

# Guide to program appraisal

Technical guide 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.

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# 1

## Introduction to programs

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## At a glance

- A program is a package of related interventions to address a common problem or realise a common opportunity, delivered in a coordinated manner to obtain benefits that may not be achieved by delivering the interventions individually.
- We categorise programs as either linear programs, inter-related programs or place-based programs, each having their own benefits and challenges. The relevance of these different types of programs depends on the nature of the identified problems or opportunities and the desired outcomes.
- Program development follows the same staged process as for individual projects. However, the process should take a more strategic, holistic approach to identifying problems and opportunities. Options identification and analysis is then usually an iterative approach to identifying, defining, analysing and optimising the scope of the program and the package of interventions (projects) within it.
- You can submit a program to us for inclusion on the *Infrastructure Priority List* through two pathways. The appropriate pathway will depend on whether funding is being sought at the program or project level.
- The requirements for program business cases will vary by the state or territory in which they are located.

## 1.1 How to navigate this document

This document is designed for proponents (you) developing infrastructure programs for 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](#) and relevant [stage volumes](#) before reviewing this document.

- **Section 1** provides an overview of programs, including their benefits and challenges. This section also describes the types of programs – linear programs, inter-related programs and place-based programs.

- **Section 2** takes you through the steps you should follow to develop and appraise programs. This includes detailed technical guidance that you should consider as part of this process.
- **Section 3** explains how we assess programs and the two pathways that apply when assessing them. This section includes our specific requirements at each stage of the Assessment Framework.

Program submissions should include the [Submission Checklist](#) for the relevant proposal stage, available on our website, along with all listed supporting information.



## 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 this technical guide

There has been a growing trend across Australia towards planning and delivering infrastructure through programs of work, rather than individual projects. This shift presents opportunities for more holistic and integrated planning and investment decision-making, as well as challenges in the time and complexity of those processes.

In a review of state and territory guidance across Australia, we found there are varying levels of policy and guidance on program development and assessment. The purpose of this technical guide is therefore to provide clear guidance to practitioners on the types of programs, how to develop and appraise programs, and how we assess them.

This guidance also applies to project proposals that form part of a broader program.

Program submissions may require proponents to provide more analysis than might currently be required through state and territory guidance. The guidance in this document sets out our requirements so you can demonstrate to decision-makers the robustness of your proposal. We encourage you to engage with us at any time to discuss the scope and approach to your submissions.

## 1.3 Structure of the Assessment Framework

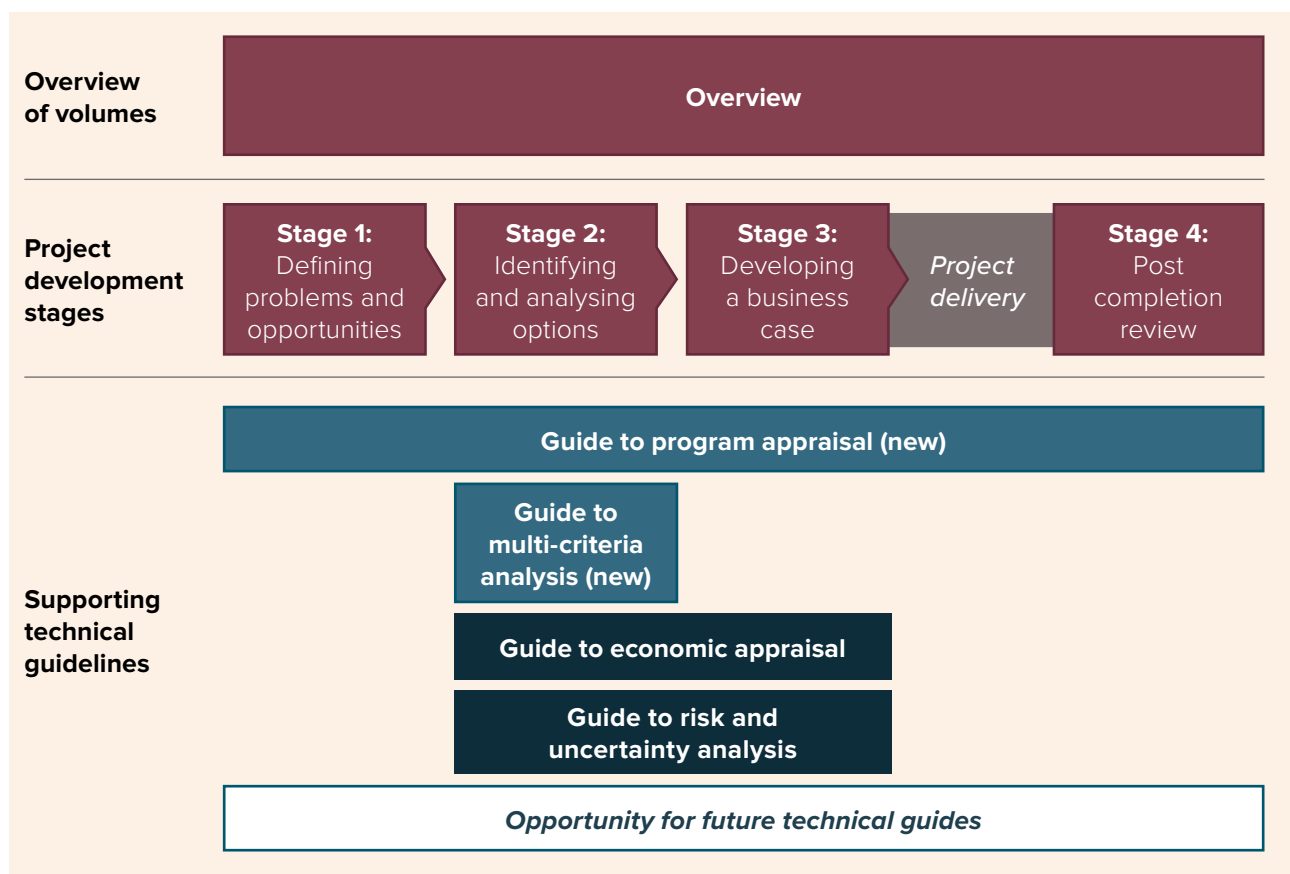
The Assessment Framework consists of a series of volumes and technical guides. Together, they describe the activities in a typical project development and review process, and how we assess proposals that are submitted to us.

For practicality and ease of use, each submission 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 and the stage you are up to in project development.

The structure of the Assessment Framework is shown in **Figure 1**. The suite of Assessment Framework volumes is available at [www.infrastructureaustralia.gov.au/publications/assessment-framework](http://www.infrastructureaustralia.gov.au/publications/assessment-framework).

**Figure 1: Structure of the Assessment Framework**



## 1.4 Overview of programs

### How Infrastructure Australia defines a program

A program is a package of related interventions to address a common problem or realise a common opportunity, delivered in a coordinated manner to obtain benefits that may not be achieved by delivering the interventions individually.<sup>1</sup>

Importantly, the collection of interventions (referred to as projects in this document) can, and ideally should, comprise infrastructure and non-infrastructure options.

### How we assess programs

You can submit a program to us for inclusion on the *Infrastructure Priority List* (the Priority List) through two pathways (described in detail in [Section 3](#)):

- **Pathway 1:** You have established the problem or opportunity as a program during Stage 1 (early-stage proposal) and you have developed a program of projects (Stage 2), but *funding is not sought or committed for the program as a whole*. You will submit projects within the program to us separately for Stage 2 and Stage 3 evaluation, with the program analysis included as context to the proposals.
- **Pathway 2:** You have established the problem or opportunity as a program during Stage 1 (early-stage proposal). *The program itself is seeking funding* and therefore you will submit the program to us for Stage 2 and Stage 3 evaluation.

All submissions are considered against our three Assessment Criteria:

1. **Strategic Fit – 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.
2. **Societal Impact – 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.
3. **Deliverability – 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.

Our specific requirements for assessing programs and component projects are outlined in detail in [Section 3](#).



### Box 2: When to submit a proposal to us

There are two reasons to submit an infrastructure proposal to us:

1. **To have the proposal considered for the Infrastructure Priority List.** We will determine if the proposal is nationally significant and suitable for the Priority List.
2. **For review where more than \$250 million in Australian Government funding has been committed.** We are required to evaluate business cases for infrastructure proposals with funding committed above this threshold.

Your proposal could also be referred to us by our responsible Minister.

1. Project Management Institute 2017, *The Standard for Program Management – Fourth Edition*

## What are the advantages of programs?

While long-term strategic and systems thinking is necessary for all infrastructure decision-making, programs take a more holistic view, considering a broad suite of coordinated interventions to address a problem or realise an opportunity, often over a longer time period. Advantages of programs include:

- Planning:
  - By establishing the investment case at the program level, you can secure commitment to the program and improve confidence in funding decisions based on a clear overarching strategy.
  - Program planning allows you to better sequence projects with regard to impact, cost, continuity of service and deliverability. In addition, by applying real options considerations (see [Glossary](#)) to programs, you can define a desired program outcome, but commit on a project-by-project basis to allow changes in the nature or timing of subsequent investment as the future becomes more certain (see the [Guide to risk and uncertainty analysis](#) for detailed guidance on real options analysis).
  - Taking a program approach can streamline options identification and assessment, business case development and project development approvals processes. This may allow you to deliver multiple related projects under a program without seeking third-party approval for each individual project.
  - You can save costs by packaging project delivery and providing a predictable pipeline of work for industry. This can provide certainty for employee skills development and retention, and progressive implementation of innovative solutions through longer-term strategic planning. For example, committing to a common technology across an infrastructure network provides greater certainty that outcomes will be achieved as it is progressively implemented across the network.
- Coordination:
  - Realising synergies between service delivery improvements and infrastructure investment – for example, interventions and incentives for preventative health care designed to improve quality of life, which in doing so reduce demand for hospitals and treatment facilities.
  - Ensuring that complementary projects, where the benefits are higher if they are both delivered, are packaged together for funding decisions.
  - Delivering a broad suite of projects to achieve an overall outcome that is in the best interests of the community, irrespective of whether each individual project achieves a net economic benefit. This is important where an individual project is a key enabler for the program but may have large social, community or environmental benefits that are difficult to quantify (for example, projects that will induce urban renewal could attract new business opportunities that are often difficult to forecast and quantify).
  - Promoting collaboration between multiple delivery agencies who can work together to achieve shared objectives. This can avoid the risks of ad hoc implementation and optimise project outcomes for the community and users.
- Deliverability:
  - Promoting efficient procurement processes, workforce capacity planning and coordinated delivery, particularly in remote or regional areas.
  - Providing a better understanding of the information gaps that will de-risk procurement and delivery for individual projects.
  - Learning lessons from each individual project to improve planning, cost and delivery time of subsequent projects.
  - Monitoring industry, rather than an individual project or contractor, can bring about industry-level improvement in delivery practices.



### Box 3: Programs can deliver a broader range of policy outcomes – Queensland Government, Cape York Region Package

#### Background

The Cape York Region Package (CYRP) – Stage 1 was a program funded by the Australian and Queensland governments, which progressively upgraded infrastructure in the Cape York Region between 2014 and 2019. The CYRP focused on upgrading the Peninsula Developmental Road (PDR), the main transport link between the Cape York Peninsula and the rest of mainland Queensland. The PDR supports the transfer of goods and services both in and out of the Cape York Peninsula for not only the mining, agricultural and tourism industries, but also the remote communities in the region. The CYRP – Stage 1 enabled 175 kilometres of road sealing and flood immunity works to be delivered along the PDR.

The program approach facilitated the development of a rolling program that accounted for wet-season construction stoppages. Importantly, this enabled more straightforward sealing works to be delivered first, while providing more time to design and build local capacity to deliver more complex projects. Building local capacity through the delivery of projects also enabled the CYRP to generate broader social outcomes in the region.

#### Program advantages

All works on the PDR were carried out under an agreement between the Queensland Government and Traditional Owners, known as an Indigenous Land Use Agreement. The Indigenous Land Use Agreement sets out key result areas relating to economic opportunities, training and local industry participation, which were built into all construction contracts.

Over the life of the program, this resulted in:

- 152,000 hours of Indigenous training and employment
- 321 Indigenous workers employed to deliver works on the PDR
- 108 local Traditional Owners employed to provide over 10,000 Cultural Heritage monitoring records
- \$42.6 million worth of work completed by Indigenous-owned businesses
- \$84 million spent on local Cape York businesses.

Delivery as a program allowed government to work with communities, businesses and other local stakeholders to identify and implement practices to improve not only infrastructure service standards, but local employment and business outcomes. Progressive delivery also enabled governments to react to changing conditions and adjust the key result areas where required. The Australian and Queensland governments have committed additional funding to continue upgrading the PDR and build on local employment/business outcomes.

Source: Department of Transport and Main Roads (Qld) 2020, *Cape York Region Package*, Queensland Government, available at: [www.tmr.qld.gov.au/projects/cape-york-region-package](http://www.tmr.qld.gov.au/projects/cape-york-region-package)

## What are the challenges of programs?

Although they have many advantages, programs can have additional challenges, such as:

- More complex planning, business case development processes and governance, resulting in higher costs and longer planning timeframes. This is particularly relevant for governance and institutional interfaces where cross-agency and cross-sectoral collaboration is needed.
- Additional complexity, time and cost to ensure stakeholders are engaged appropriately.
- Packaging of poor-performing projects that are not key enablers for the program can reduce overall benefits for the community.
- Developing and assessing a program can be challenging where it combines varied infrastructure and non-infrastructure interventions – for example, assessing the relative merit and contribution of policy, service and technological interventions.
- Preparing a business case for a medium-term (for example, 10-year) program will inherently result in demand and cost uncertainty.
- Once announced, community expectations for the program can reduce flexibility if needs change. Flexibility may also be impeded if funding commitments are made, and outcomes, service levels or technologies are committed at the program level.
- Complexity in delivery due to the coordination of multiple projects and/or delivery agencies over multiple sectors and extended timeframes.
- Challenges in sharing and recovering costs in sectors where costs are covered directly from users but projects are delivered by different agencies.
- Reduced transparency of individual project performance, as it can be difficult to assess the performance of individual projects to understand if some aspects of the program could be avoided to improve the program.
- Additional time and cost to re-assess the overall merit of the program as projects are delivered.

## Factors to consider when deciding whether a program is appropriate

You should understand the advantages and challenges of a program, as well as the requirements, to determine if a program is more suitable than a project-by-project approach. While programs have many benefits, they generally involve more time and complexity to ensure they are planned and delivered rigorously.

