Australian Government | Infrastructure Australia

July 2021

Identifying and analysing options

Stage 2 of the **Assessment Framework**

The Assessment Framework comprises an overview, stages 1 to 4 and technical guides:

Overview

1 Defining problems and opportunities

2 Identifying and analysing options

3 Developing a business case

4 Post completion review

Technical guides

Infrastructure Australia is an independent statutory body that is the key source of research and advice for governments, industry and the community on nationally significant infrastructure needs.

It leads reform on key issues including means of financing, delivering and operating infrastructure and how to better plan and utilise infrastructure networks.

Infrastructure Australia has responsibility to strategically audit Australia's nationally significant infrastructure, and develop 15-year rolling infrastructure plans that specify national and state level priorities.

Online

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Look for these icons throughout the document, for additional information:

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Introduction

At a glance

- During **Stage 2** of Infrastructure Australia's assessment process, you will identify, analyse and filter options to respond to the problems and opportunities you identified in Stage 1. This will save you from investing resources in developing unpromising options in your business case during Stage 3.
- We will assess your Stage 2 submission to determine whether you have:
  - Identified a **comprehensive longlist** of options that could address the problems and opportunities identified in Stage 1.
  - Applied a **robust and defensible methodology** to filter options from a longlist to a shortlist.
  - Identified a **shortlist of options** based on their relative merit, which are suitable for more detailed analysis in Stage 3.
- We assess both your options analysis process and the merits of your shortlisted options. This document outlines tools and methodologies that can help you with this process.
- The Assessment Framework has been designed to align with other national, state and territory frameworks. We accept submissions that conform to the relevant state or territory guidelines, so long as they include all the required information as set out in this document. Before submitting, check your submission against our Stage 2 **Assessment Criteria** and **Submission Checklist** to ensure you have met these requirements.
- If we positively assess your Stage 2 submission, we will update the ***Infrastructure Priority List***, which is published on our website. We will also provide feedback to you.
- We encourage you to **engage with us as early as you can** when developing a proposal, so that we can provide advice to strengthen your submission and clarify any assessment requirements.

Figure 1: Assessment Framework stages

1.1 How to navigate this document

This document is designed for proponents (you) wishing to make a Stage 2 submission to Infrastructure Australia (us) in accordance with the Infrastructure Australia Assessment Framework (the Assessment Framework). If you are unfamiliar with the Assessment Framework, we recommend that you review our **Overview** volume before reviewing this document.

- **Section 1** explains the purpose of Stage 2, including how it fits within our broader assessment process and the *Infrastructure Priority List* (the Priority List). This section also identifies the key infrastructure decision-making principles that apply to Stage 2.
- **Section 2** takes you through the steps you should follow to develop a high-quality Stage 2 submission. This includes guidance on methods you can use to identify a wide range of options and analyse them to develop a shortlist of options for detailed analysis in Stage 3.
- **Section 3** explains the Assessment Criteria we apply when assessing a Stage 2 submission. Before submitting, you should check your submission against our Assessment Criteria to ensure you provide all the information required for our consideration.
- **Section 4** provides a submission checklist that clearly lists all of the items that are required or recommended for a Stage 2 submission. Your submission should provide this information in the **Stage 2 Submission Checklist** available on our website.

Throughout this document, we will direct you to more detailed technical guidelines that may assist you to develop your submission.

Box 1: Key terms

Assessment Criteria: three overarching criteria we use to assess the merit of every proposal, at every stage of the Assessment Framework – Strategic Fit, Societal Impact and Deliverability.

Business case: a document that brings together the results of all the assessments of an infrastructure proposal. It is the formal means of presenting information about a proposal to aid decision-making. It includes all information needed to support a decision to proceed, or not, with the proposal and to secure necessary approvals from the relevant government agency. Unless otherwise defined, we are referring to a final or detailed business case, rather than an early (for example, strategic or preliminary) business case, which is developed in accordance with state or territory requirements. A business case is prepared as part of Stage 3 of the Assessment Framework.

Option: a possible solution to address identified problems and opportunities. A wide range of options should be considered and analysed to determine the preferred option, which will be recommended in the business case.

Program: a proposal involving a package of projects that are clearly interlinked by a common problem or opportunity. The package presents a robust and holistic approach to prioritise and address the projects, and there is a material opportunity to collaborate and share lessons across states, territories or agencies. The projects can be delivered in a coordinated manner to obtain benefits that may not be achieved by delivering the interventions individually.

Project: an infrastructure intervention. A project will move through the stages of project initiation, planning, delivery and completion. A suite of related projects to address a common problem or opportunity will create a program.

Proponent: an organisation or individual who prepares and submits infrastructure proposals to us for assessment. To be a proponent of a business case (a Stage 3 submission), the organisation must be capable of delivering that proposal.

Proposal: the general term we use for successful submissions to the *Infrastructure Priority List*, across the key stages of project development, specifically – early-stage (Stage 1), potential investment options (Stage 2) and investment-ready proposals (Stage 3). Proposals that have been delivered would be assessed in Stage 4.

1.2 Purpose of Stage 2

The Assessment Framework provides a structured and objective approach to making decisions about infrastructure. It also explains how we assess proposals for inclusion on the Priority List.

The Assessment Framework is designed to help you develop high-quality submissions at each stage of project development. The purpose of Stage 2 is to:

- identify a comprehensive longlist of options that could address the problems and opportunities identified in **Stage 1: Defining problems and opportunities**
- apply a robust and defensible methodology to filter options from a longlist to a shortlist.
- identify a shortlist of options based on their relative merit, which are suitable for more detailed analysis in **Stage 3: Developing a business case**.

To identify a shortlist of options, Stage 2 requires a structured analysis and filtering process to determine the costs and merits of each identified option. Therefore, our **Stage 2 assessments review both the options analysis process and the merits of the shortlisted options**.

This document explains how to make a Stage 2 submission to us and we clearly indicate our minimum requirements for these submissions. This document provides an overview of specific tools and methodologies you could adopt to conduct options analysis. Where appropriate, we direct you to our relevant technical guides for further advice on these tools and methodologies.

The Assessment Framework, including Stage 2, has been designed to align with other national, state and territory frameworks. We provide a **Stage 2 Submission Checklist** and guidance on tools and methodologies to support your submission to us. To prevent duplication with state, territory and agency processes, we do not provide a template. **Submissions should be provided in your own template**. We will accept submissions that conform to the relevant state and territory guidelines, so long as they include all the required information as set out in this document.

Box 2: Infrastructure Decision-making Principles

Our *Infrastructure Decision-making Principles*[1] provide guidelines to drive greater transparency and accountability in infrastructure decision-making.

This stage of development and assessment aligns with the following principles:

- **Principle 2:** Proponents should identify potential infrastructure needs in response to quantified infrastructure problems.
- **Principle 3:** Proponents should invest in development studies to scope potential responses.
- **Principle 8:** Governments and proponents should undertake meaningful stakeholder engagement at each stage, from problem identification and option development to project delivery.
- **Principle 11:** Where projects are funded as part of a broader program, the corresponding decision-making processes should be robust, transparent and prioritise value for money.

1. Infrastructure Australia 2018, *Infrastructure Decision-making Principles*, available at: www.infrastructureaustralia.gov.au/publications/infrastructure-decision-making-principles

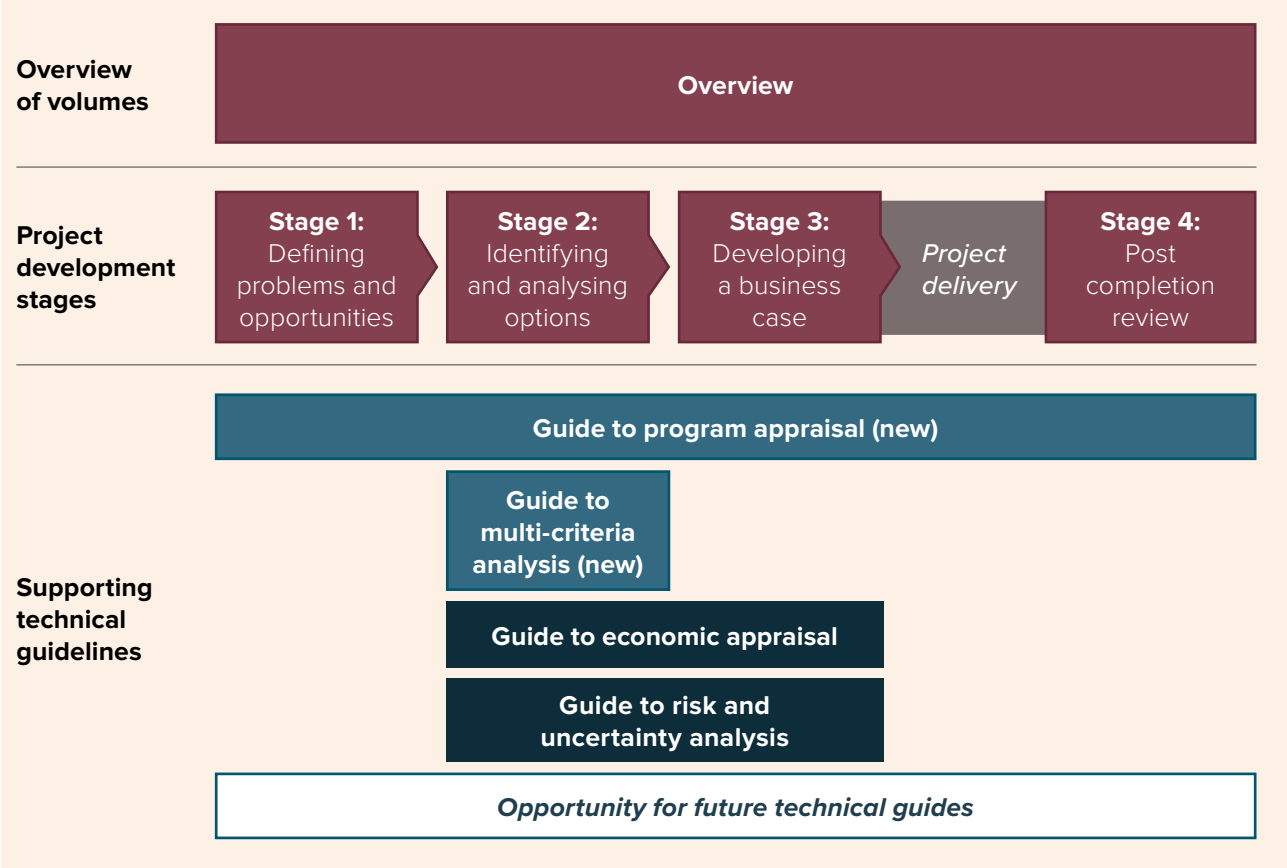
1.3 Structure of the Assessment Framework

The Assessment Framework consists of a series of volumes and technical guides. Together, they describe the activities in a typical project development and review process and how we assess proposals that are submitted to us.

For practicality and ease of use, each stage is described in a separate document and supported by the technical guides. This allows you to focus on the guidance most relevant to you at the stage you are up to in project development.

The structure of the Assessment Framework is shown in **Figure 2**. The suite of Assessment Framework volumes is available at **www.infrastructureaustralia.gov.au/publications/assessment-framework**.

Figure 2: Structure of the Assessment Framework



1.4 Infrastructure Australia can support your submission

We encourage you to engage with us during your Stage 2 development process. Ideally, you should do this **after** you have reviewed this guidance and the **Stage 2 Submission Checklist**, but **prior** to formally lodging your submission. We can provide advice and initial review to help you meet our requirements.

By engaging with us as you develop your submission, we can support you by:

- advising how to identify a broad range of options, including both capital and non-capital interventions
- advising how to analyse options, including when and how to apply different appraisal tools
- identifying whether too much focus is being placed on one option too early.

When assessing your Stage 2 submission, we will engage directly with you and provide feedback on the submission material.

We encourage you to engage with us and make a Stage 2 submission before developing a business case for assessment in Stage 3. This enables us to understand how you have identified your shortlist of options and ensures that issues are not raised after commencing detailed development of those options.

If you need further advice on any of the information in the Assessment Framework, please refer to **www.infrastructureaustralia.gov.au/publications/assessment-framework**, contact us via email at **proposals@infrastructureaustralia.gov.au**, or telephone on **02 8114 1900**.

2

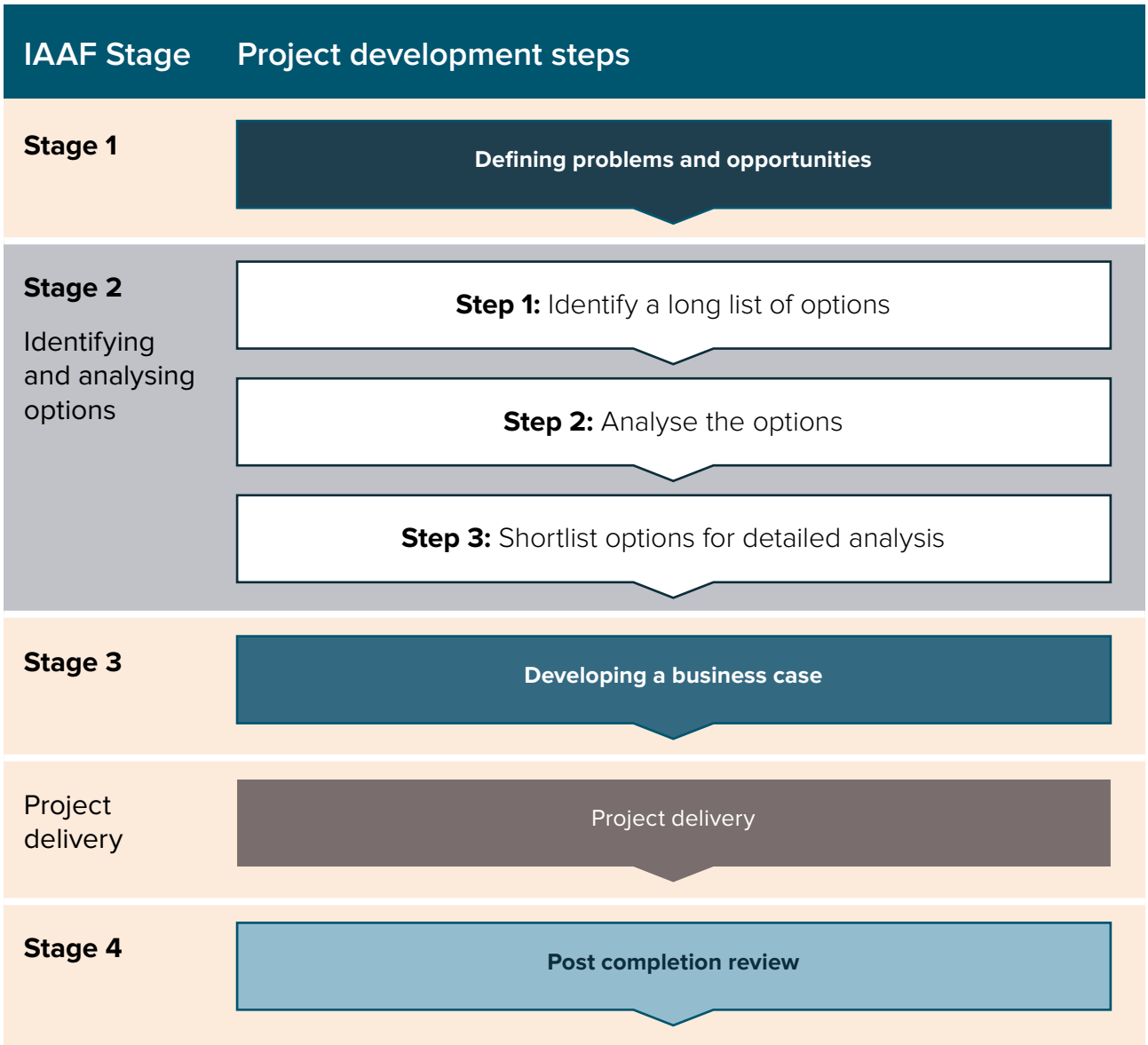
Identifying and analysing options


COSCO
SINOTRANS
MAERSK
MAERSK SEALAND
CMA CGM

2.1 Overview of Stage 2

The Assessment Framework presents our recommended process for project development (see **Figure 3**). By completing Stage 1 before Stage 2, you will have defined the problems and opportunities that your options are seeking to address.

