



Environment Effects Statement Final Scoping Requirements Suburban Rail Loop Stage One

Environment Effects Act 1978

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FINAL VERSION**

OFFICIAL



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and Planning

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List of abbreviations and definitions

CHMP	Cultural Heritage Management Plan
DELWP	Department of Environment, Land, Water and Planning
EE Act	<i>Environment Effects Act 1978</i>
EES	Environment effects statement
ELF	Extremely low frequency
EMF	Electric and magnetic fields
EMF	Environmental management framework
EPBC Act	<i>Environment Protection and Biodiversity Act 1999</i>
FFG Act	<i>Flora and Fauna Guarantee Act 1988/ Flora and Fauna Guarantee Amendment Act 2019</i>
Inquiry	An inquiry is appointed by the Minister for Planning pursuant to Section 9 (1) of the <i>Environment Effects Act 1978</i> .
P&E Act	<i>Planning and Environment Act 1987</i>
SRL	Suburban Rail Loop
SRLA	Suburban Rail Loop Authority
TRG	Technical reference group

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1. Introduction

On 20 December 2020 the Minister for Planning (the Minister) declared the Suburban Rail Loop Stage One (the project) to be 'public works' under section 3(1) of the *Environment Effects Act 1978* (EE Act) on the basis that the Minister was satisfied that the public works could reasonably be considered to have or to be capable of having a significant effect on the environment. The declaration was published in the Victorian Government Gazette on 22 December 2020 (no. S 682) and consequently, an environment effects statement (EES) for the project must be prepared.

The purpose of the EES is to describe the proposed project, assess its potential effects on the environment¹ and approaches to mitigation. The EES will inform and seek feedback from the public and stakeholders. The Minister will issue an assessment of the project's environmental effects to conclude the EES process and inform statutory decision-makers responsible for the project's approvals.

These scoping requirements set out the matters to be investigated and documented in the EES for the project. These scoping requirements were finalised following consideration of submissions made on the draft scoping requirements during their public exhibition on 26 March to 19 April 2021.

While the scoping requirements are intended to cover all relevant matters, the EES will also address other significant issues that emerge during the EES investigations or through consultation.

1.1 The project

The Suburban Rail Loop is a new 90-kilometre rail line that will connect Melbourne's metropolitan train lines from the Frankston Line in the east to the Werribee Line in the west.

Given the significant scale and complexity of the Suburban Rail Loop, it is proposed to be developed in multiple stages. The first stage would entail a rapid rail service between Cheltenham and Box Hill (Suburban Rail Loop Stage One). The remaining stages of Suburban Rail Loop would be developed subject to separate planning and approval processes.

Suburban Rail Loop (SRL) Stage One includes the following key components:

- twin-bore rail tunnels between Cheltenham and Box Hill, via a stabling yard in Heatherton, travelling beneath Clayton, Monash University, Glen Waverley and Burwood and generally following a proposed alignment depicted in Figure 1 (overleaf);
- six new stations constructed at Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill proposed to be located generally in the areas identified in Figure 1, with interchanges to existing railway stations at Cheltenham, Clayton, Glen Waverley and Box Hill;
- stabling, train wash and maintenance facilities, an operational control centre and a power substation at the proposed stabling yard site;
- dive structures and rail tunnel portals at either side of the proposed stabling yard;
- a power substation in the vicinity of the proposed Burwood Station; and
- an intervention and ventilation shaft between the proposed Glen Waverley and Burwood stations.

The Suburban Rail Loop Authority (SRLA) is a new authority established under the administration of the Department of Transport to oversee the planning and development of the Suburban Rail Loop from Cheltenham to the Airport.

1.2 Minister's requirements for this EES

A project outline, prepared by the Suburban Rail Loop Authority, was submitted to the Minister for Planning to inform the decision that the project was public works under the EE Act. The decision was made on the basis that the project could 'reasonably be considered to have or to be capable of having a significant effect

1. For assessment of environmental effects under the EE Act, the meaning of 'environmental effects' includes effects on abiotic, ecosystems, social, and economic systems (Suburban Rail Loop EES Guidelines, p. 9).

on the environment'. The public works order specified the procedures and requirements that are to apply to an EES for the works (refer Appendix A).



Figure 1. Suburban Rail Loop Stage One.

The public works order excluded 'initial works' proposed by the Suburban Rail Loop Authority from the requirement for an EES. This means these works can proceed before the EES process is complete, but they are still subject to any statutory approvals required under law. Initial works generally involve utility relocations, new underground powerlines and minor road modifications and ground improvement works at the proposed stabling yard site. These works are described within Schedule 1 of the public works order. The basis for this decision is described in the Minister's reasons for order. The cumulative impacts of the initial works and the rest of the project works are to be assessed in the EES.

1.3 Suburban Rail Loop EES Guidelines

The Minister for Planning approved the *Ministerial guidelines for the assessment of environmental effects of the Suburban Rail Loop* (referred to as the Suburban Rail Loop EES Guidelines) in September 2020.

Section 10 of the EE Act provides for the Minister for Planning to make guidelines for any matters he considers expedient to enable the carrying out of the Act. The Suburban Rail Loop EES Guidelines describe environmental assessment processes under the Act to be adopted for projects proposed as part of the Suburban Rail Loop.

An EES for the whole Suburban Rail Loop is impractical because it will be delivered over decades in a series of discrete but related projects. The Suburban Rail Loop EES Guidelines provide a process for individual

Suburban Rail Loop projects to be subject to an EES if the proposed works can have a significant effect on the environment.

These scoping requirements provide further detail on the matters to be investigated in the EES for Suburban Rail Loop Stage One as required by the Minister's public works order and the Suburban Rail Loop EES Guidelines.

2. Assessment process and required approvals

2.1 What is an EES?

An EES describes a project and its potential environmental effects. It should enable stakeholders and decision-makers to understand how the project is to be designed, constructed and operated, the likely environmental effects of doing so and how they are proposed to be managed. An EES has two main components.