Where a program approach is pursued, **clear objectives and goals should provide strategic direction**, enabling investments within the program to demonstrate alignment. Examples of appropriate programs include:

- A suite of preventative health services and incentives combined with health treatment facilities designed to improve quality of life in an area with a relative disadvantage in health-related metrics.
- A water supply program comprising a suite of demand management, existing asset optimisation strategies and new bulk water investments; all of which are aligned to meet a common level of service for customers serviced by a single water utility.
- 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, thereby improving network effects.



## Box 4: Water and wastewater programs in regional and remote areas

### Background

Reliable and safe drinking water and wastewater services are vital for the wellbeing and long-term sustainability of all communities. As noted in the 2019 *Australian Infrastructure Audit*, water and wastewater utilities in less populated regional communities – including smaller towns and rural communities – face service delivery challenges that are unlike those faced in metropolitan areas and smaller cities. For example, regional water and wastewater utilities typically serve relatively small customer bases, many of which are dispersed over large areas.

In some areas, the population is declining, which means that already small customer bases are shrinking. Many regional utilities are situated in areas with below average rainfall or streamflow, and have limited or no connection to other utilities or bulk water supply sources, which means that supply reliability is vulnerable during drought.

Many regional utilities providers also lack the expertise to overcome the water delivery challenges they face. Smaller councils find it difficult to attract and retain skilled staff, and to keep pace with advances in regulation and asset management. Many utilities lack the capacity to invest in technologies that save costs or improve services.

Source: Infrastructure Australia 2019, *Australian Infrastructure Audit*, pp 596–630. Available at: [www.infrastructureaustralia.gov.au/publications/australian-infrastructure-audit-2019](http://www.infrastructureaustralia.gov.au/publications/australian-infrastructure-audit-2019)

### Program advantages

A program approach may be particularly beneficial in remote areas where the broader effects of complementary infrastructure investment can be demonstrated and realised. In a remote area context, the cumulative benefits of a coordinated program of infrastructure and non-infrastructure interventions could be demonstrated in terms of broader health, education and/or environmental outcomes for the community that could not be achieved through provision of single investments on their own. A program enables the broad scope of work to articulate common, shared goals with emphasis on strategic alignment and broad policy objectives.

Cost–benefit analysis (CBA) of individual interventions may not capture the full range of potential benefits in remote areas. Instead, analysing a coordinated and inter-linked program of works may allow you to articulate cumulatively greater social and equity outcomes from the coordinated delivery of infrastructure. A program approach in remote areas can also be particularly beneficial for workforce and skills planning, innovation, and procurement and delivery certainty.

## 1.5 Types of programs

We categorise programs as either linear programs, inter-related programs or place-based programs. The relevance of these different types of programs depends on the nature of the identified problems or opportunities and the desired outcomes.

### Linear programs

A linear program involves a series of similar connected projects, staged to address a shared problem or realise a shared opportunity. Typically, all projects are required to be implemented to achieve the program outcome. Some key features of a linear program are:

- single asset type
- single planning and delivery agency
- projects interface with each other
- project sequencing is critical to success
- delivery of every project is critical to realising the success of the program
- similar benefits for each project (for example, travel-time savings along a corridor or staged capacity upgrades along a transmission line).

The key advantages of linear programs are sequencing of projects to maximise benefits, cost efficiency and network benefits. They can also be used to develop a network view to delivery and streamline funding, providing consistency in delivery quality and skills.

In some cases, a very large project with discretely identified stages (for example, a series of motorway sections) may be considered as a program. This may be appropriate due to the size, complexity and delivery timelines of the project to mitigate planning and delivery risks. However, this should be evaluated against the additional complexity and risks of delivering as a program (including interface management, delivering multiple business cases and the risk of later stages of the project not receiving approval resulting in 'stranded' assets).

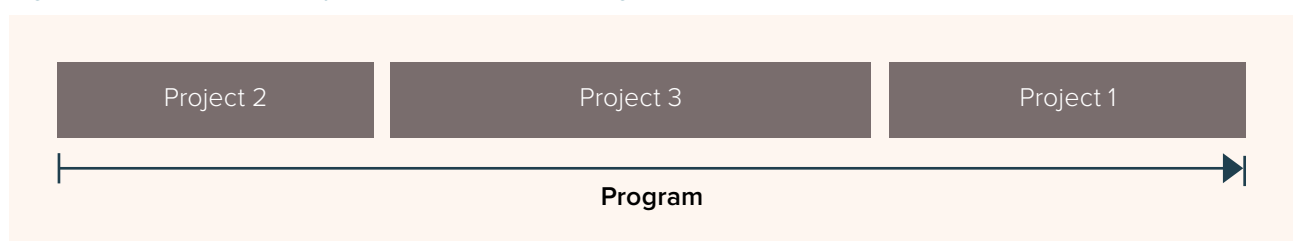
A typical linear program business case framework is shown in **Figure 2** and an indicative delivery timeline is shown in **Figure 3**. The typical planning and delivery sequence is carried out in succession for each project.

**Figure 2: Typical business case framework for a linear program**



Projects are delivered in stages and may not run concurrently. For example, as shown in **Figure 3**, Project 2 may be delivered first, as it may have the least capital cost, engineering complexity, or be necessary to deliver before other stages to minimise service disruptions. In some cases, the project that delivers the greatest net benefit to the community or users might be delivered first. In any case, the full benefits will not be realised until all subsequent stages have been delivered to achieve the overarching program objective.

**Figure 3: Indicative delivery timeline for a linear program**





## Box 5: Case study of a linear program – NSW Government, M1 Pacific Motorway Upgrades

The M1 Pacific Motorway Upgrades (between 2017 and 2020) form part of the \$391.6 million M1 Productivity Package funded by the Australian and NSW governments to provide a better and more reliable journey on one of Australia's busiest roads.

The benefits of the program include improving traffic flow for better travel times and more reliable trips, allowing for predicted increases in traffic, providing safer access, and improving freight connectivity along the corridor.

The program of works was completed in stages, with projects including widening the motorway to three lanes, upgrading exit and entry ramps, replacing roundabouts and resurfacing. Project staging and sequencing was necessary due to the construction complexity of some projects and to reduce the impacts on the 70,000 motorists using the motorway each day.

Source: Transport, Roads and Maritime Services, *M1 Pacific Motorways Upgrades*, New South Wales Government. Available at: [roads-waterways.transport.nsw.gov.au/projects/m1-pacific-motorway/index.html](https://roads-waterways.transport.nsw.gov.au/projects/m1-pacific-motorway/index.html)

## Inter-related programs

Some problems or opportunities are geographically broad and require coordinated projects spread across large areas, such as a city or regional area. These problems or opportunities can be addressed or realised through inter-related programs. Typical key features of an inter-related program are:

- single agency or asset type
- spread across a defined geographical area
- projects are physically independent
- projects can be categorised for priority delivery, for example by value for money, greatest benefits, implementation time or complexity
- if one or more projects are not delivered, the program outcome is only partially achieved but this may not undermine the overall success of the program
- projects can be delivered independently, either concurrently or at different times, depending on the implementation and procurement strategies.

In some cases, projects may be grouped together for policy or funding reasons. Recent examples include Bridges for the Bush<sup>2</sup>, the Black Spot program<sup>3</sup> and some level crossing removal programs. In these cases it is important to articulate the scope of the program, how it aligns to the identified problems or opportunities, and the approach to evaluating and optimising the specific interventions within the program.

For these types of programs it can be easy to augment the scope of work with other features or components that are not aligned to the underlying problems or opportunities. You should be careful not to 'gold plate' the scope, and clearly demonstrate the rationale for the package of work within the program.

During program establishment, you should also consider the appropriate level of program coordination, as there may be opportunities such as planning and deliverability benefits that can be leveraged.

A typical inter-related program is shown in **Figure 4**, and an indicative delivery timeline is shown in **Figure 5**.

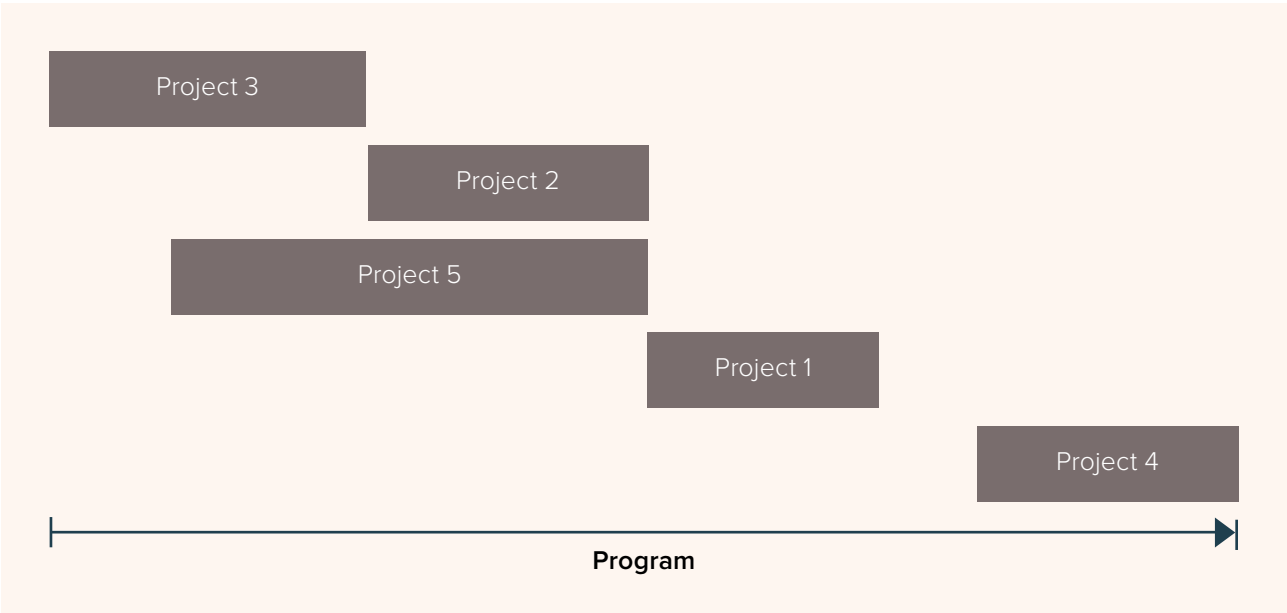
2. Roads and Maritime Services 2021, *Bridges for the Bush program*, NSW Government, viewed 10 June 2021, [roads-waterways.transport.nsw.gov.au/projects/bridges-for-bush/index.html](https://roads-waterways.transport.nsw.gov.au/projects/bridges-for-bush/index.html)

3. Department of Infrastructure, Transport, Regional Development and Communications 2021, *Black Spot program*, Australian Government, viewed 10 June 2021, [investment.infrastructure.gov.au/infrastructure\\_investment/black\\_spot/](https://investment.infrastructure.gov.au/infrastructure_investment/black_spot/)

Figure 4: Typical business case framework for an inter-related program



Figure 5: Indicative delivery timeline for an inter-related program





## Box 6: Case study of an inter-related program – Victorian Government, Level Crossing Removal

The Level Crossing Removal Project (LXRP) was established by the Victorian Government in 2017. The program involves removing 75 level crossings across metropolitan Melbourne by 2025, in addition to upgrading or constructing more than 27 train stations, laying many kilometres of new track and making associated rail improvements.

The LXRP supports four broad strategic interventions:

1. Separating road and rail networks at critical junctions.
2. Implementing a Metropolitan Network Modernisation Program – which includes new train stations, improved public transport access, and better pedestrian and cycling facilities.
3. Improving the urban amenity and physical integration of activity precincts and communities along rail corridors.
4. Improving integrated land use along rail corridors, to create vibrant community hubs.

Implementing each project will contribute to achieving these four strategic interventions. The program business case enabled the Victorian Government to make budget provisions over the forward program and beyond and to release funding into Central Contingency for all 75 level crossing removals.

The LXRP framework includes:

- a strategic program business case – strategic alignment, options development and identifying problem areas
- a detailed program business case – to secure funding for the final program of works
- individual work packages/projects – funding was released for the first five packages of level crossing removals following the preparation of full business cases and/or works package/project proposals.

The program business case outlines some of the advantages of bundling level crossing removals into a coordinated program compared to a site-by-site approach. The program approach:

- provides the ability to have a well-developed framework that encourages optimising project outcomes and avoids the risks of ad hoc implementation
- offers greater flexibility to sequence level crossing removals to match rail capacity investments, road projects or other works, leveraging benefits from coordinated infrastructure delivery
- provides a better understanding of the information gaps that will de-risk procurement
- enables costs savings from packaging or bundling sites and from providing a predictable pipeline of work for industry
- can deliver better value for money in project delivery through benchmarking and continuous improvement by reviewing projects that have been delivered and identifying learnings to reduce costs for future work packages
- realises integrated, multi-modal benefits that are not possible when removals occur site-by-site – such as greater travel time and other savings generated from augmenting the metropolitan rail network and removing rail and road conflict points concurrently; wider economic benefits from increasing effective density through improved accessibility; and increasing corridor attractiveness for urban renewal
- enables other major rail upgrades to occur on corridors where level crossing removals will separate the road and rail networks.

## Place-based programs

A place-based program takes a wide lens to consider the total impact and needs of a particular community or place over the longer-term, involving integrated 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. Infrastructure needs may span across all infrastructure types, including green and blue (involving natural assets and waterways), cultural, education, health, transport, housing, telecommunications, justice and utilities.

**A place-based program is focused around one geographical area, the place, within a clearly defined boundary**, compared to the other types of programs that can be spread across different areas.<sup>4</sup> The place can be scaled at different levels, for example, a precinct, strategic centre or sub-region. While there is no set size for a place boundary, the larger the boundary, the greater the complexity in terms of problems and opportunities, solutions, stakeholder groups, governance, delivery and assessing benefits.

As a program is defined as a suite of interventions designed to address a common problem or opportunity, the boundary for the interventions should be defined according to the problem or opportunity being considered. Then, the boundary can confine or guide the infrastructure and non-infrastructure interventions required to achieve the common outcome (noting that direct benefits may spread wider than the defined place).

In all cases, all projects that are part of the program should be aligned to achieve shared strategic outcomes and interlinked with land use planning to achieve the full program objectives. As an example, for an education precinct, the direct benefits would be the education outcome (such as providing access to education facilities), but there are likely to be additional benefits to consider, such as urban amenity.

