VAGO
Victorian Auditor-General's Office

Quality of Major Transport Infrastructure Project Business Cases

September 2022

Independent assurance report to Parliament
2022–23:5

This report is printed on Monza Recycled paper. Monza Recycled is certified Carbon Neutral by The Carbon Reduction Institute (CRI) in accordance with the global Greenhouse Gas Protocol and ISO 14040 framework. The Lifecycle Analysis for Monza Recycled is cradle to grave including Scopes 1, 2 and 3. It has FSC Mix Certification combined with 99% recycled content.

ISBN 978-1-921060-47-2

VAGO
Victorian Auditor-General's Office

Quality of Major Transport Infrastructure Project Business Cases

Independent assurance report to Parliament
Ordered to be published

VICTORIAN GOVERNMENT PRINTER
September 2022

PP no 342, Session 2018–22

The Hon Nazih Elasmar MLC
President
Legislative Council
Parliament House
Melbourne

The Hon Maree Edwards MP
Speaker
Legislative Assembly
Parliament House
Melbourne

Dear Presiding Officers

Under the provisions of the *Audit Act 1994*, I transmit my report *Quality of Major Transport Infrastructure Project Business Cases*.

Yours faithfully

[redacted]

Andrew Greaves
Auditor-General
21 September 2022

The Victorian Auditor-General's Office acknowledges the Wurundjeri Woi Wurrung People as the traditional custodians of the land on which our office is located. We pay our respects to their Elders past and present.

Contents

Audit snapshot

Do business cases for major transport infrastructure projects support informed investment decisions?

Why this audit is important

Developing a business case for a major transport infrastructure project involves significant resources, time and expenditure, and requires close oversight and assurance.

Business cases give the government information it needs to make important choices about potential investments.

Transport infrastructure projects make up around 70 per cent of the state's planned capital expenditure.

Who and what we examined

We looked at 4 transport infrastructure business cases against the Department of Treasury and Finance's (DTF) Investment Lifecycle and High Value High Risk (ILHVHR) guidelines:

- the Suburban Rail Loop (SRL) rail and precinct development project
- the Melbourne Airport Rail (MAR) project
- 2 much smaller scale road projects—Barwon Heads Road Upgrade and the Mickleham Road Upgrade.

We audited the Department of Premier and Cabinet, Department of Transport (DoT), DTF, Major Transport Infrastructure Authority (MTIA) and Suburban Rail Loop Authority (SRLA).

What we concluded

Business cases for 3 of the 4 projects we reviewed do not support fully informed investment decisions.

The audited agencies' business case development and oversight processes for the projects were usually consistent with DTF and agency requirements. However, 3 business cases lacked sufficient analysis of alternative project options and 2 lacked an assessment of the value for money the projects could provide under different scenarios. Agencies provided other advice but did not finalise these 3 business cases until after the government made significant financial commitments to them.

Without a comprehensive business case, decision-makers do not know whether the investments they make will maximise benefits to Victorian communities.

Our recommendations

We made 6 recommendations to DTF, DoT, MTIA and SRLA about:

- improving the ILHVHR guidelines and Gateway review process
- providing the government with a full business case for the entire SRL program of investments
- disclosing the justification for and impacts of departures from DTF's ILHVHR guidance in any published version of the MAR business case.

Key facts

Suburban Rail Loop

Integrated transport and precinct development project

Multistage investment program over decades

SRL East from Cheltenham to Box Hill expected to cost over $30 billion

Melbourne Airport Rail

A rail link between Melbourne Airport and the CBD via Sunshine and Melbourne Metro Tunnel

Expected to cost between $8 billion and $13 billion

Barwon Heads Road Upgrade

Duplicates 4 km of Barwon Heads Road at a cost of $365 million

Mickleham Road Upgrade

Adds extra lanes on Mickleham Road between Somerton Road and Dellamore Boulevard at a cost of $220 million

Source: VAGO, based on audited agencies' information.

What we found and recommend

We consulted with the audited agencies and considered their views when reaching our conclusions. The agencies' full responses are in Appendix A.

The quality of business cases for major projects is important because they provide the basis for investment decisions. Agencies need to ensure that the information contained in business cases is timely and comprehensive so that governments can make informed decisions.

The Department of Treasury and Finance's (DTF) Investment Lifecycle and High Value High Risk Guidelines (ILHVHR guidelines) do not have the status of a statutory instrument with mandatory requirements. However, the content and presentation requirements of the ILHVHR guidance do provide a framework and basis against which DTF and decision-makers can compare and assess all standard and non-standard business cases. The guidelines state that they are applicable to any investment proposal and support the development of business cases, which are mandatory for capital investments with a total estimated investment of $10 million or more.

We concluded that 3 out of the 4 business cases we assessed in this audit do not support fully informed investment decisions because their content was not sufficient or timely and did not meet the requirements set out in DTF's guidance.

The Department of Premier and Cabinet (DPC), DTF, Department of Transport (DoT), Suburban Rail Loop Authority (SRLA) and Major Transport Infrastructure Authority (MTIA) do not agree with our assessment of the Suburban Rail Loop (SRL) and Melbourne Airport Rail (MAR) business cases. They told us that the MAR project is a very large scale and complex project and that SRL is much more than a typical transport project because it includes an unprecedented, city-shaping and multi-generational program of integrated and precinct development works. They said our assessment of the SRL and MAR business cases against DTF's standard business case development process and guidance, which they say is typically followed for projects with a narrower scope and influence, is inappropriate and misleading.

DTF's guidance is designed to cater for large-scale investment projects and programs that have higher risks and opportunity costs than smaller scale projects. Commonly accepted better practice suggests that a well-formulated business case should precede and inform investment decisions. Circumstances where governments make commitments to projects before receiving a complete business case do not relieve agencies from their responsibility to develop a comprehensive business case to inform subsequent government decisions.

Timing of business cases

DoT and relevant transport agencies developed the SRL, MAR and Barwon Heads Road Upgrade (BHRU) business cases between 2018 and 2021 and gave regular advice to central agencies and the government to inform progressive decision making on the projects. However, they did not give the government complete business cases in time to inform key decisions on investment commitments and project solutions for these 3 projects.

Figure A shows our assessment of whether DoT, SRLA and MTIA gave the government a business case before it committed to the project, as required by DTF's ILHVHR guidance.

Figure A: **Assessment of business case timing for the 4 projects**

	Business case			
	SRL	MAR	BHRU	MRU1*
Did the business case timing meet DTF's ILHVHR guidance?	A	A	R	G

Note: *MRU1 stands for Mickleham Road Upgrade.
We have used a **green (G)**, **amber (A)**, **red (R)** scale, where:

- **G** = no or minor departures from relevant guidance and/or expected processes
- **A** = some departures from relevant guidance and/or expected processes
- **R** = significant departures from relevant guidance and/or expected processes.

Source: VAGO.

The timing of 3 of the business cases does not align with DTF's guidance:

- For SRL and MAR, the business cases came after the government made funding commitments to the projects.
- For BHRU, while DoT and MTIA completed draft versions of the business case before the government made a funding commitment in 2018, they did not complete the final version and receive government approval until August 2020.

For MRU1, DoT and MTIA provided the government with a complete business case in time to inform key decisions.

The MAR business case did not fully meet its key purpose under the ILHVHR guidance to inform key government decisions on investment commitments and project solutions. This was because it was provided too late to inform decision-making.

DoT disagrees and told us that:

- our finding does not reflect the 'progressive government decision-making' that is required for a project of its scale and complexity
- this decision-making occurred in parallel with the development of the business case to inform the planning, approval and procurement of the project.

The decisions for the MAR project (before the final business case was completed) were informed by other detailed briefings and advice from DoT, MTIA, DTF and DPC. However, this advice did not fully meet the standard expected in a business case and agencies used it to justify the limited analysis they included in the final business case.

The timing and approach adopted by DoT and SRLA for assessing the SRL investment program is also not consistent with DTF's ILHVHR guidelines. However, it does support the government's decision-making for SRL, where project development and delivery are progressing in parallel. Despite this, the government does not yet have a business case for the entire SRL program of planned investments.

Recommendation about the timing of business cases

We recommend that:			Response
The Department of Treasury and Finance	1.	amends the Investment Lifecycle and High Value High Risk Guidelines to provide departments and agencies with clarity that a comprehensive business case is still required in circumstances where the government has made project-specific commitments, announcements and/or decisions before a business case is completed (see sections 2.1, 3.1 and 4.1).	**Accepted in principle**

Business case content and analysis

The DTF ILHVHR guidelines indicate that a business case should provide a detailed examination of an investment proposal. They state that:

> 'The purpose of submitting a business case is to provide confidence to decision-makers that:
>
> - the strategic justification for the investment is valid
> - the right investment option is selected
> - the agency can deliver the investment as planned'.

Figure B shows our assessment of whether the content in the business cases we examined comprehensively meets DTF's ILHVHR guideline requirements in key content areas.

We found:

- significant issues and departures from the guidance in the SRL and MAR business cases in the options assessments and economic analyses
- that the business cases for the BHRU and MRU1 roads projects largely complied with DTF's guidance requirements. However, DoT and MTIA's options assessment and analyses in the BHRU business case were too narrow.

Figure B: **Assessment of business case content for the 4 projects**

Business case content area	SRL	MAR	BHRU	MRU1
Problem definition and evidence	A	A	G	G
Case for change (benefits)	A	G	G	G
Options assessment	R	R	A	G
Economic appraisal method and presentation	R	R	G	G
Delivery case	A	A	G	G

Note: We have used a **green (G)**, **amber (A)**, **red (R)** scale, where:

G = no or minor departures from relevant guidance and/or expected processes

A = some departures from relevant guidance and/or expected processes

R = significant departures from relevant guidance and/or expected processes.

Source: VAGO.

Problem definition, evidence and benefits

Under DTF's ILHVHR guidance, business cases supporting bids for government funding need to describe and provide evidence for the problems they are trying to solve and the benefits they are trying to achieve.

The departures from the guidance that related to problem definition and evidence occurred mainly in the SRL and MAR business cases. Specifically, the problems described:

- in the SRL business case do not:
  - clearly identify how the proposed benefits flow from the problems identified
  - adequately demonstrate how some of the benefits are a direct consequence of the SRL project
  - immediately point to the need for a transport-related intervention
- in the SRL and MAR business cases are not supported with comprehensive evidence for or detailed descriptions of:
  - their root causes or underlying drivers
  - why the government needs to act now.

Options assessment

DTF's business case guidance expects an agency to explore and assess a broad range of interventions and options so it can recommend a preferred one based on evidence of relative costs and benefits. The guidance states, 'Business cases that are weakest in this area often propose just three options: do nothing, do something that is infeasible, or do what the business case is proposing'.

The SRL, MAR and BHRU business cases fall short of this standard because, although none of the options were infeasible:

- the MAR business case completes a cost–benefit analysis (CBA) only on a single option relative to the do-nothing base case
- SRL has only 2 options relative to the base case and those options only differ in the timeframe to build the rail loop and undertake related precinct initiatives
- DoT, SRLA, DPC and MTIA relied on high-level early assessments of potential strategic interventions and options to narrow their subsequent analysis of both SRL and MAR, which is not consistent with DTF's guidance
- for the BHRU, DoT and MTIA restricted their project options analysis by narrowing it to the parameters of the government's funding commitment, which preceded the full business case.

The SRL and MAR projects are large scale and complex, and their benefits are for the long term.

We expected that business cases for significant long-term transport infrastructure projects, such as the SRL and MAR projects, would consider options to defer or delay the proposed intervention to account for uncertainty. Neither did.

Given the limited number of options assessed both in the high-level early assessments and in the actual business cases, there is a risk that DoT, MTIA and SRLA have not provided the government with advice that maximises value for money.

Economic appraisal method and presentation

The economic analyses in the SRL and MAR business cases lack transparency and are not consistent with key elements of relevant guidance.

The methodology used for the economic and cost–benefit analyses in the SRL and MAR business cases creates a material risk that the economic value of these projects is overstated.

Relevant guidance for the economic appraisal of transport projects includes guidance from DTF, DoT, Infrastructure Australia and the Australian Transport Assessment and Planning (ATAP) guidance.

Specifically:

- the discount rate used in the economic appraisals in the SRL and MAR project business cases of 4 per cent was approved by the Minister for Transport Infrastructure (the minister) and accepted by the Treasurer. DTF's guidelines recommend a discount rate of 7 per cent for projects in core service delivery areas of government with benefits that are easy to monetise, such as public transport and roads
- the economic appraisal results for both projects are sensitive to small changes in the discount rate. DoT, MTIA and SRLA did not provide government decision-makers with the results of discount rate sensitivity analysis
- DoT, MTIA and SRLA included wider economic benefits (WEBs) and other non-standard benefits when presenting the primary economic analysis benefit–cost ratio (BCR) results in the SRL and MAR business cases. This materially improved the economic results for the projects. In particular:
  - for SRL, the business case highlights BCRs ranging between 1.0 and 1.7. The BCR for the project is 0.51 when calculated in line with DTF's guidance by excluding WEBs and other non-standard benefits and using a discount rate of 7 per cent
  - for MAR, the business case shows BCRs ranging between 1.1 and 1.3 when assuming that an SRL connection to the airport will be built. The BCR for the project is 0.48 when calculated in line with DTF's guidance by excluding WEBs and other non-standard benefits and using a discount rate of 7 per cent.

DTF and DoT guidance says that the primary CBA results of business cases should be shown exclusive of WEBs, with WEB-inclusive results presented separately.

DoT, MTIA and SRLA's inclusion of WEBs in primary economic analysis results and lack of discount rate sensitivity tests in the SRL and MAR business cases mean decision-makers did not have all necessary information at their disposal.

Discount rates are like interest rates. They express the value or cost of money at a particular time. Organisations use them in discounted cashflow analysis to value a project.

Wider economic benefits (WEBs) are benefits associated with changes in accessibility or land use that are not captured in traditional cost–benefit analyses. DTF and DoT guidance say WEBs should be considered separately from primary benefits and excluded from headline BCR results.

A **benefit–cost ratio (BCR)** is a number that represents the value of a project's benefits divided by its costs. Projects with a BCR of less than 1.0 do not usually proceed.

Recommendations about business case content and analysis

We recommend that:			Response
Department of Transport and the Suburban Rail Loop Authority	2.	provide the government with a full business case for the entire Suburban Rail Loop program of investments that includes economic analysis results for all stages of the proposed investment program (see Section 2.1)	**Not accepted by:** Department of Transport or the Suburban Rail Loop Authority
	3.	include updated economic analysis results in funding submissions for all future stages of the program (see Sections 2.1 and 2.2)	**Not accepted by:** Department of Transport or the Suburban Rail Loop Authority
Department of Transport and Major Transport Infrastructure Authority	4.	disclose in any published version of the Melbourne Airport Rail business case the justification for and impacts of departures from the Department of Treasury and Finance's Investment Lifecycle and High Value High Risk Guidelines guidance for the conduct of and disclosure of results from economic analysis (see Section 3.2)	**Not accepted by:** Department of Transport or the Major transport Infrastructure Authority
Department of Treasury and Finance	5.	amends the Investment Lifecycle and High Value High Risk Guidelines to require departments and agencies to include information in business cases to acknowledge, justify and disclose the impacts of any significant departures from the guidance (see sections 2.2 and 3.2).	**Accepted in principle**

Business case development processes

Project development, governance and quality assurance

Processes used by DoT and agencies to manage, oversee and quality assure the 4 audited business cases were largely consistent with DTF and agency-specific requirements and demonstrated active management of the business case development process.

