Australian Government | Infrastructure Australia

July 2021

Post completion review

Stage 4 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

The Assessment Framework (including this document) and the Infrastructure Priority List are changing in line with amendments to the Infrastructure Australia Act 2008.

While this transition process is underway, IA will continue to receive and evaluate proposals according to the current process and assessment framework.

For further information
contact engagement@infrastructureaustralia.gov.au

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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Introduction

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At a glance

- During **Stage 4** of Infrastructure Australia's assessment process you will undertake a post completion review to demonstrate how the investment has responded to the problems and opportunities identified in **Stage 1**, and how it performs against the preferred project option identified in **Stage 3**.
- We will assess your Stage 4 submission to:
  - identify whether the project achieved its intended objectives and was delivered in accordance with the plans outlined in the business case (including time, cost, scope and realisation of risk)
  - determine whether the project's net benefits have been realised as per the business case and that the assumptions adopted in the cost–benefit analysis were appropriate
  - identify whether the outcomes could have been achieved in a more effective and efficient way.
- The Assessment Framework has been designed to align with other national, state and territory frameworks. We accept submissions that conform to the relevant state or territory guidelines, so long as they include all the required information as set out in this document. Before submitting, you should check your submission against our Stage 4 **Assessment Criteria** and **Submission Checklist** to ensure you have met these requirements.
- We encourage you to **engage with us as early as you can** when developing a Stage 4 submission, so that we can provide advice to strengthen your submission and clarify our requirements.

Figure 1: Assessment Framework stages

1.1 How to navigate this document

This document is designed for proponents and delivery agencies (you) wishing to conduct a post completion review (PCR) and make a Stage 4 submission to Infrastructure Australia (us) in accordance with the Infrastructure Australia Assessment Framework (the Assessment Framework). It also contains guidance on how to prepare a PCR plan as part of a Stage 3 submission.

If you are unfamiliar with the Assessment Framework, we recommend that you review our **Overview** volume before reviewing this document. The **Stage 3** volume also provides context, as some early steps of the Stage 4 process are completed during Stage 3 of proposal development.

This document explains how to conduct a PCR of a completed infrastructure project, and to submit documentation of that review to us (a Stage 4 submission). This process will help you capture lessons from the completed project to apply to future projects.

- **Section 1** explains the purpose of completing a PCR, key terms and how these reviews fit in our broader assessment process.
- **Section 2** will take you through the steps you should follow to conduct a robust PCR. This includes methodology and key data you should capture.
- **Section 3** explains the Assessment Criteria we apply in assessing a Stage 4 submission. Before submitting, you should check your submission against these criteria to ensure you have provided all the information required for our consideration.
- **Section 4** provides a submission checklist that clearly lists all of the items that are required or recommended for a Stage 4 submission. Your submission should include a **Stage 4 Submission Checklist**, available on our website, along with all listed supporting information.

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

Box 1: **Key terms**

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

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

Ex ante: a phrase meaning 'before the event', which refers to forecast or intended outcomes identified in the business case.

Ex post: a phrase meaning 'after the event', which refers to actual outcomes or performance. A PCR is an ex-post comparison between actual outcomes and forecasts or benchmarks to gain insights into what degree a project has succeeded in meeting its objectives.

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

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

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

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

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

1.2 Purpose of Stage 4

The Assessment Framework provides a structured and objective approach to making decisions about infrastructure. The Assessment Framework is designed to help you develop high-quality submissions at each stage of project development.

The purpose of Stage 4 is to conduct a PCR that captures lessons from the project to improve future projects and demonstrate successes.

A PCR of a delivered project will determine if the:

- project achieved its intended objectives
- project was delivered in accordance with the plans outlined in the business case, including time, cost, scope and realisation of risk
- project's net benefits have been realised as per the business case
- assumptions adopted in the cost–benefit analysis (CBA) of the project were appropriate
- outcomes could have been achieved in a more effective and efficient way.

The overarching objective of a PCR is not to find fault in the implementation of the project, but to capture lessons that can improve future planning, delivery and risk mitigation. PCRs should focus on understanding and learning from experience to improve future decisions, project delivery and project performance.

Completing a PCR can also **demonstrate your successes** in project design and delivery. By completing PCRs, you can develop a catalogue of successfully delivered projects with a demonstrated track-record of benefit realisation.

If you are making a business case submission (**Stage 3** of the Assessment Framework), we require you to include a PCR plan, which may include a benefits realisation plan (see **Box 3**). **Section 2.2** describes how to develop a PCR plan.

You should publish a summary of completed PCRs for each project, so that others can learn lessons from them.

Box 2: When to submit a post completion review to us

We recommend PCRs are conducted for all completed projects. However, **you are only required to submit a PCR to Infrastructure Australia if we have already assessed the business case** (Stage 3 submission). A number of states and territories complete similar reviews.

Submitting a PCR to us should not be a daunting task. A PCR is scalable and should reflect the level of complexity and investment made in a project. Rather than an additional requirement, your PCR submission can inform and be informed by any other post completion activities. There is no need to duplicate work.

By submitting a PCR to us, we can help you analyse the changes that occurred following completion of the business case that may have impacted realisation of the anticipated benefits. These lessons can inform future investment decisions.

For a program, we recommend that a PCR is completed for each project in the program and used to update the program business case. Additional information on program pathways is available in our **Guide to program appraisal**.

Box 3: **How a PCR Plan differs from a benefits realisation plan**

A benefits realisation plan helps you to understand how and when the benefits of the project will be realised. It is a useful tool to set up monitoring and reporting mechanisms and to mitigate the key risks of benefits not being realised. Most states and territories include a benefits realisation plan as part of their standard business case templates.

Infrastructure Australia's PCR process builds on the benefits realisation process. It reviews costs, benefits and project delivery to understand whether the community is better off because of the project. **Where benefits realisation has been completed, we will accept this as capturing the benefits component of the PCR for Stage 4**.

Benefits realisation focuses on identifying and quantifying project benefits or key performance metrics. For examples of industry-specific benefit categories, see our **Guide to economic appraisal**. **Table 2** in **Section 2.6** of that document provides a non-exhaustive list of benefit drivers to consider. We encourage you to discuss proposed benefit categories with us.

Post-completion *reports* are a simpler version of PCRs and tend to focus on project delivery outputs (schedule and budget). Where completed, we will accept them as part of a PCR submission. However, our requirements for a PCR are broader – we require you to analyse the outcomes (costs and benefits), in addition to the outputs.

We recommend PCRs for all completed projects (as noted in our 2019 *Australian Infrastructure Audit*). However, as noted in **Box 2**, **you are only required to submit a PCR to Infrastructure Australia if we have already assessed the business case** (Stage 3 submission). We also recommend that you conduct PCRs periodically throughout the operational life of the asset, particularly for more complex and transformative projects that are of a significant scale. This is reinforced in our Infrastructure Decision-making Principles (see **Box 4**).

Box 4: **Infrastructure Decision-making Principles**

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

They are designed to ensure major public infrastructure investments deliver the best outcomes for the community and the best value for taxpayers, and should guide the development of any business case. The guidelines aim to promote greater accountability and transparency, and reduce instances of major projects receiving funding before appropriate planning and assessment.

The principles relevant to PCRs are:

- **Principle 9:** Governments and proponents should publicly release all information supporting their infrastructure decisions.
- **Principle 10:** Governments should commit to, develop and release post completion reviews.
- **Principle 11:** Where projects are funded as part of a broader program, the corresponding decision-making processes should be robust, transparent and prioritise value for money.

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

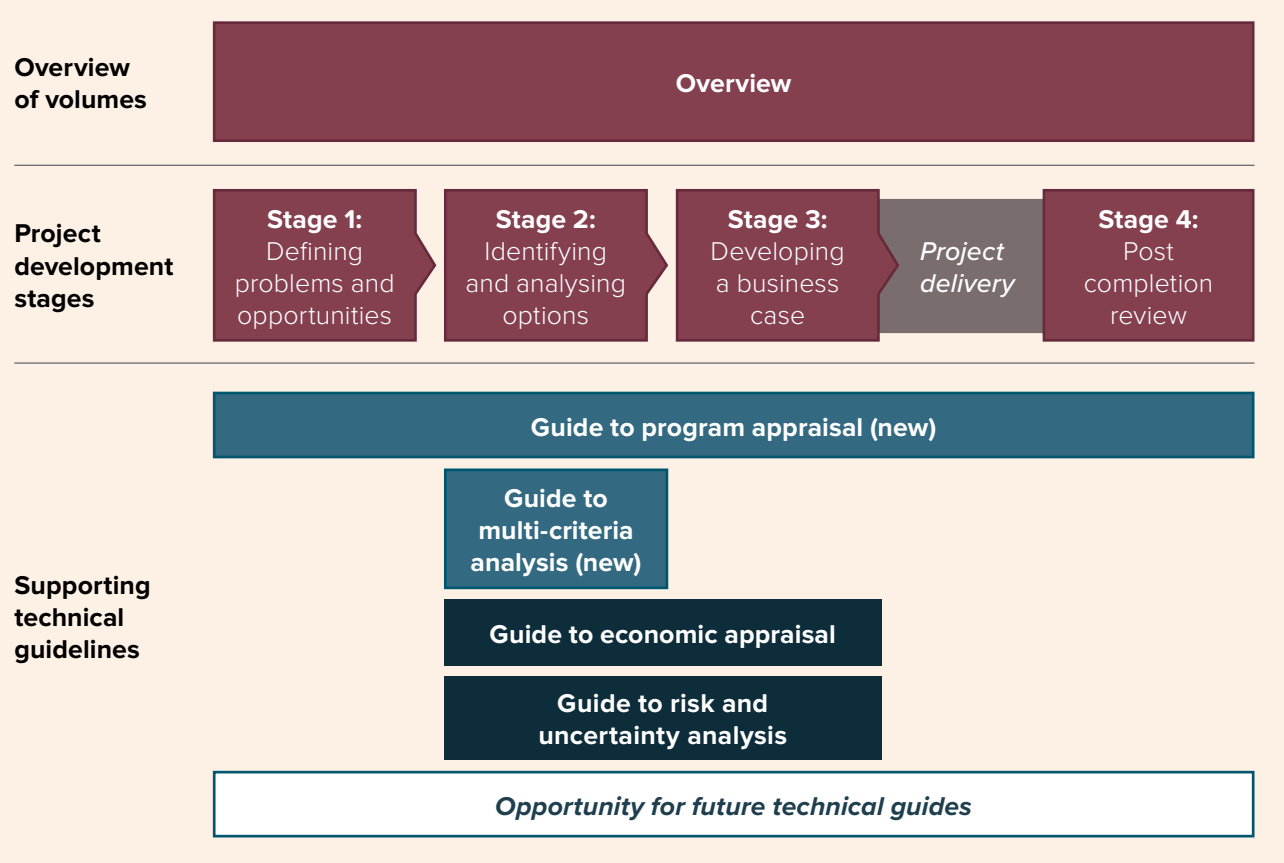
1.3 Structure of the Assessment Framework

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

For practicality and ease of use, each 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 2**. The suite of Assessment Framework volumes is available at **www.infrastructureaustralia.gov.au/publications/assessment-framework**.

