



Wirraway Precinct in 2050

Fishermans Bend Strategic Transport Peer Review

Client // Fishermans Bend Taskforce
Office // VIC
Reference // 16M1997000
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Fishermans Bend

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Executive Summary

An unparalleled opportunity

Fishermans Bend is Australia's largest inner urban redevelopment opportunity and is significant on a world scale.

When finished it will be home to a busy port, 80,000 residents and 60,000 jobs, plus all the accompanying activities required to make it a vibrant and successful place for the people of Melbourne.

It is an unparalleled opportunity but also a real challenge as evidenced by the range of work completed to date, and the issues identified in the 2015 Fishermans Bend Ministerial Advisory Committee Report.

Peer review and a pathway forward

GTA Consultants (GTA), in collaboration with David Lock Associates and Andrew Wisdom, has been engaged to undertake a peer review of all transport planning work to date.

The peer review identifies gaps in the planned transport network and sets out a pathway towards an agreed and robust evidence-based transport network, that will stand up to community scrutiny.

The recommended pathway is included as the main output of this peer review.

The nature of the challenge

It is no surprise that Fishermans Bend remains a challenging urban renewal opportunity. It is significant in scale, sits adjacent to Melbourne's CBD yet is, from a transport viewpoint, isolated with poor connectivity to the surrounding area.

Key junctions that allow access to and from the area are presently operating at or close to capacity, major roads form significant barriers creating severance, walking and cycling is fragmented and there is no mass transit public transport service.

Furthermore, unlike many large inner city urban renewal projects in Australia and overseas, Fishermans Bend is largely in private ownership.

Fishermans Bend requires a different approach if it's to work

Section 2 of this report contains a comparison of Fishermans Bend against a range of potentially comparable urban precincts both within Australia and overseas.

That work highlights that Fishermans Bend fundamentally different to the central business districts of our major cities in terms of the ratio of workers to residents, as well as being very different to the inner urban areas surrounding our central cities, and suburbia more generally.

The port, and the associated freight and logistics demands it generates, is an added complication that has been factored into the assessment.

Looking internationally provides some useful direction and forms part of the basis for our recommended approach.

In this context, there was consensus that a business as usual (BAU) approach will result in car usage similar to the rest of Melbourne. This outcome will produce both unsustainable and unworkable conditions for the community given the target population and employment densities.

Target mode shares as the key planning tool

To ensure success, a paradigm shift in transport planning approach and corresponding travel behaviours is required to deliver on the vision for Fishermans Bend.

The recommended approach places target mode shares at the centre of planning and decision making. The Australian case studies and international examples confirm that mode shares are the single most tangible and practical measure to drive decisions across transport infrastructure from a multi-criteria assessment perspective.

In other words, if target mode shares are achieved in a staged manner (inclusive of the road network required to support them), we can be confident that the right foundation has been put in place for Fishermans Bend to be a good place to live, work and play into the future.

The recommended pathway

To deliver an evidenced-based transport plan to support the Fishermans Bend Vision, we recommend a fit-for-purpose analytical framework, reproduced in the figure over and discussed in detail in Section 4.

The analytical framework covers all aspects of transport demand, and provides the evidence base for the supporting road network.

It is predicated on achieving a land use outcome that works for the people of Melbourne, where the transport network is the means by which the Fishermans Bend Vision is realised.

It considers what the transport network should look like, how it should be staged and how it can be funded.

The Analytical Framework shown on the next page contains three columns which align to:

- i The steps to undertake a transport assessment informed by best practice both within Australia and overseas
- ii Recommended tasks informed by the gap analysis and required to work towards the justification of the future road network
- iii The ongoing program of work the Fishermans Bend Taskforce is managing and how that can be brought together under an integrated approach.

The pathway is recommended as the basis on which further work proceed, and decisions regarding the transport network be taken.

