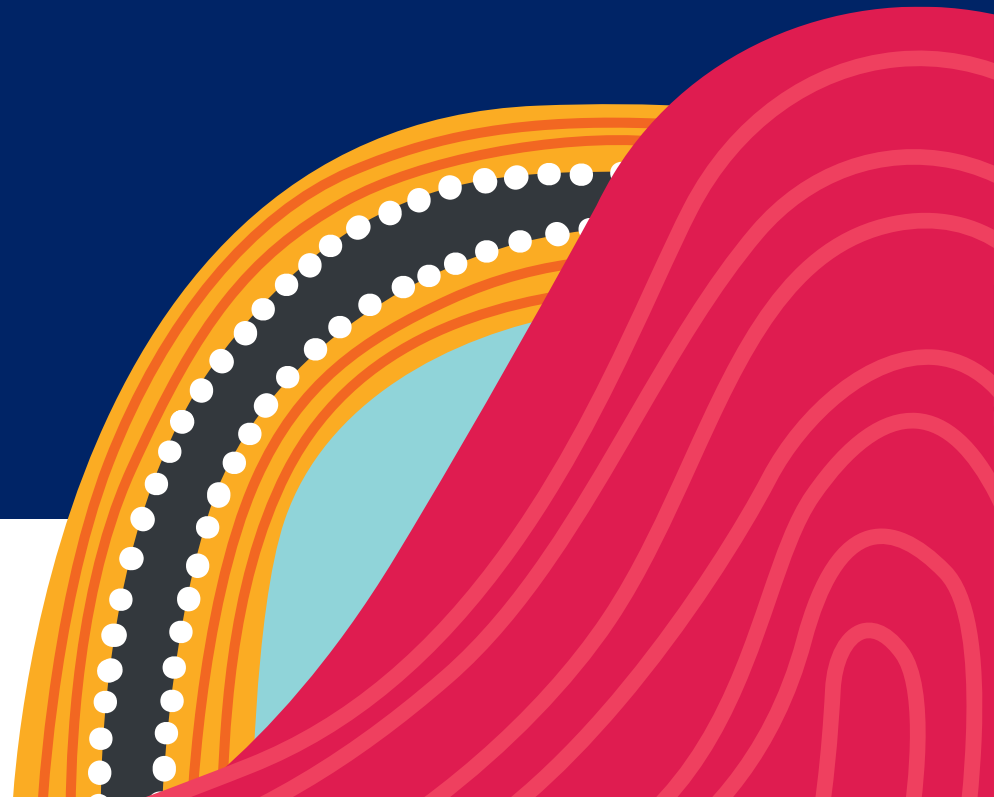
Business Case Development Training

Project Development

Business Case Centre Of Excellence

20 February 2025



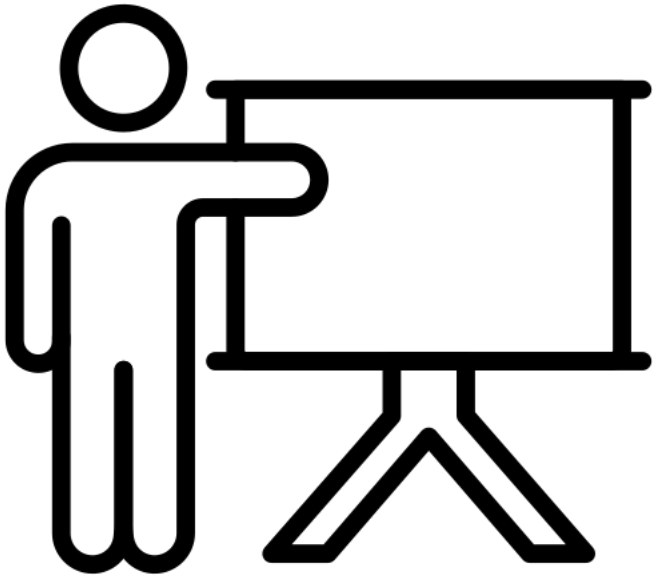
Acknowledgement of Country

Transport pays respects to Elders past and present, and recognise and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW.

Introduction

Richard Skoda

Director, Project Development



Facilitators

Business Case Centre of Excellence & BC Advisory

Ilya Zak
Director

Ted Robson
Senior Manager

Quanita Naveed
Senior Manager

Daniel Bahyl
Senior Manager

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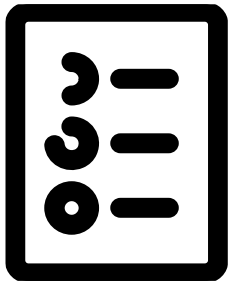
Business Case Teams @ TfNSW



Business Case CoE		Business Case Advisory
Infrastructure Projects and Engineering (IPE) Formerly Infrastructure & Place (I&P)	Where	Finance, Technology and Commercial (FTC) Formerly Finance & Investment (FID)
Practitioners (Hands on)	Who	Advisers & Assurers
Works with project teams	What	Advises project teams
Follows TfNSW BC guidance	How	Owns TfNSW BC guidance
Help project teams achieve an investment decision	Why	Provide best practice advice and guidance

Agenda

20 Feb 2025

Business Case Development Training

Section	*Timing (start – finish)*	
Introductions	9:00AM	9:15AM
Session 1a | Business Case Purpose	9:15AM	9:55AM
Session 1b | Project Development and Business Case Sections	9:55AM	10:25AM
Morning Tea	10:25AM	10:40AM
Session 1c | Assurance & Treasury Guideline Updates	10:40AM	11:20AM
Session 2 | Problem Definition	11:20AM	12:20PM
Lunch	12:20PM	1:05PM
Session 2 | Group activity	1:05PM	1:25PM
Session 3a | Options Development	1:25PM	2:15PM
Session 3b | Options Assessment	2:15PM	2:55PM
Afternoon Tea	2:55PM	3:10PM
Session 4 | Value for Money; Economic & Financial Analysis	3:10PM	3:40PM
Session 5 | Progressing to Final Business Case	3:40PM	3:50PM
Q&A | Feedback Form & Summary	3:50PM	4:00PM

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Training Course Overview

Session 1a-c	Session 2	Session 3a & 3b	Session 4	Session 5
				
Why do we need a Business Case?	**How do we define the Problem?**	**How do we develop & assess options?**	**How do we prove value for money?**	**How do we progress to Full Business Case?**

Interactive Exercise #1	Interactive Exercise #2	Interactive Exercise #3
		
Problem Definition & ILM	**Options Identification**	**Options Assessment**

Section 1a

Business Case Purpose

Contents

Business Case Purpose

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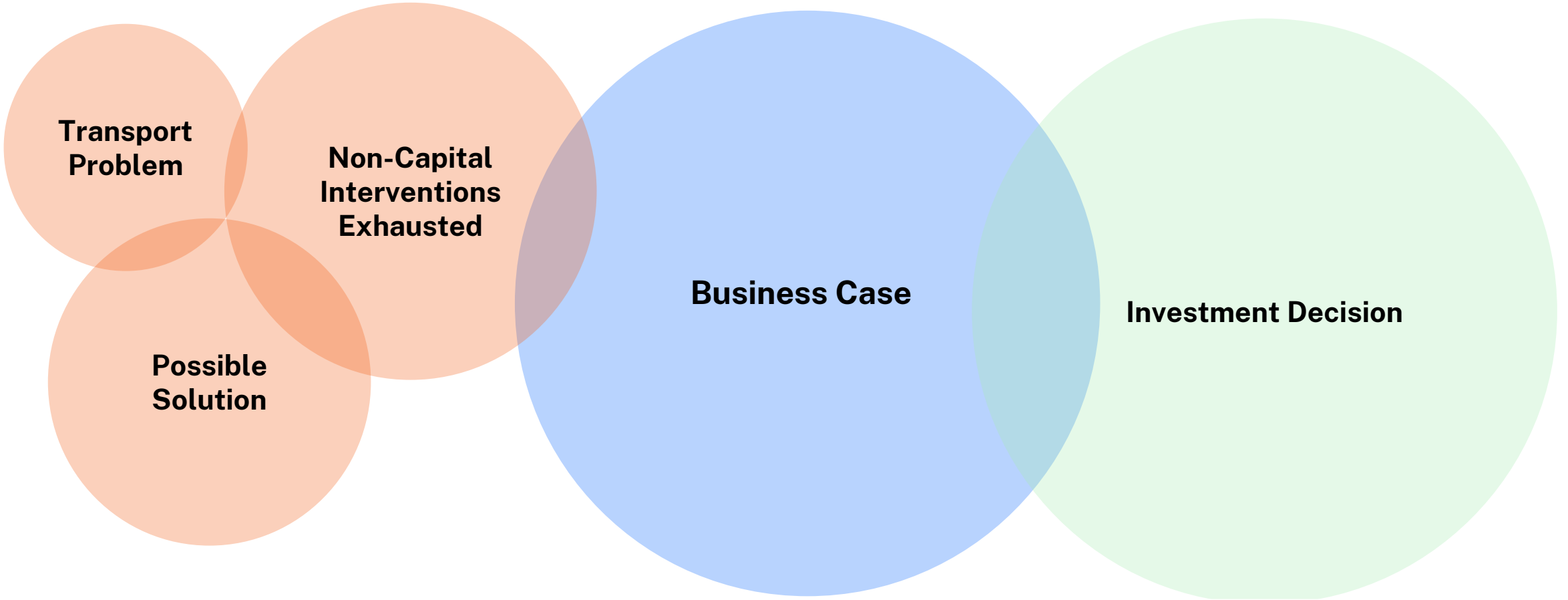
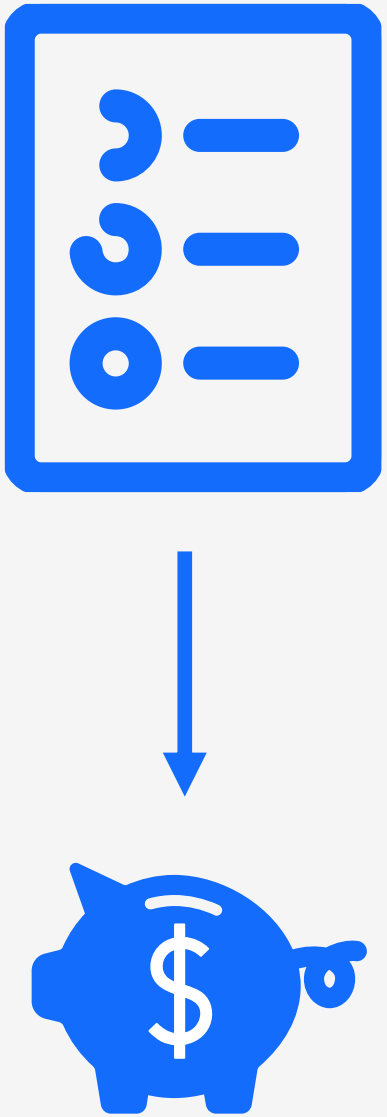
BUSINESS CASE PURPOSE

Business Case Objective



Client	Development	Investment Decision Makers TfNSW Executives, Treasury & Cabinet



BUSINESS CASE PURPOSE

Business Case Objective

How is a
BUSINESS CASE
going to convince
anyone to give us
BILLIONS OF DOLLARS
of public money?

Why do business cases fail?

BUSINESS CASE PURPOSE

Business Case Key Questions

Questions

Is there really a problem? What is it?	Why is this option the best solution?	Why not a smaller investment?	Why can't we deliver this later?	Can you really deliver this?

Answers through...

Investment Case

Evidence & Data	Optioneering & Evaluation	Delivery Feasibility

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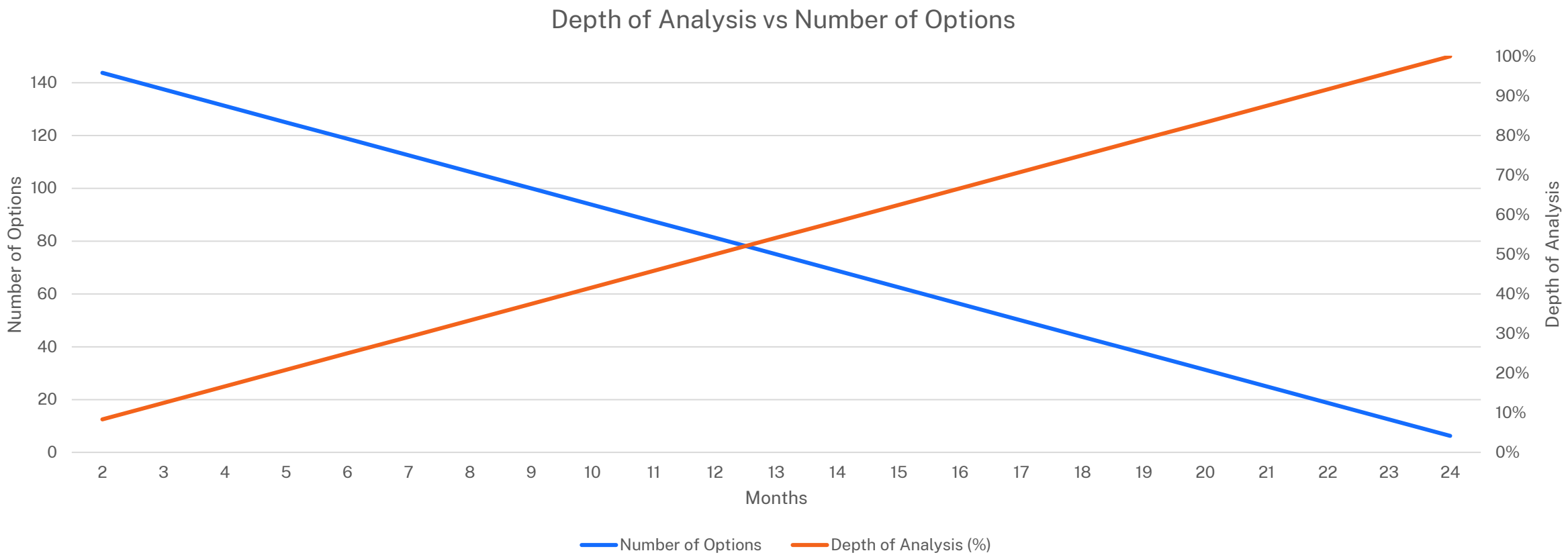
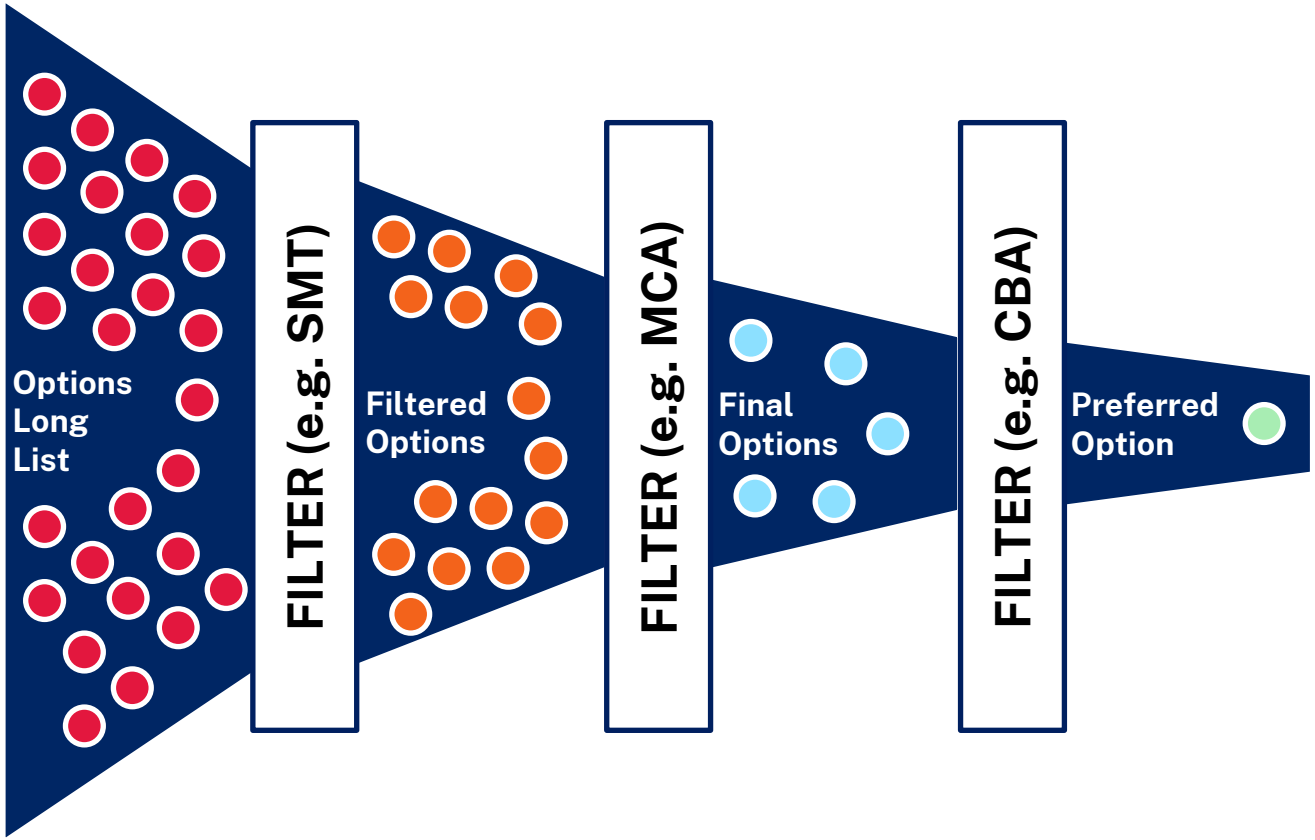
BUSINESS CASE PURPOSE

