regional roads victoria

6 EES assessment framework and approach

Authorised by the Victorian Government,
1 Treasury Place, Melbourne

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Tables

Figures

6.1 Overview

This chapter describes the assessment framework applied to assessing and evaluating the environmental effects of the proposed project, the development and assessment of alignment options, and the preparation of the EES.

The key elements of the assessment framework applied in evaluating the effects of the project and preparing this EES are:

- EES evaluation objectives outlined in the final *Scoping Requirements for Beaufort Bypass Project EES* (DELWP) 2016) (refer to EES Chapter 1: *Introduction*)
- relevant requirements under applicable legislation, policy and guidelines (refer to EES Chapter 5: *Legislative framework and approval requirements*).

RRV's project objectives, the EES evaluation objectives, and relevant legislation, policy and guidelines have informed the development of project-specific criteria. The framework has enabled comparison and assessment of:

- the overall potential impacts of the project, both positive and negative
- potential risks and impacts of each route option
- the relative impacts of the alignment options
- a detailed assessment of impacts for the preferred alignment
- the development of recommended mitigation and management measures to minimise adverse impacts of the preferred alignment, including the duration and magnitude of impacts.

This chapter also includes an overview of the environmental risk assessment, and its relationship to the impact assessment and alignment options assessment.

6.2 EES assessment approach

The assessment framework for the EES guides the identification and assessment of environmental, social and economic impacts of the project, including:

- existing conditions and baseline assessments
- specialist risk and preliminary impact assessments of alignment options
- recommended measures to mitigate and manage environmental impacts relevant to facilitation of an options assessment
- alignment options assessment
- detailed specialist impact assessments of preferred alignment, C2, and identification of recommended mitigation measures to manage or avoid environmental impacts and reduce residual impacts
- development of an Environmental Management Framework for the preferred alignment.

A systems- and risk-based approach was adopted for the specialist studies to:

- identify potential impact pathways
- undertake an integrated risk assessment across all specialist disciplines
- assess the potential impacts of the project.

A summary of the EES assessment framework is provided in Figure 6.1.