Figure 3: Process for project development and evaluation



The guiding principle in options analysis is to develop and progress the full range of options that maximise net social benefits to the Australian community. Options analysis should be a structured, objective and evidence-based process that determines the relative merit of options. The approach should be appropriate to the proposal under consideration and the level of rigour should increase as the number of options narrows.

We recommend the following steps:

1. **Step 1: Identify a longlist of options** – identify options that could address the problems and opportunities identified in Stage 1. Options should represent a range of reasonable alternatives, including both non-capital and capital interventions.
2. **Step 2: Analyse the options** – analyse these options to determine those which are expected to address the identified problems and opportunities giving consideration to a range of agreed proposal objectives. The best performing options will be subject to progressively more detailed analysis, while poorer performing options are gradually excluded from consideration.

A range of tools are available for analysing options, although you should consider their respective strengths and limitations. If applied appropriately, we suggest a progressively detailed approach of:

a. **Strategic review** – a high-level qualitative consideration of feasibility and alignment to relevant goals, objectives and strategic plans.
b. **Multi-criteria analysis (MCA)** – a detailed, preferably quantitative analysis using scores and ratings against multiple criteria linked to the objectives of the proposal.
c. **Rapid cost–benefit analysis (Rapid CBA)** – a high-level, balanced and robust analysis of the costs and benefits of the options to test their value for money.

3. **Step 3: Shortlist options for detailed analysis** – based on the merit of the options, determine the shortlist of options that will be further developed and analysed in detail in **Stage 3**. At a minimum, your Stage 2 submission should provide supporting documentation describing all analysis and decision-making that resulted in the final shortlisted options.

Box 3: **What options are appropriate?**

Typically, each project case is a 'do something' option that reflects a proposed intervention. This intervention may respond in whole or in part to the defined problems and opportunities, such as discrete capital investment, or non-capital regulatory or policy reforms. The project case describes a future in which infrastructure, operational and policy changes have taken place.

We recommend that a business case includes at least two options for the project case, in addition to a 'do-minimum' base case. Project appraisal compares the project case options against the base case to determine their incremental impact. In other words, this measures the merit of the project case options over and above the base case.

You should describe each project case option shortlisted for appraisal in sufficient detail to analyse them. Further information is provided in **Section 2.4**.

2.2 Step 1: Identify a longlist of options

In Step 1 you should develop a comprehensive longlist of potential options to address the problems or realise the opportunities identified in Stage 1.

To develop a longlist of options, you should draw on a wide range of sources, including policies and strategic plans, previous studies, subject matter experts and stakeholders. You should appropriately engage stakeholders that are impacted by the options, including the community, and their needs should inform the process.

We appreciate that the number of options may vary between proposals and there may not always be a large number of options available. We recommend not spending time developing and evaluating options that do not relate to the problems and opportunities, or that are unlikely to be pursued.

Range of options to consider

Considering a comprehensive range of options increases the transparency of the investigation and provides evidence that the shortlisted options have greater merit than other possible options.

Options should represent a range of reasonable alternatives, with capital investment being one of those options. You should consider:

- capital and non-capital options
- demand-side and supply-side options.

Table 1 identifies a range of options that could be considered to address a problem or realise an opportunity.

Table 1: Range of options to be considered

Options		
Regulatory Reform	**'Better Use' Reform**	**Governance Reform**
• Regulatory or access regimes • Market structures and frameworks • Safety • Environment • Standards • Licensing	• Active management systems • Intelligent transport systems • Smart metering • Pricing and demand management	• Administrative and institutional frameworks • Project appraisal and selection processes • Public service delivery • Approval processes • Contractual provisions • Funding agreements
Capital Investment	**Service Reform**	**Land Use Reform**
• Expansion of existing infrastructure • New infrastructure • Programs of projects from across a network	• Service delivery/quality reform • Asset and modal integration • Comfort and amenity programs • Information and open data	• Planning or land use controls • Strategic regional planning • Integrated decision-making

Like infrastructure or capital spending processes, policy reform processes may have their own unique requirements (for example, regulatory impact assessments or community consultation). It is important to be conscious of these requirements and plan for them into your options development processes.

The longlist of options should be defined before you develop any decision-making criteria – this ensures that nothing is left off the table and a comprehensive range of options is identified. **Box 4** provides worked examples for identifying a broad range of options for two transport proposals, while **Box 5** provides some advice on how to consider socially beneficial options.

Box 4: Consider a comprehensive range of options to address the problems and opportunities

When identifying options, there are usually a wide range of infrastructure and non-infrastructure interventions that may address the underlying problems and opportunities.

For example, when responding to overcrowding on a public transport corridor or network, options could include:

- additional transit fleet
- timetabling changes to balance passenger loading across services and better utilise existing capacity – exploring interventions across a range of different routes and services
- fare changes
- optimising routes and services to better utilise existing infrastructure
- better integration with supplementary modes
- consideration of investment in complementary modes, for example, active transport
- communications strategy to encourage interchange
- encouraging working from home.

Similarly, when responding to road network congestion in a growth corridor, options could include:

- time-of-day tolling
- road upgrade – exploring a wide range of interventions, such as corridor widening, new routes, separated intersections and bypasses
- clearways
- intelligent transport systems
- public transport – exploring a number of modes and alignments
- encouraging working from home
- congestion charges.

Box 5: **Considerations for socially beneficial proposals**

Sometimes the key rationale for undertaking an investment is to address an identified social problem, such as to improve the overall health of an identified community. There are a wide range of options that could be considered:

- Non-infrastructure solutions – such as an education campaign to encourage healthy habits and promoting healthy activities (for example, exercising to improve physical health and social inclusion to promote mental health).
- Health infrastructure – investing in hospital and medical centre upgrades to provide doctors with better equipment and facilities, which could improve patient health outcomes.
- Transport – upgrading a key access road so that it is resilient to all weather events and therefore improves a community's accessibility to hospitals and medical services.
- Telecommunications – upgrading internet services to allow residents to access information online or to increase access to tele-health services.
- Water – investment in water treatment to improve water quality, and so reduce chance of water contamination.

Set boundaries around your problem or opportunity

You should be mindful of the boundaries of the problems and opportunities (identified in Stage 1) when identifying options by considering:

- geographical boundaries (for example, the corridor, city or region affected)
- jurisdictional boundaries (for example, the governing bodies that have authority over each option)
- physical constraints (for example, the impact of topography and climate risks on each option)
- timeframes (for example, the expected design life of each option and/or any critical future 'triggers' such as full capacity, population growth by 2030, sea level rise inundation by 2100)
- other interdependent infrastructure and systems (for example, power, telecommunications and water supply, transport access)
- budgetary limits (for example, practical limitations to the amount or timing of budgets)
- outcomes of any initial problem or opportunity definition or screening exercises (if relevant).

Include options that are sustainable and resilient

When developing a longlist of options, you should take into account possible future scenarios or conditions to identify options that improve sustainability and resilience outcomes. This should include considering:

- **sustainability** – the impacts of decisions today on future generations
- **resilience** – how options perform in response to shocks and stresses.

Box 6 provides advice on how you could consider sustainability and resilience when identifying options. **Section 3.2** provides detailed guidance around how we will assess your consideration of sustainability and resilience for the shortlisted options.

Box 6: **Identify options that are sustainable and resilient**

We have embedded sustainability and resilience throughout the Assessment Framework to recognise improved outcomes delivered by proposals. You should identify whether there are any sustainability or resilience outcomes associated with potential options, including where sustainability and/or resilience is the driver for providing infrastructure. You should also refer to our Sustainability Principles and resilience characteristics in **Section 2.6** of the **Overview** volume.

You might consider the following questions while identifying a longlist of options:

Stage 2: Identifying and analysing options	
Strategic Fit	Are the problems and opportunities directly related to the sustainability or resilience of the community? If so, do options effectively respond to this context? Have impacts been considered within an appropriate spatial and temporal boundary – including interdependent networks and systems, as well as the place and wider community?
Societal Impact	Does an option respond to or consider social, economic, environmental and governance impacts? If not, have opportunities to improve community sustainability or resilience been considered as an overlay to the primary problems and opportunities? Does an option consider potential short and long-term shocks and stresses? Have whole-of-life costs been considered in options analysis?
Deliverability	Have risks related to sustainability or resilience been identified, documented and considered for the ongoing investigation for each option?

The following provides some examples of how options could consider and respond to sustainability or resilience:

- **Sustainability:** The options developed should take into account long-term drivers of change, such as climate change and population change. The options should also have regard to the social, economic and environmental context of the study area. For example, a water proposal that is responding to climate change could take into account data on increasing average temperatures (which impacts on demand) and decreasing average rainfall (which impacts on supply). This would become an input to identifying options. The proponent should also consider other relevant factors in the study area, such as environmental designations and key interests of the local community, such as green space and sports fields.
- **Resilience:** The options developed should take into account any potential shocks (such as failure of interdependent systems including power, and extreme climate events including flooding and bushfire) and stresses (ageing infrastructure, social inequity, lack of accessibility between transport modes) to the network. To identify options that are resilient, a proponent could explore those that increase robustness and redundancy to reduce the impacts of shocks and stresses, or improve recovery and adaptability to improve the recovery from shocks and stresses. For example, for a road access proposal, it might be appropriate to identify a dual carriageway option that permits contra-flow traffic during disruptions, or consider the range of possible flooding scenarios to balance redundancy with cost of options.

Consider how options can be packaged

Where possible, longlisted options should comprise mutually exclusive options. However, it is worth considering how individual options could be packaged together – or better coordinated – for a more efficient and effective outcome. This will allow the packaging of individual options into composite options for further assessment in later analysis.

In practice, options should be developed and analysed individually in the first instance. For options that individually only address one or a small number of objectives, it may be possible to combine them with other options to collectively address the objectives and provide comparable outcomes to other higher-cost individual options. You should consider this when applying each filtering tool (see **Step 2** in **Section 2.3**) so that you do not discard options without appropriate consideration.

Options packages should be defined and analysed as discrete options to ensure that potential synergies (such as when 'the whole is more than the sum of the parts'), as well as any economies of scope and scale, are fully considered. For example:

- A road upgrade proposal may also include improved active transport links and time-of-day tolling to better manage demand, and designation as an evacuation route in the event of an emergency, increasing overall benefits of the proposal.
- An urban cooling proposal may require several discrete investments such as green walls and roofs, urban tree canopy, water in the landscape, and community outreach programs to work together to achieve desired urban cooling, sustainability and quality-of-life outcomes.
- A collection of bridge upgrades along a corridor, where upgrades along the entire length of the corridor are required to enable high productivity vehicle access and improve equitable accessibility outcomes.

This process will generally be iterative. That is, packages of options would be identified after the initial analysis and then be analysed again using the same process to determine their merit.

Where multiple major interventions are packaged together into a program, refer to our **Guide to program appraisal** for detailed guidance and our assessment requirements. Options should be grouped into a program if they address a common problem or realise a common opportunity, and if they can be delivered in a coordinated manner to obtain benefits not available from delivering them individually.

Appropriate level of detail for longlisted options

When developing a longlist, you should consider the information needs for options analysis.

We recommend you understand the following information at a high-level, as appropriate, for each longlisted option:

- type (for example, regulatory reform, capital investment)
- definition of the option – what it is
- location
- timeframes, including the expected design life of the option and any critical future 'triggers'
- alignment with national, state and territory plans or strategies
- infrastructure changes or enablers – the interventions required to deliver and implement the option
- dependencies with other investments, including existing infrastructure and systems
- a qualitative understanding of the option's social, economic, and environmental impacts
- indicative whole-of-life investment costs (capital, operating, maintenance and disposal).

Step 1 outputs

We expect that the process for identifying the longlist of options is documented with clear rationale and evidence. At the end of **Step 1**, you should document:

1. the process used to develop the longlist of options (for example, options development workshops)
2. the stakeholders involved in the longlisting process and their relevance to the problem/opportunity
3. a summary of the longlist of options, including capital and non-capital options, and demand-side and supply-side options.

2.3 Step 2: Analyse the options

In Step 2 you should analyse the longlist of options identified in Step 1, to progressively filter out options once you are confident that they have lesser merit than other options. This analysis will inform the selection of the shortlisted options during Step 3. **Although we do not mandate a specific options analysis methodology, we expect the process to be robust and defensible.**

Even if a possible solution has been publicly announced, we still expect a rigorous options analysis process is undertaken, as there are usually variations to it that can be considered. For instance, it may be possible to:

- build a similar option at a lower cost without a relative reduction of benefits
- deliver a more expensive scope of work that achieves proportionally higher benefits
- identify an option that achieves the same objectives but provides better outcomes, for example, by better integrating into or improving the resilience of the existing network or improving social outcomes such as quality of life, sustainability and resilience.

This will ensure that the shortlist of options investigated further in the business case are still the most efficient and effective response to the defined problems or opportunities.

Options analysis inputs

Having completed Stage 1 of the Assessment Framework, you will have clearly demonstrated the problems and opportunities that the intervention will respond to.

For Stage 2, it is important to gather sufficient information to enable analysis of a longlist of options so that they can be filtered to an appropriate shortlist. Preliminary technical studies and investigations will help to identify and inform the analysis process.

Table 2 provides a summary of the types of investigations that are typically inputs to the options analysis. The list is not exhaustive or sector-specific, so you should refer to relevant national, state, territory and sector-specific guidelines for further detail.