1. The EES main report presented in a single volume or interactive website – a plain English integrated analysis of the potential effects of the project and the avoidance, mitigation or other measures to reduce environmental effects. The main report draws on technical studies, data, public engagement, policy and statutory requirements. If web-based, additional standards may apply to ensure the EES is readily accessible and the information conveyed on the website is accurate, time-stamped and secure.
2. The EES technical reports – specialist studies, investigations and analyses that provide the basis for the EES main report. These reports will be exhibited in full.

The proponent should also prepare a concise, graphically based non-technical summary document (of no more than 25 A4 pages) for free hardcopy and/or electronic distribution to interested parties. The EES summary document needs to include details of the EES exhibition, public submission process and availability of the EES.

2.2 The EES process

The proponent is responsible for preparing an EES, including conducting technical studies and undertaking stakeholder consultation. The Department of Environment, Land, Water and Planning (DELWP) is responsible for managing the EES process.² The EES process has the following steps:

- the proponent prepares a draft study program (completed);
- DELWP prepares and exhibits draft scoping requirements, on behalf of the Minister;
- the comments received during the exhibition period are considered, and the scoping requirements finalised and issued by the Minister (this document);
- DELWP and the technical reference group³ review the proponent's EES studies and draft documentation and provide feedback;
- the proponent completes the EES and seeks authorisation from the Minister to exhibit the EES;
- exhibition of the EES and public comment;
- the Minister appoints an inquiry panel to review the EES and public submissions, conduct public hearings and provide a report to the Minister; and, finally,
- the Minister prepares an assessment of the project's environmental effects for consideration by statutory decision-makers.

Technical reference group

DELWP has convened a technical reference group (TRG)⁴ of state government agencies, directly impacted local governments and Wurundjeri Woi-Wurrung Cultural Heritage Aboriginal Corporation. The TRG will advise DELWP and the proponent on:

- policies, strategies and statutory provisions;
- the scoping requirements for the EES;
- the design and adequacy of technical studies for the EES;
- the proponent's stakeholder consultation program for the EES;
- responses to issues arising from the EES investigations;
- the technical adequacy and completeness of draft EES documentation; and

² Further information on EES process can be found at planning.vic.gov.au/environment-assessment/what-is-the-ees-process-in-victoria.

³ For critical components of the EES studies, peer review by an external, independent expert may be appropriate.

⁴ Member organisations of the TRG are listed on the DELWP website at <https://www.planning.vic.gov.au/environment-assessment/browse-projects/projects/suburban-rail-loop-stage-one>

- coordination of statutory processes.

Consultation plan

The EES is to be informed by meaningful and effective stakeholder and community engagement. Stakeholders include potentially affected parties, interested community organisations and government bodies. Guided by its consultation plan, the proponent informs the public and stakeholders about the EES investigations and provides opportunities for input and engagement during the EES investigations. The consultation plan is reviewed and amended in consultation with DELWP and the TRG before it is published on the planning website.⁵ The final consultation plan will:

- identify stakeholders;
- characterise public and stakeholders' interests, concerns and consultation needs, local knowledge and inputs;
- describe consultation methods and schedule; and
- outline how public and stakeholder inputs will be recorded, considered and addressed in the preparation of the EES.

Statutory approvals and the EES process

The project will require a range of approvals under Victorian legislation if it is to proceed. DELWP coordinates the EES process as closely as practicable with approval procedures, consultation and public notice requirements.

It is envisaged that a planning scheme amendment would be sought to allow for the use and development of land for the project works under the *Planning and Environment Act 1987*. The planning approvals process will be aligned with the EES process to remove duplication and ensure efficacy of public review.

In addition, the delivery of project works is anticipated to require approvals, consents and/or to comply with the following Acts:

- *Aboriginal Heritage Act 2006* including an approved cultural heritage management plan (CHMP);
- *Catchment and Land Protection Act 1994*;
- *Crown Land (Reserves) Act 1978*;
- *Environment Protection Act 2017*;
- *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth);⁶
- *Flora and Fauna Guarantee Act 1988* (FFG Act) and *Flora and Fauna Amendment Act 2019*;
- *Heritage Act 2017*;
- *Land Act 1958*;
- *Major Transport Projects Facilitation Act 2009* (note that the assessment and approval powers under Parts 3 and 8 of the Act are not being used);
- *Pipelines Act 2005*;
- *Rail Management Act 1996*;
- *Road Management Act 2004*;
- *Transport Integration Act 2010*;
- *Water Act 1989*.

Other approvals may be required and will be determined through the EES process.

5. <https://www.planning.vic.gov.au/environment-assessment/browse-projects/projects/suburban-rail-loop-stage-one>

⁶ SRLA intends to refer the project under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), on the basis of indirect impacts to Commonwealth Land, at which point the Commonwealth Minister will determine whether it is a 'controlled action' requiring assessment and approval under the EPBC Act.

3. Matters to be addressed in the EES

3.1 General approach

The EES should present an assessment of the potential effects of the project on the environment. Technical investigations and preparation of the EES should be consistent with the principles of a systems approach and a risk-based approach. Effort should be directed at assessing project features or phases that pose relatively higher risk of adverse environmental effects. Simpler or less comprehensive methods of investigation may be applied to attributes likely to involve lower risk of adverse environmental effects. The EES should put forward a sound rationale for the level of assessment and analysis undertaken for potential environment effects arising from construction or operation of the project. SLRA needs to consult closely with DELWP and the TRG during the development of the EES to ensure that the investigation of potential effects is both targeted and sufficiently thorough in this context.

The level of detail of investigation for the EES should be adequate to inform an assessment of the significance and acceptability of potential environmental effects. The EES should provide analysis of the significance of the potential effects of the project, with appropriately scaled consideration of:

- potential effects on environmental assets – magnitude, extent and duration of change;
- interdependency of potential effects, consistent with a systems-based approach;
- project phases, from construction to operation;
- potential avoidance, minimisation, or restoration to mitigate predicted effects; and
- likely residual effects, post mitigation, and their significance, allowing for uncertainty in predictions.