However, DoT and SRLA's decision to adopt a program-level business case approach for the SRL project, which is acceptable under DTF's ILHVHR guidance, meant that they should have developed a preliminary and full business case for the entire project. They did not.

Instead, DoT and SRLA provided the government with a business case for the eastern and northern parts of the project only and funding submissions for specific components of the eastern part of the program only. This meant that they did not demonstrate the economic rationale for the entire project, and they have told us that they have no plans to do so. DoT and SRLA's approach does not fully meet DTF's guidance requirements and creates risks that their advice to government on these investments is not sufficiently comprehensive.

While not supported by a full business case for the SRL project, other advice and progressive reviews provided by DoT, SRLA, DTF and DPC to the government informed its decisions on funding submissions that have secured over $11.5 billion.

Compliance with external assurance and review requirements

DTF's high value high risk (HVHR) project assurance process requires a project assurance plan, Gateway reviews and a DTF assessment of the deliverability of the business case for projects designated as HVHR.

When projects receive funding from the Australian Government, Infrastructure Australia also reviews the business case.

Figure C summarises our assessment of compliance with external assurance and review requirements for the 4 business cases.

Projects are identified as **high value and/or high risk** (HVHR) by DTF or government. They are subject to more rigorous scrutiny and approval processes than other projects.

Gateway reviews are performed by a team of independent, experienced reviewers engaged by DTF at key points of the project/program life cycle as a critical check on business cases and to provide insights and learnings to assist project delivery.

Figure C: **Assessment of compliance with external assurance and review requirements**

Assurance and review requirements	SRL	MAR	BHRU	MRU1
Project assurance plan	G	G	G	N/A
Gateway reviews	A	A	A	N/A
HVHR business case deliverability assessment	A	A	G	N/A
Infrastructure Australia review of business case	To be confirmed	G	G	N/A

Note: We have used a **green (G)**, **amber (A)**, **red (R)** scale, where:

- **G** = no or minor departures from relevant guidance and/or expected processes
- **A** = some departures from relevant guidance and/or expected processes
- **R** = significant departures from relevant guidance and/or expected processes.

Source: VAGO.

While DTF provided ongoing input to agencies and advice to the Treasurer on all 4 business cases, it has not fully applied the HVHR major project assurance framework to the SRL and MAR project business cases because it is yet to complete the required HVHR deliverability assessment on them.

This means that a key intent of the HVHR assurance process—to provide confidence to government that business cases are robust before they are approved—has not been fully met for 2 of the largest infrastructure projects ever undertaken in Victoria.

MRU1 is not an HVHR project and therefore it did not require Gateway reviews or an HVHR deliverability assessment of the business case.

Gateway reviews

Gateway reviews were not fully effective in making recommendations on shortcomings with the SRL and MAR business cases.

Both SRL and MAR undertook combined Gate 1 and Gate 2 reviews with a stated purpose to:

> '… confirm that the business case is robust—meets the business need, is affordable, achievable with appropriate options explored, likely to achieve value for money and aligns well with the department's overall strategy'.

The combined reviews lack evidence that due consideration was given to affordability, options assessment or value-for-money requirements. Given this, these Gateway reviews fell short of their stated scope and missed a key opportunity for crucial elements of each business case to be tested and challenged.

For the BHRU project, DoT and MTIA did not fully respond to recommendations from the Gateway review of the draft business case that related to:

- providing a stronger alignment between the project and land-use objectives
- considering a wider range of transport options
- providing a more rigorous justification for the project option assessment framework.

DTF's deliverability assessments

A fundamental purpose of the HVHR process is for DTF to apply added scrutiny to the business cases for HVHR projects before they are approved and funded by the government. The process exists to inform the government's deliberations on the merits of business cases.

DTF is yet to complete an HVHR deliverability assessment on the SRL and MAR business cases, even though the government has committed significant funding and begun procurement for major works packages on both projects.

However, DTF told us that:

- it has provided ongoing advice to the government on the SRL and MAR business cases that addresses the substance of the required deliverability assessments
- the HVHR deliverability assessment will be completed once the final MAR business case is ready for approval by government
- it is undertaking a business case deliverability assessment based on the SRL business case, SRL East main works funding submission and other relevant information but has not indicated when it expects to complete this.

DTF did conduct a deliverability assessment on a short-form version of the business case for the BHRU project.

Recommendation about business case development processes

We recommend that:			Response
Department of Treasury and Finance	6.	amends the template for Gateway review reports to require review teams to explain any departures from the recommended scope for each review gate (see sections 2.1 and 3.1).	**Accepted**

1. Audit context

Victoria's population growth has prompted a significant increase in government investment in infrastructure. Capital investments of nearly $129 billion in transport represent around 70 per cent of the state's capital program in the 2022–23 Budget.

The unprecedented scale of investment in major transport infrastructure projects and the attendant impact on the state's debt burden underline the central importance of government decisions on these investments being well informed. A well-formulated, comprehensive business case that precedes investment decisions is commonly accepted to be better practice.

Among a range of other issues, VAGO performance audit reports since 2010 on the planning and delivery of major transport projects have variously found problems with business case content, development processes and timing.

This chapter provides essential background information about:

- What is a business case and why is it important?
- Required structure and content of a business case
- Who is responsible for developing business cases?
- Assurance framework for major infrastructure projects
- Major transport infrastructure project business cases

1.1 What is a business case and why is it important?

Investment life cycle

Responsible fiscal management demands that governments are as well informed as practicable before making decisions about whether and how to proceed with an investment.

DTF set up the ILHVHR guidelines, including templates and technical guidelines, to help departments analyse investments and inform government decision-making throughout the investment life cycle.

The **investment life cycle** is the process of planning, proposing and delivering investments.

The ILHVHR guidelines seek to promote consistently good practice in the detailed examination of proposed investments. The guidelines do not have the status of a statutory instrument with mandatory requirements. However, they do state that they are applicable to all investment proposals. Where we refer to 'requirements' throughout this report we are typically referring to DTF's guidance.

There are 3 key stages to the investment life cycle under the guidelines, as shown in Figure 1A. The business case is the first stage in this cycle.

FIGURE 1A: **Investment life cycle framework**

1. Business case	2. Procurement	3. Delivery	
Establishes need, defines benefits, explores interventions, estimates costs, identifies delivery process.	**Explores delivery options, finalises delivery plan, engages the market, awards the contract.**	**Implements solution, transitions investment into normal business.**	**Gateway—Benefits evaluation**
What is the problem, issue or service need? What are the benefits from addressing the problem? Is there a compelling case for investing? Can the project be delivered as planned?	What is the preferred method for delivering the investment?	Is the investment proceeding as planned? Are changes to the investment needed?	

Source: VAGO, based on *Investment Lifecycle and High Value High Risk Guidelines: Business Case (2019).*

The ILHVHR guidelines help shape proposals, inform investment decisions, monitor project delivery and track the benefits projects achieve throughout the investment life cycle.

The business case: purpose, timing and guidance

A business case should provide confidence to decision-makers that there is a compelling case for investing. This requires understanding whether the investment:

- is of net benefit, meaning it is expected to generate benefits that exceed costs
- is the best use of government funding, meaning better value than other alternatives to solving a problem.

According to the ILHVHR guidelines, the core purpose of a business case is to provide a detailed examination of an investment proposal. The ILHVHR guidelines state that:

> 'All investment proposals over $10 million seeking budget funding are required to submit a full business case. The purpose of submitting a business case is to provide confidence to decision-makers that the:
>
> - strategic justification for the investment is valid
> - right investment option is selected
> - agency can deliver the investment as planned'.

The business case should be provided at the time funding is sought for an investment. It has a fundamental role in showing the investment rationale, analysing response options and establishing whether proposed investments have sufficient value and can be delivered.

While the ILHVHR guidelines communicate a clear purpose to provide practical assistance to anyone developing investment projects in Victoria, the guidelines also state that:

- all capital projects over $10 million require a business case and should follow DTF's business case guidance
- DTF will use its economic evaluation technical guidelines to determine whether rigorous economic evaluations have been undertaken and whether the findings of such evaluations should be accepted by the government at face value.

DTF's ILHVHR guidance is not meant to unduly restrict agencies in the approaches they adopt in differing contexts. However, it does outline critical steps, methods and questions that should be taken and answered to comprehensively inform government decisions about whether to proceed with an investment. Comprehensively addressing the guidelines is more important for larger, more complex and costly projects.

Figure 1B shows the 2 main types of business cases.

FIGURE 1B: **Two types of business cases**

Business case type	Features
Preliminary business case	• Allows departments and agencies to test the investment case with government prior to developing a full business case • Is optional
Full business case	• Most comprehensive business case • Should be used for investment decision-making • Must include a comprehensive investment case with evidence showing the case for government investment and providing confidence about project delivery • Mandatory for projects seeking $10 million or more in budget funding

Source: VAGO based on DTF's ILHVHR guidelines.

1.2 Required structure and content of a business case

Under the ILHVHR guidelines business cases have 2 key sections:

- The investment case sets out the rationale for the investment, provides evidence of the scale of need, measures the impact of the problem and analyses response options.
- The delivery case shows how the preferred solution can successfully deliver the intended benefits on time and on budget.

The business case currently consists of 10 chapters. Figure 1C outlines each chapter and its purpose. The ILHVHR guidelines indicate that comprehensive evidence and effort is required across all 10 chapters for a full business case on a project classified as HVHR.

FIGURE 1C: **Business case chapters and levels of evidence and effort required**

Section	Chapter	Purpose
Investment case	Problem definition	Define the problem the project is trying to solve with supporting evidence. The problem should identify a cause and an effect
	Case for change (benefits)	Define the benefits or direct advantage gained by Victoria as a result of undertaking the investment and solving the defined problem
	Response option development	Outline a mix of high-level strategic interventions to respond to the problem, known as response options. A preferred response option should be identified from a range including a base case or a realistic option of what will occur if continuing under the current policy setting
	Project options assessment	Project options explore how the preferred response option might be implemented
Delivery case	Project solution	Present the evidence relied on in the options analysis in arriving at the preferred project option, including major assumptions on the project scope, why costs and benefits have been included or excluded and valuation methodologies employed to estimate costs and benefits
	Commercial and procurement	Analyse procurement options and a recommendation on the preferred procurement method The business case must demonstrate that the investment would be procured by the most appropriate method and provide an overview of the recommended procurement strategy
	Planning, environment, heritage and culture	Outline relevant planning, environment, heritage and culture considerations and approvals required to deliver the project solution
	Project schedule	Outline a detailed project schedule and list all major milestones so that decision-makers understand the extent of pre-construction works required
	Project budget	Develop estimate-level costing data used for the project options assessment to a preliminary design estimate level. This forms the basis for the budget funding consideration
	Management	Outline project governance so that roles and responsibilities are clear and decision-makers know who is accountable for effective project delivery

Source: VAGO based on DTF's ILHVHR guidelines.

What is involved in response and project option assessments?

Assessing response and project options are key functions of a business case. Business cases should identify and assess a range of realistic and feasible project options to address the underlying problem and meet investment benefits. The ILHVHR guidelines state that business cases are weakest if they propose only 3 options: do nothing, do something infeasible or do what the business case is proposing.

The ILHVHR guidelines and business case template seek an options assessment with the following stages:

- identify a range of strategic interventions—described as 'high-level actions' that should 'examine a range of capital, service delivery, legislative, and/or market-based solutions available'
- establish response options—DTF's business case guidance describes a response option as 'a combination of interventions that, when packaged together, form a response' and says, 'The response options should represent a broad coverage and include a focus on changing demand, improving productivity and changing supply'
- assess the response options by evaluating the extent to which options deliver the benefits targeted in the business case together with identifying risks, disbenefits, interdependencies, cost and timeframe. The end result is a ranking of response options and identification of a recommended response option
- assess project options aligned to the preferred response option by undertaking detailed financial, economic, risk and other analysis to arrive at a recommended project solution.

Following this process gives the government confidence that it is selecting the best solution to address the stated problems and benefits targeted in the business case.

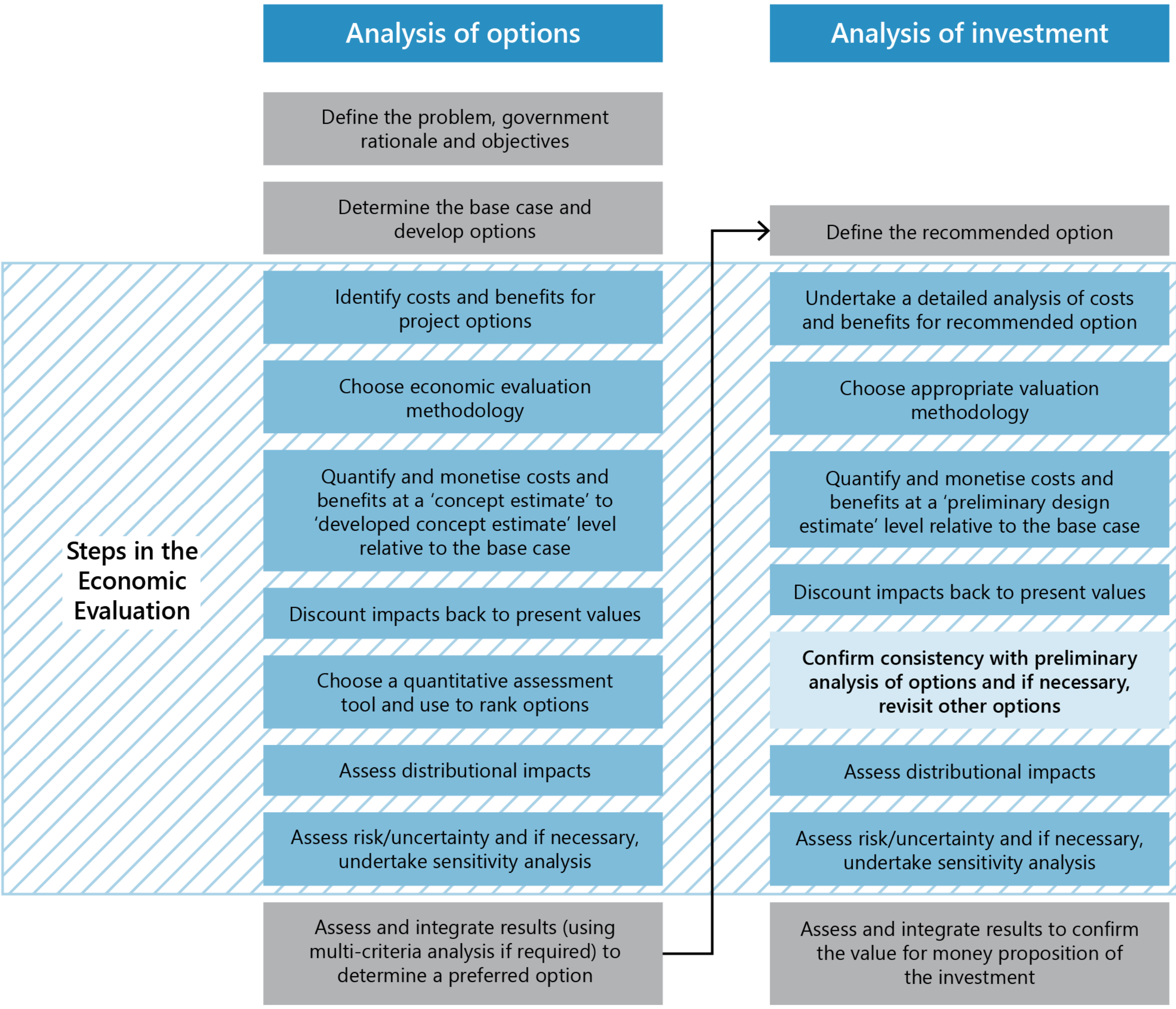
Economic and cost–benefit analysis

The assessment of economic impacts is a key feature of the project options assessment and the business case. It gives the government an understanding that what it funds will provide a net benefit to society.