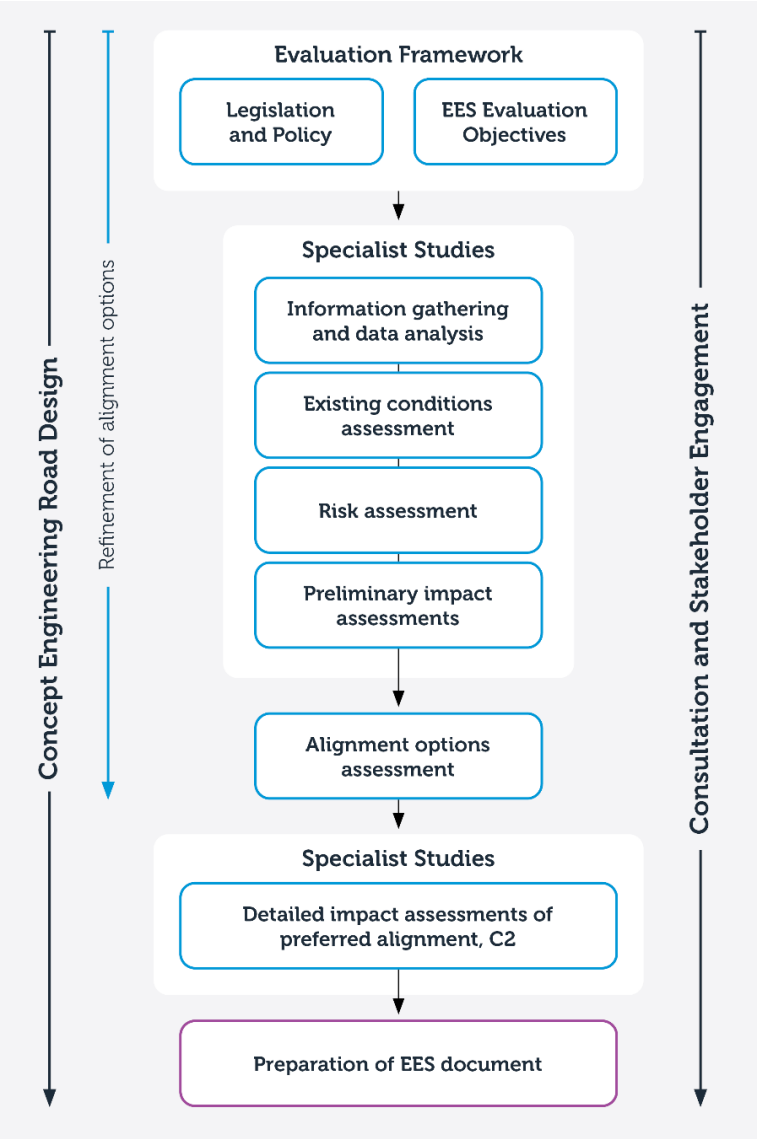

Figure 6.1 EES assessment framework

Consultation was undertaken throughout development of the functional design and EES. Public information sessions were iterative and held to:

- assist DELWP in collecting feedback on draft scoping requirements during the exhibition period
- present and collect feedback on the three draft bypass routes
- present and collect feedback on the four refined alignment options which are the subject of this EES
- present the final preferred option.

A Public Engagement Group was established in 2016 and comprised members of the Beaufort community including residents, community representatives, local businesses, environmental group representatives and council. This group held six meetings over 2016 to 2019, where they were provided updates on project decisions, including a summary of feedback received through each public activity and how this feedback influenced project decisions.

Local council and relevant government agencies were identified as key stakeholders, forming part of the Technical Reference Group and providing input on applicable policies and strategies for incorporation into the EES.

The Technical Reference Group was consulted at key points during the EES process including at project initiation, during alignment options development and following public engagement on the draft bypass routes. The Technical Reference Group were provided the proposed specialist studies methodologies, and reviewed existing conditions and impact assessments prepared for the project. Further information on Technical Reference Group meetings, stakeholder engagement and consultation is provided in EES Chapter 7: *Community consultation and stakeholder engagement*.

6.3 Phase 1 – Preliminary constraints analysis

During Phase 1 of the design and impact assessment process a number of technical studies and field investigations were undertaken to identify key environmental values and constraints in the study area. This work assisted with route option development so that potentially significant impacts could be avoided where possible during the development of route options. These preliminary investigations included:

- biodiversity
- land use and planning
- Aboriginal and historic cultural heritage
- geology
- hydrology.

As the initial alignment options were developed and a shortlist of options determined, detailed specialist investigations were undertaken covering a wider range of environmental, economic and social issues. Early investigations of the shortlisted route options allowed consideration of key environmental values and constraints during option development so that impacts could be considered and avoided.

6.4 Phase 2 – Baseline determination

6.4.1 Options development and assessment

The Minister for Planning decided that an EES was required for the project due to the potential for significant effects on biodiversity, land uses and cultural heritage values. One of the Minister's reasons for the decision was "*The opportunity to avoid or minimise significant adverse effects* ***through alignment selection*** *and mitigation requires further investigation via an integrated assessment of environmental effects, prior to decision-making on a final alignment*".

A three-phase process was used for identifying initial alignment alternatives, using input from technical specialists in the project team and feedback received from community information sessions. Four alignment options (A0, A1, C0 and C2) were shortlisted for investigation during the EES. The overall performance of each option was evaluated using multiple scoring scenarios, resulting in the identification of the C2 alignment as the preferred alignment option due to its lower impacts on native vegetation, ecology, heritage and community amenity. The options development and assessment process for selecting a suitable alignment is discussed in detail in EES Chapter 3: *Project alternatives*.

6.4.2 Existing conditions

Following the finalisation of the EES scoping requirements, detailed technical specialist studies commenced for the shortlisted alignments within the project study area. Each specialist adopted the EES evaluation objective(s) relevant to their discipline and completed existing conditions assessments to identify:

- relevant legislation, policies, standards and specific criteria
- assets and values currently present within the study area that could potentially be affected by the project.

The assessments were completed by drawing on information available from publicly accessible records (e.g. EPBC Act fauna survey records), field investigations of existing conditions such as monitoring of air and noise levels, and through field surveys aimed at validating and expanding on the results of the desktop investigations.

The existing conditions assessments were used as a benchmark against which the potential environmental impacts of the project could be measured.

Existing conditions are provided for each technical discipline in each EES technical chapter (EES Chapters 8–16).