Options Analysis vs Elimination

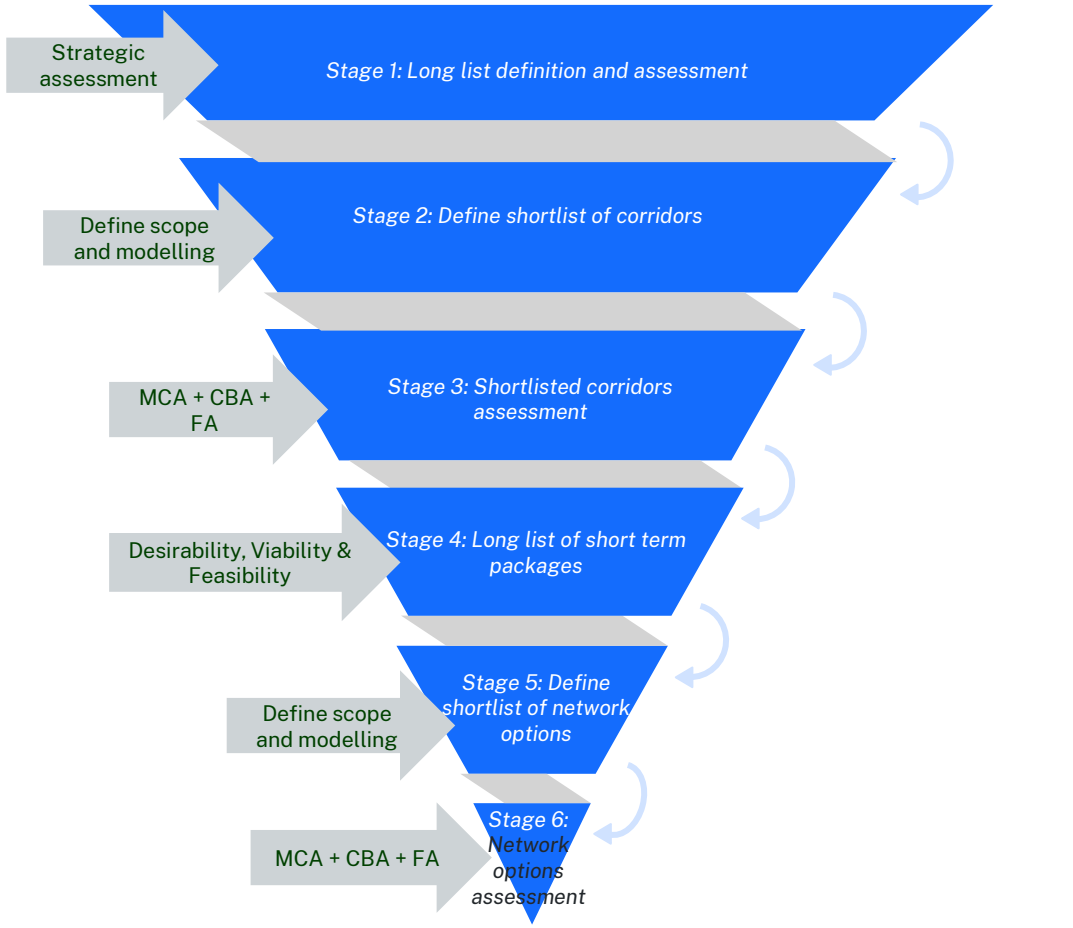


Options Elimination

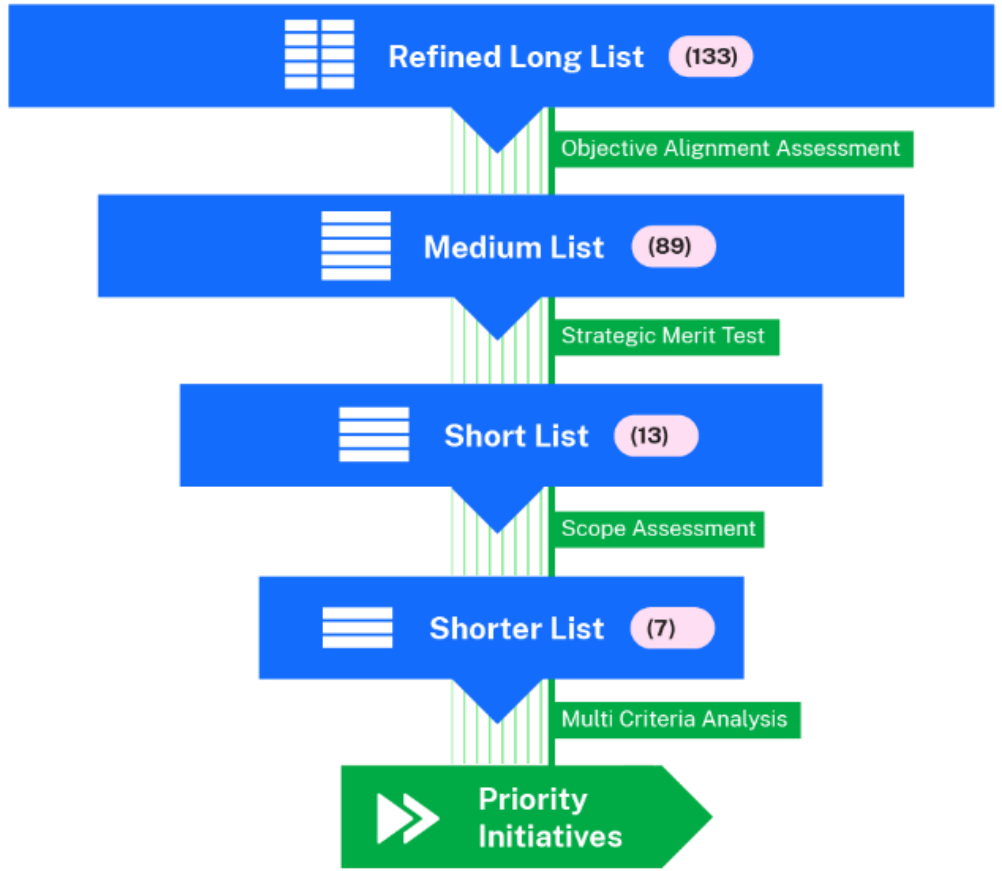


Options Elimination

Options development approach

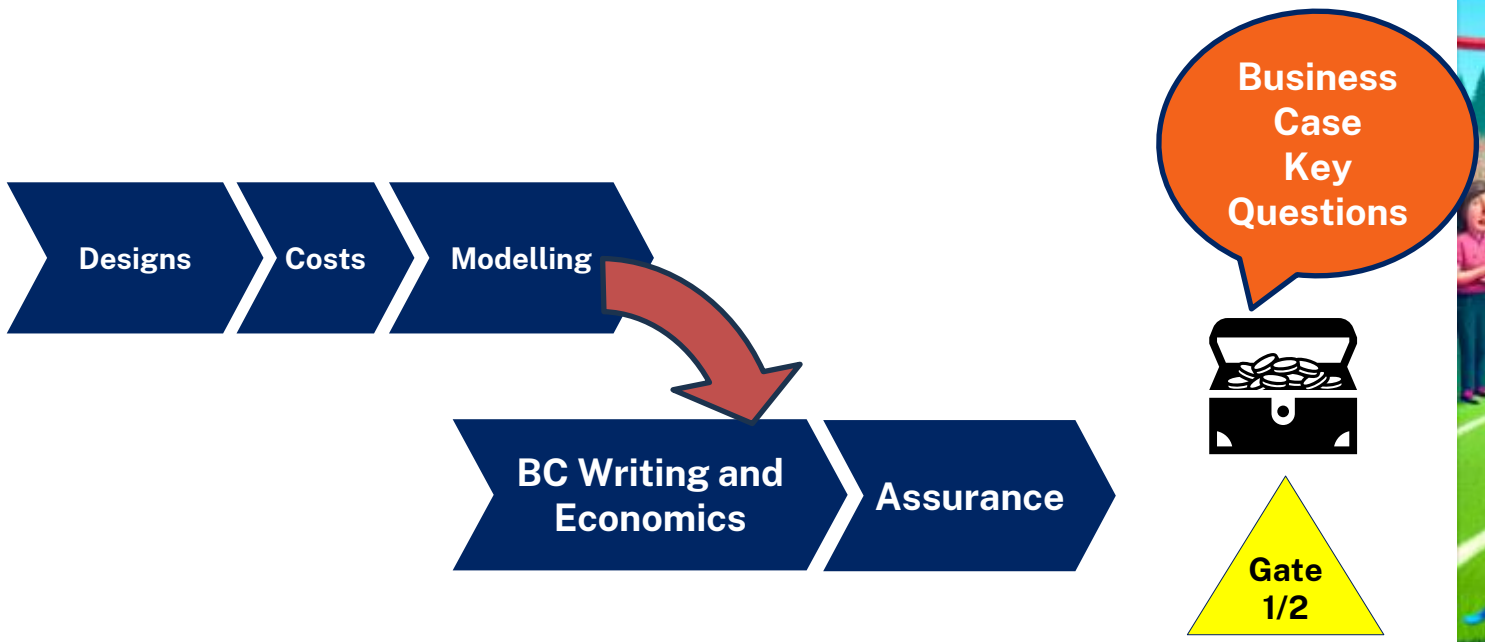


Stage 2 – Options filtering

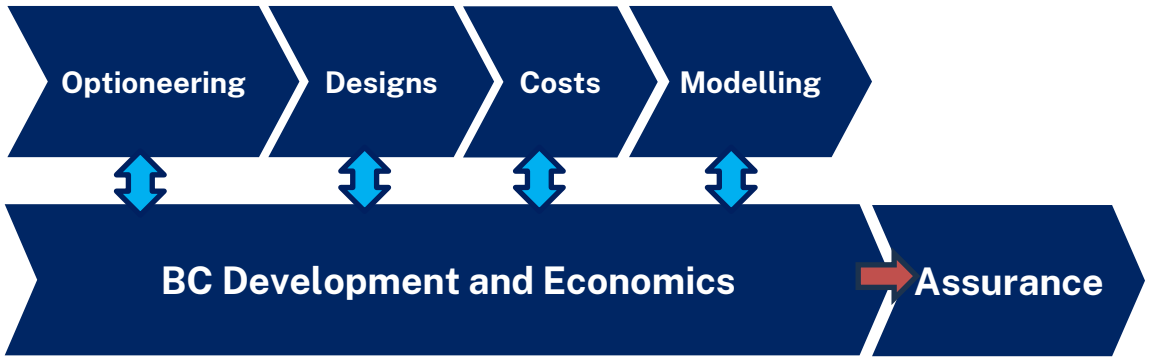


Project Development and Business Case Development

When it all goes wrong

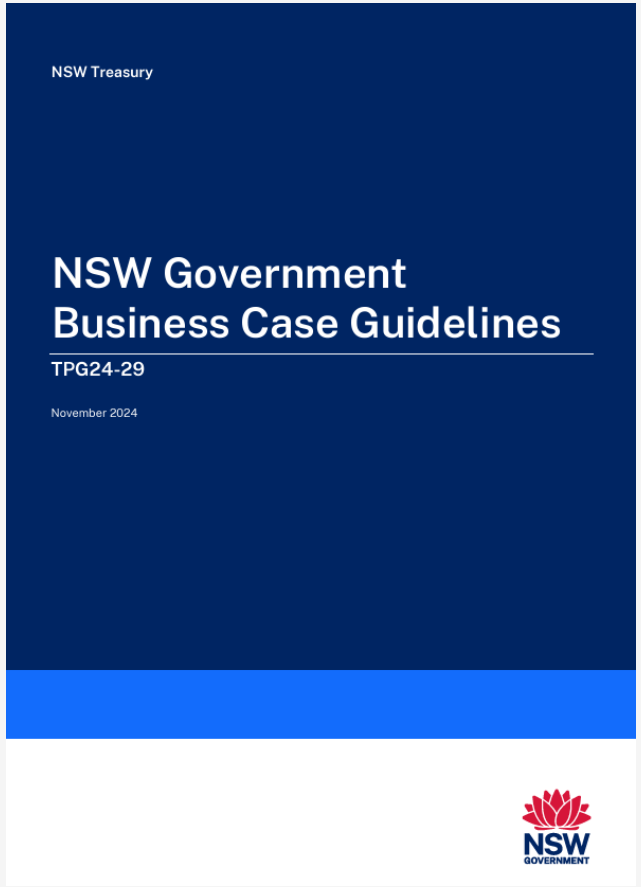


Project Development and Business Case Development



Project development and Business Case development must progress in tandem

Primary focus = Business Case Questions



What is a Business Case?

Primary Purpose: *Inform an investment decision*

Secondary Purpose: *Develop foundational basis for project delivery*

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Section 1b

Business Case Sections

Contents

Business Case Sections

1. Project Development & Business Case Development
2. Business Case Structure
3. Business Case Chapters
4. Focus for this Training Course

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BUSINESS CASE PURPOSE

How do we do Business Case Development in Transport?

Transport Problem

Non-Capital Interventions Exhausted

Possible Solution

Client Requirements Document

Business Case

Client Brief & Business Case

Investment Decision

Assurance Review, Cabinet Submission & Funding Release

Client	Deliverer / Development	Investment Decision Makers TfNSW Executives, Treasury & Cabinet

Business Case Structure Overview

Where do the key questions for the investment decision sit within the Business Case structure?

Investment decision questions	**Is there really a problem? What is it?**	**Why is this option the best solution?**	**Why not a smaller investment?**	**Why can't we deliver this later?**	**Can you really deliver this?**
Investment decisions answers	**EVIDENCE & DATA**	**OPTIONS & EVALUATION**			**DELIVERY FEASIBILITY**
		Investment Case			
Typical Business Case Sections	**Need for Investment / Case for Change**	**Options Development**	**Financial Appraisal**	Value for Money	**Commercial & Procurement**
		Costs	**Economic Appraisal**		
	Objectives & Strategic Alignment	**Risk Analysis**	**Monitoring & Evaluation**		**Management Approach** *Governance, Stakeholders etc.*

The chapters remain the same, but what is the level of effort and detail in answering each question between Preliminary to Full Business Case?

Preliminary Business Case → **Full Business Case**

Business Case Chapters Overview

Investment decision questions	Is there really a problem? What is it?	Why is this option the best solution?	Why not a smaller investment?	Why can't we deliver this later?	Can you really deliver this?
Investment decisions answers	NEED FOR INVESTMENT	OPTIONS & EVALUATION			DELIVERY FEASIBILITY

Key things to consider during the scoping and initiation phase

Do's	Don'ts
✓	✗

Detailed cheat sheets are provided in the participant pack following the session

Typical Business Case Sections

- Case for Change
- Objectives & Strategic Alignment

BUSINESS CASE SECTIONS

Need for Investment

Case for Change

Is there really a problem? What is it?	Why is this option the best solution?	Why not a smaller investment?	Why can't we deliver this later?	Can you really deliver this?

Preliminary Business Case → Full Business Case

Do's

- Define the problems & objectives / benefits (using Investment Logic Map)
- Evidence based, using data & analysis
- Provide strong strategic & policy alignment links
- Engage with stakeholders & endorse through governance

Don'ts

- Presume the solution in the problem statements
- Start the next stage (options) without clearly defining the problems

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Typical Business Case Sections

Options Development

Costs

BUSINESS CASE SECTIONS

Optioneering & Evaluation

Financial Appraisal

Economic Appraisal

Typical Business Case Sections

Is there really a problem? What is it?

Why is this option the best solution?

Why not a smaller investment?

Why can't we deliver this later?

Can you really deliver this?

Preliminary Business Case

Full Business Case

Do's

- Consider all options and develop a long list
- Use project objectives from ILM to generate and assess the options
- Use time & budget wisely; conduct economics & modelling on shorter list
- Engage with stakeholders & endorse through governance

Don'ts

- Start options generation or assessment before the problems are agreed
- Over design the options; do what's needed for each stage (PBC vs FBC)

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Typical Business Case Sections

- Commercial & Procurement Strategy
- Management Approach (*Risk, Governance, Stakeholders etc.)*

BUSINESS CASE SECTIONS

Deliverability

Is there really a problem? What is it?

Why is this option the best solution?

Why not a smaller investment?

Why can't we deliver this later?

Can you really deliver this?

Preliminary Business Case → Full Business Case

Do's

- Focus on the next stage / gate (either into FBC or into delivery)
- Develop a *concise* project management document suite and respond to risks
- Provide scalable and staged approach to implementation (budget & time)
- Engage with stakeholders & endorse through governance

Don'ts

- Copy and paste from other projects (be specific)

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Different sizes and scales of projects

Use the right tool, for the right job




Increasing depth of analysis

Same principles, same approach but tailored to be fit for purpose

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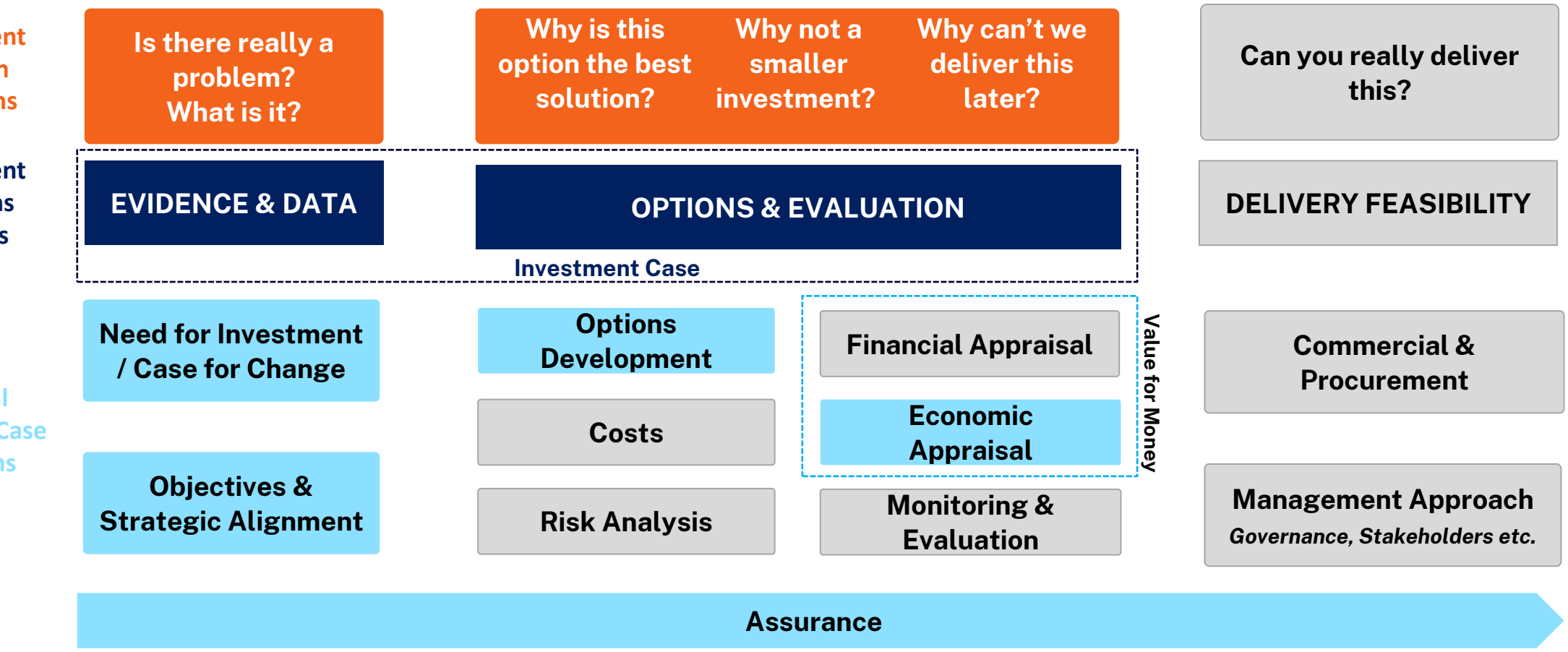
BUSINESS CASE SECTIONS

Training Course Focus

Problem Definition (Case for Change) and Option Development and Assessment



Section Summary

BUSINESS CASE PURPOSE & SECTIONS

What have we learned?

Learning outcomes:

- ✓ Purpose of a business case is to obtain an investment decision
- ✓ Focus of a business case is to answer the key questions the decision makers ask
- ✓ Project development and business case development should run in parallel, to produce the most compelling business case but in the most efficient way

Morning Tea Break

Section 1c

Overview to assurance & Treasury guidance updates

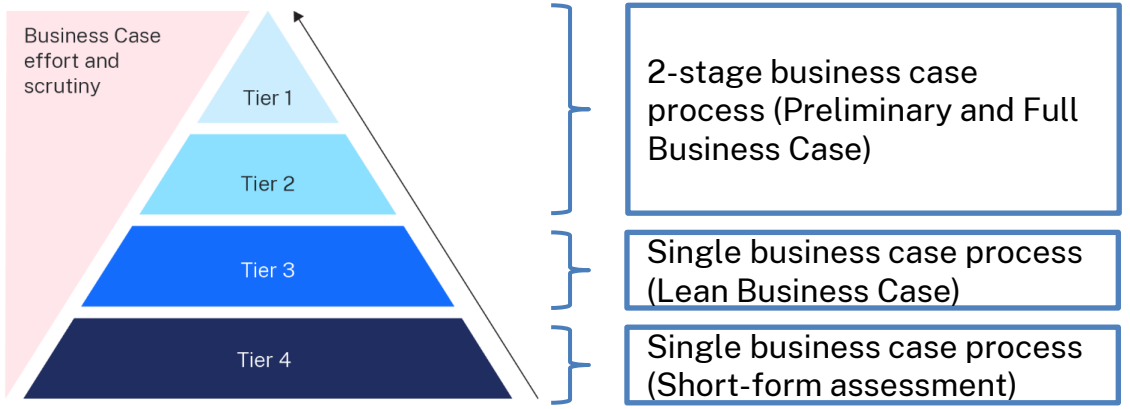
ASSURANCE

Project Tiering

NSW risk-based approach to project assurance

- Projects are ‘tiered’ based on their **expected cost** and **risk**
- Risk Areas are:
  - Government Priority
  - Interface Complexity
  - Procurement Risk
  - Agency Capability & Capacity
- IIAF Risk Profile Tool v1.8 by Transport.xlsm
- Infrastructure Investor Assurance Framework (IIAF) is the overarching document guiding business case process based on risk tier

Weighted Risk Score	ETC Range				
	$20M – 50M	$50-$100M	$100M - $500M	$500M - $1B	>$1B
0.0 – 2.0	Tier 4	Tier 3	Tier 3	Tier 3	Tier 2
2.1 – 2.2	Tier 4	Tier 3	Tier 3	Tier 2	Tier 2
2.3 – 2.4	Tier 4	Tier 3	Tier 2	Tier 2	Tier 2
2.5 – 2.9	Tier 3	Tier 2	Tier 2	Tier 2	Tier 1 – HPHR
3.0 – 3.9	Tier 2	Tier 2	Tier 2	Tier 2	Tier 1 – HPHR
4.0 – 5.0	Tier 1 – HPHR	Tier 1 – HPHR	Tier 1 – HPHR	Tier 1 – HPHR	Tier 1 – HPHR



Governance vs Assurance

Overview

Engagement with key stakeholders should underpin governance and assurance processes.

Governance

The processes and structures through which **decisions** are made

[Decision making]

Assurance

Independent **third-party assessment** to support project development and ensure success

[Reviewing & Checking]

Project assurance is not an audit, approval, or endorsement process.

It is about identifying areas of improvement!

ASSURANCE

Internal and External Assurance

Interaction between the difference assurance functions

Who has been through an assurance process?

Internal Assurance

Transport for NSW

Reviews all business cases in Transport (Tiers 1 – 4)

Timeframe: ~3-4 weeks

External Assurance

Infrastructure NSW

Reviews tier 1 and tier 2 business cases in NSW

Timeframe: ~5-6 weeks

Australian Government | Infrastructure Australia

Reviews infrastructure projects that are seeking >$250M federal funding

Timeframe: ~5-6 weeks

Reviews (as required)

Treasury

Reviews projects that are seeking new funding or are a Ministerial priority funding

**Treasury doesn't have an assurance function for Infrastructure projects*

ASSURANCE

INSW gateway workbooks

What to expect in the gateway review (Tier 1 & 2 projects)

Who has been through an INSW Review?

- Workbooks are available for all gateways (1-6)
- Outline the focus of the assurance review
- Includes 7 key focus areas including what will be assessed and how
- Review panel consists of independent industry specialists

Gate 1 Gateway Workbook - November 2024

Example INSW gateway report

The results of the gateway review (Tier 1 & 2 projects)

- INSW provides an overall confidence rating (high, medium, stressed and low)
- There are 7 key focus areas (KFAs) that INSW review. Each receives a rating and potentially recommendations.
- Each assurance group have their own guidance. All of them ask the same fundamental business case questions.

