

Transport Modelling for Project Managers

9 July 2020



Technical Webinar



Today's moderator



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Austroads acknowledges the Australian Aboriginal and Torres Strait Islander peoples as the first inhabitants of the nation and the traditional custodians of the lands where we live, learn and work. We pay our respects to Elders past, present and emerging for they hold the memories, traditions, culture and hopes of Aboriginal and Torres Strait Islander peoples of Australia.

Austroads acknowledges and respects the Treaty of Waitangi and Maori as the original people of New Zealand.

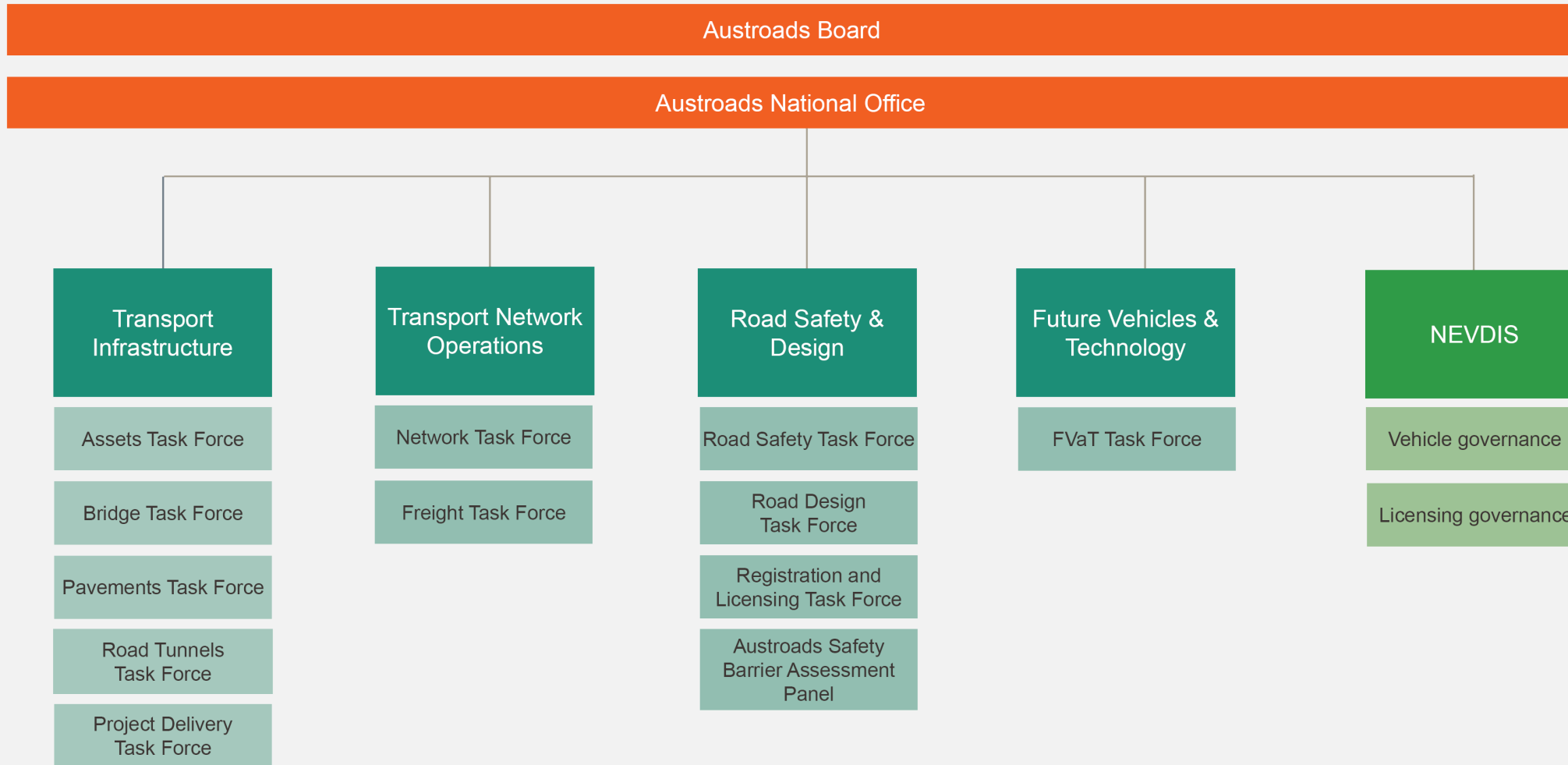
About Austroads



The collective of Australasian transport and traffic agencies

- Transport for NSW
- Department of Transport Victoria
- Department of Transport and Main Roads Queensland
- Main Roads Western Australia
- Department of Planning, Transport and Infrastructure South Australia
- Department of State Growth Tasmania
- Department Infrastructure, Transport, Regional Development and Communications Northern Territory
- Transport Canberra and City Services Directorate, Australian Capital Territory
- Department of Infrastructure, Transport, Regional Development and Communications
- Australian Local Government Association
- New Zealand Transport Agency

Our structure

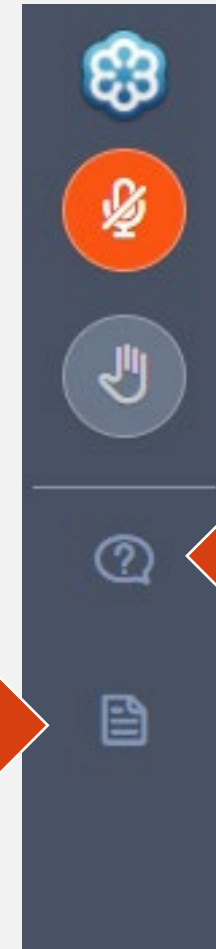
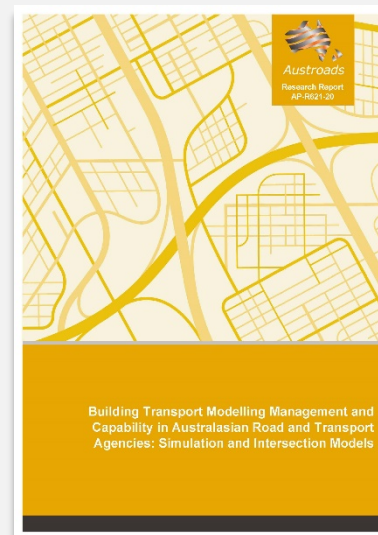


Housekeeping



Presentation = 40 mins

Question time = 15 mins



Type questions here

Let us know the slide number your question relates to

Today's presenter and agenda



Topic

Project background and introduction

Project methodology

Guideline overview

Worked examples

Q+A



Bryan Li

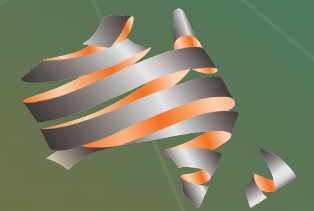
Associate Director

GTA Consultants

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Project background and introduction