The EES should detail the approach to managing the environmental effects of the project, by documenting:

- environmental performance requirements;
- environmental performance monitoring; and
- contingency planning.

3.2 Content and style

The content of the EES and related investigations is to be guided by these scoping requirements, together with the EE Act, the Minister's public works order (and published procedures and requirements) and the Suburban Rail Loop EES Guidelines. The EES should also address any other significant issues that emerge during the investigations.

It is the proponent's responsibility to ensure that sufficient studies are undertaken and documented to support an adequate assessment of environmental effects and effective internal quality assurance has been applied during the preparation of the EES. Consultation with DELWP and the TRG during the preparation of the EES will be necessary to minimise the need for revisions prior to authorisation of the EES for public exhibition.

The EES needs to provide a clear, objective and well-integrated analysis of the potential effects of the project, including proposed avoidance, mitigation, offsets or other measures, as well as feasible alternatives. Overall, the EES should include:

- an executive summary of the potential environmental effects of the project;
- the strategic need and rationale for the project and its proposed benefits (refer Section 3.3);
- the elements of the project (refer Section 3.3);
- feasible alternatives capable of meeting the project's objectives that may also offer other benefits and the basis for a preferred alternative if nominated (refer Section 3.5);
- the applicable laws, policies, strategies, guidelines and standards (refer Section 3.6);
- descriptions of the existing environment (including seasonal variations) and predicted changes (e.g. climate change or transport network changes, refer Section 4);
- appropriately detailed assessments of potential effects of each phase of the project (and feasible alternatives) on environmental assets and values, relative to the "no project" scenario, together with an estimation of likelihood and degree of uncertainty associated with predictions (refer Section 4);
- assessment of effects not confined to the immediate area of the project but also the potential effects on nearby environmental values, including areas potentially impacted by offsite components of the project (refer Section 4);

- assessment of cumulative effects with other existing and proposed developments, the initial works that were excluded from the EES and the proposed rail infrastructure of future stages of Suburban Rail Loop⁷ (refer Section 4);
- clearly stated assumptions (e.g. for model input data and outputs, refer Section 4);
- proposed environmental performance requirements that reflect acceptable environmental outcomes the project must achieve (refer Section 3.8 and 4);
- clear, active measures for avoiding, minimising, managing and monitoring effects and proposed offset measures where mitigation measures will not adequately address effects (refer Section 3.8 and 4);
- predictions of residual effects assuming proposed measures are implemented and environmental performance requirements are met (refer Section 4);
- consultation undertaken and results, including issues raised and responses (refer Section 3.8);
- evaluation of the implications of legislation and policy, the principles and objectives of ecologically sustainable development and conclusions on the significance of impacts on local, regional and state matters (refer Sections 3.7 and 4); and
- the environmental management framework (EMF) for managing the environmental effects (refer Section 3.8).

3.3 Project description

The EES is to describe the project in sufficient detail both to allow an understanding of all components, processes, development phases and operation, and to enable assessment of their likely potential environmental effects.

The EES may describe and assess the effects of a reference project with the ultimate design to be further developed beyond the EES process, but within the bounds of any environmental performance requirements set for the project through the EES process. The reference project must demonstrate the technical feasibility of delivering the project to meet the Victorian Government's objectives and achieve acceptable environmental outcomes. The project description is required to cover the following:

- contextual information on the project, including its objectives and rationale, its benefits, its relationship to statutory policies, plans and strategies, including the basis for selecting the proposed project location and implications of the project not proceeding;
- location and configuration of major civil works, tunnel alignment and station architecture;
- project area, boundary and access arrangements during construction and operation supported by plans and maps where applicable, showing areas proposed for construction, permanent infrastructure and surplus land for future development;
- proposed or potential methods of construction, temporary occupation of land, construction timetabling and staging, other necessary works directly associated with the project, such as road upgrades, infrastructure and services relocation and extent of disturbed areas;
- risks associated with projected climate change and resilience to these risks including consideration of the *Climate Change Act 2017*'s principles of risk management and standards for risk assessment e.g. AS/NZS ISO 31000:2009.;
- aspects of the project that could give rise to environmental effects, including air emissions, noise, vibration, discharges to water, local drainage, energy use and greenhouse gas emissions
- aspects of the project that could interrupt the operation of critical existing services such as water management, floodplain drainage and flood protection;
- solid waste, wastewater and hazardous material generation and management;
- generation of spoil including volumes, characterisation, offsite disposal options and haulage routes;
- lighting, safety and security requirements;
- consideration of public safety for road and path users;
- hours of construction work and workforce requirements during construction and operation;
- approach to rehabilitation and restoration of temporarily disturbed areas; and

⁷ "The assessment of cumulative impacts from proposed SRL works in combination with future SRL works will necessarily remain at a high level where future works are expressed in conceptual, rather than detailed, terms. However, where it can be ascertained at the time of preparing the EES that potential cumulative effects of multiple SRL projects (built or proposed) may be significant, the potential cumulative effects must be addressed within the EES." Suburban Rail Loop EES Guidelines (2020).

- approach to incorporate sustainability principles and practices into project development and delivery.

3.4 Urban design strategy

The EES is to describe the approach to urban design that will apply to the project. The EES is to describe how urban design mitigates environmental effects and/or creates benefits, especially in regard to visual amenity, social, land use, water, arboriculture, biodiversity and transport assessments.

The urban design strategy should explain how the project will respond to and enhance the function and character of the built and natural environment, including built form, landscape and public realm within the immediate and broader context of the project. This should include descriptions of:

- character of the existing and predicted future urban environment;
- urban design features of the project's components; and
- the strategy to deliver the preferred form, function, amenity, experience and appearance of the project.

3.5 Project development and alternatives

The EES is to document the design development process for the reference project including the alternatives considered for the stations, the stabling yard and the tunnel and the rationale for selecting the location, design, construction methods and works presented in the EES. The EES should document the assessment of feasible alternatives and their effects, including an explanation of how and why specific alternatives were selected for evaluation within the EES. The assessment of feasible alternatives and their effects is to include:

- alternatives considered in the design process;
- assessment method used for developing and selecting preferred alternatives;
- evaluation of the environmental effects of the alternatives; and
- basis for selecting the proposed reference project.