Figure 2: Structure of the Assessment Framework



1.4 Infrastructure Australia can support your submission

We encourage you to engage with us when conducting a PCR, ideally **after** reviewing this guidance, but **prior** to formally submitting the PCR documentation to us. By engaging with us, we may be able to support your PCR with experience or information from those we have reviewed previously. This presents an opportunity to reduce potential duplication, increase transparency and improve sharing of lessons learnt.

By engaging with us during Stage 4, we can support your PCR by:

- advising on current best-practice approaches to measuring performance
- advising on relevant issues observed in similar evaluations
- sharing lessons from and with other projects.

When assessing your PCR, we will engage directly with you and provide feedback on the submission material to help inform future submissions.

We will use the PCR to validate information contained in the business case that we reviewed at Stage 3. We will also use this information to inform our ongoing evaluations, advice to proponents and future enhancements to the Assessment Framework.

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

2

Conducting post completion reviews

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2.1 Overview of the process

A PCR considers both costs and benefits after the project has become operational and during different stages of operation. In conducting a PCR, you should pursue a thorough but pragmatic process to ensure it is not too burdensome or costly. The PCR should be tailored to suit the asset class and complexity of each particular project.

A PCR compares the project's forecasts, as set out in the business case, with the actual outputs and outcomes. Traditionally, a PCR was known as an 'ex-post evaluation' to signify that the project was being evaluated 'after the event' (that is, after the investment). In comparison, an 'ex-ante evaluation' determines the forecast or intended outcomes 'before the event'.

As well as the business case, these forecasts may also have been contained in the benefits realisation plans/reports, project status reports and modelling data.

You should use questionnaires, surveys, stakeholder interviews and analysis of usage data to generate the actual outputs and outcomes required for the PCR.

The review of costs should **consider all investment costs**, which should all be available following project delivery. The review of benefits should **focus on the key benefits identified as material in the business case**, and not necessarily all benefit categories.[2]

Figure 3 gives an overview of our recommended process for completing PCRs.

Who is responsible for conducting the review?

It is crucial that you define organisational responsibility for planning and conducting PCRs. This will ensure you complete each of the activities as the project moves from planning, through delivery and into operation. Broadly, we recommend:

- **Steps 1–3:** (that is, deciding how, what and who to review) should be completed by proponents as part of the business case in Stage 3.
- **Steps 4–6:** should be completed by the delivery agency and/or operating agency (based on the specific information required).

To improve the integrity and objectivity of the review, decision-makers may choose to nominate an independent reviewer to conduct the PCR.

Infrastructure Australia is available to provide advice and assistance with conducting the review.

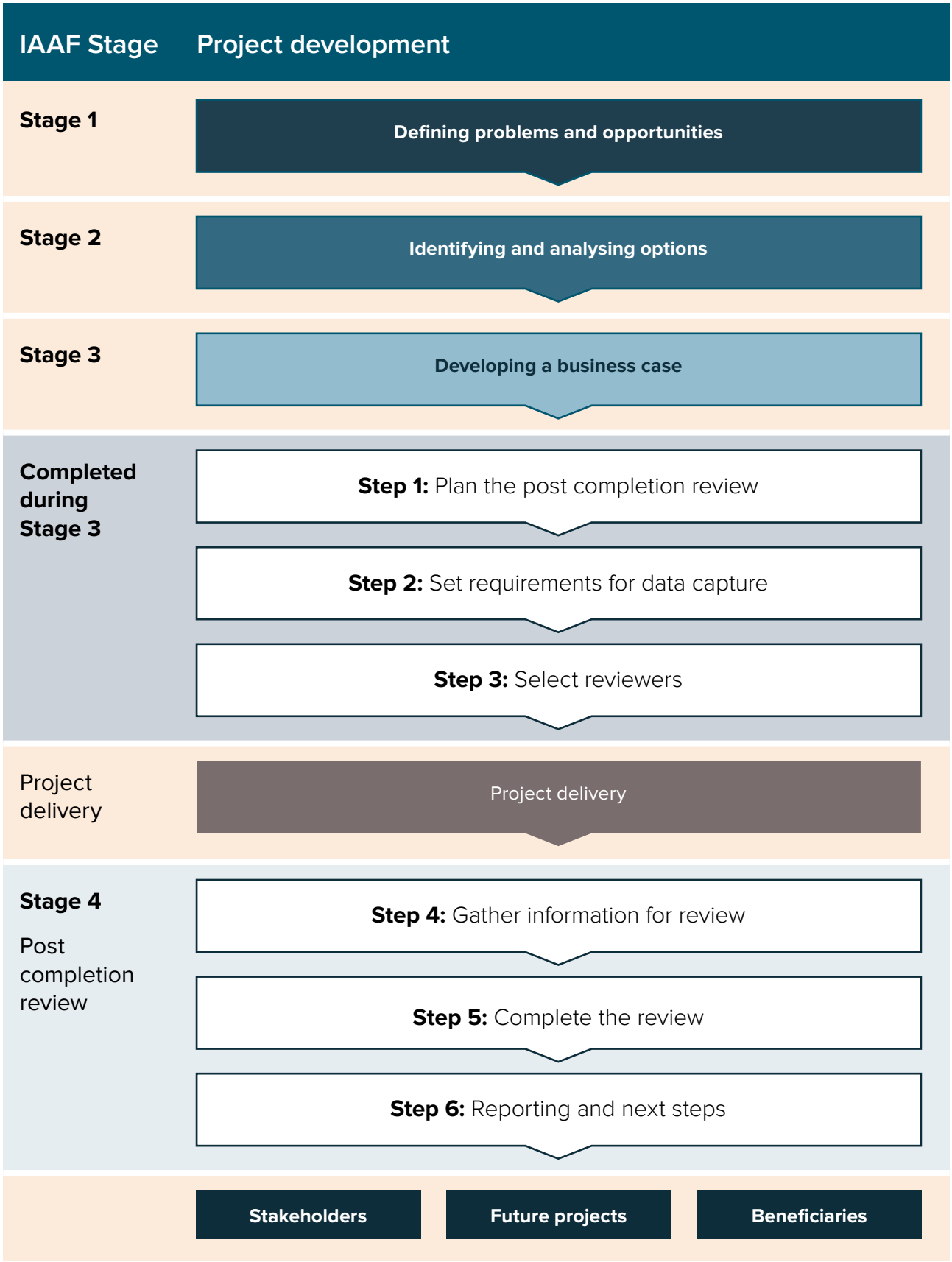
Prioritise PCRs for new or complex projects

While you should complete PCRs for all projects, **PCRs are most valuable for new or complex projects**. Where resources are limited, it may be appropriate to prioritise PCRs for projects where:

- a delivery model is applied for the first time
- there is a higher-than-normal risk profile
- the delivery cost is over $500 million
- there are many beneficiaries.

2. At a minimum, costs and benefits that make up at least 90% of the ex-ante CBA costs and benefits should be reviewed and reported.

Figure 3: Methodology for a post completion review



2.2 Step 1: Plan for post completion reviews

While developing the business case for your project, you should make a plan to conduct a PCR. At this point, you should define how, what and who to review, including the scope, cost and risks of the project. The review should focus on our three Assessment Criteria:

- **Strategic Fit**: Whether the project achieved its intended strategic objectives.
- **Societal Impact**: The performance of the project against its stated Societal Impact outcomes, including an ex-post review of the CBA.
- **Deliverability**: Whether delivery objectives were achieved, how efficiently the project was delivered against forecast capital costs, how any risks were managed and any other lessons learned.

Section 2.6 provides further information on each of the evaluation areas.

Timing your reviews

As outlined in **Box 5**, we recommend you submit an initial PCR to us one year after project completion (a Stage 4 submission). However, when you submit your PCR to us will depend on when the information will be available. Our preferred approach is that you should plan for a number of reviews and identify in your submission when they will be conducted. Each of these reviews will build on the information already gathered.

Standardising a methodology for PCRs will streamline future PCRs. We particularly recommend this for projects within a program. Standardised state, territory or proponent organisation approaches may already exist and provide a consistent approach to PCRs.

Box 5: **We recommend you undertake more than one PCR**

We recommend you undertake at least two separate PCRs at different stages to comprehensively review the project's costs and benefits, as well as any other lessons.

We recommend you submit your initial PCR to us as your Stage 4 submission, one year after project completion. However, we understand that consideration needs to be given to the most appropriate timing for the project's characteristics (for example, considering potential demand ramp-up timeframes).

The table below summarises the content of these reviews.

Review	Timing	Purpose and scope
Initial review – **this PCR forms the Stage 4 submission**	1 year after project delivery.	The initial review should consider the **delivery and initial operations** to comprehensively review the Strategic Fit, Societal Impact and Deliverability of the project, noting benefits may not yet be realised. The review should focus on: • comprehensive delivery cost analysis to review variation against the business case • initial measurement of the benefits • comparison to the business case estimates and forecasts.

Box 5: **We recommend you undertake more than one PCR** *continued*

Review	Timing	Purpose and scope
Subsequent review(s)	2–5 years after project delivery, depending on the nature of the asset: • 2 years where the benefits are expected to be realised quickly or the asset life is no more than 5 or 10 years (e.g. ICT projects). • Approximately 5 years where it takes longer to realise benefits or for assets with a long life (e.g. transport and water assets).	The subsequent review should focus on **benefits realisation**; by this time, the project should be in 'steady state' operational phase and demand would have ramped up sufficiently. The review should focus on: • forecast social, economic and environmental benefits against actual benefits, noting some benefits may not be observed yet • ongoing operational and maintenance costs (delivery costs should have already been reviewed in the initial review).
Additional reviews (optional)	As relevant, usually at the asset's half-life or end of life.	Additional reviews should consider the longer-term **performance** of the asset, to understand the success of the business case over the life of the asset. The review should focus on: • comparing realised social, economic and environmental benefits against actual benefits, including wider usage of the assets and qualitative objectives – such as liveability and amenity – which may not be observed on shorter timescales • reviewing ongoing operational and maintenance costs, on top of the costs reviewed in previous PCRs • insights and lessons on the predictability of longer-term forecasting techniques and models by enabling a longer-term comparison of forecasts against actual realised costs and benefit drivers.

2.3 Step 2: Set the requirements for data capture

When developing the business case, you should identify the information required to complete a PCR. This will allow you to collect the data required as the project is delivered and enters operation. **Box 6** shows examples of the information you will need – namely, forecasts to compare with project outcomes.

Once the project is delivered, you should prepare a detailed program and scope for the PCR in consultation with us, the relevant state or territory treasury or an infrastructure assurance agency. The delivery agency should also be able to self-nominate a project for review.

To prepare for a PCR, you will need to set the requirements for data organisation, capture and storage. This should include developing a brief project plan for the PCR that outlines what information to collect, who should collect the information, when to collect this information and where to store it (see **Box 7**).

Developing this plan will help to ensure that those completing the business case and delivering the project, including any external consultants, can correctly capture and store the necessary data. You should collect the necessary data and information as the project progresses and store it in a consolidated and centrally located repository. This will make it easier for reviewers to retrieve and examine for the PCR.