THE REVIEW TEAM'S OVERALL LEVEL OF CONFIDENCE THAT THE PROJECT IS BEING EFFECTIVELY DEVELOPED AND DELIVERED IN ACCORDANCE WITH THE GOVERNMENT'S OBJECTIVES IS:	STRESSED

Where the overall development and delivery confidence rating is defined as:

HIGH	For this stage of the project, the review team is confident that successful development/delivery of the project to a clear purpose, scope, time estimate, cost estimate and benefits appears likely and there are no unmitigated risks that threaten successful delivery.
MEDIUM	The review team is confident that successful development of the project is feasible but would benefit from improvements in justification of the purpose, options analysis, time estimate or cost estimate.
STRESSED	The review team lacks confidence in the successful development of the project. There is insufficient evidence to demonstrate a robust options analysis, time estimate or cost estimate suitable to this stage of the project. Purpose and benefits are underdeveloped or not clear. The project's development requires urgent senior executive attention.
LOW	At this stage of the project, the review team has no confidence that successful development/delivery of the project to a well justified purpose, clear scope, time estimate or controlled cost is achievable. There is evidence that the future viability of the project is in doubt and it requires urgent senior executive attention.

THE REVIEW TEAM'S RATINGS FOR THE PRESCRIBED KEY FOCUS AREAS ARE:		NO. OF RECOMMENDATIONS		
		Critical	Essential	Recommended
1. Service need	Weak	2		
2. Value for money and affordability	Weak	1	2	
3. Social, economic & environmental sustainability	Acceptable			
4. Governance	Weak	1		1
5. Risk management	Acceptable		3	
6. Stakeholder management	Acceptable			
7. Asset owner's needs & change management	Acceptable			1
8. Other matters	-			
TOTAL		4	5	2

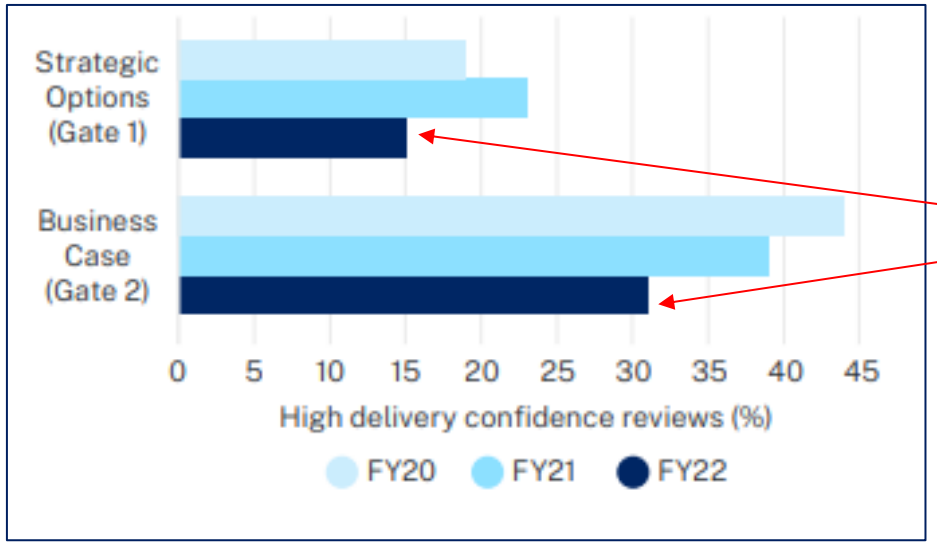
KEY FOCUS AREA RATING HOW THE KEY FOCUS AREA HAS BEEN ADDRESSED AND WHAT RISK DOES IT POSE TO PROJECT DEVELOPMENT AND DELIVERY CONFIDENCE	
STRONG	There are no major outstanding issues that appear to threaten benefit realisation, risk management and project scope definition.
ACCEPTABLE	There are issues that can be addressed and are manageable, however require timely management attention.
WEAK	There are significant issues that may jeopardise the successful delivery of the project.

ASSURANCE

Infrastructure NSW Trends & Insights

NSW risk-based approach to project assurance

Ratio of high delivery confidence ratings by Gateway Stage



High delivery confidence is decreasing!

Ranking	FY20	FY21	FY22
1	Risk management	Quality of business case	Quality of business case
2	Governance	Risk management	Risk management
3	Project management and planning	Governance	Governance
4	Procurement	Program/project management	Program/project management
5	Quality of business case	Project resourcing	Procurement
6	Options analysis	Procurement	Options analysis

https://www.infrastructure.nsw.gov.au/investor-assurance/project-assurance/trends-and-insights/

ASSURANCE

NSW Treasury Guidance Update

Released end of November 2024

The purpose of a business case is to demonstrate alignment to the Government's priorities and to inform an investment decision

Technical investigations and delivery analysis should be limited to what is required to inform the investment decision, and appropriate to the Tier of the project

Reducing the time and cost of developing business cases by streamlining the process and requirements, and reducing reliance on consultants

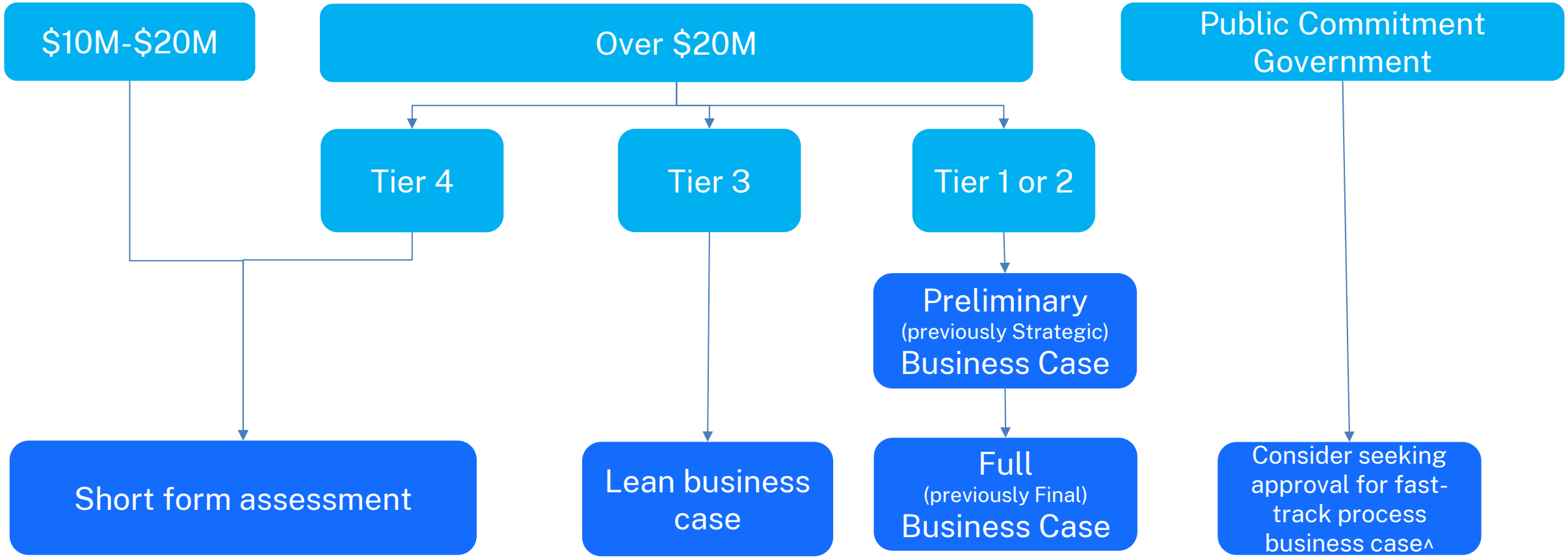
New fast track business case and investment assurance for Government commitments

Go/No Go process introduced for Tier 1 & 2 projects at Gate 1

ASSURANCE

NSW Treasury Guidance Update

Streamlining the business case process & requirements



^Pathway 1: Proceed to an abridged full business case and gate 2 review
^Pathway 2: Proceed to gate 3 review (projects with well-developed scope and delivery funding allocated)

Section 2

Problem Definition

(Case for Change & Need for Investment)

Contents

Case for Change: Problem Definition

1. Importance of Investment Logic Mapping as a blueprint
2. How to define the Problem
3. Using Investment Logic Mapping (ILM) to define the Problem
4. Spot the good and bad problem statements
5. Interactive Activity: Problems & Benefits ILM

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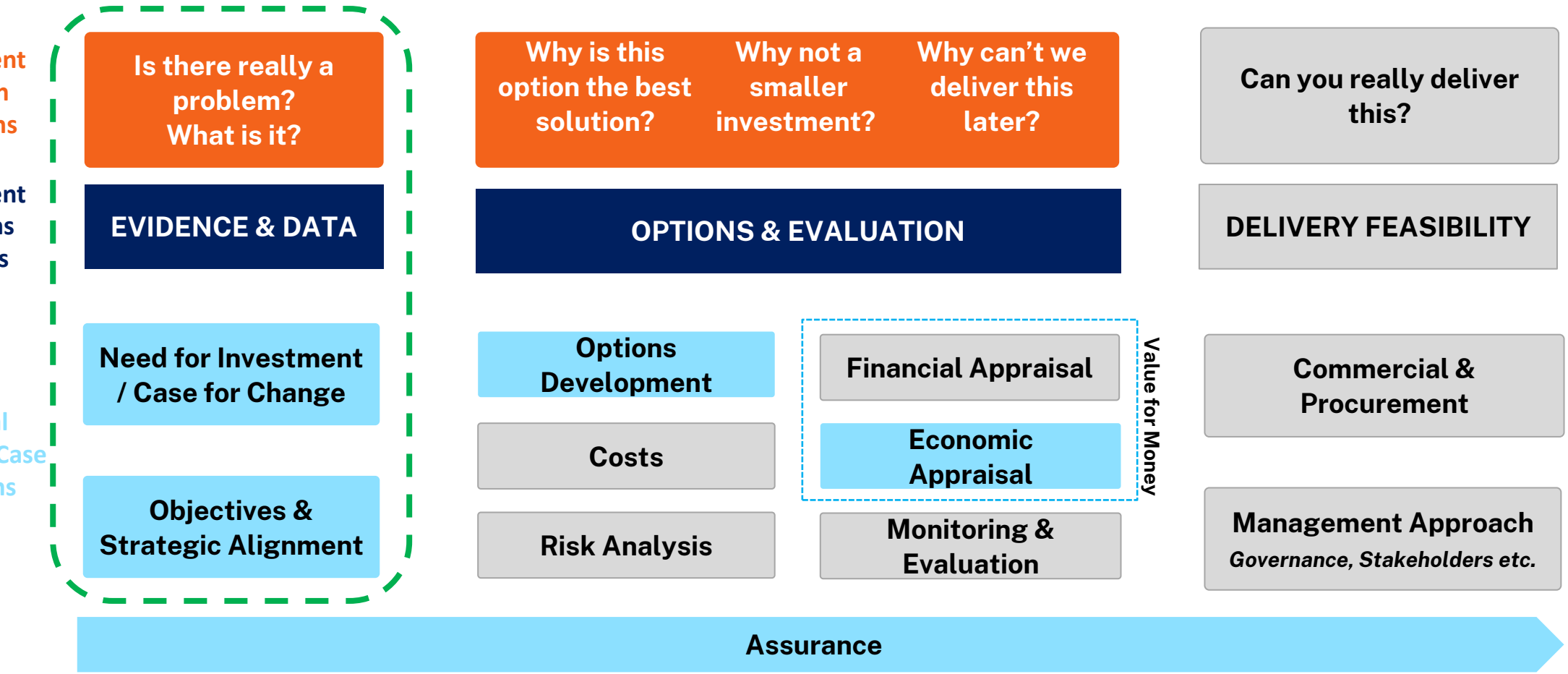
BUSINESS CASE SECTIONS

Problem Definition Focus

Problem Definition (Case for Change) and Option Development and Assessment



What is an Investment Logic Map?

PROBLEM DEFINITION

Using Investment Logic Map

To define the problems

- **How is it used?** Shows the story of the investments with clear links between each component, to be the foundation of the business case.
- **Why is it used?** To align project team and key stakeholders on the drivers for the investment in a simple visualisation.
- **How is it developed?** Through series of workshops with key stakeholders, approved through governance & updated iteratively.
- **When is it developed?** At the start of Preliminary Business Case and refreshed at Full Business Case.

Why is Problem Definition Important?

Part 1: Why is it important to understand the problem before developing the options?

"If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it,"
Albert Einstein

Well-defined problem is the foundation; which leads to a clearly defined set of objectives, which enables a better aligned options generation and an effective options assessment.

Not clearly defining the problem will lead to:

- Not understanding when the solution is needed i.e. is this an issue now, or in 5, 10 or more years
- Not fully understanding "who" is impacted or how widespread
- Overlooking solutions or not fully exploring other viable solutions
- A mismatch between the scale of problem and the proposed solution (either the solution is too small, too big or not effective)
- **Not answering the key question for investment decision makers, creating difficult assurance and approvals**

PROBLEM DEFINITION

Why is Problem Definition Important?

Part 2: What are the impacts to our customers and the wider community if we don't define the problem properly?

"If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it,"
Albert Einstein

- Deliver a less optimal or "wrong" solution and the existing problem may persist or get worse
- May need to invest more money again in the future to fix the problem or adapt the solution
- Impacts budget spending and prioritisation i.e. spending money sooner than needed or taking away from other priority needs
- Community distrust and NSW Government reputation damaged
- Overall, bad outcomes for our customers and wider community

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PROBLEM DEFINITION

What is a problem?

In the context of a Business Case

Problems are social, economic or environmental situations (costs) we want to avoid

Problems should be:

- Defining a 'transport' issue
- Presented as concise and easy to understand statements
- Reactive i.e. reacting to an issue on the network or within the community
- Describing an existing issue and/or a future issue that we anticipate will emerge or get worse over time
- Refer to a specific place or area

Problems <u>should not</u>:
Specify the solution
i.e., the problem is not: "*the road is not wide enough*" or "*there isn't enough cycle lanes*"

Problem statements have a cause and an effect:

Cause / Driver

Tells us what's broken

e.g. 1) Population growth, new housing developments and lack of alternative transport choices is creating road congestion...

e.g. 2) Flooding is regularly impacting the existing network...

Effect / So What?

Tells us who it impacts

e.g. 1) ... leading to increase in safety incidents and travel times, and impeding access to jobs

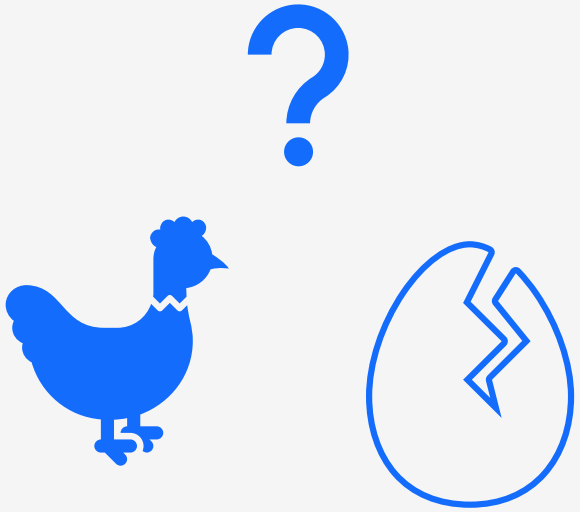
e.g. 2) ...impacting resilience and evacuation routes, increasing safety risks and community severance

Understanding both the cause and the effect sets up the options process; as the option needs to solve the effect.

PROBLEM DEFINITION

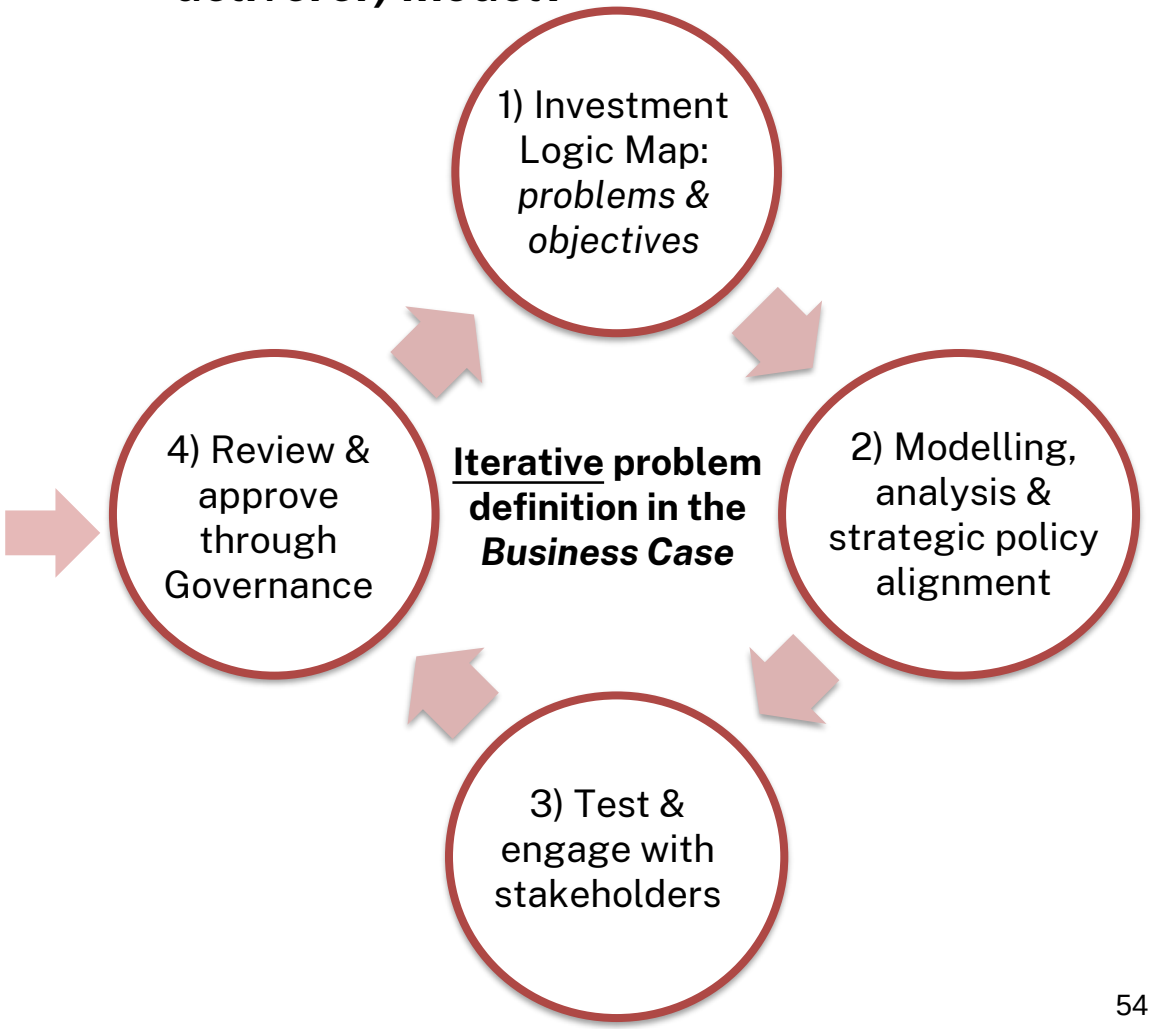
Who defines the problem?

Where does problem definition sit in the partnership (client-deliverer) model?



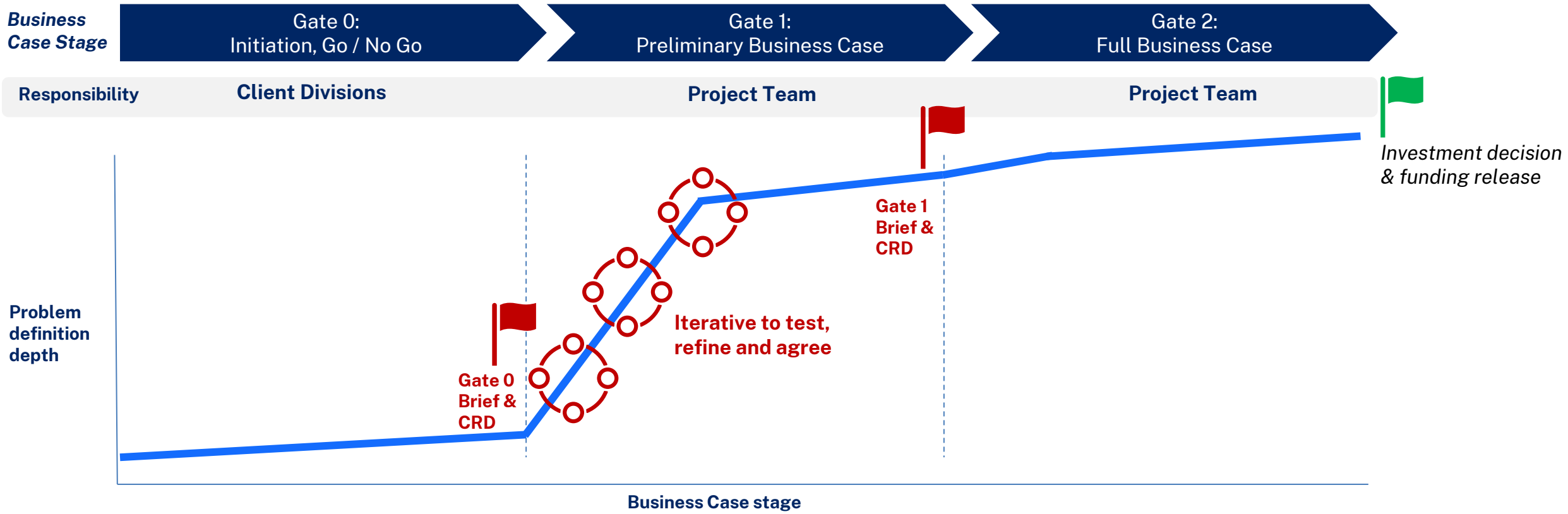
Client Requirements

✓ Starting point



PROBLEM DEFINTION

Defining the problem is iterative



- Problem definition is **fleshed out as early as possible**, during the PBC phase through an iterative process
- Endorsed through the project governance to support PBC optioneering
- Refinements may be completed during FBC phase e.g. updates to data and key messaging

Interactive:
Spot the Good and Bad Problem Statements!