3.6 Applicable legislation, policies and strategies

In addition to the EE Act, the EES will need to identify and describe relevant legislation, policies, guidelines and standards, and their specific requirements or implications for the project. Particular attention is drawn to the *Environment Protection Act 2017*. The remaining provisions of the *Environment Protection Amendment Act 2018* have been proclaimed to commence on 1 July 2021, at which time the *Environment Protection Act 1970* will be repealed, and the amended *Environment Protection Act 2017* will apply.

3.7 Evaluation objectives

Evaluation objectives are provided in Section 4 for each of the topics to be addressed in the EES. The evaluation objectives identify desired outcomes in the context of legislative and statutory policies and the principles and objectives of ecologically sustainable development and environment protection, including net community benefit. The evaluation objectives provide a framework to guide an integrated assessment of environmental effects and for evaluating the overall implications of the project.

3.8 Environmental management framework

Competent management of environmental effects during project construction and operation is required to meet statutory requirements, protect environmental values, sustain stakeholder confidence and ensure the ongoing acceptability of environmental effects. Therefore, the proponent is to provide an environmental management framework (EMF) for the project in the EES. The EMF will articulate environmental standards and outcomes to be achieved and governance arrangements to manage and monitor environmental effects.

The EMF is to specify the environmental management arrangements for project delivery including:

- description of the environmental management system to be adopted;
- organisational responsibilities, accountabilities and resourcing arrangements;
- statutory and other requirements, including approvals, consents, applicable legislation, standards and guidelines;
- environmental risk assessment and a register of environmental risks;

- environmental performance requirements⁸ and management measures proposed in the EES, including commitments to avoid, mitigate or manage adverse effects and enhance environmental outcomes;
- developing and approving environmental management plans for the construction and operational phases;
- evidence for measuring compliance, including a monitoring program (e.g. pre-construction, during construction and post-completion, baseline data, objectives, parameters, locations and frequency);
- auditing and reporting of performance, including compliance with environmental performance requirements and the EMF and continuous improvement;
- responding to and managing environmental incidents or emergencies; and
- a program for community consultation, stakeholder engagement and communications for the project, including opportunities for stakeholders to provide input into each phase of the project and a process for complaints recording and resolution.

⁸ Environmental performance requirements will be proposed within the EES but may be refined in response to public submissions, matters raised through public hearings or additional technical investigations.

4. Assessment of environmental effects

4.1 Approach to assessment

Preparation of the EES and the necessary investigation of effects should be proportional to the environmental risk, as outlined in Section 3.1. The Minister's procedures and requirements (Appendix A) require the EES to particularly, but not exclusively, document the potential effects of the proposed public works on:

- amenity due to changes in visual, noise, vibration, air quality, transport and traffic and land use conditions;
- social wellbeing due to residential acquisition, loss of access to public open space and community facilities and disruption to residents;
- businesses and economic wellbeing due to acquisition of commercial and industrial land, changes in land use and disruption to business activities; and
- disturbance of contaminated soils and groundwater, changes in surface water, geophysical conditions, including with respect to land stability, and the management of spoil.

Therefore, the EES should assess these effects in detail. For those effects that can be demonstrated to have lower levels of risk of environmental effects, the EES should describe and analyse these impacts in detail commensurate with their risk.

The matters to be investigated and documented within the EES are presented below, grouped by investigation theme. Each theme is presented with an evaluation objective. The following structure sets out how the EES should document its assessment of effects for each evaluation objective.

1. **Identify key issues or risks** that the project poses to the achievement of the evaluation objective.
2. **Characterise the environment** that may be affected by the project, having regard to the level of risk. The environmental risk assessment by the proponent could guide the necessary data acquisition.
3. **Identify the potential effects** of the project on the environment (pre-mitigation).
4. **Present design and mitigation measures** that could substantially reduce and/or mitigate the likelihood, extent and/or duration of potential effects. All design and mitigation measures must apply the mitigation hierarchy with justification of why higher order measures cannot be applied.
 - a. Avoidance: measures taken to avoid creating adverse effects on the environment from the outset, such as careful spatial or temporal placement of infrastructure or disturbance.
 - b. Minimisation: measures taken to reduce the duration, intensity and extent of impacts that cannot be avoided.
 - c. Rehabilitation/restoration: measures taken to improve a degraded environment following exposure to impacts that cannot be completely avoided or minimised.
 - d. Offsets: measures taken to compensate for any residual, adverse impacts after full implementation of the previous three steps of the mitigation hierarchy.
5. **Assess the likely residual effects** of the project on the environment and evaluate their significance assuming implementation of design and mitigation measures.
6. **Propose performance criteria and management** to evaluate whether the project's effects are maintained within permissible levels and propose contingency approaches if they are not.

4.2 Transport and traffic management

Evaluation objective

Enable a significant increase in the capacity of the metropolitan rail network and improve transport connectivity and multimodal connections while minimising the adverse effects of the works on the broader and local public transport, cycling, pedestrian and road networks and their users.

Key issues

- Contribution to an integrated and sustainable transport system.
- Changes to the public transport, cycling, pedestrian and road network due to road closures, public transport relocation and route changes, rail occupations, construction vehicle movements and the redistribution of traffic during construction.
- Disruption, delays and reduced access to activity centres and health and education precincts, for residents, businesses, commuters, freight and emergency services during construction.
- Presence of a large construction workforce and transport of spoil, materials and equipment.
- Permanent changes to the public transport, cycling, pedestrian and road system.
- Pedestrian connectivity around existing and new stations to retail and activity centres and residential areas.
- Ease and comfort of transit and accessibility of stations, transport interchanges and surrounds, including for vulnerable groups.
- Changes and impacts to car parking.