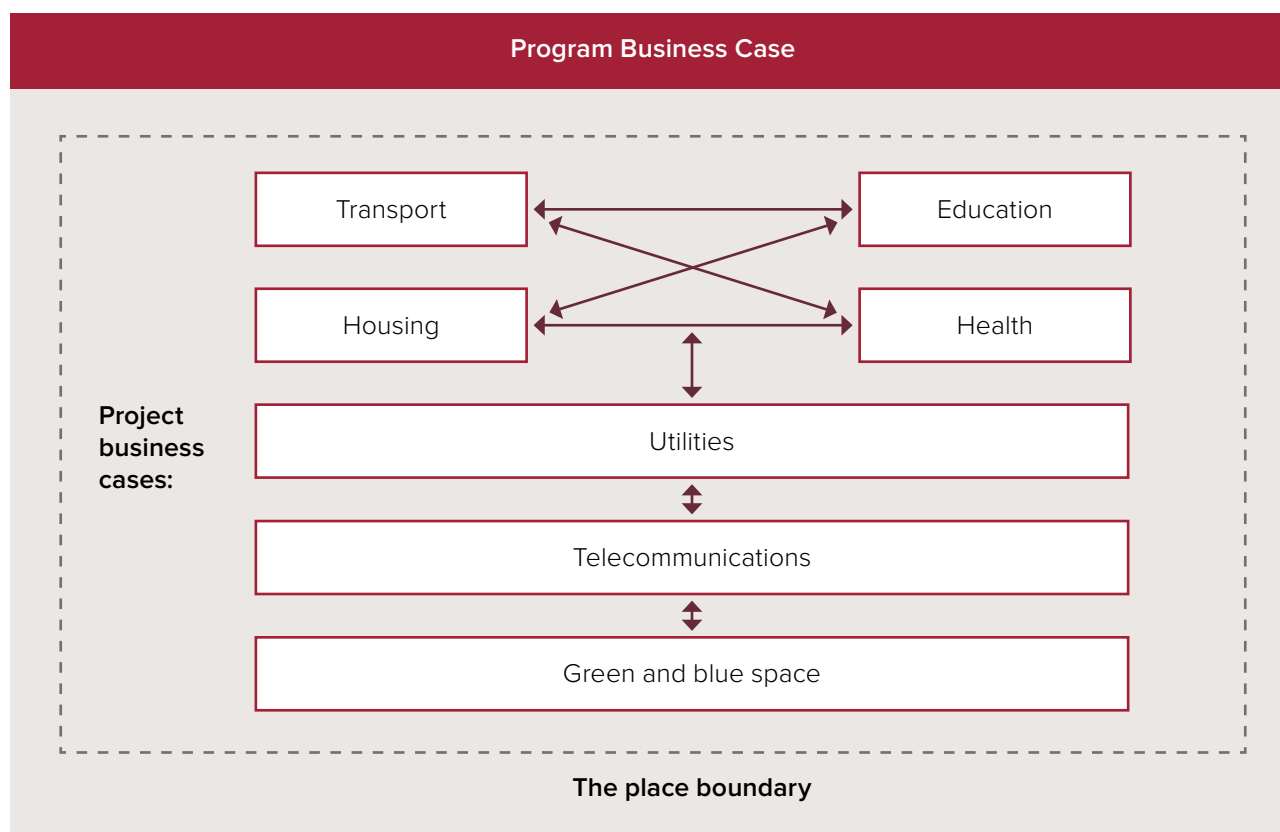
Place-based programs should be closely aligned with decision-making relating to population growth and planning, as these decisions will impact the infrastructure requirements, while the infrastructure will in turn be a key enabler for the decisions related to the place. Funding decisions should consider all enabling infrastructure required for the success of the place. This will ensure the required outcomes for the place are not only planned, but also funded and delivered at the right time, to realise the full benefits for the community.

The typical key features of a place-based program are:

- multiple agencies
- multiple asset types
- the boundary of the place guides the interventions
- the delivery of infrastructure and services across sectors is sequenced, coordinated and integrated
- each project contributes to the shared program outcome, including some core projects that are critical for overall program success
- it requires a broader consideration of community outcomes than usual infrastructure (for example, social, cultural and quality-of-life outcomes).

**Figure 6** shows an example of a place-based framework for land use change supported by relevant infrastructure.

4. Infrastructure Australia 2018, *Planning Liveable Cities: A place-based approach to sequencing infrastructure and growth*, Infrastructure Australia, Sydney. Available at: [www.infrastructureaustralia.gov.au/publications/planning-liveable-cities-place-based-approach-sequencing-infrastructure-and-growth](http://www.infrastructureaustralia.gov.au/publications/planning-liveable-cities-place-based-approach-sequencing-infrastructure-and-growth)

**Figure 6:** Typical business case framework for a place-based program

### Place-based programs require a coordinated approach

Infrastructure planning and decision making at all levels of government is often sector-based, which means that place-based outcomes are often not considered during the planning, funding or delivery of infrastructure. This sector-based focus is necessary to define accountability for delivering service standards and to achieve high-quality delivery. This is particularly relevant for utilities, transport, health and education. However, in isolation, sector-based governance structures can lead to:

- missing the opportunity to consider holistic needs for a place
- siloed planning and infrastructure decision-making
- missing key place benefits, as planning and delivery of projects are not coordinated
- unintended consequences for our communities.

In most cases, all sectors are developing projects to achieve a similar goal, such as responding to population growth or realising the benefits of a new piece of infrastructure by providing supporting infrastructure. However, lack of planning and coordination across sectors and services can result in outcomes and timings that are misaligned. For example, a lack of coordinated planning may result in either too little or too much infrastructure or service capacity in one sector relative to other sectors.

As such, while place-based programs may require additional resources, they can enable holistic planning and delivery that will support multiple-sectors to work towards common goals.

### Place-based programs can align decision-making with the needs of the community

A place-based approach aims to connect infrastructure decision-making with the needs of a community at a local level. It aims to improve the creation and use of places to unlock greater benefits from both the infrastructure and the place.

**Place-based models provide the opportunity for engagement at the strategic planning stage,** enabling communities to contribute to developing a vision for a local area.

This approach has a particular focus on collaborating with communities, rather than simply informing them of outcomes. The community helps to develop the strategic direction for their area, which helps get community buy-in to the program. Through this engagement, you can identify outcomes for the place that are supported by the community, but still achieve strategic objectives, identify interrelated infrastructure and amenity needs of a place, and identify how and when these should be delivered.

The community engagement approach differs from linear and interrelated programs as there is a greater focus on delivering wider community outcomes through the coordinated planning and delivery of the component projects, not just the community outcomes for a single asset.

### Place-based thinking in regional and remote areas

While place-based decision frameworks are increasingly being applied in metropolitan areas with a focus on urban amenity, there is also a compelling case to apply them in regional and remote areas.

This integrated approach can help you to better plan for and more efficiently sequence the delivery of a range of infrastructure in community areas and for new developments.

Within regional and remote areas, where projects are often developed on greenfield sites, there is the opportunity to use a coordinated and collaborative approach at the onset to share limited resources and labour, as well as identify supporting infrastructure and amenity requirements across the community.



### Box 7: Example of a remote place-based approach

A remote area in northern Australia with over one thousand residents spread across a number of settlements is known for its significant environmental, cultural and heritage value.

However, the primary access road is of low quality and subject to closures due to flooding during the wet season. This impacts on the quality of life and productivity of residents.

The opportunity has been identified that improving accessibility could significantly expand economic activity in the area, including tourism.

A traditional sector-based infrastructure intervention would focus solely on upgrading the road to improve access and reliability during flooding. While this will directly benefit residents, it limits the range of opportunities that the upgraded road could create by failing to consider a wider package of supporting infrastructure.

A place-based approach would identify a suite of infrastructure and planning requirements for the place to achieve the desired outcome –

in this case to improve community access, industry activity and tourism. A coordinated approach with complementary interventions could include road upgrades, tourism infrastructure, new industrial facilities, other land use changes, business incentives and an advertising campaign. It can also build local community support for the program by engaging them in the development of the program, so they are ready to capture the opportunities it will bring.

Developing the response as a program will coordinate the planning of, and commitment to, the complementary infrastructure within the place to unlock the full range of benefits claimed by a key piece of infrastructure, such as a road upgrade.

This example highlights how considering infrastructure investments both strategically and holistically will maximise the benefits they deliver, particularly in regional and remote areas.

# 2

## Program development

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This section sets out our guidance for how programs should be developed and how they are assessed. Proponents should refer to the corresponding volumes of the Assessment Framework for more detailed guidance.

## 2.1 Stage 1: Defining problems and opportunities

During Stage 1 of our project development process (our first submission stage), we encourage you to think strategically and holistically about the root causes of the problem you are seeking to address or the elements that would enable an opportunity to be realised. If during the Stage 1 process you

identify a broad package of interlinked problems and opportunities, you should identify the proposal as a program. Doing so will allow you to identify a broad suite of options in Stage 2 to fully address the problems and opportunities, and determine the most appropriate approach to addressing them.



### Box 8: Defining the problem appropriately creates flexibility for a program of solutions – Queensland Government, M1 Pacific Motorway capacity

Different sections of an existing motorway experience congestion and safety problems. The root cause of the problem is corridor-wide land use, population and employment growth requiring more people to travel along a central transport corridor into a central business district for work, or to access education, medical and recreation precincts.

In this example, the proponent could submit a series of separate Stage 1 submissions for separate sections of the motorway corridor that are experiencing congestion. However, an alternative approach would be to aggregate the problem definition to the corridor-level. This would enable the proponent to consider

the problem more holistically, and then develop a response through a coordinated program of investment along the corridor.

An example of this from the Priority List is the *M1 Pacific Motorway capacity (Eight Mile Plains to Tugun)* program. This program proposal identifies the problem of congestion for the 80-kilometre corridor between Eight Mile Plains and Tugun. It was listed as a program, rather than a project, as it identifies common problems for the same users along a corridor requiring multiple interventions. The proponent was then able to develop business cases for the corridor in multiple sections, and seek funding individually for each project.

There are various analytical tools to help you identify and measure prospective problems or opportunities. Available tools include value management studies, investment logic mapping and benefits dependency mapping.

Community and stakeholder endorsement is critical for effective outcomes of infrastructure. Engaging with the community helps you gather information, build support for interventions and reduce potential for conflict. This is particularly true for programs due to their size and complexity. Therefore, you should conduct meaningful engagement to enable communities to identify problems and opportunities, as well as shape infrastructure planning and delivery.

Once the problem has been sufficiently defined, the symptoms of the problem (or benefits of the opportunity) and underlying drivers can be identified (for example, traffic congestion, or accident and vehicle operating costs). These symptoms generally provide the basis on which the problems and opportunities can be quantified in your Stage 1 submission (see the guidance outlined in the [Stage 1](#) volume of Assessment Framework).



## Box 9: Considerations to define problems and opportunities using program-level thinking

As set out in the **Stage 1** volume of the Assessment Framework, we encourage you to think about problems and opportunities in a broad sense. We recommend the following approach:

1. Identify the problems and opportunities over the longer-term.
2. Consider wider network and system problems and opportunities.
3. Consider the total impact and needs of a particular community or region – that is, a place-based approach.
4. Consider if there are other interlinked problems and opportunities.

5. Determine if a program is appropriate and why, using the program requirements described in **Section 1.4**. That is, determine if planning and delivery as a program would significantly increase benefits or reduce costs.

Investment logic mapping and outcome logic mapping (also known as program logic) are common approaches to define problems or opportunities, then link these to the costs and benefits for the identified options. These approaches express how change is expected to occur within a system over time. The outcomes framework described in the case study in **Box 16** provides an example of outcome logic mapping.

## 2.2 Stage 2: Identifying and analysing options

The purpose of options analysis at the program-level is to determine the desired program outcomes to address the problems and opportunities, and the optimal package of projects to achieve these outcomes. Program options will therefore constitute defined program outcomes and different packages of projects to achieve them. Projects should include both infrastructure and non-infrastructure options.

For programs, options analysis is usually an iterative approach to identifying, defining, analysing and optimising the program and associated projects. The process for doing so will depend on a variety of factors, including program type, infrastructure type and the problems and opportunities being addressed.

### Identifying options

You should take a holistic approach to identifying options, so that you can develop a full range and appropriate mix of projects. **Box 10** describes additional considerations for developing and analysing program options.

In the first instance, the option development process should be considered at the program level, rather than at the project level. Subsequently, project-level options may be developed that can be packaged as a program to address the problem or opportunity.



## Box 10: Considerations when identifying the optimal program

You should identify a broad suite of projects to address program-level problems and opportunities by considering the following:

- Can synergies between service delivery improvements and infrastructure investment be realised, including to reduce demand for infrastructure (refer to **Section 1**)? Service solutions should meet projected demand and be appropriately integrated.
- Do the objectives and expected impacts of the projects align with and fully address the problems and opportunities identified in Stage 1? For example, if the problem relates to road network resilience and safety, then the projects should demonstrate their ability to address both of these problems. If there are gaps, are there clear actions/next steps for responding to residual problems or opportunities and could these gaps be resolved through a program?
- Are there wider community, quality-of-life or relative disadvantage impacts associated with the problem or opportunity? If so, can these impacts also be addressed or benefits realised as part of a program approach? For example, capacity constraints in mental healthcare facilities can have broader impacts on individuals, their families and the broader community.
- Are innovative solutions relevant? For example, technological solutions to manage demand or defer the need for new large-scale infrastructure investment by extending the service life or operating capacity of existing infrastructure?
- Are there other proposed projects that may enhance overall benefits if the planning and delivery were integrated to achieve additional/greater outcomes? This may include proposed projects that are being developed by other agencies or organisations.
- Identify all the stakeholders that could be involved in delivering the projects and include key stakeholders in the analysis process.
- Have scope complexity, delivery risks and uncertainty been assessed to consider the relative risks and uncertainties for each project?
- What are future triggers/uncertainties for each project? Can projects and their staging provide flexibility to allow changes in the nature or timing of investment as the future becomes more certain (that is, a real options approach)?
- Are the proposed projects feasible and are they able to address the problems and/or opportunities?



## Box 11: Engaging with us to help define the base case and options can avoid rework

Appropriately defining the base case and project options is critical for accurately determining project and program benefits and avoiding double counting, which is made more challenging for complex programs. This is particularly true for place-based programs. Through our many assessments and engagements with proponents, we have observed numerous pitfalls when

defining the base case and project options, which if addressed late in program appraisal can result in costly rework.

