: Contamination		Project phase
C9	<p>Management of drilling fluids</p> <p>Implement measures for management of drilling fluids including:</p> <ul style="list-style-type: none"> • Making spill kits or similar available to contain spills on land, preventing runoff into surface water and drains • Identifying and implementing contingency measures when HDD activities are in the vicinity of waterway zones • Disposing drilling fluids in accordance with Environment Protection (Industrial Waste Resource) Regulations 2009 and EPA Victoria Industrial Waste – Classification for Drilling Mud, Victoria Government Gazette G37 • If HDD occurs through a potentially contaminated site the IWRG 621 and 702 must be followed for offsite disposal • Selecting appropriate inert drilling fluids. 	Construction
C10	<p>Minimise contamination risks during operation</p> <p>Operate the Project in accordance with the existing VTS OEMP. Key design and operation measures must include:</p> <ul style="list-style-type: none"> • Conducting all operations and maintenance (including wastes) in accordance with EPA Industrial Waste Resource Guidelines • No permanent storage of fuel or other chemicals along the pipeline corridor • Compressor on a concrete area and surrounded by crushed rock hard stand and under cover with a shelter roof • Above ground oily water separator with triple interceptor and underground overflow pit with level sensors, serviced annually • Provision of general and regulated waste collection bins • Use of quick break detergents suitable for oily water separator • Annual stack test monitoring and servicing of compressors • Ensuring PIW (such as waste oils, oily water mixtures, oily rags and oil filters, etc) are segregated, labelled and securely stored and transported to a facility licensed to accept these wastes • Appropriately classifying and disposing waste, including using a regulated waste contractor and completion of waste transport certificates for PIW • Maintain spill kits onsite at all times and providing training for use of spill kit • Inducting all staff and contractors into APA HSE policies and procedures including risks and controls associated with: waste management, chemical management and refuelling, weed and pest management and incident response • Carrying out toolbox meetings including specific awareness on chemical management /refuelling and differences between waste types to facilitate correct segregation, storage and disposal • Pre-start checks of plant, equipment and vehicles will be conducted to check for oil leaks • Storing any fuels or chemicals on site in an AS1940 compliant bund or double skinned tanks to prevent any spills impacting soil or water • Regular inspections on spill controls/bunding 	Operation

Discipline: Contamination		Project phase
	<ul style="list-style-type: none"> Designating chemical and waste storage and refuelling areas away from watercourses to minimise the risk of contamination during handling and use Refuelling to be carried out on hardstand or over a drip tray to capture spills and minor leaks Collecting spilt material into regulated waste bins to be taken offsite by an EPA licenced third party to an approved facility. Regulated waste disposal records must be provided Providing designated covered bins for general waste to minimise litter generation Providing a detailed process for monitoring, recording and tracking waste handling. 	

Aboriginal and historic heritage

Table 19-8 *Aboriginal and historic heritage environmental management measures*

Discipline: Aboriginal and historic heritage		Project phase
Objective	To avoid or minimise impacts on Aboriginal and historic heritage values.	
EMM ID	Environmental controls	
CH1	Cultural Heritage Management Plans Implement and comply with the Cultural Heritage Management Plans (CHMP 16594 and CHMP 16593) management conditions to preserve registered and unidentified Aboriginal cultural heritage places and values.	Construction
CH2	Archaeologically sensitive land forms Identify and complete subsurface testing in all archaeologically sensitive areas within the Project area during the completion of Cultural Heritage Management Plans (CHMP 16594 and CHMP 16593) in consultation with AV and WWCHAC.	Construction
CH3	Listed historic heritage sites For any potential impact to VHI sites, obtain consent from Heritage Victoria in advance and implement management measures required in the consent, including fencing off the site during works, monitoring and recording.	Construction
CH4	Unlisted historic heritage sites Should an unknown historic heritage site, value or object be discovered during construction, follow the unexpected finds procedure, outlined in the CHMP.	Construction

Greenhouse gas

Table 19-9 Greenhouse gas environmental management measures

Discipline: Greenhouse gas		Project phase
Objective	To minimise activities that generate CO ₂ and other greenhouse gases which could contribute to the greenhouse effect and climate change.	
EMM ID	Environmental controls	
GG1	<p>Construction emissions</p> <p>Reduce greenhouse gas emissions during construction by:</p> <ul style="list-style-type: none"> a Using low embodied energy materials where they are of comparable quality, utility, availability and cost b Using fuel efficient plant and equipment where practicable during construction c Using locally sourced materials, including those provided by suppliers, where they are of comparable quality, utility, availability and cost d Reducing the amount of vegetation removal along the pipeline alignment as far as reasonably practicable e Monitoring construction greenhouse gas emissions via audit/monitoring processes f Mulching trees for recycling g Minimising the amount of fossil fuel based explosives required during the construction phase. 	Construction
GG2	<p>Normal operation of Wollert compressor station</p> <p>Implement the Protocol for Environmental Management (PEM): Greenhouse Gas Emissions and Energy Efficiency in Industry 2001 during operation of the Wollert compressor including consideration of energy efficiency best practice in the selection of the compressor type (greenhouse gas emissions and energy efficiency in industry).</p> <p>Comply with the conditions associated with the Pipeline Licence.</p> <p>Monitor operation greenhouse gas emissions via audit/monitoring processes.</p>	Design/ operation
GG3	<p>Operational emergencies</p> <p>Implement industry standards including AS2885 in design, inspect and maintain the pipeline and Wollert compressor station to minimise the risk of operational emergencies.</p>	Design/ operation
GG4	<p>Operational leaks</p> <p>Perform ongoing maintenance and inspection on the Project to avoid leaks. Design to be undertaken in accordance with AS2885.</p>	Design/ operation