DTF's preferred method for assessing economic impacts is through a cost–benefit analysis (CBA). The CBA produces a benefit–cost ratio (BCR) for each project option. The BCR is one indicator of how successfully a project could meet its intended benefits.

Figure 1D summarises the process steps for a CBA.

FIGURE 1D: **Steps in a CBA**



Source: VAGO, based on DTF's *Economic Evaluation for Business Cases Technical guidelines*.

A CBA assigns monetary value to the anticipated impacts or benefits of project options and compares it to the cost of investment. DTF's ILHVHR requires agencies to monetise benefits in a defensible, neutral manner wherever possible.

Investments are delivered over a number of years and their benefits may not be experienced until after a project is completed. Therefore, monetary values assigned to costs and benefits for the CBA must be calculated and represented as a net present value (NPV).

NPV is the difference between the present value of costs and the present value of benefits over a period of time or appraisal period. DTF advises that the appraisal period should generally be evaluated over the full life cycle of an investment, but this can be difficult for infrastructure projects with a long-life cycle like the SRL.

As the appraisal period becomes longer, the integrity of estimates generally declines. ATAP guidelines suggest that a standard appraisal period for road projects is 30 years and for rail projects, 50 years.

The economic analysis will also show a BCR result for project options. A BCR of less than 1.0 indicates the estimated benefits of the investment are less than the estimated costs.

Discount rates

The present-value results in the CBA are calculated by discounting real values.

DTF guidance indicates that the economic evaluation for a business case 'is used to support informed decision making' and that 'discounting is based on the concept of time preference'. That is, the discount rate reflects society's preferences for incurring costs and obtaining benefits over time. DTF's guidance defines the time preference of society through a standardised approach to discount rates recommended for business cases based on the nature of the project.

DTF's *Economic Evaluation for Business Cases: Technical Guideline*s (August 2013) recommends that business cases for proposed investments in projects use a discount rate of:

- 7 per cent in the CBA for core service delivery areas of government with benefits that are easy to monetise, such as public transport and roads
- 4 per cent in core service delivery areas of government with benefits that can be articulated but are not easily translated to monetary terms, such as schools, hospitals, police stations and civic open spaces.

The guideline also requires projects using a discount rate of 7 per cent to be sensitivity tested using real rates of 4 per cent and 9 per cent.

Standard practice in transport business cases has been to apply a discount rate of 7 per cent with sensitivity tests at 4 and 10 per cent. This matches Infrastructure Australia's requirements.

DoT's guideline, The standard approach to transport modelling and economic evaluation in Victoria, 2019–20 (October 2019), acknowledged DTF's ILHVHR guidance. DoT updated this guidance in December 2020 to require the presentation of economic analysis results under discount rates of both 4 per cent and 7 per cent.

Transport modelling

Transport modelling underpins key components of all transport project business cases. This modelling provides the basis for problem definition, response and project option assessment, and quantification of conventional transport project benefits for the economic analysis.

Non-standard benefits—wider economic benefits and option and non-use benefits

Wider economic benefits (WEBs) relate to economic benefits not typically captured in traditional CBA. They can include 'agglomeration' impacts expected to arise from an investment, such as an increase in productivity due to improved proximity or access to suppliers and labour markets.

DTF and national guidance state that caution should be exercised when estimating and considering WEBs as part of the economic assessment of projects. The guidance clearly states that the primary results of the economic analysis should be presented without including WEBs and that WEB-inclusive results should be separately disclosed.

Option and non-use benefits are a benefit stream to reflect the value that people who do not use the infrastructure or services provided by the planned investment nevertheless place on their being available. This is not a conventional benefit included in standard transport CBA approaches.

Relevant ATAP guidance suggests that:

- option and non-use value benefits should be quantified and included in the economic appraisal of public transport initiatives that would involve substantial changes in the availability of public transport services serving local communities outside main urban areas
- including option value and, particularly, non-use value benefits creates considerable risks of double counting the direct user benefits already incorporated in a conventional CBA.

1.3 Who is responsible for developing business cases?

Departments and agencies are responsible for developing business cases and can set up their own guidance, tools and resources to complement DTF's ILHVHR guidelines.

Several public sector entities are directly involved in the transport portfolio. Figure 1E outlines their roles and responsibilities for the business case stage.

FIGURE 1E: **Agency roles and responsibilities at the business case stage**

Entity	Role	Business case-specific responsibilities
DoT	• The state's lead transport agency • The 'owner' of business cases developed for major transport projects such as the SRL, Melbourne Metro Tunnel and MAR	• Develops and prioritises the transport portfolio's capital projects and programs • Defines objectives, scope and service needs • Commissions business cases from portfolio agencies • Is accountable for business cases provided to the government • Is accountable for integrating approved investments into the broader transport network
MTIA	MTIA is responsible for planning and delivering major transport infrastructure projects. It comprises a number of project offices, including Rail Projects Victoria (RPV) and Major Road Projects Victoria (MRPV), and developed 3 of the 4 business cases examined in this audit.	Manages the development of business cases for projects under project-specific agreements with DoT
SRLA	SRLA is a statutory authority established to plan and deliver the SRL program.	Manages the development of business cases and funding submissions for the SRL program based on a development brief with DoT
DTF	• Provides economic, financial and resource management advice to help the government deliver its policies • Runs the state Budget process, which is key to approving funding for major infrastructure projects	• Advises government on project delivery issues and oversees project funding requirements • Assesses the quality of business cases with the Office of Projects Victoria (OPV) • Facilitates the Gateway review process that includes a review of the business case
OPV	Provides additional technical assurance on business case quality for projects subject to the HVHR project assurance framework	Undertakes technical and project assurance reviews
DPC	Supports the government to achieve its strategic objectives	• Assesses business cases with DTF and advises government • Assesses value creation and capture documentation
Government	• Sets priorities and context • Is accountable for fiscal management and oversight of aggregate capital spending across government	Considers and approves investments and funding

Source: VAGO, based on information from DoT, MTIA, SRLA, DTF and DPC.

1.4 Assurance framework for major infrastructure projects

The ILHVHR guidelines include a project assurance framework to provide independent and objective oversight of the development, assessment and future performance of major projects.

The HVHR project assurance framework involves:

- DTF and OPV preparing project assurance plans to specify and guide the application of external assurance activities to HVHR projects
- DTF undertaking HVHR reviews at key milestones, including a deliverability assessment on the business case
- Gateway reviews.

HVHR project assurance framework

The government introduced the framework in 2010 to apply more rigorous review and assurance processes to projects meeting defined cost and risk criteria. The framework's aim is to provide government with more certainty that claimed benefits can be delivered within the timelines and costs estimated by proponents.

In 2010, DTF advised government that the key priorities in introducing the HVHR process were to:

- enforce the requirement for a robust business case with clear project objectives, well-defined benefits, a rigorous appraisal of options, selection of appropriate procurement methods and appropriate governance and management
- clearly articulate a tender proposal, appointment approach and contract management framework that appropriately allocates and manages risk, delivers benefits and effectively manages scope and cost.

Under the HVHR process as originally designed, the Treasurer's approval was required for HVHR project business cases before they were lodged for funding consideration. This required DTF to complete HVHR deliverability assessments based on final lodged business cases and to brief the Treasurer prior to the government considering these proposals.

The HVHR process has been refined since 2010 with the objective of creating a more efficient and targeted project assurance process. The most recent significant updates to the framework occurred in late 2017, based on advice from DTF. The revised framework requires DTF to include deliverability advice on business cases in briefings to the government, rather than just the Treasurer, on budget submissions.

Irrespective of the refinements to the HVHR process in recent years, the fundamental principle and goal—that DTF should apply additional scrutiny to the business cases for HVHR projects before they are approved and funded by government—remains unchanged. This additional scrutiny should take the form of an HVHR deliverability assessment of the business case by DTF to inform government consideration of the business case.

Gateway reviews

Gateway reviews, which are performed by a team of independent, experienced reviewers engaged by DTF, are done at key points of the HVHR project/program life cycle. They act as both a critical check and balance for government business cases and to provide insights and learnings to assist the investment going forward.

The aim of the Gateway review process is 'to assist agencies across the Victorian budget sector achieve better capital investment outcomes and to enhance their procurement processes.'

The standard approach for an HVHR project is to step through the 6 Gateway review gates sequentially. The business case review is at Gate 2 of the process.

1.5 Major transport infrastructure project business cases

For this audit, we looked at recently developed business cases and relevant reviews, advice and funding submissions for the following major transport infrastructure projects:

- SRL—a commuter rail network intended to trigger urban renewal in and around station precincts traversing suburbs 15 to 25 km from the CBD along an approximately 90 km route from Cheltenham to Werribee:
  - the SRL business case provided to the government in April 2021 referred to 'SRL East' as the eastern section of the SRL project between Cheltenham and Melbourne Airport and 'Stage One' as the first stage of SRL East between Cheltenham and Box Hill
  - The business case publicly released in August 2021 renamed project sections to SRL East (the section from Cheltenham to Box Hill), SRL North (the section from Box Hill to the Melbourne airport) and SRL West (the section from Melbourne Airport to Werribee)
  - in this report we have adopted the current section naming approach of SRL East, SRL North and SRL West. We have changed our descriptions of earlier decisions and events to be consistent with this approach
- MAR—12 km of new track from Melbourne Airport to Sunshine Station. MAR will use the Melbourne Metro Tunnel to access Melbourne's CBD. Expected project cost is between $8 billion and $13 billion ($5 billion was committed by the Australian Government)
- MRU1, which adds extra lanes on Mickleham Road between Somerton Road and Dellamore Boulevard. It also replaces the roundabout at the Somerton Road intersection and upgrades existing (and builds new) walking and cycling paths ($109.5 million is the commitment from the Australian Government)
- BHRU, which duplicates 4 km of Barwon Heads Road from Settlement Road to Reserve Road. The Australian Government contribution is $292 million.

Figure 1F summarises these projects.

FIGURE 1F: **Project business cases examined in this report**

Project	Expected start and finish	Total estimated investment
SRL	**SRL East** Expected start 2022 Expected finish 2035	**SRL East** $30.0b to $34.5b
	SRL North To be determined	**SRL North** To be determined
	SRL West Subject to further investigation	**SRL West** Subject to further investigation
MAR	Expected start 2022 Expected finish late 2029	$8b–$13b
MRU1	Expected start mid-2023 Expected finish early 2025	$220m
BHRU	Started 2021 Expected finish late 2023	$365m

Note: b = billion; m = million.
Source: VAGO, based on information from DPC, DTF, DoT, MTIA and SRLA.

2.
Adequacy of Suburban Rail Loop business case

Conclusion

The business case DoT and SRLA provided to the government for the SRL program did not support informed investment decisions. The business case only analysed part of the program and did not fully meet DTF's guidance requirements.

DTF has provided substantial advice to the government on the SRL program since 2019. However, it is yet to complete the assessment of the business case required under its HVHR project assurance framework to give the government confidence in its deliverability.

This chapter discusses:

- SRL business case development and timing
- SRL business case content

2.1 SRL business case development and timing

Figure 2A shows our assessment of the extent to which DoT, SRLA and DTF conformed to the good practice requirements of the ILHVHR guidelines.

FIGURE 2A: **Assessment of SRL business case development process and timing**

Process stage	Assessment
Business case development and oversight	
Development process	A
Governance, project management, quality assurance, approval	G
Assurance and external review requirements	
Project assurance plan	G
Gateway reviews	A
DTF HVHR assessment of business case deliverability	A
Infrastructure Australia review of business case	To be confirmed
Timing	
Did the business case timing meet DTF's guidance?	A

Note: We have used a **green (G)**, **amber (A)**, **red (R)** scale, where:

- **G** = no or minor departures from relevant guidance and/or expected processes
- **A** = some departures from relevant guidance and/or expected processes
- **R** = significant departures from relevant guidance and/or expected processes.

Source: VAGO.

We judge that DoT and SRLA's project management, governance, and quality assurance and review processes for the business case were satisfactory because:

- they demonstrated a systematic approach to managing the business case development work streams between 2019 and 2021
- the level of governance is appropriate to its scale and complexity and has covered the development of the business case and funding submissions
- the quality assurance processes included progressive reviews by SRLA, DoT and DTF, and a formal peer review of the transport demand forecasting and economic appraisal underpinning the business case.

In relation to our amber ratings, in summary:

- the approach adopted by DoT and SRLA for assessing the SRL investment program is not consistent with DTF's ILHVHR guidelines
- DTF did not complete its deliverability assessment of the business case before government funded it, but provided other relevant advice
- the timing of DoT's business case was much later than the expectations expressed in DTF's investment life cycle framework and ILHVHR guidelines, but it met the timing set by government.

SRL business case development processes

Government's decision-making on the SRL program since 2018 has not followed the standard investment development process, where departments first develop a comprehensive business case to inform a government investment decision. Instead, the SRL project development and delivery are progressing in parallel.

DPC, DTF, DoT and SRLA took the view that the SRL is much more than a typical transport project because it includes an unprecedented, city-shaping and multi-generational program of integrated transport and precinct development works that required a tailored approach to informing government on the investment, rather than the standard investment development process.

DTF lent support to this by advising us that their view was that the HVHR framework should not be seen as a 'one size fits all' approach and needs to be applied flexibly to projects, while maintaining appropriate rigour and confidence. DTF indicated that the need to be agile in applying the framework to fulfil the intent of the assurance task is more prominent in complex, large-scale intergenerational infrastructure projects like SRL.

In response we have assessed whether the tailored approach adopted has met the intent and key required content of DTF's investment life cycle framework and ILHVHR guidance.

Figure 2B provides a timeline of key events, decisions and announcements relevant to the SRL business case development.

FIGURE 2B: **SRL business case key events, decisions and announcements**

Date	Relevant event, decision or announcement
December 2016	Infrastructure Victoria releases its first 30-year infrastructure strategy for Victoria. This strategy did not identify a need for or recommend an orbital rail project in Melbourne.
2017	DPC commissions a strategic business case for the Orbital Metro project.
October 2017	Government releases the *Victorian Infrastructure Plan* (VIP). This plan does not refer to an Orbital Metro or suburban rail loop project.
January–April 2018	Development Victoria completes and government notes the Orbital Metro Strategic Business Case.
August 2018	*Suburban Rail Loop Strategic Assessment* is publicly released.
27 August 2018	Government requests DPC to commission a full business case for SRL.
28 August 2018	Government announces a commitment to develop a full business case for the SRL if re-elected.
November 2018	Victorian state election.
May 2019	Government agrees that RPV will prepare an investment case for SRL and allocates $300 million for the business case and early planning works.
June 2019	Government approves an approach to the SRL investment case, including a scope covering SRL East and SRL North, and an approach to the economic appraisal.
February 2020	SRL East initial works, early works and precinct activation funding submission completed by SRLA.
June 2020	Government approves $2.2 billion in funding for initial and early works and the SRL preferred delivery option and delivery program.
December 2020	Gateway Gate 1 review on SRL investment case and Gateway combined Gate 1 and Gate 2 business case review on the SRL initial and early works and Stage One main works funding submissions.
February 2021	• SRL East main works funding submission completed. • SRL business case for investment in SRL East and SRL North completed.
April 2021	Government: • considers the SRL East main works funding submission and approves setting aside funding of $9.3 billion. This is subject to endorsement of the SRL investment case and funding and financing strategy and engagement with the Australian Government on funding • approves the SRL investment case and the funding principle for SRL, targeting an equal one-third share from 3 funding sources—the state Budget (existing revenues), Australian Government grants (new grants) and value-capture revenues (new revenues).
August 2021	*SRL Business and Investment Case* publicly released.
November 2021	Government announces funding of $9.3 billion towards major works on SRL East.

