EES chapter 6 – EES assessment framework

Warburton Mountain Bike Destination

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6.0 EES Assessment framework

This chapter outlines the assessment framework adopted to undertake the assessment of environmental effects for the Warburton Mountain Bike Destination (the project) presented in the environment effects statement (EES).

6.1 Overview

An overview of the assessment framework used to evaluate the project as described in **Chapter 3: Project description** is shown in Figure 6-1. Under the framework, the environmental assessments were guided by an evaluation framework that consists of applicable legislation, policy and standards together with scoping requirements, set by the Victorian Minister for Planning, incorporating input from the Commonwealth Department of Agriculture, Water and Environment in relation to Matters of National Environmental Significance (MNES).

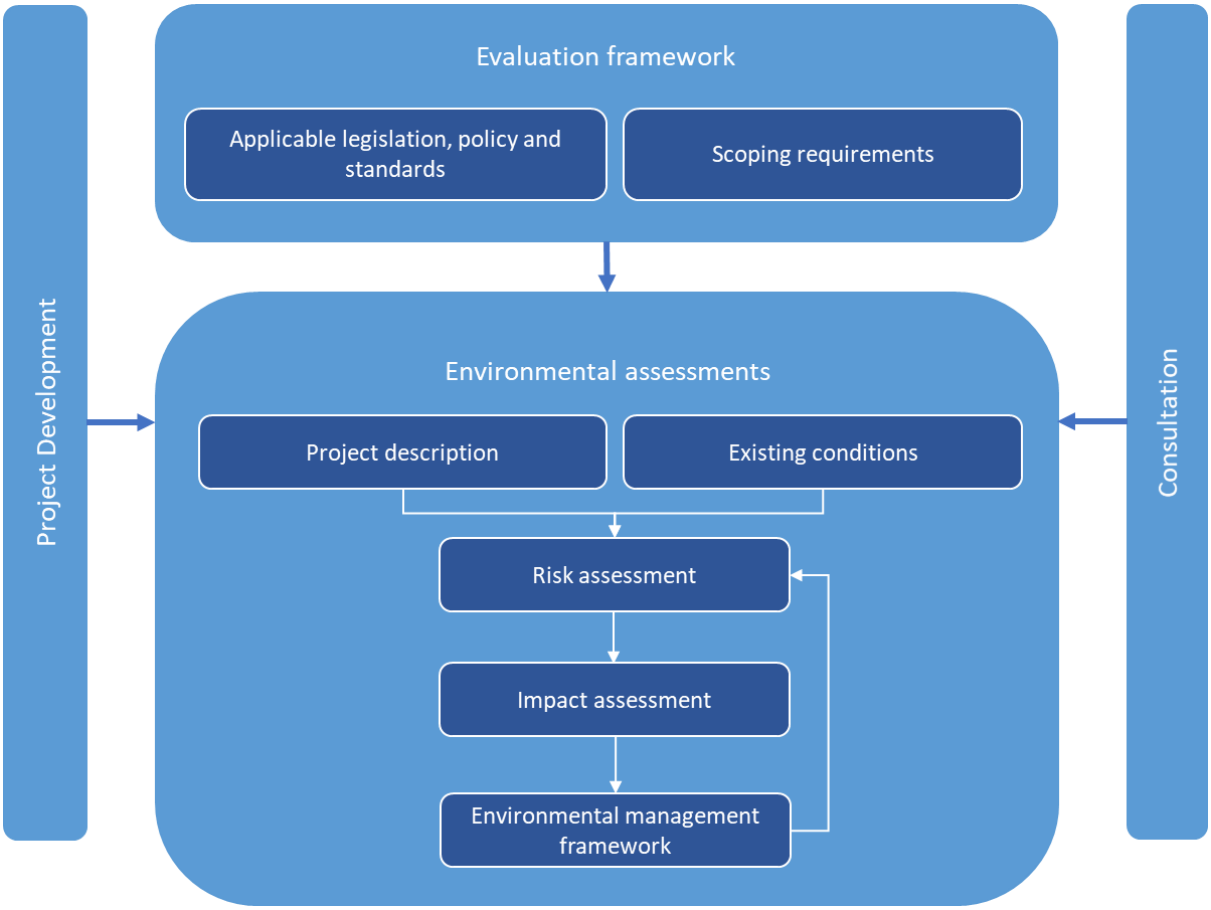

Figure 6-1 Overview of EES assessment framework

The environmental assessments undertaken encompass consideration of physical systems, ecological systems, human communities, land use effects and economic effects as relevant to the project. Each environmental assessment has been undertaken using a precautionary approach and has typically involved the following steps:

- Characterisation of the existing environmental conditions.
- Review of the project design and the proposed construction and operation activities in the context of the existing conditions to determine the location, type, timing, intensity, duration and spatial distribution of project components and activities in relation to sensitive receptors.
- An initial risk assessment to evaluate the likelihood and consequence of environmental risks associated with proposed project activities assuming adoption of standard mitigation measures to determine the relative importance of environmental issues associated with the project.

- Assessment of potential direct and indirect environmental impacts to analyse the spatial and temporal extent, magnitude and nature of the potential impacts giving consideration to the sensitivity and significance of affected receptors.
- Evaluation of the predicted outcomes against applicable legislation, policy and standards.
- Evaluation of the potential for cumulative impacts caused by impacts of the project in combination with impacts of other projects that are taking place or are proposed nearby.
- Identification of mitigation measures where necessary, to address potentially significant environmental effects.
- Identification and evaluation of the residual environmental effects including magnitude, duration and extent, taking into account the proposed mitigation measures and their likely effectiveness.

Based on the findings of the environmental assessments, an environmental management framework has been established to monitor and evaluate environmental management and contingency measures in relation to the residual environmental effects. The environmental management framework specifies the committed mitigation and management measures and describes the roles and responsibilities for implementation throughout project construction, operation and decommissioning. The environmental management framework is described fully in **Chapter 16: Environmental management framework**.

6.2 Scoping requirements and evaluation objectives

The assessment framework for the project responds to the scoping requirements, incorporating the evaluation objectives. The evaluation objectives identify desired environmental outcomes for the project as established by the Minister for Planning. Table 6-1 presents the evaluation objectives and describes the relevant EES chapter, technical report or attachment that addresses the objectives.

Table 6-1 EES evaluation objectives and location in EES documentation

Theme	Evaluation objective	Relevant EES chapter, technical report and attachment
Biodiversity and Habitats	Avoid, and where avoidance is not possible, minimise potential adverse effects on native vegetation and animals (particularly listed threatened species and their habitat and listed ecological communities), as well as address offset requirements consistent with state and Commonwealth policies.	Chapter 8: Biodiversity and habitats Chapter 14: Matters of National Environmental Significance Technical Report A: Biodiversity and Habitats Attachment IV: Biodiversity Offset Strategy and Plan
Water and catchment values	Maintain the functions and values of groundwater, surface water and floodplain environments and minimise effects on water quality and beneficial uses.	Chapter 9: Surface water, groundwater and geotechnical hazards Technical Report B: Surface Water, Groundwater and Geotechnical Hazards
Social, economic, amenity and land use	Minimise potential adverse social, economic, amenity and land use effects at local and regional scales.	Chapter 11: Land use and planning Chapter 12: Socio-economic Chapter 13: Transport Technical Report D: Land Use and Planning Technical Report E: Socio-economic Technical Report F: Transport
Cultural heritage	Avoid, or minimise where avoidance is not possible, adverse effects on Aboriginal and historic cultural heritage.	Chapter 10: Cultural heritage Technical Report C: Cultural Heritage

6.3 Environmental assessments

6.3.1 Existing conditions

Characterisation of existing environmental conditions sets environmental context for the project and also provides the baseline conditions for the subsequent impact assessments. It includes identifying and describing the existing assets, values and uses that could be affected by the project, including sensitivity and significance.

Each of the six technical reports that have been prepared for the EES include an existing conditions assessment, which collectively provide the environmental context for the project. The methods used to characterise existing conditions vary by topic and the approach used has been outlined in each EES technical report. Typically, the steps involved both desktop research and field investigations.

The existing conditions for each of the technical reports are summarised in the EES chapters.

6.3.2 Risk assessment

6.3.2.1 Overview of risk assessment method

The risk-based approach is a requirement of the Ministerial guidelines for assessment of environmental effects under the *Environment Effects Act 1978 (Vic)* (Department of Sustainability and Environment (DSE), 2006):

'A risk-based approach should be adopted in the assessment of environmental effects so that suitable, intensive, best practice methods can be applied to accurately assess those matters that involve relatively high levels of risk of significant adverse effects and to guide the design of strategies to manage these risks. Simpler or less comprehensive methods of investigation may be applied to matters that can be shown to involve lower levels of risk.