Groundwater

Table 19-10 Groundwater environmental management measures

Discipline: Groundwater		Project phase
Objective	To avoid or minimise impacts to beneficial uses of groundwater or groundwater users within the study area.	
EMM ID	Environmental controls	
GW1	<p>Minimising dewatering rates and impact to groundwater levels and flows</p> <p>Design and construct the Project to minimise changes in groundwater levels, flows and quality. Implement the following measures during construction to minimise groundwater impacts:</p> <ul style="list-style-type: none"> • Where excavations require dewatering, adopt a construction method that minimises the dewatering period. The anticipated period is expected to be approximately four weeks at the creek crossings • Install trench breakers adjacent to watercourses, wetlands and steep slopes as shown in the standard drawing (530-DWG-L7003) to minimise trench inflows. 	Construction
GW2	<p>Minimise impact to groundwater bore users</p> <p>Although it is not anticipated that any neighbouring bore will be impacted by dewatering, it is possible there is unregistered bores nearby, or a slightly greater than predicted distance of drawdown influence may occur. If this is the case, and any neighbouring bores are considered likely to be impacted by the Project within 60 metres of an area of dewatering (including the registered bore at approximately KP 47.6), then the location, condition and functionality of the bore must be visually confirmed and make-good arrangements must be agreed in consultation with affected landholders, if required.</p>	Construction
GW3	<p>Minimise impacts associated with contaminated groundwater and disposal</p> <p>Establish baseline groundwater level and quality conditions prior to the construction phase to assess any existing contamination or quality issues where groundwater is likely to be intercepted during construction and dewatering is expected, and also allow suitable disposal options to be assessed and planned.</p> <ul style="list-style-type: none"> • Complete additional groundwater quality analysis in the existing bore network to confirm baseline conditions • Investigate Bendigo Rail/Tame St Drain area further as regional data suggests dewatering may be necessary • Investigate PFAS at Jacksons Creek so that any dewatering in this area can be informed about the presence of PFAS to allow for appropriate management of the groundwater, and sediments. Investigations must occur prior to construction in order to inform the CEMP and include shallow groundwater and sediment sampling. 	Construction

Discipline: Groundwater		Project phase
	<p>Manage extracted groundwater as follows:</p> <ul style="list-style-type: none"> • Dispose groundwater in accordance with the SEPP (Waters) and EPA Guidelines and all relevant approvals processes with relevant authorities • Groundwater from areas that have been identified as contaminated must not be discharged to the environment (land, waterways). If required, engage with the local water authority to develop a trade waste agreement for sewer discharge. This agreement would specify the levels of contamination to allow for sewer discharge • Contaminated groundwater must either be treated onsite, depending on contaminant encountered (this may require approval from the EPA Victoria) or disposed offsite to an EPA Victoria licensed facility. Alternatively, a construction approach may be adopted where contaminated groundwater is left in-situ (ie not abstracted or disturbed). <p>Manage dewatering of excavated trenches/bellholes to minimise sedimentation, including the use of sediment control devices to remove suspended solids and dissipate flow. Sediment control devices must be listed in site specific environmental management plans. Minimise the duration that trench sections and bell holes are open, and divert surface water runoff away from the excavations, to reduce the potential for poor quality runoff impacting groundwater.</p>	
GW4	<p>Manage chemicals, fuels and hazardous materials Manage chemicals, fuels and hazardous materials as detailed in EMM C6.</p>	Construction and operation
GW5	<p>Drilling Fluids Requirements Manage drilling fluids in accordance with EMM C9.</p>	Construction
GW6	<p>Implement Spoil Management Procedures Implement spoil management procedures as detailed in EMM C1.</p>	Construction
GW7	<p>Design Requirements The pipeline design shall consider where groundwater interaction is expected to occur and incorporate trench breakers or plugs, as well as suitable backfill compaction, to prevent preferential flow paths. Implement trench compaction procedures as detailed in GM4 including the design of the backfill to take into account the density and permeability of the surrounding soil.</p>	Design, construction and operation

Land stability and ground movement

Table 19-11 Land stability and ground movement

Discipline: Land stability and ground movement		Project phase
Objective	To avoid or minimise potential for ground movements that may arise during construction or operation of the Project.	
EMM ID	Environmental controls	
GM1	<p>Third party asset management</p> <p>Identify and prove all third party services prior to construction and agree vertical and horizontal clearance requirements with asset owners. Liaise with asset owners for any asset within the construction easement to confirm asset clearance and other mitigation, protection or contingency requirements, including possible settlement monitoring at the railway crossings.</p> <p>Where utility crossings occur during open trench construction, the asset protection must be agreed with the provider and adhered to.</p>	Design
GM2	<p>Design and construction to be informed by geotechnical and hydrogeological conditions</p> <p>Existing and planned geotechnical and hydrogeological investigations must form the basis of design and inform expected ground and water conditions during construction so that due consideration is given toward the existing ground key issues (such as those identified in Technical report D <i>Land stability and ground movement</i>). This information is to:</p> <ul style="list-style-type: none"> • Provide information on the soil and rock expected to be encountered during all excavations • Provide information on the presence of reactive soils • Provide information on the presence of dispersive (“sodic”) soils • Provide information on the locations and extent of groundwater drawdown requirements. 	Design
GM3	<p>Management of trench stability: support and duration</p> <p>Carry out trench excavation works in accordance with the requirements of the Safe Work Australia Code of Practice: Excavation Work (2018) and WorkSafe Victoria Compliance Code: Excavation (2019).</p> <p>Measures are also to be considered where potentially unstable ground may compromise the stability of the trench as assessed by a suitably qualified geotechnical engineer.</p> <p>In addition, the time that trenches and bell holes remain open will be minimised as far as reasonably practicable. As a general rule, trenches should not remain open for longer than 3 months and should comply with SafeWork Australia (2018). For some excavations (for example for main line valves, hydrostatic test sections and tie-in locations) this time period may be exceeded and trench wall support is to be provided in accordance with SafeWork Australia (2018).</p> <p>Should failure occur, contingency response actions may include, for example, methods for temporary shoring and the removal, replacement, and rehabilitation of the disturbed soil.</p>	Construction