Is this a good or a bad problem statement, and why?

In your tables...

Spot the Good and Bad Problem Statements!

Is this a good or a bad problem statement? And why?

Example 1
Recent population growth in “Springfield” and reliance on cars is creating significant congestion

Bad!

- Missing the effect, so what?

Re-word:
Significant congestion in “Springfield” is limiting access to the CBD, which is reducing liveability and impacting the local economy with closure of local businesses

Example 2
The existing single lane highway on Main North Road is creating significant safety issues for people and wildlife, and needs to be upgraded to a dual highway to increase capacity

Bad!

- Beginning is ok with a cause, but presumes a solution
- Doesn’t say what is causing the safety issues or what's wrong with the existing highway

Re-word:
Travel demand on Main North Road is exceeding the design capacity, creating significant safety issues for people along with crashes with wildlife, and impacting journey reliability and resilience

NSW GOVERNMENT

In your tables...

Spot the Good and Bad Problem Statements!

Is this a good or a bad problem statement? And why?

Example 3
Growth in freight demand through the 'Everglades' region cannot be met due to weight limit restrictions on the road network, which is reducing the size and number of trucks movements and constraining economic growth for local businesses

Good!

- Includes cause and effect
- Specific about the direct causes and the impacts

Example 4
Sequencing road widenings with land releases for housing is required to support local housing growth targets

Bad!

- Outlines a solution (road widenings) and doesn't specify study area
- More appropriate as an objective (if road widening was main part of the project)

Re-word:

Uncoordinated transport infrastructure planning with land releases in 'Edward Hills' is creating significant delays to housing development which is undermining local planning outcomes and not achieving housing targets

In your tables...

Spot the Good and Bad Problem Statements!

Is this a good or a bad problem statement? And why?

Example 5
There are not enough rest stops along Sunshine Motorway.

Bad!

- Cause could be more specific
- Missing the effect, so what?

Re-word:

The condition of, and the distance between, heavy vehicle rest areas along Sunshine Motorway does not meet National standards, resulting in fatigued drivers causing serious injury crashes.

Section 2

Investment Logic Map

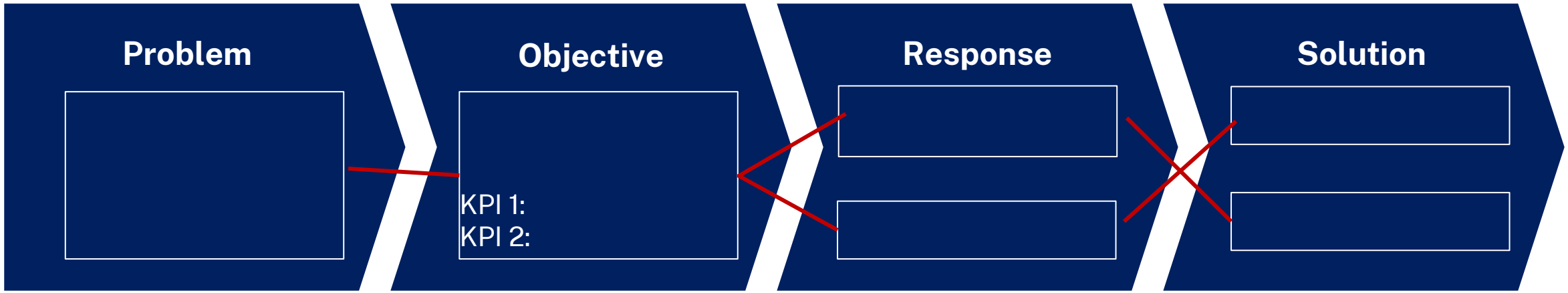
PROBLEM DEFINTION

Using Investment Logic Mapping

TO DEFINE THE PROBLEMS AND ACT AS THE FOUNDATION OF THE BUSINESS CASE

Difference between Problem and Objective?

The key ILM headings:



What is the problem or what is broken? And what is the effect, the "so what"? Up to 4 problem statements on the ILM.

What are the objectives and how will you measure them? i.e. what do we want to achieve from solving these problems?

What are the high-level interventions that can be taken to address the problem and achieve the objectives? i.e. policy or new infrastructure.

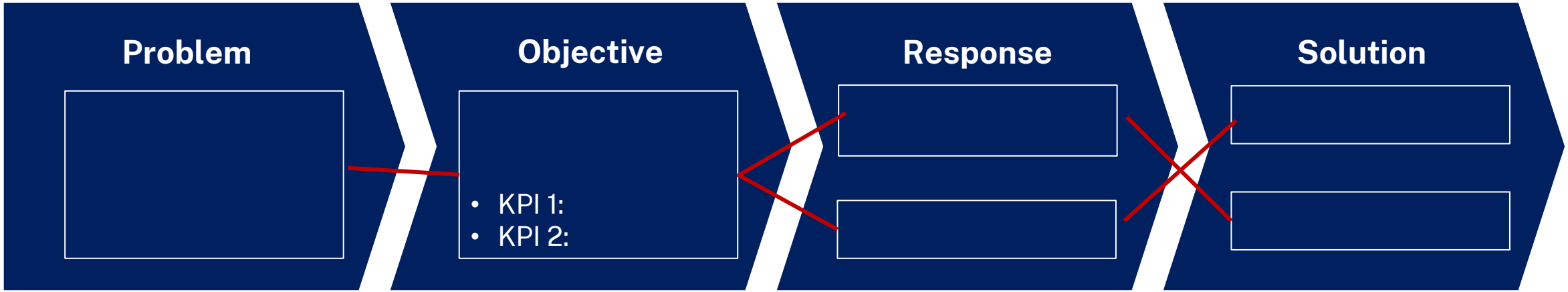
What are the specific options (assets or changes) that could be implemented from the response?

The links show the logic in the investment

PROBLEM DEFINTION

Using Investment Logic Mapping

HOW DOES THE ILM ACT AS THE FOUNDATION OF THE BUSINESS CASE?



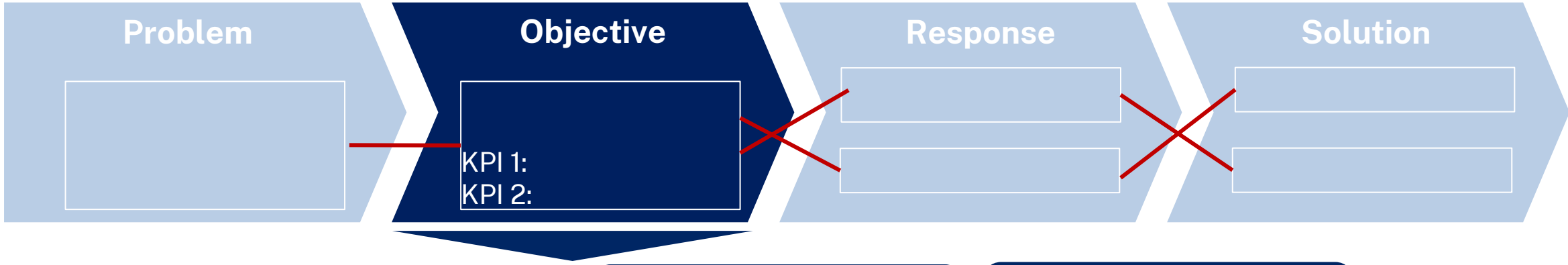
Investment decision questions	**Is there really a problem? What is it?**	**Why is this option the best solution?**	**Why not a smaller investment?** / **Why can't we deliver this later?**
Investment decisions answers	**EVIDENCE & DATA**	**OPTIONS & EVALUATION**	
Typical Business Case Sections	**Need for Investment / Case for Change** / **Objectives & Strategic Alignment**	**Options Development**	
		Costs / **Economic Appraisal** / **Financial Appraisal**	
		Risk Analysis / **Monitoring & Evaluation**	

Top tips! Be...
Specific; customer focused; measurable

PROBLEM DEFINTION

Objectives: What are we trying to achieve?

Is this a priority for the Government? Is this strategically aligned?



Themes:

- **Transport:** Connecting our customer's whole lives
- **Place:** Successful places for communities
- **Economy:** Enabling economic activity

Typical objectives:

- **Improve / Increase** — *Resilience, Amenity, Reliability, Safety, Jobs, Mode share*
- **Reduce** — *Travel times, Accidents, Emissions*
- **Meet** — *Statutory / regulatory requirement, Vehicle size standard, Asset life*

Example objectives:

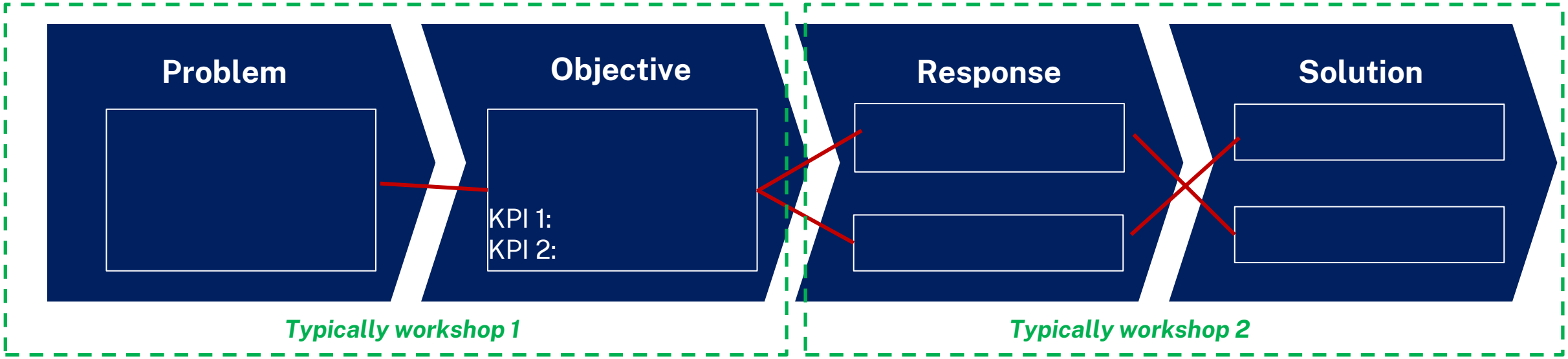
- *Increased mode share by % trips taken by public transport in X area by date Z*
- *Reduction in road fatalities and serious injuries within X area, by X amount*

PROBLEM DEFINTION

Using Investment Logic Mapping

Has anyone worked on a business case with the ILM developed later?

HOW DO YOU DEVELOP AN ILM?



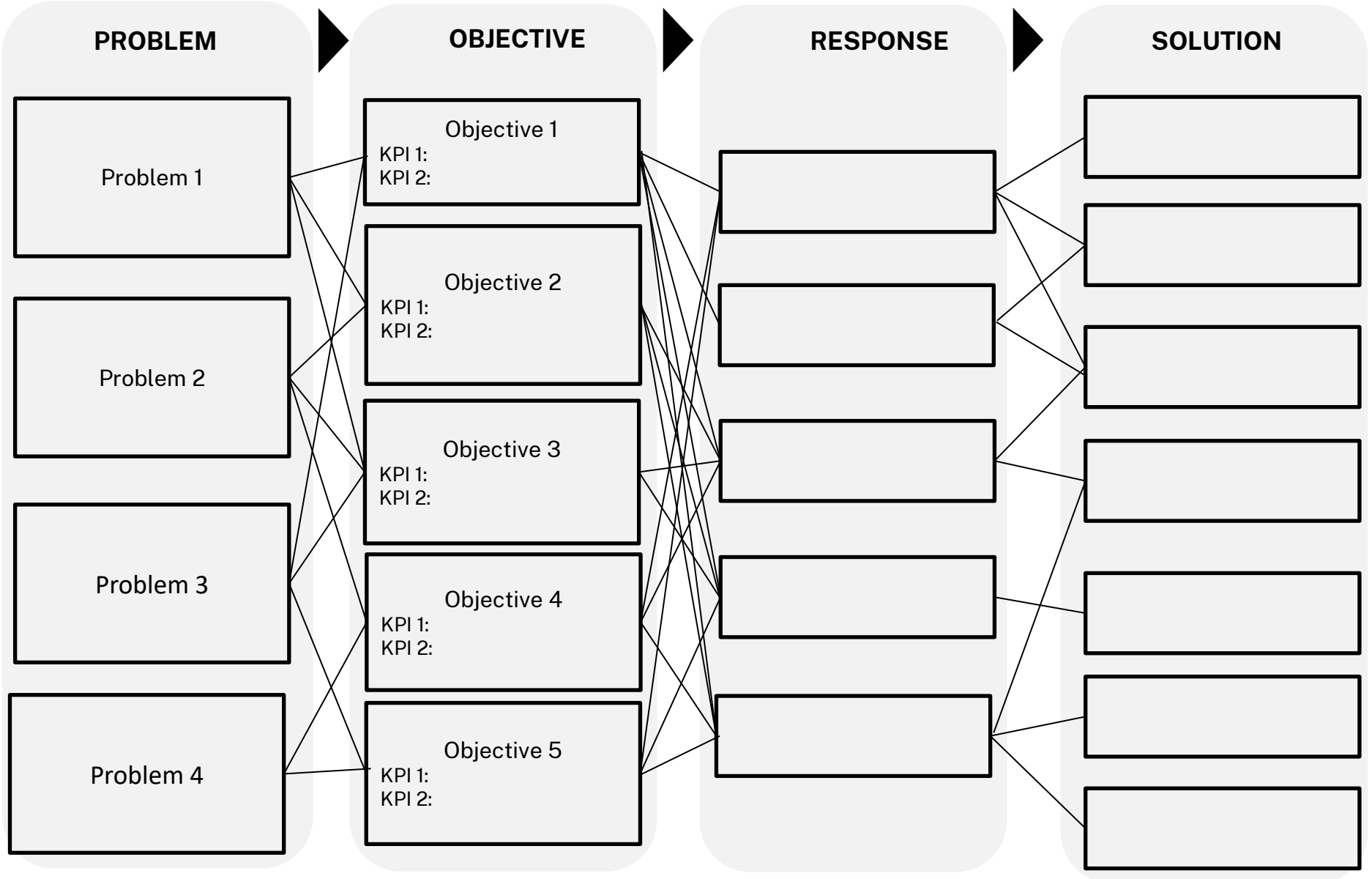
Typical development approaches:

- Series of interactive workshops with decision makers in attendance
- Review the ILM by stakeholders and approve through the project governance
- The ILM is iterative and should be refined and updated as key analysis and data is gathered; any substantial changes should be approved through project governance

PROBLEM DEFINTION

Example Investment Logic Map

THE ORDER REFLECTS THE NARRATIVE OF THE INVESTMENT

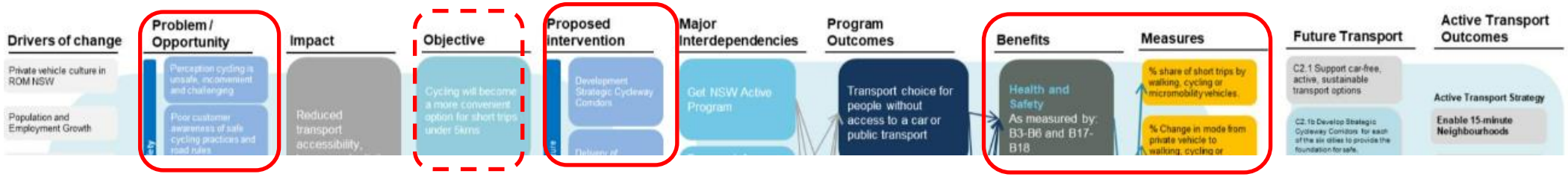


PROBLEM DEFINTION

Investment Logic Map Examples

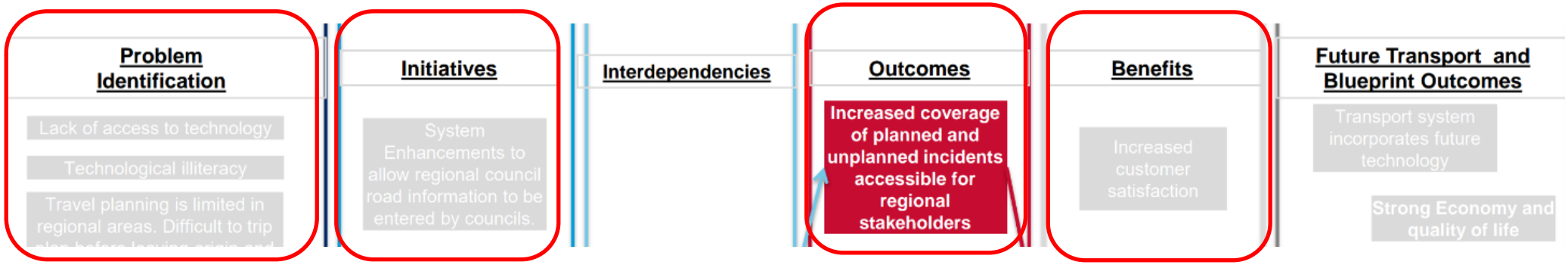
CAN ADAPT TO SUIT THE PROJECT

TfNSW's latest template

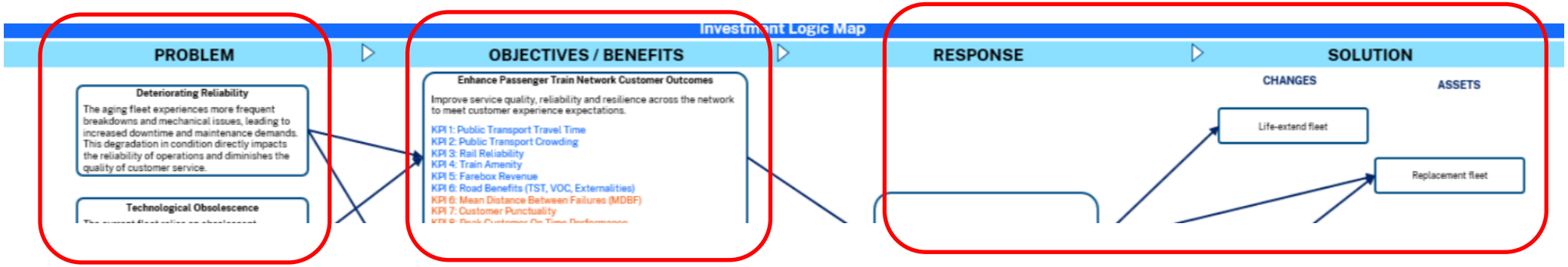


Other 'enterprise level' components can be completed as the business case progresses, to support with TfNSW Assurance Review

TfNSW's previous template



Example project:

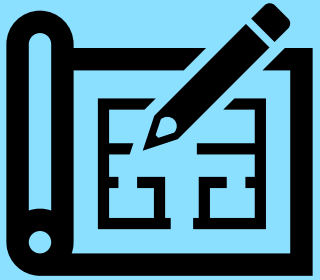


Practical Task

Developing Problems and Benefits in an Investment Logic Map

Material you need:

- *Case study*
- *Problem definition do's and don't*
- *ILM*



Case Study & Interactive Exercises

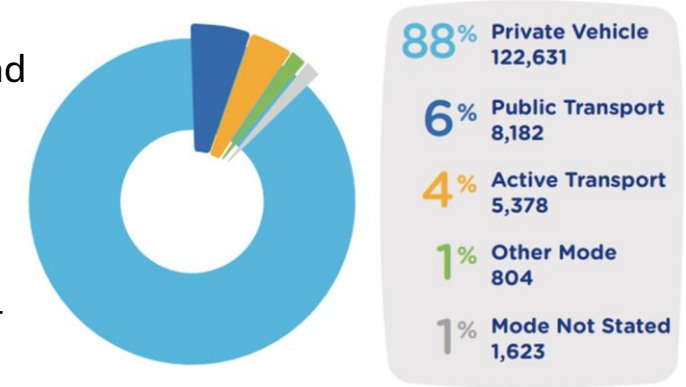
Case Study – **Project "Betoota Road Corridor"**

Client Requirements:

Develop a Preliminary Business Case to revitalise the Betoota Road Corridor and provide more transport choices for the Betoota community

Background:

- Revitalising the corridor is listed as a **key initiative** in "*Betoota* Place **Strategy**"
- **15km long corridor**, connecting a major population centre (*Betoota*) to the CBD, with up to three-lanes in each direction
- **Important local link** between smaller suburbs within *Betoota* and one of the key links from *Betoota* to the CBD
- **Significant population growth** along the corridor over the last 10 years, with **more housing development proposed** for the next 5 years
- The **Minister has announced** investigation into a new light rail network in the corridor.
- **Significant levels of congestion** at peak times and weekends
- **There are limited public transport options** and the existing bus routes are at capacity and travel on peak-only bus lanes



Key Issues:

- Long standing issues with **balancing the needs of a movement corridor with local places**, and there are growing concerns from other NSW Government agencies, the local Councils and advocacy groups to fix the issues
- Increasing volume of **safety incidents** for people crossing the road and feelings of **isolation and disconnection** by the busy corridor
- **Business closures** with local businesses struggling to retain customers or attract staff due to the significant congestion and loss of street appeal
- **Proposed housing density** is at risk of not being adequately connected

Customer Needs:

- ✓ **More cycling and walking** opportunities along the corridor
- ✓ **Local trips** between suburb to suburb
- ✓ **Commuter trips** into/out of the CBD
- ✓ **Freight delivery access** to local businesses

Case Study – **Project “Betoota Road Corridor”**

Version 1: Gate 0, Client Requirements

Primary Objectives:

1. **Develop a new light rail network along the Betoota Road Corridor**
2. **Improve reliability and connectivity along the Betoota Road Corridor**
3. **Improve the amenity, and safety for all users, along the Betoota Road Corridor**

Lunch Break

PROBLEM DEFINITION

Practical Task

Problems and Benefits in the ILM for the project case study

In your tables, complete the ILM provided for the Case Study

1. Develop *up to* four **problem statements** (10 mins)
    1. Start by identifying the problem themes
    2. Then flesh out into problem statements (r*emember: Cause & Effect and no solutions!)*

2. Develop **objectives** that can be achieved from solving the problems (10 mins)

3. Draw the **links "the logic"** between the problems and benefits (5 mins)

4. Playback from the tables (5 mins)

NSW GOVERNMENT

Investment Logic Map – *Case Study Example: "Betoota Road Corridor" Workshop 1, First Draft"*

PROBLEM

Journey times & reliability: Reliance on private vehicles and limited alternative routes is causing growth in congestion and unpredictable journey times, which is constraining productivity, liveability & the local economy

Freight access: Significant levels of congestion along the corridor is creating delays for local freight deliveries, impacting delivery reliability and constraining productivity

Local economy: Conflicting land uses and focus on supporting vehicle movements has created an unsafe and unattractive environment for pedestrians, which is deterring visitors along the corridor and deteriorating the local economy

Housing: Network capacity along the corridor and reliance on private vehicles is limiting opportunities for further housing density along the corridor, which undermining housing targets for the area

OBJECTIVE

Reliable journeys along the corridor
- Increased AT/PT mode share
- Reduction in travel time
- Journey time reliability

Improved safety for all
- Reduction in safety incidents
- Improved perception of safety for pedestrian and cyclists

Reliable freight access along the corridor
- Improved freight access times
- Delivery time reliability

Reduced pollution and emissions
- Reduced noise & air pollution
- Reduced emissions

Improved local amenity for pedestrians within the corridor
- Reduced congestion levels
- Increased footfall
- Increase green cover

Increased local economic activity to achieve "Place Strategy"
- Shop vacancies rates
- Increase in visitor catchment area
- Local jobs

Improve transport links to support housing density
- Dwelling growth
- Population growth

RESPONSE

SOLUTION

Case Study –Project “Betoota Road Corridor””

The outputs of the ILM workshop 1 are synthesised into a set of concise and measurable objectives

Version 1: Gate 0 / Client Requirements

Primary Objectives:

1. **Develop a new light rail network along the Betoota Road Corridor**
2. **Improve reliability and connectivity along the Betoota Road Corridor**
3. **Improve the amenity, and safety for all users, along the Betoota Road Corridor**

Version 2: Post ILM

Primary Objectives:

1. *Transport:* **Develop viable alternatives for travel along the Betoota Road Corridor to reduce reliance on private vehicles and improve journey reliability and connectivity**
2. *Place:* **Improve the liveability of the Betoota Road Corridor to create safer and more vibrant local centres, to achieve the vision outcomes in the “Betoota Place Strategy”**
3. *Economy:* **Improve the amenity and access of the Betoota Road Corridor to encourage a diverse and sustainable local economy**
4. *Strategic Alignment:* **Support housing density along the corridor in line with achieving state government housing targets**

Section Summary

PROBLEM DEFINITION

What have we learned?

Learning outcomes:

- ✓ Define the problem(s) accurately and early in the development, with iterations as needed to get right
- ✓ Problem statements should have a cause and effect
- ✓ Use ILM to define the problem and act the foundation for the business case

Progress on the Case Study:

- ✓ Used the client brief & initial objectives as the starting point
- ✓ Held ILM Workshop 1 to identify the problems and benefits
- ✓ Approved the first draft ILM through project governance, to set up for options identification & assessment

NSW GOVERNMENT

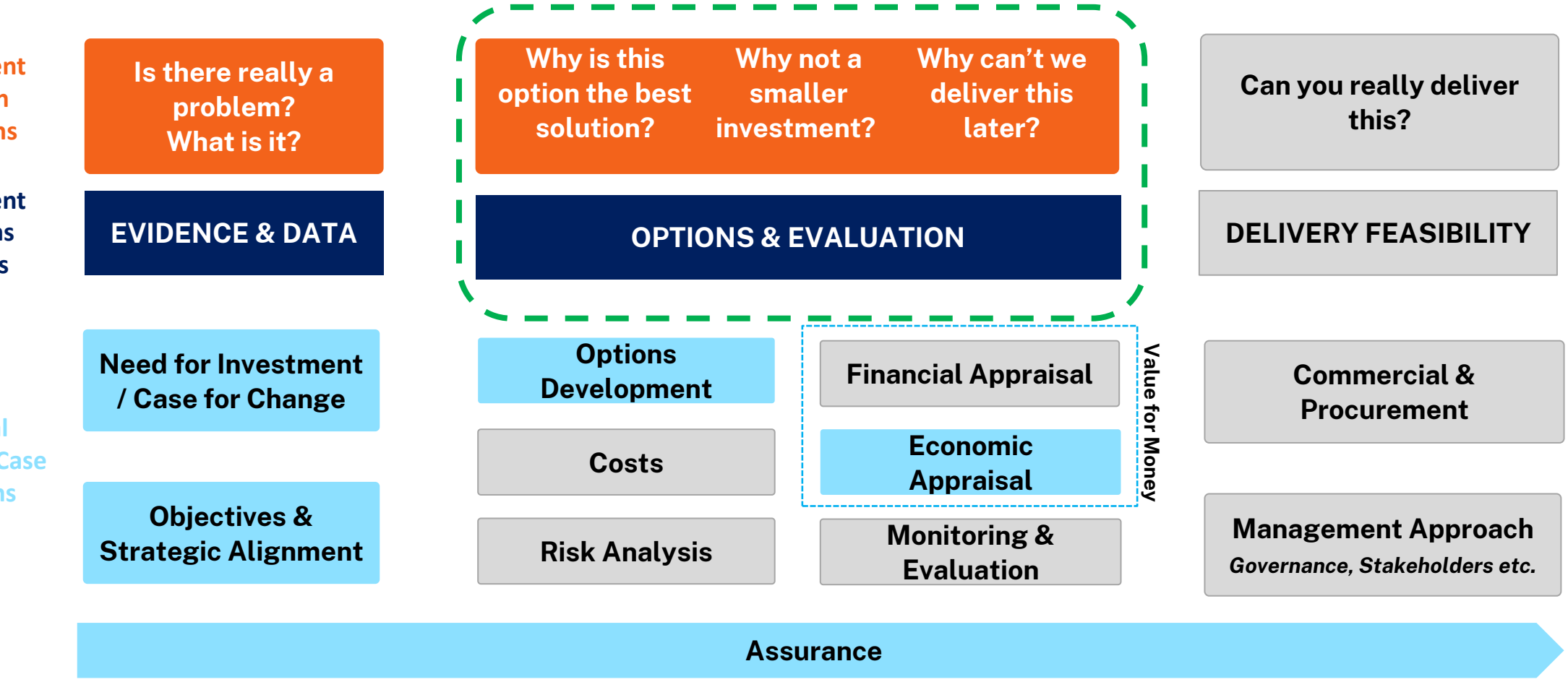
Section 3

Options Development and Assessment

BUSINESS CASE SECTIONS

Training Course Focus

Problem Definition (Case for Change) and Option Development and Assessment



Contents

Option Development

Options Development Purpose

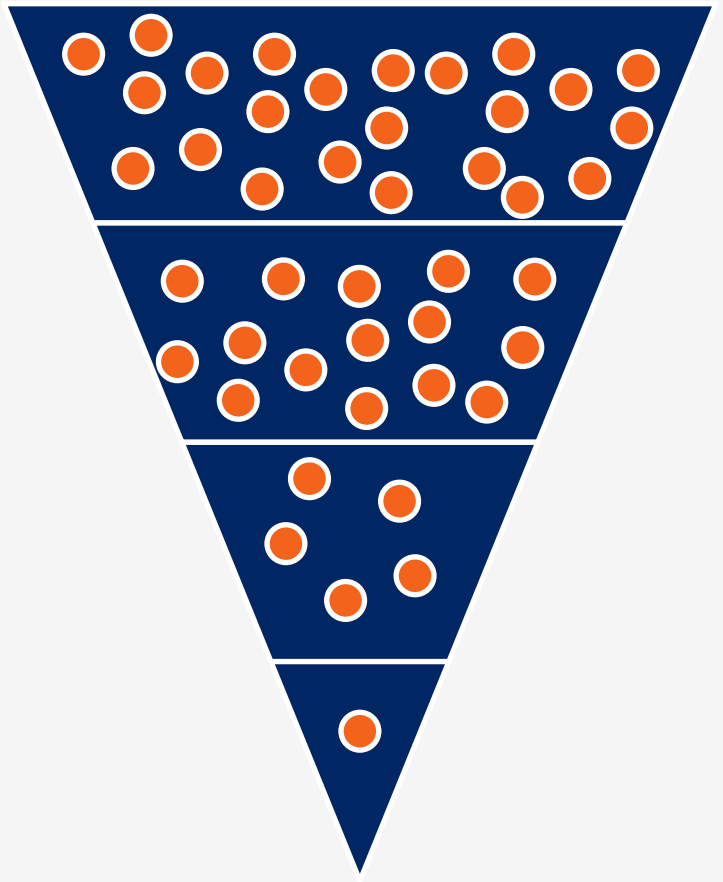
Why is this option the best solution?

Why not a smaller investment?

Why can't we deliver this later?

How do we show
that the
preferred option
is the
'best' option?

How do we show
that the
preferred option
is the
'best' option?



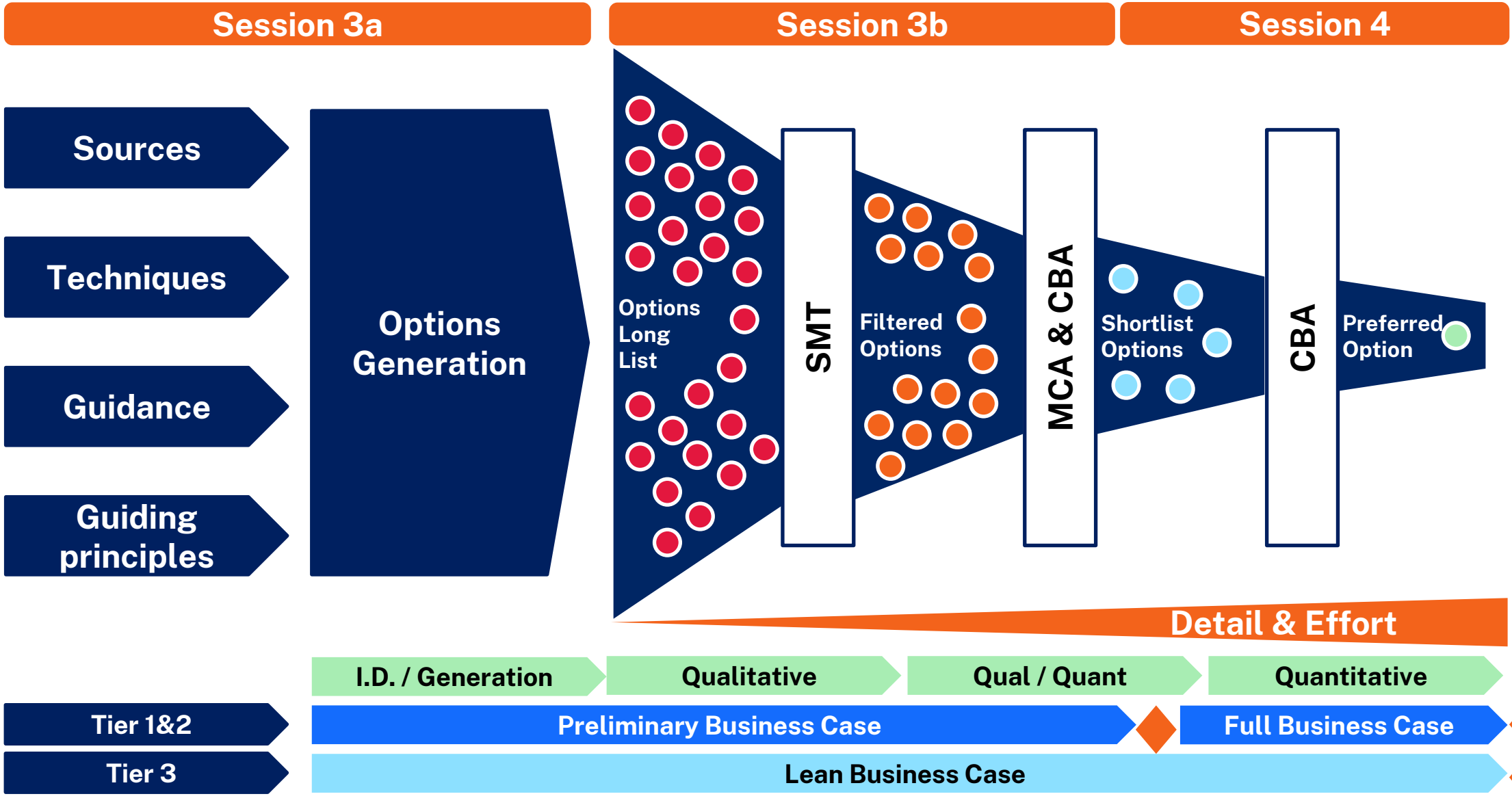
Options Development Purpose

Demonstrate all other reasonable alternative options have been considered

Show a structured process of elimination

Show that all other options are not the best

Options Development Approach



Options Development Guide for Tier 1, 2

Go/no-go	Preliminary Business Case	Full Business Case
Strategic options • Identify high-level options or classes of options that cover the plausible range of responses.	**Longlist to shortlist** • Identify a longlist of options using a transparent and repeatable method. • Undertake preliminary investigations and costings. • Use CBA to refine the longlist (recommended 3-6 options) to a shortlist. • May identify a preferred option	**Shortlist to preferred option** • Further develop and define the shortlist. • Prepare a CBA on the shortlist (minimum 2 options in addition to base case) and identify a preferred option.

Source: NSW Government and Transport Business Case Guide

Infrastructure NSW Trends & Insights

Recurring critical recommendations throughout INSW Assurance Reviews (2020 – 2023):

- ***Options analysis***
  - *Lack of consideration for alternative options*
  - *Inadequate justification of the preferred option*

Section 3a

Option Generation

Contents

Option Generation

NSW GOVERNMENT

Options Generation Principles

Overarching purpose – Generate potential solutions (options) that address the problem(s)

WHAT ELEMENTS CONTRIBUTE TO SUCCESSFUL OPTIONS GENERATION?

OPTIONS DEVELOPMENT

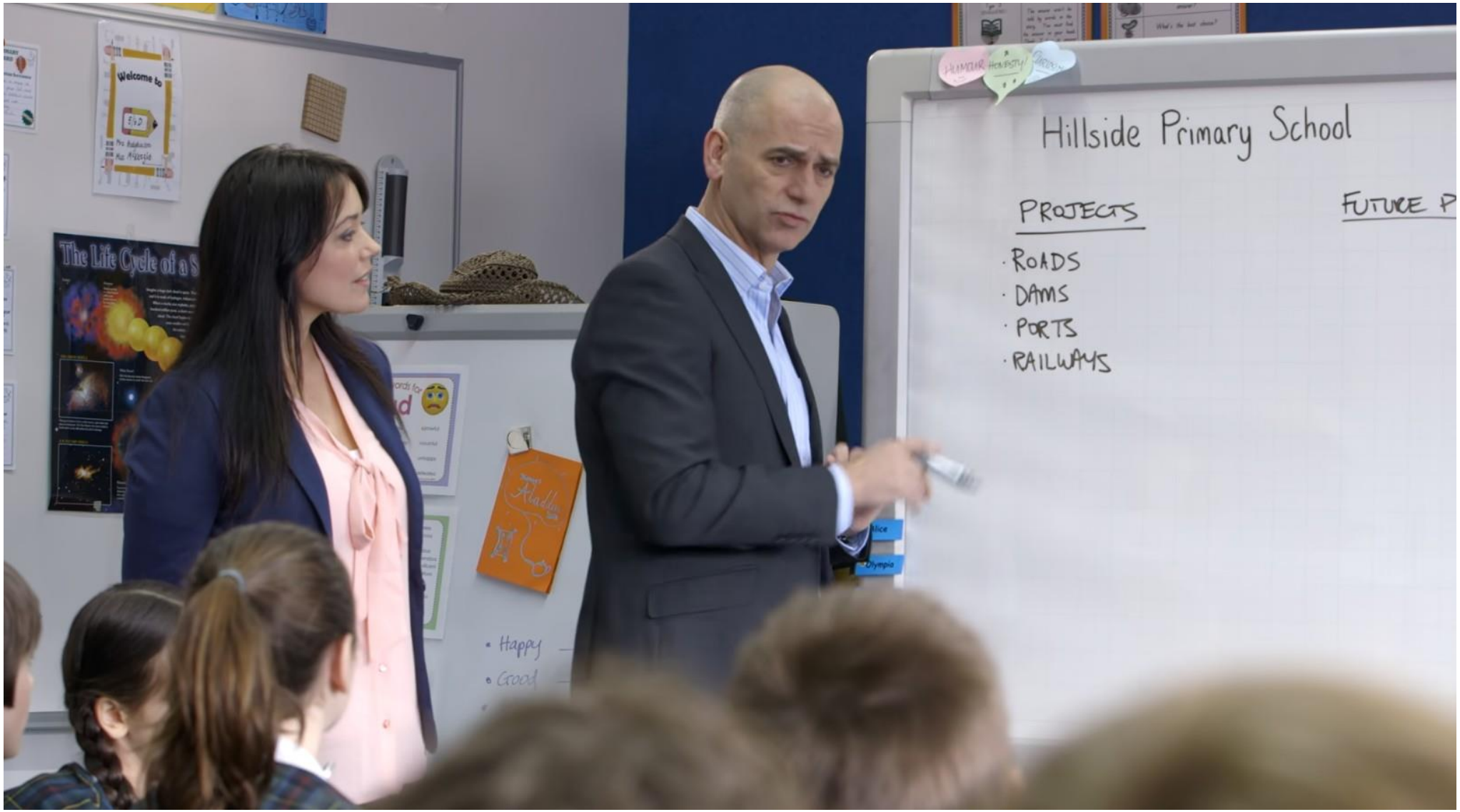
Options Generation Principles

"It is important to think broadly in developing options to solve transport problems." (ATAP F3 Options generation & assessment)

1. **Scan Broadly & Un-constrain thinking**
2. **Consult widely - Engage SMEs and stakeholders**
3. **Generate – Don't Evaluate**

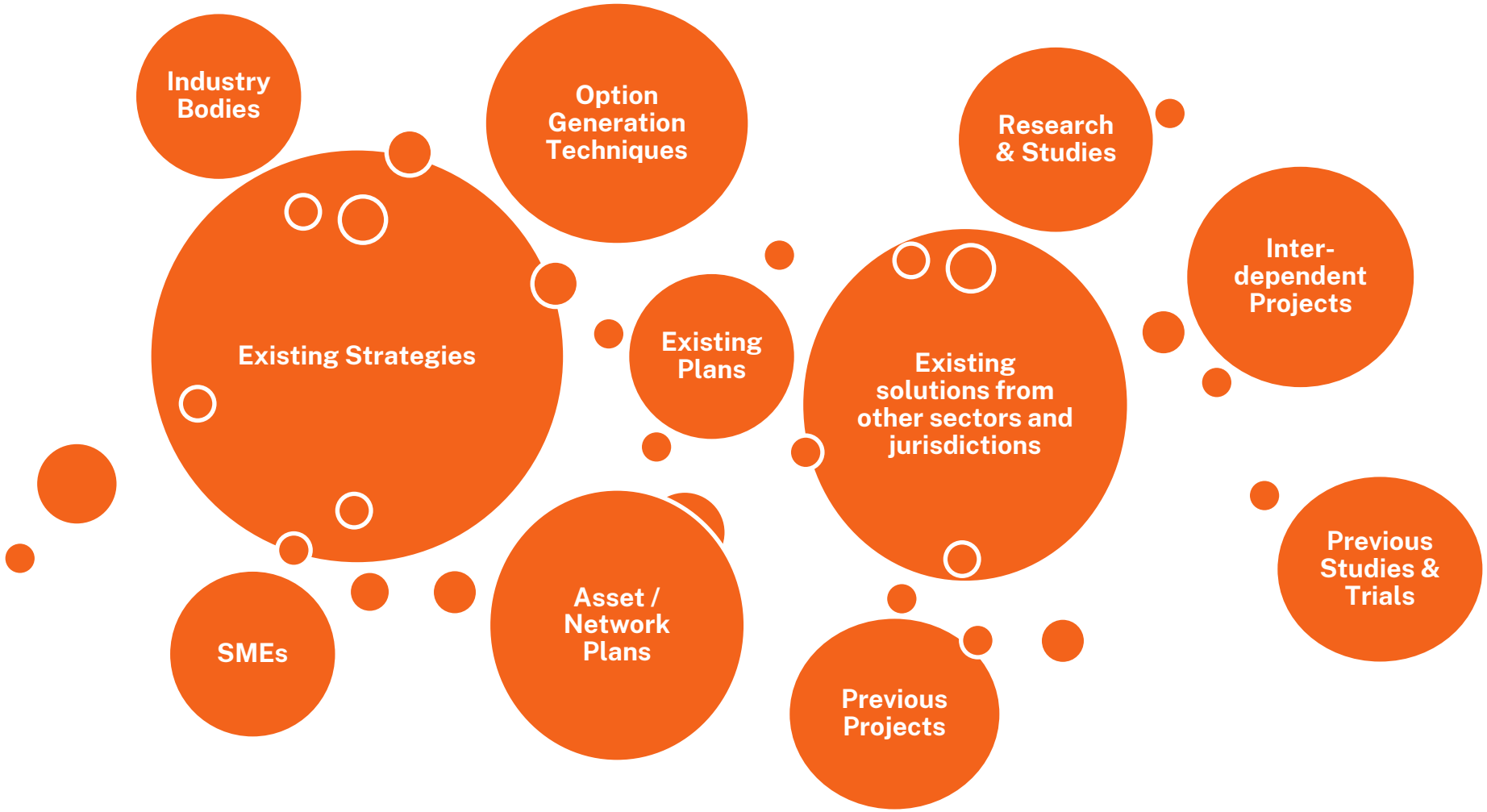
Who is best to generate ideas?

