



Level Crossing Removal Program

Position Paper

Options Assessment Framework

August 2015

Document Version Control:

Version	Date	Status and key changes	Author	Endorsed	Approved
13.0	03 August 2015	1 st draft	Julia Hicks	N/A	N/A
13.1	06 August 2015	Incorporate comments	Julia Hicks	N/A	N/A
13.2	17 August 2015	FINAL	Julia Hicks	Alexis Davison 	Kevin Devlin 

1. Purpose

This paper outlines the approach to the assessment framework to identify preferred solutions for the Level Crossing Removal Project. This approach is used to analyse and support the development of the possible options at each site to achieve the Government's objective of removing 50 level crossings across Melbourne between 2015 and 2022.

The Assessment Framework aims to efficiently and effectively assess and shortlist a range of options at each site in a consistent manner that meets both the Project objectives and timelines. This approach will ensure that the assessment of options is cost-effective, defensible, comprehensive, transparent and consistent across all sites.

The outputs of the application of this framework will be the identification of preferred solutions for inclusion in the Program Business Case and reference designs where relevant for inclusion in procurement documentation.

This paper should be read in conjunction with the 'Approach to Business Case Development' position paper.

2. Introduction

Ensuring a consistent approach for assessing options is important for efficiency and will enable clear decision making regarding a clearly defined and reduced set of options to be included within the Program Business Case. There are a wide range of potential options available to the Level Crossing Removal Project. These need to be reviewed, assessed and reduced for the Program Business Case to ultimately establish a realistic budget envelope to deliver a credible range of options at each level crossing removal site.

The Assessment Framework will be applied to all level crossing removal sites (including those in the Caulfield-Dandenong Level Crossing Removals and Rail Upgrade project), except the first ten Level Crossing Removal sites for which contracts have been awarded or for which a preferred proponent has been nominated.

At each site there are at least five, and often more, options to be assessed. They can include:

Option	Type	Option Description
1	Rail under Road	Provide new rail cutting with new road bridge to retain road levels
2	Road over Rail	Provide new road overpass with existing rail line to remain
3	Rail over Road	Provide new rail bridge with existing road access to remain
4	Road under Rail	Provide new road underpass with new rail bridge to retain rail levels
5	Road Closure/ Nearby Improvements	Remove Level Crossing and divert road traffic
6i)	Hybrid/ Alternative	Road over rail hybrid with rail lowered to minimise elevation of the road over bridge
6ii)	Hybrid/ Alternative	Rail over road hybrid with the road lowered to minimise elevation of the rail over bridge
6iii)	Hybrid/ Alternative	Relocate and provide full grade separated crossing on adjacent site.

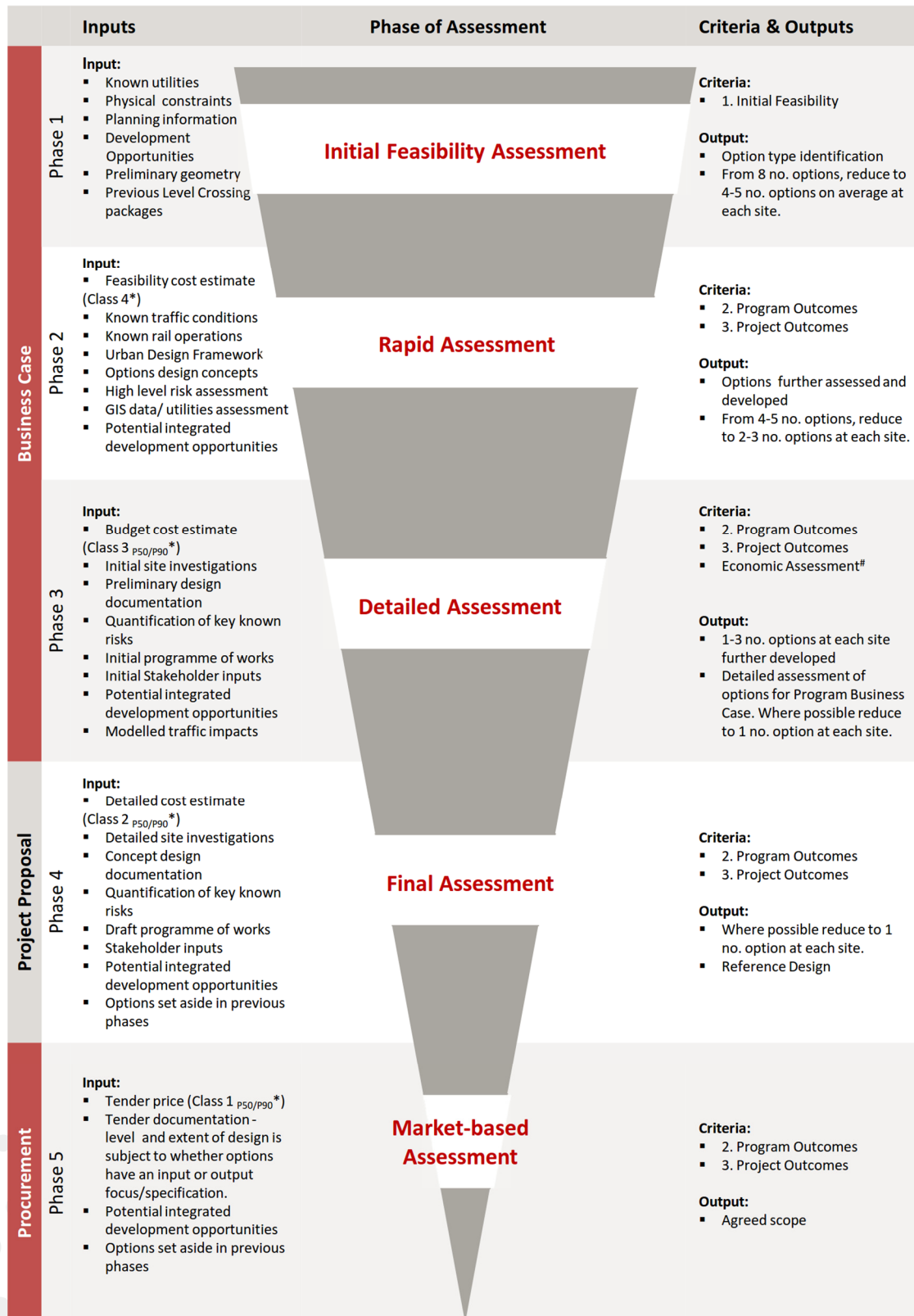
As the project continues, additional and/or new information will progressively become available, informing and influencing the assessment and shortlisting of options. At the end of each of assessment LXRA will recommend and document the shortlisted options.