Implementation of a risk-based approach means that a staged study design may be appropriate. The initial phase of investigation will characterise environmental assets that may be affected, potential threats arising from a project and the potential environmental consequences. This phase will enable the design of any necessary further studies proportionate to the risk to analyse the consequences and likelihood of adverse effects.'

The risk assessment undertaken is consistent with AS/NZS ISO 31000:2018 Risk Management Process and involves risk identification, risk analysis, risk evaluation and risk treatment.

The following tasks have been completed to identify, analyse and evaluate risks:

- Use existing environmental conditions and identify applicable legislation and policy to establish the context for the risk assessment.
- Develop likelihood and consequence criteria and a risk matrix.
- Consider construction, operational and decommissioning activities in the context of existing conditions to determine risk pathways.
- Identify standard controls and requirements to mitigate identified risks.
- Assign likelihood and consequence ratings for each risk to determine risk ratings considering design, proposed activities and standard mitigation.

The assessment of risk combines the consequences of a threat and the likelihood of that consequence occurring, resulting in an overall risk rating. Any risk with an overall rating of medium or above required further analysis in line with the impact assessment methods and approach to mitigation strategy, outlined in Section 6.3.3.1.

Risk can be defined as a combination of:

- The likelihood of the consequence event occurring
- The magnitude of potential consequences of an event occurring.

The selected method to assign likelihood and consequence levels and determine a risk rating for each risk pathway is explained in the following sections.

6.3.2.2 Assignment of likelihood level

Likelihood is the combination of the chance of an event and the chance of the identified consequence occurring. The likelihood criteria range from 'rare' where the event and consequence may occur only in exceptional circumstances to 'almost certain' where the event and consequence is expected to occur

in most circumstances. Likelihoods were assigned by technical specialists guided by the levels presented in Table 6-2.

Table 6-2 Guide to likelihood levels

Level	Description
Rare	The event could occur but only in exceptional circumstances
Unlikely	The event could occur but is not expected in the course of normal circumstances
Possible	The event may occur in the course of normal circumstances
Likely	The event will probably occur in the course of most normal circumstances
Almost certain	The event is expected to occur in the course of most normal circumstances

6.3.2.3 Assignment of consequence level

Consequence refers to the 'worst case scenario' outcome of an event affecting an asset, value or use. Table 6-3 presents the consequence framework describing the consequence levels from 'insignificant' to 'severe'. The consequence criteria have been developed in the form of project-wide criteria rather than discipline specific, to enable a consistent assessment of consequences across a range of potential environmental effects.

Consequence criteria were assigned based on the maximum credible consequence of the risk pathway occurring. Where uncertainty regarding consequences existed, a conservative approach to assessing risk has been adopted.

Consequence criteria considered the following characteristics:

- Spatial extent of impact
- Duration and reversibility of potential impacts
- Sensitivity and significance of the receiving environment
- Magnitude, or severity of potential impact.

The descriptors for these characteristics guided the specialists to consistently define and rate the maximum credible consequence. In applying the severity criteria specialists have taken into account discipline specific factors such as legislative status, vulnerability and rarity of assets, values and uses. Severity has been assigned a greater weighting than extent and duration as this is considered the most important characteristic.

Each risk pathway has been assigned a level of consequence taking into account the guidance in Table 6-3. That consequence level, together with the likelihood level, has been used to determine a risk rating in accordance with the risk matrix presented in Section 6.3.2.4.