Source: VAGO, based on information from DPC, DTF, DoT and SRLA.

Early development process for SRL business case during 2017 and 2018

The early development of the SRL business case was atypical for the state's largest ever transport infrastructure project because:

- no transport agencies were involved in the planning and development of the orbital metro line
- the VIP released in October 2017 made no reference to an orbital rail line for Melbourne
- DPC, the agency that commissioned its development, has no record of its decision to do so, or of its review of the business case before it provided it to government in April 2018
- DTF was not involved in its development and did not provide any advice to the Treasurer when the business case was submitted to the Cabinet in April 2018.

In late August 2018 the government:

- released the *Suburban Rail Loop Strategic Assessment* that examined 3 potential corridors for the SRL (inner, middle and outer Melbourne), recommended a rail line through Melbourne's middle suburbs and committed to a full business case for the entire project
- requested DPC to engage Development Victoria to lead development of a full business case for the project
- announced its commitment to the SRL project if re-elected and committed $300 million for the development of a full business case for the entire SRL project.

Before the SRLA was set up in September 2019, DPC, DTF, DoT, RPV (a project office of MTIA), Development Victoria and the Department of Jobs, Precincts and Regions continued planning for SRL. These departments and agencies established teams and engaged technical and commercial advisers to develop the business case.

SRL business case approach between 2019 and 2022

DoT and SRLA advised us that in mid-2019, the government endorsed an approach involving:

- a single program-wide investment case, positioning SRL as an orbital rail project from Cheltenham to Werribee, providing integrated analysis to establish the strategic need and consider the program's transport and precinct development benefits, but focusing principally on the SRL sections from Cheltenham to Melbourne Airport
- the SRL Western section from Melbourne Airport to Werribee to be delivered as part of the MAR and the Western Rail Plan (WRP)
- separate funding submissions to secure the release of funding for individual packages of works, consistent with the investment case, and submitted progressively to align with the program's delivery timeframes.

This approach indicates SRLA adopted a program-level business case approach, which is accepted under DTF's ILHVHR guidance. The guidance states that, 'Programs bring together multiple projects under a single coordinating structure, where each project contributes to the program outcomes'.

The DTF ILHVHR guidelines say that for a program of related investments, the business case approach should involve:

- a preliminary business case for the entire program outlining the program 'master plan' and justifying the program logic
- a full business case for the entire program
- separate full business cases for the major projects that form part of the program master plan.

However, DoT and SRLA have not given the government a full business case and economic appraisal for the entire SRL program of investments and none have been requested. They have provided the government submissions for specific components of SRL East and SRL North:

- a funding submission for initial and early works on SRL East in February 2020
- a funding submission for the SRL East main works in February 2021
- the business case for SRL East and SRL North in April 2021.

This approach creates risks that the advice to the government on these investments is not sufficiently comprehensive. This is because the funding submissions for SRL stages have not, and will not, provide any further investment rationale or economic analysis for either the significant individual investments proposed under those submissions or the SRL project as a whole.

The Gateway review of the draft business case in December 2020 raised this risk and stated that:

> 'Greater clarity on the scope of all works covered by the investment analysis is needed if it is the intention that future funding submissions do not require a further investment rationale'.

The final SRL business case made it clear that its scope was limited to SRL East and SRL North, but it does not:

- provide an economic appraisal for the entire SRL program
- make it clear that DoT and SRLA do not intend to provide government or the community the economic appraisal results for the entire project or individual stages of the project.

The separate funding submissions for specific components of SRL East so far have detailed the scope, budget and other information relevant to these requests but not an economic appraisal for this project. The other advice from DoT, SRLA, DTF and DPC to the government on these funding submissions has also lacked economic appraisal results for the SRL East component of the SRL program.

External review and assurance on the SRL business case

HVHR projects require a project assurance plan, Gateway reviews and a DTF assessment of the deliverability of the business case before it is funded.

Important steps in DTF's HVHR project assurance process did not provide sufficient assurance or recommendations on key elements of the SRL business case.

Project assurance plan

DTF established an SRL program assurance framework document by July 2020. This substantively meets the intent of a project assurance plan for the entire SRL program. DTF advised that the Treasurer has also approved project assurance plans for the SRL East initial and early works package and the SRL East main works package.

Gateway reviews

The Gateway reviews of the SRL project business case and funding submission for SRL East main works could have provided greater value to the SRL project team if they had been more comprehensive.

Gateway review teams undertook:

- a Gate 1 (concept and feasibility) review on the SRL investment case, completed on 3 December 2020
- a combined Gate 1 and Gate 2 business case review on the SRL initial and early works and SRL East main works funding submissions, completed on 6 December 2020.

A Gate 1 review is primarily 'to review the outcomes and objectives of the proposed investment (and the way they fit together)'. In contrast:

> 'The key purpose of a combined Gates 1 and 2 review is to confirm that the business case is robust—meets the business need, is affordable, achievable with appropriate options explored, likely to achieve value for money and aligns well with the department's overall strategy'.

The Gate 1 review of the SRL business case found that the economic appraisal approach diverges from standard guidance on the discount rate used and also that the inclusion of WEBs in primary results was not in line with DTF guidance. However, it is not clear why the reviewers made no recommendations about these matters.

The review team for the combined Gate 1 and Gate 2 business case review of the SRL East main works funding submission acknowledged previous government decisions on the project and tailored its approach to focus on project implementation and governance. As a result, the report on the review did not adequately address key elements of its required scope, including affordability, options assessment and value for money.

HVHR deliverability assessment of the business case

DTF's deliverability assessments on HVHR project business cases aim to provide confidence to the government that business cases are robust before they are considered for funding.

However, DTF has not yet completed its deliverability assessment of the SRL business case, even though the government approved the SRL business case in April 2021 and has committed funding of over $11 billion to the project and SRLA has commenced procurement for major works packages. In addition, DTF did not do a deliverability assessment on the SRL East initial and early works funding submission that secured funding of $2.2 billion in June 2020.

In June 2022 DTF told us that:

- the information submitted to the government in June 2020 did not have enough detail to enable DTF to complete the HVHR deliverability assessment for SRL East initial and early works
- it was unable to complete the deliverability assessment of the business case before it was approved in April 2021 because DTF required additional information
- it is undertaking a business case deliverability assessment based on the *SRL Business and Investment Case*, SRL East main works funding submission and other relevant information.

DTF also advised us that it has provided advice to the government on the SRL business case that addresses the substance of the required deliverability assessment. Our review of this advice shows that it did not fully address the scope of a deliverability assessment.

In any case, DTF has:

- provided extensive ongoing advice to the Treasurer on the SRL business case
- reviewed the funding submissions for SRL East initial and early works and main works
- provided ongoing input to SRLA on the business case
- commissioned an independent cost review of the initial and early works packages
- commissioned a review of the cost estimate for the SRL East main works tunnelling package
- plans to undertake reviews of cost estimates for other SRL East work packages
- carried out HVHR reviews on procurements for the project.

DTF has not indicated when it expects to complete the HVHR deliverability assessment for the SRL business case.

SRL business case timing

The business case for SRL East and North was completed in February 2021 and was consistent with earlier government decisions and requests. However, it was too late to inform key government decisions on proceeding with the investment and the project solution and its timing was not consistent with DTF's investment life cycle framework and ILHVHR guidelines.

The advice provided to inform earlier government decisions on the SRL program did not address gaps and issues with the options and economic assessment we identified in the business case.

2.2 SRL business case content

Figure 2C summarises our assessment of 5 key business case content areas in the ILHVHR guidelines.

FIGURE 2C: **Assessment of SRL business case content**

Business case content areas	Assessment
Problem definition and evidence	A
Case for change (benefits)	A
Options assessment	R
Economic analysis and presentation of results	R
Delivery case	A

Note: We have used a **green (G)**, **amber (A)**, **red (R)** scale, where:

G = no or minor departures from relevant guidance and/or expected processes

A = some departures from relevant guidance and/or expected processes

R = significant departures from relevant guidance and/or expected processes.

Source: VAGO.

In summary:

- the high-level problems and benefits articulated in the SRL business case lacked necessary and sufficient supporting evidence
- a narrow set of options were considered and analysed both before and as part of the business case development
- the economic analysis does not cover the entire SRL program and lacks consistency with the guidance in key areas.

Problem definition and evidence

The SRL business case describes 3 problems that are consistent with addressing challenges and objectives identified in *Plan Melbourne 2017–2050*:

- Melbourne's monocentric form is constraining economic growth.
- Concentration of growth in inner and outer Melbourne is contributing to inefficient infrastructure and service provision.
- Inequitable access to jobs and services is entrenching disadvantage.

Plan Melbourne 2017–2050 is the metropolitan planning strategy to manage Melbourne's growth and change over the next 3 decades.

The discussion of problems in the business case is consistent with relevant requirements in DTF's ILHVHR guidance. However, these high-level problems:

- are not supported with comprehensive evidence
- are not supported by detailed descriptions of their root causes or underlying drivers or how they may be impacted by uncertainty
- do not immediately point to the need for a transport-related intervention.

The business case lacks comprehensive evidence on why the problems need to be addressed now by the government. It notes that SRL was an election commitment before the 2018 state election but does not acknowledge that:

- Infrastructure Victoria's independent 30-year infrastructure strategy released in 2016 did not include or signal a need for an orbital rail line in Melbourne
- the VIP released in October 2017 did not include an orbital rail loop in Melbourne
- no transport or rail plan publicly available in Victoria in 2017 or 2018 identified the need for an orbital rail loop in Melbourne.

The case for change and benefits

The 'case for change' section in the SRL business case is not fully consistent with DTF's ILHVHR guidelines.

The investment logic map included in the business case identifies 3 benefits:

- increase Victoria's productivity and economic growth
- improve connectivity across Victoria
- improve Melbourne's liveability and thriving communities.

These benefits are of high value to the government. However, the business case does not:

- clearly identify how the proposed benefits flow from the problems identified
- adequately demonstrate how some of the benefits are a direct consequence of the SRL project
- demonstrate how some of the benefits specifically relate to the key performance indicators identified
- substantively discuss key dependencies critical to benefit delivery and it lacks detail on the degree to which the benefits are dependent on other infrastructure projects.

These issues arise because the business case defined such a high-level set of benefits that they may not be achievable with a single investment or even a major program of investments, such as the SRL.

Option development and assessment

The SRL business case does not meet the DTF ILHVHR guideline requirements because it does not consider a sufficient breadth of strategic interventions for the scope of the problems it describes.

The 2 program options assessed in the business case and supporting economic analysis have the same scope and only differ in their delivery timelines. Given the size and complexity of the SRL project, we expected the business case to examine a wider range of options, including as part of the economic analysis. This would have given the government greater confidence that the recommended program is the best value-for-money solution.

Strategic response options assessment

The narrowness of the options analysis in the business case is not mitigated by earlier advice to government. The Orbital Metro Strategic Business Case (January 2018) and *Suburban Rail Loop Strategic Assessment* (2018) both lacked a robust assessment of alternative response options:

- The Orbital Metro Strategic Business Case included only a brief assessment of a relatively narrow set of strategic interventions.
- The *Suburban Rail Loop Strategic Assessment* only considered potential corridors for an orbital rail link.

These assessments identified and assessed an insufficient range of strategic options and they were not packaged into response options. Gaps in the response options assessment in the strategic business case mean that this assessment may not have identified the best way to address the problems and deliver the benefits targeted in the SRL business case.

The fact that neither the SRL business case nor its preceding strategic assessment and strategic business case attempted to package the high-level strategic interventions into response options is inconsistent with the DTF ILHVHR guidance. This omission may have led to an early focus on an orbital metro rail solution rather than exploring a broader set of solutions.

Advice from DTF and SRLA indicates that the government had made a decision on a preferred strategic option when considering the Orbital Metro Strategic Business Case in 2018 and that this removed the need for the SRL business case to review other strategic options. This is concerning, given that:

- evidence provided to us on government consideration of the Orbital Metro Strategic Business Case in April 2018 does not show any decision on a preferred strategic option
- both DTF and DPC have advised us that they can find no evidence that they reviewed the strategic business case or provided any advice to government on its merits and comprehensiveness in meeting DTF's ILHVHR guidelines.

Project options economically assessed in the business case

The SRL final business case includes an economic appraisal of just 2 program cases compared to a base case:

- Program Case Option A: proposed SRL East and North rail along with select precinct initiatives, with completion scheduled for 2053
- Program Case Option B: rail and precinct initiatives as per Program Case A, with completion scheduled for 2043.

These 2 options have the same scope and only differ in the timing of their delivery. For an investment of this scale, and to meet DTF's ILHVHR guidance, the economic appraisal should have been used to test a shortlist of substantively different options covering a range of feasible solutions.

Because the business case does not do this, the project options assessment provides little assurance to decision-makers that, from a value-for-money perspective, the best option has been selected to deliver the benefits targeted in the business case.

Economic analysis

The SRL business case provided to government in April 2021 only includes economic analysis of the combined SRL East and North sections and this analysis is not sufficiently comprehensive, robust or transparent.

The business case method and content for the economic analysis are consistent with earlier government decisions but are inconsistent with key elements of the relevant guidance. The business case also does not present the results transparently. It:

- uses a discount rate of 4 per cent, whereas DTF guidance recommends 7 per cent
- does not include the required sensitivity analysis at different discount rates
- includes WEBs and urban consolidation benefits when presenting the primary economic evaluation results
- presents the CBA results as a range, without highlighting that this range incorporates only some of the uncertainties.

These issues increase the likelihood that the business case overstates the economic value of the project.

The business case and economic appraisal report acknowledge and seek to justify these departures from guidance and standard practice. However, the business case does not:

- explain the lack of sensitivity analysis at higher discount rates
- clearly show how these departures from guidance impact the CBA results.

The sensitivity analysis included in the business case is not sufficiently robust or comprehensive because it is unclear how the CBA results would change if assumptions around cost, public transport demand and land-use demand were altered. These are likely to be key areas of uncertainty for the SRL project and should have been explored further as part of the sensitivity analysis.

In addition, the business case and the SRL East main works funding submission do not provide distinct CBA results for the stage from Cheltenham to Box Hill. This failure to report a separate BCR for SRL East is significant because the government was advised to commit to an extended and unprecedented costly investment program without any advice on the expected economic value of only SRL East being completed.

Discount rate

SRLA used a discount rate of 4 per cent for the economic evaluation in the final SRL business case. This discount rate does not align with relevant Victorian or national guidance, which recommend a discount rate of 7 per cent for transport infrastructure projects.

The Minister for Transport Infrastructure approved the use of a 4 per cent discount rate in February 2021, based on advice from DoT and SRLA. The Treasurer accepted this approach in April 2021, 2 months after the business case was completed, based on advice from DTF. The minister and Treasurer did not approve the omission from the business case of sensitivity results using different discount rates.

The business case acknowledges that, 'Standard approaches require future costs and benefits to be discounted at a real rate of 7 per cent.' The key rationale presented in the business case for diverging from this approach is that:

> 'SRL [is intended] to benefit Victorians for generations to come. Application of the standard 7 per cent discount rate would render almost worthless many of the benefits enjoyed by the intended beneficiaries of SRL East and SRL North'.