Bryan Li



Austroads

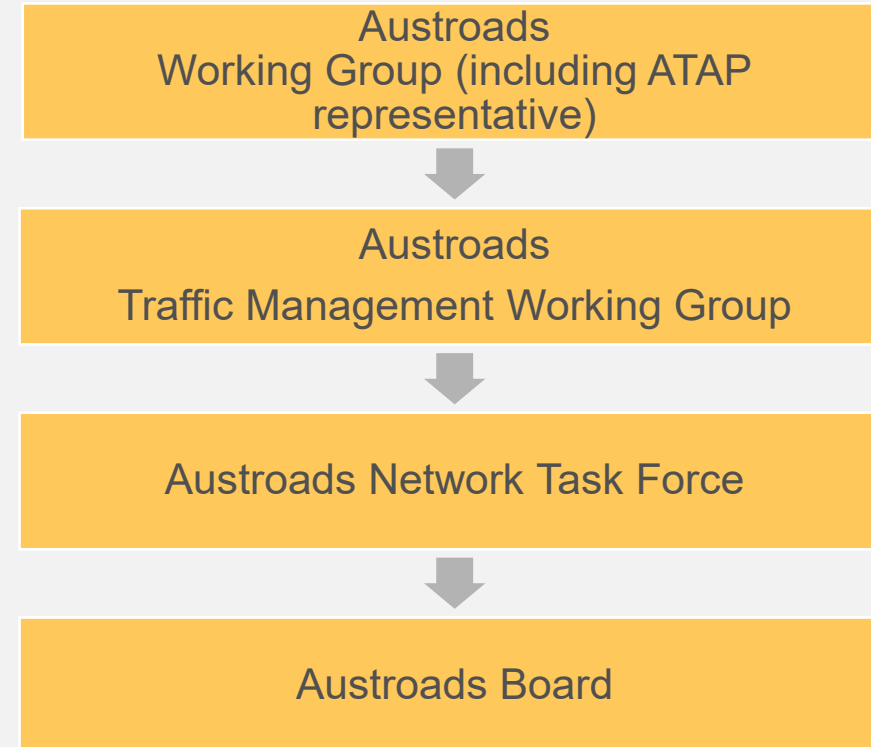
Introduction to the team



Project Team



Review Team



Austrroads Working Group



Austrroads Working Group

ATAP Steering Committee
(led by Peter Tisato)

Project background

Refer to Chapter 1



- Traffic and transport modelling assessments are becoming more in demand – sometimes a compulsory requirement for a project to obtain approval.
- Vast quantity of technical material is available for model users to develop models to a standard suitable for the respective agency.
- Austroads also has some technical modelling guidelines, but there is a general lack of guidance in the industry to assist with the management of modelling studies.



Purpose and objectives

Refer to Chapter 1.3



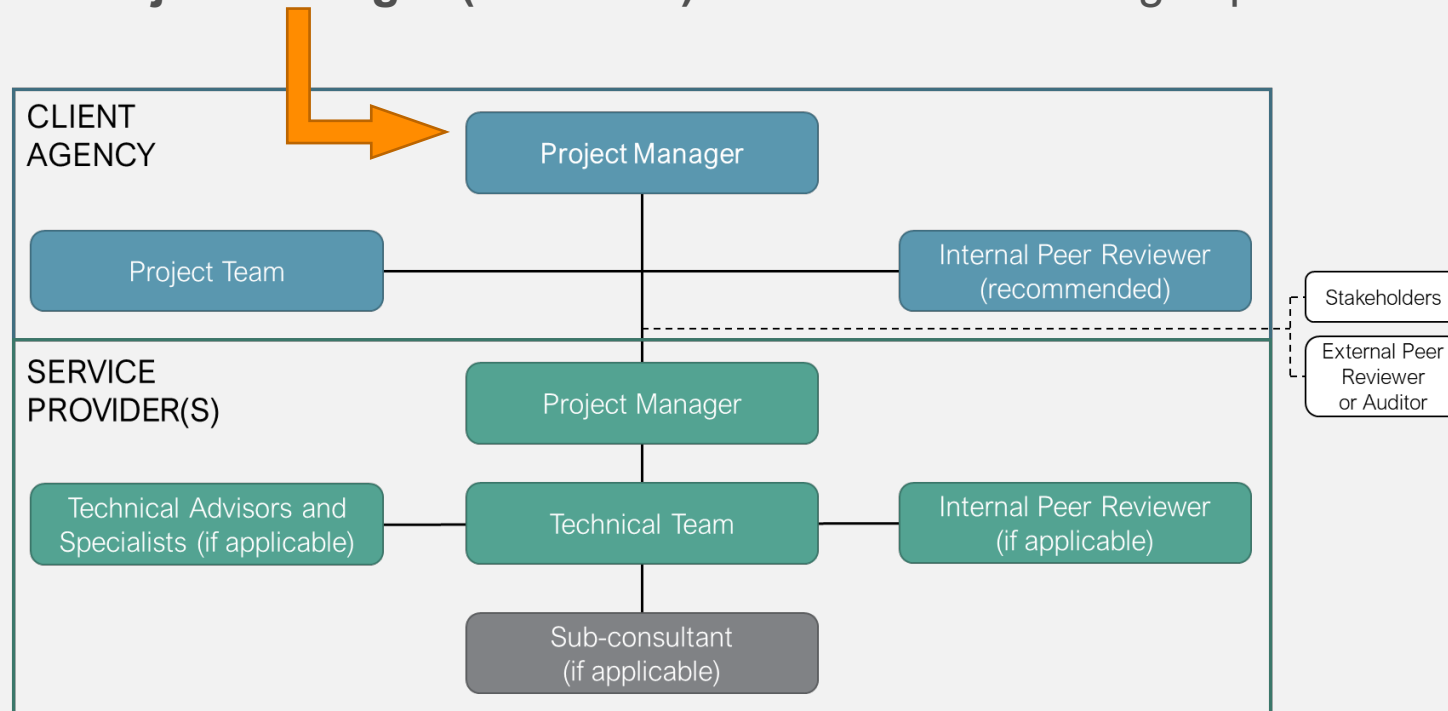
- Consistency across jurisdictions in descriptions of key elements of modelling practice.
- Common definitions and terminology.
- Identify where material differences exist in terms of advice and guidance for those undertaking and managing transport modelling.
- Provide appropriate national best practice principles and / or clear explanations to support best practice in modelling, drawing on the existing guidelines where relevant.
- Complement the existing suite of guidance to assist managers.
- Encourage collaboration with internal technical experts when developing and managing modelling contracts.