A Pathway Forward: Framework for Transport Network Justification

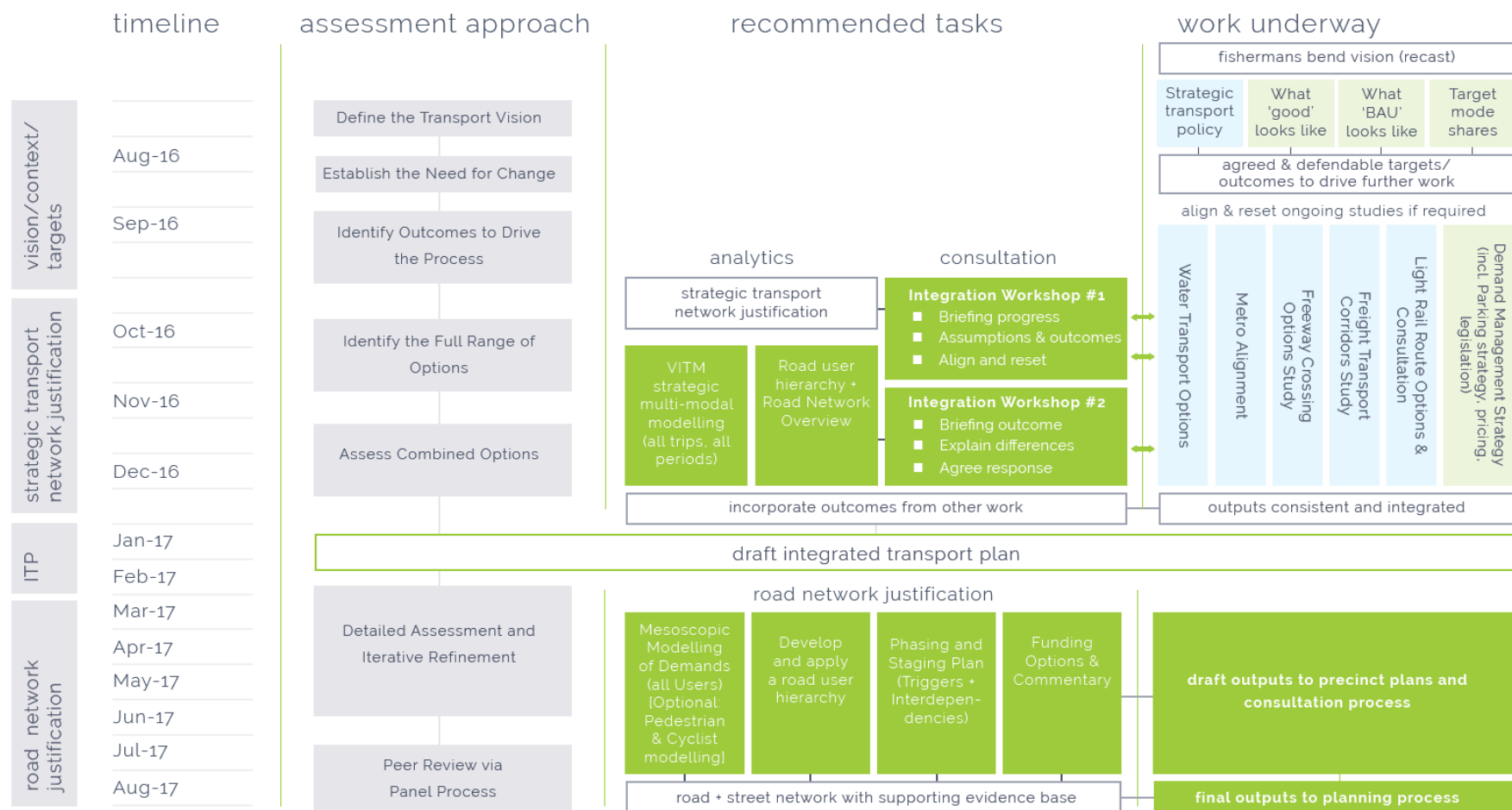


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1. Introduction

1.1 Background

The Government acknowledges Fishermans Bend as an unparalleled renewal opportunity for Melbourne. Totalling over 450 hectares, it is Australia's single largest inner urban renewal opportunity. The site now includes the employment precinct on the northern side of the Westgate Freeway as well as Webb Dock in addition to its four existing precincts. Fishermans Bend is adjacent to an expanding Webb Dock and other port activities related to the Port of Melbourne.

'Fishermans Bend [requires] not the usual traditional approach to planning' Minister Richard Wynne at Big Ideas, New Frontiers public conversation July 2016

The Government has stated its many aims for Fishermans Bend, including a change in planning that will significantly increase employment opportunities in the area. This is part of a recast exercise that has a greater focus on consultation through mechanisms such as a Ministerial Advisory Committee and enhanced public engagement.

Getting transport right remains a key issue for Fishermans Bend, even though numerous studies have been carried out to date. With the recent inclusion of the employment precinct, changes to the route alignment for Melbourne Metro, changes in transport policy and projects and development pressure within the area, the need has arisen for the completion of a strategic transport peer review.

Unlike many large inner city urban renewal projects, Fishermans Bend is largely in private ownership. In this context, there is a need to develop partnerships between Government and the property owners to deliver mutually beneficial outcomes for the future residents and workers.