The approach to the assessment framework is to be carried out in five phases. The phases are:

1. Initial Feasibility Assessment
2. Rapid Assessment
3. Detailed Assessment
4. Final Assessment
5. Market-based Assessment

The phased approach and the time at which each phase occurs in the project cycle is shown in Figure 1.

Figure 1 – Assessment Framework



* Estimate in accordance with Department of Infrastructure, Transport, Regional Development and Local Government, Best Practice Cost Estimation for Publicly Funded Road & Rail Construction, June 2008.

Refer to Position Paper #5: Economic modelling, and Position Paper: Approach to Business Case Development.

3. Framework for Assessment

3.1. The Phases

Each of the five phases of the Assessment Framework aims to make an assessment of the shortlisted options based on the information and level of options development available at each phase. The detail regarding the components of each phase is outlined in Appendix A. The aim of each phase is outlined below:

- The **Initial Feasibility Assessment** will identify and set aside options that are considered physically infeasible to implement thereby providing a short list of options at each site to take forward for further development and assessment. The assessment is based on an evaluation of the viability of the option taking into consideration local features and factors and its alignment with the Government's policy to remove 50 Level Crossings by 2022.
- The **Rapid Assessment** will identify from the short list of feasible options, the preferred options to be further developed for detailed assessment and consideration for inclusion in the Program Business Case. The preferred option identification is based on a qualitative assessment of the performance of the option against Program objectives and Project outcomes.
- The **Detailed Assessment** will undertake a detailed evaluation of the performance and impacts of the preferred options to inform the Program Business Case, and to identify the funding envelope to deliver Government's Level Crossing Removal Program.
- The **Final Assessment** takes place following completion of the Program Business Case during the development of the Project Proposal. The Final Assessment will undertake a further detailed assessment of the performance and impacts of the preferred option(s) which informed the Program Business Case using more detailed site information and further developed design documentation. This assessment will form part of the Project Proposal and confirms that the project options chosen to take forward into procurement will deliver the expected benefits within the funding envelope for the Program.
- The **Market-based Assessment** will enable LXRA to use the procurement process, where relevant, to identify innovative or new thinking from private industry. The Market-based Assessment will enable the private sector to assess and propose options they consider best for the contract package to be delivered, based on the scope the Level Crossing Removal Authority has issued to market, with the aim to determine the final option to be implemented.

3.2. Criteria for options assessment

Three sets of criteria for the options assessment has been developed for the Level Crossing Removal Program to be applied at different phases of the Assessment Framework. These sets of criteria are outlined in Appendix B.

In developing the assessment criteria, the Assessment Framework for Project Options considers the commitment by the Government, the Transportation Integration Act, the problems and benefits identified within the Investment Logic Map and Benefits Management Plan. The three sets of assessment criteria are as follows:

1. Initial Feasibility
2. Program Outcomes, and
3. Project Outcomes.

The Assessment Framework is to be adopted for each phase of the options assessment ensuring that Program and Project outcomes are continually achieved within the Project funding envelope. The applicable sections of the Assessment Framework are noted below.

3.3. Inputs for assessment framework

At each of the five phases of assessment framework, it is acknowledged that further development of the options and additional information regarding site conditions and risk will become available. Figure 1 identifies some of the key inputs that will be available at each Phase in order to undertake an assessment of the potential project options being considered for further development at the respective phases. Each phase of the assessment will be undertaken using relevant expertise within the LXRA team or its relevant Technical, Legal or Commercial Advisor. Appendix A outlines in more detail those input requirements at each phase.

3.4. Review and approval of short listed options

The framework allows flexibility to revisit decisions around shortlisting of options should further information become available.

At the end of each assessment phase, but particularly for the Final Assessment and the Market-based Assessment, a review of options set aside in previous phases may be undertaken if the availability of further information suggests that these options should be brought back into consideration. Decisions for bringing options back into consideration should be clearly documented within the assessment of the current phase. Figure 2 outlines the phases where options not taken forward may be further developed and assessed.