Target audience

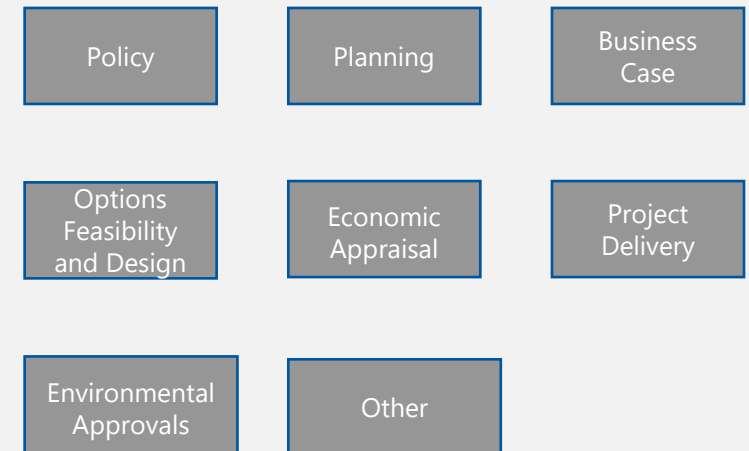
Refer to Chapter 1.3



- The below figure illustrates a typical Project Team structure.
- The target audience for the Austroads Guidance is the overall **Project Manager (i.e. client)** with limited modelling experience.



- The target audience may work in various agency areas / sections, such as (but not limited to) the below.



Project methodology

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Approach to guidance development

Industry Research and Review

- Literature Review
- Collaboration with ATAP (Australian Transport Assessment and Planning) Guidelines
- Industry Survey.

Draft Guidance Outline

- Prepare outline / structure of document for agreement amongst Working Group.

Draft Guidance Report

- Multiple drafts prepared seeking feedback from Working Group, NTF, etc. and improve content.

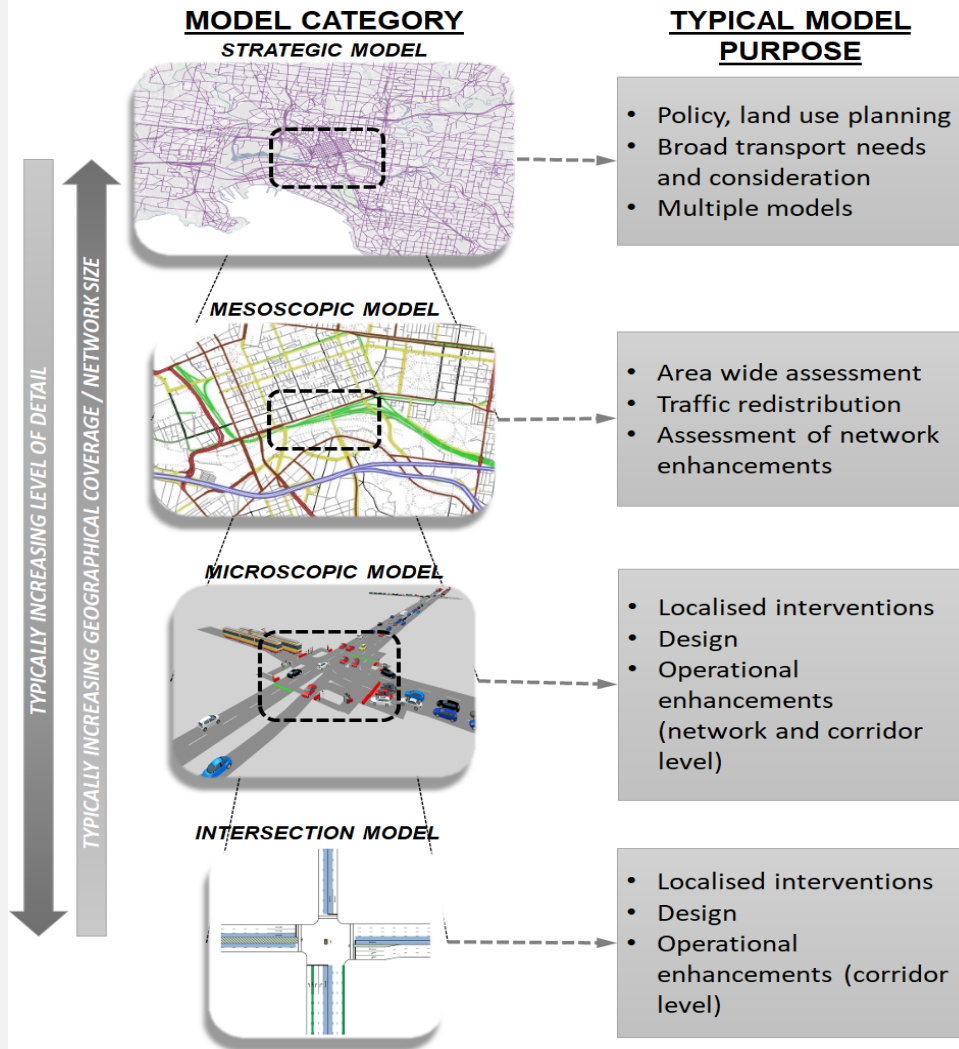
Final Review and Publication

- Final stages of guidance for Austroads' endorsement and publication
- Training webinar.