Discipline: Land stability and ground movement		Project phase
GM4	<p>Management of trench erosion, consolidation and swelling</p> <p>Implement measures to manage soil dispersion, erosion, consolidation and swelling risks including:</p> <ul style="list-style-type: none"> • Implementation of erosion and sediment control measures in accordance with EPA 1834 guidelines (2020) and is to be informed by the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control, Appendix P – Land Based Pipeline Construction (2008). This includes the use of trench breakers installed at regular intervals along the trench excavation where necessary (for example, near to existing slopes and where shallow groundwater tables exist) to minimise ongoing erosion caused by altered water flow regimes as a result of trench construction • Compaction of the trench backfill as per APA's performance requirement and/or contractor's construction requirements. Degree of compaction and design of backfill to take into account design load limits on the pipe and density and permeability of surrounding soil • Routine inspection and monitoring of the construction area (easement patrols) must be undertaken throughout operation as per the VTS OEMP to identify any issues such as ongoing erosion, ground movement, slope creep or other adverse effects on land use. Management, monitoring and identification of issues may be in accordance with IECA Best Practice Erosion and Sediment Control (2008). <p>Additional erosion control measures in proximity to waterways are contained in EMM SW4.</p> <p>Additional measures for rehabilitation and monitoring of trenched waterways are contained in EMM SW3.</p>	Construction/ operation
GM5	<p>HDD trenchless bore management</p> <p>Use trenchless bore support (such as a suitable drilling mud or bentonite) to temporarily support the bore during the trenchless activities in accordance with the guidelines for horizontal directional drilling, microtunnelling and pipe jacking (ASTT, 2009).</p> <p>Prior to construction, undertake a detailed hydrofracture risk assessment where appropriate to confirm that the risk of blow-out is low. Prepare and implement a volumetric drilling fluid tracking program with defined threshold levels for fluid loss, stop works and further investigation.</p> <p>Monitor and manage support fluid to effectively minimise ground deformations and risk of bore collapse in unstable ground to reduce the risk of damage to nearby sensitive receptors as well as the potential for frac-out.</p>	Construction
GM6	<p>Confirmation of ground risk</p> <p>For sites where there is insufficient or no geotechnical information, confirm the viability of proposed temporary works (ie choice of trenchless method) by completing additional geotechnical investigations. Additional investigations may include shallow surface geophysical methods, trial pitting or drilling as appropriate (subject to environmental or access constraints).</p> <p>Take into account any new geotechnical information at all relevant sites and develop and implement measures for trenchless construction to mitigate the risk of adverse environmental impacts (for example excessive settlement, damage to assets). Relevant sites include Beatty's Road, Morefield Court, Sunbury Road, Oaklands Road, Donnybrook Road (West).</p> <p>Carry out further utility proving works where information is not currently available at the crossing location (including at the Donnybrook Road (West) crossing).</p>	Design/ Construction

Discipline: Land stability and ground movement		Project phase
GM7	<p>Preparation and implementation of sodic soil management measures</p> <p>Complete additional site investigations to further identify areas of higher dispersion risk along the alignment (in addition to those listed in Technical report D <i>Land stability and ground movement</i> Section 6.3).</p> <p>Develop, document within the CEMP and implement minimum requirements to be put in place to manage dispersive/sodic soils during construction and operation. Management measures may be proportional to the level of risk identified by the additional site investigations and in general accordance with the guidelines contained within Best Practice Erosion and Sediment Control, Appendix P (IECA, 2008) where applicable.</p> <p>A management plan must be developed prior to construction and implemented detailing how sodic soil hazards will be managed during construction.</p> <p>Application of EMM GM4 is also considered to assist in the management of dispersive soils.</p>	Design/ construction/ operation

Land use

Table 19-12 Land use environmental management measures

Discipline: Land use		Project phase
Objective	To minimise land use impacts	
EMM ID	Environmental controls	
LU1	<p>Impacts to Precinct Structure Plans (PSPs) and growth areas</p> <p>Minimise impacts as far as reasonably practicable to PSPs and growth areas by providing for consistency with approved and PSPs that are yet to be approved. This must include:</p> <ul style="list-style-type: none"> • Co-locating the alignment with other utility and transport infrastructure projects to avoid impacts on net developable land where practicable • Where the pipeline has not been provided for in an existing PSP: <ul style="list-style-type: none"> – Designing the pipeline in accordance with AS 2885 with consideration to current land use • Incorporating the proposed easement and notification area based on the Area of Consequence into any future PSPs along the alignment • Rehabilitating land within existing PSPs in accordance with EMM LU2 • Providing for future uses along the pipeline (eg shared use paths) in accordance with the APA Site Planning and Landscape National Guidelines (APA 2020). 	Design and construction
LU2	<p>Continuation of existing land uses</p> <p>Construct and operate the Project in accordance with EMM AQ1, AQ3, AQ4, NV1, NV2, NV3, NV4, NV5 to minimise amenity impacts and support the continuation of existing land uses during construction and operation phases.</p> <p>Rehabilitate land in accordance with the Project CEMP.</p> <p>Continuation of agricultural land uses must be managed in accordance with EMM S2.</p> <p>Inform landowners and occupiers of the construction commencement, and details of the proposed construction programme, in accordance with the Project Consultation Plan.</p>	Construction and operation
LU3	<p>Impacts to land tenure and access</p> <p>Provide compensation for the reservation of the easement and acquisition of land for the Project in accordance with Pipelines Act 1985 and Land Acquisition and Compensation Act 1986.</p> <p>Consult relevant stakeholders in relation to construction access and operational activities in accordance with the Project Consultation Plan and Project EMMs S3 and S5.</p>	Construction and operation
LU4	<p>Interruptions to roads and railways</p> <p>Develop and implement Traffic Management Plans in accordance with EMM S3.</p> <p>Use trenchless construction methods to avoid disruptions to major roads and railway lines as far as reasonably practicable.</p>	Construction