6.5 Phase 3 – Environmental risk and preliminary impact assessment (four alignment options)

6.5.1 Environmental risk assessment

In support of the scoping requirement's requirement for a risk-based approach to the EES studies, an environmental risk assessment was undertaken for the EES. The objective of the risk assessment was to identify key environmental risks relating to the project construction and operation, and to guide the assessment of the project's social, environmental and economic impacts for each of the proposed alignment options.

The risk assessment helped technical specialists to identify high risk activities and to focus the impact assessment on those activities presenting the most significant risks and impacts to the environmental values identified in the study area.

A summary of the relationship between the risk and impact assessment process is provided in Figure 6.2 below. The process used was based on ISO31000:2018 *Risk Management*.

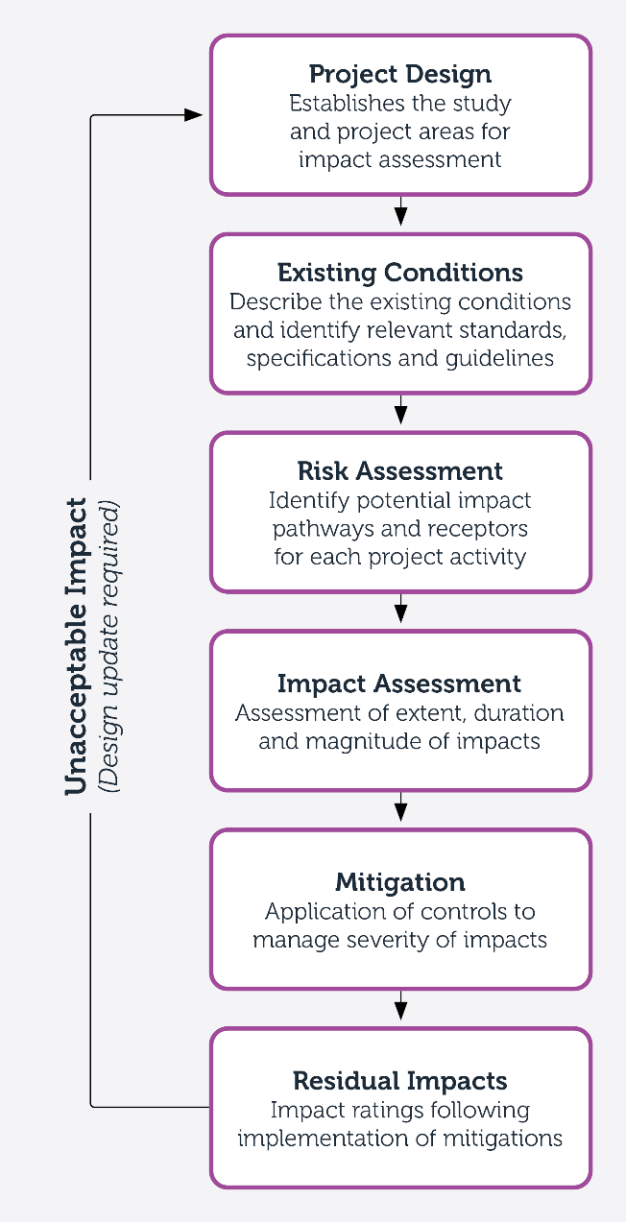

Figure 6.2 Environmental risk and impact assessment process

The environmental risk assessment takes into account functional designs, draft construction methodology, existing conditions reports and draft environmental effects assessment reports. The environmental risk assessment process identified primary environmental effects and associated risks which are directly attributable to project activities, such as vegetation removal. An initial risk rating was assigned for the primary environmental effects. The initial rating was assigned using appropriate consequence and likelihood criteria for primary environmental effects, assuming all standard controls (e.g. legislative requirements, Environment Protection Authority Victoria guidelines) are in place and working effectively. Descriptors were developed for 'likelihood' (Table 6.2) and 'consequence', specific to each technical area (see EES Attachment II: *Environmental risk register*).

Assigning a likelihood rating considers historical occurrence (e.g. adjacent Western Highway projects), frequency of exposure to the risk and site-specific project knowledge.

Consequence criteria have been developed for the project in consultation with technical specialists. The result is a discipline- and aspect-specific set of consequence descriptors used to define what would be considered an Insignificant, Minor, Moderate, Major and Catastrophic consequence associated with a risk event. These definitions were developed based on the 'credible worst case' scenario, which allowed for a prioritisation of risks and plausible pathways from activities to receptor. A consequence descriptor example is provided in Table 6.3 below.