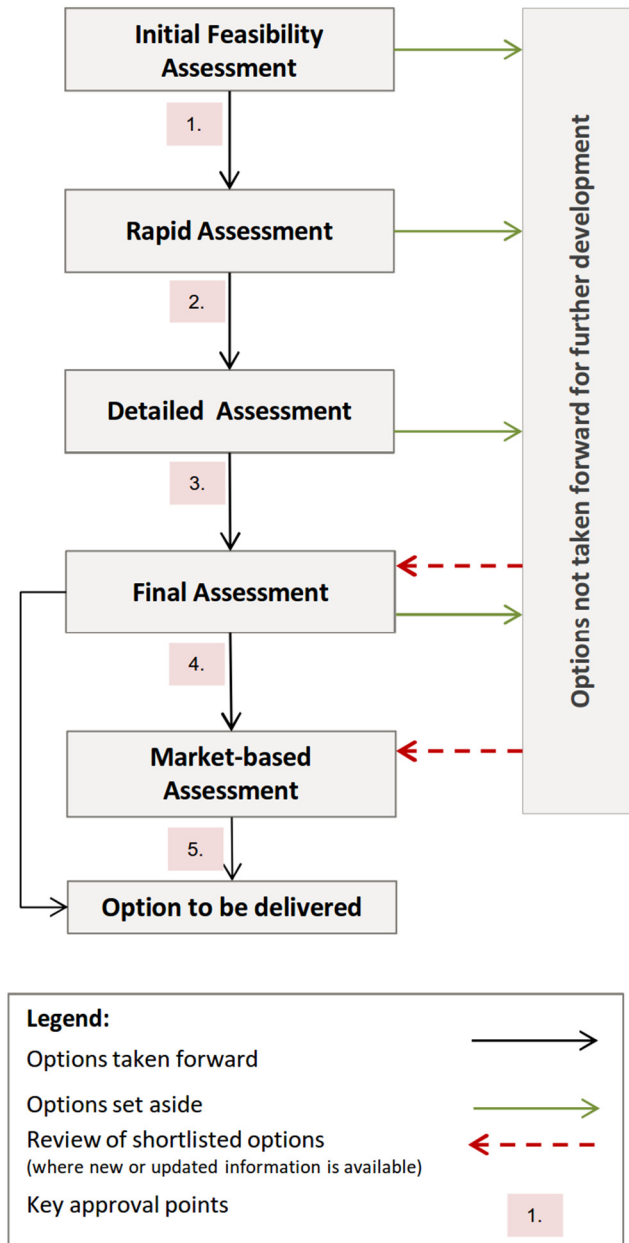
The outcomes of each assessment phase must be fully documented with the rationale behind recommendations to be fully explained, bearing in mind that the application of the criteria will be focussed on the relevant issues at each site. The documentation of the outcomes and recommendations will be undertaken at a point of time based on the site specific constraints and issues, having regard to the overall objectives of the program.

In accordance with the Level Crossing Removal Program Business Case Development Approvals Matrix, preferred options will be issued to nominated parties for their information, comments/ feedback, endorsement, or approval by the nominated party. Refer to the Assessment Governance outlined in Figure 2 for the relevant parties and their associated actions.

4. Recommendation

That the Major Projects Development Steering Committee endorses the proposed Options Assessment Framework.

Figure 2 - Framework process and governance map



ASSESSMENT GOVERNANCE

1. Outcomes of Initial Feasibility Assessment

- Comment/ feedback – Wider LXRA team
- Information – N/A
- Endorsement – Director Engineering and Program Services
- Approval - CEO

2. Outcomes of Rapid Assessment

- Comment/feedback - DEDJTR, DTF and DPC
- Information - OCG/Board Review, TPPDC, and Minister Public Transport
- Endorsement - MTM and PTV Project Steering Committee and VicRoads
- Approval - CEO/LXRA Steering Group, MPDSC

3. Outcomes of Detailed Assessment

- Comment/feedback - DEDJTR, DTF and DPC
- Information - TPPDC, ICC, and Minister Public Transport
- Endorsement - OCG/Board Review, and MTM and PTV Project Steering Committee and VicRoads
- Approval - CEO/LXRA Steering Group, MPDSC

4. Outcomes of Final Assessment

- Comment/feedback - DEDJTR, DTF and DPC
- Information - TPPDC, and ICC.
- Endorsement - CEO/LXRA Steering Group, OCG/Board Review, and Gateway Review
- Approval - MPDSC, Minister Public Transport, Treasurer & ER SC.

5. Outcomes of Market-based Assessment

- Comment/feedback - DEDJTR, DTF and DPC
- Information - TPPDC, and ICC.
- Endorsement - CEO/LXRA Steering Group, OCG/Board Review, and Gateway Review
- Approval - MPDSC, Minister Public Transport, Treasurer & ER SC.