Box 6: **Examples of forecasts you can compare with actual outputs and outcomes**

- **Lifecycle costs of the new or upgraded asset**, including:
  - Capital costs
  - Routine operational and maintenance costs
  - Planned periodic refurbishment costs
- **Costs of decommissioning life-expired assets**
- **Demand levels** for the new infrastructure or asset (including, where relevant, demand ramp-up profile)
- **Key metrics and benefit drivers for different asset classes** (please see **Section 2.6** for further information).

Box 7: **Data organisation, capture and storage requirements**

You should collect data and information for the PCR as the project progresses. Here is an outline of what information you should capture at different stages:

- **Project planning:** collate the documents and analysis that will be used to prepare the business case, and store the information in one place. In particular, make sure you record the assumptions and methods used to undertake the CBA underpinning the business case so that the reviewer(s) can test these during the PCR.

  All of this information should be provided to the reviewer(s) once project delivery is complete.
- **Project delivery:** develop a reporting template to collect information on project delivery and whether the project met its objectives. The template should capture information and data on the final costs, the timeframes, changes in scope, risk management processes, achievement of intended strategic objectives and other issues that occur.

  Complete the reporting template at regular intervals as the project delivery progresses and provide it to the reviewer(s) once project delivery is complete.
- **Project operation:** in your project planning stage, you should have already identified the metrics you will need to measure the operational performance of the project. For example, if the project is for a new road, you will need a plan for how you will capture information on the level of congestion, the travel time per trip, travel speeds on the road, and any safety-related incidents affecting traffic on the new road. You should detail these metrics in the project plan and in the reporting template. These metrics should be reported in the benefits realisation register or other attachments to the business case, or in the main body of the business case document.

2.4 Step 3: Select reviewers

For all projects, the proponent organisation should **conduct the initial review of a project internally, using a different team independent from the project team**. For example, the proponent organisation may select reviewers from the internal assurance team of the delivery agency. We recommend a different team to promote independence, while keeping the initial review in-house to limit cost and complexity. Additionally, we encourage you to seek our advice and assistance with conducting the review.

To improve the integrity and objectivity of the review, the Treasury of the relevant state or territory, or the Secretary or head of the delivery agency, in consultation with Infrastructure Australia, may select the appropriate reviewers from within the delivery agency.

If the PCR raises concerns with the delivery of the project, or if there is a high level of risk involved with the project, a subsequent external review may be useful to provide a fully independent review of the project.

Expertise is required to analyse and form conclusions on how well projects were delivered and whether the business case forecasts were met. The skills required to conduct the review are outlined in **Box 8**.

Box 8: **Skills required for the review**

To undertake the PCR, the reviewer(s) should have the following skills:

- **Stakeholder consultation skills:** The reviewers will be required to consult with a number of stakeholders, including members of the project team, other people within the proponent organisation, other government stakeholders and, potentially, customers and users of the project under review.
- **Economic analysis skills (for the Societal Impact review):** The reviewers will need to understand the CBA model used in the business case and to compare this with the actual costs and benefits from the project. Reviewers should have an understanding of using real prices, escalation factors, discounting, and subject matter experts in the fields of the project being reviewed (that is, transport, health, water, energy, education etc.).
- **Technical skills in engineering, project management and risk management (for the Deliverability review):** The reviewers will need to understand the impact of changes in scope and changes in design on project delivery. They will need to understand the appropriateness of any risk management activities.
- **Analytical skills:** The reviewers will need to gather all of the required information and then analyse it to distil the key findings and make recommendations as part of the PCR.
- **Report writing and communication:** The reviewers will need to communicate clearly the findings and recommendations from the PCR to a broad audience. This is essential for the findings from the PCR to lead to better project planning and delivery.

2.5 Step 4: Gather information for the review

A PCR aims to compare the expectations for a project's benefits, costs, Strategic Fit and Deliverability against the actual outcomes.

The information used for the PCR should be a combination of documented evidence (that is, actual cost data and performance criteria) and workshops, interviews and user questionnaires. **Box 9** lists the documents you will typically need to gather and review to complete a PCR.

Box 9: **Examples of documentation to review during the PCR**

Typical examples of documentation to be reviewed during the PCR include:

- Business case(s) – Typically, the reviewer will use the final business case as the 'baseline' to compare against, as it was the basis for funding to deliver the project. However, in the instances where multiple rounds of business cases occur, the reviewer may reference earlier business cases for contextual purposes. For instance, some states and territories follow the practice of submitting a preliminary, or a strategic business case, followed by a final business case. The preliminary or strategic business case may be reviewed for context, but the final business case should provide the 'baseline' for the PCR.
- Cost estimate – the full range of cost estimate documentation (for example, whole-of-life costs) used to support the business case.
- Investment logic map to understand how the options were developed.
- Feasibility/options study.
- Stage 2 report, including any value management or logic map reports – to understand how the options were developed (see the **Stage 2** volume for detail).
- Demand modelling study.
- Business case economic appraisal.
- Financial appraisal (if appropriate).
- Benefit realisation plans prepared as part of the business case, or separately, during the procurement phase.
- Project management plan.
- Change management plan.
- Delivery strategy.
- Tender documents – including tender briefing documents, tender decision and award documents, and tenderers' responses.
- Contracts – providing the final costs, project scope and delivery approach that the proponent committed to, and which may have changed since the business case, as a result of contract negotiation.
- Change log or decision register – will provide a trackable source of agreed changes in scope or variations throughout delivery. This will also highlight any cost impacts as a result of agreed changes and variation.
- Project cost documentation – this may include final contractor invoices, budget reports, project finance reports to steering committee or other executives, and project contracts register.
- Design documents – particularly final design documents and as-built drawings.
- Risk management – including any risk analysis, risk registers and mitigation plans and any risk management documentation used throughout the project.
- Objectives measurement – this will vary by asset type and project and in particular includes documentation post completion that shows the project has met its planned service objectives.
- Progress reports.

Conduct interviews for the review

After reviewing the material contained in the relevant documents, **the reviewer should undertake interviews** to get a first-hand perspective from those project team members who had, or have, a role in either the planning, delivery or operations of the asset. The interviews are an important step to identify the key lessons learned. Interviews will be key for understanding whether the project met its strategic objectives and how the project performed during the delivery stages. We provide more detail on interviews in **Step 5**.

After the interviews, the reviewer can use the document review and analysis to confirm the information gathered by the interview and conduct a more detailed analysis of forecast outcomes against actual outcomes if necessary.

Stakeholder interviews may identify any problems that hindered the project and if or how they have since been resolved.

2.6 Step 5: Complete the review

Each PCR should include a review of the Strategic Fit, Societal Impact and Deliverability of the project. The depth of review for each criterion may differ each time a PCR is conducted (see **Step 1** for purpose and timing of reviews).

Once you have prepared for the PCR through steps 1 to 4, we recommend the actual review should follow these steps:

1. Review project information.
2. Review responses provided during interviews.
3. Compare responses against documentation.
4. If necessary, meet with delivery agencies to clarify.
5. Prepare PCR documentation.

The review should focus on how the project performed against the following Assessment Criteria:

- **Strategic Fit** – an evaluation of how the project contributed to the state or territory-level and national-level strategic objectives, including whether the appropriate project options were analysed.
- **Societal Impact** – an ex-post evaluation of the validity of assumptions underpinning the CBA in the business case against actual realised values, and estimating the deviations in estimated costs and benefits against actual outcomes. See **Ex-post cost–benefit analysis** in this section for a step-by-step approach for undertaking the ex-post process.
- **Deliverability** – an evaluation of how efficiently and effectively the project was delivered.

In the following subsections, we have suggested detailed considerations and interview questions for these review criteria.

Identify missing information

Reviewers may not have sufficient detail at the time of the PCR to fully address all aspects of the evaluation areas. Information on delivery costs and service levels should be available for the initial PCR, but some benefits may not be observed until a subsequent review. This can occur where it may not be possible to observe some project benefits due to their random or subjective nature, for example:

- rainfall and flood mitigation in the case of dams
- where user behaviour or customer satisfaction is influenced by a range of external factors
- where benefits are linked to increased resilience to unpredictable events, such as climate adaptation or sea-level rise.

Reviewers should discuss where more information is required and recommend that the proponent collect this information prior to any subsequent reviews.

Reviewing the overall Strategic Fit

The review of Strategic Fit should determine how the project or program of works contributed to national, state and territory strategic objectives. If relevant, it will also show whether the project supports the strategic objectives of any associated agencies or applicable states and territories.

The business case for the project should include information on **the problem and strategic objectives the project aimed to address** (as defined in **Stage 1** of project development). The business case, tender documentation and any design documentation should detail the strategic objectives for the project or program of works.

To evaluate whether the project has met each strategic objective, the reviewer should use proponent interviews, PCR workshops and/or user questionnaires.

Specific questions to review Strategic Fit

Table 1 lists the questions to ask when reviewing the **Strategic Fit** of a completed project.

Table 1: Questions to establish the Strategic Fit of a completed project

Components of Strategic Fit	Questions to establish whether the project addresses problems or opportunities of national significance to achieve stated goals
Case for change	1. Did the project (or program of works) solve the identified problem or realise the opportunity? If not, why did it not? 2. To what extent did the project meet its strategic objectives? 3. What factors helped/hindered the project to contribute to meeting these objectives? 4. Do some objectives remain unmet? If so, what prevented them being met (e.g. changes in the macro environment, scoping error)? How do you think the planning or scoping of future projects might better contribute to meeting these outcomes? 5. Were there other strategic benefits or objectives that were not identified by the proposal (i.e. the final business case) that have been achieved? Describe them.
Alignment	6. Which national, state and territory objectives did the project contribute to? To what extent has the project achieved the objectives?

Table 1: *Continued*

Components of Strategic Fit	Questions to establish whether the project addresses problems or opportunities of national significance to achieve stated goals
Network and system integration	7. Was all enabling infrastructure required to support the project included in the business case and delivered with the project? Provide an explanation of any additional enabling infrastructure that was required and the reasons for its inclusion. 8. Has the project successfully integrated with the network or supply chain? Were potential vulnerabilities identified and addressed? 9. If the project is part of a program, does the project represent a good fit within the program? In what way does it contribute to meeting program objectives? a. If the project did not contribute to realising program benefits, how could future projects better contribute to meeting program objectives?
Solution justification	10. Given what you know today, would you have specified the base case as was defined in the business case? Why or why not? 11. Was the solution appropriate for the problem (i.e. was the project appropriately scoped, or was there over-engineering or under-engineering of the project)? Provide an explanation if the solution is not deemed appropriate. 12. Did the project deliver the benefits at the lowest cost compared with the cost of alternative options? 13. Given what you know today, would you have selected the preferred option in the business case as the preferred one today? Why or why not? If not, which alternative might have been picked? Why was this option not advanced or selected during project development?
Stakeholder endorsement	14. Were stakeholder management plans developed and implemented? Describe how stakeholder management was conducted and what the outcomes were. 15. Who were the beneficiaries of the project? Were there any unintended beneficiaries or negatively impacted stakeholders? 16. To what extent are stakeholders satisfied with the project outcomes and the level of consultation during project planning and delivery?

Reviewing the overall Societal Impact

The review of the Societal Impact of the project or the program of works should compare the actual operational performance against the expected performance (as detailed in the final business case). This is accomplished through an **ex-post CBA review** of benefits and costs, and a review of the non-monetised impacts predicted in the business case (see later in this section for detail).