**We encourage you to speak with us early to get a shared agreement on the appropriate base case and options for project analysis within a program.**

How you approach options analysis will depend on the type of program you are developing:

- For a **linear program**, the option development process may vary. Options may be considered at the program level, then the project options detailed to achieve them. Alternatively, project options may be developed that can be packaged as a program to address the problem or opportunity. In either case, program options should consider factors such as the project mix, scale, sequencing and interfaces.
- For an **inter-related program**, generally, the desired program outcomes are defined and supported by a robust approach to categorise, prioritise and respond to the common problem or opportunity.
- For a **place-based program** (for example, a multi-purpose greenfield development), options would be developed in accordance with the development plan. This ensures that transport, education, housing, health, utilities, social and green/blue infrastructure and service solutions are tailored to meet the scale and timing of demand and that outcomes are achieved in an integrated manner. You should consider how the options interact with one another to best meet the objective of improving place-based outcomes within a defined place.

Alternatively, it may be more appropriate to define a clear and robust prioritisation framework that will be used on an ongoing basis to select projects within the program and how they are staged.

## Analysing options

As outlined in the **Stage 2** volume of the Assessment Framework, we encourage you to systematically map options to:

- the root causes of the problem or the elements that would enable an opportunity to be realised
- a broad range of outcomes or benefits that could result from addressing the problem or opportunity, with reference to our Strategic Fit, Societal Impact and Deliverability criteria (see **Section 3**).

The merit of each option should be tested at both the program and project level. Multi-criteria analysis (MCA) and rapid CBA are appropriate tools for filtering and shortlisting options respectively, and can be used to inform the project mix (further guidance on these tools is provided in the **Stage 2** volume).

**You should clearly document the approach you take to categorising and prioritising the project mix, sequencing and interfaces that respond to the problem or opportunity.** You should identify components that are critical to the success of the program and those that are just complementary.

The outcome of Stage 2 should be a range of program options (with associated projects) to address the program-level problems or opportunities. In Stage 2 you should also confirm the program has been appropriately defined to include the right mix of project options for detailed assessment.

Under **Pathway 2** (see **Section 3** for detail), where funding will be sought at the program-level, you should make a strong case in your Stage 2 submission for the overall merit of the program against all three of our Assessment Criteria. This will provide confidence in proceeding to detailed analysis and business case development (in Stage 3).

## What is the program base case, compared to the project base case?

To effectively analyse program and project options, it is important to carefully define the base case at both the program-level and project-level.

The definition and considerations can vary depending on the type of program and the sequencing of projects within the program.

**Table 1** provides high-level guidance on defining program-level and project-level base cases and options for different types of programs. However, there are likely to be nuances for each program and across sectors, so we encourage you to engage with us so we can agree on a suitable approach for your analysis. See the **Guide to economic appraisal** for our detailed definition and requirements for a 'do minimum' base case.

Guidance on considering the base case to avoid double counting of benefits is provided in **Box 12**. **Box 14** provides a worked example of developing the project base case and options for a place-based program.

**Table 1:** Base case and option definitions for program and project types

	Base case	Options
<b>Program level</b>	<p><b>Program base case</b></p> <p>The program base case should represent a ‘do-minimum’ situation, reflecting the continued operation of the network or service under good management practices. This aligns to the usual base case definition for projects.</p>	<p><b>Program options</b></p> <p>The program options are the overall solutions, that is, how the program will address the problem or opportunity through a suite of projects.</p> <p>There are many ways to develop programs, so program options may be desired overall outcomes, or they may consist of different combinations of various project components.</p>
<b>Project level: Linear or inter-related program</b>	<p><b>Project base case</b></p> <p>The project sequencing will influence the project base case.</p> <p>During detailed option assessment, the project base case should represent what will happen in the absence of the project, so it will include any projects within the program that have been, or will be, completed. We prefer the committed and funded approach<sup>5</sup> for a do-minimum base case.</p> <p>For example, stage 2 of an upgrade program would consider the completion of stage 1 within the project base case. This prevents double counting of benefits from other projects within the program.</p>	<p><b>Project options</b></p> <p>The project options should only capture the benefits of the individual project solution. Where there are common benefits arising from projects (e.g. through network effects), proponents should clearly articulate how each project contributes to overall program benefits and therefore how any benefits can be attributed to the relevant project (e.g. through an outcomes framework).</p> <p>This will ensure the quantitative options assessment process considers the merit and incremental benefits for the project only, and also how the project is contributing to achieve the overall program objectives. Where an individual project does not present overall value for money, such as where benefits are unlocked by a later stage of the program, you should justify overall merit at the program-level and how the project is required for program success (see <a href="#">Section 2.3</a>).</p>

Table 1: *Continued*

	Base case	Options
<b>Project level:</b>	<b>Project base case</b>	<b>Project options</b>
<b>Place-based program</b>	<p>Defining the project base case for place-based programs can be challenging, because project benefits may be highly interdependent on whether individual projects and the program as a whole proceed. This is particularly relevant for greenfield development – for example, when considering a transport connection for a new education precinct, a base case that does not include demand impacts of the education precinct proceeding will not sufficiently allow for benefits of providing the transport connection.</p> <p>Generally, the base case will be specific for each project considered and should align to the usual definition – that is, a ‘do-minimum’ situation, including committed and funded projects.</p> <p>However, where project benefits, and therefore overall merit, are interdependent with other projects within the program, it may be relevant to include these projects in the base case. In this case, we would require demonstrated commitment at the program-level (such as an approved ‘strategic’ business case for the program and corresponding Stage 2 submission to Infrastructure Australia) to consider a base case that includes other projects that have not been committed. You should also review your analysis to ensure you have not double counted benefits.</p> <p>Where these projects are included in the base case, the options analysis will be highly sensitive to forecasts at the program-level, which risks over-estimating project benefits. Therefore, any place-based options analysis should be subject to rigorous sensitivity testing.<sup>5</sup></p>	<p>The project options should capture the contribution of the individual projects to the place-based objectives and achieving the shared outcomes and benefits. Where there are common benefits arising from projects (e.g. in shared spaces), you should clearly articulate how each project contributes to overall program benefits and therefore how any benefits can be attributed to the relevant project. This requires careful consideration and supporting evidence to prevent double counting.</p> <p>This will ensure the quantitative options assessment process is assessing the merit and incremental benefits for the project only, and also how the project contributes to the overall program outcome.</p>

5. If the program, or a project within the program, has not been committed or funded, different base case scenarios with and without the program components should be used to test the robustness of the merits of each project.



## Box 12: Avoiding double counting benefits across projects

A program of projects can generate benefits greater than if the projects were pursued individually, due to network and synergy effects. However, the presence of network effects also comes with challenges in preparing project-level business cases. Some of these challenges can be mitigated by appropriately specifying the project base case and options (as described in [Section 2.2](#)). This box provides a worked example to correctly specify the base case and options for a project-level business case that forms part of a program to avoid double-counting benefits across projects.

### Staged motorway upgrade (linear program)

A proponent is developing a staged motorway upgrade as a program. The program is listed as an early-stage proposal on the *Infrastructure Priority List* (meaning that a nationally significant problem or opportunity has been identified) and a program-level strategic business case has been developed. The proponent wishes to submit three separate Stage 3 project submissions, representing three sections of the motorway, as they are each seeking Australian Government funding. The proponent has applied a prioritisation approach to stage the projects, which assessed the sections of road with the highest level of congestion, as well as timing and cost considerations. Section A of the road was identified as the highest priority, was positively assessed by Infrastructure Australia, and is now operational.

The proponent wishes to submit a Stage 3 project business case on Section B, the second project within the program. This submission included a detailed CBA of the upgrade, estimating:

- travel time savings
- vehicle operating costs
- environmental benefits/costs
- safety benefits
- residual value benefits.

### Pitfalls in specifying the project base case and options can result in double counting benefits across project business cases

The proponent has defined the project base case and options to assess the impact of Section B. For the safety benefits, the proponent has used observed crash rate data from before Section A was operational to inform the base case crash rate across all three sections of the motorway. For Section B, the proponent has assumed that a lower crash rate associated with a motorway-grade road applies to all three sections of the road.

This approach resulted in the safety benefits associated with Section B of the project to be overestimated, as this attributed the benefits associated with the entire program upgrade to Section B alone.

### How to appropriately specify the project base case and options to avoid double counting

The base case should include the current infrastructure network, as well as all known (that is, already committed and funded) future expenditures on the relevant infrastructure network. Further, only benefits attributable to the exact investment being proposed should be included in the project case. In the example above, it was incorrect to apply the lower crash rates to all three sections if the proponent is only assessing Section B at this time.

In this example, the appropriate base case is to include Section A. The project case should only include Section B, not Section C.

We encourage proponents to conceptualise project-level CBAs that form part of a wider program business case, the same as they would a non-program business case. That is, the same principles, guidelines and best-practices apply.

In assessing Stage 3 submissions, we will always check that the proponent is not double-counting benefits or missing benefits as a result of the base case and project case specifications.



### Box 13: Base case and option considerations for place-based programs

There are a number of additional considerations when developing project base cases and options for place-based programs. These should be considered on a case-by-case basis:

- Whether asset classes should be treated separately.
- How the precinct should be separated into projects.
- The appropriate base case for generating reasonable demand estimates in the context of a greenfield development.
- Which of the proposed projects and other projects are assumed to proceed under the base case may need to be better defined for transport projects compared to utilities projects.<sup>6</sup>
- How to consider interdependencies between project options.
- How to consider interdependencies with other projects. How to treat interdependent projects that are not funded.

We encourage you to engage with us when defining your base cases and project cases for place-based programs.

6. When considering transport options for a new greenfield development, demand will be driven in part by whether there are employment, health, social services and education services within or nearby the development or whether residents are more likely to commute elsewhere to access these services. In contrast to utilities where demand can be mapped to growth forecasts at Stage 2, assessing transport options may require more detail on other projects within the program to select the best options to proceed to further analysis (that is, the shortlist you will examine during Stage 3 business case development).



## Box 14: Developing the base case and options for a place-based program

### Defining the program base case and program options

Suppose a program base case and options have been developed for a new precinct. The program base case is:

- the existing land use planning controls for the precinct (for example, zoning, building envelope, floor space ratios)
- the existing and committed infrastructure servicing the precinct.

Each program option describes:

- a. changes to the land use planning controls (for example, higher density development allowed)
- b. the infrastructure required to support these changes.

A preferred program option has been determined through a robust process. It is presumed that this preferred program case has strategic and economic merit.

### Defining the project base case and project options for individual infrastructure options

***Note, to apply this approach there must be demonstrated commitment to the program and appraisal outcomes should be subject to rigorous sensitivity testing.***

For simplicity, assume that the program has three infrastructure components: utilities, school and transport upgrades. For the purposes of any individual infrastructure project (for example, utilities, schools or transport), the key question is whether the program achieves better outcomes with a particular option for the individual project. If it does, then that individual project would be a desirable part of the overall program.

This means that at an individual project level:

- The project base case would assume that the land use controls are changed according to the overall preferred program option.
- The project base case would include the other components of the program, but not the project in question. For example, the transport base case would include utilities and schools upgrades, but not transport upgrades.
- The project options would also include options for the individual project, such as alternative road or public transport options.

In this instance, the analysis may show a new bus route has the highest net benefit relative to the base case.

This approach for options development would be applied separately for schools, utilities and transport. There are complex interactions as each type of infrastructure will be optimised separately, which should be considered when interpreting analysis results.

This type of analysis would indicate that:

1. the program is desirable from the perspective of society, as it has strategic and economic merit
2. the individual projects that maximise the merit of the overall program have been identified, which in the example is a new bus route.

If done in this way, **the benefits of the multiple project evaluations could not be added together.** This is because where projects are complementary, as would be expected, this would lead to benefits larger than the program as a whole. This approach would only be valid for individual projects where the overall program assessment indicated positive strategic and economic merit.

## Analysing program benefits

Program investment mapping (or cost and benefit mapping) is a useful way to document the causal links between identified program problems and opportunities, demand drivers, potential options, expected outcomes from implementing options and the benefits and costs that arise from each option. While we do not prefer a particular investment mapping approach, we do support the general concept as it helps to avoid double counting and allows practitioners to visually present how each option could contribute to the program outcomes and benefits. A mapping approach may also be useful to visualise how project options can work together to achieve network benefits. Investment mapping can also support the identification and packaging of a wider range of options to respond to the identified problems and opportunities.

## Project interactions

When considering multiple projects in the context of a program, they may interact as substitutes or complements, or they may be independent (see **Table 2**).

Understanding how projects fit together within the program can improve decision-making:

- Where projects are either substitutes or complements, it is helpful to understand the net benefits undertaken by themselves and together to inform the optimal program option.
  - You can determine this by considering multiple projects within a single business case or through sensitivity analysis testing whether project benefits change if other projects occur or do not occur.
- Where projects are dependent, they should be combined into a single business case.
- Where projects are independent, they should not be combined into a single business case.

**Table 2: Project relationships**

Project relationship	Definition
<b>Substitutes</b>	<p>The net benefits of undertaking both Project A and Project B are lower than the net benefit of undertaking Project A by itself, plus the net benefit of undertaking Project B by itself.</p> <p>For example, Project A has a net benefit of \$100m and Project B \$200m if undertaken alone. The net benefit if both are undertaken is \$250m.</p>
<b>Complements</b>	<p>The net benefits of undertaking both Project A and Project B are higher than the net benefit of undertaking Project A by itself, plus the net benefit of undertaking Project B by itself.</p> <p>For example, Project A has a net benefit of \$100m and Project B \$200m if undertaken alone. The net benefit if both are undertaken is \$400m.</p>
<b>Dependent</b>	<p>The net benefits of undertaking Project A are wholly or significantly dependent on Project B proceeding, often referred to as 'enabling' infrastructure. For example, power upgrades to support a new rail fleet or utilities to support a new hospital.</p>
<b>Independent</b>	<p>The net benefits of undertaking both Project A and Project B are equal to the net benefit of undertaking Project A by itself, plus the net benefit of undertaking Project B by itself.</p> <p>For example, Project A has a net benefit of \$100m and Project B \$200m if undertaken alone. The net benefit if both are undertaken is \$300m.</p>

## 2.3 Stage 3: Developing a business case

Detailed economic assessment should be completed to assess the merit of programs and the proposed project options. The requirements for business cases vary by jurisdiction, and will depend on the funding arrangements, as per our two assessment pathways (described in further detail in [Section 3](#)):

- **Under Pathway 1** – Stage 3 should be completed at the project level by developing business cases for project funding. This should be in alignment with our requirements for Stage 3 submissions (see the [Stage 3](#) volume of the Assessment Framework), noting the additional guiding outcomes of our assessment (see [Section 3.3](#)) and submission requirements (see [Section 3.4](#)) for projects that are part of a program.
- **Under Pathway 2** – Stage 3 should be completed at the program level by developing a business case for program funding. This should consider the specific program requirements outlined throughout this document, including the additional guiding outcomes of our assessment (see [Section 3.3](#)) and submission requirements (see [Section 3.4](#)) for programs.