Appendix A – Components of Assessment Framework



Phase	Type of Assessment	Available Inputs	Applicable Assessment Criteria	Output
Phase 1 Initial feasibility assessment	During Phase 1 a qualitative assessment that identifies those options that are not feasible to implement. Assessment is carried out based on: <ul style="list-style-type: none"> Achieving the Government's commitment to remove the level crossing; Technical or physical constraints that render the option infeasible to implement; The level of impact on designated activity areas; The level of impact on State significant infrastructure or utility services; Poor transport or safety outcomes; and The level of planning or environmental impacts. 	The available inputs and initial data to inform the Phase 1 assessment may include, but are not limited to: <ul style="list-style-type: none"> Known utilities, Known physical constraints such as locations of intersecting roadways, watercourses, drainage, railway maintenance facilities or turnbacks; Planning information, inclusive of: <ul style="list-style-type: none"> Local councils and current strategic plans; Heritage overlays; Environment protection overlays; Contamination; Flooding; and/or Development overlays. Station data; Preliminary geometry; and Previous Level Crossing packages 	The applicable assessment criteria to be used for this phase of assessment are the 'Initial Feasibility' criteria from the Assessment Framework for Project Options, as outlined in Appendix B.	The output of this phase of assessment will be: <ul style="list-style-type: none"> A number of options identified as infeasible based on the Initial Feasibility Criteria, and The identification of 4-5 no. feasible options (on average) at each site to take forward for further development and assessment.
Phase 2 Rapid Assessment	During Phase 2 a qualitative assessment will be carried out to identify options that are preferred to progress to the next stage of assessment based on their performance: <ul style="list-style-type: none"> in achieving Program outcomes, and in achieving Project outcomes. 	In addition to the available inputs at Phase 1, the available inputs at Phase 2 may include, but are not limited to: <ul style="list-style-type: none"> Feasibility cost estimate (Class 4*); Known road traffic conditions; Known rail operations; Urban Design Framework; Options design concepts; High level risk assessment; GIS data/ utilities assessment; and Potential integrated development opportunities. 	The applicable assessment criteria to be used for this phase of assessment are the 'Program outcomes' and 'Project outcomes' criteria from the Assessment Framework for Project Options, as outlined in Appendix B.	The output of this phase of assessment will be: <ul style="list-style-type: none"> The identification of 2-3 no. preferred options at each site to take forward for detailed assessment; and A number of options identified as unlikely to pass detailed assessment put aside for potential consideration in the future.
Phase 3 Detailed Assessment	During Phase 3 a detailed qualitative and quantitative assessment and economic assessment that assesses the preferred options to be implemented at each site. In a number of cases, this may include more than one option at each site. It involves undertaking an economic assessment and producing a detailed impact assessment. The assessment should reaffirm the achievement of Program outcomes and Project outcomes.	In addition to the available inputs at Phases 1 and 2, the available inputs at Phase 3 may include, but are not limited to: <ul style="list-style-type: none"> Budget cost estimate (Class 3 _{P50/P90} *); Initial site investigations; Preliminary design documentation; Quantification of key known risks; Initial programme of works; Initial stakeholder inputs; Potential integrated development opportunities, and Modelled traffic impact.. 	The applicable assessment criteria to be used are the same as Phase 2, and Economic assessment [#] .	The output of this phase of assessment will be: <ul style="list-style-type: none"> A detailed assessment of around 1-3 no. (on average) preferred options at each site for inclusion into the Program Business Case. Where possible reduce to 1 no. option per site.
Phase 4 Final Assessment	During Phase 4 a detailed quantitative assessment that assesses the preferred options to be implemented at each site will be undertaken. The assessment should reaffirm that the options meet the Program outcomes and Project outcomes.	In addition to the available inputs at Phases 1, 2 and 3 the available inputs at Phase 4 may include, but are not limited to: <ul style="list-style-type: none"> Detailed cost estimate (Class 2 _{P50/P90} *); Modelled traffic impacts; Detailed site investigations; Concept design documentation; Detailed quantification of key known risks; Draft programme of works; Stakeholder and community inputs; Potential integrated development opportunities and Options set aside in previous phases. 	The applicable assessment criteria to be used are the same as Phase 2.	The output of this phase of assessment will be either: <ul style="list-style-type: none"> A shortlist of preferred options with an output specification for the market to consider and price via procurement, or Where possible reduce to one (1 no.) shortlisted preferred option for the market to consider and price. Reference Design.
Phase 5 Market-based Assessment	During Phase 5 a detailed quantitative assessment that assesses the preferred options and/or options put aside at Phase 2 to be implemented at each site. The extent of the assessment will be based on the scope issued to the market. The assessment should reaffirm the achievement of Program outcomes and Project outcomes, inclusive of the option meeting the funding envelope.	In addition to the available inputs at Phases 1, 2, 3 and 4, the available inputs at Phase 5 is subject to the may include, but are not limited to: <ul style="list-style-type: none"> Tender price (Class 1 _{P50/P90} *); Tender documentation (extent and level of design subject to scope issued to market); Potential integrated development opportunities; and Options set aside in previous phases 	The applicable assessment criteria to be used are the same as Phase 2.	The output of this phase of assessment will be the agreed scope at each relevant site to be delivered, that meets the funding envelope.

* Estimate in accordance with Department of Infrastructure, Transport, Regional Development and Local Government, Best Practice Cost Estimation for Publicly Funded Road & Rail Construction, June 2008.

Refer to Position Paper #5: Economic modelling, and Position Paper: Approach to Business Case Development.