1.2 Purpose

GTA Consultants (GTA), in collaboration with David Lock Associates and Andrew Wisdom, has been engaged by the Fishermans Bend Taskforce (Taskforce) to undertake a 'fit for purpose' review of previous investigations. The aim is then to identify a best practice transport planning methodology or 'pathway', with a focus on the road network, supported by transport modelling both early or late in the process.

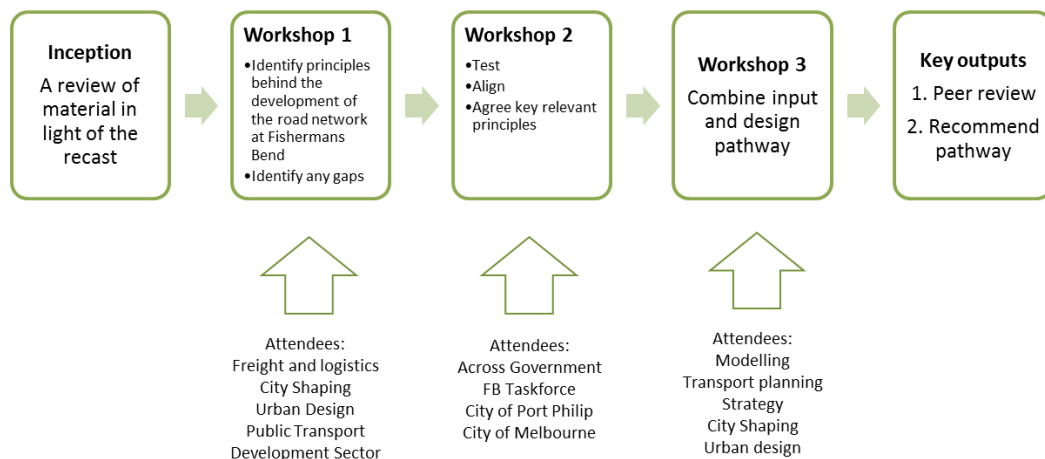
A key output of this study is to develop a methodology or pathway to justify the new road network proposed in Fishermans Bend to a potential future planning panel. This has been undertaken through:

- A critical peer review of the transport network proposed to date including a review of past and ongoing transport planning work
- A proposed approach to justify the road network and elements of the evidence base to support that justification.

1.3 Methodology

A collaborative approach was adopted involving an experienced team, including experts from a range of professional planning disciplines. Figure 1.1 provides an overview of the collaborative process undertaken to complete the study and arrive at the conclusions contained in this report.

Figure 1.1: Adoption of a Collaborative Approach



The workshops were critical in shaping the findings of the review. These workshops were a wide ranging exercise that explored the 'what-ifs', and we have included the agendas and summary notes of the workshops in Appendix A to highlight the wide-range of issues that were explored. The notes do however reflect the range of lines of interrogation pursued during the process, specifically:

- Urban design considerations provided by Mark Sheppard of David Lock Associates
- Future cities provided by Andrew Wisdom and GTA
- Freight, Public transport, Modelling and Transport all provided by GTA

1.4 Report Structure

The approach to the study and this report is structured in four parts.

- **Part 1** – The introduction.
- **Part 2** – Background and the transport planning challenge. This provides a short contextual overview of the area, identifies the strategic transport planning challenge and provides a model to address these challenges.
- **Part 3** – Identifies the gaps in evidence and policy-logic for Fishermans Bend transport planning.
- **Part 4** – Recommends a pathway forward and a clear methodology, supported by additional detail and information on forecasting methodology.

Relevant case studies and examples of best practice are provided throughout the report.

1.5 Assumptions

The recommendations outlined in this report have been developed as part of ongoing Fishermans Bend planning activities. As a result, the study was designed to incorporate and integrate these perspectives. Specifically, the body of work reviewed included:

- A range of planning and technical work informed by the Ministerial Advisory Committee and led by the Fishermans Bend Taskforce
- Consultation, media information and public forums
- A range of Government inputs and interfaces e.g. planning for Webb Dock, transport network development planning
- Planning led by adjoining/interested authorities, in particular the City of Port Philip and City of Melbourne.

1.6 Scope

The scope of the study reflected the complex and iterative interaction between a functioning transport network, stakeholder expectations, policy objectives (at all tiers of Government), development pressure and achievement of the Fishermans Bend vision.

2. Part 2: Background Review

2.1 The Next Chapter in Melbourne's Growth Story

Fishermans Bend today is home to 200 residents, 30,000 workers and an operational port. In 2051 it is projected to be home to 80,000 residents, 60,000 workers and an expanded port.