Table 6-3 Guide to consequence levels

Level	Criteria
Insignificant	• No detectable changes or very short-term and localised. • Readily reversible (insignificant) impact (<1 year for recovery). • Resilient[1] or highly disturbed receiving environment or population. • No impact[2] to native vegetation or habitat. • No impact on critical habitats such as Cool Temperate Rainforest / Cool Temperate Mixed Forest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum. • Heritage: No observable impact to tangible and intangible heritage values, sites remain intact and unaffected. • Social: No measurable impact to local character, amenity and access to public space/facilities. General community support, no impact to economy. • Transport: Existing transport services unaffected and transport infrastructure can comfortably accommodate the project. Transport safety unaffected. • Surface water / groundwater: No detectable changes to water levels, flow or quality with no measurable effect on assets, values or uses. • Geotechnical hazards: No detectable changes to land stability/erosion.
Minor	• Short-term localised detectable changes. • Impact likely to be readily reversible (within 5 years for recovery). • Resilient or disturbed receiving environment or population. • No impacts on critical habitats such as Cool Temperate Rainforest / Cool Temperate Mixed Forest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum. • Heritage: Low degree of disturbance or low degree of observable impact to locally significant heritage values. No impact to state or nationally significant heritage values. • Social: Low degree of impact to local character, amenity and access to public space/facilities. Individual opposition to the project, short-term isolated economic issues. • Transport: Existing transport services experience isolated and short-term disruption and transport infrastructure can accommodate the project. Transport safety not materially affected. • Surface water / groundwater: Changes to water levels, flow or quality with isolated and short-term effect on assets, values or uses. • Geotechnical hazards: Changes to land stability/erosion with isolated and short-term effect on assets, values and uses.
Moderate	• Short or medium-term detectable changes at a number of locations within the study area. • Impact likely to be medium-term and reversible (5–10 years for recovery). • Undisturbed receiving environment or population. • Short-term, localised impacts on critical habitats such as Cool Temperate Rainforest / Cool Temperate Mixed Forest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum. • Heritage: Limited degree of impact to heritage values of state or local significance. • Social: Limited degree of impact to local character, amenity and access to public space/facilities, some community resistance, economic pressure on community. • Transport: Existing transport services experience minor but ongoing disruption or transport infrastructure can accommodate the project except for occasional short periods. Transport safety reduced somewhat but safety levels are satisfactory. • Surface water / groundwater: Changes to water levels, flow or quality with moderate effect on assets, values or uses. • Geotechnical hazards: Changes to land stability/erosion with moderate effect on assets, values or uses.
Major	• Long-term changes that are significant regionally. • Impact likely to be medium to long-term and potentially irreversible (> 10 years to recover). • Sensitive receiving environment or population. • Material impacts on critical habitats such as Cool Temperate Rainforest / Cool Temperate Mixed Forest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum. • Heritage: High degree of impact to heritage values of State or local significance. • Social: High degree of impact to local character, amenity and access to public space/facilities. Vocal community conflict, declining economic stability. • Transport: Existing transport services experience significant and ongoing disruption or transport infrastructure is strained for extended periods due to the project. Transport safety reduced with the potential for injuries. • Surface water / groundwater: Significant changes to water levels, flow or quality with assets, values or uses significantly compromised.

Level	Criteria
	• Geotechnical hazards: Significant changes to land stability/erosion with assets, values or uses significantly compromised.
Severe	• Permanent changes that are significant at a Victorian or Commonwealth level. • Impact likely to be long-term and irreversible. • Highly sensitive receiving environment or population. • Significant impacts on critical habitats such as Cool Temperate Rainforest / Cool Temperate Mixed Forest, Mount Donna Buang Wingless Stonefly or Leadbeater's Possum. • Heritage: Very high degree of heritage destruction or loss of heritage values. • Social: Very high degree of impact to local character, amenity and access to public space/facilities. Public backlash, economic distress. • Transport: Existing transport services cease to function, and transport infrastructure is constantly overextended due to the project. Transport safety is reduced with the potential for fatalities. • Surface water / groundwater: Extensive changes to water levels, flow or quality with assets, values or uses irreversibly compromised. • Geotechnical hazards: Extensive changes to land stability/erosion with assets, values or uses irreversibly compromised.

[1] Resilient: an environment or population that is able to withstand change and/or difficult conditions or recover quickly from change and/or difficult conditions

[2] No impact: no change to existing conditions

6.3.2.4 Risk matrix

Risk is defined as a combination of the likelihood of an event occurring and the consequence of that event occurring. A risk rating was determined by these factors using the risk matrix, presented in Table 6-4.

Table 6-4 Risk matrix

		Consequence level				
		Insignificant	Minor	Moderate	Major	Severe
Likelihood level	Rare	Very Low	Very Low	Low	Medium	Medium
	Unlikely	Very Low	Low	Medium	Medium	High
	Possible	Very Low	Low	Medium	High	High
	Likely	Low	Medium	High	High	Very High
	Almost certain	Low	Medium	High	Very High	Very High

When risks have been rated as medium or above, the impacts associated with the risk pathway were assessed in an increasing level of detail and prompted further exploration of potential mitigation and management actions to reduce the overall impact.