Appendix B – Project Options assessment criteria

LEVEL CROSSING REMOVAL PROGRAM ASSESSMENT FRAMEWORK FOR PROJECT OPTIONS

Final v3 23 September 2015



1. INITIAL FEASIBILITY

Feasibility	Consideration/ Constraint	Examples
Not Feasible	An option may be considered Not Feasible if any one of the following considerations are met.	
	It does not achieve the Government commitment to remove the level Crossing	<ul style="list-style-type: none"> Rail level crossing still exists Planning, environmental or construction constraints preclude the option from being delivered within the timeframe committed by the Government It does not support a separate State Government Commitment
	Multiple technical challenges & constraints, which in combination result in an option not being feasible	<ul style="list-style-type: none"> In avoiding a major EPBC site, an option results in land acquisition of a sensitive site. To avoid a State significant electricity transmission line, an option results in complete loss of road functionality
	Physical constraints, eg major freeway, highway, waterways or topography.	<ul style="list-style-type: none"> Geometrically impossible, constraints do not allow rail or road grades to be achieved – even accounting for land acquisition. An option is constrained by a major freeway, and impacting/changing on the freeway is unrealistic.
	Impact on designated Activity Area (retail or commercial)	<ul style="list-style-type: none"> Complete loss of connectivity of local shopping area – even accounting for land acquisition. (eg. large scale acquisition of major activity area shopping strips) Completely inconsistent with local council plans for precinct /activity centre and is likely to face significant opposition. Has the potential to significantly impact on the viability of the commercial/ industrial precinct.
	Complete loss of functionality of surrounding roads	<ul style="list-style-type: none"> Existing road functionality cannot be maintained (Arterial route, primary emergency services route or Over-dimensional route cut, with no realistic alternative).
	Sensitive land acquisition	<ul style="list-style-type: none"> Option requires acquisition of a sensitive site (eg school, church, etc)
	(State) Significant infrastructure / utility service impacted	<ul style="list-style-type: none"> An option impacts on significant infrastructure (eg significant new bridge(s)) or services (eg 500kV electricity lines, substation, gas transmission line, fuel transmission line, major telecommunications line between Sydney and Melbourne) and the impact either cannot be mitigated, or relocation cannot occur within the timeframe committed by government.
	Transport & Safety Outcomes	<ul style="list-style-type: none"> An option is likely to significantly impact on traffic congestion (eg. considerably narrower cross section(s) which is inconsistent with the future plan for the road network) An option is likely to significantly impact on rail commuters (eg. configuration of the design requires an adverse change in current or future planned rail operations). An option is likely to significantly impact on safety outcomes (eg. traffic redirected to blackspot intersections or an alternate safety risk is created)
	Planning & Environmental Impact	<ul style="list-style-type: none"> Planning or Environmental impacts occurs such that the risk is Extreme and cannot be mitigated. (eg. Major EPBC impact or Ramsar wetland etc)
Feasible with major Constraint	An option may be considered Feasible however will include one or more of the following manageable constraints/risks requiring mitigation measures	
	Complex Ground or Site Conditions	<ul style="list-style-type: none"> Groundwater present within 4m of surface, such that there are complexities in construction, draw down settlements, etc Soil or groundwater contamination present and can be addressed but will likely incur higher management costs Complex flooding & hydrology issues Solution impacts upon or requires construction through/over/under a waterway, hillside
	Complex Environmental or Social Impacts	<ul style="list-style-type: none"> Impact on sensitive flora and fauna communities which will require special consideration but can likely be addressed within the delivery timeframe Impact on European or Aboriginal Cultural Heritage site which will need to be managed but can likely be done so within delivery timeframe Significant visual and noise issues impacts on abutting residential areas which will need to be managed but can likely be done so within delivery timeframe
	Major Land Acquisition	<ul style="list-style-type: none"> An option requires Land Acquisition (eg. a small cluster of properties, a continuous strip of land)
	Existing train operations impacted	<ul style="list-style-type: none"> Effects on rail operations (e.g. stabling yards, turnouts, or other aspects of rail operations) which are likely to require some review, modification, or amendment to rail operations but which will largely allow the current rail operations to be retained.
	Major infrastructure changes	<ul style="list-style-type: none"> New bridge required or existing bridges requiring modification. Significant station impacts or station cannot be provided in current location (requiring a new station at a different location)
	Major services relocation required	<ul style="list-style-type: none"> One or more local utility services impacted which present particular risks that can be managed but could have cost implications (e.g. WAG, 22 or 66KV, water main, telecommunications, local gas main, etc.)
	Reduction in local road access / connectivity	<ul style="list-style-type: none"> Additional works may be required to restore local road connectivity, e.g. upgrades to local roads, new road, or some minor loss in connectivity required (e.g. truncation of a local road).
Feasible	An option is considered Feasible if the constraints are business-as-usual	
	Station relocation is required	<ul style="list-style-type: none"> Minor station impacts or new station required, which can be provided in approximately the same location
	Impact on services	<ul style="list-style-type: none"> Minor impact on utility services which can be readily managed and do not represent significant risk to the project (e.g. 22 kV electricity, minor water connections, etc.)
	Minor land acquisition	<ul style="list-style-type: none"> Minor or isolated pockets of land acquisition required (Eg. transfer of land between road and rail authorities, minor number of residential or retail properties or other small area of land which can be offset by the proposed solution).
	Minimal disruption to rail or road service	<ul style="list-style-type: none"> Solution proposed is unlikely to cause significant disruption to current network operations during construction Options present which permit a rail under/over solution to be constructed largely without impacting existing rail or road operations during construction
	Low complexity solution	<ul style="list-style-type: none"> Solution is of low technical complexity and risk
	Provides for significant enhancement of local/ neighbourhood amenity	<ul style="list-style-type: none"> Solution offers significant opportunity for value capture and community enhancement through improved pedestrian connectivity and opportunity for improved local shopping precincts and mixed use development