The review will determine whether you would have changed the initial assumptions used in the business case, based on the information available at the time of conducting the PCR.

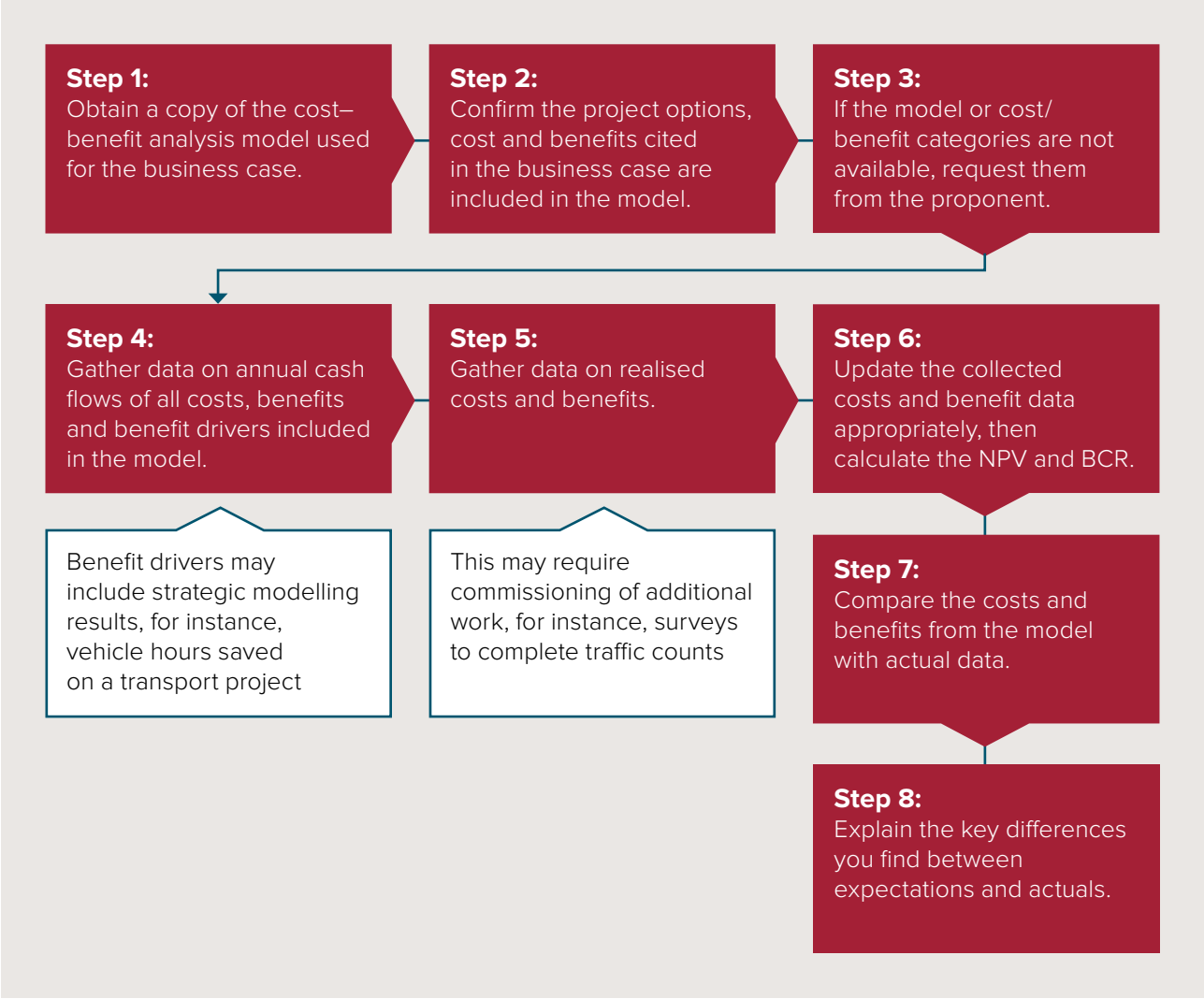
Ex-post cost–benefit analysis

An ex-post CBA review compares:

- the expected delivery, operational and maintenance costs of the project (at the time of completing the business case and contract negotiation) against the actual cost profile of the project
- the drivers of key benefit categories that the proponent anticipated at the time of completing the project development against the actual manifestation of these drivers.

The step-by-step approach for undertaking an ex-post CBA is shown in **Figure 4**. The review should show how the project performed on this comparison in every year since commencing delivery through to the year when the review is undertaken

Figure 4: Steps to complete an ex-post cost–benefit analysis



The reviewer should use quantitative analysis for the review of Societal Impact, in line with the model used in the business case (most often this will be the CBA). The reviewer should use the business case, economic analysis report, financial analysis report, benefit realisation plans and statements, cost estimate report, options report, state budget papers and the value management report to draw estimates of planned costs and key benefits.

For comparability, convert the actual costs and benefits collected for the ex-post CBA to real prices as used in the ex-ante CBA. The reviewer should compare these with the information on actual costs and benefit drivers collected through PCR workshops, interviews and/or user questionnaires.

Present all metrics by comparing reported/forecasted values in the business case with realised values at the time the PCR is undertaken.

Reviewing benefit drivers

The review of benefits realisation should compare the anticipated drivers of key benefit categories (as detailed by the proponent during the project development) against the actual manifestation of these drivers. The comparison should **focus on the key benefits** identified as material in the business case. It is not necessary to review all benefit categories.

The reviewer should gather measurable evidence to support their findings.

Table 2: Examples of key benefit drivers/performance metrics

Industry	Key benefit drivers/metrics
Train	Travel time per trip
	Occupancy/train load
	Crowding (in-vehicle, platform, concourse)
	Journey time reliability (e.g. running to schedule)
	Service frequency
	Wider economic benefits
	Land use impacts (e.g. population, densities, changes in zoning and planning regulation)
Road	Travel time per trip
	Travel speed per trip
	Distance travelled per trip
	Congestion
	Safety incidents per million kilometres travelled
	Journey time reliability
	Road degradation
	Wider economic benefits
	Land use impacts (e.g. population, densities, changes in zoning and planning regulation)
Water	Actual storage capacity
	Annual volume of water available to be delivered over the future years
	Annual volume of water delivered over the future years
	Breakdown of annual water delivery by customer type (urban, agriculture, mining, industry, environment, other)
	Annual value of water in consumptive and non-consumptive uses over the future years
	Structural integrity (cracking, movement)
	Release volumes
	Levels of contaminants
Energy	Service reliability
	Supply capacity

Table 2: *Continued*

Industry	Key benefit drivers/metrics
Telecommunications	Upload/download speeds
	Bandwidth
	Customer numbers
Education	Student enrolments
	Performance of students at institutions
	Research grants submitted by and granted to institutions
	Performance of teachers at institutions
Health	Additional number of separations (i.e. end of care for an admitted patient – including pathology, imaging, procedures and treatments)
	Proportion of patients who otherwise would not have received treatment
	Percentage reduction in hospital-acquired infections as a result of better infection control
	Reduction in subsidy payments targeted to help with travel and accommodation costs for people (and eligible escorts) who need to travel long distances for surgeries and procedures and other separations
	Operational cost saving per unit of separation
	Average length of stay for admitted separations
	Bed occupancy days
	Emergency response times
	Staffing levels

Box 10: **Worked example of a project benefit review (road project)**

This worked example continues the road project example outlined in the **Stage 1–3** volumes. Improvement in travel times was a key opportunity identified in Stage 1 and the anticipated benefits were analysed in the CBA.

Without the project, it was forecast that travel times would steadily increase from 40 minutes to 55 minutes, measured over the transport corridor, due to population growth and urban development. Travel times after the completion of the motorway were forecast to reduce from 40 minutes to 30 minutes. After 12 months of operation, the actual observed travel time remained constant at 40 minutes over the length of the transport corridor.

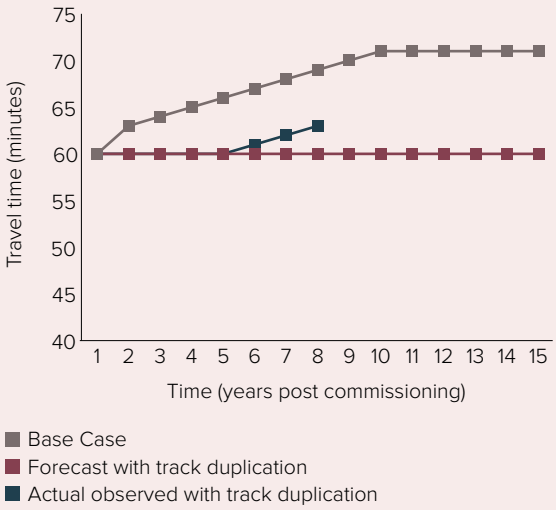
During the PCR, it became clear that the reason for the longer-than-forecast travel time was lower average travel speeds than anticipated in the business case. The PCR identified that higher-than-forecast road use resulted in unforeseen congestion. Because of this finding, further analysis was conducted on population growth and other demand factors to improve transport model forecasts in future projects.

Box 11: **Worked example of a project benefit review (train project)**

Suppose that a train track duplication was commissioned eight years ago, after successfully progressing through our assessment stages and being listed on the Priority List.

The following graph illustrates the forecast and observed travel times over the transport corridor:

- The **base case (that is, without the project)** forecasted travel times to increase from 60 minutes in Year 1, to 70 minutes in Year 10 and beyond.
- **With the track duplication project**, travel times were forecast to remain constant at 60 minutes i.e. would not get worse as forecast in the base case.
- **Actual observed travel after the track duplication was commissioned** remained constant at 60 minutes for five years, before increasing steadily each year to 63 minutes in Year 8.



A PCR identified an unforeseen increase in other train lines and 'flow-on' platform crowding had increased city station dwell times for all train lines.

Reviewing costs

The review should consider all relevant costs, including:

- **Investment costs** (or construction costs) – These are the costs to implement the project. We anticipate that investment cost information will be available within one year of construction being completed and should be **evaluated in the PCR**.
- **Operating and maintenance costs** – These are the ongoing costs related to the operation and upkeep of the project. They are unlikely to be available for the initial PCR, but should be **evaluated in subsequent reviews**.

Investment cost estimates are a fundamental input into a project's economic evaluation, and help determine if and when a project should proceed. Therefore, it is important that cost forecasts are robust and reliable.

A PCR is a valuable tool to improve cost forecasting for future projects, by identifying the causes of project cost variations so that they can be accounted for in future projects.

As part of the PCR, the reviewer should compare the forecast annual profile of capital and delivery costs against the actual cost delivery timeline.

Box 12: **Level of project development, design and cost estimate in a PCR**

At Stage 4, reviewers should compare the cost estimates between contract award and final completion, as shown in the table below.

For a breakdown across all Stages, please see our **Guide to economic appraisal**.