Table 2: Option analysis inputs

Input area	Description
Technical	• Demand and/or service-level analysis should be confirmed from Stage 1. • Design concepts (including engineering and/or architecture concepts) that provide context to the definition, preliminary cost estimates, risk profile and deliverability of the options. • System management analysis should be completed to provide context to network/system integration and interface differences of options.
Planning and environmental	• Preliminary land use, planning and value capture opportunities can provide context to the shortlisted options role within the local, regional and/or sector. • Preliminary approvals/permit, property and heritage (cultural, native title) analysis to identify any potential 'showstoppers' of the options. • Geotechnical/hydrology investigations (for example, desktop or field) should be completed to inform the definition, cost estimate and risk profile of the options. • Sustainability and resilience should be considered in the shortlisting process.
Other	• Preliminary funding and financing analysis should be undertaken to identify potential funding models that may be applicable to different options. This should consider user-pays funding models and public-private partnership options, and the potential role of the Australian Government. • Market considerations may include consideration of future market trends, capacity, materials availability and contracting terms. • Preliminary legal and regulatory investigations should identify any potential 'showstoppers' that would severely impact the deliverability of options.

Options analysis considerations

We use three overarching Assessment Criteria when assessing submissions made to us. These criteria, which broadly align with state and territory guidelines, are:

1. Strategic Fit
2. Societal Impact
3. Deliverability

Each of the criteria includes five specific themes (see **Figure 4**) to highlight the key considerations within them. The criteria are applicable at each stage of project development. However, the considerations evolve through each progressive stage and not all may be applicable depending on the nature of each proposal.

Figure 4: Our Assessment Criteria and themes

Strategic Fit *'Is there a clear rationale for the proposal?'*	• Case for change • Alignment • Network and system integration • Solution justification • Stakeholder endorsement
Societal Impact *'What is the value of the proposal to society and the economy?'*	• Quality of life • Productivity • Environment • Sustainability • Resilience
Deliverability *'Can it be delivered successfully?'*	• Ease of implementation • Capability and capacity • Project governance • Risk • Lessons learnt

For Stage 2 submissions, we use the criteria and themes to guide our assessment of the shortlisted options. Therefore, you are encouraged to review the considerations, which are set out in **Section 3**, to inform your decision-making during the options analysis process.

Compare options against a base case

Project appraisals compare the costs and benefits of doing something, the project case, with not doing it, the base case.

A high-level consideration of the base case is required in Stage 1 to assist in determining the scale of problems and opportunities, that is, what will happen in the absence of new investment. In Stage 2, you should define the base case in detail so that you can analyse the relative merits of response options.

The base case should represent a 'do-minimum' situation[2], reflecting the continued operation of the network or service under good management practices. We recommend the committed and funded expenditure approach to defining the base case, but recognise that some states and territories use the planning reference case approach.

Detailed guidance and our requirements for developing the base case are provided in the **Guide to economic appraisal**.

Consider the wider delivery context

When analysing options, you should consider which organisations and regulatory bodies would be involved in their delivery and how they would be impacted by their relevant regulatory, governance, ownership and operational arrangements. This will impact the viability and suitability of options, influencing the analysis process. This will be a high-level analysis at Stage 2, with more detailed assessment occurring during Stage 3.

2. Every Commonwealth, state and territory guidance document recommends a 'do-minimum' base case.

Consider stakeholder impacts

Meaningful stakeholder engagement enables communities to shape infrastructure planning and delivery. This kind of engagement is needed to achieve stakeholder and community endorsement for the delivery of an infrastructure proposal. You should consider:

- impacts of options on a wide range of stakeholders, including Aboriginal and Torres Strait Islander people, minority groups and disadvantaged communities
- stakeholder input to inform the options analysis process
- reporting back to communities on how their feedback was used in decision-making.

Evidence required to filter options

The analysis of options and their impacts should be considered in appropriate detail and supported with evidence. While suitability to each filtering tool may differ, **you should use monetised and quantified evidence as far as possible in your options analysis process**.

Monetised evidence allows for a detailed and objective understanding of the size, composition and timing of benefits and costs and should be the primary evidence source. However, we appreciate this may be difficult in Stage 2 where the data or methods to monetise or quantify the benefits have not yet been developed (instead it will be completed in Stage 3). Therefore, in Stage 2, **qualitative information may be used as evidence of wider strategic or social benefits to supplement monetised and quantitative data where required**.

For qualitative data, there are several ways to present costs and benefits that have not been monetised for consideration in the analysis. Generally, we would expect that they are an input to any MCA, and may be presented alongside rapid CBA results, for example, in an appraisal summary table. See **Summarising your business case** in **Section 2.6** of the **Stage 3** volume for further detail and an example appraisal summary table.

Box 7 describes when options should be discarded, or filtered, from consideration.

Box 7: **Discarding options from analysis**

The objective of the analysis is to exclude or eliminate options where you can be confident that those options have lower net benefits than other options. Options should be judged on their merits and should not be ruled out on the basis of personal preferences or perceived political difficulties.

It is appropriate to discard options from a longlist where:

- They are not physically feasible or feasible only at a cost much greater than the monetised cost of the problem or opportunity (as defined in Stage 1).
- They are inferior to other options in terms of performance against the objectives, the extent to which they address the problem or opportunity and high-level estimates of cost relative to the scale of the problem or opportunity. This can be approximated by a well-designed MCA where there are multiple objectives/problems.
- They have been subject to a rapid CBA and this analysis highlights that they do not present value for money.
- They have been subject to cost-effectiveness analysis (CEA), where appropriate, and are shown to be significantly less cost effective than other options.

Sometimes options may be discarded because they do not address the whole problem or opportunity. This is particularly true of low-cost options that provide net benefits but do not solve the entire problem by themselves. Where options do solve part of the problem, they should be considered for packaging and re-analysed for the shortlist – that is, they should not be automatically discarded from the longlist if they can supplement other projects to better address the problems and/or opportunities.

Options analysis tools

Appraisal and evaluation methods differ in their levels of effort and costs. **As the range of options narrows, you should apply more detailed analysis, to better differentiate the net benefits of each option**.

While there is no single 'best' process for analysing options, a progressive filtering approach using the following tools may be appropriate:

a. Strategic review.

b. MCA.

c. Rapid CBA.

This is a general process presented as a guide only. When selecting assessment tools throughout the decision-making process, you should consider the relative cost and robustness of analysis. **In some cases, it may be more cost-effective to use a more robust assessment method. Where quantitative information is already available for the proposal, applying rapid CBA to the longlist of options will provide a more robust process**. In very rare cases, cost-effectiveness analysis (CEA) might be applied (described later in this section).

These tools are explained in the following sections. Importantly, when applying these tools, you should consider your ultimate decision-making criteria, which should be informed by our Assessment Criteria, as set out in **Section 3**. This approach will enable consistency throughout the analysis process by applying the criteria at progressively greater levels of detail in each successive tool.

For reference, ATAP's guide *F3 Options Generation and Assessment*[3] also includes detailed guidance on options analysis tools.

Strategic review

You should review the Strategic Fit and feasibility of options at a high level before moving on to more detailed analysis. This is intended to form an initial view of each option and can be conducted informally with less effort than is required for quantitative analysis.

Although the longlist of options (and sub-options) should be comprehensive, some of these options may not be feasible due to legal, political, regulatory or deliverability reasons. Strategic review helps you test and refine the merit of options before undertaking more structured analysis. This makes the options analysis process more manageable by focussing time and effort on options that are more likely to achieve the desired outcomes.

Two tools that practitioners can consider for strategic review are initial screening or strategic merit testing (SMT), which can be applied consecutively:

- **Initial screening** – a tool for filtering a longlist of options against minimum thresholds. It can help to develop a more manageable longlist of options by discarding options which do not address key proposal requirements.
- **Strategic merit test (SMT)** – a method of testing a filtered list of options for strategic merit based on high-level objectives or criteria. It can help to form an initial view of the outcomes, test for anomalies, or refine a list of options.

These tools are described in further detail in **Appendix A**.

3. Transport and Infrastructure Senior Officials' Committee 2021, *Australian Transport Assessment and Planning (ATAP) Guidelines F3 Options generation and assessment*, Transport and Infrastructure Council, Canberra, available at: www.atap.gov.au/framework/options-generation-assessment/index.

Multi-criteria analysis

When applied effectively, MCA can bring further analytical structure to the options analysis process and is a useful precursor before introducing economic appraisal.

The MCA process scores and rates options against multiple criteria linked to the objectives of the problem or opportunity. MCA can consider factors wider than those of monetary and quantitative techniques by examining options qualitatively against an explicit set of criteria related to the objectives of the investigation.

If an MCA is well designed, consistently applied and adequately documented, it provides a cost-effective way for reducing a large number of options to a filtered list for more detailed and intensive analysis. This means practitioners can then focus their effort and resources (using more data-intensive and expensive tools) on better performing options. **However, the nature of MCA and its greater reliance on judgements, weightings and qualitative analysis result in a greater risk of a biased or misleading analysis and these risks need to be recognised and managed**.

For detailed guidance on MCA, refer to our **Guide to multi-criteria analysis**.

Using MCA, you should arrive at a reasonable list of options that warrant analysis using economic appraisal. MCA should not be used as the sole decision-making tool for arriving at the shortlist of options.

Rapid cost–benefit analysis

Undertaking detailed economic analysis is expensive and time consuming. To determine the final shortlist of options, we recommend that rapid CBA is used to apply a quantitative analysis methodology without the time and cost of a detailed CBA. Undertaking a rapid CBA will provide some rigour to identifying your shortlist to take forward to Stage 3 for analysis using detailed CBA as part of a business case.

A rapid CBA applies standard CBA principles and techniques, allowing multiple options to be compared using a common metric, the net present value, but applies a strategic level of cost and benefit assumptions.

As well as filtering, rapid CBA is valuable as an early check on the economic merit of options to ensure that the scale of benefits align to the scale of the option costs and that they address the problems or opportunities. However, caution should be applied in publicly releasing the rapid CBA results as the outputs could change substantially as more detailed CBA is undertaken to inform the business case.

Box 8 provides a worked example of a rapid CBA. Detailed guidance on rapid CBA, including a comparison between rapid CBA and detailed CBA, is available in the **Guide to economic appraisal**.

Cost-effectiveness analysis

CEA compares the costs of alternative ways of producing the same or similar outputs. The aim is to achieve these outcome(s) at least cost. CEA expresses the result in terms of the average cost per unit of effectiveness – for example, the average cost per life saved or the average cost per megalitre of water supplied in a catchment.

CEA may be relevant for options analysis where an intervention is mandatory, or is to achieve a government policy outcome (like community service obligations) or to address major public safety concerns. For example, an agreed outcome may be reducing the road toll by a specified number of lives or reducing major incidents at a particular road junction or rail level crossing site. While CEA can be used when the main benefits cannot be easily valued, it does not indicate if the preferred option is of net benefit to society.

Therefore, CEA may be an appropriate filtering tool where outcomes are taken as given or considered equivalent among options. However, for the vast majority of the business cases for infrastructure proposals, CBA is the appropriate appraisal tool to use. For further information, please refer to our **Guide to economic appraisal**.

Box 8: **Worked example of using rapid CBA during the options analysis process**

Background – this is a continuation of the worked example provided in the **Stage 1** document (**Section 2.6 – Box 16**), regarding an opportunity for an irrigation precinct. This box demonstrates the natural progression from Stage 1 to show how rapid CBA can be used as part of the options analysis activity in Stage 2.

In Stage 1, the analysis of the irrigation precinct opportunity estimated the current and future value of the opportunity. During Stage 2, you can use the estimated opportunity value (rapid CBA of prospective benefits) to inform the analysis of options:

- You have estimated a total agricultural value potential of $42 million per annum. This is a high-level benefit estimate based on preliminary analysis of value of increased water availability in the region.
- You investigated potential solutions, including constructing a dam in a nearby valley. This proposal has an estimated cost of $1 billion.
- This information can be used in rapid CBA:
  - You have used a basic discounted cashflow model, with an assumed 30-year appraisal period and a discount rate of 7%.
  - You have assumed that the dam is built over a five-year period at a cost of $200 million annually. Following this, the annual agricultural benefits ($42 million) will be generated over 30 years.
  - The present value of the agricultural benefits equals $397.6 million, while the present value of the costs equals $877.4 million.

This rapid CBA shows that the costs significantly exceed the benefits. While detailed CBA will provide more certainty of the results, it is unlikely that this option will generate net benefits.

A range of other options tested were found to deliver larger net benefits through rapid CBA. This option was therefore discarded from consideration.

Step 2 outputs

We expect that the procedure for progressing or excluding options follows a robust process, with a clear rationale and evidence that is thoroughly documented. At the end of Step 2, you should document:

1. The process used to filter the longlist of options to a shortlist, including details of the tools used and how they were applied.
2. Details of the options considered with each tool and the rationale for them to be progressed, changed, or removed – this should include justifiable explanations as to why options have progressed to the shortlist or not.
3. How stakeholders were engaged through the options filtering process.

2.4 Step 3: Shortlist options for detailed analysis

Step 3 involves defining your shortlist of options that will be taken forward for robust analysis in Stage 3, based on the analysis undertaken in Step 2. The shortlisted options should be those from the longlist which are most likely to maximise net societal benefits. Importantly, it should be possible to demonstrate how these options:

- are expected to address the problems or opportunities identified in Stage 1
- respond to our Assessment Criteria of Strategic Fit, Societal Impact and Deliverability
- are likely to provide value for money, as indicated by the rapid CBA

Describe the shortlisted options

You will need to outline what options have been retained in the shortlist following options analysis. The characteristics of the shortlisted options should be defined in detail, including high-level information regarding the scope of works for each option. As a guide, this should include the following elements, some of which are explained in subsequent sections:

- option description (as provided for longlisted options)
- infrastructure and non-infrastructure changes or enablers
- indicative whole-of-life costs
- expected impacts, including:
  - monetised benefits (and dis-benefits)
  - non-monetised quantitative and qualitative impacts
- consideration of risks and uncertainties
- any relevant information supporting the Assessment Criteria, such as sustainability assessments, environmental impact assessments, feasibility studies, economic appraisals
- any relevant assessments, such as distributional effects, sensitivity and real options analysis, if available
- anticipated funding model(s)
- interdependencies with other problems and opportunities and/or programs and projects
- indicative deliverability considerations (risks, schedule, model etc.).

A Stage 2 submission should describe the stakeholders that you engaged during the options identification and analysis, how you coordinated this engagement and how any workshops functioned, and how stakeholder input was meaningfully incorporated in the decision-making.

The description provided should also include detail around the potential impacts of options on relevant stakeholders – as part of this, you should specifically consider any impacts on Aboriginal and Torres Strait Islander peoples and communities.

Describe the capital costs of each shortlisted option

As part of Stage 2, you should have an indicative understanding of the whole-of-life investment costs and proposal risks for each shortlisted option.

In terms of capital costs, you should have an indicative understanding of the following:

- The cost estimates in real, $million, $20XX and present value terms.
- Confidence in the cost estimates, and the probability levels used (for example, expected value, P50, P90).