Future planning for Fishermans Bend seeks to support a diverse and vibrant community.

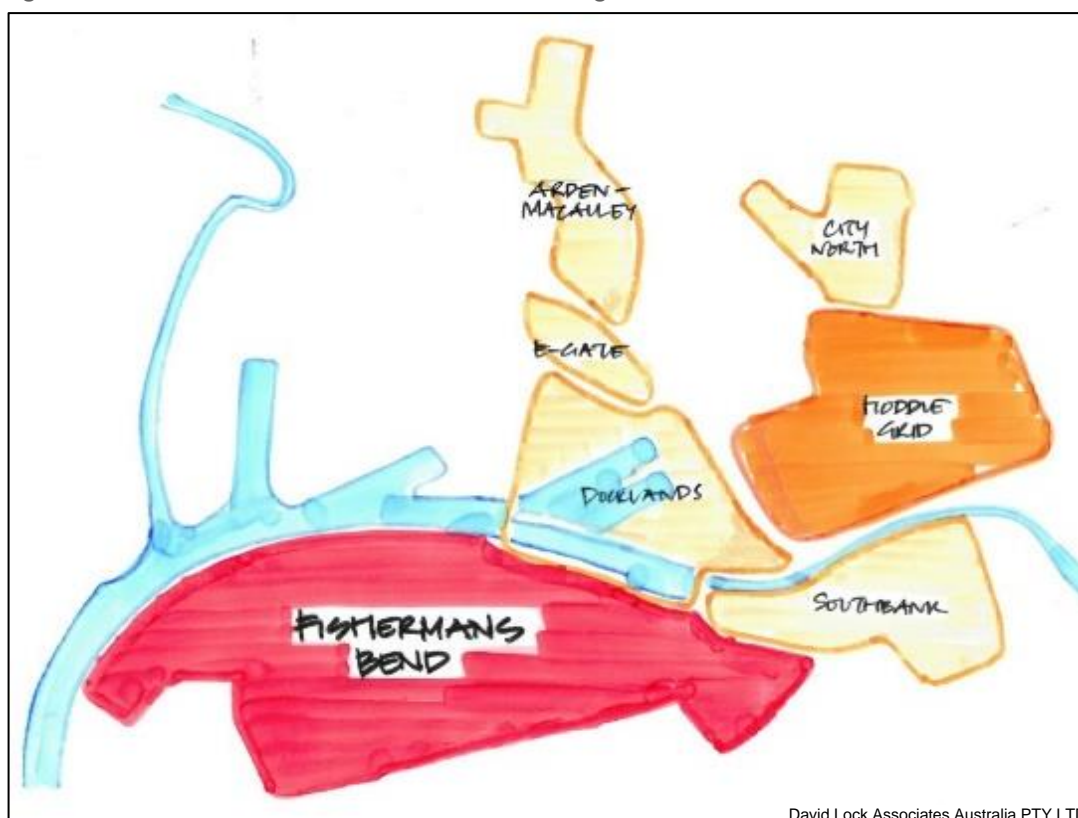
Employment in the area is expected to be varied and from a metropolitan-wide catchment with the employment areas' function evolving over time. In addition, a fully functioning port must continue to operate 24 hours a day, 7 days per week at Webb Dock, directly adjacent to Fishermans Bend.

Fishermans Bend is linked to a city-changing regeneration and infrastructure program that will significantly alter how inner Melbourne looks and works. Over the next 40 years the epicentre of Melbourne will move west, and, as illustrated in Figure 2.1, there is an inner arc of new city areas that will redefine the shape of inner Melbourne.

In response, this study has considered the strategic questions of:

- *What is the vision for Fishermans Bend, and what does the transport network need to do to achieve this vision?*
- *What is the strategic role of Fishermans Bend in relation to the Central City, other urban renewal areas and Melbourne as a whole?*

Figure 2.1: Fishermans Bend and Inner Melbourne Regeneration Areas



2.2 The Current Transport Network Serving Fishermans Bend

It is generally agreed that the current transport network cannot support the long term aspirations for the area.