A program business case will include the program outcomes, a coordinated scope of work, complete with individual project costs, benefits and risk information, which identifies the optimal combination of projects to deliver the best value at the lowest cost, for the whole program. This is the same as the approach we recommend for projects. We will assess your business case against the three criteria of Strategic Fit, Societal Impact and Deliverability for the package of interventions that make up the program, including any network costs and benefits.

The base case and project option definitions and considerations can vary depending on the type of program and the sequencing of projects within the program. [Table 1](#) in [Section 2.2](#) provides high-level guidance on defining program-level and project-level base case and options for different types of programs. However, there are likely to be nuances for each program and across sectors, so we encourage you to engage with us early so we can agree on the appropriate base case and project options to use in your program analysis.

Developing a business case for the program requires rigorous economic assessment and outcomes realisation management to estimate and measure at the project level and program level. The business case should clearly explain the inter-relationships between projects (see [Table 2](#) in [Section 2.2](#)) and outline how each project contributes to achieving the common program objectives.

You should appropriately define the scope of the program, including the definition, design and schedule. We acknowledge that in development of a program, it will be difficult to include the same level of definition, design and cost estimate for each stage or project within a program business case. We recommend that you identify in your program business case an estimated cost for the entire program and, where required, for individual projects within the program, with the level of definition in accordance with the [Stage 3](#) volume. See [Box 15](#) for more detail.

The outcome of Stage 3 is to agree the final program solution (if not confirmed in Stage 2), project composition, high-level delivery sequence and value-for-money analysis. Where relevant, this should include the prioritisation framework that will be used on an ongoing basis to select projects.



## Box 15: Level of project development, design and cost estimate for programs

It is important that you appropriately define the scope of your program to inform the structure of the program, and the projects within it. This should include demand modelling and forecasting and technical investigations (including design), as well as program scenarios and cost estimates. The following table outlines the level of scope development we would expect to see from programs at stages 2 to 4 of the Assessment Framework.

As Stage 1 is focussed on problem and opportunity identification and quantification, solution costs are not required for Stage 1.

	Stage 2		Stage 3	Stage 4
Recommended inputs to design and cost estimate	Options identification (longlist)	Quantitative options analysis (filtered list)	Program business case	Post completion review
Level of project design	0–5%, or usually concepts / sketches / descriptions	5–20%, or usually strategic / thick pen	20–40%, or usually a Preliminary / Schematic design	100%
Program focus	Demand and potential suite of options	Modelling of program scenarios to inform shortlisting options	Program option optimisation (schedule, cost, benefits etc.)	Benefits realisation
Cost estimate bases	Order of magnitude/recent comparable projects	Comparative/ benchmark rates	Benchmark rates for entire program  Primarily first principles for early stages	Actual
Quantified Risk & Contingency	40–70%		20–50%	0–10%
Probabilistic Risk	n/a	P50/Expected Value for financial and economic	P50/Expected Value for program  P50/P90/ Expected Value for early stages	n/a
Estimate confidence level	Low		Moderate	Certain
Usage	For program scenario development		For investment and budget allocation	For post completion review

## Project viability in the context of a program

Establishing the investment case at the program level can allow for projects that do not perform as well through cost–benefit analysis to still proceed in order to realise the overall benefits of the program. This is important where a project is a key enabler for the program but its benefits rely on later stages or other parts of the program being completed. However, programs should avoid packaging poor-performing projects unless the project is required for overall program success.

**Our criteria for including a project that is not economically viable on its own merit is where both:**

- a. the project is a key enabler for the program due to demonstrated, quantified interdependencies
- b. realising additional benefits of other projects in the program or the program overall outweigh the negative value of the individual project (that is, the program as a whole meets our Assessment Criteria).

Within an inter-related program there may be diminishing returns to benefits for each new project as the program nears completion, particularly if the projects with the greatest individual benefit are completed first. For linear and place-based programs, the opposite will often be true, with later stages having the largest benefit because the benefits are only realised upon completion of all components.

## Quantifying benefits for place-based programs

A 'place' is defined by its boundary, which can confine or guide the infrastructure and other interventions required to achieve a common outcome within that boundary. However, there may be impacts outside the defined place, so all costs and benefits should be included in the analysis, regardless of their location.

The program business case should define project options and the base case in terms of measurable place characteristics – that is, your objective(s) for the place and the interventions, outcomes and benefits to be achieved.

The program and the individual projects within it can then be assessed against the stated place characteristics. Your assessment should analyse the full range of costs and benefits, which may include positive and negative externalities. The assessment will determine the appropriate program characteristics and project solution options, to achieve the objectives and outcomes.

You can use accepted economic parameters and values to measure place objectives, but the economic framework should attempt to differentiate the impacts of each project.

We note that place-based analysis of programs or projects that generate social benefits through coordinated development in a defined area may need to be qualitative given current data constraints. However, this should only apply where compatible studies or revealed preferences from past projects are not available. We encourage you to apply revealed preference, stated preference and avoided cost techniques to quantify non-market costs and benefits specific to the program. Approaches to quantifying non-market values are described in our [Guide to economic appraisal](#).



## Box 16: Case study of a place-based program – NSW Government, Greater Parramatta and the Olympic Peninsula

### Background

Greater Parramatta and the Olympic Peninsula (GPOP) is the primary economic corridor for the centre of Greater Sydney. It is critical to the 2018 *Greater Sydney Region Plan*'s vision to rebalance access to jobs, housing and opportunities for people in Central and Western Sydney.<sup>7</sup> The area is set to accommodate growth of an additional 357,000 people and 105,000 jobs over the next 40 years.

This case study demonstrates:

- applying an 'outcomes framework' to assess the contribution of options to a single set of objectives linked to a place vision
- an iterative options assessment process to improve overall program benefits and plan for coordinated delivery.

### Problems and opportunities

The Greater Sydney Commission (GSC) identified a lack of integration between land use and infrastructure planning to consider the cross-sectoral needs as an area experiences significant growth. The GSC piloted a new collaborative land use and infrastructure planning model to focus on overall place outcomes for GPOP. This took the form of the Place Infrastructure Compact (PIC), with more than 20 NSW Government partners.

### Linking outcomes and benefits: the place-based outcomes framework

The PIC identified infrastructure needs and costs, defined growth scenarios and recommended sequencing for the delivery of infrastructure to support growth. The analysis also considered climate risks and opportunities to leverage committed infrastructure investment (such as Sydney Metro West and Parramatta Light Rail).

Infrastructure identified was assessed against an outcomes framework, which linked the strategic planning objectives of the *Greater Sydney Region Plan* to place-based performance indicators, system and service-specific indicators (and associated quantified metrics) related to NSW Budget Outcomes, and then to economic benefits for evaluation.



7. Greater Sydney Commission 2018, *Greater Sydney Region Plan: A Metropolis of Three Cities*, NSW Government, Sydney, available via: [www.greater.sydney/metropolis-of-three-cities](http://www.greater.sydney/metropolis-of-three-cities)

## Box 16: Case study of a place-based program – NSW Government, Greater Parramatta and the Olympic Peninsula *continued*

### Place-based Outcomes Framework for GPOP

<b>Vision</b> GPOP is the true centre: the connected, unifying, competitive urban heart of Greater Sydney			
Greater Sydney Region Plan outcomes	<b>Liveability</b> A city for people; Housing the city; A city of great places	<b>Productivity</b> A well-connected city; Jobs and skills for the city	<b>Sustainability</b> A city in its landscape; An efficient city; A resilient city
<b>Place-based performance indicators (set for program)</b> (11 total)	Example: Increased proportion of homes within 10 minutes' walk to quality green, open and public space	Example: Increased proportion of homes within 30 minutes of a centre by public or active transport	Example: Increased proportion of recreational waterway open space
<b>System and service indicators (set by agencies)</b> (20 total)	Linked indicator: Increased proportion of population participating in sport and recreation	Linked indicator: Improved peak travel time on key road routes	Linked indicator: Improved health of local waterways to enable increased swimming locations
<b>Economic benefits evaluated</b> (29 total)	Linked benefit: Quality-of-life improvements from reduced risk of chronic disease	Linked benefit: Travel time savings	Linked benefit: Willingness to pay for Parramatta River swimability

### Refining the program: project packaging and scheduling

The outcomes framework guided development of a place-based Strategic Business Case by 10 NSW Government proponent agencies, coordinated by the Department of Planning, Industry and Environment. It includes infrastructure projects across nine sectors: arts and culture, justice, housing, health, sport, green, education, water and transport infrastructure.

The business case refined and optimised the suite of infrastructure projects required to meet the place outcomes in the immediate term (0–5 years). This was achieved using a prioritisation framework to assess project contributions to place, risk, deliverability, efficiency (such as co-location opportunities), critical interdependencies and affordability. Projects were assessed iteratively both individually and in 'packages' to improve value for money through packaging and scheduling. Economic evaluation included

rapid CBA (at project and package level), hedonic modelling, real options analysis and economic contribution analysis.

### Outcomes from the approach

The outcome of the GPOP PIC and Strategic Business Case is that prioritised green, social and economic infrastructure projects were identified and will be taken to individual final business cases by relevant agencies. The benefits of this approach are an iterative evidence-based approach to identify and assess the full range of infrastructure needs for the place, focusing on the mix of projects to improve overall program benefits. Challenges included establishing robust governance to coordinate the large number of agencies and options and developing a new framework to link place and service outcomes to economic benefits. Realising the desired benefits of the program will require cross-agency coordinated planning and delivery of the proposed projects.

## Sequencing projects

You should provide a clear rationale for sequencing projects within a program, focusing on maximising benefits. The sequencing of projects may also be informed by:

- funding constraints (for example, prioritising lower cost, non-infrastructure investments first)
- the proportion of the problem or opportunity being addressed
- the significance of the problems (for example, addressing an existing quality-of-life issue for a disadvantaged area)
- deliverability and continuity of service (for example, delivering a particular section of a highway upgrade first if there are engineering, construction or traffic impact minimisation benefits in doing so)
- whether enabling infrastructure needs to be delivered before other projects, particularly for place-based programs
- real options considerations to provide a degree of flexibility to allow changes in the nature or timing of investment as the future becomes more certain (for example, delivering larger interventions later in the program when forecasts are more certain). Additional guidance on real options analysis is provided in the [Guide to risk, uncertainty and sensitivity analysis](#).

Your analysis should determine the optimal mix and staging of projects within the program and define this in the business case. Where sequencing of projects changes following completion of the program business case (such as during procurement or after delivery of individual projects) the impact on benefits and deliverability should be re-assessed to confirm the mix and staging is still optimal.

## Developing project business cases within a program

Project business cases should be developed in accordance with the state and territory guidance in which they are based, and draw on guidance in the Assessment Framework as needed, including the requirements in this document, the [Stage 3](#) volume and the [Guide to economic appraisal](#).

The results and detailed inputs of project cost–benefit analysis (CBA), once completed, should be used as inputs to the program-level CBA and to improve confidence in project-level CBAs in

the future. Any changes to the program scope or sequencing that result from project development, and the resulting impact on the program or other project CBAs, should be clearly articulated in subsequent project business cases.

Likewise, the ongoing learnings and outputs of project post completion reviews of completed projects should inform the ongoing program and any future projects, where there is sufficient time to do so. This process should be completed across all program components.

## 2.4 Stage 4: Post completion review

The approach to post completion review (PCR) for a program, or project that forms part of a program, is consistent with guidance in the [Stage 4](#) volume of the Assessment Framework.

To ensure an adaptive management and decision-making approach for programs, we recommend you use the PCR for each project in the program to update the program business case. Under Pathway 1, this is appropriate each time a new project that forms part of the program is submitted to us for assessment. That is, the outputs of the first project PCR can then be fed back into the program business case and used to improve the approach to future project business cases. We consider this to be practical where there is sufficient time to undertake a PCR of a component project(s) within the program implementation period that can usefully inform another component project of the program.

Where project business cases are not submitted to us (that is, Pathway 2), we still expect PCRs to be undertaken as part of good practice program appraisal processes. The advantage of this approach is that it:

- provides decision-makers with a dynamic view of the social, economic and environmental impacts of the overall program, utilising up-to-date data as projects are commissioned and subject to PCR
- demonstrates network effects of a program as distinct from project benefits in their component parts.

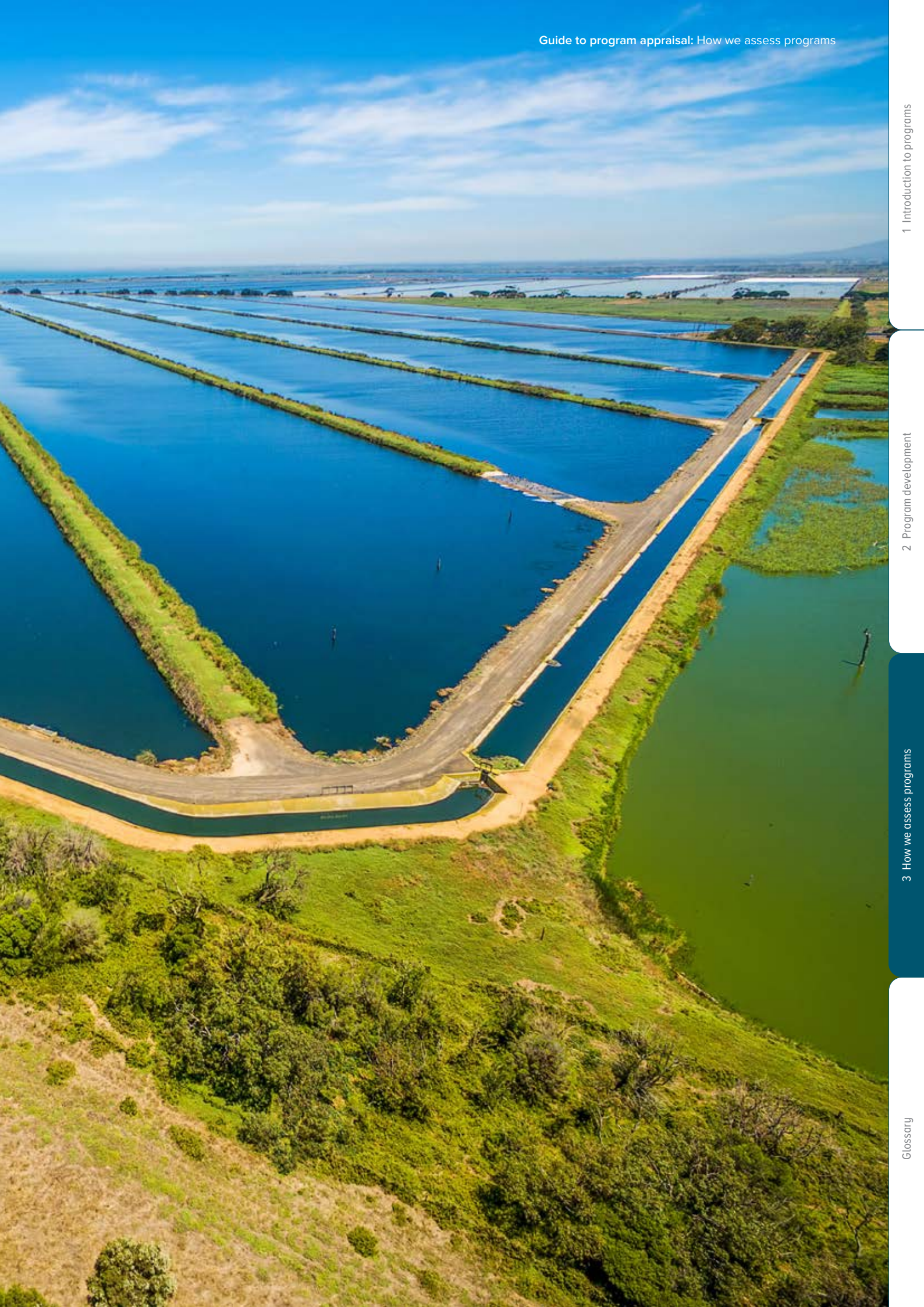
A PCR for the program should be undertaken and submitted to us once the final project or intervention is delivered or once the program is considered complete.