2: PROGRAM OUTCOMES

Primary criteria	Secondary Criteria	Criteria considerations & measures	Criteria Rating Guidance		
			Clear Improvement indicators	Marginal Improvement indicators	No Improvement indicators
Alignment with Program Benefits	More reliable and efficient transport networks to improve productivity	<ul style="list-style-type: none"> Local network efficiency (KPI) Local network reliability (KPI) Rail capacity (KPI) 	<ul style="list-style-type: none"> Clear improvements to road travel time and reliability (eg. removal of a level crossing that causes continuous peak queuing, or removal of level crossing adjacent to major intersection allowing for improved traffic signal coordination) Clear improvements to bus and tram travel times & reliability (eg. major delay point removed enabling travel time savings to be realised, removal of level crossing affecting major bus/tram route) Clear improvements to intermodal interchange (eg. improvement to time and reliability at major bus interchange) Strong alignment with SmartRoads Hierarchy (eg. likely to achieve positive Network Fit, or removal of level crossing removal on strategic route, such as preferred traffic, freight or major bus route) Clear alignment with Network Development Plan – Metropolitan Rail. (eg. Allows the ability for rail capacity to be later increased). 	<ul style="list-style-type: none"> Marginal improvements to road travel time and/or reliability (eg. removal of a level crossing that causes short-term delay) Marginal improvements to bus and tram travel times (eg. minor delay point removed) Marginal improvements to intermodal interchange (eg. bus stop is closer to train station than currently) Marginal alignment with SmartRoads Hierarchy, likely to achieve neutral Network Fit Assessment 	<ul style="list-style-type: none"> No improvements to (or adverse impact on) road travel time and reliability No improvements to (or adverse impact on) bus and tram travel times No improvements to (or adverse impact on) intermodal interchange Not well aligned with SmartRoads Hierarchy, likely to achieve negative Network Fit Assessment Not well aligned with Network Development Plan – Metropolitan Rail. Caters (eg. does not allow the ability for rail capacity to be later increased, where this need is identified in NDPMR.)
	Better connected, liveable and thriving communities ¹	<ul style="list-style-type: none"> Local area amenity (KPI) Urban renewal along rail corridor(KPI) 	<ul style="list-style-type: none"> Clear improvement on access within designated activity area (eg. removal of level crossing that divides or restricts access within a major activity area) Clear improvement on number or quality of physical connection points across the rail corridor (eg. unrestricted access beneath raised viaduct on piers, or additional pedestrian links across limited extent of deck over road/ rail) Clear improvement to public spaces (where applicable) (eg. new high quality public plaza at the heart of an activity centre) Clear improvement to station access (eg. improved access to the station for pedestrians, drivers and public transport users, allows opportunity for increases to station car-parking) Clear improvement to pedestrian and cyclist access (eg. connection of previously unconnected sections of the strategic cycling corridors and the principal bicycle network) Clear alignment with local land use policy & strategy Clear opportunity for urban renewal of the broader precinct (beyond value capture development). 	<ul style="list-style-type: none"> Marginal improvement on access to designated activity area (eg. removal of level crossing that partially restricts access to nearby minor activity area) Marginal improvement to number or quality of physical connection points across the rail corridor (eg. grade separated connections that replace existing pedestrian level crossings) Marginal improvement to public spaces (where applicable) (eg. improved streetscape adjacent transport infrastructure) Marginal improvement to station access (eg. pedestrian access improved but car parking less accessible) Marginal improvement to pedestrian and cyclist access (eg. limited extension of the existing local bicycle network) Marginal alignment with local land use policy & strategies (minor review/update required) Marginal opportunity for urban renewal of the broader precinct (beyond value capture development). 	<ul style="list-style-type: none"> No improvement to (or adverse impact on) number and quality of physical connection points across the rail corridor No change to (or adverse impact on) public spaces No improvement to (or adverse impact on) station access No improvement to (or adverse impact on) Pedestrian and cyclist access Not well aligned with local land policies & strategy (major reviews/update required) No opportunity for urban renewal of the broader precinct beyond value capture development.
	Safer communities	<ul style="list-style-type: none"> Frequency/severity of incidents (KPI) Pedestrian/cyclist exposure to risk (KPI) Road and rail commuter exposure to risk (KPI) 	<ul style="list-style-type: none"> Clear improvement to safety outcomes (eg. elimination of level crossing with crash history and high number of near misses, removal of multiple pedestrian level crossings)) 	<ul style="list-style-type: none"> Marginal improvement to safety outcomes (eg. improvement to safety risk by removal of a level crossing, no anticipated redistribution to intersections with safety issues) 	<ul style="list-style-type: none"> No improvement (or adverse impact) to safety outcomes, or potential to result in unintended reduced safety outcomes (eg. traffic redirected to another level crossing or to an intersection with safety issues)

¹ 'Access to jobs, education and services' KPI will measured at network levels only.