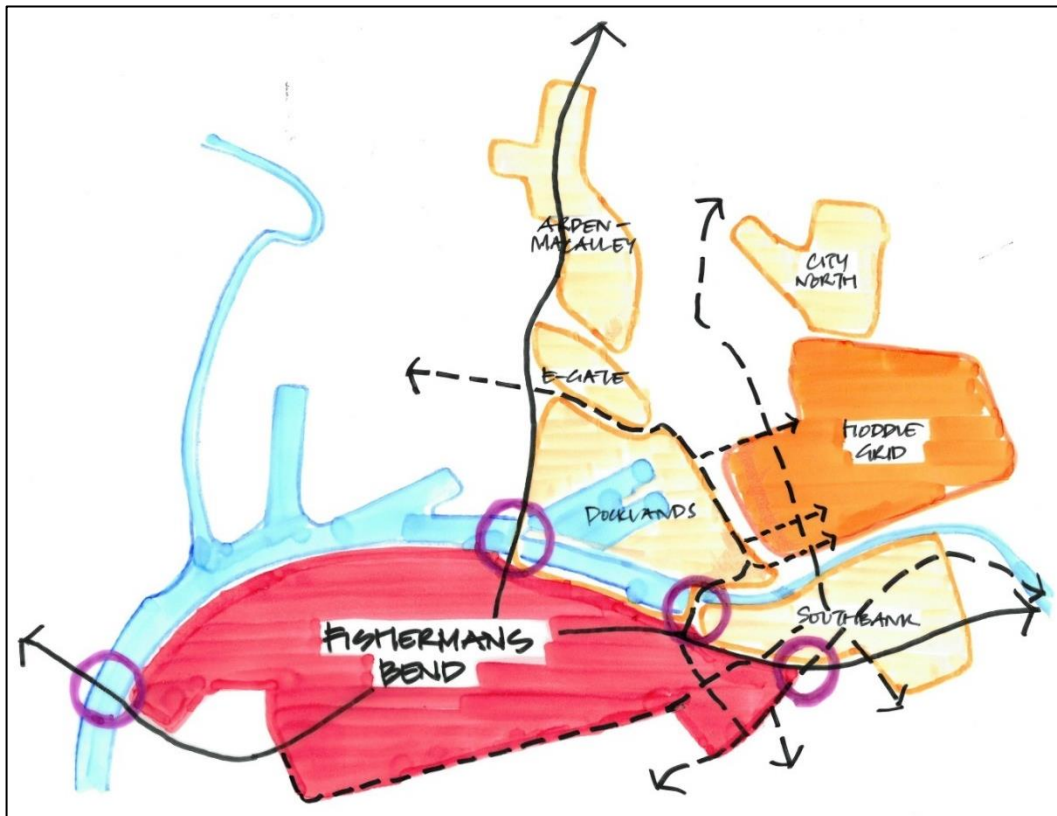
The network is designed to support the area's current function as an industrial precinct with limited residential occupancy and an employment mix reliant on access through road based transport . As a result, the transport network has a focus on access to the adjacent freeway system. The road network principally provides for vehicle traffic with limited public transport provision and underdeveloped bicycle and pedestrian access.

It would position Fishermans Bend amongst the most sustainable transport oriented developments in the world

In this context, the recast should address the strategic question:

- How will the current transport network perform for people living and working in Fishermans Bend in 2051?
- How will the area be linked to Inner Melbourne development areas?

Figure 2.2: Indicative Example of Strategic Links to the Wider Area that must be Defined with Certainty



Source: David Lock Associates Australia

2.3 The Transport Planning Challenge for Fishermans Bend

Planning for Fishermans Bend should be based on the key assumption that, similar to Melbourne's CBD (the Hoddle grid), most people choose not to travel by car.

The congested main road network around Fishermans Bend has been key to informing this assumption. As a result, strategic transport planning for Fishermans Bend should be based on

mode share targets similar to that of the Melbourne CBD. This approach aligns with international best practice.

Mode share targets are globally used as a performance indicator that can be linked to a range of non-transport outcomes, such as: CO₂ emissions, safety, health and economic productivity.

2.4 Target Mode Shares as a Key Planning Tool

If Fishermans Bend achieves its target mode shares in 2051, it will approach the lowest level of car use of any urban precinct in Australia and would position Fishermans Bend amongst the most sustainable transport oriented developments in the world.

Fishermans Bend targets are compared to other areas in Australia that are known for high public transport use in Figure 2.3. The Fishermans Bend vision positions it amongst the city areas that have the highest public transport and active travel mode shares in Australia.

However, Fishermans Bend has significantly fewer jobs than other areas with comparable mode shares. It targets a ratio of 0.8 jobs to each resident in contrast to Melbourne and Sydney CBDs which both have approximately 20 jobs to each resident. This is illustrated in Table 2.2.