6.3.3 Impact assessment

6.3.3.1 Impact assessment methods and approach to mitigation

An impact assessment is a structured process for considering the implications, for people and their environment, of proposed actions while there is still an opportunity to modify (or even, if appropriate, abandon) the proposals. It is applied at all levels of decision-making, from policies to specific projects (IAIA, 2020).

A change caused by project activities in any of the project phases (construction or operation) may give rise to impacts. The nature and extent of potential impacts have been measured against the existing environmental conditions. Sometimes a direct impact will give rise to indirect impacts as environmental receptors are interconnected.

For each technical assessment a study area has been defined for the purposes of environmental impact assessment. Each assessment has involved identifying the nature and extent of any direct and indirect impacts, positive or negative, that the project may have on the existing environment. The method used in each individual technical report varies based on the relevant guidance and standards for that topic and the relevant scoping requirements. The technical reports each contain a section that describes their impact assessment method in detail, in particular the modelling or analysis undertaken

to predict the changes that may occur due to the project. The level of assessment undertaken for each issue was informed by the risk assessment step described in Section 6.3.2.

Where the environmental impacts were identified as potentially significant, mitigation measures have been proposed. Mitigations have been identified in accordance with the hierarchy as outlined in Figure 6-2, below. Where possible, changes to the project design have been made in order to remove a risk or impact (thereby making mitigation measures unnecessary) as first priority, or if not feasible, minimise or reduce the level of impact. Refinement of the project has occurred alongside the environmental assessments where modifications to the design were found to assist with the mitigation of environmental impacts.

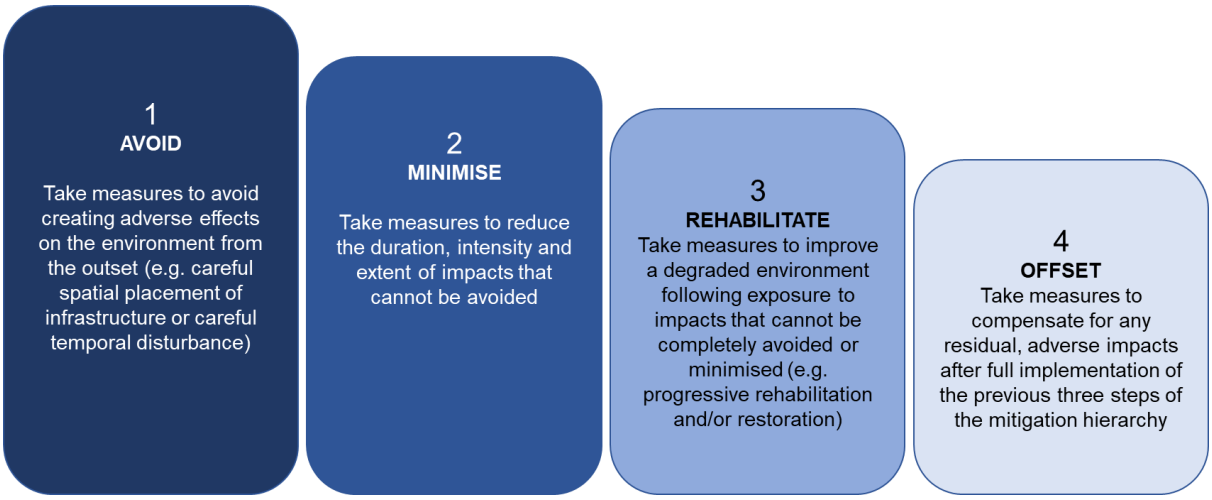

Figure 6-2 Mitigation hierarchy

To evaluate the significance of residual environmental effects of the project, the following factors have been considered:

- Magnitude, spatial and temporal extent of impact on the environment
- The relationship between different impacts on the environment and potential cumulative impacts
- The likely effectiveness of measures to minimise and manage impacts
- The likelihood that any given environmental impact would occur
- Benchmarks and standards set by statutory requirements and environmental approvals
- The policies and guidelines that apply to the proposed project
- Community expectations
- The principles of ecologically sustainable development as defined in the Ministerial guidelines for assessment of environmental effects (DSE 2006).

There are clear steps in the assessment process, however it does not follow a linear progression and may potentially require multiple iterations of rating impacts and application of mitigation as the technical assessments progress and additional information becomes available.

The outcomes of the completed impact assessment process are the final mitigation measures and descriptions of residual impacts, which have been captured in the technical reports.