# 3

## How we assess programs

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### 3.1 Submission of programs to Infrastructure Australia

There are two pathways for you to submit a program to us for assessment:

- **Pathway 1:** You have established the problem or opportunity as a program during Stage 1 (early-stage proposal) and you have developed a program of projects (Stage 2), *but funding is not sought or committed for the program as a whole*. You will submit projects within the program to us for Stage 2 and Stage 3 evaluation, with the program analysis included as context to the proposals.
- **Pathway 2:** You have established the problem or opportunity as a program during Stage 1 (early-stage proposal). *The program itself is seeking funding* and therefore you will submit the program to us for Stage 2 and Stage 3 evaluation.

We encourage you to engage early with us to discuss your approach and the associated requirements.

You should also consider any legislative requirements or restrictions of Australian Government funding of infrastructure and non-infrastructure solutions that may impact what can be funded. Please consult with the relevant department for necessary information.

#### Pathway 1

**Pathway 1** applies where investment and funding decisions are made on a project-by-project basis. Under Pathway 1, the problem or opportunity is established at the program level and a program solution developed, but there is no funding sought or committed at the program level.

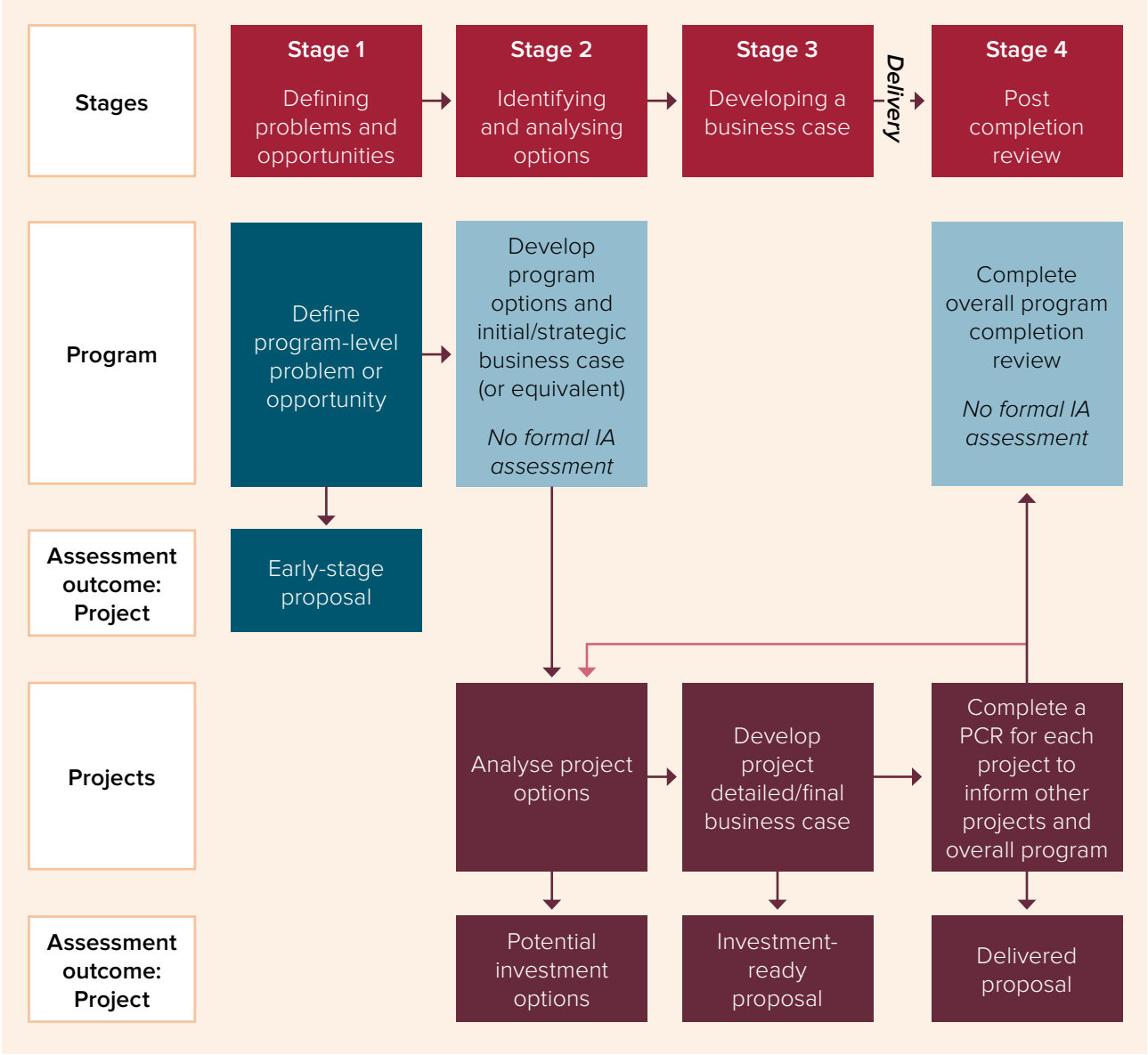
Projects seeking more than \$250 million of Australian Government funding require Stage 2 and Stage 3 assessment. The program business case (expected to be at least an initial/strategic business case in state and territory terminology) is required as part of your submission to justify the program approach and detail program-level options assessment.

Stage 4 submissions are required, following completion of each project for which there has been a Stage 3 assessment.

Under this pathway, proposals that are positively assessed at Stage 1 would be listed on the Priority List as a program (early-stage proposal). Project proposals that are positively assessed at Stage 2 (potential investment options) and Stage 3 (investment-ready proposal) would be listed individually. The program will remain on the Priority List until all projects in the program are funded for delivery (whether they have been assessed by us or not).

This assessment pathway is shown in **Figure 7**.

Figure 7: Program assessment Pathway 1





## Box 17: Worked example of Pathway 1

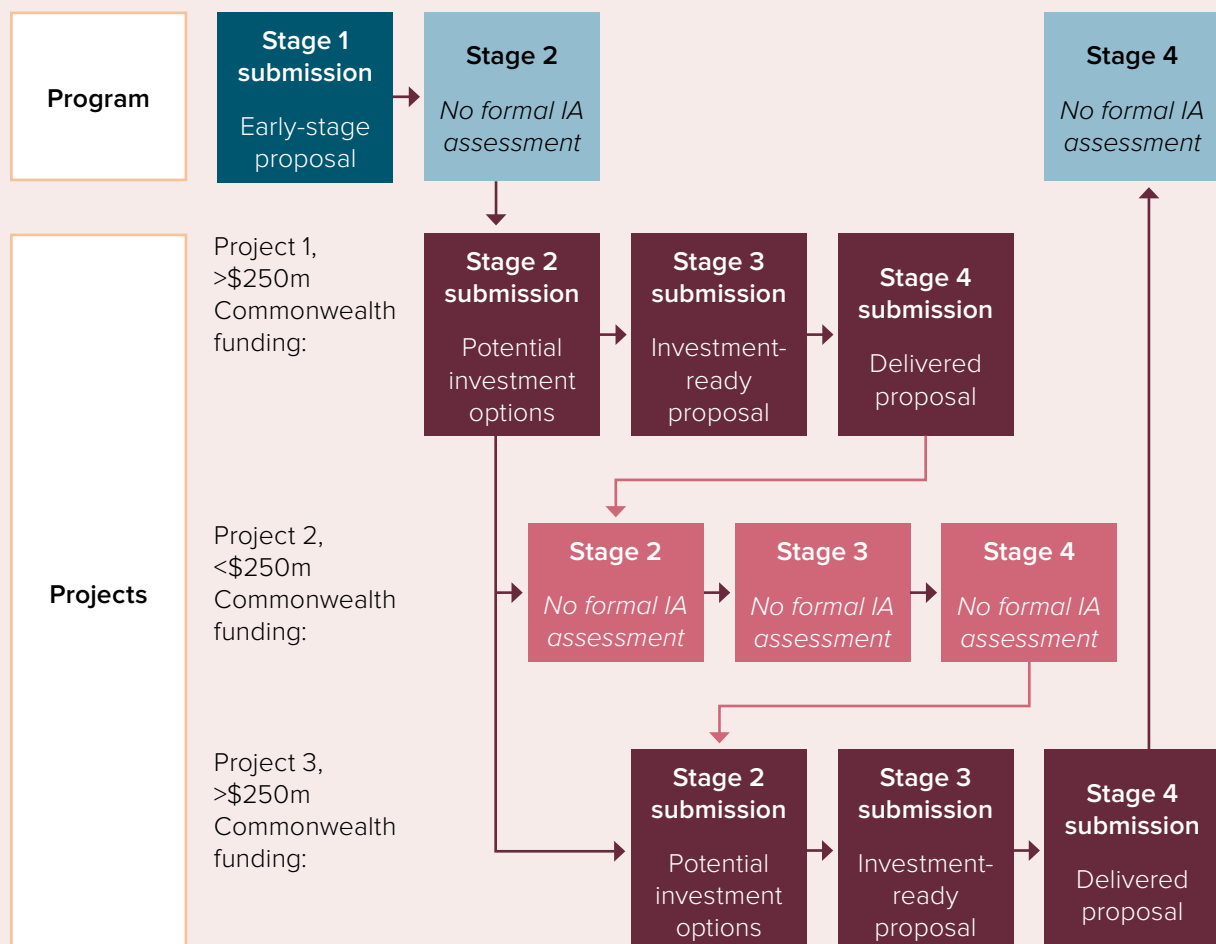
**Figure 8** shows a program that was submitted to us at Stage 1 and then listed on the Priority List having been assessed as nationally significant. A program solution is developed by the proponent, but there is no program-specific Stage 2 or 3 submission as funding is not sought at the program level.

While there is no program-specific submission at Stage 2 under this pathway, we require justification of the program approach and understanding that there has been suitable options assessment for the program. This would usually be evidenced by providing the program-level initial or strategic business case as part of any project Stage 2 submissions.

In the case of a transport program, program-level options analysis could be an assessment of corridors and modes. Project options assessment would then detail the specific requirements for each project, such as scale and number of lanes of a corridor segment, based on the mode for the corridor justified by the program.

In this example, three projects are identified through the program-level options analysis. As Project 1 and Project 3 are seeking more than \$250 million of Australian Government funding, they require Stage 2 and Stage 3 assessment by Infrastructure Australia. By contrast, as Project 2 is not seeking more than \$250 million of Australian Government funding, the project is not assessed by Infrastructure Australia. While there is no submission for Project 2, a business case should still be developed as part of the overall program governance arrangements to ensure good practice planning and implementation.

**Figure 8: Worked example of Pathway 1**



## Pathway 2

**Pathway 2** applies where investment and funding decisions are made at the program-level. Under Pathway 2, the problem or opportunity is identified at the program level and a detailed program business case is developed. The overall program requires Stage 2 and Stage 3 assessment, and a Stage 4 submission is required following program completion.

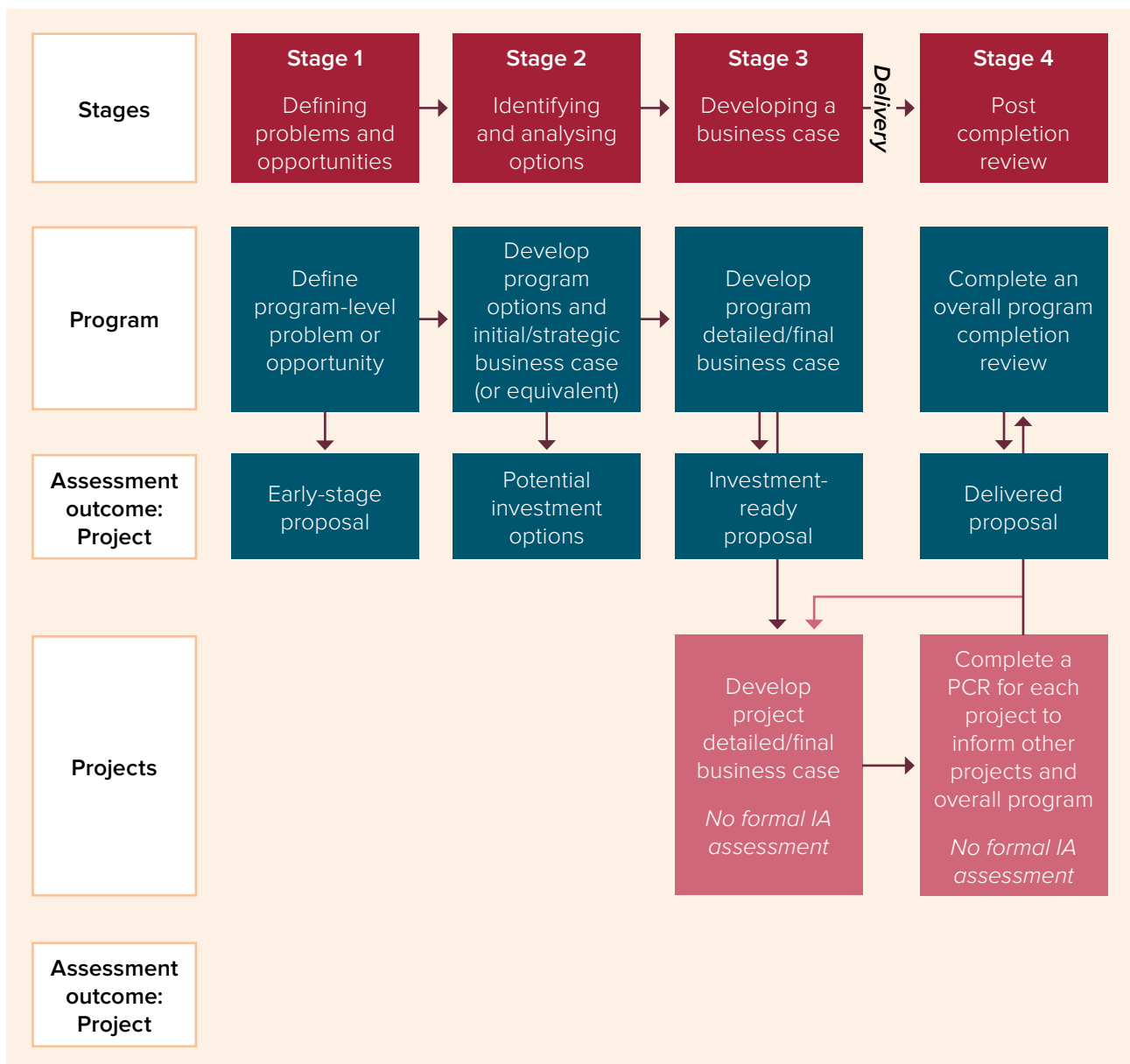
Under this pathway, programs that are positively assessed at Stage 1 would be listed on the Priority List (early-stage proposal). Proposals for the program as a whole will progress through the Priority List as they are positively assessed at Stage 2 (potential

investment options) and Stage 3 (investment-ready proposal). We would not review individual projects in detail and they would not be listed on the Priority List.