The rationale provided in the business case and the advice to the minister and Treasurer supporting the use of 4 per cent do not demonstrate a detailed consideration of the issues to justify this specific discount rate.

In particular, the advice commissioned by SRLA and provided to support the recommendation to the minister does not specifically endorse the use of a 4 per cent discount rate for the SRL business case. It finds that the continued application of a fixed 7 per cent discount rate is inappropriate and proposes a revised methodology for calculating a more appropriate discount rate and that further work and analysis is needed to develop the specific discount rate.

DTF has not changed its technical guidance on discount rates. DoT's standard approach to transport modelling and economic evaluation in Victoria requires economic appraisals to report CBA results using both 4 and 7 per cent discount rates.

DTF has recently advised that the Australian Government and all states and territories, including Victoria, are undertaking work to review discount rate guidance.

DTF has advised us that it was appropriate to use a 4 per cent discount rate for the SRL program because:

- the project is more than a public transport infrastructure investment because it will enhance Melbourne's liveability with social and environmental benefits that are not easily monetised and quantified for CBA
- the extended delivery timeline of 30 years and the intergenerational economic and social benefits of the projects mean a 7 per cent discount rate was not appropriate.

These observations may be relevant when considering an appropriate discount rate for the economic appraisal of the entire SRL program. However:

- our review of the economic appraisal in the business case indicates that it quantified around $50 billion of present-value benefits, including conventional transport benefits, transport emission environmental benefits, WEBs and reduced social exclusion benefits, and did not suggest that there are material levels of non-monetised benefits
- suggesting that projects with longer-life benefits should have a lower discount rate is not consistent with the accepted purpose of applying a discount rate, which is to reflect the community preference for costs and benefits over time.

In addition, DoT and SRLA have no intention to provide government with a business case or other advice that includes an economic assessment covering the entire SRL program. They have justified the use of 4 per cent with reference to it being the only rate appropriate for an assessment of the full costs and benefits of the full project scope, but this analysis of the full project scope may never be done. The SRL East section funded to date is intended for completion in just over 10 years.

Presentation of primary economic appraisal results

The business case is not consistent with DTF guidance because it presents the economic appraisal results as a range and only shows BCR and NPV results with WEBs and urban consolidation benefits included together with what the business case describes as 'conventional benefits'.

Non-standard benefits in primary results

Including WEBs and urban consolidation benefits when presenting the primary CBA results is not consistent with DTF guidance that states, 'WEB inclusive results should therefore be presented separately from the standard Net Present Value or Benefit–Cost Ratio results'. DoT guidance also reinforces this requirement.

The SRL business case lacks transparency and is not sufficiently comprehensive because it does not explain how this departure from guidance impacts on the results.

Activating and capturing precinct development is identified in the business case as being a key reason for including WEBs and urban consolidation benefits in the primary economic appraisal results. However, it is not clear if the full incremental costs associated with delivering this precinct development are included in the economic analysis.

The economic appraisal also includes option and non-use value benefits in the primary CBA results. The peer review of the economic appraisal reported that the results of the economic appraisal would have been more plausible and transparent if the option and non-use benefits were excluded from the primary results or, at least, the implications of excluding these benefits streams were clearly presented.

The peer review report on the economic appraisal summarised the impact of these issues:

> 'Amending the assumptions to more closely conform with national guidelines is likely to reduce the BCRs to 1.0 or lower, with the further exclusion of non-conventional benefits such as WEBS [sic] reducing the BCR to be below 1.0'.

That is, presenting the economic appraisal results consistently with relevant guidance could have fundamentally altered the SRL's value proposition. This information should have been, but was not, transparently disclosed to the government in the business case or related advice.

Showing the economic appraisal results as a range

The SRL business case presented the CBA results as a range based on probabilistic estimates. Presenting the results as a range departs from the DTF guidance, which requires a 'headline Net Present Value or Benefit-Cost Ratio result', and the DoT guidance, which describes a 'core result' as being the 'project case compared to the reference case base case'.

In addition, uncertainty around the value-for-money proposition for the project was not clearly communicated to decision-makers. The probabilistic estimates used to derive the range varied annualisation factors, monetisation factors and cost estimates, but they did not vary demand or address plausible sources of uncertainty such as coronavirus (COVID-19) or technology change.

Given the scale and complexity of the proposed investment and the length of the appraisal period—more than 50 years into the future—issues around how uncertainty could impact the value-for-money proposition should have been more clearly communicated to decision-makers.

Adequacy of sensitivity analysis

The sensitivity analysis in the SRL business case and economic appraisal is not sufficiently robust or comprehensive.

The analysis provided does not clearly demonstrate how the CBA results would change if assumptions around cost, public transport demand and land-use demand were altered. These are likely to be key areas of uncertainty for the SRL project and should have been explored further as part of the sensitivity analysis.

In addition, neither the SRL business case nor the associated advice to government transparently disclose how sensitive the CBA results are to the choice of discount rate. The business case fails to include sensitivity results for the CBA at other discount rates, including the rate of 7 per cent recommended for transport projects. This is inconsistent with relevant DTF and DoT guidance and deprived decision-makers of important information when assessing the value of the proposed investment.

The model underpinning the economic appraisal in the business case includes CBA results at discount rates of both 4 per cent and 7 per cent. These results, shown in Figure 2D, clearly demonstrate the sensitivity of the project's economic value to changes in discount rate. These results should have been, but were not, transparently reported to government. The model indicates that the BCR for the project is 0.51 when calculated in line with DTF's guidance and using a discount rate of 7 per cent.

Figure 2D shows the SRL CBA results at the 4 and 7 per cent discount rates with different benefit inclusions, including the result most aligned with relevant guidance that only includes conventional benefits.

FIGURE 2D: **SRL economic appraisal results at alternative discount rates and benefit scenarios**

	CBA results at 4 per cent discount rate		*CBA results at 7 per cent discount rate*	
Benefit inclusion scenarios	**BCR**	**NPV ($ million)**	**BCR**	**NPV ($ million)**
Guideline compliant with conventional benefits only	0.99	−$360	0.51	−$11,562
Conventional benefits + option and non-use value benefits	1.06	$2,294	0.56	−$10,498
Conventional benefits + option and non-use value + WEBs	1.32	$11,978	0.70	−$7,038
Conventional benefits + option and non-use value + WEBs + urban consolidation benefits + social exclusion benefits	1.42	$15,886	0.77	−$5,385

Source: VAGO, based on information from SRLA.

Delivery case

The SRL business case and the associated funding submissions do not fully comply with the ILHVHR guidelines for the delivery case. We found that:

- the options assessment used to identify the preferred procurement approach lacks transparency and does not clearly demonstrate that it will maximise value for money
- the solution specification focuses on the rail element of the program, with the precinct solution less well developed. This creates risks for benefits realisation because the SRL investment is intended to provide and derive benefits from an integrated transport and precinct solution
- there is uncertainty around the funding arrangements for SRL East. While the business case targets an equal split of funding from the Victorian Government, Australian Government and value capture (used to service borrowings), there is evidence suggesting that the value-capture target may not be achieved. DTF advised government in August 2021 on options for mitigating the forecast shortfall in value-capture revenue
- there is also ongoing uncertainty about whether the Australian Government will fund a third of the project. DTF has provided advice regarding the affordability of SRL East for the state should Australian Government funding and value-capture funding fail to provide two-thirds of the project funding
- the benefits targeted in the SRL East main works funding submission only cover one of the 3 benefit streams included in the SRL business case. The benefits targeted from the SRL East works are only a small subset of those included in the overarching benefits management plan for the SRL program. This presents an important exit risk to the SRL East works. This exit risk is compounded by decision-makers not having been given a clear picture of the value-for-money proposition of SRL East as a standalone investment.

3. Adequacy of Melbourne Airport Rail business case

Conclusion

The MAR business case DoT and RPV completed in late 2021 did not fully meet DTF's guidance requirements and was too late to inform key government decisions on the project.

DTF has provided substantial advice to the government on the MAR project since 2017. However, it is yet to complete the deliverability assessment of the business case required under its HVHR major project assurance framework to give the government confidence in its deliverability. This assessment has not been finalised despite the project having started.

This chapter discusses:

- MAR business case development and timing
- MAR business case content

3.1 MAR business case development and timing

The MAR project is co-funded by the state and Australian governments, with each committing $5 billion for the project, subject to the joint development and approval of a full business case.

Figure 3A summarises our assessment of the development approach, process and timing of the MAR business case and whether DoT, RPV and DTF met relevant assurance and external review requirements.

FIGURE 3A: **Assessment of MAR business case development process and timing**

Process stage	Assessment
Business case development and oversight	
Development process	G
Governance, project management and quality assurance	G
Approval	A
Assurance and external review requirements	
Project assurance plan	G
Gateway reviews	A
DTF HVHR assessment of business case deliverability	A
Infrastructure Australia review of business case	G
Timing	
Did the business case timing meet DTF's guidance?	A

Note: We have used a **green (G)**, **amber (A)**, **red (R)** scale, where:
G = no or minor departures from relevant guidance and/or expected processes
A = some departures from relevant guidance and/or expected processes
R = significant departures from relevant guidance and/or expected processes.
Source: VAGO.

DoT and RPV's processes for the planning, development, quality assurance and oversight of the MAR business case were consistent with relevant requirements and demonstrated active management of the business case.

With respect to our amber ratings, in summary:

- DTF did not complete its deliverability assessment of the business case before the government funded it, but provided other relevant advice
- DoT provided advice to support government decision-making on the project from 2018, but the business case was too late to be consistent with DTF's investment life cycle framework and ILHVHR guidelines.

MAR business case development processes

Figure 3B provides a timeline of key events, decisions and announcements relevant to the business case development.

FIGURE 3B: **MAR business case key events, decisions and announcements**

Date	Relevant event, decision or announcement
October 2017	Victorian Government releases the VIP, which includes in-principle support for a new Melbourne Airport rail link with a timeframe of 15 to 30 years and $30 million towards a business case.
November 2017	The state and Australian governments sign a memorandum of understanding for the joint development and approval of a business case for the MAR project.
April 2018	Australian Government commits $5 billion in funding towards an airport rail link.
July 2018	*Melbourne Airport Rail Link—Sunshine Route Strategic Appraisal* publicly released to inform development of a full business case.
	Victorian Government commits $5 billion in funding towards the MAR via Sunshine.
August 2018	Victorian Government endorses the MAR preliminary business case.
September 2018	Victorian Government receives a market-led proposal for a Melbourne Airport rail link.
November 2018	Australian Government endorses the Sunshine route for the MAR detailed business case.
March 2019	Australian and state governments sign a heads of agreement for a joint business case on the MAR by the end of 2020.
	Victorian Government endorses development of a program business case covering both the MAR and the WRP by early 2020.
September 2019	Victorian Government approves the MAR Sunshine route configuration and alignment.
November 2020	Victorian Government announces its rejection of the market-led proposal for a Melbourne Airport rail link.
	The Australian and state governments announce the agreed MAR project route and timing, subject to the business case and relevant approvals.
	Gateway combined Gate 1 and Gate 2 review report on the MAR business case is conducted.
April 2021	Victorian Government approves the MAR business case in-principle, subject to approval of the financial and funding details.
June 2021	The Australian and state governments announce an expression of interest process for the first package of MAR works around Sunshine and Albion.
	Victorian Government approves the WRP investment case.
October 2021	Victorian Government approves the MAR airport station to be above ground to reduce project costs and delivery time and notes that the airport operator has not agreed to this solution.
November 2021	DoT and RPV complete the MAR business case.
December 2021	Victorian Government notes the business case and delegates its finalisation and release to the Australian Government to the Premier, Treasurer and Minister for Transport Infrastructure. DoT provides the business case to the Australian government and Infrastructure Australia.
March 2022	Infrastructure Australia provides feedback on the business case.

Source: VAGO, based on information from DPC, DTF, DoT and MTIA.

Development process for the MAR business case

DoT is accountable for development of the business case and began work on it in late 2019 with support from RPV (a project office of MTIA). DoT signed a development brief with RPV in August 2020, making RPV responsible for development of the MAR business case.

The business case was preceded by:

- development of a preliminary business case in 2018
- the public release of a strategic appraisal document in July 2018 to support the Victorian Government announcement of the Sunshine route as the preferred route for a heavy rail link between Melbourne's CBD and airport
- agreements between the state and Australian governments in November 2017 and March 2019 requiring development of a full business case for the project
- government approval of a business case strategy in March 2019, involving the development of a high-level program business case covering the MAR and the WRP.

The program business case approach was eventually abandoned in favour of separate business cases for the MAR and WRP.

Project management, governance and quality assurance, and review and approval processes

DoT and RPV's project management, governance and quality assurance, and review processes for the business case were satisfactory:

- They demonstrated a systematic approach to managing business case development.
- DoT, MTIA and RPV applied their own governance arrangements in addition to oversight by the joint state and Australian government project steering committee.
- The quality assurance processes included progressive reviews of the business case by RPV, DoT, DTF and the relevant Australian government department, as well as a formal peer review of the transport demand forecasting and economic appraisal underpinning the business case.

The agreement between the state and Australian governments requires joint approval of the business case. The Victorian Government approved the business case in principle in April 2021, subject to finalisation and approval of financial and funding details.

The business case was completed in late 2021, incorporating the financial and funding chapters and updated scope and costs. However, the business case is yet to be approved and remains under review by Infrastructure Australia and the Australian Government.

External review and assurance on the MAR business case

DTF has not yet fully applied the HVHR project assurance process for the MAR business case. Specifically, DTF is yet to update a project assurance plan for the current MAR project or complete an HVHR deliverability assessment on the business case.

DTF should develop a project assurance plan for all HVHR projects that require a range of assurance steps, including Gateway reviews, and a DTF assessment of the deliverability of the business case before it is funded. The provision of Australian Government funding also requires external review of the business case by Infrastructure Australia and the relevant Australian Government department.

Project assurance plan

The Treasurer approved a project assurance plan for the combined MAR and WRP scope in 2019. The subsequent separation of these projects required a project-specific assurance plan for the current MAR project. DTF and OPV have finalised this plan and it was awaiting approval by the Treasurer at the time we finalised this report.

Gateway reviews

The MAR business case was subject to a Gateway combined Gate 1 and Gate 2 review in November 2020.

The review team acknowledged previous government decisions on the project, including route selection, and tailored its approach to largely focus on project implementation and governance. As a result, the review report did not include substantive findings on key questions, such as affordability and options assessment. This limited the value of a key check in DTF's HVHR process in providing an independent review of these essential business case elements.

The Gateway review report included an overall delivery confidence assessment of amber. This meant the review team considered that successful delivery appeared feasible but significant issues existed, requiring timely management attention.

The review included 14 recommendations, with 7 of these rated red (critical). Under the HVHR assurance framework, red recommendations must be reported to the Treasurer together with an action plan to address them. DoT and RPV provided a recommendation action plan to DTF in early 2021. DTF:

- advised the Treasurer in April 2021 that some of the Gateway recommendations could not be resolved at that time due to limited engagement with key stakeholders, such as the airport operator
- advised us in July 2022 that a number of red recommendations have not been resolved and DTF is engaging with DoT and RPV as well as advising the government on these risks.

HVHR deliverability assessment of the business case

A fundamental purpose of the HVHR process is for DTF to apply additional scrutiny to the business cases for HVHR projects before they are approved and funded by the government.