Project specific tools were developed for the project based on risk matrices used on recent and similar Victorian transport projects, and feedback from RRV and the Technical Reference Group. These are described below in Table 6.1 and Table 6.2.

Table 6.1 Risk assessment matrix

			Likelihood				
Consequence	**Risk Categories**		**Rare (A)**	**Unlikely (B)**	**Possible (C)**	**Likely (D)**	**Almost Certain (E)**
	Catastrophic	**5**	Medium	High	High	Extreme	Extreme
	Major	**4**	Medium	Medium	High	High	Extreme
	Moderate	**3**	Low	Medium	Medium	High	High
	Minor	**2**	Negligible	Low	Low	Medium	Medium
	Insignificant	**1**	Negligible	Negligible	Negligible	Low	Low

Table 6.2 Example likelihood descriptors

Likelihood				
Rare	**Unlikely**	**Possible**	**Likely**	**Almost Certain**
Less than once in 12 months OR 5% chance of recurrence during course of the project	About once in 6 months OR 10% chance of recurrence during course of the project	About once in 4 months OR 30% chance of recurrence during course of the project	About once in 2 months OR 50% chance of recurrence during course of the project	About once in a month OR 100% chance of recurrence during course of the project
The event may occur only in exceptional circumstances	The event could occur but is not expected	The event could occur	The event will probably occur in most circumstances	The event is expected to occur in most circumstances
It has not happened in Victoria but has occurred on other road projects in Australia	It has not happened regionally but has occurred on other road projects in Victoria	It has happened in the Beaufort region	It has happened on an adjoining section of the Western Highway	It has happened on more than one of the adjoining Western Highway projects OR It has happened multiple times on an adjoining Western Highway project

Table 6.3 Example consequence descriptors – Economics

Consequence descriptor					
Aspect	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Project has a detrimental impact on business operators	No loss of revenue	Minor loss of revenue (%)	Medium loss of revenue (%)	Significant loss of revenue (%)	Business closure

RRV, with review from the Technical Reference Group developed the likelihood definitions and the consequences criteria for the risk assessment. The final risk register is further detailed in EES Attachment II: *Environmental risk register*.

6.5.2 Preliminary environmental impact assessment

Preliminary impact assessments, prepared by discipline technical specialists, were conducted for a suite of environmental, social and economic issues for the shortlisted bypass options. The extent and complexity of the technical impact assessments were influenced by the risk assessment and sensitivity of the identified values in the study area, and risks with an initial risk rating of medium, high or extreme were subject to detailed impact assessment. Where impacts were identified, mitigation treatments have been considered to avoid impacts or reduce residual impacts. Input and consultation with the Technical Reference Group also informed the level of assessment for each of these studies prepared.

Specialist studies evaluated the impacts, by considering:

- the significance of the identified value impacted
- the extent and duration of the identified impact
- management measures that could be put in place to avoid, minimise or mitigate impacts
- the ability of the impacted asset or value to recover
- the significance of the impact.

Mitigations

Mitigations for identified impacts were developed by discipline specialists and RRV to reduce residual impacts on sensitive receivers. All identified mitigations developed for the project have been informed by specialist experience with proven feasible control measures for major civil infrastructure projects, industry best practice measures and regulatory measures defined by State, Commonwealth and International Government agencies.

Preliminary impact assessments drew conclusions about the net effect (i.e. with mitigation measures in place) of the activity, considering the relevant EES evaluation objective.

The preliminary impact assessments were used to inform the options assessment process, discussed in Section 6.6 and further described in EES Chapter 3: *Project alternatives*.

6.6 Phase 4 – Alignment options assessment and detailed impact assessment of preferred C2 alignment

6.6.1 Options assessment

An alignment options assessment was conducted by RRV for the four alignment options (Option A0, Option A1, Option C0 and Option C2) that form part of the EES for the project. The objective of the assessment was to identify alignments that minimise potential adverse environmental, social and economic impacts whilst maximising the benefits to be gained from the project proceeding.

To allow for a balanced consideration of the outcomes of each specialist assessment, an Options Assessment Matrix was created by RRV. Specific evaluation criteria and sub-criteria were developed by RRV for the project to assess the impacts of each alignment against the EES scoping requirements.