Figure 2.3: Australian Mode Shares – Active and Public Transport Compared to Car Trips and City Size

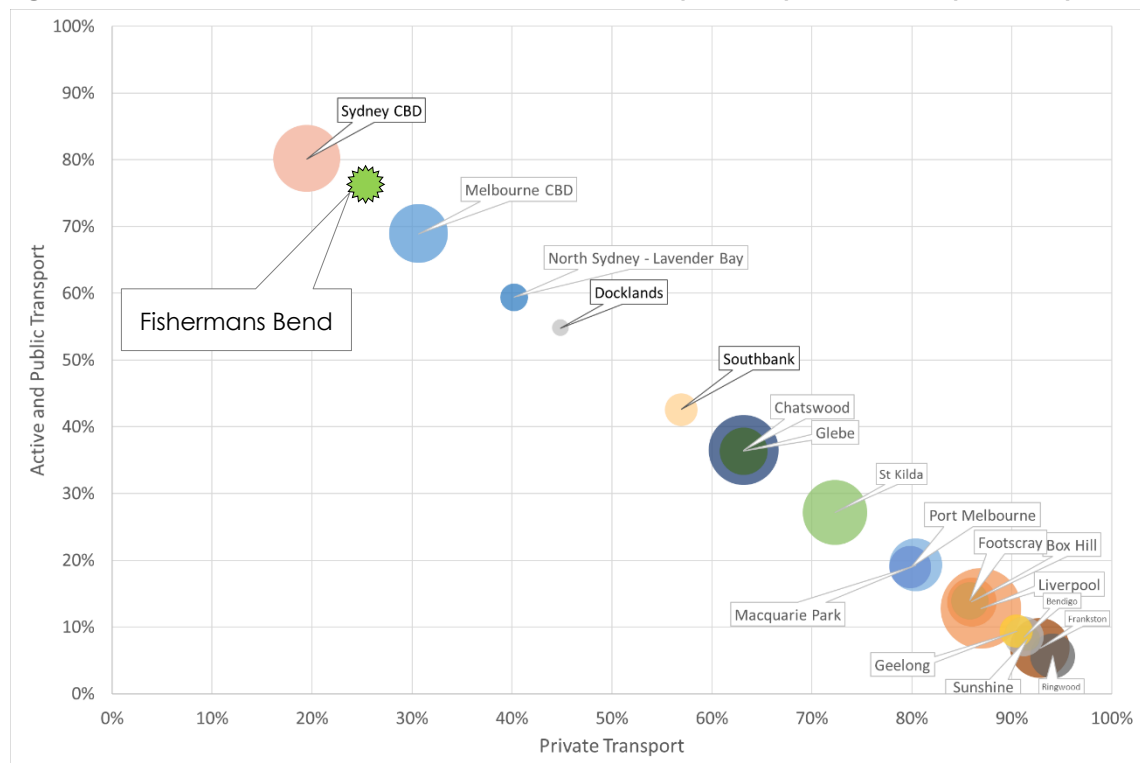


Table 2.1: Ratio of Jobs per Residents in Areas of High Public Transport and Active Travel Mode Shares

	Fishermans Bend	Sydney CBD	Melbourne CBD	North Sydney - Lavender Bay	Docklands	Southbank
Population	80,000	22,760	20,030	9,515	5,791	11,311
Jobs	60,000	251,459	186,141	43,028	32,048	34,000
Ratio jobs per resident	0.8	11.0	9.3	4.5	5.5	3.0

Fishermans Bend will therefore aim for a major city CBD mode share in the future but will have a completely different profile of activity given the ratio of jobs to residents.