Who is best to generate ideas?



Options Development Approach

WHERE DO OPTIONS COME FROM? SCAN BROADLY



Options Development Approach

ASSET & NON-ASSET OPTIONS

ASSET

- New
- Modify existing
- Augment existing
- Consider all modes incl. active & public transport

ASSET / NON

- Demand Management inc. pricing / tolls & behaviour change
- Road Space (Re)Allocation
- Technology / Digital

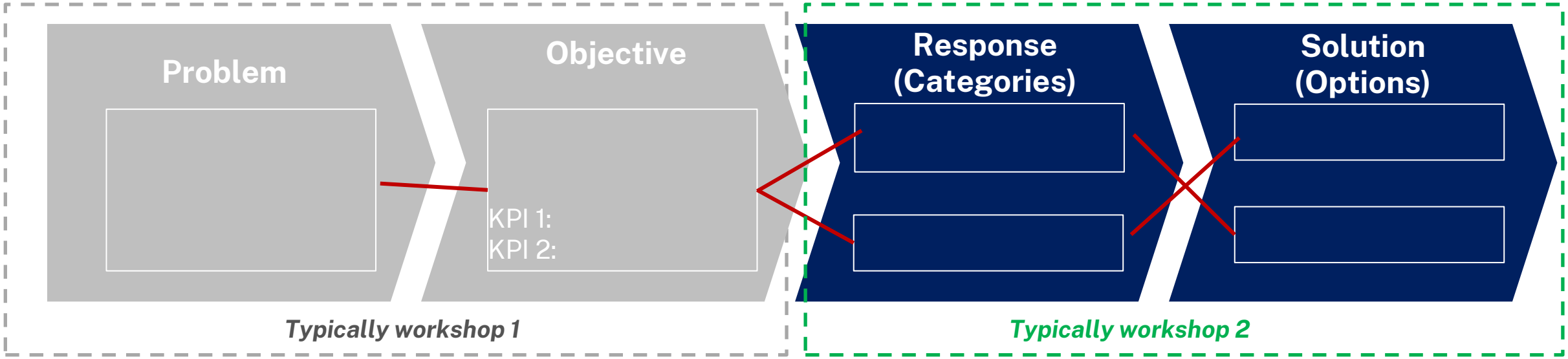
NON-ASSET

- Policy / Service Reform
- Commercial
- Design Parameters (e.g. speed)

ALL MODES

Using Investment Logic Mapping

Options Generation

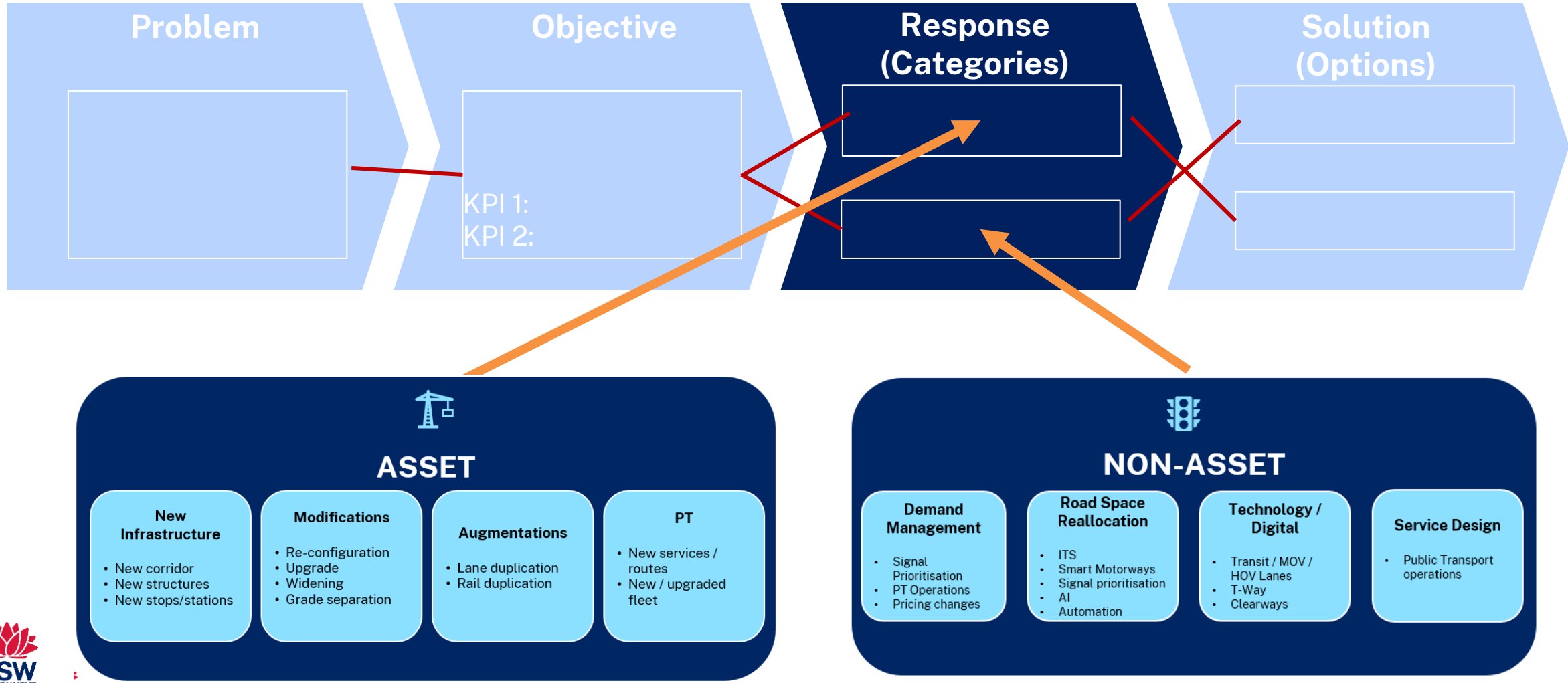


Problem & Objectives ILM Activity

Options generation workshop

Using Investment Logic Mapping

WHERE DO OPTIONS SIT IN THE ILM?



Practical Task

Option Generation
Long List

Case Study –Project “Betoota Road Corridor”

The outputs of the ILM workshop 1 are synthesised into a set of concise and measurable objectives

Version 1: Gate 0 / Client Requirements

Primary Objectives:

1. **Develop a new Light Rail along the Betoota Road Corridor**
2. **Improve reliability and connectivity along the Betoota Road Corridor**
3. **Improve the amenity, and safety for all users, along the Betoota Road Corridor**

Version 2: Post ILM

Primary Objectives:

1. *Transport:* **Develop viable alternatives for travel along the Betoota Road Corridor to reduce reliance on private vehicles and improve journey reliability and connectivity**
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3. *Economy:* **Improve the amenity and access of the Betoota Road Corridor to encourage a diverse and sustainable local economy**
4. *Strategic Alignment:* **Support housing density along the corridor in line with achieving state government housing targets**

OPTIONS GENERATION

Practical Task

Identify options to solve the problems / achieve the objectives in the ILM

In your tables, generate long list of options for the Case Study:

1. Include at least two Options for each category (10 mins)
    1. Physical Infrastructure – New or modify existing
    2. Public Transport and Active Transport
    3. Non-asset: Road Space Reallocation & Demand Management
    4. Non-Asset: Technology, Digital, Policy & Land Use

2. Playback from the tables (5 mins)

NSW GOVERNMENT

Case Study – **Project "Betoota Road Corridor"**

Client Requirements:

Develop a Preliminary Business Case to revitalise the Betoota Road Corridor and provide more transport choices for the Betoota community

Background:

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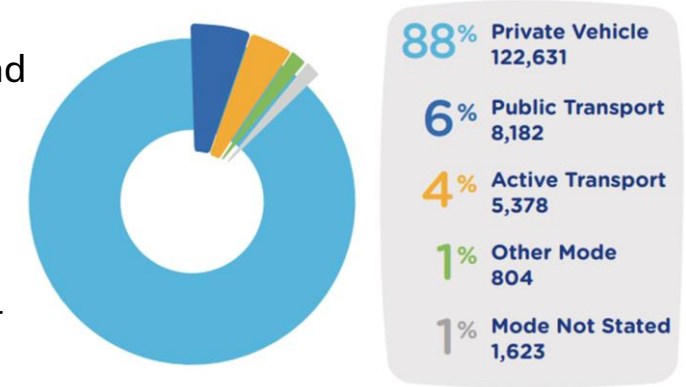

Key Issues:

- Long standing issues with **balancing the needs of a movement corridor with local places**, and there are growing concerns from other NSW Government agencies, the local Councils and advocacy groups to fix the issues
- Increasing volume of **safety incidents** for people crossing the road and feelings of **isolation and disconnection** by the busy corridor
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Customer Needs:

- ✓ **More cycling and walking** opportunities along the corridor
- ✓ **Local trips** between suburb to suburb
- ✓ **Commuter trips** into/out of the CBD
- ✓ **Freight delivery access** to local businesses

Section Summary

OPTIONS GENERATION

What have we learned?

Learning outcomes:

- ✓ Use option generation & assessment to show the preferred option is the ‘best’ option
- ✓ Think broadly and unconstrained in generating options
- ✓ Lots of low cost & minimal effort ways to generate options

Progress on the Case Study:

- ✓ Updated the project objectives using the governance approved ILM to feed into the options generation
- ✓ Generated a long list of potential options to solve the problems & achieve the benefits identified in the ILM

Section 3b

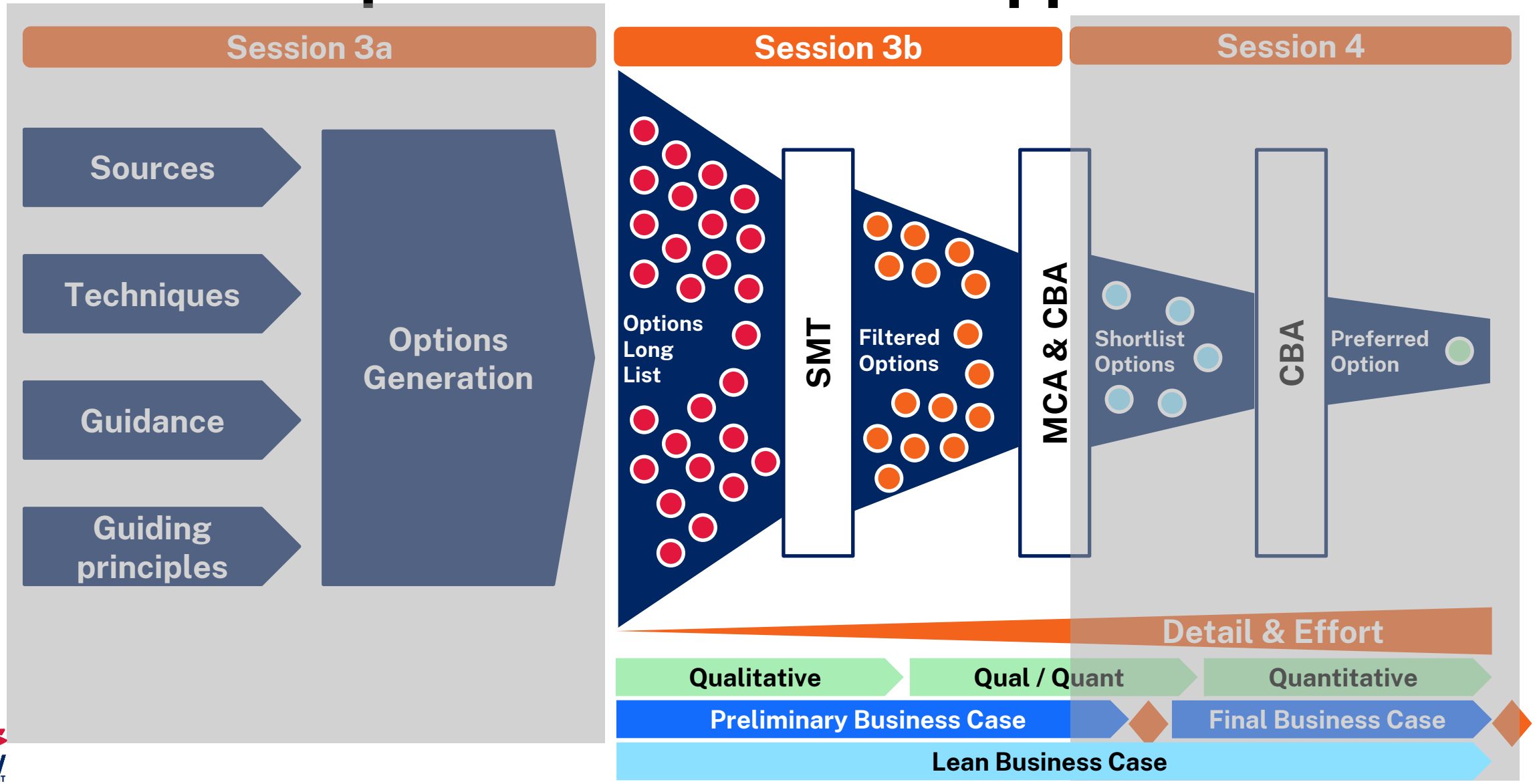
Options Assessment

Contents

Option Assessment

NSW GOVERNMENT

Options Assessment Approach



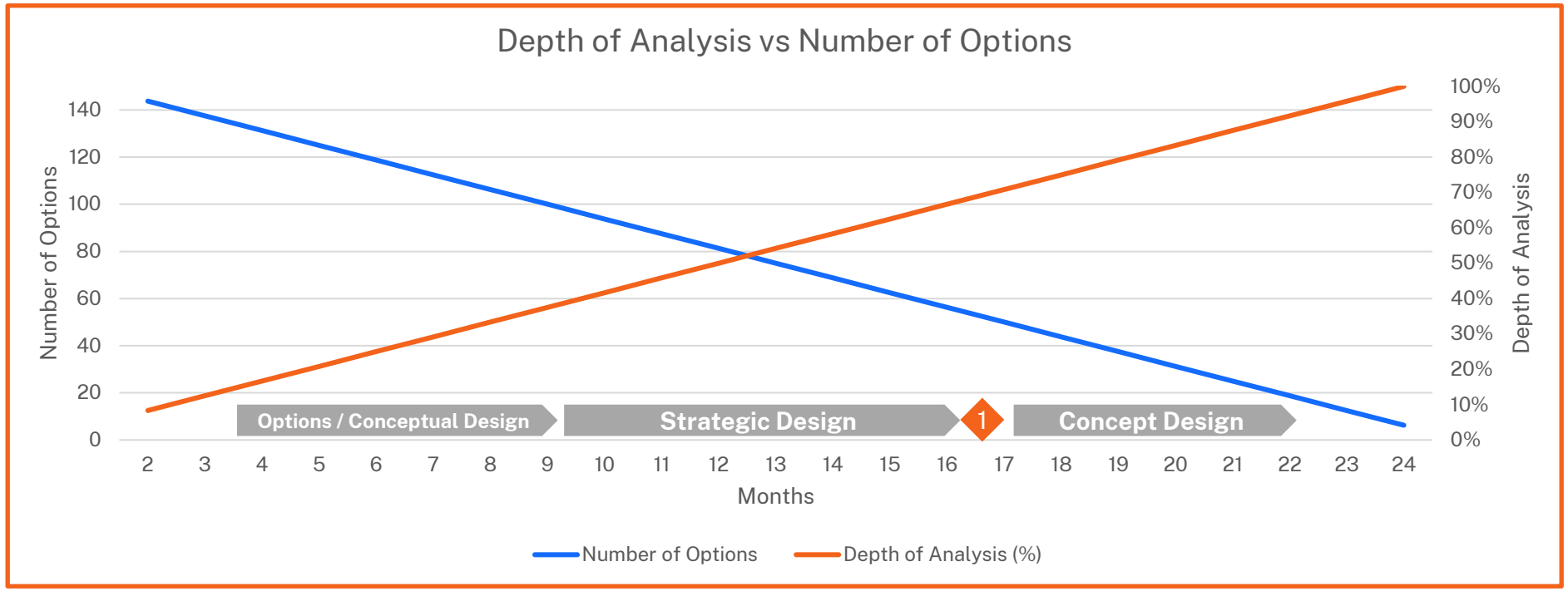
Options Assessment Approach

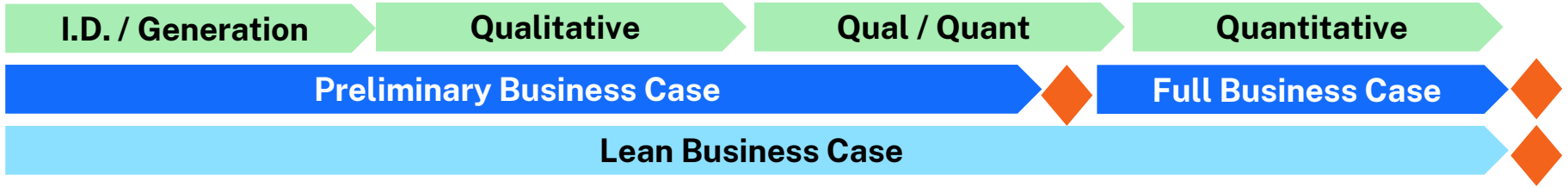
PBC (Gate 1)

- **Aim:** Reduce long list of options to 2-5 feasible options
- More **breadth**, less **depth**
- Mostly **qualitative**

FBC (Gate 2)

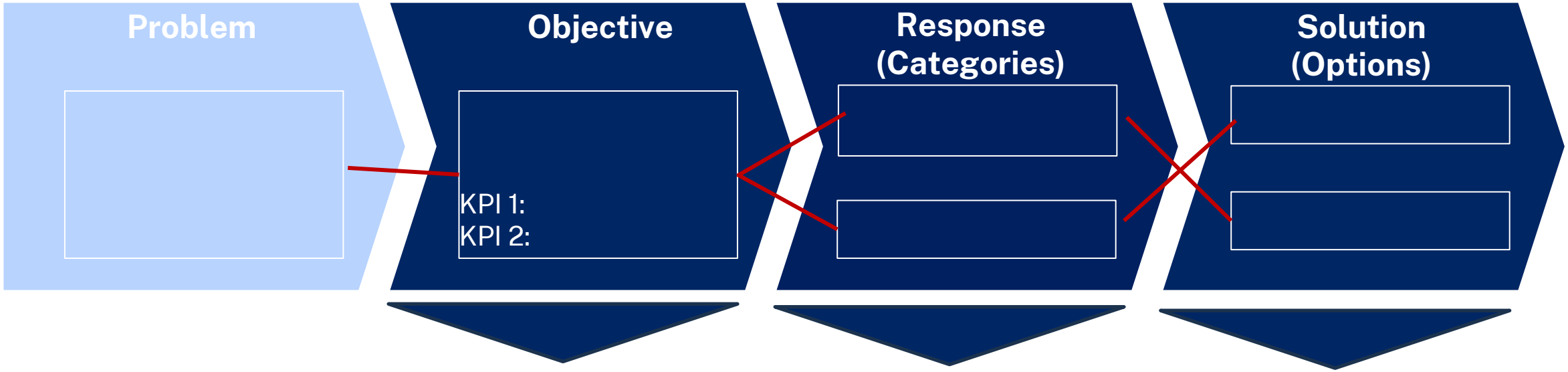
- **Aim:** Arrive at preferred option from shortlisted PBC options.
- More **depth**, less **breadth**
- Mostly **Quantitative**