The shortlisted options should be based on an indicative, whole-of-life costing for both the base case and options. If possible, this should include all aspects of the construction, operation, maintenance, renewals and disposal/decommissioning of an asset across the appraisal period. Stage 2 submissions should justify the scope of the costing included in the options analysis for each of the shortlisted options. See **Box 9** for further detail on infrastructure definition, design and cost estimate maturity applicable to Stage 2.

At this stage, you should also consider what components of each option, in whole or in part, are seeking Australian Government funding. You should also consider state and territory grant options alongside opportunities for non-government (private sector) funding.

Box 9: **Level of project development, design and cost estimate in options analysis**

We receive proposals for projects at varying degrees of development, design and cost estimate confidence. While some state and territory guidelines outline the level of design and investigations required to support a business case, the approaches are not consistent.

To assist you in completing a rigorous options analysis that is supported by an appropriate level of definition, design and cost estimate confidence, we have identified the key features we would expect to see at Stage 2. Project development[4] includes undertaking a comprehensive range of technical investigations to inform the scope and level of confidence in the cost estimate of the proposal. We receive Stage 2 submissions at varying degrees of development, so we have identified two steps where you should identify project design and cost maturity in your submission.

For a breakdown across all stages, please see our **Guide to economic appraisal**, which outlines that cost estimates are primarily presented as either at P50, P90 or expected value.

	Level of design and cost estimate at Stage 2	
Recommended inputs to design and cost estimate	**During options identification (longlist)**	**During quantitative options analysis (filtered list)**
Level of project design	0–5%, or usually concepts / sketches / descriptions	5–20%, or usually strategic / thick pen
Investigations to inform project definition	Demand modelling (current and future years) Network/system analysis See **Table 2** for more detail.	Network optimisation analysis Rapid economic appraisal Preliminary technical investigation See **Table 2** for more detail.
Cost estimate bases	Order of magnitude or recent comparable projects	Comparative/benchmark rates
Cost estimate class/category	Nominate applicable state, territory or sector specific cost estimate class/category at each stage	
Quantified risk & contingency	40%–70%	40%–70%
Cost ranging	Low side: -20%/-50% High side: +30%/+100%	Low side: -15%/-30% High side: +20%/+50%
Probabilistic cost estimates	n/a	P50/Expected Value for financial and economic
Estimate confidence level	Low	Low
Usage	Project initiation and planning budget	For shortlisting

Key considerations and influencing factors informing project definition, design and cost level include the budget and timeframe made available for planning and options analysis.

4. There is different terminology, phases, design and cost classes across states, territories, sectors and infrastructure classes. You should adopt an approach that is appropriate for your proposal.

Describe relevant risks and uncertainties for each shortlisted option

In terms of risks, you should develop a high-level understanding of:

- Risks or uncertainties that pose fundamental challenges for each option.
- Risks or uncertainties that impose critical constraints on the successful implementation of the options.
- Possible future scenarios and uncertainties and each options performance against them.

A number of tools exist to determine the impact of risks and uncertainty on decision-making. They range from relatively low-cost methods such as sensitivity analysis, through to more sophisticated methods such as the development of alternative possible futures. **Box 10** provides an overview of sensitivity and scenario analysis.

We recommend that you undertake a high-level sensitivity analysis for each shortlisted option and suggest that more robust tools (for example, scenario or real options analysis) are considered where significant uncertainty exists. Sensitivity and scenario analysis undertaken should reflect the evidence requirements outlined in the next section. As further investigations are required to develop the benefits and costs of shortlisted options in detail, we appreciate that you will only be able to attain a high-level understanding or risks and uncertainties at this stage. For more information on accounting for risk and uncertainty, please refer to our **Guide to risk and uncertainty analysis**.

Box 10: **Sensitivity analysis and scenario analysis**

It is important to consider how the options may change over time and under new, abnormal and disruptive circumstances.

Sensitivity analysis

Sensitivity analysis identifies potential impacts of risks on project outcomes by varying key inputs and assumptions. Sensitivity analysis allows you to understand the key factors and variables that impact on project outcomes and prioritise, analyse and select options (including the preferred option), based on different assumptions and outcomes. We expect Stage 2 submissions to demonstrate the key sensitivities of the shortlisted options, including high-level sensitivity analysis as part of the options filtering process.

For example, a project-specific sensitivity test could consider climate risks to a road proposal through a flood-prone area. Flood modelling can consider climate risk by analysing the sensitivity of impacts to higher rainfall intensity (the variable) under a high projection. The sensitivity analysis can use the projected change in rainfall intensity to test the design of the proposal's associated drainage infrastructure and determine if the design is resilient to future changes in rainfall intensity.

Scenario analysis

Scenario analysis considers a range of alternative, possible future states, called 'scenarios'. It is based on the premise that investing in infrastructure is a complex process, which must consider uncertainty and understand that assets may have to perform under different plausible futures. We expect Stage 2 submissions to develop and apply scenarios analysis to test how robust options are in the face of uncertainty about the future and to assist decision-makers in choosing robust options.

To undertake scenario analysis, it is first important to define and/or select the scenarios of different plausible futures that the proposal or options will be assessed under. This may include scenarios of future population forecasts, plans for increased economic activity or employment opportunities, potential pathways for the transition to a low-carbon economy (such as changes in policy, market drivers, technology and resources) and scenarios of projected changes in climate. When defining scenarios it is important to identify any assumptions, including the timeframes over which potential changes may occur.

Provide evidence to demonstrate the net benefits for the shortlisted options

We expect that a Stage 2 submission will provide evidence that the shortlisted options are those most likely to deliver net societal benefits. To support this, we expect you to provide information on each shortlisted option using the following evidence hierarchy:

- **Monetised information** – monetised values of the impacts for each option.
- **Quantified information** – quantification of impacts in terms of social, economic and environmental – although not providing a monetised cost, quantification provides an indication of the magnitude of the problem and the potential size of benefits from resolving a problem.
- **Qualitative description** – qualitative discussion of impacts in terms of social, economic and environmental.

Commentary should be provided relating to likely externalities (positive and negative) associated with each option, in addition to highlighting any linkages to other problems and opportunities.

Number of shortlisted options

We recommend that a minimum of two shortlisted options are taken forward for more detailed investigation in Stage 3, in addition to the base case.

However, we appreciate that in some instances you may deem it suitable to progress only one option for further investigation in the business case. While we are willing to accept this approach, **progressing only one option is only appropriate on the basis that sufficient analysis, supported by detailed evidence, has been undertaken to justify this decision in Stage 2**. **Box 11** provides more detail on our position.

Next steps to progress options to detailed analysis

As Step 3 leads into the detailed development phase as part of Stage 3, you should have an understanding of the next steps required to progress each shortlisted option.

As such, we ask you to describe the next activities planned to progress each shortlisted option. You should identify what areas of analysis need further refinement and detailed analysis to build on the work undertaken as part of Stage 2. This may include, but is not limited to:

- demand modelling
- cost estimates
- economic analysis.

In addition to detailed technical work, you should list broader delivery activities that will need to occur – including but not limited to:

- environmental approvals
- zoning and land use approvals
- cultural or heritage assessments
- climate change risk and resilience analysis
- detailed stakeholder engagement plans, including engagement strategies for Aboriginal and Torres Strait Islander peoples if relevant
- gateway review processes.

You should also identify any remaining Deliverability risks and identify indicative mitigation strategies that will be further explored throughout Stage 3. As part of this, you should consider any analysis relating to suitable governance structures and market capacity assessments.

As part of your submission, you should also provide an estimation of when these activities are due to commence, an initial estimate for their completion and, if known, when you expect to make a Stage 3 submission to us.

Box 11: **Number of options in a business case**

The Assessment Framework **recommends, but does not require, that a business case** (submitted at Stage 3) **includes at least two options**, (that is, two possible responses to the identified problems and opportunities) and a base case (see **Glossary**).

This approach is consistent with the majority of national, state and territory guidelines for business case development. Including at least two feasible options enables a rigorous and defensible analysis to determine the most appropriate investment response. Considering more than one option is important because it:

- increases the transparency of analysis
- helps establish the economic merit of the proposal by comparing it to other feasible solutions
- helps to consider additional societal benefits that may be achieved as part of each option
- may increase confidence in the results, by reducing the risk of there being a superior option that was not considered in the business case.

We expect you to demonstrate a rigorous and defensible Stage 2 process to identify and analyse an appropriate range of potential options – particularly if a business case includes only one option.

Where only one option is considered in the business case, we require a Stage 2 submission or equivalent analysis with an indicative value-for-money analysis (for example through rapid CBA). **This should demonstrate that the preferred option is clearly better than the alternatives and that those alternatives do not warrant further investigation.**

If a single option has been identified for detailed analysis, there are usually variations to it that can be considered. It may be possible to build the same option more cheaply without any impact on benefits, to progress a more expensive scope of work that derives proportionally higher benefits, or to package options, including with non-build interventions such as policy reform or demand management.

When we assess your options analysis, we will consider the following:

1. Have an appropriate range of options been considered to ensure maximum value to society?
2. Is the preferred option the best response to addressing the problems and opportunities, compared to other options?

Step 3 outputs

We expect that the shortlisted options are sufficiently detailed and supported by a clear rationale and evidence that is comprehensively documented. At the end of Step 3, you should document:

1. the process and decision-making undertaken to arrive at the shortlist of options (including live copies of the shortlisting tools, that is, not 'hard-coded')
2. whether the options have changed (from the longlist) as a result of the options analysis process
3. details on each shortlisted option, including indicative whole-of-life costs and their anticipated social, economic and environmental impacts
4. the status of each option's development and what further work is required before they can be analysed in detail
5. how options packaging was considered
6. Stage 3 plan (next steps).

In documenting the analysis of your shortlisted options, it may be appropriate to complete an Appraisal Summary Table to succinctly capture both the qualitative and quantitative impacts. See **Summarising your options analysis in the business case** in **Section 2.6** of the **Stage 3** volume for further detail and an example Appraisal Summary Table.

Box 12: **Worked example of options analysis of a mass transit opportunity**

A transport corridor in a major city has experienced population growth of over 50% in the past 10 years. In comparison, the population of the city overall has increased by 20% over the same period. The corridor lacks any form of rapid public transit, presenting an opportunity to increase mobility and influence travel behaviour.

The transport corridor connects growing residential areas, major employment centres and the city's central business district. Outside of the transport corridor is an existing heavy rail network.

Stage 1: Identifying the problems and opportunities

Identified problems include a lack of connectivity, road congestion and poor urban amenity in activity centres, urban sprawl and a lack of equitable access to employment centres.

Identified opportunities include influencing long-term travel behaviour in the growth area, improving access to employment centres and supporting higher-value land use through integrated transport and land use planning.

Stage 2: Identifying and analysing options

Step one: Identify a longlist of options

A wide range of interventions are identified to connect the growth areas to the existing heavy rail network, as well as non-build solutions such as demand management and regulatory reform. In total, a longlist of options based on various modes and route alignments is identified.

Step two: Analyse the options

Strategic review followed by MCA

Following our suggested options filtering approach, the proponent conducted a strategic review and then an MCA to analyse how options performed against the city's strategic objectives and the problems and opportunities identified in Stage 1. As a result, the initial long list was narrowed down to 10 feasible options.

The proponent used an enhanced MCA for further options analysis, which included quantitative analysis of costs and technical feasibility impacts, to develop a filtered list of four options, in addition to the base case:

- **Option A** – a new heavy rail line connecting directly to the CBD using a partially tunnelled route
- **Option B** – a new light rail line with the same alignment as Option A, but shorter distance
- **Option C** – a new heavy rail line connecting to the existing heavy rail network outside the CBD
- **Option D** – a BRT solution following a similar alignment to Option C and interchanging with a station on the existing heavy rail network.

Rapid CBA

Rapid CBA was conducted to provide a preliminary value for money review of the four options, as shown in **Table 3**.

Box 12: **Worked example of options analysis of a mass transit opportunity** *continued*

Table 3: Results of rapid CBA evaluation

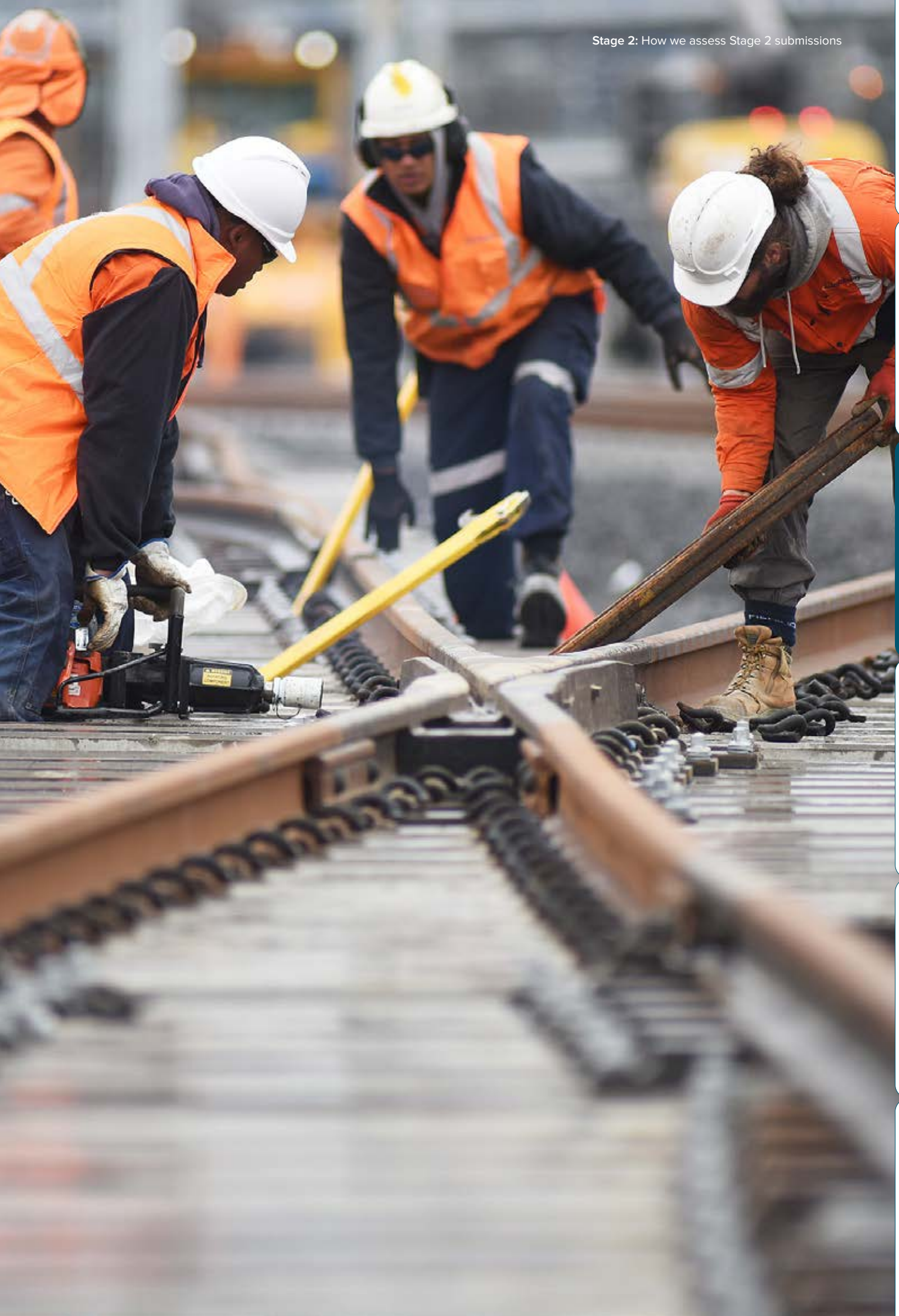
	Options			
	A	B	C	D
	($m, real)	($m, real)	($m, real)	($m, real)
Total benefits	**2,815**	**1,565**	**2,800**	**1,930**
Public Transport users	2,340	1,070	2,165	1,375
a. Public transport travel time savings	2,340	1,070	2,165	1,375
Road users	515	515	515	515
a. Road decongestion	410	410	410	410
b. Reduced road crashes	105	105	105	105
Community / externalities	-40	-20	120	40
a. Environmental benefits	-40	-20	120	40
Total costs	**3,970**	**2,400**	**1,880**	**1,040**
Capex	3,250	1,950	1,240	680
Opex	720	450	640	360
Evaluation results				
NPV ($m)	**-1,155**	**-835**	**920**	**890**
BCR	**0.71**	**0.65**	**1.49**	**1.86**

Step three: Shortlist options for detailed analysis

The rapid CBA indicated that Options C and D demonstrated indicative value-for-money, and significantly outperformed Options A and B. Option D slightly outperformed Option C, noting caution should be taken in interpreting the results of rapid CBA. This result was supported by broader consideration of Strategic Fit, Societal Impact and Deliverability, so Options C and D were determined as being most suitable to take forward to Stage 3 for detailed analysis.