DTF is yet to complete its HVHR deliverability assessment of the business case, despite the government approving it in-principle in April in 2021 and committing $5 billion of funding to the project. DTF advised that:

- the government has not yet approved the business case
- it has provided advice to the government on the business case that addresses the substance of the required deliverability assessment
- it has drafted the HVHR deliverability assessment and will complete it once the final business case is ready for approval by the government.

DTF's HVHR deliverability assessment should have been done when the MAR business case was completed in late 2021. The deliverability assessment could then inform government deliberations on the business case's merits and whether it should be submitted to the Australian Government. DTF's draft deliverability assessment is substantially complete but has not been finalised and provided to the government. Our review of DTF's advice to the government on the business case shows that it is yet to fully address the scope of a deliverability assessment.

However, DTF has:

- provided ongoing advice to the Treasurer on the development of the business case
- engaged an external consultant to review the cost estimate in the business case and for specific MAR works packages
- undertaken HVHR reviews on procurements for the project—for example, DTF completed an HVHR assessment for the Sunshine–Albion works package prior to its release in November 2021.

MAR business case timing

The MAR business case was completed in November 2021. This timing was not consistent with DTF's investment life cycle framework and ILHVHR guidelines because it was too late to inform government decisions on proceeding with the investment and key features of the project solution.

Key government commitments and announcements for the MAR project made before completion of a full business case include:

- announcing in November 2017 that MAR construction would be underway in 2022
- committing $5 billion in state funding to the project in July 2018
- approving the Sunshine route alignment and configuration in September 2019
- approving release of procurement documents for the Sunshine–Albion package of works in June 2021.

These decisions, commitments and announcements, while not informed by a full business case, were informed by other advice to the government, including:

- detailed briefings and advice from relevant departments and agencies, including DoT, RPV, DTF and DPC, between 2018 and 2022
- the *Melbourne Airport Rail Link—Sunshine Route Strategic Appraisal* in July 2018
- the MAR preliminary business case completed in August 2018.

This advice that preceded the full business case did not fully meet the standard expected in a business case, particularly in relation to comprehensive options analysis. However, this advice was relied on to both inform decision-making and to justify the limited analysis ultimately included in the final business case. As a result, the business case did not fully meet its key purpose under the ILHVHR guidance to inform key government decisions on investment commitments and project solutions.

3.2 MAR business case content

The MAR business case completed in late 2021 was preceded by a strategic appraisal and a preliminary business case in 2018. We refer to these as 'the supporting documents' and comment on these documents where relevant to our assessment of the business case.

The government emphasised the importance of a robust business case in April 2021 when it approved the $10 billion funding for the project.

DoT's attestation on the MAR business case in February 2022 stated that it had been prepared with consideration of DTF's ILHVHR guidelines and that the economic appraisal in the business case was undertaken in accordance with the relevant guidelines.

Figure 3C summarises our assessment of the MAR business case content in 5 key areas against DTF's ILHVHR guideline requirements. The business case does not fully meet the guidance on problems, options assessment, economic analysis and the delivery case. These departures are significant enough to compromise the usefulness of the business case as a basis for government decision-making on the project.

FIGURE 3C: **Assessment of MAR business case content**

Business case content areas	Assessment
Problem definition and evidence	**A**
Case for change (benefits)	**G**
Options assessment	**R**
Economic analysis and presentation of results	**R**
Delivery case	**A**

Note: We have used a **green (G)**, **amber (A)**, **red (R)** scale, where:

- **G** = no or minor departures from relevant guidance and/or expected processes
- **A** = some departures from relevant guidance and/or expected processes
- **R** = significant departures from relevant guidance and/or expected processes.

Source: VAGO.

In summary:

- the high-level problems described lacked sufficient supporting evidence
- the options development and assessment in the business case is not sufficiently comprehensive because it was narrowed based on high-level early assessments that lacked rigour and transparency
- the economic analysis is not consistent with the guidance in key areas, including the presentation of results.

Problem definition and evidence

The MAR business case content on problems is broadly consistent with the requirements of DTF's ILHVHR guidance. Problems are generally described in terms of their cause and effect.

The business case and supporting documents imply that the primary problem and service need is maintaining or improving travel time and reliability to Melbourne Airport. However, the level of evidence it provides to support the scale, impacts and need for action:

- is not comprehensive about how a forecast deterioration in travel time to Melbourne Airport puts at risk Victoria's liveability, visitor economy and connectivity to national and international markets
- relies on forecasts of road travel demand and capacity on the road network connecting Melbourne Airport to the CBD that potentially overstate the scale of the problem and the urgency of intervention
- is not sufficient to demonstrate that the reliance on road-based transport to access Melbourne Airport is constraining connectivity with the airport (or broader movements in Melbourne's north-west) and contributing to relative economic disadvantage in Melbourne's north-west
- is not sufficiently comprehensive because, beyond assertions, the business case does not clearly articulate why the problems and issues identified with airport access need to be addressed by the government now rather than later and does not articulate the consequences of delay.

Changes in problem description between the preliminary and final business cases and impact on options analysis results

One of the problems identified in the preliminary business case (August 2018) related to poor connectivity of Melbourne's inner north-west. The preliminary business case identified the benefits of addressing this problem as economic development of Melbourne's inner north-west.

This problem was not included as a distinct problem in the final business case of November 2021. Instead, it is discussed as an outcome of another problem relating to reduced accessibility to employment opportunities for people in Melbourne's north and west, which is considered to limit Victoria's economic potential. The change in the way the problems are defined is not a critical issue on its own. However, this change highlights how sensitive the outcomes of the analysis of strategic options and mass transit options in the 2018 strategic appraisal and preliminary business case are to the way problems and associated benefits are defined and weighted.

If we remove the benefits associated with this problem from the analysis results:

- airport mass transit is ranked as the equal highest strategic option with pricing and productivity interventions
- an integrated heavy rail response is the second highest ranked mass transit option. Standalone heavy rail is ranked first.

This would not be a significant issue if the final business case had revisited and extended the brief analysis in the preliminary business case to fully examine strategic and response options. It did not.

DoT and RPV cite this as a virtue, advising us that the business case assessed options to deliver on previous commitments by the government. As a result, it did not seek to re-prosecute or re-evaluate preceding policy commitments and decisions of the state and Australian governments.

The case for change and benefits

The MAR business case content on the case for change for, and benefits of, the proposed investment is consistent with the guidance. In addition, the benefits sought in the business case appear to be of high value to the government.

However, the business case defines the benefits at such a high level that they may not be achievable with a single investment or even a major program of investments. As a result, it will be challenging to demonstrate the extent to which the MAR investment directly improves Victoria's productivity and competitiveness.

Option development and assessment

The MAR business case does not fully meet DTF's ILHVHR guidance requirements on options development and assessment.

DoT and RPV relied on high-level early assessments of potential strategic interventions and options to narrow the analysis in the business case, but these assessments were not sufficiently rigorous to justify this narrow approach. As a result, the options development and assessment content in the business case is not sufficiently comprehensive to provide confidence to decision-makers that the right investment option was recommended and selected.

DoT and RPV advised us that:

- the decision-making and business case development approach followed for the MAR project involved the Australian and Victorian governments progressively agreeing key investment decisions on the project, including selecting a heavy rail solution and route
- the business case did not seek to re-prosecute or re-evaluate these commitments and decisions but assessed options to deliver on government commitments.

The impact of this approach is that the business case is narrowly focused on testing a single 'invest now' Sunshine route via Melbourne Metro Tunnel MAR option against the business-as-usual (BAU) base case that assumes the project is not built. This is inconsistent with DTF's ILHVHR guidelines and, as a result, only answers the binary question, 'Is there community value in developing a Sunshine route airport rail link relative to the base case?'

The business case cited previous work and planning studies undertaken for a rail link to the airport as justification for not re-prosecuting the adoption of an integrated heavy rail solution through Sunshine. Our analysis indicates that the strategic appraisal and preliminary business case developed in 2018 did not justify this narrow focus.

Instead of re-examining and confirming the validity and currency of that earlier work, the business case states that it is focused on:

> '… assessing three alignment options from Sunshine to the CBD including:
> - the Metro Tunnel—connecting to the CBD via Sunbury tracks and Metro Tunnel.
> - Regional Rail Link—connecting to the CBD via the existing Regional Rail Link track pair to Southern Cross Station.
> - Sunshine Tunnel—connecting to the CBD via a new tunnel to Southern Cross Station'.

However, the business case provides limited evidence and analysis to support the conclusion set out in the business case that 'identifies the Metro Tunnel as the recommended Sunshine to CBD alignment option'.

In addition, the business case does not include detailed assessment of the value and risks of an option to defer investment in the MAR. This option is particularly relevant when a project is subject to uncertainties that may be resolved over time.

Identification and assessment of options before the final business case

The MAR business case states that,

> '… the 2018 Melbourne Airport Rail Link Strategic Appraisal … identified a new mass transit link as the preferred response option and an integrated heavy rail link as the preferred mass transit solution. The …. Appraisal also evaluated the preferred heavy rail route, concluding that the Sunshine Route was the preferred alignment for MAR'.

This is an accurate representation of the outcomes of the various qualitative assessments of strategic response options, mass transit options and route options included in the strategic appraisal and preliminary business case of 2018. However, these qualitative options assessments were not sufficiently rigorous, were not transparently presented in the strategic appraisal, and were not substantively justified in either the strategic appraisal or the preliminary business case. As a result, they do not adequately justify the narrow options analysis approach subsequently adopted in the business case.

Specifically, while the strategic appraisal examined strategic response options and mass transit mode options, it did not:

- provide details on the criteria used in the qualitative analysis of these options
- break down the overall scores for each option to show scores against the various criteria
- justify the scores, other than briefly describing the benefits associated with the favoured options.

The strategic appraisal then examined 4 shortlisted route options for a heavy rail link between the airport and the CBD. It identified the Sunshine route as the preferred option, based on an overall ranking after scoring each option against benefits and deliverability criteria shown in the appraisal document. However, the presentation of these results was not transparent because there was no detailed justification for the scores and this figure does not show subtotal scores against the benefits and deliverability criteria. Not disclosing the subtotal results meant that it was not obvious that the Sunshine route option was not ranked first on either benefits or deliverability.

The preliminary business case disclosed the full results, including subtotal scores against the benefits and deliverability criteria. These results show that the Sunshine route option ranked third out of 4 options on benefits and second out of 4 on deliverability. The Sunshine route was ranked first when the benefits and deliverability scores were combined.

In addition, the preliminary business case indicated that the qualitative assessment of route options was not informed by current modelling data or comprehensive cost estimates.

The results from these early options assessments significantly influenced government decisions to commit $5 billion in public funds to the specific mode and route solutions announced for the MAR project since 2018. They were carried forward into the MAR final business case, but not validated or revisited in any depth.

Options analysis in the final business case

The scope of the substantive options analysis in the final business case is limited to testing a single 'invest now' Sunshine route via the Melbourne Metro Tunnel MAR option against a BAU base case.

The business case does not adequately justify this narrow approach. It relies on previous work and planning studies that lack currency and there is little evidence of work to retest conclusions from this work. In addition, there is a lack of transparency on and justification for not re-examining the adoption of an integrated heavy rail solution through Sunshine.

The business case limits itself to identifying and assessing 3 heavy rail alignment options from Sunshine to the CBD. These 3 project options are clearly defined. However:

- other than a single table presenting preliminary BCR results for the 3 alignment options, the business case does not provide any detail on the economic analysis and performance of the options, such as a breakdown of the costs and benefits, or how costs and benefits were estimated
- this preliminary assessment process is used to rule out 2 options and only one of these 3 options (option 1: the Melbourne Metro Tunnel) advances for further assessment as part of the business case's economic appraisal, funding and risk analysis
- no information is provided on why high-level strategic interventions (particularly higher-performing ones) were not packaged into a set of preferred response options.

In addition, the business case provides no information on why it did not examine options to change the timing and/or scale of investment in the MAR project. This could have included efforts to package other interventions into response options that would enable the government to defer the investment. Given that the problem identified in the business case is not expected to emerge until the mid-2030s when forecast demand exceeds road capacity, other interventions may have enabled the MAR investment to be deferred indefinitely, particularly if the SRL came online in the 2040s.

The business case acknowledges that the Victorian Government has committed to delivering the SRL. It adopts a BAU core 'base case' that assumes demand for travel on the road network continues to be significant and that the SRL project is not built.

The combined effect of these key assumptions results in the business case suggesting that the BAU base case is not well placed to address the problem and that significant intervention is urgently required. However, it is not clear that this is the most credible base case because it would have been equally plausible to assume a core BAU base case that accounted for changed travel patterns resulting from COVID-19 and assumed the construction of the SRL.

Economic analysis

The business case method and content for economic analysis is not fully consistent with key elements of the relevant guidance and the results are not presented transparently. These issues mean that the business case may overstate the economic value of the project.

Specific areas where the MAR business case content for economic analysis and CBA is not consistent with key elements of the DTF, DoT and ATAP guidance include:

- application of a 4 per cent discount rate
- failure to include the required sensitivity analysis at different discount rates, including 7 per cent
- including WEBs and option value and non-use benefits when presenting the primary economic evaluation results
- presenting the CBA results as a range
- adopting a demand forecast that may be optimistic, meaning the assumed benefits of MAR may be overstated
- assuming that benefits grow linearly between the final year of demand modelling in 2056 and 2078 (the end of the evaluation period) in line with the growth rate assumed between 2051 and 2056 but providing little justification for this approach and so potentially overstating the value of these benefits.

These departures from guidance have the effect of improving the results. The business case and economic appraisal report acknowledge and seek to justify these departures but do not:

- explain the lack of sensitivity analysis at higher discount rates
- clearly show how these departures from guidance impact the CBA results.

The government has committed to building the SRL rail connection to Melbourne Airport. As Figure 3D shows, the MAR business case shows BCR results at a discount rate of 4 per cent that assume construction of the SRL airport connection alongside the primary results that assume this SRL connection to the airport is not built. Assuming that the SRL is built by 2051 significantly reduces the MAR BCR for the project.

FIGURE 3D: **Presentation of economic analysis results in MAR business case executive summary**

	BCR (4 per cent discount rate)	NPV (4 per cent discount rate)
Excluding the SRL North connection to Melbourne Airport in 2051 in the base case		
Total economic benefits	1.8–2.1	$7.5b–$10.8b
Including the SRL North connection to Melbourne Airport in 2051 in the base case		
Total economic benefits	1.1–1.3	$0.9b–$2.8b

Note: b = billion.
Source: VAGO, based on Melbourne Airport Rail, Business Case (November 2021).

Discount rate and sensitivity tests

The minister approved the use of a discount rate of 4 per cent and this was supported by DTF and accepted by the Treasurer. However, this approach was inconsistent with relevant guidance, could have been more robustly justified and materially improved the economic CBA results for the MAR project.

The standard approach to economic analysis for transport infrastructure projects under DTF and relevant national guidance uses a discount rate of 7 per cent and only includes conventional benefits when calculating BCR results.

We expected evidence of detailed consideration of the implications of allowing discount rates to differ across transport projects in order to justify changes to the 'standard' approach. The evidence provided to date does not demonstrate that this occurred. The rationales provided in the business case and in the advice to the minister and Treasurer for using 4 per cent lack substance or evidence of robust, detailed investigation and consideration of the matter.

In addition, the business case does not include sensitivity results at a standard discount rate of 7 per cent and associated advice to the government does not highlight the degree to which the results are sensitive to the 4 per cent discount rate assumption. This is inconsistent with DTF and national guidance.

We also note that DoT's response to the peer review of the MAR economic appraisal referred to its updated guidance requiring economic evaluations to continue reporting results using a 7 per cent discount rate alongside results at 4 per cent.