6.3.3.2 Matters of National Environmental Significance

Potential impacts on MNES have been assessed in line with Commonwealth regulatory requirements, specifically MNES, Significant Impact Guidelines 1.1 (DoE, 2013), as well as the assessment approach in Section 6.3.3.1. This included a systematic evaluation of potential impacts of the project on key MNES against the criteria for significant impacts provided in the relevant guidelines. Key steps included:

- Desk and field-based data collection and collation, to inform and describe the existing biodiversity values, including MNES that are potentially affected by the project or project area.
- Determination of likelihood for the potential for MNES to occur within the project's area of influence.
- Assessment of risk and impacts for relevant MNES values.

6.3.3.3 Assessment of alternative to Trail 1

During the project development process, consideration was given to feasible trail alternatives for key trails where there is potential for significant environmental impact.

Through a screening process of the 61 trails within the proposed network, that focussed on ecological, heritage and socioeconomic factors, trail sections through locations of high sensitivity and where significant impacts on those areas may be unavoidable were identified. A framework was developed to rate each trail according to the priority for further examination of alternatives. The trails could be given a rating of low, moderate, high or very high. The framework is detailed in **Attachment II: Alternatives Assessment Report**. Under the framework, any trail assigned a very high or high priority would be subject to further consideration of alternatives.

The investigations identified Trail 1, with a length of 23 kilometres and vertical drop in elevation of over a kilometre, as requiring consideration of alternative alignments. Subsequently, an alternative to this trail, being the combination of Trail 45, Trail 46 and Trail 47 with a combined length of 15 kilometres, was identified. These have been assessed in the technical reports with a summary in **Chapter 4: Project development and alternatives**.

6.3.3.4 Cumulative impacts

Cumulative impacts refer to the situation where a project, in combination with one or more other proposed projects, or existing activities in an area, may have an overall significant effect on the same environmental asset. Where other major projects are occurring or proposed within the same geographical region and over a comparable time period, there is potential that the impacts of the project could be compounded.

The potential for cumulative impacts is typically addressed through the impact assessment undertaken for each technical assessment where relevant. The Warburton Water World, which opened in 2020 has been identified as a project with the potential for cumulative impacts because it is an attractor of traffic to Warburton. Accordingly, the cumulative traffic impacts have been assessed and the findings are presented in **Technical Report F: Transport**. No other major projects have been identified where there is potential for impacts to overlap temporally and spatially with the Warburton Mountain Bike Destination. Accordingly, no other cumulative impacts with other projects are anticipated.

6.3.4 Environmental management framework

The environmental management framework contains the environmental management measures proposed in the EES to address specific issues, including commitments to mitigate adverse effects and enhance environmental outcomes. The environmental management framework also provides a transparent framework with clear accountabilities for managing potential environmental effects and hazards associated with construction and operation phases of the project.

The environmental management framework will include performance criteria and performance management requirements to evaluate whether the project's impacts are maintained within permissible levels during construction and operation. Performance criteria and management will be measured and implemented through the Construction Environmental Management Plan and the Operations Environmental Management Plan. As part of the EES, **Attachment V Draft Construction Environmental Management Plan** and **Attachment VII Draft Operations Environmental Management Plan** have been prepared. The draft versions would be updated after primary approvals have been obtained to incorporate any modifications to mitigation measures and the relevant approval conditions. The plans include objectives for monitoring and reporting, performance indicators, monitoring parameters, location and frequency, reporting, responsibilities and contingency measures.

Performance criteria can take many forms. These may be standards that come from applicable legislation, regulation and policy however could also be project commitments and technical best practice. Potential examples include:

- Implementation of relevant controls during project construction, aligned with state legislation and applicable policy such as the general environmental duty (GED), established under the *Environment Protection Act 2017*, which requires Victorians to understand and minimise their risks of harm to human health and the environment, from pollution and waste.
- Compliance with construction and operation noise limits, as per applicable state legislation and state policy (e.g. EPA Publication 1826.4: *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*).
- Avoidance of areas of ecological sensitivity through the designation of no-go zones.

- Implementation of specific construction restrictions to minimise impacts on species with heightened seasonal or daily activities.
- Implementation of specific weed and pathogen control during construction and operation to prevent invasive species intrusion into the project area.

The environmental management framework has been provided in **Chapter 16: Environmental management framework**.