3

How we assess Stage 2 submissions



3.1 Assessment of Stage 2 submissions

We assess Stage 2 submissions for inclusion on the Priority List using the Assessment Framework. More details on the Priority List are provided in the **Overview** document.

Your Stage 2 submission should demonstrate the longlist of options, the process used to filter the longlist of options to a shortlist, details on each shortlisted option and a summary of next steps. **Stage 2** assessments review **both the options analysis process and the merit of the shortlisted options**. Our Assessment Criteria for Stage 2 focus on determining whether the shortlisted options are likely to maximise net societal benefits.

As such, we ask that when you are describing your shortlisted options, you carefully consider the information outlined in this section.

Infrastructure Australia accepts Stage 2 submissions at any time.

Our information requirements for Stage 2 assessment are set out in the Submission Checklist in **Section 4**.

We follow a two-step pathway (as shown in **Figure 5**), to assess each proposal seeking to be added to the Priority List.

Figure 5: *Infrastructure Priority List* assessment pathway

To support this assessment, **Box 13** describes our information requirements for Stage 2

Box 13: **Our information requirements for Stage 2**

We require you to provide the following information in your Stage 2 submission:

- Information related to our Stage 1 requirements, where details on the problem or opportunity for a particular submission have not previously been submitted for review.
- Outputs of any state or territory reviews (for example, Gateway reviews).
- Detailed information on the process adopted for each step of the options analysis process, as set out in **Section 2** of this document.
- A description of each shortlisted option and how they would address the problem or opportunity.
- Information on how the shortlisted options respond to our criteria/themes, using appropriate **monetised, quantitative and qualitative data**.

There is no specific format for submissions as we expect you will prepare documents in accordance with your own state and territory processes. We also accept any appendices and relevant models that include the information we require.

3.2 Assessment Criteria

To assess how the **shortlisted options** presented in Stage 2 are likely to maximise net societal benefits, we will consider them against our Assessment Criteria and their associated themes. You should consider every theme, and make reference to them in your submission as relevant, noting that **the level of significance will differ and not all themes may be applicable to all proposals**.

The following sections outline how our Assessment Criteria apply to a Stage 2 submission.

Note that we consider additional guiding outcomes when assessing program submissions. See the **Guide to program appraisal** for our requirements for program submissions.

Strategic Fit

For a Stage 2 assessment, Strategic Fit focuses on how the options will address problems or opportunities of national significance, the range of options which have been considered and stakeholder involvement in the options analysis process.

Table 4: Stage 2 Strategic Fit considerations

Theme	Guiding outcomes for shortlisted options
Case for change	• Initial investigations indicate that options are likely to respond to the identified problems and opportunities. • The objectives and expected impacts of the options are consistent with the problems and opportunities identified in Stage 1. • Options identified are proportionate to the scale of the problems and opportunities.
Alignment	• Each option is aligned with relevant national, state or territory plans and strategies. • The options are compatible with relevant national, state or territory policies, for example, the adoption of new technology or regulatory frameworks.
Network and system integration	• Options have accounted for proposals which are being planned, constructed or have been recently completed that may be complements or substitutes. • Interdependencies (including complements and substitutes) of the options with other infrastructure within the network and potential vulnerabilities are identified. • Enabling infrastructure that is required to support the options are identified. • There is clear alignment and integration between options and the broader program of work or with other projects being planned/delivered.
Solution justification	• A wide range of realistic options (including reform, demand management, better use and new capital) to address the problems and opportunities have been considered, with a robust methodology applied to arrive at the shortlist of options. • Non-capital solutions (policy, legislation, user behaviour changes, pricing changes) have been investigated as independent options or as part of a package of work. • Early investigations indicate that the shortlisted options are feasible solutions to the problems and or opportunities.

Table 4: *Continued*

Theme	Guiding outcomes for shortlisted options
Stakeholder endorsement	• There is relevant government (national state, territory and local) support for the proposal. • Impacted stakeholders have been identified for each option and appropriate engagement strategies have been considered, with initial engagement in line with national, state and territory processes for the relevant stage of proposal development. • Stakeholders and stakeholder views have been incorporated into options identification and analysis. • Engagement has been meaningful and transparent, which is inclusive of relevant communities and cultures. • Options development has considered public interests and reflects stakeholder perceptions of the problem or opportunity. • The level of stakeholder support, or otherwise, for each shortlisted option has been considered.

Societal Impact

At Stage 2, your submission should focus on identifying the likely impacts of your options, then presenting the qualitative, quantitative and (where relevant) monetised information that has informed your options analysis.

This is summarised in **Table 4**, with further detail on our considerations for each theme provided in the subsequent sections.

Table 5: Stage 2 Societal Impact considerations

Theme	Guiding outcomes for shortlisted options
Quality of life	• The shortlisted options are likely to improve quality of life in response to the problems and opportunities. • The analysis process has identified quality-of-life impacts (such as culture, living standards, learning and earning, health and safety, or economic and social participation) for each option and has established a plan for assessing them in detail. • The proposal is likely to produce a significant improvement to a disadvantaged place (in regional or urban areas) of Australia.
Productivity	• The options are likely to improve efficiency and productivity within the economy, such as faster movements of freight and business trips, which can be measured in dollar terms. • The options are likely to modernise the economy and enhance sustainable productivity growth into the future, rather than replicating current economic arrangements (for example, pioneering development, research and innovative or new industries). • The options are likely to increase access through capacity enhancements to infrastructure networks (transport, water, energy, telecommunications etc). • The options are likely to increase the overall efficiency, improve the reliability and enhance resilience to disruption of an infrastructure network. • The options have considered whole-of-life costs (including operating, maintenance and end of life costs).
Environment	• Environmental impacts (including to natural resources, habitat and broader ecosystems) during development/construction and operation of each option are understood. • The analysis process has identified environmental impacts for each option and has established a plan for assessing them in detail. • Each option does not have known significant, irreversible environmental impacts.
Sustainability	• The options respond to or support identified long-term drivers of change. • Externalities have been identified and considered in the options analysis • Options will avoid or minimise social, economic and/or environmental costs in the future, in both the immediate and broader network. • Options will improve sustainability through decreased material, energy, social or economic costs (for example, maintenance).
Resilience	• Short/long-term shocks and stresses (for example, population changes, natural hazards, war, pandemic and climate change) have identified and their materiality has been determined. • The shortlisted options have considered key shocks and stresses and are expected to improve community resilience to them. • The shortlisted options are likely to improve regional or city resilience outcomes, for example, would facilitate new development or would support community recovery in response to a major event such as bushfire, pandemic etc.

Assessing quality-of-life impacts

Quality of life relates to people's standards of health, wealth, happiness and choice in how they live. Infrastructure can have positive and negative impacts on quality of life. Considering these impacts during project development helps achieve positive quality-of-life outcomes for Australians. We have identified key quality-of-life characteristics that relate to infrastructure, as outlined in **Table 6**, which you should consider as part of options analysis.

At Stage 2, your submission should focus on identifying the quality-of-life characteristics that are likely to be impacted by the options, then presenting the qualitative and quantitative information that has informed your options analysis.

Table 6: The key characteristics of quality of life

Characteristic	How infrastructure can support this characteristic
Culture	Supporting the continuation and sharing of beliefs, arts, culture, customs and places that define individual and community identity, including through vibrant and socially inclusive meeting places, such as community, entertainment, recreational, arts and cultural facilities.
Living standards	Meeting the basic needs of all users and improving the standard of living of the community. This may include addressing equity issues (including cost-of-living, poverty or entrenched disadvantage) and improving liveability and access (whether to employment, social and affordable housing, essential services or utilities) and accommodating all users, including people with disability.
Learning and development	Improving educational outcomes and fostering skills development to build social capital and productivity at all stages of life, including through access to tertiary and technical education facilities.
Health and safety	Improving the health of the community through access to health services, recreation choices and environmental factors (for example, connectivity for virtual health, active transport, potable water quality and air quality). Improving the safety of the community by reducing risks and improving access to justice services.
Economic and social participation	Providing appropriate access to desired goods and services, including where access is facilitated digitally.

While **we recommend that you monetise quality-of-life impacts where possible**, we recognise that this can be difficult, particularly in the early analysis of options. Where you do not monetise these impacts, we suggest you provide other evidence that helps validate the impacts. To demonstrate this, you should:

- Link to the quality-of-life characteristics of the problems and opportunities identified in Stage 1.
- Describe the impact of the services and infrastructure on the community, to understand how the social outcomes are attributable to the proposal. This should be supported by relevant studies to evidence the links, such as surveys, known demand elasticities or relevant academic literature.
- Identify quantitative indicators that capture the impact of addressing the problem or opportunity by utilising relevant benchmarks (for example, relevant regional or national comparisons) and government objectives for comparison.
- Indicate the target changes in quality-of-life indicators that should be expected from the proposal.

Providing supporting evidence

For a Stage 2 submission, we expect that the potential quality-of-life impacts will be considered when analysing the identified options and be supported by evidence in line with our information requirements. There are a number of publicly available sources that provide metrics on social outcomes by region that may be relevant. Useful sources, for which you should determine appropriateness of use specific to your proposal, are provided in **Table 7**.

Table 7: Quality-of-life indicator data sources

Data source	Update frequency	Available at
ABS labour statistics (e.g. average weekly earnings, employment)	Updated every six months	**www.abs.gov.au/statistics/labour**
ABS Census	Updated every 5 years	**www.abs.gov.au/census**
Bureau of Meteorology Urban National Performance Report (Water)	Updated annually	**www.bom.gov.au/water/npr/**
Digital Inclusion Index	Updated annually	**digitalinclusionindex.org.au/**
Household, Income and Labour Dynamics in Australia (HILDA) Survey	Updated annually	**melbourneinstitute.unimelb.edu.au/hilda/for-data-users**
National Assessment Program – Literacy and Numeracy (NAPLAN)	Updated annually	**www.nap.edu.au/results-and-reports**
Centre for Social Impact Social Progress Index	Updated annually	**amplify.csi.edu.au/social-progress-index/**

Where impacts may be less directly linked to the infrastructure (for example, where place-based development is expected to improve health and education outcomes and reduce the rate of incarceration in an area), you should support your analysis with evidence that the outcomes will be achieved, such as through relevant surveys and academic literature.

As an example, for the telecommunications sector, different options will deliver various improvements related to access, quality and reliability of digital connectivity. It is our expectation that identified shortlisted options will present an initial understanding of these benefits quantitatively, and where possible they should be monetised.

Other impacts, such as reductions in poverty and entrenched disadvantage are more difficult to monetise. If the purpose of the proposal is to address distributional issues, we recommend for the shortlisted options you present information as **quantitative and qualitative information on impacts, and support this with distributional analysis** to show how different groups in society are affected.

Assessing productivity impacts

Productivity impacts will generally be considered in the economic appraisal by measuring the benefits (or costs) to business activities. See **Box 14** for examples of productivity impacts.

It is our preference that shortlisted options have a general understanding of their impact on national productivity and include monetised evidence to support this. Where these impacts cannot be monetised, we recommend you present quantitative and qualitative information on impacts as well as distributional analysis to show how production is affected.

Box 14: **How to measure productivity impacts**

Productivity impacts are generally measured in CBA by measuring the impacts on business activity. Some examples of investments that may result in productivity gains, and how these gains can be measured, include:

- **Investment to reduce congestion on the road network** may increase productivity for the transport and logistics sector by requiring fewer capital and labour inputs to complete the same freight task. This could be measured from travel time and vehicle operating cost savings for business users.
- **Investment in the transport network** may increase accessibility of firms to one another and their input and labour markets, generating positive productivity externalities or agglomeration effects.
- **Investment in electricity infrastructure** may increase the productivity of electricity generators and distributors, reducing the costs of supplying a given level of electricity.
- **Investment in water infrastructure** to reduce leakage and evaporation losses may improve the productivity of irrigators, resulting in increased water available for irrigation. This could be measured from the marginal value of the water saved.
- **Investment to reduce telecommunications black spots** in rural areas may increase the productivity of the agricultural sector by supporting the implementation of agricultural technology. This could be measured from the net value of the additional production.
- **Investment in social infrastructure** to reduce social disadvantage may also increase productivity in key areas of the economy, such as healthcare and education. This could be measured by societal indicators such as number of presentations.
- **Investment in renewable energy generation**, and a shift away from ageing fossil fuel generation assets, could improve the electricity network's productivity and viability in the transition to a low carbon economy. This could be measured through the costs associated with generation, considering carbon emissions and the potential costs of offsets, and/or a change in prices paid by consumers.

Assessing environmental impacts

Infrastructure projects may have both positive and negative impacts on the environment. For example, investments in public transport may reduce air pollution and greenhouse gas emissions by inducing mode shift from private car to public transport. In contrast, the construction and use of infrastructure consumes physical resources and may have negative environmental impacts, such as the clearing of native vegetation.