Landscape and visual

Table 19-13 Landscape and visual environmental management measures

Discipline: Landscape and visual		Project phase
Objective	To avoid or minimise landscape and visual impacts during construction and operation.	
EMM ID	Environmental controls	
LV1	Avoid tree removal as far as reasonably practicable. Through detailed design and selection of construction methods, identify and demarcate trees to be retained (within the construction corridor) that provide screening to private property residences. Protect trees to be retained in accordance with AS-4970 Protection of trees on development sites.	Design, construction
LV2	Prior to construction, undertake an arborist report on trees that screen private residences from road reserves to be retained immediately bordering the construction corridor where trimming would be required. The arborist assessment must consider any potential impacts on trees from proposed construction activities in accordance with AS-4970 Protection of trees on development sites.	Construction
LV3	Remove machinery, materials and temporary infrastructure from site as soon as it is no longer required. Keep construction laydown areas tidy and minimise dust in accordance with EMM AQ1.	Construction
LV4	Manage light generated during night construction activities such as HDD, in general accordance with the requirements in Australian Standard AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting. Design lighting to minimise off-site light spill as far as reasonably practicable.	Construction
LV5	Where trees and shrubs within the approved construction area are lost and affect public places or existing screening of private residences from road reserves, replace trees and shrubs where practicable, reasonably requested and in consultation with the affected landholder and/or responsible authority. Undertake planting in accordance with the relevant bushfire management overlays for the area.	Construction
LV6	Introduce trees and shrubs to screen the mainline valve from roads and residences, if reasonably requested by affected landholders and with any necessary approvals granted (while meeting requirements of the Asset Protection Zone (APZ)). The planting of trees and shrubs must be undertaken in consultation with the affected landholder and/or responsible authority. Undertake planting in accordance with the relevant bushfire management overlays for the area.	Construction
LV7	Develop and implement a planting and remediation plan (applicable to screening trees directly impacted) where planting of trees and shrubs are proposed, in consultation with any affected landowners where requested. Planting will be undertaken with consideration of APA requirements for restricted uses within an easement and other necessary approvals granted. The plan must be reviewed by the responsible authority and/or affected landholder. The plan must outline a monitoring and defects period for planting and remediation.	Construction, Operation

Noise and vibration

Table 19-14 Noise and vibration environmental management measures

Discipline: Noise and vibration		Project phase
Objective	To minimise noise and vibration impacts during construction and operation	
EMM ID	Environmental controls	
NV1	<p>Manage construction noise and vibration in accordance with Chapter 4 (Noise and vibration) of EPA Publication 1834 Civil Construction, building and demolition guide.</p> <p>Prepare and implement a Construction Noise and Vibration Plan that includes the following general good practice measures:</p> <ul style="list-style-type: none"> • Use the lowest-noise and vibration work practices and equipment that meet the requirements of the job • Use broadband reversing alarms on construction vehicles and machinery in preference to 'beeper' reversing alarms. The site will be planned to minimise the need for reversing of vehicles • Turn off equipment and vehicles when not being used • Take care not to drop spoil and construction materials that cause peak noise events • Ensure equipment is operated in accordance with manufacturers requirements • Limit works to the 'normal working hours' (as defined in EPA Publication 1834) as far as reasonably practicable • Minimise use of loud equipment, generation of unnecessary noise and vibration, and the movement of vehicles on the construction corridor as far as reasonably practicable • Outline designated vehicle routes, parking locations and delivery hours to minimise noise impact on sensitive receptors • Undertake all reasonable and practicable actions to comply with the construction noise and vibration criteria as identified in EMM NV10. 	Construction
NV2	<p>Where the construction noise and/or vibration levels are predicted or measured to exceed applicable criteria (as identified in EMM NV10) after implementing the general noise mitigation practices, further mitigation measures must be considered and implemented as far as reasonably practicable. These measures may include:</p> <ul style="list-style-type: none"> • Adopting engineering noise controls at the source (eg silencer, mufflers, enclosures) by all practical means using current technology • Selection of quieter equipment • Installation of onsite barriers such as hoardings or temporary screens to provide a noise barrier between any particularly noisy construction works and the residences • Restricting the hours that the very noisy activities can occur (respite periods). 	Construction

Discipline: Noise and vibration		Project phase
NV3	Develop a detailed blast study and impact management plan in accordance with AS 2187.2 – 2006 Explosives- storage and use and other relevant documents to confirm blasting impacts and implement any further management measures required.	Construction
NV4	As far as reasonably practicable, increase the distance between a sensitive receptor and the noise/vibration source to reduce impacts. This can be achieved through strategic placement of stationary equipment (eg generators used for specific works) within the construction corridor to maximise the distance between source and receptor.	Construction
NV5	As far as reasonably practicable limit works to the 'normal working hours' (as defined in EPA Publication 1834). Identify activities required to be undertaken outside of normal working hours. The Construction Noise and Vibration Plan must include a clear rationale for defining works as 'low-noise', 'managed impact', or 'unavoidable' (as defined in EPA Publication 1834) and response strategies to mitigate the impacts of these works.	Construction
NV6	Where the residual noise and vibration impact (after mitigation measures are being implemented) exceeds the recommended construction noise and vibration criteria or construction works are planned close to the sensitive receptors, notify residents in advance about upcoming construction works. Send notification letters to residents of noise affected dwellings prior to the commencement of works which include information on: <ul style="list-style-type: none"> • Date and time of the noise intensive works • Expected durations of the noisiest activities • Use and provision of individual protective measures such as earplugs (for short duration impacts of 1 to 2 nights only and on a case-by case basis). Implement a complaints management register that documents: <ul style="list-style-type: none"> • Name of persons receiving complaint • Name of person making the complaint • Date and time of complaint • Nature of the complaint • Actions taken to rectify the issue • Actions to minimise risk of repeated occurrence • Name of person responsible for undertaking the required actions • Communication of response to the complaint. 	