Existing environment

- Regional and metropolitan transport network context for the project.
- Elements of the transport system including public transport, cycling, pedestrian and road networks, parking and transport interchanges that might be affected by the project.
- Baseline data for public transport, bicycle, pedestrian movements and private motor vehicle in areas affected by the project.
- Other planned and proposed transport projects relevant to assessing effects on the transport network.

Likely effects

- Traffic performance and travel time on local roads, interchanges and intersections affected by stations and the stabling yard, the reallocation of road space and other changes to the surrounding transport network.
- Travel time and performance for public transport routes.
- Connectivity and integration with existing train stations and bus and tram services.
- Connectivity for cyclists and pedestrians and access in and around stations.
- Construction traffic including spoil transport.
- Likely risks to public safety as a result of transport changes and construction traffic. Local access to activity centres from residential areas, retail centres, community facilities and significant urban renewal precincts.
- Consistency with transport and urban plans.
- Interactions, including cumulative impacts, with concurrent projects and works.

Mitigation

- Design approach to integrating the project with the existing and future transport network and land uses.
- Network and infrastructure changes proposed to maintain or improve transport system function and safety, including the proposed nature and duration of road, public transport, pedestrian and cycle path diversions and reconfigurations, and changes in car parking availability and management.
- Approach to construction traffic route identification, scheduling of transport movements and traffic management measures.
- Provision of infrastructure and the opportunities to improve public and active transport connections and sustainable transport options.
- Design or management measures to mitigate adverse effects or optimise the transport system benefits of the project.

Performance criteria

- Performance requirements to manage the effects of the works on the transport network.
- Monitoring and evaluation of construction traffic management measures relative to predicted effects.
- Potential contingency measures if more significant adverse effects are detected.

4.3 Amenity and environmental quality

Avoid or minimise air quality, noise and vibration effects on the amenity and health of nearby residents and local communities and protect sensitive infrastructure.

Key issues

- Emissions of airborne and ground borne noise that could affect the health, wellbeing and amenity of residents, workers, students, park and recreational users or others in proximity to the project.
- Generation of vibration that could adversely affect residential amenity, the structural integrity of infrastructure and the operation of sensitive facilities, such as research and education institutions.
- Reduced air quality, due to dust, odour or other emissions from construction works and project operations.
- Altered electromagnetic environment that may have health implications or interfere with the use of existing and future medical, research, educational or industrial facilities and equipment.

Existing environment

- Residents and others that may be affected by air and noise emissions or altered electromagnetic environment relating to health and wellbeing, local amenity and aesthetic enjoyment.
- Residences and other sensitive land uses, property assets or infrastructure that may be vulnerable to vibration.
- Sensitive equipment operated by medical, research, educational and industrial facilities at risk of electromagnetic interference.
- Background noise and air quality conditions and trends in the neighbourhood of the project elements.
- Background extremely low frequency (ELF) and electric and magnetic fields (EMF) assessment.
- Ground conditions that may influence the transmission of vibration and ground borne noise from the project.

Likely effects

- Analyse potential for exceeding relevant air quality standards, either in isolation or in addition to background levels of air pollutants.
- Analyse potential for noise standards to be exceeded, with respect to timing, durations, localities, degree of potential exceedance and any relevant special noise characteristics (e.g. tonality, impulsiveness).
- Evaluate changes to air quality and noise conditions and the implications of these for human health and amenity.
- Analyse potential for vibration to cause disturbance to occupants of residential buildings or other sensitive land uses or cause adverse effects on property and infrastructure.
- Analyse potential for ELF and EMF to disrupt the operation of sensitive equipment and compliance with guidelines.

Mitigation

- Design and management measures to prevent or control emissions of dust or other air pollutants.
- Design and management measures to prevent or minimise the effects of noise and vibration on amenity.
- Design and management measures to prevent or control vibration, ELF and EMF in order to protect the public, infrastructure and sensitive uses.

Performance criteria

- Performance requirements to adequately protect amenity, environmental quality, infrastructure and sensitive land uses.
- Monitoring programs for air quality, noise, vibration and ELF and EMF.
- Potential contingency measures if more significant adverse effects than predicted are detected.

4.4 Business and retail

Avoid or minimise adverse effects on businesses include upon their functionality, access to services and facilities provided by businesses and on the retail economic environment.

Key issues

- The presence of and interactions with businesses and business precincts across a range of industry sectors including significant retail centres, education and training services, health care, research and others.
- Displacement and disruption of businesses and retail precincts due to land acquisition and temporary occupation.
- Adverse effects on amenity, changes in visitation numbers to retail centres and changes to access for business customers and suppliers.
- Potential effects on the economic well-being of local areas.
- New or enhanced business and commercial opportunities provided by the project.

Existing environment

- Individual businesses or business precincts that could be affected temporarily or permanently by project activities, and the nature and characteristics of the businesses.
- Relevant economic activity and trends within precincts, activity centres and retail centres.
- Engagement with businesses to identify their sensitivities to project impacts.

Likely effects

- Analyse short and long-term effects on businesses and business precincts, especially with respect to routine operations and business viability, and implications for the local economy and employment.
- Assess short and long-term effects on activity centres and retail centres, including from changes in visitation numbers and vehicular and/or pedestrian access.

Mitigation

- Approach to supporting individual businesses and business precincts affected by the project.
- Design and management measures to minimise impacts within activity centres and on retail centres.

Performance criteria

- Performance requirements to support businesses and avoid significant impacts to the retail economic environment.
- Methods to track actual business effects relative to predicted effects, proposed trigger levels for initiating contingency actions and potential actions.

4.5 Landscape, visual, recreational values and built form

Avoid or minimise adverse effects on landscape, visual amenity, open space, recreational and public realm values and capitalise on opportunities to enhance these values.