At Stage 2, you should complete any analysis required to understand the nature and indicative scale of any material environmental impacts of the shortlisted options. Any major environmental impacts (including project costs related to environmental offsets, mitigation and remediation) should inform options filtering, and be included in the rapid CBA where relevant. You should also describe the likely environmental and planning approvals required and any risks for successful approval.

The level of environmental investigation required at Stage 2 should be sufficient to identify any potential significant irreversible environmental impacts or risks of your proposal. You should also identify key environmental impacts that may provide differentiation to inform the option shortlisting process. This is also linked to sustainability and resilience considerations identified in the next sections.

We recommend proponents present the following information alongside the rapid CBA results:

- Quantitative and qualitative information to describe the nature and indicative scale of how the options will impact the environment.
- Relevant environmental offsets or mitigation strategies for the proposal.
- Identification of environmental approval requirements, particularly any *Environment Protection and Biodiversity Conservation Act 1999* (Cth) referral requirements (where relevant), and also including the level of information required to seek national and state or territory environmental approvals.

Assessing sustainability

Sustainability is a broad topic that crosses a number of themes within our Assessment Criteria. It is also a defined theme within our Societal Impact criterion to recognise specific sustainability outcomes and trade-offs. You should consider sustainability throughout your options analysis.

Table 8 demonstrates how we consider sustainability outcomes against applicable themes to inform our assessments. Our approach is also guided by our sustainability principles (see **Section 2.6** in the **Overview** volume).

Table 8: Stage 2 sustainability considerations

Criteria	Theme	Sustainability considerations for shortlisted options
Strategic Fit	**Case for change**	The shortlisted options respond to longer-term drivers such as climate change.
	Alignment	The shortlisted options directly contribute to relevant national, state and local government goals, objectives, policies and strategic plans relating to issues such as emissions reduction and circular economy practices.
	Network and system integration	The proposal improves an infrastructure network or system's viability, for example, in the transition to a low carbon economy.
	Solution justification	The proposal is planned to be delivered at the right time to avoid or minimise any negative social, economic and/or environmental costs in the future.
	Stakeholder endorsement	The shortlisted options have been defined through transparent engagement, which is inclusive of all relevant communities and cultures.
Societal Impact	**Quality of life**	The shortlisted options are expected to promote sustainable communities by improving or maintaining quality of life, well-being, heritage and culture.
	Productivity	The shortlisted options are expected to provide value-for-money returns over the long-term by increasing productivity and providing ongoing employment opportunities.
	Environment	Possible impacts on the environment of the shortlisted options are understood, and there is a plan to protect natural assets as much as possible.
	Sustainability	The shortlisted options have been planned and designed to optimise social, economic, environmental and governance outcomes efficiently and responsibly throughout the asset's life.
Deliverability	**Implementation**	The shortlisted options can be implemented without compromising other sustainability considerations, such as adversely impacting the environment during the construction phase.
	Capability & capacity	The proposal has considered short-term and long-term employment needs, while also seeking to improve market capacity.

For a Stage 2 submission, sustainability considerations should be embedded within the options analysis process.

We expect that sustainability impacts are demonstrated **both qualitatively and quantitatively, in addition to being monetised where appropriate**.

Consider sustainability in the underlying drivers of change

Options analysis should consider the underlying long-term drivers of change in both the base case and options. For example, factoring in relevant climate change, population and behavioural projections. Stage 2 submissions should describe how the underlying drivers of change have been factored into options analysis, including justification of the projections applied. We suggest consulting with the relevant state or territory Treasury to ensure appropriate projections are being applied.

Analyse all material impacts, including externalities and whole-of-life costs

For Stage 2, all material economic, environmental and social impacts should be identified for the shortlisted options.[5] This should include high-level analysis of both positive and negative externalities, such as changes in air pollution, noise, biodiversity and social impacts.

Indicative, whole-of-life costs should also be used to inform options analysis, rather than using up-front capital costs.

You should clearly detail the sustainability impacts that are most relevant to your Stage 2 submission and justify your approach.

Consider sustainability of the delivery and operations

We expect that sustainability is considered in the delivery and operations of the shortlisted options. For example, through design decisions to reduce ongoing operating and maintenance costs, or re-using or recycling materials to promote circular economy principles.

Sustainability considerations will be specific to the proposal context, but should be considered consistently across the delivery and operations. You should demonstrate a robust approach to mitigating negative impacts and/or enhancing positive impacts.

5. A useful rule of thumb to determine the materiality of an impact is whether the impact is expected to be 10% or greater of the infrastructure cost. There may be some impacts of less than 10% which should be calculated if they are of strategic importance.

Assessing resilience

Like sustainability, resilience is a broad topic that crosses a number of themes within our Assessment Criteria. It is also a defined theme within our Societal Impact criterion to recognise specific resilience outcomes and trade-offs. You should consider resilience throughout your options analysis.

Table 9 demonstrates how we consider resilience outcomes against applicable themes to inform our assessments. Our approach is also guided by our seven characteristics of resilient infrastructure (see **Section 2.6** in the **Overview** volume).

Table 9: Stage 2 resilience considerations

Criteria	Theme	Resilience considerations for shortlisted options
Strategic Fit	**Case for change**	The proposal responds to a clear problem or opportunity relating to the management of risk and/or future uncertainty.
	Alignment	Options are aligned or directly contribute to relevant national, state and local government goals, objectives, policies and strategic plans relating to resilience, including shocks and stresses, such as bush fires, coastal inundation and cyber-security.
	Network and system integration	Options contribute to wider system resilience and redundancy, such as its role in emergency response or how it improves network redundancy.
	Stakeholder endorsement	A diverse set of stakeholders have been consulted, to help understand the broad range of current and potential future challenges being experienced, and potential responses.
Societal Impact	**Quality of life**	Options are likely to protect quality of life, well-being, heritage and culture both during and after shock and stresses. Improved quality-of-life outcomes contribute to community resilience.
	Productivity	Options are likely to improve the ability to absorb and recover from shocks and stresses to minimise disruption to productivity.
	Environment	Options are likely to absorb and resist shocks and stresses to minimise impacts on the broader physical environment.
	Resilience	Options are likely to improve the community's ability to anticipate, resist, absorb, recover, transform and thrive in response to shocks and stresses.
Deliverability	**Implementation**	Options can be delivered without compromising the ability of communities to respond to shocks or stresses, such as disrupting a transport corridor that is required for access during flooding.

For a **Stage 2** submission, resilience considerations should be embedded within the options analysis process.

We expect that resilience impacts are demonstrated **both qualitatively and quantitatively in addition to being monetised where appropriate**.

Identify and respond to risk exposure

Stage 2 submissions should understand the risk exposure of each option. This should include understanding the resilience of the options themselves, and the contribution to broader community resilience.

A Stage 2 submission can demonstrate this understanding by analysing options performance against the below considerations:

- **Criticality and prioritisation** – determine the criticality of the options (dependencies from other assets and the community) during normal and emergency operations.
- **Systems-based approach** – when evaluating impacts of the options, consider an expanded spatial boundary that includes the broader system and community that the asset is connected to.
- **Multi-hazard approach** – consider the risks and opportunities of options through a multi-hazard lens to understand compounding risk effect compared to single hazard occurrence. For example, this may include multiple shock events and/or shock events that magnify stresses, such as an extreme temperature event (the shock) that places additional strain on health infrastructure that is already at capacity (the stress).
- **Life cycle approach** – consider the entire life cycle of options recognising that shocks and stresses may change over time and that resilience efforts may be adopted in planning, design or operation, as needed.
- **Transboundary analysis** – develop a consistent analysis approach that addresses the transboundary nature of options and potential hazards.

Identify potential shocks and stresses

Once you have understood the risk exposure of the proposal, a Stage 2 submission should identify the specific potential shocks and stresses that could impact both the delivery and operation of potential options. You should also determine the likelihood and consequence of potential shocks and stresses to build results into planning and development. Refer to **Table 7** in the **Overview** volume for examples of shocks and stresses.

Review option performance under shocks and stresses

Where resilience is a driver of the proposal, you should analyse the performance of each option against the relevant shocks and stresses. Where appropriate, this can be demonstrated through sensitivity analysis for risks and scenario analysis where you are dealing with uncertainty. You should always start with sensitivity analysis and then undertake scenario analysis where uncertainty exists. Please refer to the **Guide to risk and uncertainty analysis** for further information on how to distinguish between risks and uncertainties and how to undertake both sensitivity and scenario analysis.

The detail you provide for each option should appropriately respond to our guiding outcomes for high-level options analysis in Stage 2, provided in **Table 5**. You should also refer to our **Guide to risk and uncertainty analysis** for guidance on how to apply sensitivity and scenario analysis to Stage 2 of the project development process.

Develop flexible investment strategies to respond to uncertainty

Long-term changes, path dependencies and irreversibility can create uncertainty for decision-makers. Where **significant uncertainty** has been identified for the proposal, such as key shocks and stresses, the performance of the options and the value of a flexible investment strategy can be demonstrated using **real options analysis**. The practical steps for considering resilience and accounting for uncertainty are described below:

- Develop coherent future scenarios relevant for the proposals.
- Consider or measure the value of a range of options in these different scenarios.
- Attach likelihoods and measure costs/benefits for these different future scenarios (for quantitative real options analysis).
- If outcomes are significantly affected under the different scenarios, then develop investment strategies that provide future flexibility.

Undertaking this work will help identify options and investment strategies whose outcomes are robust to a range of different futures. Please refer to our **Guide to risk and uncertainty analysis** for further information on real options analysis.

Deliverability

For a Stage 2 submission, we require evidence that the delivery risk of the options is considered acceptable, or delivery risks can be sufficiently mitigated.

Table 10: Stage 2 Deliverability considerations

Theme	Guiding outcomes for shortlisted options
Implementation	• Options can be delivered within the timeframes required to address the problems and opportunities. • Options analysis has considered the broader network and/or supply chain and how they will fit into it.
Capability and capacity	• The proponent has evaluated market capacity (labour and materials) to support the requirements of the options. • The proponent has evaluated market capability (tools, technology, experience) to deliver the options. • Jobs creation and capacity building has been considered within the options.
Governance	• There is an understanding of appropriate governance structures, including management, quality assurance and inter-agency agreements have been for each option. • There is an initial understanding of the funding and financing models available for each option. • The necessary planning and environmental approval pathways for each shortlisted option are clearly understood.
Risk	• Risks or sensitivities that pose fundamental challenges or impose critical constraints on the successful implementation of each option have been identified. • There is an appropriately defined cost and schedule estimate supported by project definition and design maturity to inform further investigation. • There is an appropriate level of operating cost estimate maturity to inform further investigation. • Each option considers the risks and uncertainties surrounding the problems and opportunities. • Scope complexity, delivery risks and uncertainty have been analysed to consider the relative risks and uncertainties for each option. • There are clear actions / next steps for responding to residual delivery risks for each option.
Lessons learned	• Lessons learned and collaboration with other states and territories, or internationally, have been used to inform how the problems and opportunities may be addressed. • Lessons learned from delivery of similar projects have been considered in identification and analysis of options.

3.3 Outputs of our assessments

When we complete our assessment of a submission to the Priority List, we will:

- inform you of our decision on whether we found your proposal to be:
  a. nationally significant
  b. suitable for the Priority List
- add successful proposals to the online version of our Priority List
- publish a summary of our evaluation (Stage 3 submissions only)
- provide you with feedback on our decision.

Positively assessed proposals are summarised on the Priority List. We also publish more detailed evaluation summaries for investment-ready proposals (Stage 3).

See **www.infrastructureaustralia.gov.au/infrastructure-priority-list**.

It is worth noting:

- where submissions are not successful, this does not mean they are not worth pursuing or revising in more detail for a future submission
- where submissions are not listed on the Priority List, this does not preclude them from seeking Australian Government funding
- we will assess all submissions, however, we will not revisit earlier submissions again unless there is new information that has a bearing on the previously assessed stages.

3.4 Removing proposals from the Infrastructure Priority List

Proposals may be removed from the Priority List for a number of reasons:

1. The proposal receives a commitment of funding for delivery from the Australian Government.
2. The proposal proceeds to construction (major contracts are awarded).
3. The proposal is withdrawn because the problem or opportunity is no longer nationally significant. (Evidence of the change, such as change in forecast demand, is required to support this action).
4. The proposal is withdrawn because it no longer meets our Strategic Fit or Deliverability criteria.

4

Submission Checklist

Stage 2 submissions to us require the following documentation to demonstrate the process and outcomes of the options analysis.

Stage 2 Submission Checklist

Table 12 provides our submission checklist, which clearly lists all of the items that are required or recommended in a Stage 2 submission. The editable **Stage 2 Submission Checklist** that we require to accompany your submission is available at **www.infrastructureaustralia.gov.au/submit-a-proposal**. Information supporting your submission should be provided in relevant state and territory or agency templates.

We classify submission documentation as **required**, **recommended** or **good practice**, as described in **Table 11**.

We encourage you to engage with us when developing your Stage 2 submission, ideally after reviewing this guidance and the Stage 2 submission checklist, but prior to formally lodging your submission. We can provide advice and initial review to ensure you are meeting our requirements, which may avoid us seeking clarification or requesting additional work be completed.

Contact us to discuss your proposal before submission and to arrange a secure file transfer facility for your submission. You can contact us via email at **proposals@infrastructureaustralia.gov.au** or call us on **(02) 8114 1900**.

Table 11: Classification of submission checklist requirements

Required	Proponents must provide this information, including evidence justifying the analysis or outputs that have been determined.
Recommended	Proponents must consider recommended items and provide supporting evidence justifying if they have not been assessed.
Good practice	Proponents should consider these discretionary items as part of good practice, but they may not apply to all proposals.