Discipline: Noise and vibration		Project phase																					
	<p>Implement a complaint system that includes the following measures:</p> <ul style="list-style-type: none"> Establish a community liaison phone number and permanent site contact number so that noise related complaints can be received and addressed in a timely manner Determine whether any unusual activities were taking place at the time of the complaint that may have generated higher noise levels than usual and whether they may be attributed to the construction site activities <p>Implement additional mitigation measures where required and reasonably practicable.</p>																						
NV7	<p>Where the residual impact is predicted to exceed the recommended noise or vibration criterion for an extended period (after other mitigation measures have been implemented), discuss information on the impact with affected residents.</p> <p>Depending on the circumstances, off-site measures to minimise noise impact must be considered including alternative temporary accommodation or other respite option.</p>	Construction																					
NV8	<p>Where required, condition/dilapidation surveys may be offered to owners of buildings where high blast charges are required and the detailed blast study and impact management plan identifies possible impact to buildings.</p>	Construction																					
NV9	<p>Liaise with the Melbourne Water Bald Hill to Yan Yean pipeline and Major Road Projects Victoria Sunbury Road upgrade project teams to assess cumulative construction noise impacts. Implement additional noise mitigation measures if required.</p>	Construction																					
NV10	<p>Undertake all reasonable and practicable actions to comply with the construction noise criteria:</p> <table border="1"> <thead> <tr> <th>Sensitive receptor</th> <th>Period</th> <th>Noise criteria, LAeq</th> </tr> </thead> <tbody> <tr> <td>Residential</td> <td>EPA normal working hours</td> <td>75</td> </tr> <tr> <td>Educational institutions</td> <td>Mon-Fri: 7 am – 6 pm Sat: 7 am – 1 pm</td> <td>60</td> </tr> <tr> <td>Parks and recreational areas</td> <td></td> <td>65</td> </tr> <tr> <td>Community and commercial buildings</td> <td></td> <td>70</td> </tr> <tr> <td>Residential</td> <td>Evening and weekend Mon-Fri: 6 pm – 10 pm Sat: 1 pm – 10 pm Sundays and public holidays 7 am to 10 pm</td> <td>Noise level at any residential premises not to exceed background (LA₉₀, dB) noise by: <ul style="list-style-type: none"> 10 dBA or more for up to 18 months </td> </tr> <tr> <td>Residential</td> <td>Night-time Mon-Sun: 10 pm – 7 am</td> <td>Noise inaudible within a habitable room of any residential premises. Background +0 dB(A) (external)</td> </tr> </tbody> </table>	Sensitive receptor	Period	Noise criteria, LAeq	Residential	EPA normal working hours	75	Educational institutions	Mon-Fri: 7 am – 6 pm Sat: 7 am – 1 pm	60	Parks and recreational areas		65	Community and commercial buildings		70	Residential	Evening and weekend Mon-Fri: 6 pm – 10 pm Sat: 1 pm – 10 pm Sundays and public holidays 7 am to 10 pm	Noise level at any residential premises not to exceed background (LA ₉₀ , dB) noise by: <ul style="list-style-type: none"> 10 dBA or more for up to 18 months 	Residential	Night-time Mon-Sun: 10 pm – 7 am	Noise inaudible within a habitable room of any residential premises. Background +0 dB(A) (external)	Construction
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Residential	Night-time Mon-Sun: 10 pm – 7 am	Noise inaudible within a habitable room of any residential premises. Background +0 dB(A) (external)																					

Discipline: Noise and vibration						Project phase
Implement management measures if vibration from construction is predicted to exceed the standards for structural damage as identified in the following:						
Group	Type of structure	Vibration velocity (PPV) in mm/s				Vibration at horizontal plane of highest floor (all frequencies)
		At foundation at a frequency of				
		< 10 Hz	10 Hz–50 Hz	50 Hz–100 Hz		
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20–40	40–50	40	
2	Dwellings and buildings of similar design and/or occupancy	5	5–15	15–20	15	
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (eg heritage-listed)	3	3–8	8–10	8	
Implement management measures if vibration from construction is predicted to exceed the standards for structural damage to existing underground pipelines:						
Pipe material					Guideline value on pipe (mm/s)	
Steel (including welded pipes)					100	
Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with/without flanges)					80	
Masonry, plastic					50	
Implement management measures if vibration from construction exceeds the human perception of 0.3 mm/s at sensitive receptors.						

Safety

Table 19-15 Safety environmental management measures

Discipline: Safety		Project phase
Objective	To avoid safety impacts during construction and operation	
EMM ID	Environmental controls	
SA1	<p>Pipeline, MLV and compressor works safety standards</p> <p>Design, construct and operate the pipeline, MLV and compressor works in accordance with AS/NZS 2885, including:</p> <ul style="list-style-type: none"> • Completion of identification/assessment of threats and mitigating strategies as part of detailed design • Maintenance and inspections of the pipeline in accordance with APA procedures and AS/NZS 2885. <p>Maintain and inspect the MLVs and the Wollert compressor station at a frequency in accordance with APA's monitoring regime and procedures. This must include vegetation management, valve and compressor operation and corrective maintenance.</p>	Design, construction and operation
SA2	<p>Process control system and automated emergency shutdown systems</p> <p>Monitor the operation of the WORM using an automated process control system, with the capability of initiating an emergency shutdown, local alarms and remote alarms. Ensure the shutdown systems are fail-safe and designed with redundancies.</p> <p>Provide training to personnel, in field and in the control room.</p>	Design, and operation
SA3	<p>Fire protection</p> <p>Develop and implement a Health and Safety Management Plan that requires:</p> <ul style="list-style-type: none"> • Provision of active fire protection and suppression for liquid fires in the turbine enclosure • Storage of diesel in storage tanks in accordance with AS 1940:2017 and provision of foam for firefighting purposes at diesel stations and implementation of routine monitoring to manage the risk of any fire events. <p>Manage diesel in accordance with the HSEMS, including the creation of Emergency Response Plan(s).</p>	Construction and operation
SA4	<p>Emergency response plans</p> <p>Develop and implement emergency response plans, such as for spills, for both the construction and operations phases of the Project.</p>	Construction and operation
SA5	<p>Bushfire Management Plan</p> <p>Review and update the existing APA Bushfire Management Plan to consider the new infrastructure introduced by the WORM Project in consultation with relevant stakeholders including the Country Fire Authority and Fire Rescue Victoria.</p>	Construction and operation
SA6	<p>Traffic Management Plan</p> <p>Develop and implement a Traffic Management Plan to manage risks to both workers and the public on the movement of vehicles on public roads and at site access points as per EMM S3.</p>	Construction

Social

Table 19-16 Social environmental measures

Discipline: Social		Project phase
Objective	To minimise potential social impacts associated with construction and operation of the Project.	
EMM ID	Environmental controls	
S1	<p>Reduce community disruption:</p> <ul style="list-style-type: none"> Construct the Project in accordance with EMMs AQ1, AQ3, AQ4, B7, LV1, LV2, LV5, NV1, NV2, NV3, NV4, NV5, NV6, and NV7 to minimise noise, vibration, air quality, and landscape and visual amenity impacts to residents directly adjacent to the alignment, community facilities and recreation areas. 	Construction
S2	<p>Minimise property impacts:</p> <ul style="list-style-type: none"> Minimise the risk of property damage due to construction of the Project by carrying out construction activities in accordance with the mitigation measures detailed in the Agricultural Impact Assessment (Appendix-C). Refer EMM S7 to EMM S23. 	Construction
S3	<p>Community and residential access and connectivity:</p> <ul style="list-style-type: none"> The following must be implemented to manage potential impacts to local access roads during construction: <ol style="list-style-type: none"> Approved Traffic Management Plans (TMPs) to mitigate risks to workers and the public arising from the movement of construction vehicles on public roads and at site access points Stakeholder and communications arrangements in accordance with the Project Consultation Plan (Refer to EMM S6) Measures to prevent impacts to emergency services access. 	Construction
S4	<p>Land access:</p> <ul style="list-style-type: none"> Prior to any works commencing on a property, develop agreements with the landowners and occupiers regarding the use of existing roads or tracks, the selection of new access routes and any property-specific measures to implement during construction and operation, such as: <ul style="list-style-type: none"> Access across the construction area Relocation/duplication of facilities and infrastructure. Inform land owners and occupiers of the construction commencement, and details of the proposed construction program, in accordance with the Project Consultation Plan (EMM S6). 	Construction Operation