Austroads
Building
Transport
Modelling
Management
and Capability
Guidelines

Transport Models

Refer to Chapter 2



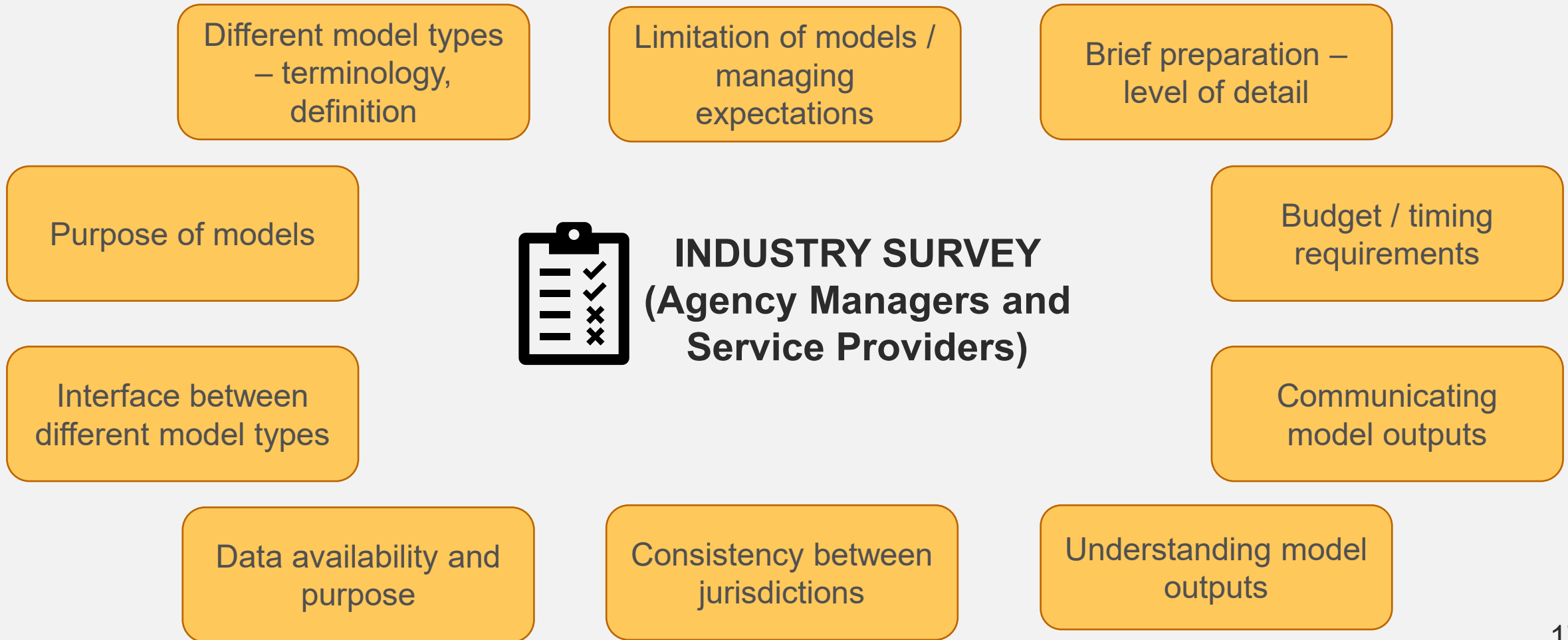
Guidance aimed at Strategic models:

- For ATAP Guidelines – to be integrated into pending update of ATAP Part T1 Travel Demand Modelling.

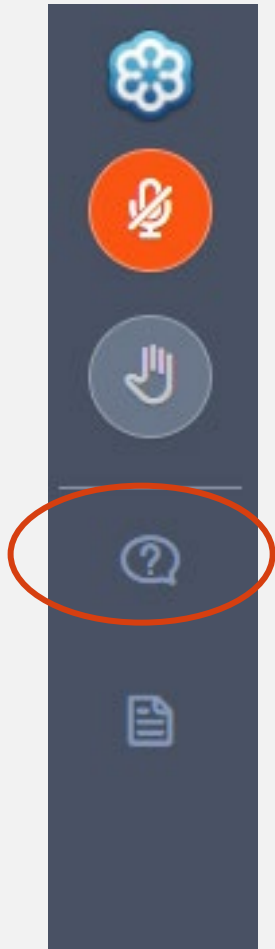
Guidance aimed at Simulation and Intersection models:

- Austroads Report AP-R621-20
- **Primary focus of this webinar**

Key outcomes from industry survey



Send us your questions



Type questions here

Let us know the slide number your question relates to

Guideline overview

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Overview of guidance content



Chapter	Title	Description
1	Introduction	Background and context for guidelines
2	Transport Models	Current situation, introduction to modelling and typical issues when using modelling.
3	Simulation Models	Key concepts modelling managers should be aware of for simulation models.
4	Intersection Models / Analysis	Key concepts modelling managers should be aware of for intersection modelling / analysis.
5	Integrated Modelling Approach	Outline of integrated modelling solutions and their requirements.
6	The Modelling Process	Overview of a typical modelling process / project stages.
7	Developing Model Briefs	Outline of key consideration when developing model briefs.
8	Dealing with Transport Data	Transport data collection techniques with relevance to the different model levels. Basic considerations when collecting and analysing transport data.
9	Transport Modelling Reports	Outline of key considerations when reporting on models.

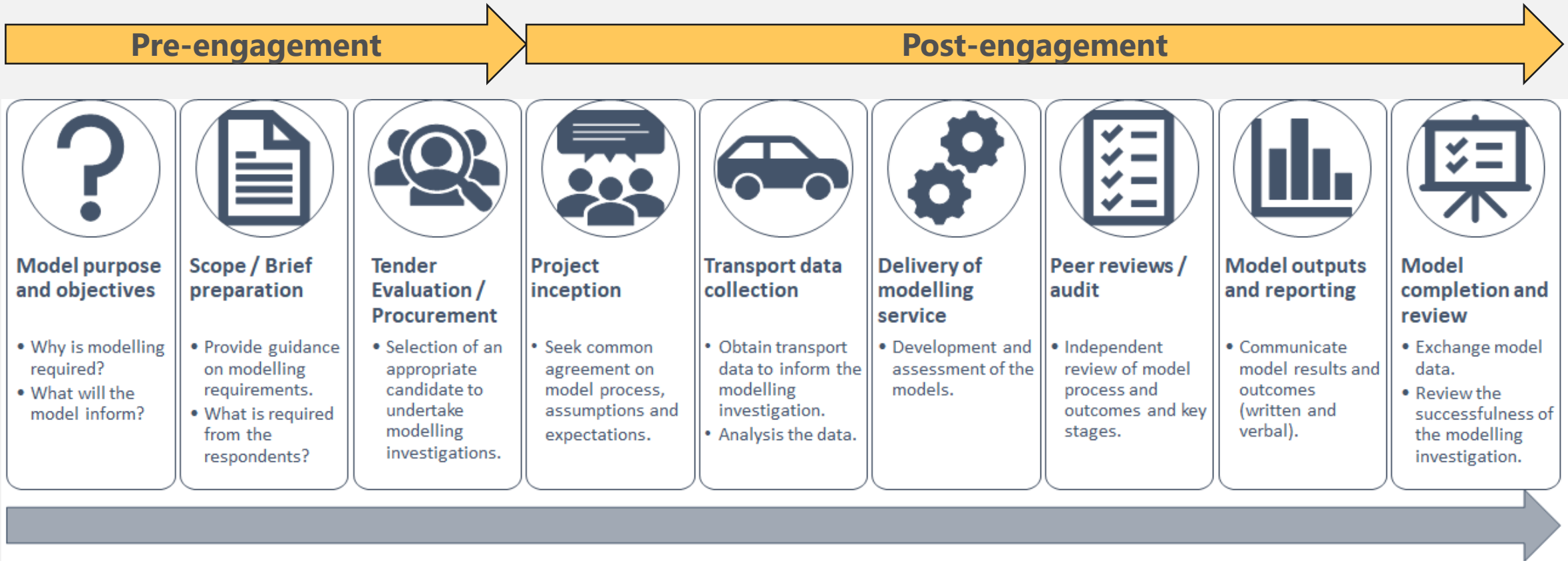
Overview of guidance content



Chapter	Title	Description
1	Introduction	Background and context for guidelines
2	Transport Models	Current situation, introduction to modelling and typical issues when using modelling.
3	Simulation Models	Key concepts modelling managers should be aware of for simulation models.
4	Intersections	<p>Project Manager Consideration:</p> <p><i>Early planning stages of model requirements is key as it shapes the way the model can be developed, or how much effort is put into the various components of a model build. This will ensure that there is no wasted effort on insignificant items for the purpose of the investigation – for example, an assessment of freeway systems requires effort on the driving behaviours and not interaction with pedestrians.</i></p>
5	Integration	Requirements.
6	The Modelling Process	Overview of a typical modelling process / project stages.
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Typical modelling process