The matrix considered the outcomes of the preliminary impact assessments (with mitigation measures in place) against the evaluation criteria and sub-criteria, and provided a ranking of alignment options based on the total weighted score. The outcome of the evaluation was the selection of a preferred alignment that provided the best balance between project and environmental, social and economic objectives. The alignment options assessment process and outcomes are detailed in EES Chapter 3: *Project alternatives*. Further details of the specialists' assessment that informed the matrix are provided in EES Part B (Chapters 8–16) and in EES Chapter 18: *Conclusion*.

6.6.2 Detailed impact assessment

Following the options assessment, detailed impact assessments were undertaken for the preferred alignment, C2. Where preliminary impact assessments identified information uncertainties, further modelling and analysis was undertaken to detail the likely residual impacts and required mitigations to manage identified impacts. The detailed impact assessment for the C2 alignment describe and assess impacts in terms of the following:

- description of impact
- identification of whether impacts are direct or indirect
- prediction of the magnitude, extent and duration of impact
- overall rating of impact (without mitigation)
- residual rating of impact (with mitigation).

The development of mitigation measures during the detailed impact assessments have been informed by proven feasible control measures for major civil infrastructure projects, and industry best practice and regulatory measures. These mitigation measures have in turn informed the development of the Environmental Management Framework (EES Chapter 17*: Environmental management framework*) and associated Chapters in EES Part B (Chapters 8–16).

The mitigations developed through the detailed impact assessments and detailed in the EES are RRV's commitment to reducing the residual impacts of the project.

6.7 Environmental Management Framework

An Environmental Management Framework has been prepared for the preferred alignment to identify the environmental management, mitigation and monitoring measures, identified in the detailed impact assessments, to be implemented by RRV to manage the detailed design, construction and operational phases of the project. The Environmental Management Framework has been prepared in line with current VicRoads/RRV standard specifications *S.177 Environmental Management (Major)* and requirements for road works during the construction phase.

The EES scoping requirements include the following evaluation objective for the Environmental Management Framework:

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

The Environmental Management Framework is a key management document, providing a framework with clear accountabilities for avoiding, minimising and managing the environmental impacts associated with all stages of the project, as detailed in Figure 6.3 below.

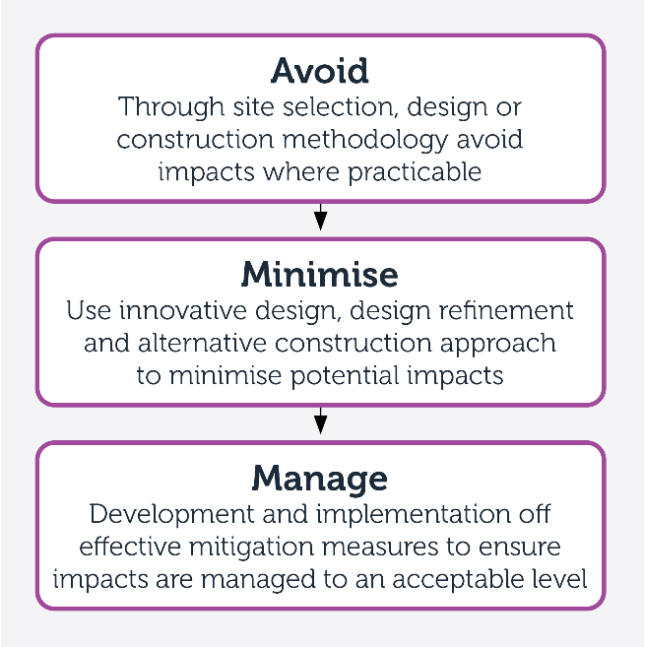

Figure 6.3 Environmental management approach

The Environmental Management Framework will be bound to project approvals and will guide the preparation of the construction contractor(s) Environmental Management System and Construction Environmental Management Plan. The Construction Environmental Management Plan will detail the construction contractor's environmental commitments to the project and outline all relevant legislation and guidelines, and demonstrate how all environmental objectives will be met. The appointed contractor will need to have regard to the VicRoads/RRV *S.177 Environmental Management (Major)* specifications in the contract in relation to environmental management requirements and reporting.

EES Chapter 17: *Environmental management framework* provides an overview of the Environmental Management Framework that has been developed to support the design, construction and operation of the project.