Using Investment Logic Mapping

AS THE FOUNDATION FOR THE OPTIONS ASSESSMENT

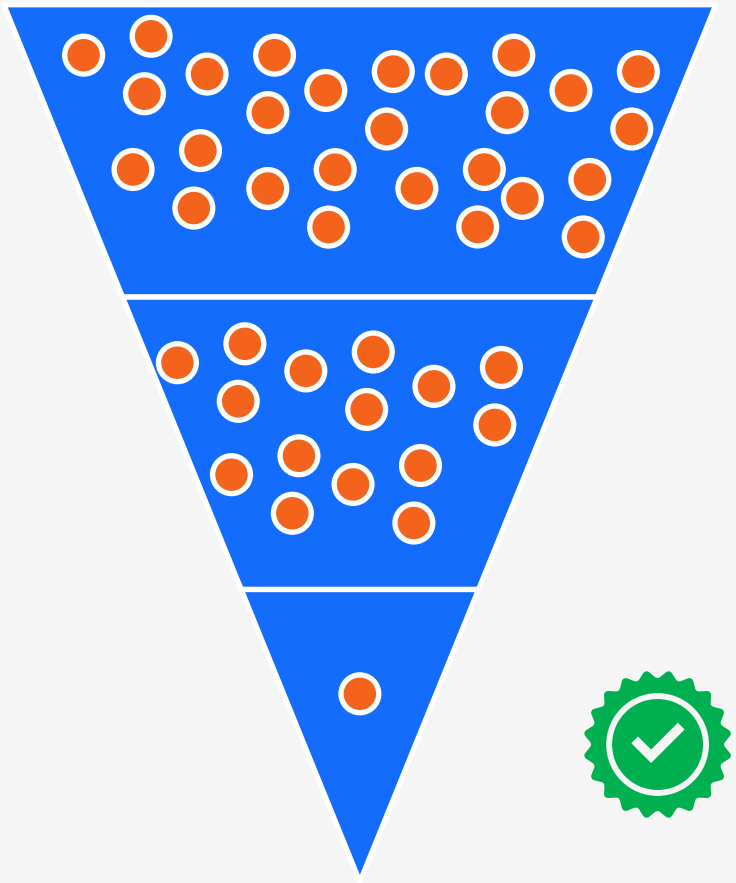


Objectives and KPIs form **the options assessment criteria** & metrics

Option categories: Asset (new, modify, augment) **and non-asset** (demand management, road space reallocation etc)

Individual options linking to a category

Options Assessment Principles



1. Maintain a master list (traceability)
2. All options are created equal
3. Define criteria & assessment logic using the ILM

Qualitative .v. Quantitative Tools

QUALITATIVE

- **More breath, less depth**
- Simple scoring against objectives
- Screen initial long list to a medium list
- Key tools:
  - Objective Alignment Test
  - Strategic Merit Test

QUANTITATIVE

- **More depth, less breath**
- More detailed scoring against objectives using measures & KPIs
- Key tool is Multi-Criteria Analysis
- Also Economic Analysis (CBA)
  - Stage 1 (Rapid) [SBC] using strategic demand / inputs
  - Stage 2 (Full) [FBC] using more detailed demand / inputs

OPTIONS ASSESSMENT

Qualitative Tools

STRATEGIC MERIT TEST (SMT) / OBJECTIVE ALIGNMENT TEST (AOT)

Include a rationale description against each option's score, as evidence for any future queries

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

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

Simple pass or fail assessment

Assessment against objectives from the ILM

Simple scoring method

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

Source: IA Stage 2 Guidance

Quantitative Tools

MULTI-CRITERIA ANALYSIS (MCA)

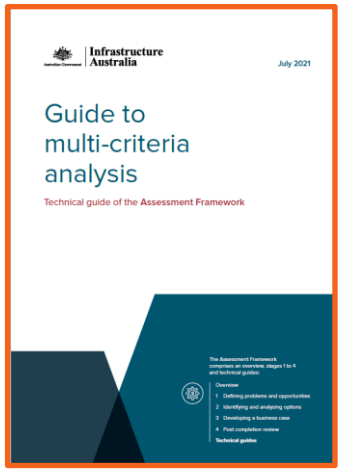
Expanded objectives list

Scoring using data & KPIs

Objectives and criteria	Weights	Option Scores			
		1	2	3	4
Objective 1: Efficiency and reliability	**1.0**	**4.1**	**3.3**	**3.0**	**2.6**
Criterion 1: Traffic journey times and reliability	0.3	3	5	1	5
Criterion 2: Public transport coverage & frequencies	0.4	5	3	3	2
Criterion 3: Pedestrian journey times	0.3	4	2	5	1
Objective 2: Health and Safety	**1.0**	**3.6**	**3.1**	**5**	**3.8**
Criterion 4: Traveller safety	0.7	3	4	5	5
Criterion 5: Traveller health	0.3	5	1	5	1
Objective 3: Cost and related risks	**1.0**	**2.5**	**2.5**	**3.5**	**2.5**
Criterion 6: Whole-of-life discounted cost	0.5	2	1	4	1
Criterion 7: Risk of cost over-run	0.5	3	4	3	4

Table 12: MCA matrix key, indicative example

First-ranked option	
Second-ranked option	
Third-ranked score and below	

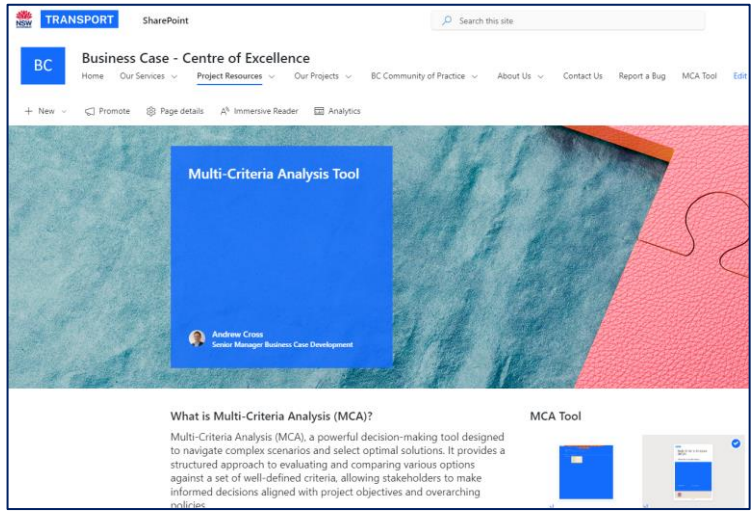


Source: IA Stage 2 Guidance

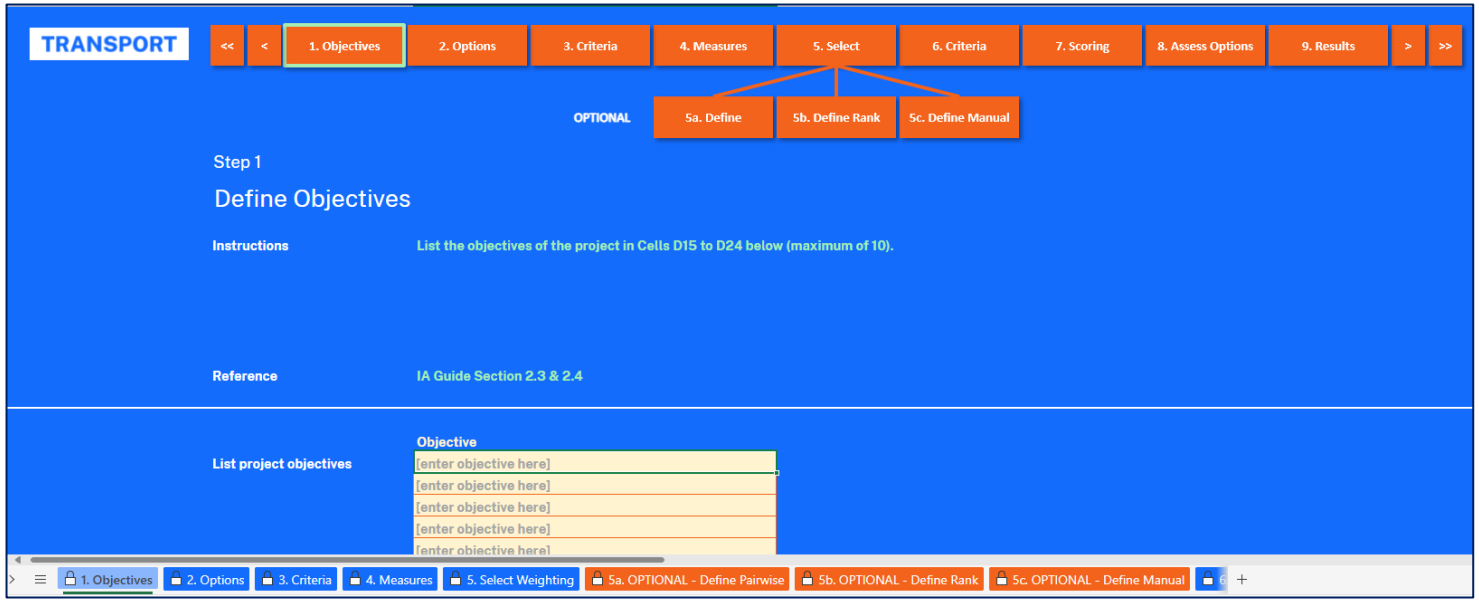
MCA Rating	Colour	Score	Description	Example threshold
Strong positive		5	Strong, positive impact for the criteria or measure	Scores of 5 for journey time & reliability changes
Moderate positive		4	Moderate, positive impact for the criteria or measure	Scores of 4 for journey time and reliability changes or mixed 4/5 score
No significant impact		3	No significant positive or negative impact	Any scores with a 3 are classified in this category
Moderate negative		2	Moderate, negative impact for the criteria or measure	Scores of 2 for journey time and reliablity changes or mixed 1/2 scores
Strong Negative		1	Strong, negative impact for the criteria or measure	Scores of 1 for journey time and reliability changes

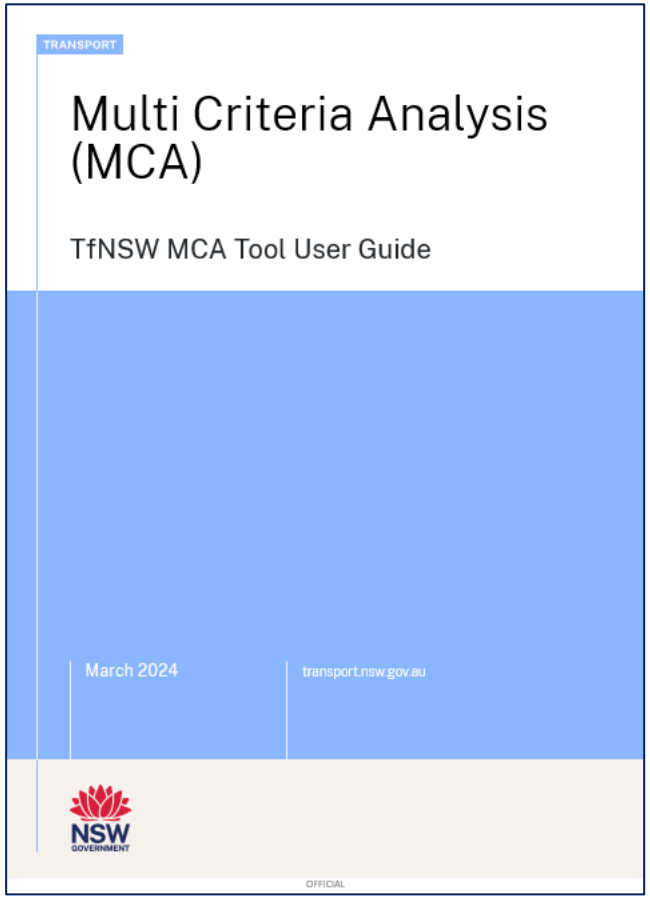
Quantitative Tools

MULTI-CRITERIA ANALYSIS (MCA)



[Multi-Criteria Analysis Tool (sharepoint.com)]





Practical Task

Options Assessment Objective Alignment Test (OAT)

Practical Task

Complete the Objective Alignment Test (OAT) for the Project Case Study

- In your tables, assess each of the options you generated in the previous task using the project objectives (20 mins)
- Score each option on the ability to achieve the project objective
- Total the scores to identify the highest rating options

Example

Option #	Objective 1: Develop viable alternatives for travel along the Betoota Road Corridor to reduce reliance on private vehicles and improve journey reliability and connectivity	Objective 2: Improve the liveability of the Betoota Road Corridor to create safer and more vibrant local centres, to achieve the vision outcomes in the "Betoota Grove Place Strategy"	Objective 3: Improve the amenity and access of the Betoota Road Corridor to encourage a diverse and sustainable local economy	Objective 4: Support housing density along the corridor in line with achieving state government housing targets	*Total score*	*Proceed (Y/N)*
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Section Summary

OPTIONS ASSESSMENT

What have we learned?

Learning outcomes:

- ✓ Eliminate options that do not align with the project objectives early
- ✓ Lots of low cost & minimal effort ways to assess the long list of options, with minimal design work required
- ✓ Use the project objectives and ILM to define the assessment criteria (traceability)

Progress on the Case Study:

- ✓ Assessed the long list of options to create a ‘medium’ list
- ✓ Endorse the assessment results through the project governance, to commence the next step; value for money assessment and/or multi-criteria assessment (MCA)

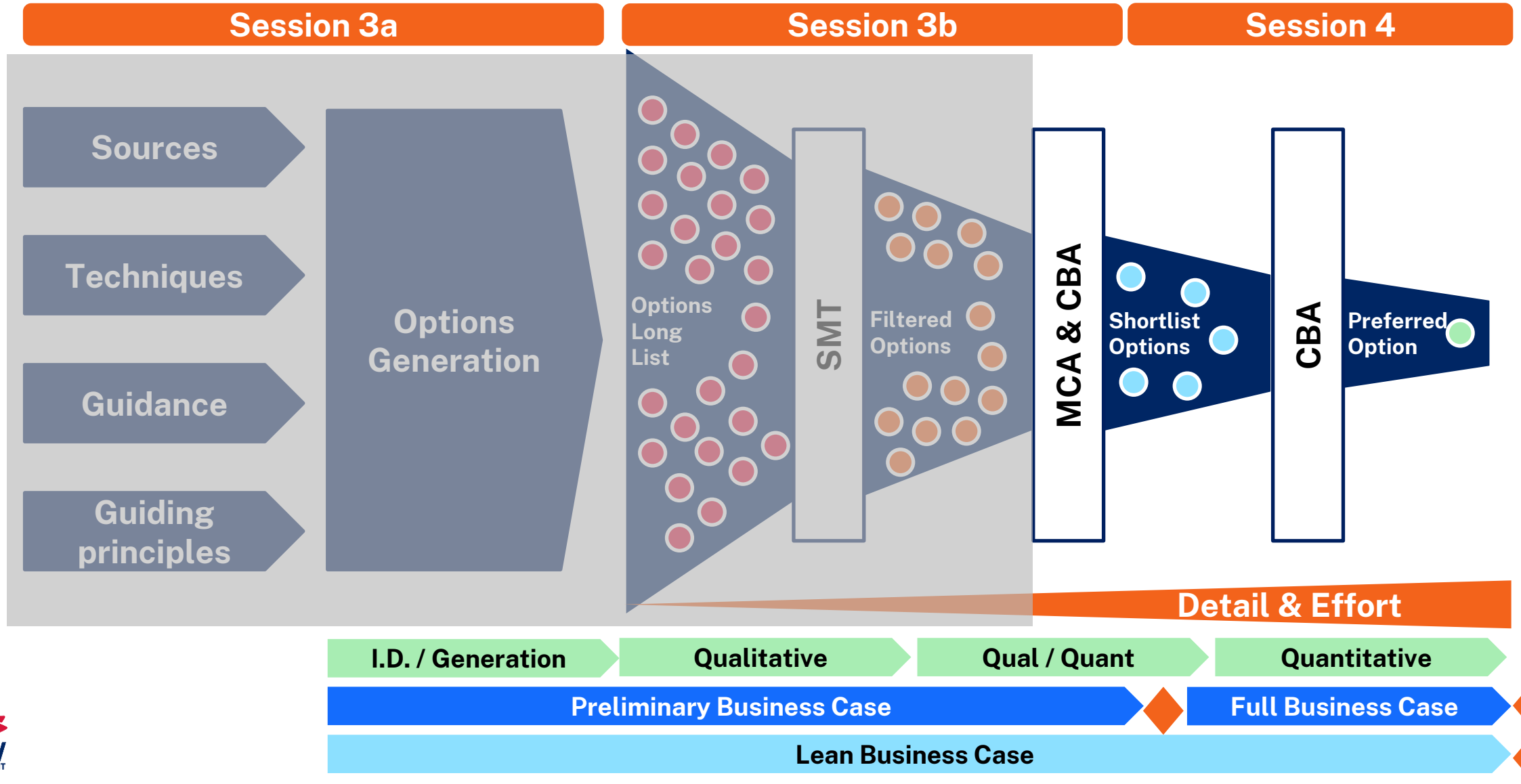
Section 4

Value for Money

What is Value for Money?

- What do you want to get out of this session?
- Any specific questions or interests?

Options Development Approach



What's your experience with economics / BCRs?

What is Value for Money?

The key indicators used in Government decision making and budget planning

Investment decision questions	Is there really a problem? What is it?	Why is this option the best solution?	Why not a smaller investment?	Why can't we deliver this later?	Can you really deliver this?

Economic Appraisal

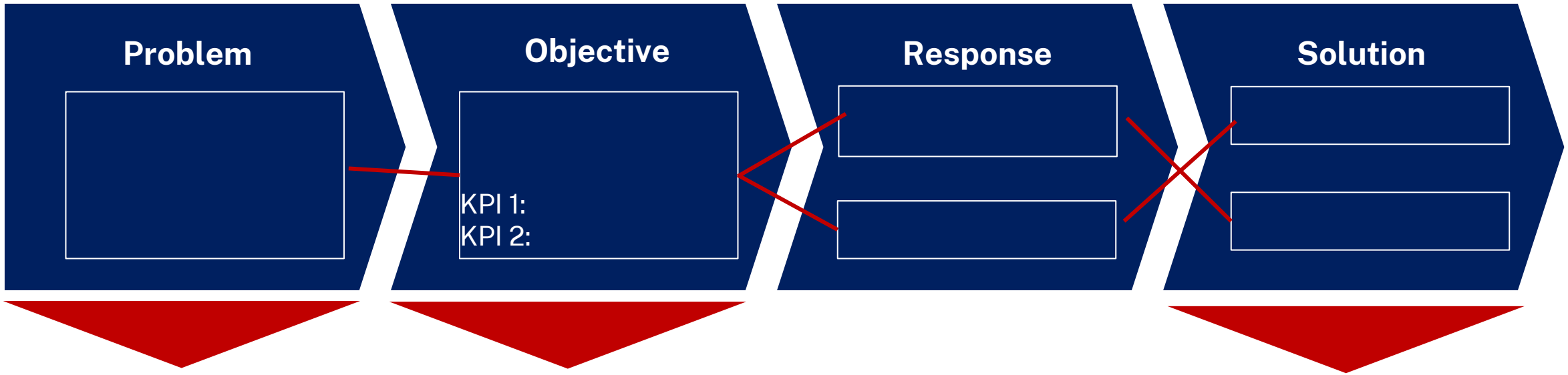
- Cost Benefit Analysis (CBA) measures the **economic, social and environmental impacts** of a project on the **community**

Financial Appraisal

- Financial Appraisal (FA) measures the **financial impacts** of a project on the **government**

Using the ILM

The foundation for the business case as well as the economics



Base case
What happens if we do nothing? Or can we do minimum?

Benefits
What are the individual benefits from achieving the objectives?

Options
What are the project options that have progressed through the options assessment to CBA?

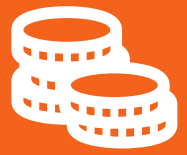
Cost-Benefit Analysis

Key steps to calculating a CBA

Tip: Quantifying benefits can be expensive – consider if it's worth it

Base case

- Do nothing
- Do minimum



Costs

- Using design
- Capital expenditure (CAPEX)
- Operational expenditure (OPEX)

Benefits

Three step process:

- *Identify* - benefits
- *Quantify* – using modelling & data
- *Monetise* – using guidelines

Key metrics

- Benefit cost ratio BCR (Benefits/costs)
- Net Present Value (Benefits – costs)

Cost-Benefit Analysis

Betoota Road Corridor: New rapid bus transit

- Options analysis has reduced options to a short list of 3.
- Includes a rapid bus transit along Betoota Corridor linking to the CBD and key stops.
- Options include low, medium and high levels of bus lanes and other priority infrastructure.