Refer to Chapter 6



Pre-engagement stages

Refer to chapters 6 and 7



Transport models – current situation

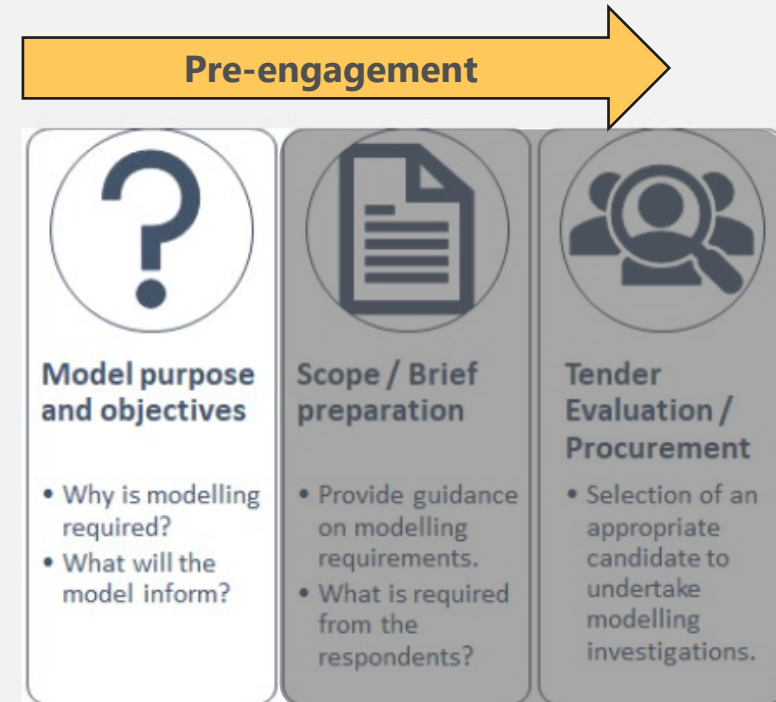
Refer to Chapter 2



Current Situation / Common Problems

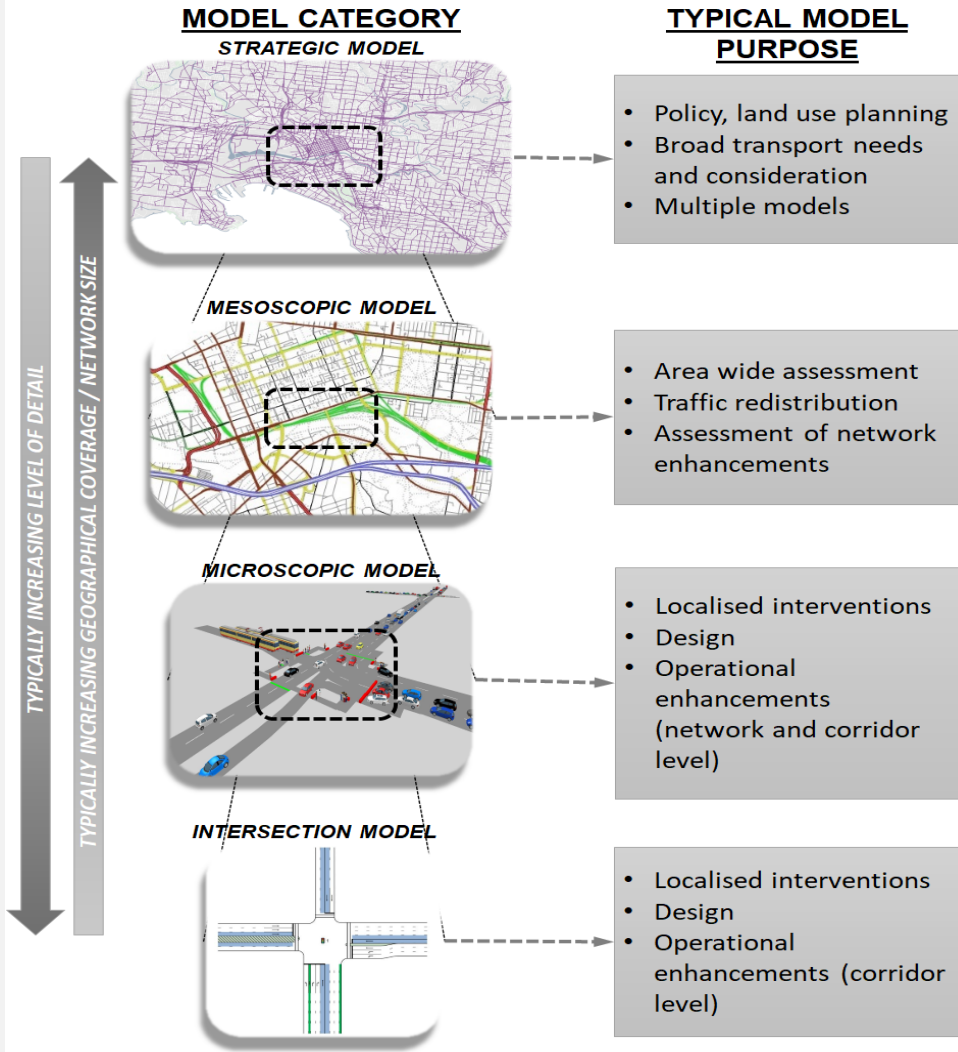
- Issues and limitations with existing guidelines
- Inconsistent approaches
- Relevance of advice on data
- Enhancing the collective use of various models
- Communicating model outputs.

The development of these guidelines have been prepared to address these issues.