	Level of design and cost estimate at Stage 4	
Recommended inputs to design and cost estimate	**Contract Award**	**Final Completion**
Level of project design	40–90%, or usually a Detailed design	100%, or usually an Actual or As Built design
Investigations to inform project definition	As required, by contract and delivery model	As built
Cost estimate bases	Tender price	100%
Cost estimate class/category	Proponent to nominate applicable state, territory or sector specific cost estimate class/category at each stage	
Quantified risk & contingency	10–30%	0%–10%
Cost ranging	Low side: -5%/-10% High side: +5%/+20%	Low side: -0%/-5% High side: +0/+10%
Probabilistic cost estimates	P50 & P90 for financial	n/a
Estimate confidence level	High	Certain
Usage	For construction	For PCR

While the reviewer should check the costs against the contract (to compare final outlays with signed contract amounts), it is also worthwhile reviewing these compared with the earlier estimates contained in the business case.

Similarly, we recommend you compare the original scope as set out in the business case *and* the scope as set out in the contract to the final delivered asset. It is also important to compare the 'planned to build' design documents, as per the business case, with the 'as built' design.

Cost variations will relate to both the outcomes and the delivery of the project. You should categorise them as either:

- **Scope changes** – costs arising from project amendments that materially improve end-user benefits. Evaluate the relative costs and benefits of all scope changes to confirm the change was worthwhile, as part of the review of **Societal Impact**.
- **Cost variations** – costs arising from unforeseen events during delivery of the project, which the original business case did not capture. By identifying sources of cost variations, you can improve cost forecasting and delivery practices for future projects. Consider the causes of cost variations in the review of **Deliverability** (see the next section).

To compare the estimated costs against actual out-turn costs in contracts, estimated real costs need to be converted into nominal costs or the actual costs need to be converted into real costs (that is, costs excluding inflation).

A review of forecast operational and maintenance costs against actuals is achieved through a review of the operational performance of the project post-commissioning. It measures performance against any stated maintenance cost or service outcomes expectations.

The reviewer should seek measurable evidence during the review to support findings.

Box 13 presents a worked example of an ex-post cost review of the construction of a road project. The identified cost variations relate to common causes of ex-ante cost forecast errors identified in various published studies, described in **Box 14**.

Box 13: **Worked example of reviewing a project's construction cost (road project)**

The original cost forecast and actual cost outcome provide a starting point to review a project's construction cost after it is completed.

Suppose a major road project was constructed after successfully progressing through our assessment process and being listed as an investment-ready proposal on the Priority List. The forecast construction cost used in the CBA, actual construction costs and a breakdown of the cost variation are shown in the following table.

Breakdown of the project's construction costs

Cost	Amount ($million)
Ex–ante forecast	4,500
Actual	5,500
Variation	**(1,000)**
Breakdown of variation	
Scope changes[3]	
Two additional highway off ramps	500
Cost variations	
Increased tunnelling depth to avoid heritage items identified during construction	650
Lower than anticipated land acquisition and litigation costs	(250)
Higher construction tender prices than forecast	100
Total variation	**1,000**

A key challenge in this example (and for most post-completion cost reviews) is how to attribute cost variations. In this example, $500 million was attributed to a project scope change of two additional highway off ramps, and $1 billion to cost increases from higher-than-expected acquisition/ construction costs.

The additional off ramps are categorised as a scope change, as they materially improve benefits for end users by increasing utilisation. The increased tunnelling depth, however, does not materially improve end-user benefits. The deeper tunnels and their costs arise from an unforeseen event, not captured as part of the original business case.

3. Scope changes refer to project amendments that materially improve end-user benefits.

Specific questions to review Societal Impact

Table 3 lists the questions to ask when reviewing the **Societal Impact** of a completed project. These questions will also determine whether in hindsight the right option was selected. The key elements of reviewing societal impacts are the comparison of benefits and costs against those identified in the CBA at Stage 3. In addition to specific theme questions that also inform the review of societal impacts, these include:

- **Benefits realisation**
  - Did the delivered project meet the scope or service level requirements, stated in the business case, to enable realisation of the anticipated benefits?
  - To what extent were the key benefit drivers realised? If there were deviations, what were their causes?
  - Were other benefits realised that were not captured in the original business case, for example, due to scope changes? If so, which benefit types are these? Why were these benefits not considered during the project development stage?
  - If the project has not delivered the anticipated benefits, or had adverse impacts greater than anticipated, what are the reasons for this? What strategies have been identified and taken to rectify these impacts?
- **Cost realisation**
  - Was the project delivered within budget? What is the breakdown between scope changes and cost variations?

You should **use the realised costs and benefits to evaluate and present the ex-post cost–benefit analysis of the project.**

Box 14: **Common causes of cost errors in ex-ante forecasts**

Published studies have identified a number of common causes of cost errors in ex-ante forecasts:

- Announcing costs prematurely, before detailed analysis, and then failing to re-evaluate costs.
- Project scope changes.
- Cost overruns are more likely and larger for large projects (those that cost over $500 million), for reasons such as:
  - cost forecasts not accounting for project complexity and interrelated components
  - larger projects have more interdependent elements, any one of which could suffer a setback that flows through to other elements
  - project delays are longer if projects are announced and undertaken in periods of significant public investment (a ‘hot market’).
- Cost forecasts that do not account for industry-specific or mode-specific differences in the size and timing of project costs.

Sources:

Terrill, et al, 2020, *The rise of megaprojects: counting the costs*, Grattan Institute, Carlton, available at: grattan.edu.au/report/the-rise-of-megaprojects-counting-the-costs/; and Flyvbjerg, et al 2004, *What Causes Cost Overrun in Transport Infrastructure Projects?, Transport Reviews*, vol. 24, no. 1, January, pp. 3-18.

BITRE publication *‘Ex-post Economic Evaluation of National Road Investment Projects’* provides a methodology and source of examples of common causes of ex-ante forecast errors in cost and benefit estimation. See www.bitre.gov.au/publications/2018/rr_145.

Table 3: Questions to establish the Societal Impact of a completed project

Components of Societal Impact	Questions to establish the social, economic and environmental value of the solution
Quality of life	1. To what extent is the project having the desired quality-of-life impacts (cultural, living standards, learning and earning, health and safety, and economic and social participation) and how have they been measured? 2. Has the proposal achieved any equity or distributional outcomes as identified in the business case?
Productivity	3. To what extent has the project improved efficiency and productivity within the economy? Consider whether the productivity benefits outweigh the costs, such as through faster movements of freight and business trips, which can be measured in constant dollars terms. Demonstrate realised economic impacts measured against the CBA from Stage 3. 4. To what extent has the project improved job creation and capacity? Demonstrate impacts measured against those identified in the business case.
Environment	5. To what extent has the project improved or managed environmental impacts (including to natural resources, habitat and broader ecosystems) during development, construction and operation? 6. Have environmental mitigation or offset activities been successfully completed? If not, is there a plan in place to complete them and meet any environmental approval requirements? 7. Were there any significant, irreversible environmental impacts?
Sustainability	8. To what extent has the project improved sustainability through decreased material, energy, social or economic costs (e.g. maintenance)? Demonstrate how sustainability was explicitly considered in the design, delivery strategy and operations strategy. 9. To what extent have identified longer-term drivers of change been realised? If not, what assumptions or forecasts should be revised for future proposals? 10. Where committed in the business case or through a sustainability assessment, to what extent has the project achieved requirements relating to design and sustainability, energy and water efficiency, waste and recycling?
Resilience	11. To what extent has the project addressed the impacts of changing future circumstances (and multiple future scenarios) or improved resilience to short-term and long-term shocks (such as population changes, natural hazards, war, pandemic and climate change)? 12. To what extent have identified shocks and stresses materialised? If they have not materialised, should any assumptions or forecasts be revised for future proposals? 13. Have any of the triggers for flexible investment strategies been met? If so, what actions have been completed to re-assess and adapt the project or program of works?

Reviewing overall Deliverability

The Deliverability review should consider how the project was delivered and whether it followed the plans and expectations set out in the business case. This may include project governance, procurement and delivery models, management of project risk or any other factors that arose during project development and delivery that provide insights for future projects.

The reviewer should base the deliverability review on a combination of qualitative and quantitative analysis. The reviewer should use information collected through PCR workshops, interviews and/or user questionnaires, as well as documentation such as the business case, tender documentation, cost estimate report, state budget papers and any design documentation as the basis of determining intended cost efficiency and delivery models.

Reviewing implementation

The review of project implementation should consider:

- **Cost variations** – As stated under **Reviewing costs** (see the **Reviewing the overall Societal Impact** section), the review should capture any costs that arose from unforeseen events during delivery of the project, that were not captured as part of the original business case. Identifying sources of cost increases can improve cost forecasting and delivery practices of future projects. If there were significant changes in scope during the project planning and delivery, the reviewer should find out why this occurred.
- **Project schedule and timing** – Determining the required project timing is an important step in the planning process and can also impact the urgency with which projects must be approved. Timing can also determine whether key project objectives are achieved, if a project must be completed within a particular timeframe. The PCR is an opportunity to review why a project finished ahead of, on or behind schedule. It also provides the opportunity to revisit original assumptions as to why the project needed to be delivered under a particular timeframe and evaluate if these assumptions were warranted.
- **Effective change management** – Effective change management mechanisms are generally required where the roles and functions of delivery, operations or maintenance staff and any associated systems will change significantly as a result of the project. This would particularly be the case for health projects or information, communications and technology projects, where changes to process are critical for realising the benefits of the project. You should assess the effectiveness of the change management and operational readiness activities, such as training, communications, workforce planning and interface management.

Reviewing capability and capacity

The PCR should review whether sufficient capability and capacity was available and effectively applied to deliver the project:

- **Capability** – The skills, experience, tools and technology of the proponent and contractor/s to manage the risks during delivery. Risks should have been highlighted in the project planning stage, then considered in the project procurement and delivery model. If there were significant shortfalls that resulted in cost or schedule issues, then these should be investigated and considered for future projects.
- **Capacity** – The capacity of the labour and resource markets to support the delivery and implementation of the project. Risks should have been highlighted in the project planning stage, then considered in the project timing and cost estimates. Review any shortfalls and the impact on cost or schedule. Capacity should also be considered for the ongoing operation and maintenance of the asset.

Reviewing project governance

The review of project governance should consider:

- **Project procurement and delivery model** – The project delivery model can have a significant impact on the success of a particular project. Project asset types and circumstances lend themselves to particular delivery models. The proponent should choose the delivery model based on a thorough review of relevant project risks and desired project objectives. The PCR should review if the delivery model was successful in mitigating the project risks and achieving the desired outcomes. Reviewing the performance of the selected delivery model will support future decision-making in relation to the situations that are best suited for particular delivery models.
- **Project financing** – The review of project finance arrangements should consider the mix of financing sources that were used for the project and determine the extent to which the actual funding profile matched the forecast baseline funding profile. The review should determine if the proponent considered all appropriate financing options during the planning stages of the project.
- **Project management and governance** – Appropriate levels of project management and governance will support successful project delivery and hold teams accountable for achieving project outcomes. Often a project governance structure will be prescribed within the business case or other project planning documentation. The PCR should evaluate the implementation of governance compared to the project plan and determine the extent to which project management and governance contributed to successful project outcomes.

Reviewing risk

Project risk assessment and risk management should play a key role throughout the project lifecycle. In some cases, a project can start out with strong risk management processes, but fail to adequately apply them throughout all delivery phases. The PCR should evaluate the adequacy and constancy of the risk analysis and risk management process throughout the project planning and delivery phases.

Lessons learnt

Consider any other lessons learnt from delivering, operating and maintaining the project.