Discipline: Social		Project phase
S5	Source workers, supplies and services during construction from the regional study area as far as reasonably practicable. Support regional employment and purchasing by requiring the main construction contractor to detail mechanisms to provide for regional employment and purchasing during the tender phase. The adequacy of this plan must be a consideration in the selection of the preferred construction contractor. Once engaged, contractors must be required to report on performance against set criteria.	Construction
S6	Develop and implement a Project Consultation Plan to facilitate ongoing consultation with relevant stakeholders throughout the Project's planning and construction. The Plan must include: <ul style="list-style-type: none"> • The approach to communicating and engaging with the community and potentially affected stakeholders in relation to: <ul style="list-style-type: none"> – The likely timing and nature of the Project's construction activities and potential impacts – Changes to transport conditions. • The mechanisms and timing for communicating Project updates for all stakeholders through multiple channels (website, newsletters, local media) • The approach for communicating and engaging with vulnerable groups, including community groups and residents that do not speak English. Translation services will be promoted as and where appropriate for specific project communications • Measures to evaluate the effectiveness of the communication and engagement under the Plan • Arrangements for receipt and management of feedback and complaints, including timeframes for responding to complaints. 	Construction
S7	Consult with relevant landholders regarding property-specific measures to implement during construction and operations including: <ol style="list-style-type: none"> a Access across the construction corridor during construction b Stock management c Biosecurity. 	Design and construction
S8	Undertake all reasonable steps to enter into an agreement with each landholder on fair and reasonable terms. Agreements must include commitments to agreed measures to minimise the impact of the Project on landholder activities.	Design and construction
S9	Compile and maintain a schedule of Landholder Agreements, documenting actions to be carried out on each property.	Design and construction
S10	All third party services within the easement, including on farm infrastructure, must be identified and marked on the ground in advance of open trench construction activities.	Design and construction
S11	Manage interfaces with all identified third party services and water lines so that their operation can continue during pipeline construction, wherever reasonably practicable.	Construction
S12	Develop and implement biosecurity management measures for the construction phase of the Project in accordance with the Catchment and Land Protection Act 1994.	Construction

Discipline: Social		Project phase
S13	Implement biosecurity management measures in accordance with the VTS Operational Environmental Management Plan that has been prepared for use during the operation of the Victoria section of the VTS only in accordance with the Pipelines Act 2005 and Pipelines Regulations 2017.	Operations
S14	Progressively commence and complete reinstatement as soon as reasonably practicable post-construction.	Construction
S15	Reprofile the construction corridor to original contours or to new, stable contours (where it is not reasonably practical to re-profile to original contour) in line with contractor construction specification.	Construction
S16	Apply soil amelioration and fertiliser where required as determined by soil assessments and tailored to rehabilitation requirements in consultation with the landholder.	Construction
S17	Compact the trench backfill as per APA's performance specification and/or contractor's construction specifications. Degree of compaction to take into account design load limits on the pipe whilst minimising changes to pre-construction groundwater conditions.	Construction
S18	Implement compaction relief by ripping or scarifying areas of the construction corridor which have been compacted by construction activities. Particular attention must be given to areas subject to regular watering and high traffic volume.	Construction
S19	Reinstate all access tracks, fences and gates post construction in consultation with landholders and any relevant third parties.	Construction
S20	Install permanent access gates post construction, where required at fence intersections and for access to MLV compounds which will be completely fenced.	Construction
S21	Where seeding is adopted to facilitate prompt revegetation and soil stabilisation, consider the following principles: <ul style="list-style-type: none"> a Formulate seed mixtures with consideration of the vegetation composition of the areas adjacent to the construction corridor and in consultation with the relevant landholder b Sterile seed stock (cover crop) may be used to provide short term surface stability c Disperse seed evenly dispersed over the disturbed area d Seeding to take place as soon as reasonably practicable after reinstatement of the soil profile e A suitable fertilizer may be applied depending on soil conditions and any landholder requirements. 	Construction
S22	Monitor the condition of the construction corridor and other disturbed areas post construction with remedial measures undertaken, as required, with the aim that all disturbed areas are re-profiled to a stable landform consistent with original contours and drainage lines, or proposed new stable contours, and vegetated with a self-sustaining, non-pest species groundcover.	Construction and operation
S23	Implement reasonable and practicable measures to avoid impacts to landholder national vendor declarations and other requirements under applicable livestock production assurance programs due to the use of herbicides, pesticides and other chemicals during construction and operations. Such measures must be informed by consultation with Meat and Livestock Australia.	Construction and operation