Transport models

Refer to Chapter 2



Model Type	Sub-category	Key Features
Strategic Model	Macroscopic, Demand, Multimodal, Highway Assignment	Estimation of trips between origins and destinations at specific time periods. Estimation of mode choice and route choice. Estimation of link, route, area and network travel statistics.
	Simulation Models	Simplified simulation of individual vehicles by the propagation of flow in discrete time intervals along a sequence of links. Static and Dynamic traffic assignment
Simulation Models	Mesoscopic models	Simplified simulation of individual vehicles by the propagation of flow in discrete time intervals along a sequence of links. Static and Dynamic traffic assignment
	Microscopic models	Detailed simulation of individual vehicles and their interactions with each other. Static and Dynamic traffic assignment.
Intersection Models	Intersection models	Simplistic calculation of intersection performance and operation. Static traffic assignment.

Model briefs and evaluation

Refer to chapters 6 and 7

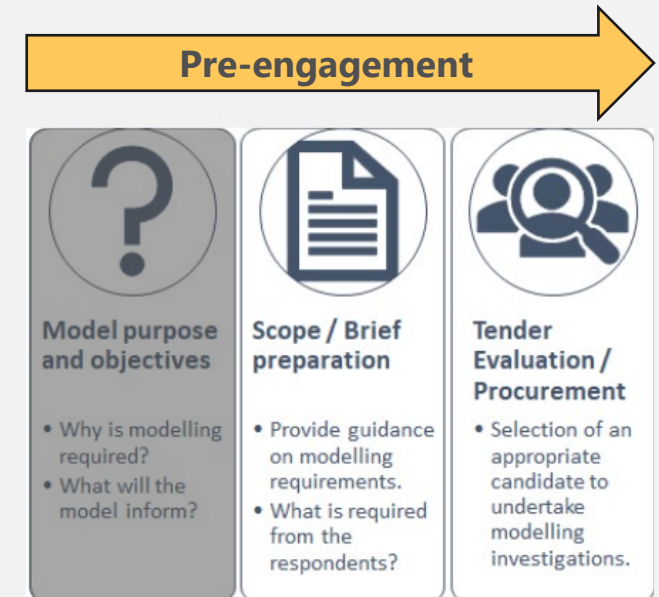


Scope / Brief Preparation

- Project managers should make their priorities for the study clear within the model brief.
- Ensure clarity in the model requirements for service providers to respond, and at times prescribe what they perceive as the most appropriate approach.
- Also consider the level of ‘creative freedom’ they are willing to give to the consultant throughout the project lifecycle (and the potential financial risks associated with this).

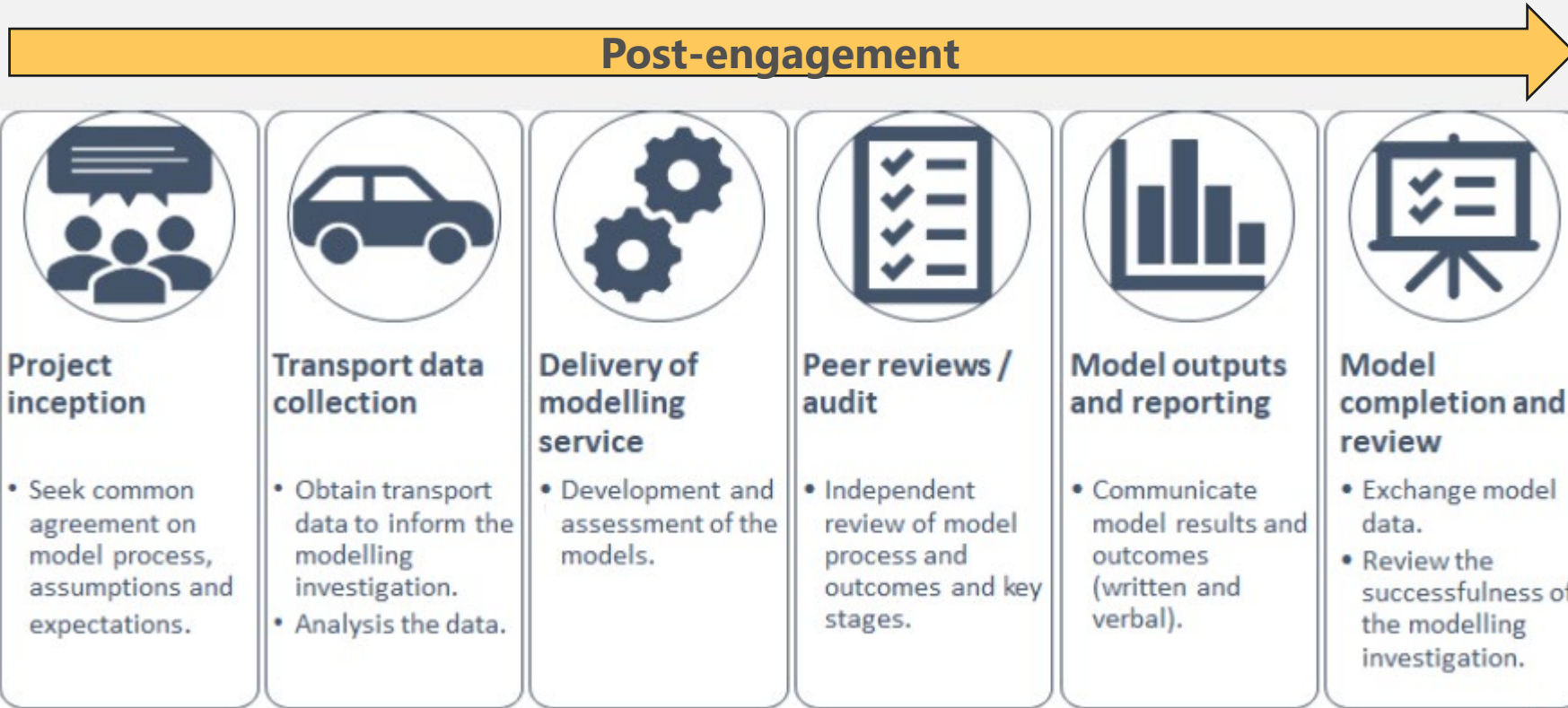
Evaluation

- Commercial Criteria
 - E.g. cost, time, value, insurances etc.
- Non-commercial Criteria
 - E.g. appreciation and understanding of project requirements, methodology, work program, experience, capability and capacity, etc.