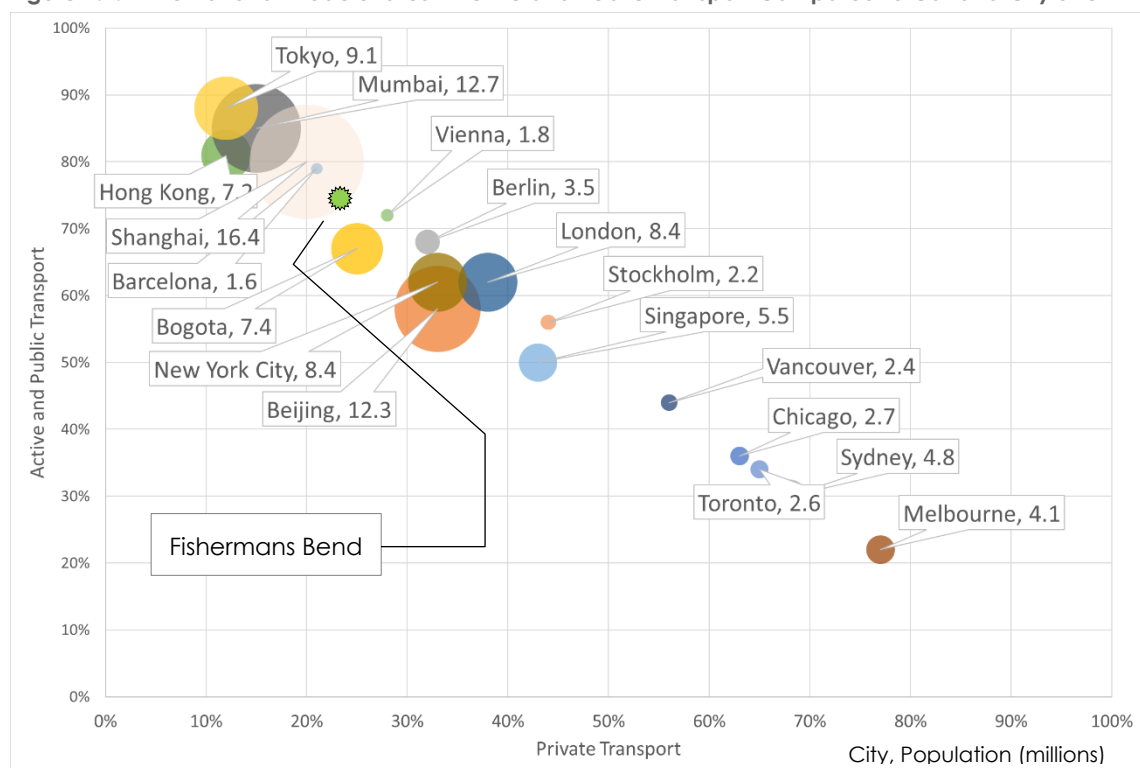
As a result, it is helpful to look overseas for examples on where comparable outcomes to Fishermans Bend have been achieved.

A similar analysis is provided in Figure 2.4, with a comparison between Fishermans Bend and other cities across the world. This figure illustrates that, at a city level, comparable examples with similar mode shares to the targets for Fishermans Bend include Barcelona, Vienna and Berlin.

We have mapped Best Practice examples and developed a 'model' or 'ideal' approach to transport planning.

These examples indicate that in order to achieve the desired target transport mode shares, Fishermans Bend needs to be considered as different to anything else achieved in Australia.

Figure 2.4: International Mode Shares - Active and Public Transport Compared to Car and City Size



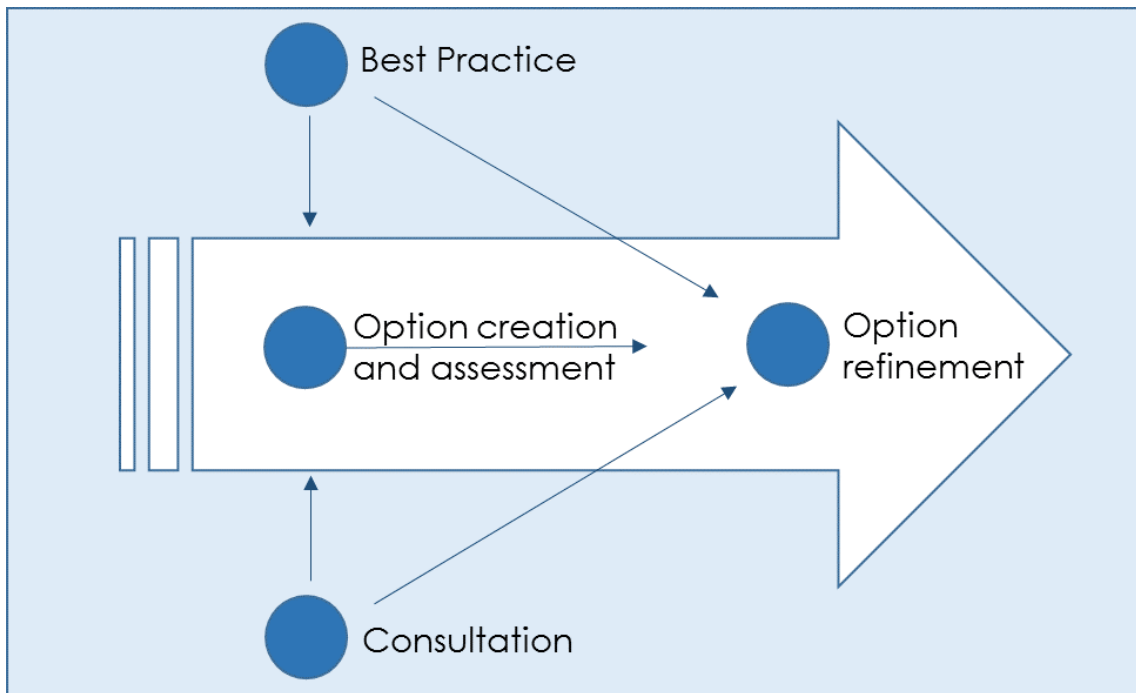
2.5 An Approach to Planning Transport for Fishermans Bend

To identify any gaps in evidence supporting the proposed configuration of the transport and supporting road network, it is important to appreciate what comprises an 'ideal' approach.