The review of lessons learnt should be a qualitative analysis using the information collected through interviews, user questionnaires, and documentation review as appropriate.

Specific questions to review deliverability

Table 4 lists the questions to ask when reviewing the **Deliverability** of a completed project.

Table 4: Questions to establish the Deliverability of a completed project

Components of deliverability	Questions to establish if the project was effectively delivered and delivery risks were sufficiently mitigated
Implementation	1. Was the project delivered within budget? Describe any changes from the baseline. In which delivery years did variances arise, if any? What were the causes of the deviation? What lessons can be drawn to avoid variances in future projects? 2. Have other costs arisen that were not included in the base case? If so, describe them. Why were these costs not considered during the project development stage? 3. Did the delivered project meet the scope requirements stated in the business case (or contract documents)? Provide an explanation for any variances. 4. Did the scope of the project change after the submission of the business case? Was this captured by the tender documentation or any other documentation during the project delivery stage? 5. If the scope of the project changed during the project delivery stage, did this have an impact on planned costs? Describe these impacts. Could these scope changes and impacts have been avoided? 6. Was the project delivered on time? Describe any changes from the baseline and reasons for variances. What lessons can be drawn for future projects from this review? 7. Were the identified milestones in the baseline schedule appropriate for a project of this nature? Could these milestones be defined differently to improve planning and delivery of future projects? 8. Was a change management plan required and adequately defined? Was this implemented appropriately? Describe how change was managed and what the outcomes were.
Capability & capacity	9. Were there any capability shortfalls during delivery, including tools, technology, skills or experience? What were the reasons for them and how were they managed? 10. How did the proponent and contractor/s successfully mitigate any identified capability risks? 11. Were there any labour or resource capacity shortfalls during project delivery? What were the reasons for them and how were they managed? 12. Is there sufficient labour capacity to operate and maintain the asset?

Table 4: *Continued*

Components of deliverability	Questions to establish if the project was effectively delivered and delivery risks were sufficiently mitigated
Project governance	13. To what extent did the procurement process meet policy and procedural requirements? 14. Was the project procured using the model proposed in the business case and the contract (e.g. design and construct)? If not, how and why did it differ? 15. Did the selected procurement/delivery model achieve the intended outcomes? Describe these outcomes. Was the selected model considered appropriate? 16. What were the strengths and/or weaknesses of the selected procurement/delivery model? 17. Were there any issues with funding and financing? 18. Were non-government financing sources considered for delivering this project (e.g. tolls revenue or value sharing mechanisms)? a. If such sources of revenue were not considered, was this the right decision? 19. What are the lessons for financing of future projects that you can draw from this review? 20. Was the level of project management and governance sufficient to support successful project outcomes? Describe the approach taken and what the outcomes were.
Risk	21. Did the procurement/delivery model mitigate identified risks or did it introduce additional risks? 22. Were the project risks managed effectively? Was the risk management approach in the business case adopted? 23. Was the proposed risk management approach adequate? 24. Were there risks that the project development documentation did not identify to an appropriate standard for the asset type (i.e. did the risk assessment meet the required safety standards and regulations)? How might you manage these risks, or manage risks differently going forward, when implementing a project of a similar nature? 25. Were there any unintended outcomes that have arisen due to this project or program? If so, what were they?
Lessons learnt	26. Were lessons from previous projects applied effectively? If not, why is this feedback loop not effective? 27. What lessons for future projects can you draw from this review? 28. What lessons can you draw from this review of procurement and delivery models for improving planning of future projects?

Make recommendations for future reviews

During the initial review, the reviewer should also determine whether:

- A subsequent review should be more independent or detailed, depending on the project's complexity, or due to findings that have emerged in the initial review. This may require that a second review be completed by an external reviewer or a panel of external reviewers. It may also require more extensive user surveys to supplement findings from discussions with project teams.
- The information and method that was used in the initial review was adequate, and therefore, should be used in subsequent reviews, or if an alternative baseline and/or approach would be more appropriate.

By the time of completing subsequent review(s), adequate information should be available to complete a PCR on all evaluation areas and, importantly, should be focused more on:

- an ex-post review of the Societal Impact of the project to determine whether the expected benefits of the investment have been realised over the initial years of operations, compared to the costs incurred
- other lessons for consideration of how the project planning and delivery could be improved.

In any subsequent reviews, the reviewers should gather additional information on the operational performance of the asset, as well as the actual operating and maintenance costs of the asset. The reviewer should also consider additional factors that have arisen, which could assist with future projects (for example, whether the project is continuing to meet its strategic objectives or whether any additional project risks have emerged).

2.7 Step 6: Reporting and next steps

Once the information is collected and analysed, the delivery agency and reviewers should look at all the responses and **determine the key findings of the PCR**. These key findings should be **compiled and submitted to Infrastructure Australia as a Stage 4 submission**. For any subsequent review(s), the reviewers should also look at the key findings and recommendations from the previous review(s), and consider these as part of the subsequent review.

The purpose of completing PCRs is to capture key lessons from the project to guide better project planning and delivery in the future. Therefore, you should **share the results with relevant stakeholders** who can incorporate lessons learnt into ongoing and future projects. These stakeholders may also be able to help verify whether any problems that hindered the project have since been resolved. To achieve this, states, territories and proponent organisations should publish a summary of the PCR for each project, so that others can learn from their experience.

In the case of problematic findings, you should seek to understand the reason for the result and include recommendations on how proponents can avoid this for future projects. Similarly, in the case of positive findings, you should provide recommendations on what steps should be adopted on future projects to achieve a similar positive result.

The PCR documentation should describe the project, the information and analysis for each of the evaluation areas and the key findings and recommendations from the review. **Figure 5** provides a guide to the contents that should be included in a PCR.

Figure 5: Example table of contents for a post completion review

Post completion review: [Insert project name]

Table of contents

Illustrative

Executive summary
1. Project overview
2. Findings from earlier PCRs (if applicable)
3. Strategic Fit
   - 3.1. Case for change
   - 3.2. Alignment
   - 3.3. Network and system integration
   - 3.4. Solution justification
   - 3.5. Stakeholder endorsement
4. Societal Impact
   - 4.1. Benefits realisation
     - 4.1.1. Quality of life
     - 4.1.2. Productivity
     - 4.1.3. Environment
     - 4.1.4. Sustainability
     - 4.1.5. Resilience
   - 4.2. Cost realisation
5. Deliverability
   - 5.1. Implementation
   - 5.2. Capability and capacity
   - 5.3. Governance
   - 5.4. Risk
   - 5.5. Lessons learned
6. Conclusions
7. Recommendations

Once a delivery agency has completed multiple PCRs, we recommend they consider them together and identify the key lessons and findings that can be applied to future projects.

A robust PCR process should be cumulative and not undertaken in isolation. This means that for any specific project, reviewers need to consider the findings from any previous or earlier PCRs in undertaking their review. States, territories and proponent organisations should also consider PCR findings collectively, to **identify where there are systemic issues** (rather than project-specific issues). This will assist states, territories and delivery agencies to benefit from these lessons, even if they themselves deliver very few projects in any given year.

3

How we assess Stage 4 submissions

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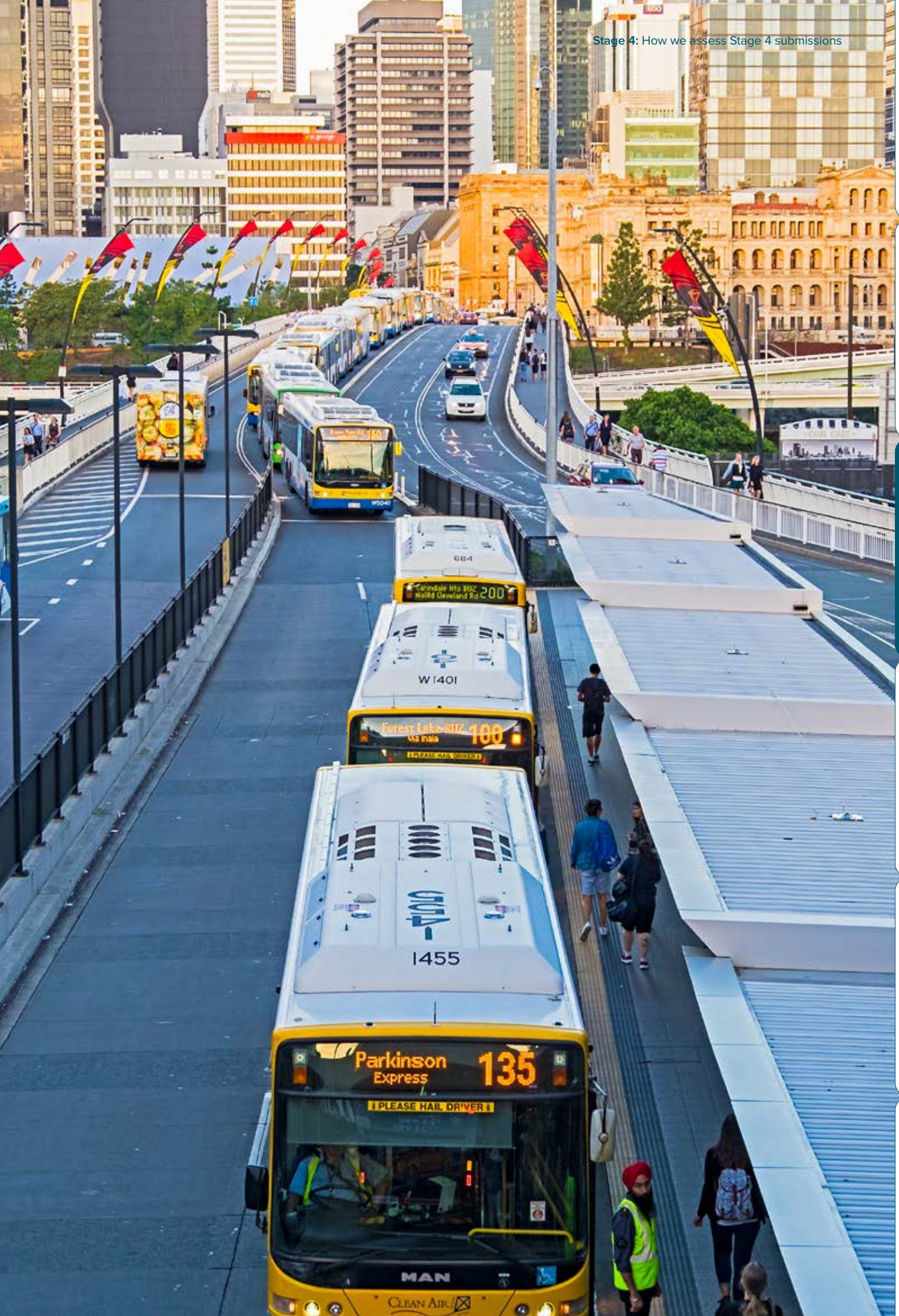
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3.1 How we assess Stage 4 submissions

We assess Stage 4 submissions using the Assessment Framework and preceding stage submissions, such as the business case (Stage 3), Stage 2 and even Stage 1 submissions.

Through assessing a PCR, we can help you capture lessons from the project to improve future projects and demonstrate successes.