Post-engagement stages

Refer to Chapter 6

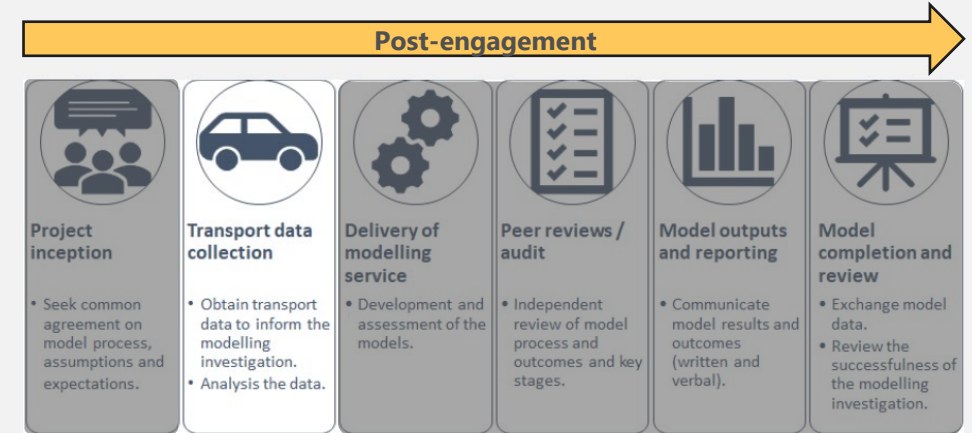


Transport data collection

Refer to Chapter 8



- Importance of data and its impact on the delivery of successful models.
- Challenges in collecting suitable data.



- More reliance and availability of large datasets to complement traditional methods:
 - Open source data, road and transport agency data (SCATS, permanent counts, etc.), GPS, Bluetooth, etc.
- Summary of various transport data types and typical use in various model categories.

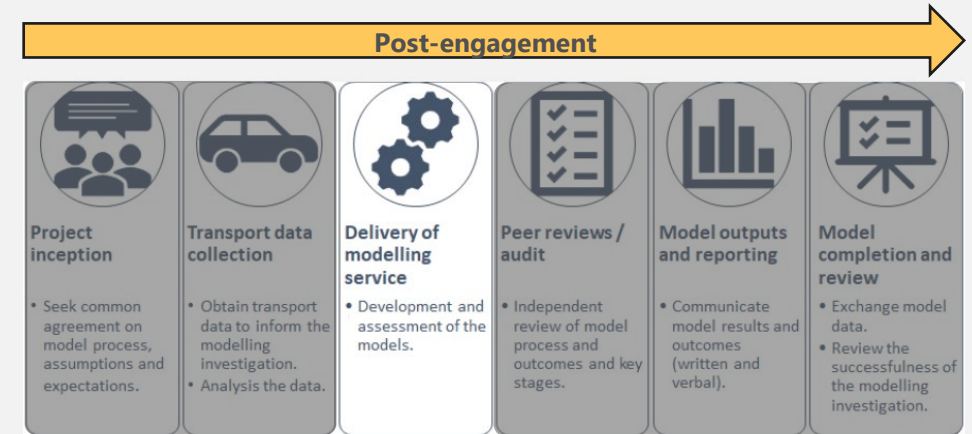
Simulation and Intersection models

Refer to chapters 3 and 4



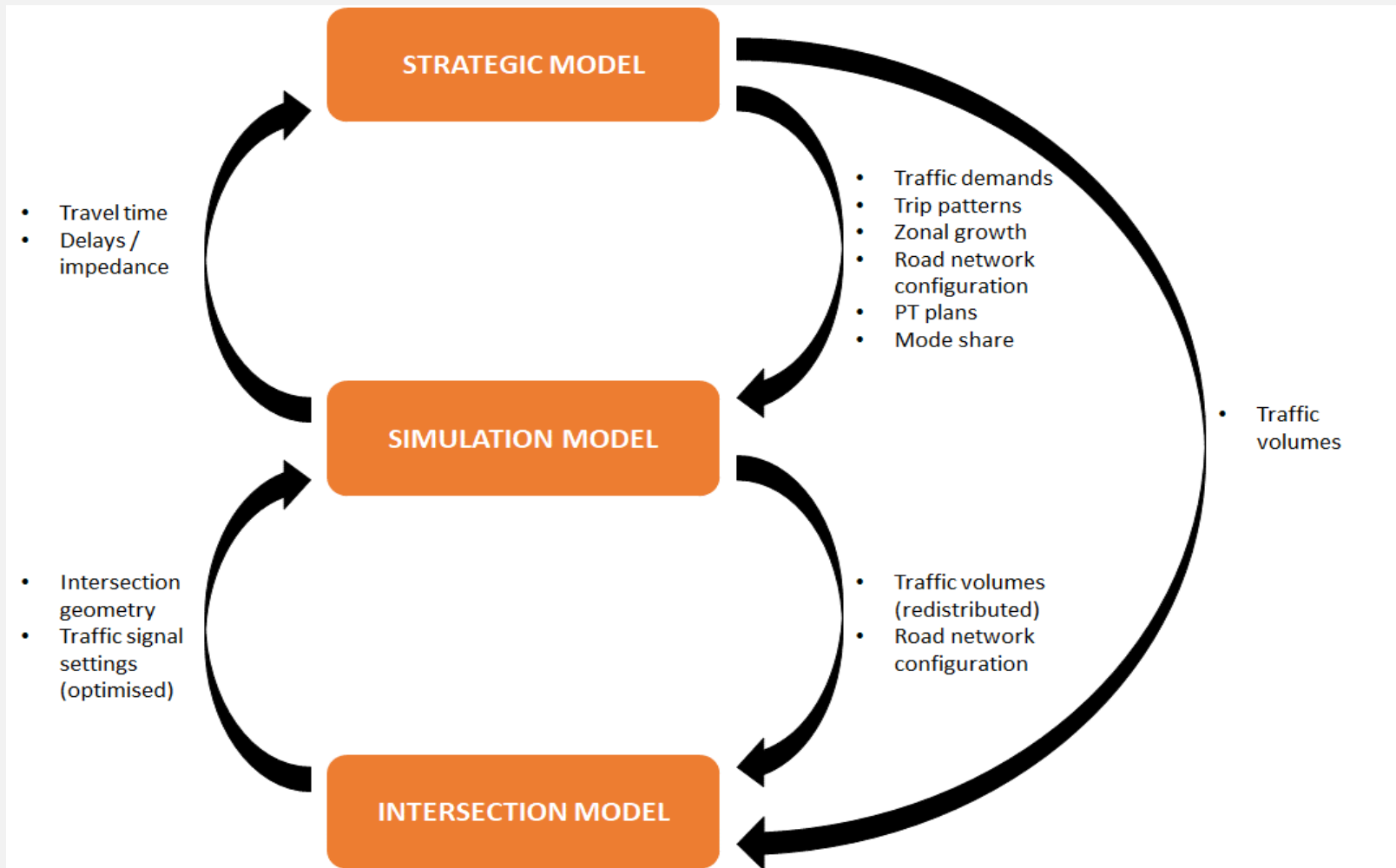
Key content in these chapters:

- Selecting Model Extents
- Composition of Transport Network
- Modelling Process and Timeframes
- Key Features for Base Model Development
 - (including references to Data Collection – Chapter 8)
- Future Year Assessment
- Model Outputs
 - (also refer Chapter 9 for a guide to Reporting requirements)