Key issues

- Temporary and permanent project infrastructure resulting in changes to urban and green-wedge landscapes and neighbourhood character.
- Alteration or removal of public open space, landscape buffers and vegetation impacting on views from surrounding residential and other sensitive areas and affecting access to or enjoyment of open space and recreational opportunities.
- Permanent project infrastructure resulting in changes to views experienced from surrounding residential and other sensitive areas.
- Light spillage from temporary and permanent project infrastructure decreasing the amenity of adjacent neighbourhoods, parks and community facilities.
- Design of infrastructure to reinforce, enhance or complement valued aspects of the existing and evolving built environment and landscape.

Existing environment

- Visual and landscape features, character and values in the area or broader vicinity of proposed project works.
- Public realm and residential viewing points from which project components or landscape changes will be visible.
- Condition and uses of public open space and facilities to be occupied or otherwise adversely affected.

- Character of the existing and anticipated built environment and landscapes in the immediate and broader neighbourhood of project works.

Likely effects

- Assess extent and duration of adverse effects on, or improvements to, landscape and visual values using methods for depicting landscape and other visual changes.
- Assess temporary and permanent effects on use, enjoyment and availability of open space and recreational facilities.
- Assess the extent and nature of light spill impacts on residential properties and public realm.
- Analyse the effect of the project on the form, function, amenity and appearance of associated public realm and neighbourhoods.
- Assess consistency with any relevant built-form frameworks or urban plans.

Mitigation

- Design of new built form and landscape to compliment the character, function and quality of the surrounding existing and evolving environment, including measures to promote climate resilience, urban cooling, water sensitive urban design and biodiversity outcomes.
- Measures to avoid or minimise adverse effects on landscape character and visual values.
- Measures to avoid or minimise adverse effects on recreational values and public open space and opportunities for losses to be offset.

Performance criteria

- Performance requirements that adequately protect or enhance landscape, visual amenity, recreational and open space values and support appropriate built form.
- Approach to evaluating landscape, visual amenity, recreational, open space and built form outcomes.
- Approach to contingency in the event of more significant adverse effects.

4.6 Land use planning and infrastructure

Achieve integration with adjoining land uses, minimise displacement of land use activities and key infrastructure and resolve inconsistencies with strategic land use plans.

Key issues

- Compatibility with existing land uses in the project neighbourhood and the likely opportunities and constraints for future land use.
- Permanent and temporary disruption or displacement of existing and future land uses and infrastructure, including loss of proposed public open space.
- Future proofing and interaction with future precinct planning around train stations and the stabling yard.
- Development protections proposed for the tunnel corridor and land use implications.
- Future use of surplus land permanently acquired or temporarily used for the project.
- Potential relocation of, or hazards and disruptions to key electricity transmission, water, drainage, sewerage, telecommunications or other public infrastructure assets.

Existing environment

- Land that may be required permanently or affected temporarily.
- Current and proposed future land uses, land use objectives and sensitivities for required and nearby land.
- Key electricity transmission, water, drainage, sewerage, telecommunications or other public infrastructure assets affected by the project.

Likely effects

- Analyse the effects of temporary and longer-term land use changes resulting from the project.
- Evaluate the consistency of the project with the policies and provisions of the Bayside, Kingston, Monash and Whitehorse planning schemes, other relevant land use planning, environmental, urban or built form strategies, including Plan Melbourne (2017-2050) and any addenda, and any approved masterplans for large scale institutions.

- Outline proposed planning scheme mechanisms for use and development of project land and associated impacts to property owners and tenants.
- Assess residual effects on key electricity transmission, water, drainage, sewerage, telecommunications or other public infrastructure assets and services.
- Describe any benefits for land use or infrastructure from the project.

Mitigation

- Land use constraints and opportunities relevant to the siting and design of project infrastructure.
- Measures to minimise the temporary or permanent acquisition of land and, where access is required, the processes to be applied to gain access to land, including the approach to compensation and managing adverse effects for landowners.
- Measures to optimise compatibility of project use and development of land with nearby uses and developments.
- Use of planning approval processes to address land use issues.
- Approach to minimising constraints on land development while protecting the tunnel and other permanent infrastructure.
- The approach to relocation of or managing hazards and disruptions to key public infrastructure assets and services.

Performance criteria

- Performance requirements to minimise extent of project land and impacts on land uses and infrastructure.
- Approach to evaluating land use and infrastructure outcomes.
- Approach to integration of the project with future precinct planning.
- Approach to contingency in the event of more significant adverse effects.

4.7 Social, community and public health

Avoid or minimise adverse effects on the community near the project, including with regard to community cohesion, access to services and facilities and health impacts and capitalise on opportunities to enhance benefits for communities.

Key issues

- Permanent displacement of residents and impacts to community networks.
- Changes to local access patterns and severance to properties and social infrastructure for residents, workers and users of health, educational, commercial, recreational and other community facilities.
- Amenity impacts, including the combined impacts of noise, dust, heat, traffic and visual changes, that impact on social wellbeing and human health and may increase health inequities experienced by vulnerable population groups.
- Changes to valued places including neighbourhoods, parks and public open spaces, social infrastructure recreational assets.
- Changes to public safety and perceptions of safety.

Existing environment

- Communities that may be affected by the project and community demographics, values and attributes.
- Social and community infrastructure, networks and other elements, such as community service facilities and public spaces, to the extent that use of such features may be disrupted.
- Existing health and wellbeing status of the population in the vicinity of the project.

Likely effects

- Potential for health impacts including distribution and susceptibility of the population.
- Direct, indirect, temporary and permanent adverse effects on social wellbeing of communities and community safety.
- Accessibility, connectivity and other social benefits from the project.
- Consistency with social and public health strategies and plans.

Mitigation

- Measures to maintain, enhance or add community linkages or replace linkages which may be disrupted.
- Design and management measures to protect public safety.
- Measures to support community members and groups affected by the project.
- Public participation in designing community outcomes.

Performance criteria

- Performance requirements that adequately protect social wellbeing and public health.
- Approach to evaluating social and public health outcomes.
- Approach to contingency in the event of more significant adverse effects.

4.8 Contaminated land and spoil management

Avoid adverse environmental effects resulting from the disturbance and handling of contaminated or acid-forming material and minimise spoil generation, maximise reuse and manage spoil in accordance with best practice principles.