Presentation of primary economic appraisal results

Aside from the use of a discount rate of 4 per cent, the calculation and presentation of the economic analysis results in the MAR business case is not consistent with relevant guidance because the primary results:

- include WEBs—DTF guidance states that, '"Wider economic benefits" should be considered separately from core benefits and excluded from the headline Net Present Value or Benefit-Cost Ratio result', and DoT and ATAP guidance support this
- include option and non-use value benefits—this is not consistent with guidance or standard practice. The peer review of the MAR demand modelling and economic appraisal recommended that these benefits be excluded from the monetised benefits in the CBA and that they be limited to a qualitative discussion, citing inconsistency with ATAP guidelines
- are presented as a range—presenting the BCR results as a range is also inconsistent with DTF and DoT guidance and the business case does not highlight that this range incorporates only some of the uncertainties.

RPV put significant effort into valuing the WEBs and non-use benefits. However, guidance requires WEBs to be excluded from primary results and presented separately. This is because these estimates are subject to more uncertainty. The combined effect of these issues is that the business case potentially overstates the certainty that the MAR will deliver sufficient value to justify the investment.

Figure 3E shows the MAR CBA results at a 7 per cent discount rate with different benefit inclusions, including the result most aligned with relevant guidance that only includes conventional benefits. We show the results for the 2 scenarios included in the business case. One assumes construction of the SRL airport connection. The other assumes it is not built.

FIGURE 3E: **MAR project CBA results using a discount rate of 7 per cent**

	CBA results with no SRL airport connection built		*CBA results with SRL airport connection built*	
Benefit inclusion scenarios	**BCR**	**NPV ($ million)**	**BCR**	**NPV ($ million)**
Guideline compliant with conventional benefits only	0.71	−$2,419	0.48	−$4,309
Conventional benefits + option and non-use value + WEBs	0.92	−$700	0.65	−$2,936

Source: VAGO, based on information in MAR business case and advice from RPV.

Aligning the business case more closely with the guidelines could have fundamentally altered the value proposition of MAR. The results shown in Figure 3E indicate that applying a discount rate of 7 per cent reduces the project BCR results to less than 1.0, even when non-standard benefits are added to the conventional benefits.

The impacts on the value of the project if the economic appraisal had adopted assumptions and presentation approaches that were more consistent with guidelines should have been, but were not, included in the business case. We think this deprived government decision-makers of important information when assessing the value of the proposed investment.

Other issues with presentation of economic analysis results

The benefits projected to be delivered by the MAR will be substantially affected by construction of the SRL North connection to the airport and, to a lesser extent, by a future government decision on the SkyBus service. However, the business case and advice to the government:

- give most prominence to the economic analysis results that do not include the impacts on MAR service demand resulting from construction of the SRL connection to the airport
- only provide economic sensitivity results for the base case that excludes the SRL connection to the airport.

Infrastructure Australia raised this issue in its review of the business case and requested economic evaluation sensitivity test results for a base case including SRL North. RPV did not provide this information and advised Infrastructure Australia that these sensitivity test results have not been produced, confirming that sensitivity testing was only undertaken for the 'without SRL North scenario'.

Adequacy of sensitivity analysis

Aside from the failure to include sensitivity results at different discount rates in the business case, the risk and uncertainty analysis should have been broadened to provide more comprehensive information to the government.

The business case includes scenario and sensitivity analyses that are intended to show the impact on the value delivered by the project option of uncertainties around key inputs, assumptions and the nature of air passenger travel.

The results present NPVs and BCRs that are consistently above 0 and 1, respectively. This suggests that the project option continues to deliver value to the community even when uncertainty is taken into account.

However, our review of evidence to date suggests there are reasons why the findings of the sensitivity and scenario analysis presented in the business case are not sufficiently comprehensive. Specifically, the sensitivity analysis provided in the business case does not appear to:

- consider the impact of alternative discount rates
- consider the combined impact of key uncertainties, such as adjusting the discount rate to align with the relevant guidelines, construction of the SRL, and COVID-19—all of which are likely to negatively impact the performance of the project option
- consider the impact of changes in costs, although this is considered in the analysis used to produce the CBA range results
- report the results of any analysis of other key uncertainties, such as adjustments to the methodology for estimating resource cost correction.

DoT and RPV's decision to only report the results of the scenario analysis with a discount rate of 4 per cent, inclusive of option and non-use values and assuming that SRL North is not constructed, means the business case does not adequately reflect the broad range of potential value scenarios for the delivery of the project option under a reasonable range of uncertainty.

Delivery case

The MAR business case does not fully comply with the ILHVHR guidelines for the delivery case in the following areas:

- the cost estimates for the project have been the subject of significant ongoing review by the project team and DTF. DTF raised concerns in December 2021 that the DTF-commissioned independent reviewer had highlighted issues with the identification and calculation of risks adopted for the MAR business case. These may lower confidence in the cost estimate for the project
- DTF's ILHVHR guidelines have a requirement to:

  > 'Discuss proposed funding sources for capital and output requirements and in addition to the option of new budget funding, discuss potential funding sources including contributions from other levels of government, private sector, sale of assets, etc'

  The business case falls short of this. It does not address the potential funding gap if the capital costs, currently expected to be between $8 billion and $13 billion, exceed the $10 billion of committed funding
- the financial analysis and budget section does not include costs associated with any compensation for the operator of Melbourne Airport to secure access to the airport site for the project
- the business case does not appear to include the required stakeholder engagement and communications plan.

4. Adequacy of business cases for 2 major road projects

Conclusion

Overall, the business cases for the Mickleham Road Upgrade—Stage 1 (MRU1) and the Barwon Heads Road Upgrade (BHRU) projects were substantively compliant with DTF's ILHVHR guidance requirements.

However, both business cases provided a limited range of project options for the government's consideration, and for the BHRU, the business case was not timely enough to inform the government's funding commitments on the project.

This chapter discusses:

- Business case development process and timing
- Business case content

4.1 Business case development process and timing

We assessed whether …	And found …
DoT and MTIA's development, oversight and review of the business cases for the BHRU and MRU1 roads projects met DTF's ILHVHR guideline requirements and any project specific requirements	• DoT and MTIA's development of the MRU1 and BHRU business cases complied with the guidelines. However, these agencies did not fully address the findings and recommendations from the Gateway review for the BHRU business case • MRU1 was not subject to any Gateway reviews, as it is not an HVHR project.
DTF reviewed the deliverability of the BHRU business case before the government committed funding to the project	DTF did conduct a deliverability assessment but not before the government committed to the BHRU project.
DoT and MTIA provided the government with a business case before it committed to the project	• DoT and MTIA did not provide the government with a business case before it committed to the BHRU project • DoT and MTIA provided the government with the MRU1 business case before the investment commitment.

Business case timing

BHRU business case

The government committed $318.3 million to upgrade Barwon Heads Road in October 2018 as part of its *Labor's Financial Statement 2018* commitments. Funding for the project was confirmed in the state Budget released in May 2019. These commitments were made before DoT and MTIA provided the government with a complete business case for the project.

While DoT completed draft versions of the business case before 2018, it did not complete the final version and receive government approval until August 2020.

MRU1 business case

DoT and MTIA provided the government with a complete business case in time to inform key decisions on investment commitments and project solutions for MRU1.

Business case development process

DoT and MTIA's development processes and oversight on the MRU1 and BHRU business cases complied with the guidelines.

External reviews of the BHRU business case

The BHRU business case was subject to a Gateway review in 2017, a DTF deliverability assessment in 2019 and an Infrastructure Australia review in 2021.

DoT and MTIA did not fully address 3 out of 8 findings and recommendations from the Gateway review on the draft BHRU business case in 2017. The 3 recommendations related to:

- clearly aligning regional land use, broader transport objectives and the BHRU project (recommendation 1 in the Gateway report, rated amber)
- considering a wider range of road and/or public transport options to alleviate the problem (recommendation 3 in the Gateway report, rated amber)
- providing a more rigorous justification for the project option assessment framework and the weightings applied to the evaluation criteria (recommendation 4 in the Gateway report, rated red).

DoT and MTIA advised us that Gateway recommendations rated amber are not required to be addressed under DTF's Gateway review guidelines. We note that the Gateway report template indicates that amber-rated recommendations are not critical, but projects would benefit from addressing these recommendations.

In 2021, the Infrastructure Australia review of the final business case found that these issues remained largely unresolved.

Our review of DoT's and MTIA's responses to the Gateway recommendations:

- found that though DoT and MTIA did not provide a stronger strategic alignment between the BHRU project and transport objectives in the final business case, they did provide stronger strategic alignment between the BHRU project and regional land-use objectives
- confirmed that DoT and MTIA did not assess a wider range of project options
- found that DoT and MTIA did not justify their decision to change the weightings of the criteria from numerical (in the 2017 business case) to qualitative in the final business case. While the qualitative criteria are comprehensive, detailed and consistent with DTF's ILHVHR business case content requirements, it is unclear how criteria were measured against each other to arrive at the final ranking and preferred option.

These shortcomings meant that the final BHRU business case was not sufficiently comprehensive to inform government investment decisions on the project.

DTF's deliverability assessment of the business case

DTF conducted a deliverability assessment in March 2019 on a short-form version of the business case. It concluded that the project was underdeveloped and not deliverable in its current form and specified areas where DTF expected the full business case to include further detail. In the same month it concluded that because the scope of the BHRU project had not changed significantly since 2017, a second Gate 2 review of the business case was unnecessary.

DTF did not do any further deliverability assessments or reviews on the final BHRU business case submitted to the government in 2020. The final business case substantively resolved the issues identified by DTF in its 2019 deliverability assessment.

4.2 Business case content

The BHRU and MRU1 business cases were substantively compliant with DTF's ILHVHR guidelines. However, both business cases did not have comprehensive project options assessments.

Response and project options

The MRU1 business case assessed a range of possible strategic interventions or response options to address the problems identified, with a focus on 2 interventions. The 'do minimum' response option was also outlined for comparison with the other options.

MRPV recommended the response option involving a connected and accessible corridor. This focused on improving walking and cycling network safety and connectivity and improving intersection midblock capacity and safety for vehicles travelling along Mickleham Road.

This recommended response option informed a limited range of 3 project options offered in the MRU1 business case. The first was the base case (do minimum) option. The second and recommended option was a 6-lane dual carriageway. The third option was a 4-lane carriageway.

The only difference between options 2 and 3 was the number of proposed lanes.

In the final BHRU business case, DoT and MTIA included only a high-level summary of a comprehensive response options assessment VicRoads had developed in 2017. DoT and MTIA do not have the evidence to show they had provided the government with the full response options assessment before submitting the final business case.

DoT and MTIA restricted their project options analysis for the BHRU project by developing it within the parameters of the government's 2018 funding commitments. DTF did not ask DoT and MTIA to undertake a more rigorous options analysis because of the 2018 government commitment.

A government commitment does not relieve agencies of their responsibility to:

- consider a range of feasible options, as required by DTF's guidance
- give the government more comprehensive advice on other potential project options so it is fully informed before it makes a final investment decision.

Transport modelling

The base case transport model for the BHRU was 4 years old when DoT and MTIA submitted the business case to the government in 2020.

DoT and MTIA did not validate or calibrate the transport model used for the MRU1 business case because of the short 5-month timeframe in which it was written. This limited the capacity of the model to accurately:

- predict traffic growth
- predict heavy vehicle volumes
- redistribute traffic.

Transport models produce traffic estimates that need to be **validated** or compared against observed traffic. The model is then **calibrated** or adjusted where appropriate to align modelling results closely to the observed data.

These limitations impact the accuracy of the economic analysis and CBA, the problem definition and the options analysis because they all require accurate and reliable representations of current and future traffic in the project area.

DoT and MTIA understood the limitations of the traffic modelling. They disclosed this in the MRU1 business case as a risk and sought to mitigate the modelling limitations in the CBA by using a 20-year appraisal period rather than the standard 30 years. They also clearly documented their agreed approach to transport modelling for the MRU1 business case and devised a process to minimise issues as far as possible.

Economic analysis and presentation of results

The economic analysis of both projects was consistent with key elements of DTF’s ILHVHR guidelines and DoT's and ATAP's guidance. The business case content, including the presentation of results, also met guidance.

Specifically, both business cases:

- applied the standard discount rate for transport projects of 7 per cent in the CBA
- presented the results of the CBA as a single BCR result
- included transparent sensitivity results showing BCRs calculated using discount rates of 4 and 10 per cent.

APPENDIX A

Submissions and comments

We have consulted with DPC, DoT, DTF, MTIA and SRLA, and we considered their views when reaching our audit conclusions. As required by the *Audit Act 1994*, we gave a draft copy of this report, or relevant extracts, to those agencies and asked for their submissions and comments.

Responsibility for the accuracy, fairness and balance of those comments rests solely with the agency head.

DoT, MTIA and SRLA expressed concerns with findings in the report in a joint response signed by the Secretary of DoT and did not accept the recommendations directed at them. We have written to DoT's Secretary and MTIA and SRLA outlining our concerns with this response.

Responses were received as follows:

Response provided by the Secretary, DPC

Department of
Premier and Cabinet

1 Treasury Place
Melbourne, Victoria 3002 Australia
Telephone: 03 9651 5111
dpc.vic.gov.au

BSEC-220801089

Mr Andrew Greaves
Auditor General
Victorian Auditor General's Office
Level 31/35 Collins Street
MELBOURNE VIC 3000

Dear Mr Greaves

Thank you for your letter dated 24 August 2022 and for providing the opportunity to comment on the Performance Audit Report on the Quality of Major Transport Infrastructure Project Business Cases (the report).

I note that the Department of Premier and Cabinet (DPC) is not subject to the six recommendations in the report and that the departments and agencies responsible for them will provide a separate response to VAGO.

VAGO's overarching findings and recommendations relate to alignment between the High Value High Risk (HVHR) Guidelines and the approach taken to business cases for the four selected projects, including Suburban Rail Loop (SRL) and Melbourne Airport Rail (MAR).

As noted in the report, the HVHR Guidelines are a guide to support agencies and provide a framework to be scaled to the complexity of the investment. They are not a statutory instrument but provide project assurance checks for major infrastructure investments. For SRL and MAR, which are complex programs of investment to be delivered over long time periods, the rigid application of the Guidelines was not suitable for these atypical projects.

The SRL project was a 2018 election commitment and the SRL Business Case was developed in this context. It is important to note that any commitment taken to an election by a political party, either in government or opposition, inevitably brings a focus to subsequent deliberations. While the role of the public service is to provide advice regarding risk and opportunity, Ministers and Cabinet make the decisions. These are fundamental principles of Victoria's Westminster system of democratic government.

Sensible variations from the HVHR Guidelines and the development of business cases may occur at the prerogative of Executive Government in delivering upon their public commitments to the people of Victoria.

Business and investment cases are instrumental to informing decision makers. However, at times an iterative process aligned to the Government's preferred decision-making timeline is required. Business cases are considered by Cabinet or a relevant Cabinet Committee brought by responsible Ministers for consideration by their Cabinet colleagues, as was the case with SRL.

VICTORIA State Government

Response provided by the Secretary, DPC—*continued*

I note the report acknowledges the view of audited parties that the SRL project is not a conventional transport project. It explicitly aims to deliver a broad range of benefits through a program of urban renewal and precinct investment and activation over multiple decades.