Cost-Benefit Analysis

Case study – New rapid bus transit

	Base case	Costs	Benefits	Key metrics
New rapid bus transit	• No major investments into corridor. • Congestion worsens as traffic grows. • Further closures of business along the corridor.	• $600m (CAPEX) • $20m ongoing maintenance (OPEX)	Identify: • Saved time for bus passengers Quantify: • Save 0.3 hrs for 20,000 passengers per day (~1.9m hrs/yr) Monetise: • Value of travel time is $20.62 per person hour • 1.9m x $20.62 = $39m • Repeat for other benefit categories	• Present value (PV) costs: $1,485m • PV benefits: $1,930m • BCR = 1930/1485 = 1.3 • NPV = 1930-1485 = $445m

Interpreting the economic results

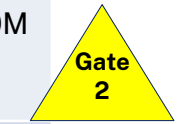
How is CBA used to support the preferred option(s)?

Preliminary Business case

	Description	Total costs	Total benefits	BCR	NPV
Option 1	Rapid bus transit – minor infrastructure priority	$1,000M	$1.200M	1.2	$200M
Option 2	Rapid bus transit – moderate infra. priority	$1,485M	$1,930M	1.3	$445M
Option 3	Rapid bus transit – major infrastructure priority	$2,300M	$2,070M	0.9	-$230M

Full Business case

	Description	Total costs	Total benefits	BCR	NPV
Option 1	Rapid bus transit – minor infrastructure priority	$1,100M	$1,320M	1.2	$220M
Option 2a	Rapid bus transit – moderate infrastructure priority	$1,600M	$2,400M	1.5	$800M
Option 2b	Rapid bus transit – moderate infra., more stops	$1,800M	$1,980M	1.1	$180M



Key Investment Decision Maker Questions:

- What is the problem?
- Why is this option the best solution?
- Why not a smaller investment?
- Why is the investment needed now?
- How would this be delivered?

Interpreting the economic results

How is CBA used at the decision maker level?

Outcome Budgeting		Total costs	Total benefits	BCR	NPV
Transport, connecting customer's whole lives	Project A – Betoota interchange upgrade	$60M	$80M	1.3	$20M
	Project B – Western motorway widening	$300M	$200M	0.7	-$100M
	Project C - Betoota Road rapid bus	$1,600M	$2,400M	1.5	$800M

Lowest CAPEX with positive value for money

Strongly Aligned with current government housing strategy

Significant benefits but outside of current funding envelope

Key Investment Decision Maker Questions:

What is the problem?

Why is this option the best solution?

Why not a smaller investment?

Why is the investment needed now?

How would this be delivered?

Example BCRs from NSW transport projects

Match the project to the BCR


Sydney CBD and Southeast Light Rail (2014)


WestConnex(2020)


Sydney Metro Sydney and Southwest (2017)


Sydney Metro West (2020)


Sydney Metro Western Sydney Airport (2020)


Newcastle Inner City Bypass – Rankin Park to Jesmond (2022)

?

5.0

1.7

1.4

1.3

1.04

0.75

Sources from INSW and Infrastructure Australian project summaries. Wider Economic Benefits excluded.

Beyond the BCR

What doesn't the CBA show?

Non-quantified Impacts	Result Reliability	Benefit Distribution
• Not all benefits can be quantified in a CBA • Data limitations, lack of sufficient evidence, or methodological restrictions may prevent benefits from being quantified • These impacts should be considered qualitatively	• How sensitive are the results to changes in key assumptions and parameters? • How accurate are key inputs such as traffic modelling and cost estimates? • Sensitivity testing is used to assess the reliability of the results	• Who gains? Who loses? • How does the distribution of benefits and costs differ across stakeholder groups? • Distributional analysis can be used to assess the winners and losers of a project

Supplementary economic tools

VASP and CGE modelling

Who has experience using these tools?

Value Assessment System for Place (VASP +PERS)

Assess the quality and characteristics of a change in public realm

Ideal when public realm outcomes are:

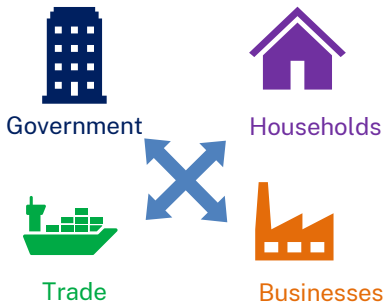
- Within project objective and scope
- On an assessable scale

Example projects:

- Sydney Metro
- Parramatta Light Rail Stage 2
- Cycleways

Computable General Equilibrium (CGE) modelling

Simulates how the economy responds to transport improvements



Ideal when there are:

- Strategic benefits (e.g. productivity)
- Wide geographic scope of impact

Example projects:

- Fast Rail
- Great Western Highway Upgrade
- Western Sydney Freight Line

To read more: Place Benefits Assessment (sharepoint.com)

CGE Modelling for Business Cases (sharepoint.com)

Key Takeaways

If you remember nothing else, remember…

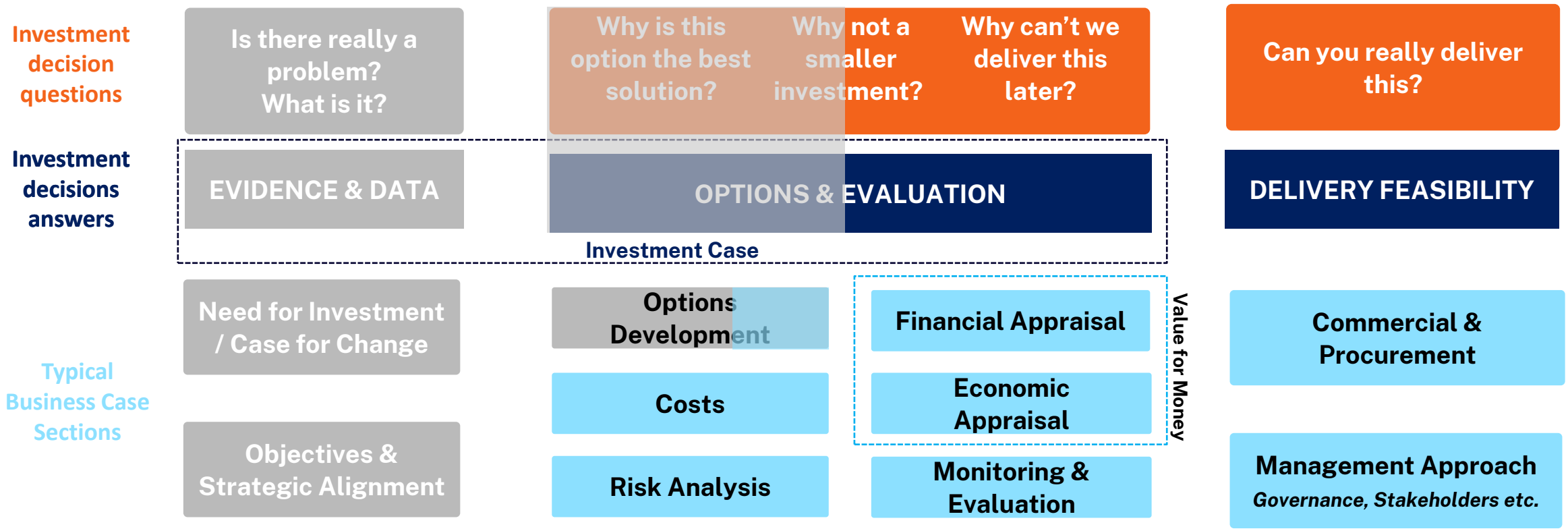
- **Should be fully integrated and play a key role in the business case process**
- **Involve your economics team early – make sure demand modelling/data collection is on track (expensive, long lead times)**
- **Engage early with assurance, both internal and external**

Section 5

Progressing to Full Business Case

Focus of the Full Business Case

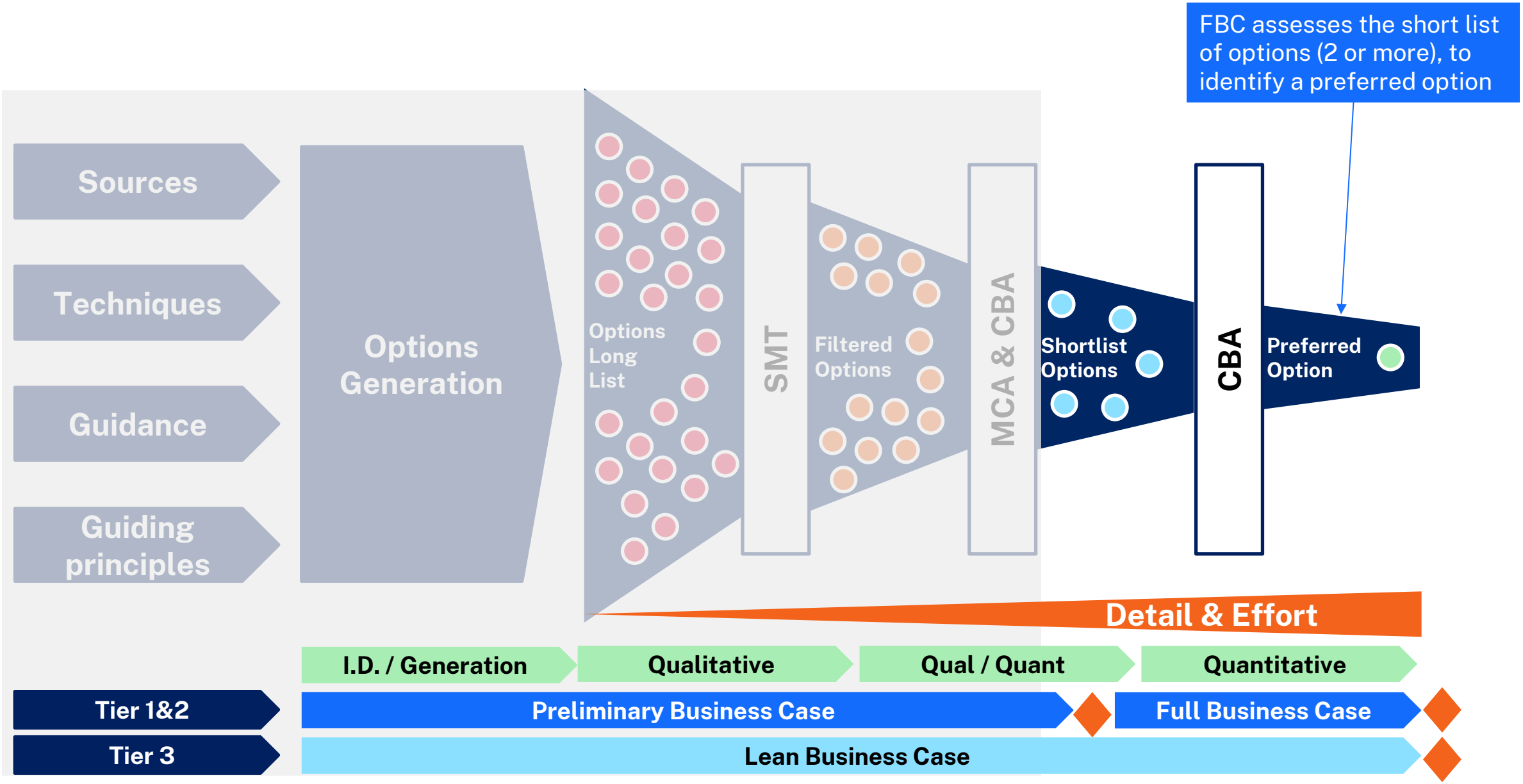
Where do the key questions for the investment decision sit within the Business Case structure?



The focus for the FBC is on the evaluation and deliverability

PROGRESSING TO INVESTMENT DECISION

Full Business Case Focus



FBC Options Assessment

But there is still lots of optioneering at the FBC stage

Investment decision questions	Is there really a problem? What is it?	Why is this option the best solution?	Why not a smaller investment?	Why can't we deliver this later?	Can you really deliver this?

- Route alignment
- Value Engineering (scope increase / decrease)
- Design development & design options
- Packaging & staging
- Commercial, procurement & funding
- Construction approaches

Summary

SUMMARY

Key Questions Answered

Questions

What is the problem?	Why is this option the best solution?	Why not a smaller investment?	Why is the investment needed now?	How would this be delivered?

Answers

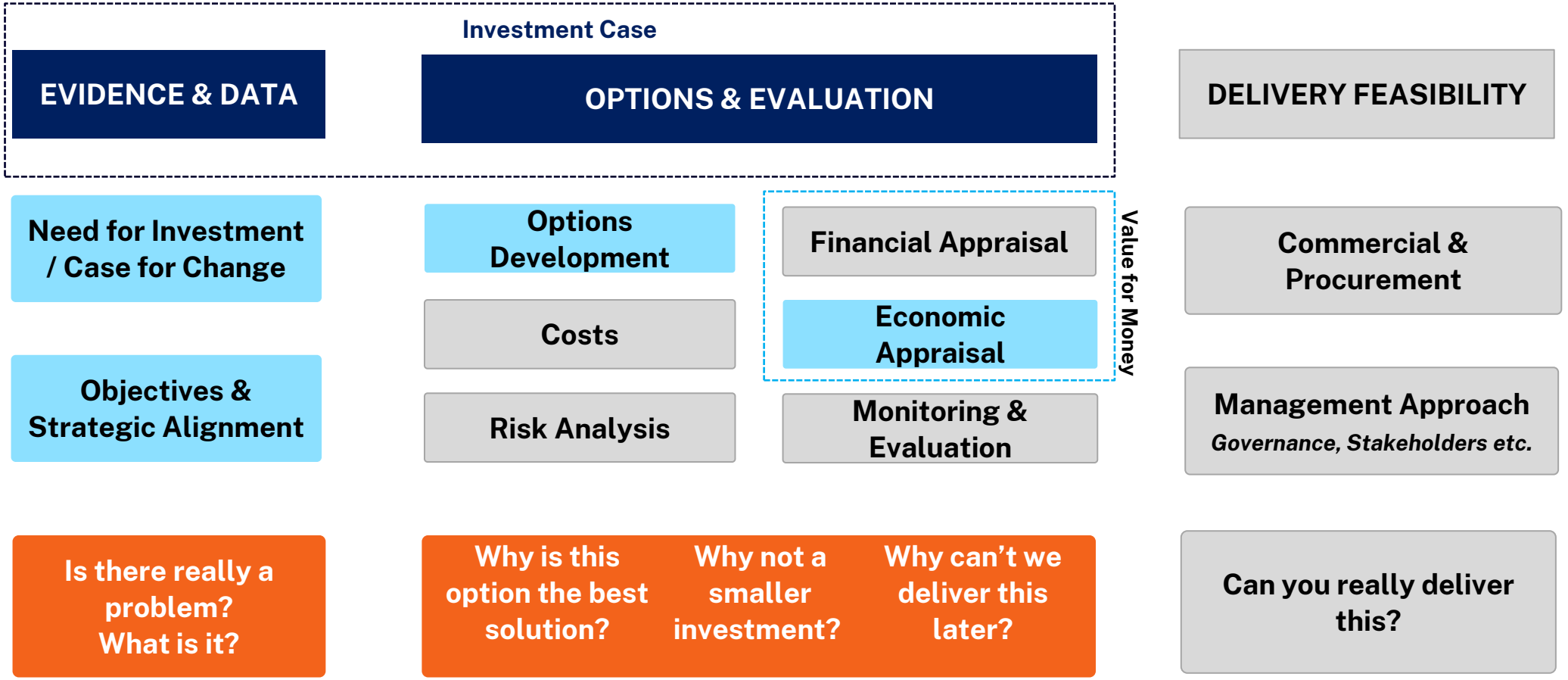
Investment Case

CASE FOR CHANGE	OPTIONEERING & EVALUATION	DELIVERY FEASIBILITY

NSW GOVERNMENT

SUMMARY

Business Case Sections Covered



Q&A

Feedback Form

https://forms.office.com/Pages/ResponsePage.aspx?id=gmc1y5qt-0eHi36864W4bE5z-B_lYhxOkLrRWJtjpEFUODI5NTNVQ1pBMjM3MTlGWlIwRlNESFUySC4u

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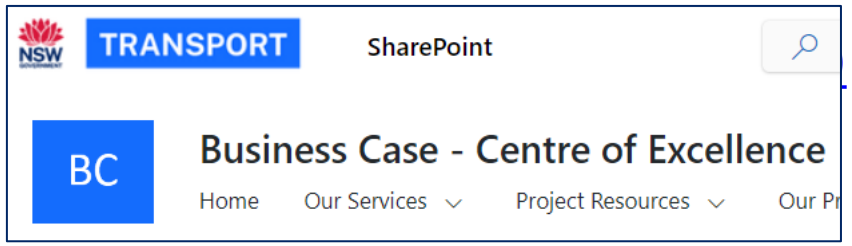
[Economic Advisory (sharepoint.com)]



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[(20+) Viva Engage - Business Case Community of Practice (yammer.com)]

Session 1

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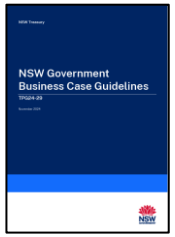
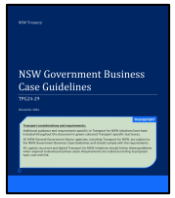


[TPG24-29 NSW Government Business Case Guidelines]



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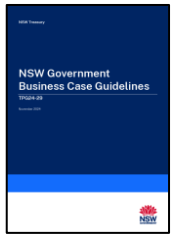
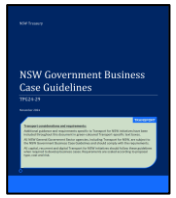
Session 2 (Section 3.1)



TPG24-29 NSW Government Business Case Guidelines (Section 3.1)



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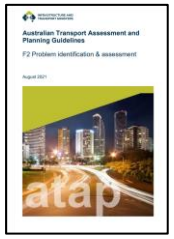
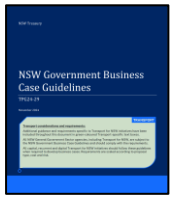


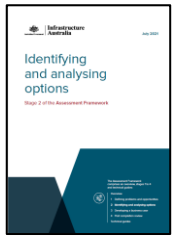
f2-problem-identification-and-assessment.pdf (atap.gov.au)

REFERENCES & GUIDANCE DOCS

Session 3



[NSW Government and Transport Business Case Guide](#) (Section 3.2)



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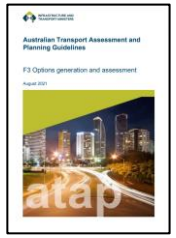
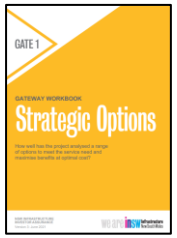


[F3 Options generation & assessment (atap.gov.au)](#)



[Gate 1: Strategic Options (nsw.gov.au)](#)

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REFERENCES & GUIDANCE DOCS

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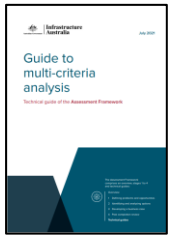
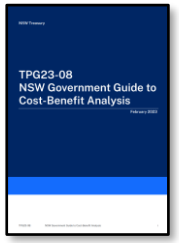
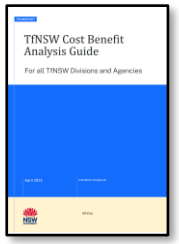


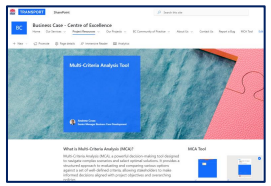
[Assessment Framework 2021 Guide to multi-criteria analysis.pdf (infrastructureaustralia.gov.au)]



[TPG23-08 NSW Government Guide to Cost-Benefit Analysis]

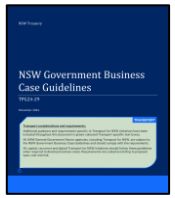


[Investment and Assurance - TfNSW-CBA-Guide-2023.pdf - All Documents (sharepoint.com)]

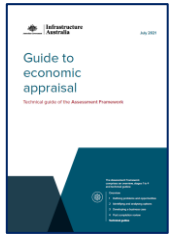


[Multi-Criteria Analysis Tool (sharepoint.com)]

Session 4



[NSW Government and Transport Business Case Guide](#) (Section 3.3)



[Stage 3 - Developing a business case | Infrastructure Australia](#)

[TPP18-06 NSW Government Business Case Guidelines](#)

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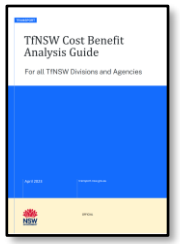
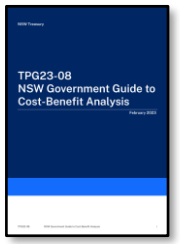
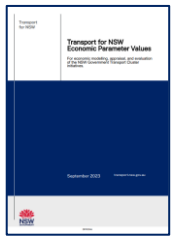


[Investment and Assurance - TfNSW-CBA-Guide-2023.pdf - All Documents (sharepoint.com)]



[TPG23-08 NSW Government Guide to Cost-Benefit Analysis]



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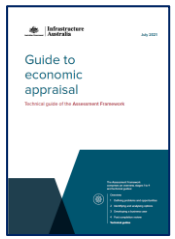

[Guide to economic appraisal | Infrastructure Australia]

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[Investment Assurance (sharepoint.com)]

[Infrastructure NSW Trends and Insights Report 2022]

[Infrastructure Investor Assurance Framework update - September 2022 (nsw.gov.au)]

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