Key issues

- Potential to encounter contamination in soil, rocks and groundwater and acid sulphate soils and rocks.
- Proximity to former and current landfills and potential interaction with landfill gas, leachate systems and existing contamination plumes.
- Mobilisation of contaminants, potentially impacting human health, the environment and other beneficial uses.
- Generation of substantial quantities of excavation and tunnelling spoil, including the need for temporary stockpiling and storage, transport and off-site disposal and treatment of liquid wastes.
- The cumulative impact of concurrent projects on any offsite storage and disposal options.

Existing environment

- Sources of contamination, acid sulphate soils and potential hazards associated with landfill activity.
- Existing geological and groundwater conditions.
- Likely volumes and characteristics of project waste and spoil, including both contaminated material and fill material.

Likely effects

- Potential for disturbance of contaminated soil, acid sulphate soils, contaminated groundwater or former and existing landfills to affect users, environmental values, human health and public safety.
- Likely capacity constraints on potential storage, treatment and disposal sites and implications.

Mitigation

- Minimise the generation of waste spoil through design.
- Options for storing, treating, reusing, transporting or disposing of spoil with reference to the waste hierarchy and relevant best practice principles, and the routes and destinations for spoil movement and disposal.
- Design, management or site protection measures that could avoid or mitigate potential adverse effects of spoil on air, land or water values.
- Assess potential for project reuse or other economically viable reuse of project spoil.

Performance criteria

- Performance requirements and a strategy for the appropriate management of spoil and contamination.
- Contingency measures when encountering previously unknown sources of contamination.

4.9 Surface water, groundwater and land stability

Avoid or minimise adverse effects on the interconnected surface water, groundwater and floodplain environments and on land stability.

Key issues

- Potential for project works to affect waterways, groundwater, hydrology and drainage, including with respect to flooding, future climate change scenarios and groundwater dependent ecosystems.
- Potential for contaminated run-off or other water, including groundwater, to be discharged into surface waters or groundwater environments.
- Potential for project works to cause reduced ground stability, subsidence and erosion which could adversely affect properties, structures or other values.

Existing environment

- Natural and constructed surface water system within project catchments.
- Future climate change scenarios.
- Key surface water quality and stream condition parameters and trends.
- Groundwater conditions, characteristics and users that might be affected by project works.
- Ground conditions that may be susceptible to instability, in particular if subjected to tunnelling, deep excavation or dewatering.
- Land, properties, structures and infrastructure that may be affected by ground instability and hydrological changes.
- Hydrological or geomorphic conditions that may contribute to susceptibility to erosion.

Likely effects

- Effects to waterways and hydrology, including with respect to flood behaviour and implications for public safety, properties and assets.
- Effects to water quality in receiving waters, having regard to existing water quality conditions, water quality objectives and standards.
- Potential changes to groundwater conditions, with particular regard to ground subsidence, tunnel drainage, groundwater availability and quality and beneficial uses.
- Potential for immediate or incremental reduction of ground stability, subsistence and erosion and implications for land and assets.

Mitigation

- Measures to avoid or mitigate effects on waterways, drainage and flood behaviour.
- Measures to protect surface water quality with reference to water quality objectives, background conditions, water sensitive urban design and integrated water management principles and other relevant standards and guidelines.
- Measures to protect groundwater and aquifers.
- Strategy for managing extracted groundwater and surface waters, including generation of trade waste.
- Opportunities for maximising the sustainable use of water resources and improving water quality and waterway function over time.
- Design, construction and management measures to maintain ground stability where risks of potential instability have been identified.

Performance criteria

- Performance requirements that protect surface water and groundwater environments, groundwater dependent ecosystems and address flood and land instability risks.
- Approach to monitoring programs for water quality, hydrology, hydrogeology and land stability and contingency measures when encountering previously unknown contaminated groundwater or if monitoring indicates more significant adverse effects than predicted or permitted.

4.10 Aboriginal cultural and historical heritage

Avoid or minimise adverse effects on Aboriginal and historical cultural heritage values and maximise opportunities to appropriately complement and preserve these values.

Key issues

- Potential to destroy, reduce or intrude upon Aboriginal cultural heritage values.
- Potential adverse impacts on, or loss of historical cultural heritage values (buildings, properties, trees, archaeological sites and neighbourhoods).

Existing environment

- Land use history, landforms and geomorphology, Aboriginal traditional knowledge, previous studies and registers to identify areas with the potential for cultural heritage values.
- Aboriginal cultural heritage sites, values and areas of sensitivity that could be affected.
- Potentially affected heritage places, objects, precincts or sites on the Victorian Heritage Register or Heritage Inventory, within Heritage Overlays in relevant planning schemes or other documented heritage significance.
- Any previously unidentified places and sites of historical and cultural heritage significance, including any necessary investigations to supplement past studies.
- Liaise with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation and other Traditional Owner groups or representatives as appropriate to investigate Aboriginal places, values or areas of sensitivity.

Likely effects

- Effects on identified sites or places of Aboriginal cultural heritage significance.
- Effects on Aboriginal intangible heritage.
- Effects on sites and places of historical cultural heritage significance.

Mitigation

- Design, management and site protection measures that could avoid or minimise impacts on Aboriginal and historical cultural heritage values.
- Management and contingency measures in accordance with the requirements for Cultural Heritage Management Plans under the *Aboriginal Heritage Act 2006*.
- An archaeological management plan and chance finds procedure to manage historic heritage investigation or excavation, having regard to Heritage Victoria's Guidelines for Investigating Historical Archaeological Artefacts and Sites (2015) or updates.
- Opportunities for enhancement, preservation and celebration of cultural heritage values developed through meaningful engagement with and/or participation of cultural groups.

Performance criteria

- Performance requirements that avoid, minimise, manage and mitigate residual effects on Aboriginal and historical cultural heritage values.
- Describe a framework for identifying and responding to unexpected heritage effects.