As noted in the report, this is consistent with the vision of Plan Melbourne 2017-2050. Plan Melbourne, originally released in May 2014 and updated in 2017 establishes the vision for a polycentric city and '20-minute neighbourhoods' where people can access most of their everyday needs within a 20-minute walk, cycle or trip on local public transport. Plan Melbourne also establishes the need to plan for a population of 10 million by 2050 and a commitment for 70 per cent of growth to occur in Melbourne's established areas.

The report states there is a risk the methodology for economic and cost benefit analysis adopted for the SRL and MAR business cases overstates the value of the projects. Given SRL's objectives to enable precinct activation, link key activity centres, support housing and public space, and catalyse investment and job creation, I believe it is appropriate that the SRL business case considered Wider Economic Benefits.

The adoption of a four per cent discount rate and Benefit Cost Ratio (BCR) range for the SRL Business Case was considered in a deliberative manner by Ministers and Cabinet. The responsible Minister and Treasurer approved application of the four per cent discount rate prior to government consideration and approval of the final business case.

I consider that a four per cent discount rate is appropriate given the long timeframes and afore-mentioned wider objectives of the SRL project, noting that the same discount rate has been adopted for some other large infrastructure projects, such as the Inland Rail Project. Discount rates of slightly higher or lower than four per cent have also been used internationally for multi-generational projects including Crossrail in the United Kingdom.

Considering the above, I am of the view that the business cases for SRL and MAR met the overarching intent of the HVHR Guidelines and followed a robust development process to support informed and progressive decision making by the government for projects of this scale and complexity.

Any questions relating to this letter should be directed to Mr Andrew Witchard, Executive Director, Infrastructure, Planning and Major Projects in DPC at andrew.witchard@dpc.vic.gov.au.

Yours sincerely

[redacted]

Jeremi Moule
Secretary

7 September 2022

VICTORIA
State
Government

Response provided by the Secretary, DoT

Department of Transport

GPO Box 2392
Melbourne, VIC 3001 Australia
Telephone: +61 3 9651 9999
www.transport.vic.gov.au
DX 210074

Ref: BSEC-1-22-13307R
File:

Mr Andrew Greaves
Auditor-General of Victoria
Victorian Auditor-General's Office
Level 31, 35 Collins Street
MELBOURNE VIC 3000

Dear Mr Greaves

Victorian Auditor-General's Office – Proposed Report – Quality of Major Transport Infrastructure Project Business Cases

Thank you for the opportunity to comment on the Proposed Report: Quality of Major Transport Infrastructure Project Business Cases provided on 24 August 2022 to the Department of Transport (DoT), Major Transport Infrastructure Authority (MTIA) and Suburban Rail Loop Authority (SRLA), which details your conclusions in relation to an assessment of the business cases for four 'transport infrastructure' projects.

The projects in focus are:

- Suburban Rail Loop (SRL)
- Melbourne Airport Rail (MAR)
- Barwon Heads Road Upgrade (BHRU) and
- Mickleham Road Upgrade (MRU1).

I note the six recommendations outlined in the Report. DoT, MTIA and SRLA do not accept recommendations 2, 3 & 4 and defer any opinion on recommendations 1, 5 & 6 which are directed towards the Department of Treasury and Finance (DTF). I wish to bring your attention to my observations and concerns with the recommendations as outlined below:

Recommendation 2
The Department of Transport and the Suburban Rail Loop Authority provide the government with a full business case for the entire SRL program of investments that includes economic analysis results for all stages of the proposed investment program.

The SRL Business and Investment Case (BIC) is a comprehensive 400-page document (supported by more than 600 pages of appendices), that was released in August 2021 after two years of detailed development and rigorous peer review. It was recognised at an early stage that a more appropriate initial approach for a project of such scale, length and duration was to develop a full

VICTORIA State Government

BIC for the first two stages of the project (SRL East and North) with a subsequent final business case to occur for the final stage of works at a more appropriate timeframe.

As I have raised in previous correspondence, the characterisation of SRL as a 'transport project' does not recognise the scale, scope and ambition of SRL. Rather than simply a 'transport project', SRL is an unprecedented urban renewal and precinct development program of works for Melbourne that will be catalysed over multiple decades by a rail investment. Many of VAGO's conclusions relating to SRL flow from this treatment of SRL as a 'transport project'. SRLA and DoT have sought to correct this position through written feedback to the Victorian Auditor-General's Office (VAGO) as well as through direct engagement.

Recommendation 3
The Department of Transport and the Suburban Rail Loop Authority include updated economic analysis results in funding submissions for all future stages of the program.

The SRL BIC is comprised of a comprehensive and transparent application of the economic analysis as per DTF's ILHVHR guidelines. DoT and SRLA will continue to work with DTF to ensure future business cases adhere to the appropriate guidelines for that project. A future business case will be developed with the appropriate economic analysis for that project as per the current ILHVHR guidelines at that time.

Recommendation 4
The Department of Transport and the Major Transport Infrastructure Authority disclose in any published version of the MAR business case the justification for and impacts of departures from DTF's ILHVHR guidance for the conduct of and disclosure of results from economic analysis.

The MAR business case has been finalised and lodged with Infrastructure Australia for review and assessment. The business case has comprehensively and transparently applied DTF's ILHVHR Guidelines in the determination of the economic analysis.

The Report focuses solely on DTF's ILHVHR guidelines and does not consider the suite of relevant guidelines that apply to economic appraisal of major projects in the Victorian context. Relevant guidelines that were considered for MAR and SRL include:

- Department of Treasury and Finance (2013) Economic Evaluation for Business Cases - Technical Guidelines
- Department of Transport (2019 and 2020) The Standard Approach to Transport Modelling and Economic Evaluation in Victoria v4.0 and April 2020 Reference Case
- Austroads (2012) Guide to Project Evaluation Part 4: Project Evaluation Data
- Transport and Infrastructure Council (2016, 2018 and 2020) Australian Transport Assessment and Planning (ATAP) Guidelines
- Infrastructure Australia (2018) Assessment Framework

VAGO's presentation of a departure from DTF's ILHVHR guidelines without suitable context or consideration of the other guidelines applied is likely to lead to incorrect interpretation of the economic analysis.

In addition to the above observations, DoT, MTIA and SRLA have consistently provided feedback to and raised concerns with VAGO about the preliminary information provided through the audit and the previous draft of the Report and a lack of nuance and recognition of the challenges in applying a single set of guidelines to four Projects of varying complexity and size. DoT, MTIA and SRLA have also repeatedly informed VAGO that all business cases have comprehensively and transparently applied the ILHVHR guidelines in the context of decisions made by the Governments and their Agencies. These concerns do not appear to have been duly considered and I ask that VAGO revisit the information and feedback provided in response to the draft Report.

DoT, MTIA and SRLA are committed to the success of these critical State-shaping Projects and thank you for the opportunity to respond to the Report.

If you require further information, the nominated contacts for this audit are Melissa Dobric, Executive Director – Strategic Projects, DoT (Melissa.Dobric@transport.vic.gov.au) and Peter Short, Executive Director – Project Integration Division, DoT (Peter.Short@transport.vic.gov.au).

Yours sincerely

[redacted]

Paul Younis
Secretary
Department of Transport

7 September 2022

Response provided by the Secretary, DTF

Department of Treasury and Finance

1 Treasury Place
Melbourne Victoria 3002 Australia
Telephone: +61 3 9651 5111
dtf.vic.gov.au
DX210759

D22/150312

Mr Andrew Greaves
Auditor-General
Level 31, 35 Collins Street
MELBOURNE VIC 3000

Andrew.greaves@audit.vic.gov.au

Dear Auditor-General

PROPOSED PERFORMANCE AUDIT REPORT QUALITY OF MAJOR TRANSPORT INFRASTRUCTURE PROJECT BUSINESS CASES

Thank you for your letter dated 24 August 2022, inviting the Department of Treasury and Finance (DTF) to respond to the proposed performance audit report: *Quality of Major Transport Infrastructure Project Business Cases* (Report).

I note the findings of the Report and the three recommendations directed at DTF. DTF has accepted in full one recommendation and in principle two recommendations.

A proposed action plan for implementing the recommendations directed at DTF is attached to this letter.

DTF notes that for most projects, investment decisions by Government are informed by business cases prepared by the public service. To address the occasional instances where an announcement precedes formal consideration of a business case, DTF will amend the applicable guideline to request a business case with a focus on project delivery, noting a full options analysis in these circumstances has reduced relevance on future project implementation decisions.

DTF does not agree with the red rating assigned to the economic appraisal method for the Suburban Rail Loop (SRL) and Melbourne Airport Rail (MAR) business cases. For these projects, the discount rate adopted was appropriate given that benefits accrue over a long period of time and social benefits are not easily translated into monetary terms. In addition, these projects also include significant urban renewal elements which are again, not easily translated into monetary terms. The use of a range was appropriate to communicate the inherent uncertainty with forecasting project outcomes for these projects over such a long period. A comparable approach has also been taken by other jurisdictions on similar projects.

DTF also does not agree with the conclusion that it did not fully address the scope of the High Value High Risk (HVHR) deliverability assessment for SRL and MAR. DTF considers that it has delivered progressive advice that addresses the substantive areas of analyses required in a HVHR deliverability assessment. This approach is necessary in circumstances where DTF is unable to finalise the full scope of the HVHR deliverability assessment at the time Government makes funding decisions for projects such as these.

VICTORIA State Government

DTF notes that both SRL and MAR have been and remain subject to extensive and detailed internal and external assurance processes that are more robust than is typically applied to standard projects.

Thank you for the opportunity to comment on the proposed report.

Yours sincerely

[redacted]

David Martine
Secretary

7/ 9 / 2022

Response provided by the Secretary, DTF—*continued*

Department of Treasury and Finance action plan to address recommendations from the *Quality of Major Transport Infrastructure Project Business Cases* review

No	VAGO recommendation	Action	Completion date
	That the Department of Treasury and Finance (DTF):		
1	Amend the ILHVHR guidance to provide departments and agencies with clarity on the implications, if any, for business case timing and comprehensiveness in circumstances where government has made project specific commitments, announcements and/or decisions before a business case is completed.	**Accept in principle** DTF accepts in principle this recommendation and will amend the ILHVHR guidance to request in these circumstances a business case with a focus on project delivery to assist future decision making.	By Quarter 1 2023
5	*That the Department of Treasury and Finance (DTF):* Amend the ILHVHR guidance to require departments and agencies to include information in business cases to acknowledge, justify and disclose the impacts of any significant departures from the guidance.	**Accept in principle** DTF accepts in principle this recommendation and will amend the ILHVHR guidance and business case template to request departments to disclose the rationale for any departures in future business cases and/or funding proposals.	By Quarter 1 2023
6	*That the Department of Treasury and Finance (DTF):* Amend the template for Gateway Review reports to require review teams to explain any departures from the recommended scope for each review Gate.	**Accept** DTF accepts this recommendation and will amend the Gateway report template.	By Quarter 1 2023

Page 3 of 3

APPENDIX B

Acronyms, abbreviations and glossary

Acronyms

ATAP	Australian Transport Assessment and Planning
BCR	benefit–cost ratio
BHRU	Barwon Heads Road Upgrade
BAU	business as usual
DoT	Department of Transport
DPC	Department of Premier and Cabinet
DTF	Department of Treasury and Finance
HVHR	high value high risk
ILHVHR guidelines	Investment Lifecycle and High Value High Risk Guidelines
MAR	Melbourne Airport Rail
MRPV	Major Road Projects Victoria
MRU1	Mickleham Road Upgrade
MTIA	Major Transport Infrastructure Authority
NPV	net present value
OPV	Office of Projects Victoria
RPV	Rail Projects Victoria
SRL	Suburban Rail Loop
SRLA	Suburban Rail Loop Authority
VAGO	Victorian Auditor-General's Office
VIP	*Victorian Infrastructure Plan*
WEBs	wider economic benefits
WRP	Western Rail Plan

Abbreviation

COVID-19	coronavirus

Glossary

Reasonable assurance	We achieve reasonable assurance by obtaining and verifying direct evidence from a variety of internal and external sources about an agency's performance. This enables us to express an opinion or draw a conclusion against an audit objective with a high level of assurance. We call these audit engagements. See our assurance services fact sheet for more information.

APPENDIX C
Scope of this audit

Objective

To determine whether business cases for major transport infrastructure projects support informed investment decisions.

Who we examined	Their key responsibilities
DoT	The state's lead transport agency responsible for developing and prioritising transport portfolio capital projects and programs
DPC	Supports the government to achieve its strategic objectives
DTF	Provides economic, financial and resource management advice to help the government deliver its policies
MTIA	Comprises a number of project offices, including RPV and MRPV, responsible for planning and delivering major transport infrastructure projects
SRLA	To plan and deliver the SRL program

What we examined

We looked at 4 transport infrastructure business cases against DTF's ILHVHR guidelines:

- 2 rail projects—SRL and MAR
- 2 road projects—BHRU and MRU1.

How we assessed performance

To form our conclusion against our objective we used the used the following lines of inquiry and associated evaluation criteria:

Line of inquiry	Criteria
DoT and relevant transport agencies apply comprehensive processes to develop business cases for major transport infrastructure projects.	DoT and relevant transport agencies: • meet DTF's ILHVHR guideline requirements for business case planning, development, quality assurance, oversight and approval processes, and any relevant department, agency and/or project-specific processes and requirements • comply with and respond to relevant external oversight, assurance and review mechanisms and requirements such as the Gateway and HVHR review and project assurance frameworks.
DoT and relevant transport agencies develop comprehensive business case content for major transport infrastructure projects to support informed government investment decisions.	• The key content in business cases for major transport infrastructure projects, including on options analysis, benefits identification and measurement, risk, cost estimation and financial and economic analysis, comprehensively meets DTF's ILHVHR guideline requirements. • DoT and relevant transport agencies adequately justify and approve any departures from the key content requirements of DTF's ILHVHR guidelines.
DoT and relevant transport agencies deliver timely business cases for major transport infrastructure projects.	• DoT and relevant transport agencies provide government with complete business cases for major transport infrastructure projects in time to inform key decisions on investment commitments and project solutions.

Our methods

As part of the audit we reviewed:

- the business cases and related documentation, including any strategic assessments and preliminary business cases for selected projects
- relevant documentation relating to the planning, development, quality assurance, oversight and external review (including HVHR reviews and Gateway reviews) of the selected projects and business cases
- relevant briefs and advice provided to the government.

We conducted our audit in accordance with the *Audit Act 1994* and ASAE 3500 *Performance Engagements* to obtain reasonable assurance to provide a basis for our conclusion.

We complied with the independence and other relevant ethical requirements related to assurance engagements.

Cost and time

The full cost of the audit and preparation of this report was $975,000. The duration of the audit was 11 months from initiation to tabling.

Auditor-General's reports tabled during 2022–23

Report title	
Results of 2021 Audits: Technical and Further Education Institutes (2022–23: 1)	July 2022
Results of 2021 Audits: Universities (2022–23: 2)	July 2022
Follow-up of Protecting Victoria's Coastal Assets (2022–23: 3)	August 2022
The Effectiveness of Victoria Police's Staff Allocation (2022–23: 4)	September 2022

All reports are available for download in PDF and HTML format on our website www.audit.vic.gov.au

Auditor-General's responsibilities

Our fact sheets provide you with more information about our role and our audit services:

- About VAGO
  Information about the Auditor-General and VAGO's work
- Our assurance services
  Information about the nature and levels of assurance that we provide to Parliament and public sector agencies through our work program

Victorian Auditor-General's Office
Level 31, 35 Collins Street
Melbourne Vic 3000
AUSTRALIA

Phone	+61 3 8601 7000
Email	enquiries@audit.vic.gov.au