This assessment pathway is shown in **Figure 9**.

We recommend this pathway is **only applied to smaller or less complex programs** where all or most of the component projects are seeking less than \$250 million of Commonwealth funding. **A program being assessed through Pathway 2 must clearly demonstrate why it is pursuing funding at the program level.**

**Figure 9: Program assessment Pathway 2**





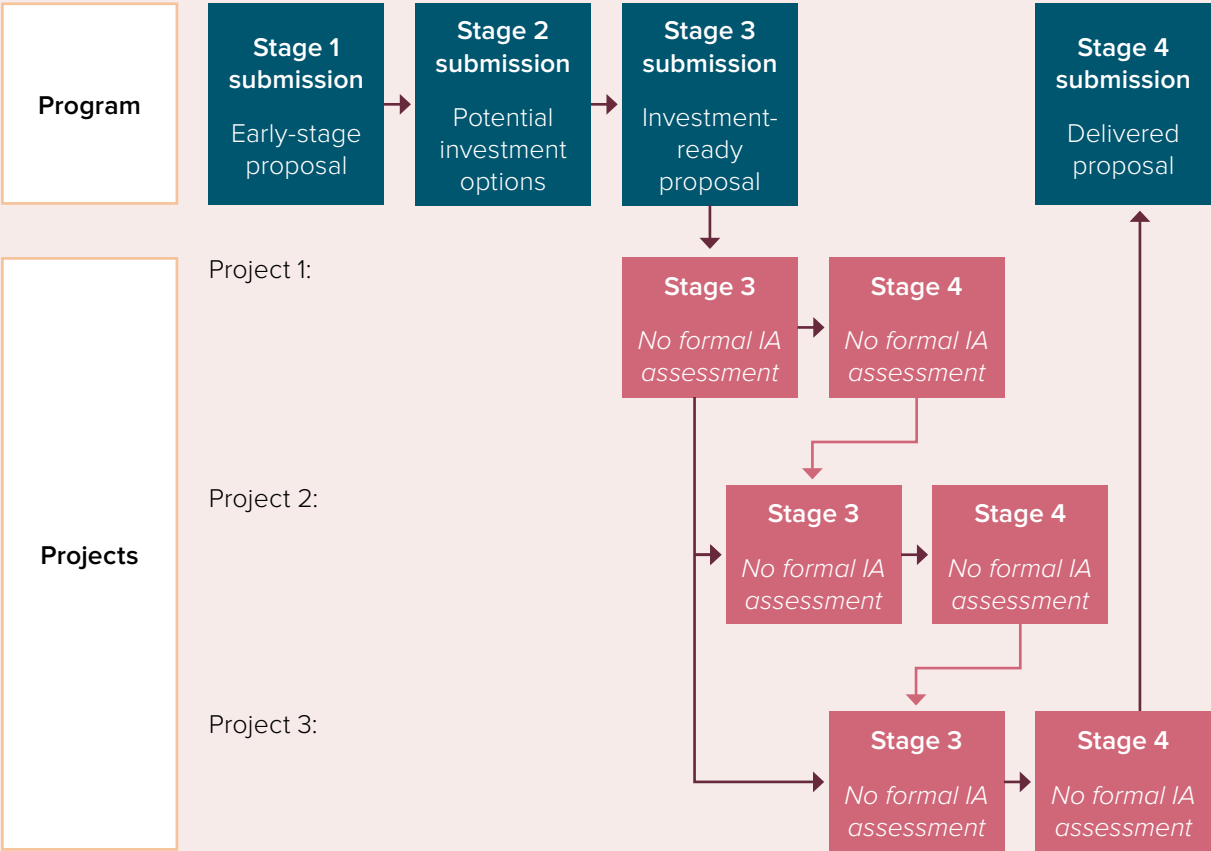
Box 18: Worked example of Pathway 2

**Figure 10** shows a program that was submitted to us at Stage 1 and then listed on the Priority List having been assessed as nationally significant. The proponent develops a program solution that is seeking funding. Stage 2 and Stage 3 assessments are required for the program as there is a funding commitment at the program level of more than \$250 million from the Australian Government.

Projects are not assessed by Infrastructure Australia as the funding commitment is made at the program level. The program is listed on the Priority List, but not the projects.

In the case of a transport program, program-level options analysis could be an assessment of a series of bridges along a key freight route to enable the use of high productivity vehicles along the length of the corridor. The program business case would include a level of design and analysis sufficient to make an investment decision for the package of bridge upgrades and widening.

Figure 10: Worked example of Pathway 2



## 3.2 Relationship between programs and projects

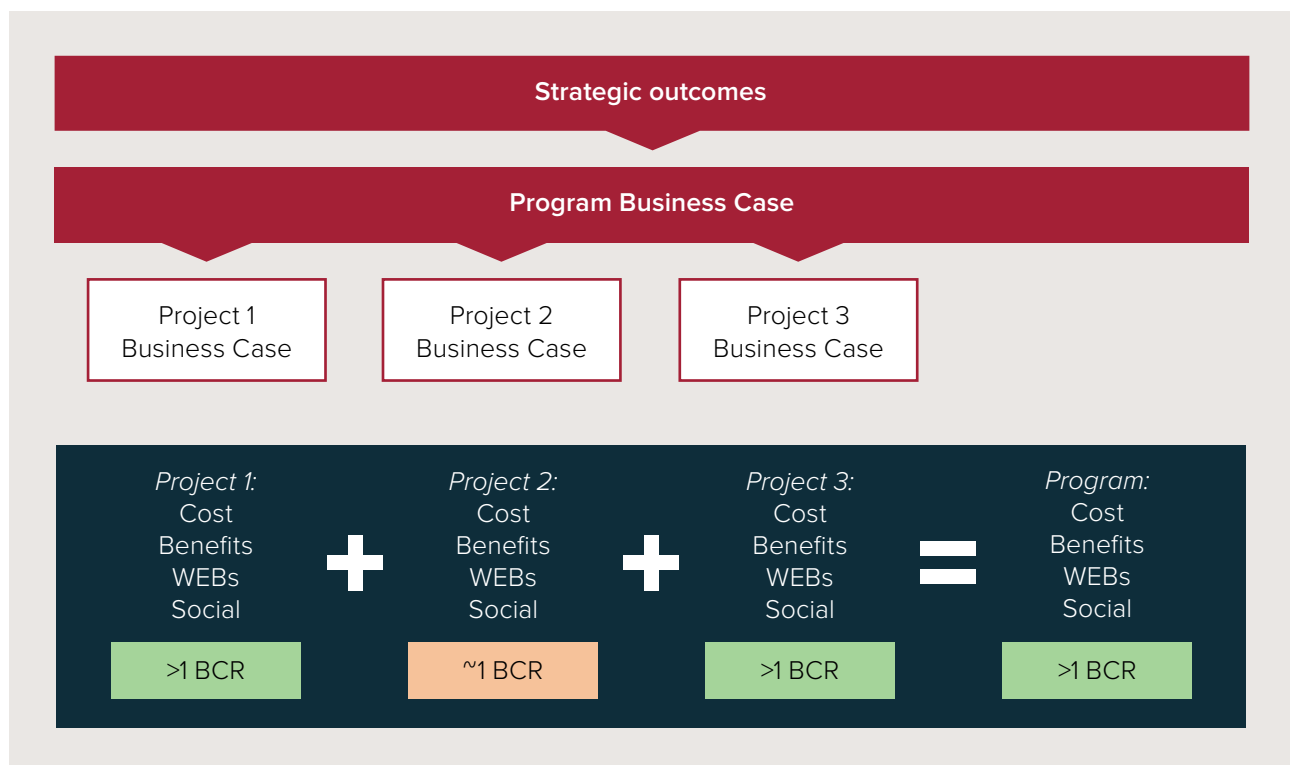
Submissions should demonstrate the relationship of projects to the program and inter-relationships between projects within the program. This should include, where relevant:

- attribution of costs
- attribution of benefits – to avoid double-counting, particularly as the program progresses
- interdependencies, interfaces and network/system benefits
- risks
- delivery timing, capacity and resources.

**Figure 11** illustrates a simplified example of an economic framework for a program business case and how program- and project-level CBA is linked.

As described in [Section 2.2](#), options analysis is usually an iterative approach to identifying, defining, analysing and optimising program and project options. On a stand-alone basis, a project business case may reflect that a particular option is preferred, but when considered in the context of the program, different project options might provide better program outcomes. The iteration process and the investigation of interdependencies between different projects and their respective options requires a more sophisticated evaluation process to satisfy the overarching program objectives. This iterative process should be clearly explained and evidenced in your submissions to us.

**Figure 11:** Simple example of an economic framework for a program business case



### Program-level CBA requirements

Where funding will be sought at the project-level (that is, Pathway 1), rapid CBA may be sufficient at Stage 2 at the program-level. You would then proceed to project-level options analysis, which would include rapid CBA at Stage 2 and detailed CBA at Stage 3 for each project.

Where funding is sought at the program level (that is, Pathway 2), then a detailed CBA is required at Stage 3 as part of a detailed program business case.

### Allocating program benefits and costs

Where there are common benefits arising from projects (for example, through a place-based approach), proponents should clearly articulate (for example, through an outcomes framework) how each project contributes to overall program benefits.

You can then assess the program and the individual project options against the outcomes framework. This assessment would uncover both positive and negative externalities of projects, allowing you to attribute costs and benefits to each project.

You can use existing economic parameters and values to measure place objectives, but the economic framework should ensure that any quantitative modelling differentiates between the impacts of each option. This will ensure the CBA is assessing the merit and incremental benefits for the project only, but also demonstrates how the project contributes to solving the problem or opportunity and achieving the stated program outcomes.

### 3.3 Assessment Criteria

When assessing submissions for program proposals, we consider a number of program-specific criteria. These are described in the sections below for each submission stage and should be considered alongside the detailed project-level criteria in the Assessment Framework in each stage volume.

#### Stage 1 Assessment Criteria for programs

**Table 3:** Additional Stage 1 guiding outcomes for programs

<b>Strategic Fit</b>	<ul style="list-style-type: none"> <li>• It is clearly demonstrated why a program approach is appropriate to address a common nationally significant problem or opportunity.</li> <li>• It is clearly demonstrated how the problem or opportunity is interlinked and that solving the problem or realising the opportunity cannot be achieved by individual proposals.</li> <li>• There is a quantitative, robust and holistic approach to program appraisal.</li> </ul>
<b>Societal Impact</b>	<ul style="list-style-type: none"> <li>• Addressing the problems or opportunities as a program would produce greater benefits than addressing them separately.</li> <li>• Place-based outcomes are clearly articulated through a place or precinct approach.</li> </ul>
<b>Deliverability</b>	<ul style="list-style-type: none"> <li>• There is an overarching governance process for program development.</li> <li>• There is a material opportunity to collaborate and share lessons across jurisdictions to address a common problem.</li> </ul>

## Stage 2 Assessment Criteria for programs

**Table 4:** Additional Stage 2 guiding outcomes for programs

<b>Strategic Fit</b>	<ul style="list-style-type: none"> <li>• It is clearly demonstrated how the project options are interlinked to the program and contribute to achieving the program outcomes.</li> <li>• There is a quantitative, robust and holistic approach to categorise and prioritise projects within the program.</li> <li>• There is a target design or service standard requiring multiple complex input projects.</li> </ul>
<b>Societal Impact</b>	<ul style="list-style-type: none"> <li>• Delivering the options as a program would produce greater benefits than delivering them separately, e.g. the projects could be procured in a package(s) and delivered together so there are material capital cost savings from combined contracting.</li> <li>• Where project options do not present value for money, there is evidence that the option is a key enabler for the program.</li> <li>• Place-based outcomes are clearly articulated through a place or precinct approach.</li> </ul>
<b>Deliverability</b>	<ul style="list-style-type: none"> <li>• There is a clear understanding of the risks of delivery, such as: complexity, relying on new or untested technologies, access to resources, complex terrain or geography, and interdependency with other projects (whether in the same program or not).</li> <li>• There is an overarching governance process for preparation of a program business case, and subsequent detailed project business cases.</li> <li>• The projects can be delivered more quickly as part of a coordinated program, e.g. through efficient procurement, skills retention and fewer disruption effects.</li> <li>• Program outcomes are identified to enable the assessment of how individual project benefits and outcomes contribute to the program.</li> <li>• A plan is in place to learn lessons from one project and apply them to the next project through benchmarking and/or continuous improvement, including to reduce costs for future work packages.</li> <li>• Delivery capacity and efficiencies have been considered, e.g. upskilling the market or capacity planning.</li> <li>• There is a material opportunity to collaborate and share lessons across jurisdictions to address a common problem.</li> </ul>