As outlined earlier, the overarching purpose of a PCR assessment is not to find fault in the implementation of the project, but to capture lessons that can improve future planning, delivery and risk mitigation. Our assessment of PCRs focusses on understanding and learning from experience to improve future decisions, project delivery and project performance.

While there is no formal output published of our assessment of a Stage 4 submission, we utilise this knowledge to inform future proposal evaluations and guidance.

To assess whether the project has maximised societal welfare, **we will consider it against our Assessment Criteria and associated themes, as captured in the review questions in this document** (see **Table 1, Table 3** and **Table 4** in **Section 2.6**). Our assessment of submissions is based on the quality of evidence across all three criteria (and associated themes) and our experience in reviewing nationally significant infrastructure proposals.

Building on the specific Assessment Criteria questions outlined in **Section 2.6**, the key elements of our PCR assessment include the review of the project to confirm:

- whether the project addresses the problems or opportunities of national significance stated in the business case or earlier submission
- the Societal Impact (social, economic and environmental value) of the delivered solution, identifying any changes to that proposed in the business case, including comparison of costs and benefits
- whether the project was effectively delivered and how delivery risks were sufficiently mitigated, including but not necessarily limited to consideration of time (against delivery schedule) and quality.

3.2 How we work with proponents in Stage 4

We collaborate with proponents during Stage 4 to understand project outcomes and project delivery against the benefits and costs described in the business case. We will use the PCR to validate information contained in the business case that we reviewed at **Stage 3**. We will also utilise this information to inform our ongoing evaluations, advice to proponents and future enhancements to the Assessment Framework.

As noted in **Section 1.4**, we encourage you to engage with us when undertaking a PCR, ideally after reviewing this guidance, but prior to formally submitting the PCR documentation to us. We may be able to support a PCR to expand on existing national, state or territory post completion activities to meet our requirements. This presents an opportunity to reduce potential duplication, increase transparency and improve dissemination of lessons learnt.

To help us work collaboratively with you to review a project and capture lessons learnt, please provide the information describedin the submission checklist in **Section 4**.

4

Submission Checklist

If you are making a **Stage 4 submission** to Infrastructure Australia, you will need to provide documentation supporting the PCR.

Stage 4 Submission Checklist

Table 6 provides our submission checklist, which clearly lists all of the items that are required or recommended in a Stage 4 submission. The editable **Stage 4 Submission Checklist** that we require to accompany your submission is available at **www.infrastructureaustralia.gov.au/submit-a-proposal**. The PCR and relevant supporting information should be provided in relevant state, territory or agency templates.

For Stage 4, we classify submission items as **required**, **recommended** or **good practice**, as described in **Table 5**.

We encourage you to engage with us when developing your Stage 4 submission, ideally after reviewing this document and the Stage 4 Submission Checklist, but prior to formally lodging your submission. We can provide advice to ensure you are meeting our requirements, which may avoid us seeking clarification or requesting additional work be completed for the business case.

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

Table 5: Classification of submission checklist requirements

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

Table 6: Stage 4 Submission Checklist

Item	Requirement	Name relevant docs you have attached	Where can we find that info in the docs (if relevant)
Project information			
Project description	Required	*Included in editable Submission Checklist. Identify any additional information attached*	
Information is finalised (i.e. not draft or identified as subject to change)	Required		
Information is not out of date (we recommend information is current or less than 3 years old)	Required		
Confidentiality requirements	Required		
State or territory (gateway) review (i.e. infrastructure advisory body or equivalent), where relevant	Good practice		

Item	Requirement	Name relevant docs you have attached	Where can we find that info in the docs (if relevant)
Step 4: Gather information for review			
Forecast and actual project delivery costs and timeframes	Required	*e.g. Post completion review report*	*e.g. Section 3.1*
Forecast and actual infrastructure performance data	Required		
Forecast and actual operating and maintenance data	Required		
Forecast and actual benefits	Required		
Forecast and actual performance metrics	Required		
Interviews undertaken with the project delivery team	Required		
Step 6: Reporting and next steps			
Comparison of outcomes from the document review and the interviews	Required		
Key findings	Required		
Approach to communicate key findings and recommendations	Required		
Timing and nature of key findings and any subsequent review	Required		

Glossary

Term	Definition
Appraisal	The process of determining the impacts and overall merit of a proposal, including gathering and presenting relevant information for consideration by the decision-maker.
Assessment	For the purposes of the **Assessment Framework**, this refers to Infrastructure Australia's evaluation of proposals submitted to us for inclusion on the ***Infrastructure Priority List*** or for a funded proposal review.
Assessment Criteria	The three criteria Infrastructure Australia assesses proposals against: **Strategic Fit, Societal Impact** and **Deliverability**.
Assessment Framework	A publicly available document that details how Infrastructure Australia assesses infrastructure proposals. It provides structure to the identification, analysis, appraisal, and selection of proposals and advises proponents how to progress through the following four stages: • Stage 1: Defining problems and opportunities • Stage 2: Identifying and analysing options • Stage 3: Developing a business case • Stage 4: Post completion review
Australian Infrastructure Audit	Published in August 2019, the Audit was developed by Infrastructure Australia to provide a strategic assessment of Australia's infrastructure needs over the next 15 years. It examined the drivers of future infrastructure demand, particularly population and economic growth. Data from the Audit is used as an evidence base for assessments of proposals for inclusion on the ***Infrastructure Priority List***.
Australian Infrastructure Plan	The 2021 Plan was developed by Infrastructure Australia as a positive reform roadmap for Australia. Building off the evidence base of the Audit (see ***Australian Infrastructure Audit***), the Plan sets out solutions to the infrastructure challenges and opportunities Australia faces over the next 15 years, to drive productivity growth, maintain and enhance our standard of living, and ensure our cities remain world class. The 2021 Plan supersedes the February 2016 Plan.
Base case	A project **appraisal** compares the costs and benefits of doing something (a 'project case') with not doing it (the 'base case'). The base case should identify the expected outcomes of a '**do-minimum**' situation, assuming the continued operation of the network or service under good management practices. We recommend the committed and funded expenditure approach to defining the base case, but recognise that some states and territories use the planning reference case approach.
Base year	The year to which all values are discounted when determining a present value. (See **discount rate**).
Benefit–cost ratio (BCR)	This is the ratio of the present value of economic benefits to the present value of economic costs. It is an indicator of the economic merit of a proposal presented at the completion of a cost–benefit analysis. (See **cost–benefit analysis**).
Business case	A document that brings together the results of all the assessments of an infrastructure proposal. It is the formal means of presenting information about a proposal to aid decision-making. It includes all information needed to support a decision to proceed, or not, with the proposal and to secure necessary approvals from the relevant government agency. Unless otherwise defined, we are referring to a final or detailed business case, rather than an early (for example, strategic or preliminary) business case, which is developed in accordance with state or territory requirements. A business case is prepared as part of Stage 3 of the **Assessment Framework**.
Capital cost	The initial fixed costs required to create or upgrade an economic asset and bring it into operation. This includes expenses such as the procurement of land, buildings, construction, labour and equipment.

Term	Definition
Cost–benefit analysis (CBA)	An economic analysis technique for assessing the economic merit of an infrastructure proposal. It involves assessing the benefits, costs, and net benefits to society the proposal would deliver. It aims to attach a monetary value to the benefits and costs wherever possible and provide a summary indication of the net benefit. (See **benefit–cost ratio**).
Cost-effectiveness analysis (CEA)	Cost-effectiveness analysis is used when the benefits of project options are identical. Its aim is to identify the option that will cost the least. The technique for valuing costs is the same as for **cost–benefit analysis**.
Cost distribution	**Probabilistic project cost estimates** identify cost components, determine the probability distribution for each cost component and then undertake a simulation (often a 'Monte Carlo' simulation) to generate a probabilistic distribution of project costs.
Delivered proposal (Stage 4)	Once we've assessed the post completion review of a delivered project we will list it on the ***Infrastructure Priority List*** as a delivered proposal.
Deliverability	One of three overarching **Assessment Criteria** we use to assess the merit of every proposal, at every stage. This criterion asks: can the proposal be delivered successfully? We assess whether the proposal is capable of being delivered successfully, whether risks have been identified and sufficiently mitigated, and whether there is a plan in place to realise the benefits. This criterion is divided into five themes: ease of implementation, capability and capacity, project governance, risk and lessons learnt.
Demand forecasting	The activity of estimating future demand (such as public transport patronage, vehicle volumes or water usage) in a particular year or over a particular period.
Discount rate	The interest rate at which future dollar values are adjusted to represent their present value (that is, in today's dollars). This adjustment is made to account for the fact that money today is more valuable than money in the future. **Cost–benefit analysis** should use real social discount rates.
Do-minimum	A base case reflecting the continued operation of the network or service under good management practices. It should assume that general operating, routine and periodic maintenance costs will continue to occur, plus a minimum level of capital expenditure to maintain services at their current level (e.g. maintaining access or reliability) without significant deterioration. This may include asset renewals and replacement of life-ending components on a like-for-like basis, as well as committed and funded projects and smaller scale changes required to sustain viable operations under the base case. (See **base case**).
Early-stage proposal (Stage 1)	Stage 1 submissions that are positively assessed by us are listed on the ***Infrastructure Priority List*** as an early-stage proposal.
Economic efficiency	A measure of the extent to which economic gains (also referred to as increases in societal welfare) have been or could be achieved. Economic efficiency is improved whenever those who gain from a change could compensate the losers out of their gains and still have some gain left over. Maximum economic efficiency is said to be obtained when no further changes of this type are possible (i.e there are no unexploited opportunities to improve everybody's welfare).
Ex-ante and ex-post	The term 'ex-ante' means 'before the event' and is applied to forecast or intended outcomes. This contrasts with 'ex-post' which means 'after the event' and reflects actual outcomes or performance. An ex-post evaluation (or post completion review) involves comparisons between actual outcomes and forecasts or benchmarks and provides insights into what degree a project has succeeded in meeting its objectives.
External cost	A cost imposed on third parties, including time lost from delays, accident risks and environmental impacts (valued at **resource costs** where applicable).
Expected Value	The mean value of the **cost distribution**. If the cost distribution is symmetrical, the Expected Value will be equal to the P50 value. Where the cost distribution is positively skewed, the mean will be above the P50 value and may lie closer to the P90 value. (See **P50 cost** and **P90 cost**)