3: PROJECT OUTCOMES

Primary criteria	Secondary Criteria	Criteria considerations & measures	Criteria Rating Guidance		
			Strong Performance indicators	Average Performance indicators	Poor Performance indicators
Project Outcomes	Capital cost	<ul style="list-style-type: none"> Preliminary cost estimate range 	<ul style="list-style-type: none"> Under \$100 M (per committed site) 	<ul style="list-style-type: none"> \$100M - \$150M (per committed site) 	<ul style="list-style-type: none"> Over \$150M (per committed site)
	Whole of life cost	<ul style="list-style-type: none"> Qualitative assessment of long-term maintenance & operational costs 	<ul style="list-style-type: none"> Lower annual maintenance and operational costs than present (eg. Power-draw of trains) 	<ul style="list-style-type: none"> Moderate additional maintenance and operational costs (eg. small pumping station, moderate increase in train power with no extra substations needed) 	<ul style="list-style-type: none"> High additional annual maintenance costs (eg. large pumping stations, additional power substations, siphons required)
	Value Capture Opportunities	<ul style="list-style-type: none"> Initial integrated development opportunity assessment 	<ul style="list-style-type: none"> Solution offers clear opportunity for value capture and is already well supported by existing land value, urban context and land availability. (eg. positive net return to State, accounting for enabling work) 	<ul style="list-style-type: none"> Solution provides marginal value capture opportunities based on existing land value, urban context and land availability. (eg. marginal net return to State, accounting for enabling work) 	<ul style="list-style-type: none"> Solution provides no value-capture opportunity and/or requires changes to planning controls Solution allows for value-capture opportunities in the longer term based on future land values. Solution does not allow value-capture opportunity to occur in a location where there would otherwise be a high opportunity to do so (eg. an option builds-out the value-capture opportunity).
	Timeframe	<ul style="list-style-type: none"> Estimated length of the project delivery program (planning & construction) Estimated Project Float Construction flexibility (eg. rail occupation constraints) 	<ul style="list-style-type: none"> Enables accelerated project duration Fits into the program delivery timeframe +2 year float Minimal constraints by rail occupations 	<ul style="list-style-type: none"> Standard project delivery duration Fits into the program delivery timeframe 1-2 year float Program partially constrained by rail occupations, 	<ul style="list-style-type: none"> Extended project delivery duration required Fits into the program delivery timeframe Less than 1 Year Float Program highly constrained by rail occupations, high risk if occupation is missed High risk of planning, environmental or construction constraints allowing the project to be delivered within the timeframe committed by the Government
	Delivery risks	<ul style="list-style-type: none"> Regulatory and planning approvals Design and construction risk profile (eg. Topography, Embankment stability, Drainage, Watercourse/groundwater) Permanent impacts on adjacent assets (eg. services, local roads) 	<ul style="list-style-type: none"> Solution is of low technical complexity and risk. Project delivery risk profile contains no Extreme or High Risks (post risk mitigation assessment) 	<ul style="list-style-type: none"> Solution is of standard technical complexity and risk. Project delivery risk profile contains no Extreme Risks (post risk mitigation assessment) 	<ul style="list-style-type: none"> Solution is of higher technical complexity and risk (e.g. groundwater present within 4m of surface, soil or groundwater contamination present, complex flooding & hydrology issues., solution impacts upon or requires construction through/over/under a waterway, hillside, impacts on critical services/infrastructure, etc) Project delivery risk profile contains some Extreme Risk (post risk mitigation assessment)
	Compliance with design standards and best practice	<ul style="list-style-type: none"> Gradient and configuration of rail/road geometry Maintenance Access Structures OH&S Road & Rail standards Clearances (eg. to services) Disability DDA Standards 	<ul style="list-style-type: none"> Desirable standards met 	<ul style="list-style-type: none"> At least one minimum standard is adopted 	<ul style="list-style-type: none"> Multiple minimum standards adopted At least one absolute minimum standard adopted