Table 12: Stage 2 Submission Checklist

Item	Requirement	Name relevant docs you have attached	Where can we find that info in the docs (if relevant)
Proposal information			
Proposal description	Required	*Included in editable Submission Checklist. Identify any additional information attached.*	
Information is finalised (i.e. not draft or identified as subject to change)	Required		
Information is not out of date (we recommend information is current or less than 3 years old)	Required		
Confidentiality requirements	Required		
Please identify if Australian Government funding is sought for the proposal and, if so, the status and amount of funding.	Required		
State or territory (gateway) review (infrastructure advisory body or equivalent), where relevant	Recommended		

Table 12: *Continued*

Item	Requirement	Name relevant docs you have attached	Where can we find that info in the docs (if relevant)
On Infrastructure Priority List as Early-stage Proposal (Stage 1)	Good practice		
Stage 1 assessment complete and included in Stage 2 submission	Required		
Post completion reviews of similar projects	Good practice		
Step 1: Identify a longlist of options			
Option identification methodology	Required	*e.g. Options Analysis Report*	*e.g. Section 2.3*
Stakeholder input	Required		
Longlist of options identified, including non-capital options	Required		
Description of each longlist option (including the base case): • type (e.g. regulatory reform, capital investment) • description • location • infrastructure changes or enablers • expected stakeholder impact • initiative dependencies • indicative investment costs (capital, operating and maintenance) • alignment with national, state and territory plans or strategies	Required		
Step 2: Analyse the options			
Option analysis methodology, including any models for and outputs of: • Strategic review • MCA • Rapid CBA	Required		
Provide supporting data or key measures relevant to the options	Required		

Table 12: *Continued*

Item	Requirement	Name relevant docs you have attached	Where can we find that info in the docs (if relevant)
Describe risks or sensitivities considered in the analysis process & data supporting option outcomes	Required		
Opportunities for packaging options	Recommended		
Step 3: Shortlist options for detailed analysis			
Shortlist of options identified	Required		
Description of each shortlisted option, including: • option description and scope (as provided for the longlisted options) • infrastructure and non-infrastructure changes or enablers • indicative whole-of-life costs • expected impacts, including: – monetised benefits (and dis-benefits), including discounted cash flows – non-monetised quantitative and qualitative impacts • consideration of risks and uncertainties • any relevant information supporting the Assessment Criteria, such as sustainability assessments, environmental impact assessments, feasibility studies, economic appraisals • any relevant assessments, such as distributional effects, sensitivity and real options analysis, if available • anticipated funding model/s • interdependencies with other problems and opportunities and/or programs and projects • indicative Deliverability considerations (risks, schedule, model etc.)	Required		
Detailed explanations as to why options have progressed to the shortlist or not	Required		
Next activities planned (e.g. planning studies, feasibility studies, business case, environmental assessment, gateway reviews), expected schedule and expected Infrastructure Stage 3 review timing	Required		
Any other information attached in support of proposal			

Glossary

Term	Definition
Appraisal	The process of determining the impacts and overall merit of a proposal, including gathering and presenting relevant information for consideration by the decision-maker.
Appraisal period	The number of years over which the benefits and costs of an infrastructure proposal are assessed in a **cost–benefit analysis**. A default value of 30 operational years plus construction time is generally used for infrastructure proposals. Refer to the **Guide to economic appraisal** for more information.
Appraisal summary table (AST)	This table succinctly captures both the qualitative and quantitative elements of a proposal. It will assist decision-makers to quickly understand the broader strategic, societal and deliverability aspects of the proposal.
Assessment	For the purposes of the **Assessment Framework**, this refers to Infrastructure Australia's evaluation of proposals submitted to us for inclusion on the ***Infrastructure Priority List*** or for a funded proposal review.
Assessment Criteria	The three criteria Infrastructure Australia assesses proposals against: **Strategic Fit, Societal Impact** and **Deliverability**.
Assessment Framework	A publicly available document that details how Infrastructure Australia assesses infrastructure proposals. It provides structure to the identification, analysis, appraisal, and selection of proposals and advises proponents how to progress through the following four stages: • Stage 1: Defining problems and opportunities • Stage 2: Identifying and analysing options • Stage 3: Developing a business case • Stage 4: Post completion review
Australian Infrastructure Audit	Published in August 2019, the Audit was developed by Infrastructure Australia to provide a strategic assessment of Australia's infrastructure needs over the next 15 years. It examined the drivers of future infrastructure demand, particularly population and economic growth. Data from the Audit is used as an evidence base for **assessments** of proposals for inclusion on the ***Infrastructure Priority List***.
Australian Infrastructure Plan	The 2021 Plan was developed by Infrastructure Australia as a positive reform roadmap for Australia. Building off the evidence base of the Audit (see ***Australian Infrastructure Audit***), the Plan sets out solutions to the infrastructure challenges and opportunities Australia faces over the next 15 years, to drive productivity growth, maintain and enhance our standard of living, and ensure our cities remain world class. The 2021 Plan supersedes the February 2016 Plan.
Base case	A project **appraisal** compares the costs and benefits of doing something (a 'project case') with not doing it (the 'base case'). The base case should identify the expected outcomes of a '**do-minimum**' situation, assuming the continued operation of the network or service under good management practices. We recommend the committed and funded expenditure approach to defining the base case, but recognise that some states and territories use the planning reference case approach.
Base year	The year to which all values are discounted when determining a present value. (See **discounting** and **discount rate**).
Benefit–cost ratio (BCR)	This is the ratio of the present value of economic benefits to the present value of economic costs. It is an indicator of the economic merit of a proposal presented at the completion of a cost–benefit analysis. (See **cost–benefit analysis**).

Term	Definition
Business case	A document that brings together the results of all the assessments of an infrastructure proposal. It is the formal means of presenting information about a proposal to aid decision-making. It includes all information needed to support a decision to proceed, or not, with the proposal and to secure necessary approvals from the relevant government agency. Unless otherwise defined, we are referring to a final or detailed business case, rather than an early (for example, strategic or preliminary) business case, which is developed in accordance with state or territory requirements. A business case is prepared as part of Stage 3 of the **Assessment Framework**.
Capital cost	The initial fixed costs required to create or upgrade an economic asset and bring it into operation. This includes expenses such as the procurement of land, buildings, construction, labour and equipment.
Computable general equilibrium (CGE) modelling	CGE modelling traces the flow-on impacts of a policy change in a systematic way, such as indirect impacts on sectors of the economy. The outputs of CGE models do not usually play a role in CBA. CGE models focus on 'economic activity impacts', which are not a measure of efficiency effects. (See **economic impact analysis**).
Cost–benefit analysis (CBA)	An economic analysis technique for assessing the economic merit of an infrastructure proposal. It involves assessing the benefits, costs, and net benefits to society the proposal would deliver. It aims to attach a monetary value to the benefits and costs wherever possible and provide a summary indication of the net benefit. (See **benefit–cost ratio**).
Cost-effectiveness analysis (CEA)	Cost-effectiveness analysis is used when the benefits of project options are identical. Its aim is to identify the option that will cost the least. The technique for valuing costs is the same as for **cost–benefit analysis**.
Cost distribution	**Probabilistic project cost estimates** identify cost components, determine the probability distribution for each cost component and then undertake a simulation (often a 'Monte Carlo' simulation) to generate a probabilistic distribution of project costs.
Delivered proposal (Stage 4)	Once we've assessed the post completion review of a delivered project we will list it on the Infrastructure Priority List as a delivered proposal.
Deliverability	One of three overarching **Assessment Criteria** we use to assess the merit of every proposal, at every stage. This criterion asks: can the proposal be delivered successfully? We assess whether the proposal is capable of being delivered successfully, whether risks have been identified and sufficiently mitigated, and whether there is a plan in place to realise the benefits. This criterion is divided into five themes: ease of implementation, capability and capacity, project governance, risk and lessons learnt.
Demand forecasting	The activity of estimating future demand (such as public transport patronage, vehicle volumes or water usage) in a particular year or over a particular period.
Demand management	Deliberately managing the rate of use of an infrastructure network to improve its efficiency. This can be done through a variety of methods, such as structuring pricing for electricity consumption around peak periods or promoting water reuse.
Discount rate	The interest rate at which future dollar values are adjusted to represent their present value (that is, in today's dollars). This adjustment is made to account for the fact that money today is more valuable than money in the future. **Cost–benefit analysis** should use real social discount rates.
Discounted cash flow (DCF)	An analytical technique for converting a monetary impact at one point in time to a monetary impact at another. Project performance measures (such as internal rate of return and **net present value**) are based on this technique.
Discounting	The process of converting money values that occur in different years to a common (base) year. This is done to convert the dollars in each year to present value dollars. (See **discount rate**).
Distributional effect	A change (positive or negative) in the economic welfare of a group of individuals or firms caused by a proposal.

Term	Definition
Do-minimum	A base case reflecting the continued operation of the network or service under good management practices. It should assume that general operating, routine and periodic maintenance costs will continue to occur, plus a minimum level of capital expenditure to maintain services at their current level (e.g. maintaining access or reliability) without significant deterioration. This may include asset renewals and replacement of life-ending components on a like-for-like basis, as well as committed and funded projects and smaller scale changes required to sustain viable operations under the base case. (See **base case**).
Early-stage proposal (Stage 1)	Stage 1 submissions that are positively assessed by us are listed on the ***Infrastructure Priority List*** as an early-stage proposal.
Economic efficiency	A measure of the extent to which economic gains (also referred to as increases in societal welfare) have been or could be achieved. Economic efficiency is improved whenever those who gain from a change could compensate the losers out of their gains and still have some gain left over. Maximum economic efficiency is said to be obtained when no further changes of this type are possible (i.e there are no unexploited opportunities to improve everybody's welfare).
Economic impact analysis	A form of economic analysis aimed at establishing the effect that a proposal will have on the structure of the economy, or on the economic welfare of groups of people or firms. Economic impacts are usually expressed in terms of employment and income effects, broken down by economic sector and/or region. **Computable general equilibrium** and input–output analyses are types of economic impact analysis.
External cost	A cost imposed on third parties, including time lost from delays, accident risks and environmental impacts (valued at resource costs where applicable).
Expected Value	The mean value of the **cost distribution**. If the cost distribution is symmetrical, the Expected Value will be equal to the P50 value. Where the cost distribution is positively skewed, the mean will be above the P50 value and may lie closer to the P90 value. (See **P50 cost** and **P90 cost**).
Externality	An effect that one party has on another that is not transmitted through market transactions. An example is noise pollution from vehicles: those operating the vehicles disturb other parties such as nearby residents, but a market transaction between these parties is absent.
Financial analysis	The evaluation of the benefits and costs, measured in financial cash-flow terms, to a single entity (that is, not the community or the economy).
Impact	A generic term to describe any specific effect of a proposal. Impacts can be positive (a benefit) or negative (a cost).
Impact timeframe	For early-stage proposals (Stage 1), this indicates when the problem or opportunity is likely to have a nationally significant impact.
Indicative delivery timeframe	For investment-ready proposals (Stage 3), this provides the proponent's indication of when the proposal is likely to be delivered and operational.
Infrastructure	Physical assets and facilities that enables organisations to provide goods and services to the community and improves quality of life, efficiency, accessibility and liveability of our cities and regions. This includes, but is not necessarily limited to, transport, energy, telecommunications, water and social (such as health, education, social housing and community facilities) infrastructure.
Infrastructure Australia Act	*The Infrastructure Australia Act 2008* (Cth) is the legislative framework by which we operate and report through our responsible Minister (the Minister for Infrastructure, Transport and Regional Development).
Infrastructure Priority List	The Priority List is a credible pipeline of nationally significant infrastructure proposals that are seeking investment. Every proposal on the Priority List is expected to contribute to national productivity or to be otherwise socially beneficial. It is a statement of where governments, the community and the private sector can best focus their infrastructure efforts.

Term	Definition
Investment costs	The costs of providing the infrastructure before operations commence (e.g. costs for planning and design, site surveying, site preparation, investigation, data collection and analysis, legal costs, administrative costs, land acquisition, construction costs, consequential works, construction externalities). In some cases, investment costs can recur throughout the **appraisal period** (e.g. asset replacement or renewal costs). For **cost–benefit analysis**, these should all be expressed in economic cost terms (also known as resource costs).
Investment-ready proposal (Stage 3)	Stage 3 submissions that are positively assessed by us are listed on the ***Infrastructure Priority List*** as investment-ready proposals.
Longlist of options	A comprehensive list of potential options to address the problems and realise the opportunities identified in Stage 1. The longlist includes all options that are identified for a proposal and should represent a range of reasonable alternatives, including capital and non-capital options, as well as demand-side and supply-side options.
Maintenance	Incremental work to repair or restore infrastructure to an earlier condition or to slow the rate of deterioration. This is distinct from construction and upgrading, which seeks to extend infrastructure beyond its original condition.
Monetised	Where a quantified impact has a corresponding dollar value attached to it. (See **impact**).
Multi-criteria analysis (MCA)	An analysis tool that differentiates and evaluates options using a set of project-specific criteria with weights assigned to each criterion. The analysis involves scoring and weighting each option against each criterion. MCA can be used for analysing a longlist of options against how they address problems and opportunities, but should not be used by itself to develop a shortlist of options.
Mutually exclusive	In the context of the Assessment Framework, the term is used to refer to options where choice to adopt one option precludes adoption of all the other options.
Nationally significant problem or opportunity	The *Infrastructure Australia Act 2008* (Cth) defines nationally significant infrastructure as including transport, energy, communications, and water infrastructure 'in which investment or further investment will materially improve national productivity'. We also consider social infrastructure, such as health, education, social housing and community facilities. As a guide, for a proposal to be considered nationally significant, it should concern a problem or opportunity that will have more than $30 million per annum impact on the economy (nominal, undiscounted). We also take unquantified social benefit considerations into account.
Net present value (NPV)	The monetary value of benefits minus the monetary value of costs over the appraisal period, with discount rates applied (See **discount rate** and **appraisal period**).
Network	Infrastructure networks are the physical assets that enable the provision of services such as transport connectivity, power, water and internet.
Network optimisation (transport)	Making better use of existing infrastructure assets and improving performance through low or non-capital cost actions. For example, using technology to improve corridor management, reallocating road space between modes of transport, or encouraging users to shift from congested modes and routes to those with more capacity.
Non-infrastructure options/ solutions	Proposals that avoid the need for significant expenditure on new or upgraded infrastructure. For example, changes to pricing or reforms to regulations.
Operating costs	The costs of providing the infrastructure after it has commenced operation (e.g. maintenance and administration costs of a facility).
Opportunity	An evidence-based reason for action that results from a gap between an actual and a desired outcome. In the context of the Assessment Framework, an opportunity is informed by the ***Australian Infrastructure Audit*** and by our collaboration with proponents to identify jurisdictional and national opportunities.