Term	Definition
Externality	An effect that one party has on another that is not transmitted through market transactions. An example is noise pollution from vehicles: those operating the vehicles disturb other parties such as nearby residents, but a market transaction between these parties is absent.
Impact	A generic term to describe any specific effect of a proposal. Impacts can be positive (a benefit) or negative (a cost).
Indicative Delivery Timeframe	For investment-ready proposals (Stage 3), this provides the proponent's indication of when the proposal is likely to be delivered and operational.
Infrastructure	Physical assets and facilities that enables organisations to provide goods and services to the community and improves quality of life, efficiency, accessibility and liveability of our cities and regions. This includes, but is not necessarily limited to, transport, energy, telecommunications, water and social (such as health, education, social housing and community facilities) infrastructure.
Infrastructure Australia Act	The *Infrastructure Australia Act 2008* (Cth) is the legislative framework by which we operate and report through our responsible Minister (the Minister for Infrastructure, Transport and Regional Development).
Infrastructure Priority List	The Priority List is a credible pipeline of nationally significant infrastructure proposals that are seeking investment. Every proposal on the Priority List is expected to contribute to national productivity or to be otherwise socially beneficial. It is a statement of where governments, the community and the private sector can best focus their infrastructure efforts.
Investment costs	The costs of providing the infrastructure before operations commence (e.g. costs for planning and design, site surveying, site preparation, investigation, data collection and analysis, legal costs, administrative costs, land acquisition, construction costs, consequential works, construction externalities). In some cases, investment costs can recur throughout the **appraisal period** (e.g. asset replacement or renewal costs). For **cost–benefit analysis**, these should all be expressed in economic cost terms (also known as resource costs).
Investment-ready proposal (Stage 3)	Stage 3 submissions that are positively assessed by us are listed on the ***Infrastructure Priority List*** as investment-ready proposals.
Longlist of options	A comprehensive list of potential options to address the problems and realise the opportunities identified in Stage 1. The longlist includes all options that are identified for a proposal and should represent a range of reasonable alternatives, including capital and non-capital options, as well as demand-side and supply-side options.
Maintenance	Incremental work to repair or restore infrastructure to an earlier condition or to slow the rate of deterioration. This is distinct from construction and upgrading, which seeks to extend infrastructure beyond its original condition.
Monetised	Where a quantified impact has a corresponding dollar value attached to it. (See **impact**).
Nationally significant problem or opportunity	The *Infrastructure Australia Act 2008* (Cth) defines nationally significant infrastructure as including transport, energy, communications, and water infrastructure 'in which investment or further investment will materially improve national productivity'. We also consider social infrastructure, such as health, education, social housing and community facilities. As a guide, for a proposal to be considered nationally significant, it should concern a problem or opportunity that will have more than $30 million per annum impact on the economy (nominal, undiscounted). We also take unquantified social benefit considerations into account.
Net present value (NPV)	The monetary value of benefits minus the monetary value of costs over the appraisal period, with discount rates applied (See **discount rate** and **appraisal period**).
Network	Infrastructure networks are the physical assets that enable the provision of services such as transport connectivity, power, water and internet.

Term	Definition
Non-infrastructure options/ solutions	Proposals that avoid the need for significant expenditure on new or upgraded infrastructure. For example, changes to pricing or reforms to regulations.
Operating costs	The costs of providing the infrastructure after it has commenced operation (e.g. maintenance and administration costs of a facility).
Opportunity	An evidence-based reason for action that results from a gap between an actual and a desired outcome. In the context of the Assessment Framework, an opportunity is informed by the ***Australian Infrastructure Audit*** and by our collaboration with proponents to identify jurisdictional and national opportunities.
Option	A possible solution to a problem, including base case options such as 'do nothing' or 'do minimum'. (See **base case**).
Options analysis	The analysis of alternative options for solving an identified problem or realising an identified opportunity. (See **option**).
Pathway	In the context of the Assessment Framework, this refers to the steps we move through in the assessment of an infrastructure proposal.
Post completion review	A review of a completed project to determine whether the desired objectives and/or forecast benefits and costs have been realised, and to explain the reasons for any differences between the expected and actual outcomes. The aim is to draw appropriate lessons for future project identification and assessment. A post completion review is sometimes referred to as an '**ex-post** evaluation'.
Potential investment options (Stage 2)	Stage 2 submissions that are positively assessed by us are listed on the ***Infrastructure Priority List*** as potential investment options.
Price year	The year in which the prevailing prices are used in the analysis for the valuation of impacts.
Probabilistic project cost estimates	These estimates identify cost components, determine the probability distribution for each cost component and then undertake a simulation (often a 'Monte Carlo' simulation) to generate a probabilistic distribution of project costs. (See **cost distribution, expected value, P50 cost** and **P90 cost**).
Problem	An evidence-based reason for action that results from a gap between an actual and a desired outcome. In the context of the Assessment Framework, problems are informed by the ***Australian Infrastructure Audit*** and by our collaboration with proponents to identify jurisdictional problems and national problems.
Productivity	The efficiency with which the economy as a whole convert inputs (labour, capital and raw materials) into outputs. Productivity grows when outputs grow faster than inputs, which makes the existing inputs more productively efficient.
Project	An infrastructure intervention. A project will move through the stages of project initiation, planning, delivery and completion. A suite of related projects to address a common problem or opportunity will create a **program**.
Program	A proposal involving a package of projects that are clearly interlinked by a common **problem** or **opportunity**. The package presents a robust and holistic approach to prioritise and address the projects, and there is a material opportunity to collaborate and share lessons across states, territories or agencies. The projects can be delivered in a coordinated manner to obtain benefits that may not be achieved by delivering the interventions individually. (See **project**).
Proponent	An organisation or individual who prepares and submits infrastructure proposals to us for assessment. To be a proponent of a business case (a Stage 3 submission), the organisation must be capable of delivering that proposal. (See **business case**).

Term	Definition
Proposal	The general term we use for successful submissions to the ***Infrastructure Priority List***, across the key stages of project development, specifically – early-stage (Stage 1), potential investment options (Stage 2) and investment-ready proposals (Stage 3). Proposals that have been delivered would be assessed in Stage 4.
P50 cost	An estimate of project costs based on a 50% probability that the cost estimate will not be exceeded.
P90 cost	An estimate of project costs based on a 90% probability that the cost estimate will not be exceeded.
Qualitative	A description of an impact that does not rely on quantitative or monetised information.
Quantitative / quantified	A description of an impact that utilises, presents or references values, numbers or statistics.
Real prices	Prices that have been adjusted to remove the effects of inflation. They must be stated for a specific base year, for example '2016 prices'. (See **base year**).
Real options analysis	An investment evaluation and decision-making framework used to embed flexibility into an investment strategy to better structure and manage projects impacted by uncertainty. Real options analysis can be used as a way of thinking or as a quantitative technique to place values on options and different investment strategies. In both cases, it represents a process of understanding the value of investments under different future states of the world and developing more nuanced investment strategies to reflect this.
Resilience	The ability of the community to anticipate, resist, absorb, recover, transform and thrive in response to shocks and stresses to realise positive social, economic and environmental outcomes.
Risk	Events that have probabilities of occurrence that are predictable and outcomes that can be estimated with some confidence.
Root cause	The underlying causes and drivers of a proposal and how they are likely to change over time. (See **proposal**).
Shortlist of options	The set of options determined as most likely to benefit the Australian community using a structured, quantitative and unbiased analysis (in Stage 2). The shortlist of options is taken to Stage 3 for detailed analysis. We recommend the shortlist includes at least two viable options.
Social discount rate	Discount rates translate future costs and benefits to a common time unit, comparing costs and benefits that accrue at different times by expressing them as an equivalent amount in today's dollars. In the economic appraisal, a real discount rate should be used that considers societal resources. (See **appraisal** and **real discount rate**).
Social, economic and environmental impact	The positive and negative effects of a proposal, with regards to: • social: quality-of-life effects, such as social exclusion and access to services, employment and safety • economic: productivity effects, such as productive capacity, economic capability, global competitiveness • environmental: effects such as greenhouse gas emissions, waste treatment, noise pollution, visual intrusion, heritage impacts.
Socially beneficial	Something is socially beneficial if you can demonstrate an evidence-based improvement that will change the quality of life of Australians. For example, through improved health outcomes, access to services/employment, and improved environmental outcomes.
Societal wellbeing	The welfare of Australian society as a whole. Effects on societal wellbeing, often referred to as impacts, can be positive (a benefit) or negative (a cost), and form the basis for **cost–benefit analysis**.

Term	Definition
Societal Impact	One of three overarching **Assessment Criteria** we use to assess the merit of every proposal, at every stage. This criterion asks: what is the value of the proposal to society and the economy? We assess whether the social, economic and environmental value of the proposal, and its contribution to community sustainability and resilience is clearly demonstrated by evidence-based analysis. This criterion is divided into five themes: quality of life, productivity, environment, sustainability and resilience.
Strategic Fit	One of three overarching **Assessment Criteria** we use to assess the merit of every proposal, at every stage. This criterion asks: is there a clear rationale for the proposal? We assess whether there is a strong case for action, the proposal aligns to the achievement of stated goals and there is a clear fit with the community. This criterion is divided into five themes: case for change, alignment, network and system integration, solution justification and stakeholder endorsement.
Themes	Themes are outcome areas within our Assessment Criteria. Each criterion comprises five themes. (See **Assessment Criteria, Strategic Fit, Societal Impact** and **Deliverability**).
Sustainability	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Uncertainty	Events where probabilities of occurrence are difficult to predict and outcomes are challenging to quantify.

Appendix A

Published guidance on post completion reviews

Table 7 provides references for published guidance on PCRs.

Table 7: State and territory guidance material on post completion reviews

Jurisdiction	Guidance material
Australia	Transport and Infrastructure Senior Officials' Committee 2016, *Australian Transport Assessment and Planning (ATAP) Guidelines F7 Performance review & post-completion evaluation*, Transport and Infrastructure Senior Officials' Committee, Australian Government, Canberra, available at: **www.atap.gov.au/framework/review-evaluation/index**.
Commonwealth	Australian Department of Finance 2020, *Guidance on the Assurance Reviews Process – (RMG 106)*, Australian Government, Canberra, available at: **www.finance.gov.au/publications/resource-management-guides/guidance-assurance-reviews-process-rmg-106**.
Victoria	Victorian Department of Treasury and Finance 2020, *Gateway Key Decision Points, Guidance and Templates – Gate 6: Benefits realisation*, Victorian Government, Melbourne, available at: **www.dtf.vic.gov.au/gateway-review-process/gateway-key-decision-points-guidance-and-templates**.
Victoria	VicRoads 2014, *Investment Evaluation Framework – Post Completion Evaluation*, Victorian Government, Melbourne, available at: **www.vicroads.vic.gov.au/planning-and-projects/evaluating-investments**.
New South Wales	NSW Department of Finance, Services and Innovation 2020, *Benefits Realisation Management Framework*, New South Wales Government, Sydney, available at: **www.finance.nsw.gov.au/publication-and-resources/benefits-realisation-management-framework**.
Australian Capital Territory	ACT Treasury 2018, *The Capital Framework –Post Implementation Review*, Australian Capital Territory Government, Canberra, available at: **apps.treasury.act.gov.au/infrastructure-finance-and-reform/the-capital-framework/post-implementation**.
Queensland	Queensland Treasury 2015, *Project Assessment Framework - Benefits Realisation*, Queensland Government, Brisbane, available at: **https://www.treasury.qld.gov.au/publications-resources/project-assessment-framework/paf-benefits-realisation.pdf**.
Tasmania	Tasmanian Department of Premier and Cabinet 2011, *Project Management Guidelines*, Tasmanian Government, Hobart, available at: **www.dpac.tas.gov.au/__data/assets/pdf_file/0007/509362/Tasmanian_Government_Project_Management_Guidelines_V7_0_July_2011_2.pdf**.
New Zealand	New Zealand Treasury 2019, *Managing Benefits from Projects and Programmes: Guide for Practitioners*, New Zealand Government, Wellington, available at: **www.treasury.govt.nz/publications/guide/managing-benefits-projects-and-programmes-guide-practitioners**

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.

www.infrastructureaustralia.gov.au