Integrated modelling approach

Refer to Chapter 5



Peer review / audits

Refer to chapters 3 and 4

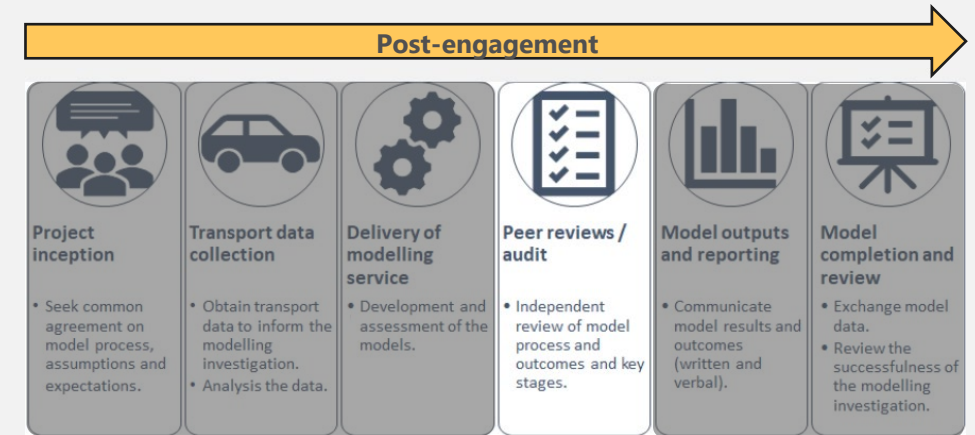


Peer review

- Engaging modellers not directly involved in the project to review the model at key milestones within the project. The peer reviewer should be selected at the commencement of the project, to maintain a continuous understanding of the model development.

Audit

- Review of the model and documentation is undertaken after completion of the model.
- Review process should be undertaken in a collaborative manner with the objective to assist rather than hinder the project/model.
- Independent review or agency review or both.



Model reporting

Refer to Chapter 9



Typical model reports include:



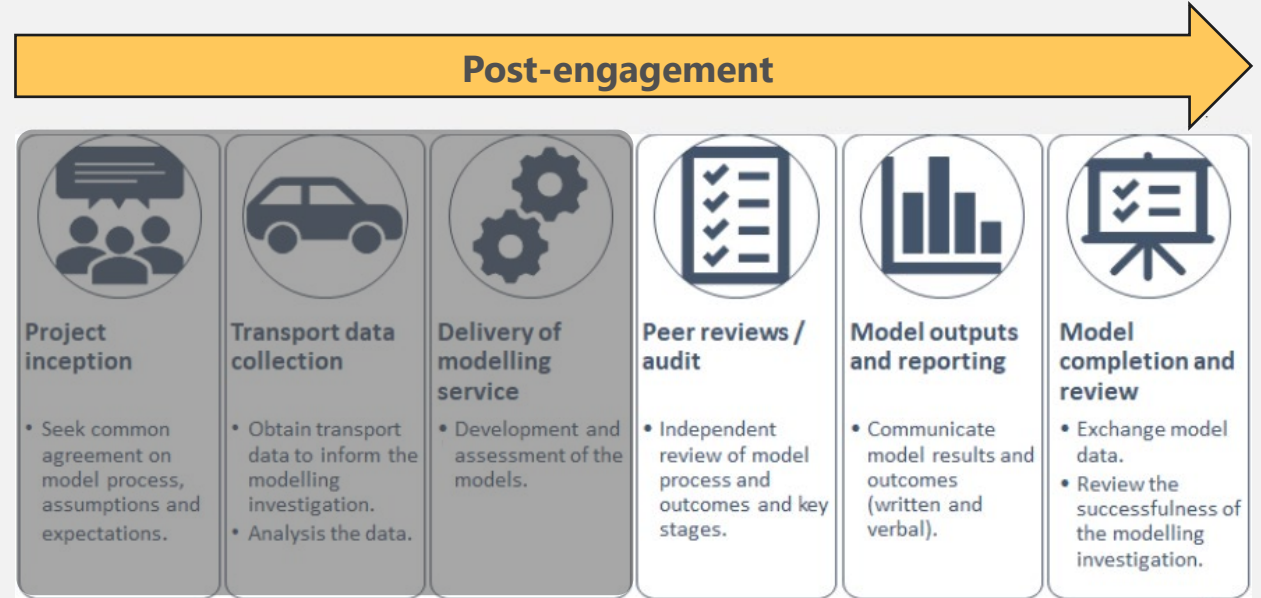
Model Scoping Report



Base Model Calibration and Validation Report



Option Assessment Report.

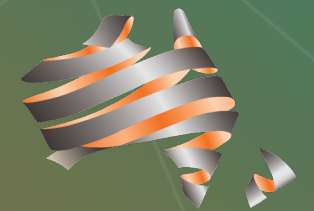


Key points

- Guideline prepared to assist Project Managers (or similar) in their respective agency in better understanding and managing model processes and projects, not to replace the need to consult internal technical experts.
- Guideline supplements current suite of Austroads traffic modelling guidance.
- Guideline does not replace the need to refer to specific jurisdiction requirements that road and transport agencies may already have in place. Rather, it is intended that these guidelines will complement existing guidance and fill any gaps (if relevant). Discretion by the reader is required.
- Guideline not intended to replace detailed technical guidelines for model users, which should still be referred to in their relevant area of assessment.

Worked examples

Bryan Li



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Worked example 1 – Pre-engagement

Project Manager of a major infrastructure project requires traffic modelling services to inform their traffic and transport assessment.

He/she has no modelling experience and limited knowledge of its capabilities, however, has been nominated to lead the procurement of a suitable modelling consultant to assist with the projects needs.

**How can they use this guide to assist them in developing a successful project brief?
Specifically what chapters should they refer to?**

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Worked example 2 – Post-engagement

A road/transport agency representative with some knowledge of modelling capabilities has moved interstate.

In their first encounter with modelling on a project, he/she has been included into a team mid-project and has noticed that the general operations are different to what they have experienced previously. In addition, he/she is unaware of a modelling team / representative within their agency to refer to.

How can this guideline assist them and provide confidence that they are following the correct procedures and gathering the correct data to inform the model?

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Questions?



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Upcoming Austroads webinars



Topic	Date
Tactical Urbanism – Streets for People	21 July
Procurement Decision Tool: A Case Study of the Toowoomba Second Range Crossing	31 July
Vehicles and Technology Future State 2030	6 August
Standards Australia – Bitumen and Related Materials for Roads	11 August
Classifying, Measuring and Valuing the Benefits of Place on the Transport System	13 August

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