## Stage 3 Assessment Criteria for programs

**Table 5:** Additional Stage 3 guiding outcomes for programs

<b>Strategic Fit</b>	<ul style="list-style-type: none"> <li>• There is a clear alignment of the project to solve a broader common problem or address a strategic outcome (e.g. upgrading multiple bridges to allow high productivity vehicles) – individual projects are unlikely to proceed unless they are part of the program.</li> <li>• It is clearly demonstrated how projects are interlinked to the program and contribute to achieving the program outcomes.</li> <li>• The extent to which the program outcomes are compromised if one or more of the projects does not proceed is understood.</li> <li>• There is a quantitative, robust and holistic approach to categorise and prioritise projects.</li> <li>• There is a target design or service standard requiring multiple complex input projects.</li> </ul>
<b>Societal Impact</b>	<ul style="list-style-type: none"> <li>• Delivering the projects as a program would produce greater benefits than delivering them separately, e.g. the projects could be procured in a package(s) and delivered together so there are material capital cost savings from combined contracting.</li> <li>• There is no double counting of benefits/costs or missing benefits/costs across projects within the program.</li> <li>• Where a project within a program does not present value for money, there is evidence that both:             <ul style="list-style-type: none"> <li>– the project is a key enabler for the program due to demonstrated, quantified interdependencies</li> <li>– realising additional benefits for the program outweigh the negative value of the individual project.</li> </ul> </li> <li>• Place-based outcomes are clearly articulated through a place or precinct approach.</li> </ul>
<b>Deliverability</b>	<ul style="list-style-type: none"> <li>• There is a clear understanding of the risks of delivery, such as: complexity, relying on new or untested technologies, access to resources, complex terrain or geography, and interdependency with other projects (whether in the same program or not).</li> <li>• There are common risks that can be managed together.</li> <li>• The projects can be delivered more quickly as part of a coordinated program, e.g. through efficient procurement, skills retention and fewer disruption effects.</li> <li>• There is a robust benefits/outcomes framework that identifies and measures how the individual project benefits and outcomes contribute to the program.</li> <li>• A plan is in place to learn lessons from one project and apply them to the next project through benchmarking and/or continuous improvement, including to reduce costs for future work packages.</li> <li>• Delivery capacity and efficiencies have been considered, e.g. upskilling the market or capacity planning.</li> <li>• There is a material opportunity to collaborate and share lessons across jurisdictions to address a common problem.</li> </ul>

## 3.4 Submission requirements

### Submitting programs to us

This document details our requirements for infrastructure programs submitted to us for assessment, and what we consider during those assessments. These requirements and considerations align with those outlined in our Assessment Framework. If you are unfamiliar with the Assessment Framework, we recommend that you review our **Overview** volume, relevant stage volumes and supporting technical guides.

If you are making a program submission to us, at any stage of the Assessment Framework, you will need to provide documentation justifying your approach and analysis. We provide an editable **submission template** (Stage 1) and **submission checklists** (Stages 2 to 4) to accompany your submission, available at [www.infrastructureaustralia.gov.au/submit-a-proposal](http://www.infrastructureaustralia.gov.au/submit-a-proposal).

We encourage you to engage with us when developing your submission, ideally after reviewing this guidance and the relevant 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 after submission.

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](mailto:proposals@infrastructureaustralia.gov.au) or call us on **02 8114 1900**.

### Program requirements for Stage 3

We require additional information to be included in Stage 3 (business case) submissions for programs, and projects that are part of programs:

- Pathway 1 – **project business cases** for projects that are part of a program
- Pathway 2 – **program business cases** for an overall program.

**Table 6** sets out these additional requirements i.e. those that are beyond what we would require in a business case for an independent project. See **Section 4** of the **Stage 3** volume and our **Stage 3 Submission Checklist** for the full list of Stage 3 submission requirements.

**Table 6: Additional Stage 3 submission requirements for programs**

<b>Pathway 1 – Project Business Case</b>	<ul style="list-style-type: none"> <li>• Demonstrate alignment to strategic objectives of the program business case.</li> <li>• Program-level analysis to justify the preferred program option (particularly if the program is not already listed on the Priority List at Stage 1 or Stage 2).</li> <li>• Establish economic benefits and outcomes metrics for monitoring how projects contribute to the program.</li> <li>• Implementation plan showing the coordination of the project with other projects in the program.</li> <li>• Deliverability assessment, including demonstration of value for money in project delivery through benchmarking and continuous improvement by reviewing projects that have been delivered and identifying learnings to reduce costs for future work packages.</li> <li>• Details of program governance arrangements.</li> <li>• Demonstrate relationships to other projects or programs (where they exist).</li> <li>• Program outcomes management plan, including post completion reviews for each project as they are delivered to inform future projects within the program.</li> </ul>
<b>Pathway 2 – Program Business Case</b>	<ul style="list-style-type: none"> <li>• Clear justification for delivery as a program (see our definition in <a href="#">Section 1.4</a>).</li> <li>• Defined program outcomes.</li> <li>• Options assessment defining the program options and project makeup in detail. <ul style="list-style-type: none"> <li>– <i>Where relevant (for inter-related or ongoing programs), the prioritisation framework that will be used on an ongoing basis to select projects.</i></li> </ul> </li> <li>• Design maturity sufficient to inform investment decision with regard to the program (see <b>Box 15</b> in <a href="#">Section 2.3</a>).</li> <li>• Cost maturity sufficient to inform investment decision to provide an estimate of program cost (see <b>Box 15</b> in <a href="#">Section 2.3</a>).</li> <li>• Detailed value-for-money assessment (CBA) and financial assessment.</li> <li>• Report economic benefits and outcomes metrics for monitoring the program.</li> <li>• Proposed delivery sequence and implementation plan, including deliverability assessment.</li> <li>• Details of program governance arrangements.</li> <li>• Program-level risks and mitigations, and a plan for how project-level risks will be assessed, monitored and mitigated as the program proceeds.</li> <li>• Demonstrate relationships between projects and with other programs (where they exist).</li> <li>• Program outcomes management plan, including post completion reviews for each project as they are delivered to inform future projects within the program.</li> </ul>

# Glossary

Term	Definition
<b>Appraisal</b>	The process of determining the impacts and overall merit of a proposal, including gathering and presenting relevant information for consideration by the decision-maker.
<b>Assessment</b>	For the purposes of the <b>Assessment Framework</b> , this refers to Infrastructure Australia's evaluation of proposals submitted to us for inclusion on the <b>Infrastructure Priority List</b> or for a funded proposal review.
<b>Assessment Criteria</b>	The three criteria Infrastructure Australia assesses proposals against: <b>Strategic Fit</b> , <b>Societal Impact</b> and <b>Deliverability</b> .
<b>Assessment Framework</b>	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: <ul style="list-style-type: none"> <li>• Stage 1: Defining problems and opportunities</li> <li>• Stage 2: Identifying and analysing options</li> <li>• Stage 3: Developing a business case</li> <li>• Stage 4: Post completion review</li> </ul>
<b>Australian Infrastructure Audit</b>	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 <b>assessments</b> of proposals for inclusion on the <b>Infrastructure Priority List</b> .
<b>Australian Infrastructure Plan</b>	The 2021 Plan was developed by Infrastructure Australia as a positive reform roadmap for Australia. Building off the evidence base of the Audit (see <b>Australian Infrastructure Audit</b> ), 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.
<b>Base case</b>	A project <b>appraisal</b> 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 ' <b>do-minimum</b> ' 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.
<b>Benefit–cost ratio (BCR)</b>	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 <b>cost–benefit analysis</b> ).
<b>Business case</b>	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 <b>Assessment Framework</b> .
<b>Capital cost</b>	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.

Term	Definition
<b>Cost–benefit analysis (CBA)</b>	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 <b>benefit–cost ratio</b> ).
<b>Cost distribution</b>	<b>Probabilistic project cost estimates</b> 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.
<b>Deliverability</b>	One of three overarching <b>Assessment Criteria</b> 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. (See <b>Assessment Criteria</b> ).
<b>Delivered proposal (Stage 4)</b>	Once we've assessed the post completion review of a delivered project we will list it on the <b>Infrastructure Priority List</b> as a delivered proposal.
<b>Demand forecasting</b>	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.
<b>Discount rate</b>	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. <b>Cost–benefit analysis</b> should use real social discount rates.
<b>Do-minimum</b>	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 <b>base case</b> ).
<b>Early-stage proposal (Stage 1)</b>	Stage 1 submissions that are positively assessed by us are listed on the <b>Infrastructure Priority List</b> as an early-stage proposal.
<b>Expected Value</b>	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 <b>P50 cost</b> and <b>P90 cost</b> ).
<b>Impact</b>	A generic term to describe any specific effect of a proposal. Impacts can be positive (a benefit) or negative (a cost).
<b>Infrastructure</b>	Physical assets and facilities that enable organisations to provide goods and services to the community and improve 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.
<b>Infrastructure Priority List</b>	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
<b>Investment costs</b>	<p>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).</p> <p>In some cases, investment costs can recur throughout the appraisal period (e.g. asset replacement or renewal costs). For <b>cost–benefit analysis</b>, these should all be expressed in economic cost terms (also known as resource costs).</p>
<b>Investment-ready proposal (Stage 3)</b>	Stage 3 submissions that are positively assessed by us are listed on the <i><b>Infrastructure Priority List</b></i> as investment-ready proposals.
<b>Longlist of options</b>	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.
<b>Maintenance</b>	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.
<b>Monetised</b>	Where a quantified impact has a corresponding dollar value attached to it. (See <b>impact</b> ).
<b>Mutually exclusive</b>	In the context of the Assessment Framework, the term is used to refer to options where choosing to adopt one option precludes adoption of all the other options.
<b>Nationally significant problem or opportunity</b>	<p>The <i>Infrastructure Australia Act 2008</i> (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.</p> <p>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.</p>
<b>Net present value (NPV)</b>	The monetary value of benefits minus the monetary value of costs over the appraisal period, with discount rates applied (See <b>discount rate</b> and <b>appraisal period</b> ).
<b>Network</b>	Infrastructure networks are the physical assets that enable the provision of services such as transport connectivity, power, water and internet.
<b>Non-infrastructure options/solutions</b>	Proposals that avoid the need for significant expenditure on new or upgraded infrastructure. For example, changes to pricing or reforms to regulations.
<b>Opportunity</b>	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 <i><b>Australian Infrastructure Audit</b></i> and by our collaboration with proponents to identify jurisdictional and national opportunities.
<b>Option</b>	A possible solution to a problem, including base case options such as 'do nothing' or 'do minimum'. (See <b>base case</b> ).
<b>Options analysis</b>	The analysis of alternative options for solving an identified problem or realising an identified opportunity. (See <b>option</b> ).
<b>Pathway</b>	In the context of the Assessment Framework, this refers to the steps we move through in the assessment of an infrastructure proposal.
<b>Place</b>	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.

Term	Definition
<b>Place-based</b>	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 <b>place</b> ).
<b>Potential investment options (Stage 2)</b>	Stage 2 submissions that are positively assessed by us are listed on the <i><b>Infrastructure Priority List</b></i> as potential investment options.
<b>Probabilistic project cost estimates</b>	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 <b>cost distribution</b> , <b>expected value</b> , <b>P50 cost</b> and <b>P90 cost</b> ).
<b>Problem</b>	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 <i><b>Australian Infrastructure Audit</b></i> and by our collaboration with proponents to identify jurisdictional problems and national problems.
<b>Productivity</b>	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.
<b>Project</b>	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 <b>program</b> .
<b>Program</b>	A proposal involving a package of projects that are clearly interlinked by a common <b>problem</b> or <b>opportunity</b> . 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 <b>project</b> ).
<b>Proponent</b>	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 <b>business case</b> ).
<b>Proposal</b>	The general term we use for successful submissions to the <i><b>Infrastructure Priority List</b></i> , across the key stages of project development, specifically – early-stage proposals (Stage 1), potential investment options (Stage 2) and investment-ready proposals (Stage 3). Proposals that have been delivered would be assessed in Stage 4.
<b>P50 cost</b>	An estimate of project costs based on a 50% probability that the cost estimate will not be exceeded.
<b>P90 cost</b>	An estimate of project costs based on a 90% probability that the cost estimate will not be exceeded.
<b>Qualitative</b>	A description of an impact that does not rely on quantitative or monetised information.
<b>Quantitative/quantified</b>	A description of an impact that utilises, presents or references values, numbers or statistics.
<b>Rapid cost–benefit analysis (rapid CBA)</b>	A rapid CBA incorporates standard CBA principles and techniques but at a lower level of accuracy. (See <b>appraisal</b> and <b>cost–benefit analysis</b> ).
<b>Real options analysis</b>	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.

Term	Definition
<b>Resilience</b>	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.
<b>Risk</b>	Events that have probabilities of occurrence that are predictable and outcomes that can be estimated with some confidence.
<b>Root cause</b>	The underlying causes and drivers of a proposal and how they are likely to change over time. (See <b>proposal</b> ).
<b>Shortlist of options</b>	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.
<b>Social, economic and environmental impact</b>	The positive and negative effects of a proposal, with regards to: <ul style="list-style-type: none"> <li>• social: quality-of-life effects, such as social exclusion and access to services, employment and safety</li> <li>• economic: productivity effects, such as productive capacity, economic capability, global competitiveness</li> <li>• environmental: effects such as greenhouse gas emissions, waste treatment, noise pollution, visual intrusion, heritage impacts.</li> </ul>
<b>Socially beneficial</b>	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.
<b>Societal wellbeing</b>	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 <b>cost–benefit analysis</b> .
<b>Societal Impact</b>	One of three overarching <b>Assessment Criteria</b> 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. (See <b>Assessment Criteria</b> ).
<b>Strategic Fit</b>	One of three overarching <b>Assessment Criteria</b> 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. (See <b>Assessment Criteria</b> ).
<b>Themes</b>	Themes are outcome areas within our Assessment Criteria. Each criterion is divided into five themes. (See <b>Assessment Criteria</b> , <b>Strategic Fit</b> , <b>Societal Impact</b> and <b>Deliverability</b> ).
<b>Sustainability</b>	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
<b>Uncertainty</b>	Events where probabilities of occurrence are difficult to predict and outcomes are challenging to quantify.



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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The bottom of the page features a decorative design consisting of two overlapping geometric shapes. On the left is a large, dark teal triangle pointing towards the bottom right. On the right is a smaller, dark blue-grey triangle pointing towards the bottom left. These shapes overlap in the center, creating a darker, almost black triangular area at the bottom.