Surface water

Table 19-17 Surface water environmental management measures

Discipline: Surface water		Project phase
Objective	To avoid or minimise potential impacts to flow paths, surface water quality and floodplain function during construction and operation.	
EMM ID	Environmental controls	
SW1	<p>Managing runoff from adjacent construction areas, discharge from dewatering activities and spills/leaks</p> <p>Implement measures to minimise impacts on downstream environments due to construction activities and potential runoff, including:</p> <ul style="list-style-type: none"> • Where practicable, construct all trenched crossings of ephemeral watercourses during no or low flow conditions and reinstated as soon as reasonably practicable • Form discrete stockpile segments (ie rather than a continuous row of stockpile materials) to prevent causing water to pond on the upstream side • Where drainage lines intersect the construction corridor, place flow diversion measures upstream of soil stockpiles • Direct surface water runoff from external catchments through regular gaps in soil stockpiles where erosion and sediment controls are installed to allow runoff to pass over the construction corridor at a controlled location without causing erosion. • Implement erosion and sediment controls for the site with reference to International Erosion Control Association Best Practice Erosion and Sediment Control, Appendix P – Land Based Pipeline Construction (IECA, 2008) • Monitor weather forecasts to manage the pipeline works with the intent of avoiding open trench works at each individual waterway crossing when high rainfall events are expected • Collect and treat water from dewatering of trenches due to rainfall prior to discharge into the waterways (eg grass filtration) if turbidity exceeds requirements in accordance with SEPP (Waters). Manage non- contaminated groundwater and surface water run-off that enters the open trenches and bell holes in accordance with SEPP (Waters). Discharge to land (ie grass filtration) must not occur within 100 metres of watercourses • Manage any spills and/or leaks during construction in accordance with mitigation measures described in EES Technical Report E: Contamination assessment (EMM C6). <p>Implement measures to minimise impacts due to discharge from Trenchless construction sites including, where reasonably practicable:</p> <ul style="list-style-type: none"> • Install a combination of earth bunds and drainage channels around the upper edges of trenchless drilling sites to divert runoff away from the site and prevent it from mixing with material used during drilling operations • Install sump pits at the bottom of trenchless drilling sites to capture any runoff from drilling compound and construct earth bunds around the sump pits to prevent spillage from entering the waterway 	Construction

Discipline: Surface water		Project phase
	<ul style="list-style-type: none"> Construct bunds around all facilities that are involved in the HDD activities including around slurry operations and pumping of drilling mud Manage trenchless bores and drilling fluids in accordance with mitigation measures described in EES Technical Report E: Contamination (EMM C9) and EES Technical Report D: Land stability and ground movement (EMM GM5 and EMM GM6). 	
SW2	<p>Waterway and floodplain function (construction)</p> <p>Implement measures to minimise impacts to the function of waterways and floodplains during construction and allow flow to be conveyed across the construction area, including:</p> <ul style="list-style-type: none"> Form discrete stockpile segments (ie rather than a continuous row of stockpile materials) to prevent causing water to pond on the upstream side Provide regular gaps in stockpiles to allow flood water to pass through Avoid stockpiling material near waterways. Material must be located away from the top of banks so that there is no restriction to the flow conveyance area To maintain the waterway and floodplain function, the Project must compact soil, scarify and re-profile the land to original contours as far as reasonably practicable. 	Construction
SW3	<p>Site Rehabilitation measures for disturbance caused by open cut trench construction</p> <p>This will include all standard construction management measures and site rehabilitation measures outlined in Table 8-7 of EES Technical report B Surface water. Implement site rehabilitation measures including:</p> <ul style="list-style-type: none"> Compact soil, scarify and re-profile the land to original contours to maintain the waterway and floodplain function Restrict any operational works to the easement only, with landholder requirements determined prior to commencement of works Restore waterway bed and banks as soon as reasonably practicable after pipe installation and backfilling works Restore banks by grading (nominally 1:3 grade. and revegetation), and smoothly transition to the undisturbed banks (refer to APA standard drawing no. 530-DWG-L-5008) Restore waterway bed to preconstruction profile, and smoothly transition to the upstream and downstream undisturbed bed condition Provide temporary protection such as geofabric or erosion matting on bed and banks to prevent erosion until vegetation has established Carry out routine inspections (eg minimum every six months plus potentially following any significant flood event) to monitor effectiveness of civil rehabilitation works (earthworks and rock beaching works) during the first 12 months post-construction. Where monitoring identifies defects or deficiency in civil rehabilitation works, appropriate rectification measures will need to be implemented. Establishment of vegetation cover within the first three months post construction. Following establishment of vegetation/ground cover, routine maintenance to be undertaken for a period between 12- 24 months to monitor and manage successful reinstatement Include site specific application of rock beaching protection as part of site rehabilitation where required. 	Construction and operation

Discipline: Surface water	Project phase
<p>SW4 Control measures for open cut trenching construction and watercourse management</p> <p>Where open cut trenching is required for a watercourse implement the following mitigation measures:</p> <ul style="list-style-type: none"> • Implement erosion and sediment controls (ESC) for the site with reference to International Erosion Control Association Best Practice Erosion and Sediment Control, Appendix P - Land Based Pipeline Construction (IECA, 2008) • Construct trenched crossings of ephemeral watercourses during no or low flow conditions where reasonably practicable • Monitor weather forecasts to minimise the likelihood of having open trenches at the waterway when high rainfall events are expected • Remove all obstructions to flow after the pipe has been laid and backfilled • Assemble and prepare the pipeline so that it can be installed as soon as reasonably practicable once the trenching over the watercourse has been undertaken • Reinstate the exposed trench within the watercourse and riparian zones as soon as reasonably practicable following the installation of the pipeline • Design waterway reinstatement to avoid future erosion over the pipeline alignment and to provide bank stability at the crossing location as the same or better than prior to construction • Provide temporary erosion and sediment control as needed to prevent erosion and scour until the vegetation has established throughout the post-construction period (eg up to 12 months depending on establishment of vegetation) • Undertake visual monitoring downstream of the trench during flow events if the trench has not been reinstated • Provide temporary flow diversions if there is permanent flow in the waterway. Flow diversion measures may include pumps to ensure that water can be moved from one side of trench to the other, screened inlets (or other appropriate equipment) to minimise the entrapment of aquatic fauna and outlet structures that are designed to avoid scouring of the channel. Measures must be in accordance with International Erosion Control Association Best Practice Erosion and Sediment Control, Appendix P – Land Based Pipeline Construction (IECA, 2008) • Restore waterway bed and banks as soon as reasonably practicable after pipe installation and backfilling works • Carry out bed and bank restoration, temporary protection and monitoring of establishment works as part of the site rehabilitation • Prepare a construction management plan for Merri Creek works including site works methodology, construction timeframes and durations, and water quality monitoring frequency and parameters for APA approval • Groundwater levels and flows will be managed in accordance with EMM GW1 described in EES Technical Report C Groundwater. 	<p>Construction</p>