4.11 Biodiversity and arboriculture

Avoid or minimise adverse effects on vegetation (planted, remnant and regenerated), tree canopy and native terrestrial and aquatic flora and fauna.

Key issues

- Project works located in a predominately urbanised setting with some semi-rural areas.
- Loss or disturbance to ecological values including native vegetation, threatened flora and fauna, and habitats.
- Loss of trees, tree canopy and other planted landscapes adversely impacting the amenity of surrounding neighbourhoods and habitat connectivity, including the cumulative impact of tree loss from concurrent projects.
- Potential impacts to waterways and riparian and aquatic environments.
- Impacts to wildlife from noise and lighting.

Existing environment

- Native vegetation, terrestrial flora and fauna and habitats that may be affected and species listed under the FFG Act, the EPBC Act or the DELWP Advisory Lists.
- Aquatic and riparian fauna that could be affected.
- Any groundwater dependent ecosystems.
- Status, condition and arboriculture value of trees in the project area.

Likely effects

- Effects on vegetation (including remnant, planted and regenerated), fauna habitat including trees, tree hollows, habitat connectivity and wildlife, aquatic habitats, groundwater dependent ecosystems and other biodiversity values.
- Urban canopy cover loss.

Mitigation

- Design, management and site protection measures to avoid or minimise impacts on trees and tree canopy and terrestrial and aquatic ecological environments.
- Measures to restore or offset adverse effects from urban canopy loss on biodiversity values.
- Opportunities to benefit or enhance urban canopy cover and biodiversity values.

Performance criteria

- Performance requirements that would adequately protect remnant and planted vegetation and ecological values.
- Describe a strategy for securing any offsets and replacing lost urban canopy cover.
- Approach to evaluating biodiversity and urban canopy outcomes and contingency planning.

4.12 Greenhouse gas emissions and resource efficiency

Avoid and minimise greenhouse gas emissions and capitalise on opportunities to reduce waste and use resources efficiently.

Key issues

- Consistency with Victoria's emission reduction targets outlined in the *Climate Change Act 2017* as well as any local government targets.
- Resource and energy use including the use of fuels for plant and equipment, electricity use for tunnel boring and embodied emissions in materials like concrete and steel.
- Influence of the project on future transport emissions in metropolitan Melbourne.
- Potable water demand and the sustainable use of water, including opportunities to minimise, harvest and reuse water.
- Waste streams generated by the project, and effective handling, treatment, reuse, recycling and/or disposal in a manner that is consistent with Victoria's circular economy goals.

Likely effects

- Predicted greenhouse gas emissions associated with the project.
- Contribution of the project to Victoria's greenhouse gas emissions in the context of the targets outlined in the Climate Change Act and by local governments.

Mitigation measures

- Approach to design, construction methods, materials, equipment and operations to reduce or offset greenhouse gas emissions, handle waste streams and promote resource efficiency.

Performance criteria

- Performance requirements that would provide for monitoring, measuring and reporting of material greenhouse gas emissions, resource use and generation of waste.

Appendix A: Procedures and requirements

Extract from the Public Works Order (20/12/2020) Declaration under section 3(1) of the *Environment Effects Act 1978*, Suburban Rail Loop Stage One (<https://www.planning.vic.gov.au/environment-assessment/browse-projects/projects/suburban-rail-loop-stage-one>).

Procedures and requirements under section 3(3) of the *Environment Effects Act 1978*

The following procedures and requirements are to apply to the environment effects statement (EES) for the proposed public works.

1. The EES is to document investigations of potential environmental effects of the public works, including the feasibility and effectiveness of design alternatives and environmental mitigation and management measures. In particular, the EES should document the potential effects of the proposed public works on:

- a) amenity due to changes in visual, noise, vibration, air quality, transport and traffic and land use conditions;
- b) social wellbeing due to residential acquisition, loss of access to public open space and community facilities and disruption to residents;
- c) businesses and economic wellbeing due to acquisition of commercial and industrial land, changes in land use and disruption to business activities; and
- d) disturbance of contaminated soils and groundwater, changes in surface water, geophysical conditions, including with respect to land stability, and the management of spoil.

2. The level of detail of investigation for the EES studies should be adequate to inform an assessment of the significance and acceptability of potential environmental effects and be commensurate with the aspects of the public works that have potential for greatest impact, as set out in the Suburban Rail Loop Ministerial Guidelines for Assessment of Environmental Effects (September 2020).

3. 'Initial works' (refer Schedule 1) are excluded from the declared public works. The cumulative effects of the initial works and the public works to which this order applies are to be assessed within the EES.

4. The Suburban Rail Loop Authority is to prepare and submit to the Department of Environment, Land, Water and Planning (DELWP) a draft EES study program to inform the preparation of scoping requirements.

5. The matters to be investigated and documented in the EES will be set out more fully in scoping requirements. Draft scoping requirements will be exhibited for at least 15 business days for public comment. The Minister for Planning will consider the public submissions before finalising and issuing the scoping requirements.

6. The Suburban Rail Loop Authority is to prepare its proposed schedule for the completion of studies, preparation and exhibition of the EES, following review of the draft scoping requirements.

7. DELWP will convene an inter-agency technical reference group (TRG) to advise DELWP and the Suburban Rail Loop Authority, as appropriate, during the preparation of the EES. The TRG will advise on the scoping requirements, the design and adequacy of the EES studies and coordination with statutory approval processes.

8. The Suburban Rail Loop Authority is to prepare and implement an EES consultation plan for informing the public and consulting with stakeholders during the preparation of the EES, having regard to advice from DELWP and the TRG.

9. The Suburban Rail Loop Authority is to apply appropriate peer review and quality management procedures to enable the completion of EES studies to a satisfactory standard.

10. The EES is to be exhibited for a period of 30 business days for public comment, unless the exhibition period spans the Christmas–New Year period, in which case 40 business days will apply.

11. The EES information should be accessible to the public and may include an online] interactive digital platform.

12. An inquiry will be appointed pursuant to section 9(1) of the Environment Effects Act to consider the environmental effects of the public works.