Term	Definition
Option	A possible solution to a problem, including base case options such as 'do nothing' or 'do minimum'. (See **base case**).
Options analysis	The analysis of alternative options for solving an identified problem or realising an identified opportunity. (See **option**).
Pathway	In the context of the Assessment Framework, this refers to the steps we move through in the assessment of an infrastructure proposal.
Place	A geographical area within a clearly defined boundary. A 'place' can be scaled at different levels, for example, a precinct, strategic centre or sub-region.
Place-based	A 'place-based' approach to infrastructure applies a wide lens to consider the total impact and needs of a particular community or place over the longer term. It adopts an integrated approach to land use and infrastructure planning. It takes a cross-sectoral view of the interrelated infrastructure and amenity needs of a place, and identifies how and when these should be delivered. (See **place**).
Potential investment options (Stage 2)	Stage 2 submissions that are positively assessed by us are listed on the ***Infrastructure Priority List*** as potential investment options.
Price elasticity	An economic measure to describe the sensitivity of a relationship between price variables.
Price year	The year in which the prevailing prices are used in the analysis for the valuation of impacts.
Probabilistic project cost estimates	These estimates identify cost components, determine the probability distribution for each cost component and then undertake a simulation (often a 'Monte Carlo' simulation) to generate a probabilistic distribution of project costs. (See **cost distribution, expected value, P50 value** and **P90 value**).
Problem	An evidence-based reason for action that results from a gap between an actual and a desired outcome. In the context of the Assessment Framework, problems are informed by the ***Australian Infrastructure Audit*** and by our collaboration with proponents to identify jurisdictional problems and national problems.
Productivity	The efficiency with which the economy as a whole convert inputs (labour, capital and raw materials) into outputs. Productivity grows when outputs grow faster than inputs, which makes the existing inputs more productively efficient.
Project	An infrastructure intervention. A project will move through the stages of project initiation, planning, delivery and completion. A suite of related projects to address a common problem or opportunity will create a **program**.
Program	A proposal involving a package of projects that are clearly interlinked by a common **problem** or **opportunity**. The package presents a robust and holistic approach to prioritise and address the projects, and there is a material opportunity to collaborate and share lessons across states, territories or agencies. The projects can be delivered in a coordinated manner to obtain benefits that may not be achieved by delivering the interventions individually. (See **project**).
Proponent	An organisation or individual who prepares and submits infrastructure proposals to us for assessment. To be a proponent of a business case (a Stage 3 submission), the organisation must be capable of delivering that proposal. (See **business case**).
Proposal	The general term we use for successful submissions to the ***Infrastructure Priority List***, across the key stages of project development, specifically –early-stage (Stage 1), potential investment options (Stage 2) and investment-ready proposals (Stage 3). Proposals that have been delivered would be assessed in Stage 4.
P50 cost	An estimate of project costs based on a 50% probability that the cost estimate will not be exceeded.

Term	Definition
P90 cost	An estimate of project costs based on a 90% probability that the cost estimate will not be exceeded.
Qualitative	A description of an impact that does not rely on quantitative or monetised information.
Quantitative/quantified	A description of an impact that utilises, presents or references values, numbers or statistics.
Rapid cost–benefit analysis (rapid CBA)	A rapid CBA incorporates standard CBA principles and techniques but at a lower level of accuracy. (See **appraisal** and **cost–benefit analysis**).
Real prices	Prices that have been adjusted to remove the effects of inflation. They must be stated for a specific base year, for example '2016 prices'. (See **base year**).
Real options analysis	An investment evaluation and decision-making framework used to embed flexibility into an investment strategy to better structure and manage projects impacted by uncertainty. Real options analysis can be used as a way of thinking or as a quantitative technique to place values on options and different investment strategies. In both cases, it represents a process of understanding the value of investments under different future states of the world and developing more nuanced investment strategies to reflect this.
Resilience	The ability of the community to anticipate, resist, absorb, recover, transform and thrive in response to shocks and stresses to realise positive social, economic and environmental outcomes.
Risk	Events that have probabilities of occurrence that are predictable and outcomes that can be estimated with some confidence.
Root cause	The underlying causes and drivers of a proposal and how they are likely to change over time. (See **proposal**).
Scenario analysis	Scenario analysis provides a framework for exploring the uncertainty about future consequences of a decision, by establishing a small set of internally consistent future scenarios and assessing options against each of them. This form of analysis is especially useful for decision-makers faced with forms of uncertainty that are uncontrollable or irreducible (e.g. future technology change or increased climate variability).
Sensitivity analysis	Changing a variable, or a number of variables, in a model or analysis to test how the changes affect the output or results.
Shortlist of options	The set of options determined as most likely to benefit the Australian community using a structured, quantitative and unbiased analysis (in Stage 2). The shortlist of options is taken to Stage 3 for detailed analysis. We recommend the shortlist includes at least two viable options.
Social discount rate	Discount rates translate future costs and benefits to a common time unit, comparing costs and benefits that accrue at different times by expressing them as an equivalent amount in today's dollars. In the economic appraisal, a real discount rate should be used that considers societal resources. (See **appraisal** and **discount rate**).
Social, economic and environmental impact	The positive and negative effects of a proposal, with regards to: • social: quality-of-life effects, such as social exclusion and access to services, employment and safety • economic: productivity effects, such as productive capacity, economic capability, global competitiveness • environmental: effects such as greenhouse gas emissions, waste treatment, noise pollution, visual intrusion, heritage impacts.
Socially beneficial	Something is socially beneficial if you can demonstrate an evidence-based improvement that will change the quality of life of Australians. For example, through improved health outcomes, access to services/employment, and improved environmental outcomes.

Term	Definition
Societal wellbeing	The welfare of Australian society as a whole. Effects on societal wellbeing, often referred to as impacts, can be positive (a benefit) or negative (a cost), and form the basis for **cost–benefit analysis**.
Societal Impact	One of three overarching **Assessment Criteria** we use to assess the merit of every proposal, at every stage. This criterion asks: what is the value of the proposal to society and the economy? We assess whether the social, economic and environmental value of the proposal, and its contribution to community sustainability and resilience is clearly demonstrated by evidence-based analysis. This criterion is divided into five themes: quality of life, productivity, environment, sustainability and resilience.
Strategic Fit	One of three overarching **Assessment Criteria** we use to assess the merit of every proposal, at every stage. This criterion asks: is there a clear rationale for the proposal? We assess whether there is a strong case for action, the proposal aligns to the achievement of stated goals and there is a clear fit with the community. This criterion is divided into five themes: case for change, alignment, network and system integration, solution justification and stakeholder endorsement.
Strategic review	Strategic review involves a high-level review of the **Strategic Fit** and feasibility of options before moving on to more structured analysis. This is intended to form an initial view of each option and can be conducted informally with less effort than is required for quantitative analysis. Two tools that practitioners can consider for strategic review are initial screening or strategic merit testing, which can be applied consecutively.
Themes	Themes are outcome areas within our Assessment Criteria. Each criterion is divided into five themes. (See **Assessment Criteria, Strategic Fit, Societal Impact** and **Deliverability**).
Sustainability	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Travel time savings	The benefit of less time spent travelling as a result of a project. The number of hours saved is typically modelled for both personal and business travel across a network, then converted to a monetary value for use in **cost–benefit analysis**.
Uncertainty	Events where probabilities of occurrence are difficult to predict and outcomes are challenging to quantify.
User costs	Costs incurred by a transport user in addition to the money price. For example, waiting time, time in transit, unreliability, damage to freight, passenger discomfort, additional costs to complete the door-to-door journey. In **cost–benefit analysis**, quality attributes such as time and reliability need to be expressed in dollar terms based on user valuations.
Vehicle operating costs	The costs associated with owning, driving and maintaining a vehicle. This includes the costs of fuel consumption, oil and lubrication, tire wear, repair and maintenance, depreciation, and license and insurance.
Willingness-to-pay (WTP)	The maximum amount a consumer is willing to pay for a given quantity of a particular good or service (rather than go without it). It is measured as the total area under the demand curve up to the given quantity.

Appendix A

Strategic review tools

Two tools that practitioners can use for a strategic review of options, which can be applied consecutively, include:

- **Initial screening** – a tool for filtering a longlist of options against minimum thresholds. It can help to develop a more manageable longlist of options by discarding options which do not address key proposals requirements.
- **Strategic merit test (SMT)** – a method of testing a filtered list of options for strategic merit based on high-level objectives or criteria. It can help to form an initial view of the assessment outcomes, test for assessment anomalies, or refine a list of options.

A-1 Initial screening

An effective tool for initial screening is a filtering matrix. A filtering matrix is a simplified variation of MCA, but unlike a full MCA assessment, screening is a 'pass/fail' approach where options that do not pass the required criteria are either reviewed and re-specified or removed from consideration. To avoid biasing the result towards larger scale options, options that partly contribute to achieving the study objectives should be recorded for potential packaging rather than being dismissed entirely.

Depending on the complexity of the investigation, practitioners may want to use high level 'filtering criteria'. Filtering criteria should align to those planned to be used in the MCA, but be summarised into higher level themes to allow more rapid application. Typical filtering criteria include:

- Effectiveness: Is the option an effective means of solving the problems and opportunities? What does the research say about the chosen policy levers?
- Budget: Does the notional estimate exceed an established budget? Is there scope to increase the budget or is this fixed?
- Cost: Has the scope, scale, and design been confirmed? Are costs likely to change by a certain threshold? Have cost estimates been peer reviewed? Have risks been identified and can they can be managed?
- Benefits: Do the benefits logically connect with the objectives? Are they likely to be realised? Are any out-of-scope enablers required to realise the benefits?
- Technical feasibility: Can current technology be applied to the current problems and opportunities? Is the capability local or international? Are there constraints current technology cannot overcome?
- Health and safety: Does the option help meet (or exceed) environmental, safety, accessibility, or heritage/community standards?

Table 13 provides a notional transport project example of a simple assessment matrix that can be used to help conduct an initial screening of the option longlist. This shows how the merits of each option are assessed relative to the stated problems, objectives, and outcomes.

Simply, 'Yes' means that the option responds in some way to the objectives, whereas 'No' means that the option does not meet the stated objective. Where a 'No' is shown, this is reflected in whether the option receives a pass or fail to be considered further under the SMT.

Table 13: Simple assessment matrix for a notional transport project example

	Cost Objectives	Time Savings Objectives	Amenity Objectives	Customer Objectives	Pass/Fail
Option 1	Yes	Yes	Yes	Yes	Pass
Option 2	Yes	Yes	Yes	Yes	Pass
Option 3	Yes	Yes	Yes	Yes	Pass
Option 4	Yes	Yes	Yes	No	Fail

A-2 Strategic merit testing

Following from initial screening, SMT examines option parameters and performance relative to high-level objectives or a limited number of criteria and with less quantitative evidence to support ratings. This approximates the MCA more generally and provides a sense of the options that are more likely to pass a more rigorous assessment.

This will help practitioners to better focus efforts and resources on the most feasible options.

As with initial screening, SMT can be captured in a simple filtering matrix, such as the notional transport project example shown in **Table 14**.

Table 14: Simple filtering matrix for a notional transport project example

	Cost Objectives	Time Savings Objectives	Amenity Objectives	Customer Objectives	Pass/Fail
Option 1					Fail
Option 2					Pass
Option 3					Pass

Table 15: Example strategic merit test key

Key	
	Significant negative performance against the criteria, performs significantly worse than the base case, significant feasibility issue
	Limited or neutral performance against the criteria, performs equivalently or worse than the base case
	Significant performance against the criteria, performs significantly better than the base case

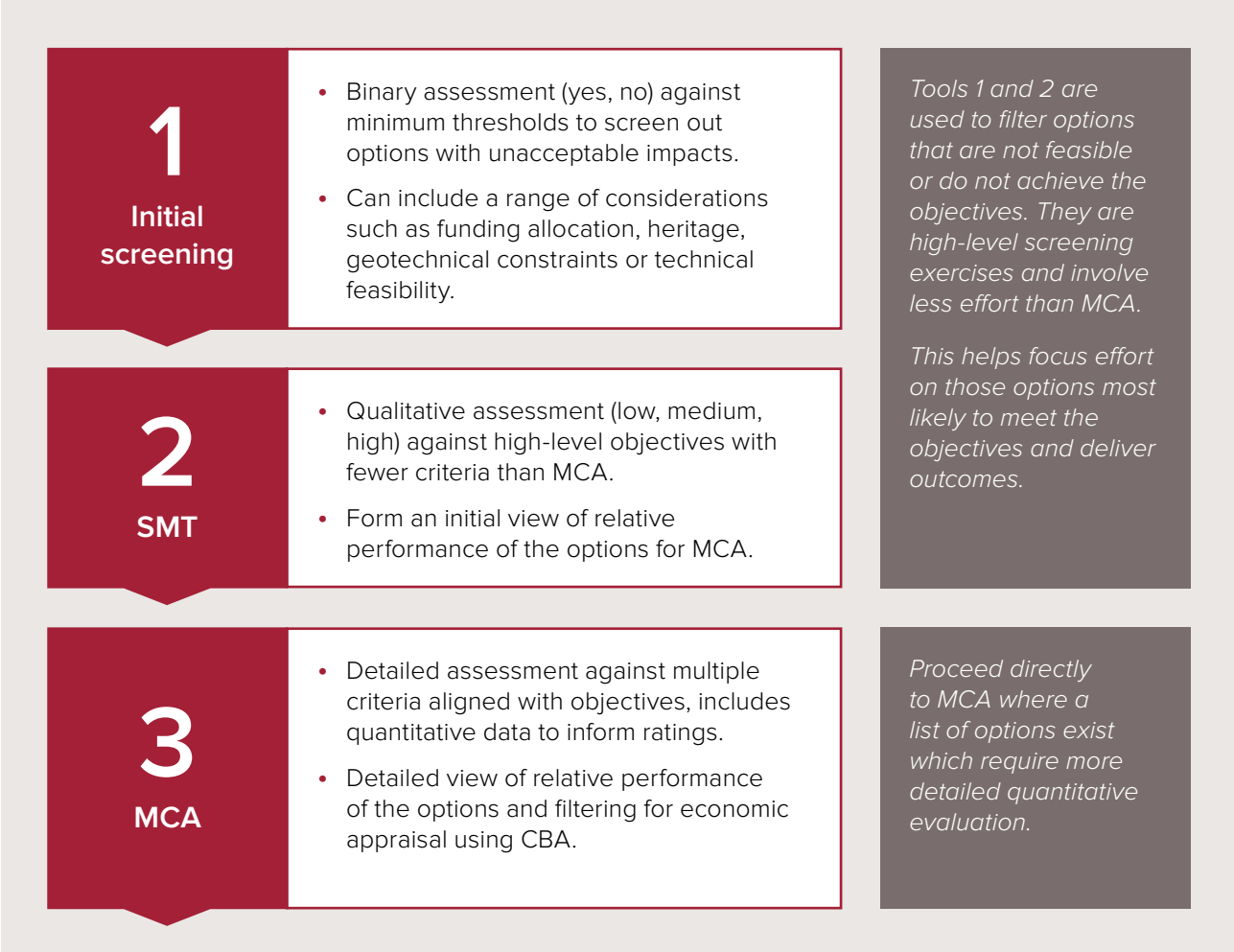
A-3 Applying strategic review tools

These preliminary assessments are effectively a high-level version of a full MCA, but are tailored to test the performance against key objectives or constraints. When applying these tools, there should be consistency of the criteria throughout the process, with progressively greater levels of detail included in each successive tool.

The outcome of the strategic review should be a list of feasible options that are worthy of more thorough analysis in MCA. The number of options should be determined by their merit and not by a pre-defined quota.

Figure 6 summarises the role of these tools in the options analysis process.

Figure 6: Example of applying strategic review tools



Infrastructure Australia is an independent statutory body that is the key source of research and advice for governments, industry and the community on nationally significant infrastructure needs.

It leads reform on key issues including means of financing, delivering and operating infrastructure and how to better plan and utilise infrastructure networks.

Infrastructure Australia has responsibility to strategically audit Australia's nationally significant infrastructure, and develop 15-year rolling infrastructure plans that specify national and state level priorities.

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