Primary criteria	Secondary Criteria	Criteria considerations & measures	Criteria Rating Guidance		
			Strong Performance indicators	Average Performance indicators	Poor Performance indicators
	Protection of Future Assets	<ul style="list-style-type: none"> Future rail network requirements Future road network requirements Future utility service requirements 	<ul style="list-style-type: none"> Active protection of future road/rail operations & projects (eg. no future rework of stations & major structures needed) Passive protection for long-term road/rail operations & projects occurring beyond 20+ years (eg. partial future modification of stations and structures required, abutments constructed to allow later conversion to piers) No impact on the ability to remove adjacent level crossings in the future. 	<ul style="list-style-type: none"> Passive protection for road/rail operations & projects occurring in 10- 20 years (eg. future modification of stations and structures required, abutments constructed to allow later conversion to piers) No protection for long-term road/rail operations & projects occurring beyond 20 +years (eg. future full reconstruction of entire stations and structures required) Future removal of adjacent level crossings is constrained (eg. results in design options becoming more limited at the adjacent sites) 	<ul style="list-style-type: none"> Passive protection for road/rail operations & projects occurring within 0-10 years (eg. future modification of stations & structures required, abutments constructed to allow later conversion to piers) No protection for road/rail operations/ projects occurring within 0-20 years (eg. future full reconstruction of entire stations & structures required) Future removal of adjacent level crossings is not possible (eg. builds-out the opportunity to remove an adjacent site) No protection for future critical utility and/or drainage infrastructure.
Project Impacts	Land Acquisition Impacts	<ul style="list-style-type: none"> Land acquisition Avoidance of land acquisition of socially significant sites (hospitals, schools, childcare centres) 	<ul style="list-style-type: none"> No land acquisition Transfer of land between State Agencies (eg. VicTrack & VicRoads) 	<ul style="list-style-type: none"> Minor or isolated pockets of land acquisition required (eg. partial acquisition, isolated minor acquisition, or temporary acquisition for construction purposes). Acquisition of Local Government land (Eg. partial acquisition of road reserves etc) 	<ul style="list-style-type: none"> More significant tracts of acquisition required (eg. a small cluster of properties, a continuous strip of land) Complex land acquisition, eg. acquisition of commercial/ industrial sites with complexities in compensation and land use)
	Land Use Impacts	<ul style="list-style-type: none"> Impacts on Residential land use Impacts on Community infrastructure Impacts on Businesses 	<ul style="list-style-type: none"> Minor adverse amenity impacts upon residential areas (eg. minor visual, noise, vibration or overshadowing impacts caused by <i>small</i> change in rail/ road elevation near a continuous strip of properties, and with a separation buffer such as side road or vegetated area) (eg. Impacts on isolated properties) Minor adverse impact on local community infrastructure Minor adverse impact on local business infrastructure (eg. impacts on isolated properties, minor changes to shop access) 	<ul style="list-style-type: none"> Moderate adverse amenity impacts upon residential areas (eg. moderate visual, noise, vibration or overshadowing impacts caused by <i>large</i> change in rail/road elevation near a continuous strip of properties, and with a separation buffer such as side road or vegetated area). Moderate adverse impact on local community infrastructure (eg. schools, childcare centres, hospitals, parkland) Moderate adverse impact on local business infrastructure (eg. minor changes to shop access affecting road dependent businesses) 	<ul style="list-style-type: none"> Significant adverse amenity impacts upon residential areas (eg. significant visual, noise, vibration or overshadowing impacts caused by <i>large</i> change in rail/road elevation near a continuous strip of properties in close proximity with no buffer, and where mitigation of impacts is difficult to achieve.) Significant adverse impact on local community infrastructure (eg. schools, childcare centres, hospitals, parkland) Significant adverse impact on local business infrastructure (eg. major changes to shopping area access, large effect on service stations or other road dependent business, acquisition of commercial/ industrial property impacts on economic activity)
	Environmental impacts	<ul style="list-style-type: none"> Flora & fauna impact Aboriginal Cultural Heritage impact European Heritage impact Other Environmental Impacts (eg. contamination, noise, air, CO₂, etc.) 	<ul style="list-style-type: none"> No impact on sensitive flora and fauna No impact on Aboriginal Cultural Heritage sites. No impact on European heritage sites 	<ul style="list-style-type: none"> Moderate impact on native vegetation (eg. permit / consent required, FFG permit needed) Moderate impact on cultural heritage sites (Aboriginal & European heritage) (eg. partial modification of sites on the Victorian Heritage Register, simple CHMP approval for low risk sites) 	<ul style="list-style-type: none"> Major Impact on sensitive flora and fauna communities which will require complex approvals, but can be done so within committed timeframes (eg. EPBC) Major Impact on cultural heritage sites (Aboriginal & European heritage) which will require complex approvals, but can be done so within committed timeframes (eg. full demolition of sites on sites on Victorian Heritage Register, complex CHMP approval for high risk sites)
	Temporary impacts	<ul style="list-style-type: none"> Disruption to Rail Commuters during construction (incl. cumulative impacts from nearby projects) Disruption to Road Commuters during construction (incl. cumulative impacts from nearby projects) Business and Residential Impacts during Construction Disruption to major utility services during construction 	<ul style="list-style-type: none"> Relatively low rail network disruptions (eg. weekend closures) (eg. 5+ week shutdown of low-volume rail corridor with alternative bussing available) Relatively low road network disruption (eg. weekend closure of strategic/ highway/ preferred traffic/ freight/ major bus route with manageable network impacts) 	<ul style="list-style-type: none"> Moderate rail network disruptions (eg. 4 week major shutdown over January on high-volume rail corridor) Moderate road network disruption (eg. 4 week closure of strategic/ highway/ preferred traffic/ freight/ major bus route over January with manageable network impacts) Effects on rail operations (e.g. stabling yards, turnouts, or other aspects of rail operations) which will largely allow the current rail operations to be retained. 	<ul style="list-style-type: none"> High rail network disruption (eg. extended closure of high-volume rail corridor in non-holiday period) High Road Network Disruption (eg. extended closure of highway/ preferred traffic/ freight/ major bus route in non-holiday period) Effects on rail operations (e.g. stabling yards, turnouts, or other aspects of rail operations) which will require temporary changes to rail operations. Disruptions to critical services (eg. large-scale gas transmission pipelines, fuel pipelines, major water mains pipelines servicing large sections of Melbourne, etc.)



Primary criteria	Secondary Criteria	Criteria considerations & measures	Criteria Rating Guidance		
			Strong Performance indicators	Average Performance indicators	Poor Performance indicators
Stakeholder & Community Views	Govt Agencies: Transport	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage
	Govt Agencies: Planning & Environment	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage
	Council	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage
	Community	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage	<ul style="list-style-type: none">To be Confirmed prior to Detailed Assessment Stage