Discipline: Surface water		Project phase
SW5	<p>Implement a Monitoring Program</p> <p>Develop and implement a monitoring program, for the main waterways to determine if there are any construction related impacts. This must occur in Merri Creek and Jacksons Creek where open cut construction will occur.</p> <p>The monitoring program must adopt a control/impact approach with water quality monitored at a suitable distance of 20 - 200 metres from the Project Area both upstream and downstream of the works to establish background conditions. The monitoring program must be developed and undertaken in accordance with SEPP (Waters) and ANZG Australia Guidelines for Water Quality Monitoring and Reporting (2018).</p> <p>Water quality monitoring must occur immediately prior to construction to establish background conditions upstream and downstream of the Project area. Monitoring must then occur on a continual basis during construction (eg at appropriate intervals) with comparisons of upstream and downstream conditions used to infer if there is a downstream impact such as increased turbidity.</p> <p>The biodiversity monitoring must occur at the two sites upstream and downstream of the Project Area prior to construction to establish background conditions. A final biodiversity and water quality monitoring must be repeated post-construction to identify any potential impacts from the construction and rehabilitation works.</p> <p>Should the monitoring determine adverse residual impacts on surface water and biodiversity values, contingency measures must be developed and implemented. These remedial actions may include:</p> <ul style="list-style-type: none"> • Identifying, repairing and redesign failed management measures aimed at reducing impacts due to erosion and sedimentation • Further stabilise banks and beds at waterway crossing to reduce erosion potential and sedimentation • Inspect pumping of water from coffer dams and/or other areas if water quality exceeds background conditions and implement further management measures. 	Design, construction
SW6	<p>Periodic Visual monitoring</p> <p>Carry out periodic routine observations (eg annually plus following any major flood events) capturing site conditions on an ongoing basis during operation for Jacksons Creek and Merri Creek.</p> <p>Incorporate specific details of the visual monitoring into the OEMP including triggers for remedial action when monitoring and inspection results indicate a potential problem to the environment.</p>	Operation

Discipline: Surface water		Project phase
SW7	<p>Design and Construction Management (Jacksons Creek)</p> <p>The detailed design must include the following measures:</p> <ul style="list-style-type: none"> • Minimum depth: 2m below bed invert level • Length of flat grade pipe (extend from top bank to top of bank) • Pipe protection: concrete encasement, concrete coated pipe or slab protection to be considered below the ground surface before backfilling. <p>Develop site specific construction management measures for Jacksons Creek:</p> <ul style="list-style-type: none"> • Timing of works: Summer-autumn only • Flow management: Prepare a flow management work method statement to detail reliance on pumping, cofferdams (partial or full), temporary flume pipes • Weather Forecast: align timing of works with long term weather forecast without significant rain • Trench exposure: Limit the longitudinal extent of trench exposure to the extent reasonably practicable (ie to what could be backfilled within 24 hours) • Construction duration: limit time for trench exposure and construction duration between bank to bank works to the extent reasonably practicable (eg pre-prepare the pipe works) • Backfilling works: Backfilling in accordance with appropriate MWC standard drawings for pipe trenching and backfilling and compaction requirements • Contingency works: Have available backfill and stockpile of rock beaching to protect exposed trench in lieu of a late change or unexpected forecast weather event • Prepare a construction management plan for Jacksons Creek works including site works methodology, construction timeframes and durations, and water quality monitoring frequency and parameters for APA approval. 	Design, construction and operation
SW8	<ul style="list-style-type: none"> • Site Rehabilitation (Jacksons Creek) • Develop and implement site specific rehabilitation for Jacksons Creek including: • Timing: Restore waterway bed and banks in accordance with site-specific requirements after pipe installation and backfilling works • Bed & Bank restoration: bed and bank rock protection in accordance with MWC Service Crossing Open Trench Medium Creek Crossing - guidelines. This may be a combination of lower bank rock beaching and upper bank and floodplain revegetation. The works must smoothly transition to upstream and downstream undisturbed conditions • Rehabilitate and reinstate Jacksons Creek in accordance with EMM B7 described in EES Technical Report A: Biodiversity and habitats. 	Construction and operation

Discipline: Surface water		Project phase
	<ul style="list-style-type: none"> Carry out routine inspections (eg minimum every two months or following any significant flood event) to monitor effectiveness of civil rehabilitation works (earthworks and rock beaching works) during the first 12 months post-construction. Where monitoring identifies defects or deficiency in civil rehabilitation works, appropriate rectification measures will need to be implemented. Establishment of planting and vegetation for the first three months post construction. Following planting and vegetation establishment period, routine maintenance (eg monthly during autumn and spring) to be undertaken for a period between 12-24 months to monitor and manage successful vegetation establishment. 	
SW9	<p>Develop and implement a Flood Management and Response Plan (FMRP) for Jacksons Creek, Deep Creek, Kalkallo Creek and Merri Creek</p> <p>Develop and implement a Flood Management and Response Plan during construction for Jacksons Creek, Deep Creek, Kalkallo Creek and Merri Creek. The FMRP must include but not limited to:</p> <ul style="list-style-type: none"> Measures to manage flood risk during construction including end of day requirements to limit flood risk exposure overnight Limiting footprint of disturbance of works within waterways and floodplains to limit flood risk exposure at any point in time to the extent reasonably practicable Placement of construction equipment and stockpile materials above threshold flood levels Flood warning communication protocols and emergency response procedures. <p>As part of the detailed design, flood modelling of the existing conditions for the waterways must be undertaken and verified by MWC to inform the FMRP and to understand the flood response within the floodplain for the range of possible design events.</p> <p>The plan could identify restrictions on construction activities within threshold flood extents, as well as contingency planning if a flood were to occur.</p> <p>A specific FMRP must be prepared for Kalkallo Retarding Basin and the various waterways and drainage lines that enter the Kalkallo Retarding Basin to consider the flood response within the basin and incoming waterways during construction.</p>	Construction
SW10	<p>Managing pipeline design solution for waterway crossings within a Drainage Services Scheme (DSS)</p> <p>To minimise potential impacts to the pipeline and to account for ongoing future development within the DSS, develop the pipeline detailed design and alignment in consultation with Melbourne Water Corporation (MWC) to inform the design requirements at waterway crossings that are within a DSS. This is relevant for the crossings at Kalkallo Creek and the Tributary to Merri Creek.</p>	Design