Broadly, strategic transport planning addresses different futures through a process of scenario planning. The purpose of the process is to take a 'big picture view' and test a range of strategies that can be structurally different, but plausible, against future city outcomes. This approach to planning is illustrated in Figure 2.5.

Our approach was underpinned by transparency and diversity of ideas in an attempt to make sense of future scenarios. We cast a wide net and asked the 'what-ifs' from a range of perspectives.

Figure 2.5: Illustrative Model for Scenario Planning



Source: Adapted from Assen et al (2003)

To align the Fishermans Bend's transport (and road) network planning with local and international best practice, we adapted three directly relevant examples:

- i Infrastructure Victoria's process to develop a 30-year plan
- ii Department of Treasury and Finance's Investment Planning and Evaluation Guidelines
- iii The United Kingdom's Transport Analysis Guidance.

These three examples all set out an approach to planning that flows from outcomes-focused strategic planning to a comprehensive technical assessment.

We have mapped these best practice examples and 'ideal' approach to transport planning. The steps in the process and a comparison to best practice is outlined in Table 2.2. This provides the foundation to identify gaps.

Table 2.2: A Model Approach to Transport Planning Mapped Against Best Practice

A model approach to transport planning for Fishermans Bend	Department of Treasury and Finance: Investment Planning Guidance 	Infrastructure Victoria: approach to planning 	The United Kingdom's Transport Appraisal Guidance(UK) 
Establish a clear vision	A tool to describe the contribution of an individual investment to achieving strategic outcomes	'From the Ground Up' and 'Laying the foundations' both progressively build a vision for infrastructure investment in Victoria	National/local policies
Establish the need for change - both technically & in a voice that communities can understand	Understand the problem	'Learning from the past and others', <i>Network performance</i> , <i>Infrastructure capability assessments</i> (including Transport), and <i>Current and future state of Victoria</i> reports all provide an evidence base for change	Establish the need for intervention Understand the current and future context and conditions in the study area
Identify your desired outcomes in a way that links to measurement & indicators, these should cover the environmental, social, & economic impacts of the vision	Understand the benefits of change	'Laying the foundations' includes indicators for tracking objectives over time	Identify intervention specific objectives to address the identified need Define Geographical are of intervention to address
Develop the full range of options, refine this through a transparent process, & prepare a range of scenarios	Investigate potential strategic responses	Options phase: Technical Reports (Assessment 1/2 and supplements A/B) - detail a wide range of infrastructure options to enable a triple bottom line assessment	Generate options, reflecting the range of modes, approaches and scales of interventions Undertake an initial shift. Discard options that would fail to address objectives or are unlikely to pass key viability and acceptability criteria
Develop a robust & defensible Assessment Framework (inc transport modelling) to test options & scenarios	Develop an indicative solution and Conduct solutions options analysis	'All things considered' and the supporting 'Options book' assesses a large number of options against a need relative to cost	Develop and assess potential options against an option assessment framework, using the five cases model: The strategic Case, value for money, delivery case, financial case, commercial case
Detailed assessment of performance against Framework – including outcomes & most importantly the vision	Drive more benefit from a funded investment; Validate the success of a completed investment; Provide lessons that will inform the shaping of future investments;	Funding and financing draft additional information paper	Clarify the methodology and scope for further appraisal of the better performing option s(followed by a feedback loop)
Peer review to ensure transparency, & the full range of options have been explored		Consultation 'We hear you'	

Source: See section 5.2 for sources

2.6 The Modelling of Transport

Transport modelling is used around the world to forecast the number of users (demand) that will travel on a transport system at a given point in the future. There are generally three layers of models: strategic, tactical and operational – these are related as they (should) contain consistent assumptions.

The traditional approach to transport modelling is undertaken through a 4-step process. These steps are iterative and there are feedback loops within the process.

The four steps are:

- i Trip Generation – how many users are travelling
- ii Trip Distribution – where users are travelling to and from
- iii Mode Choice – what form of transport users choose to make a trip
- iv Route Assignment – what routes users take

The four step model still provides the fundamental basis for insights into future transport patterns. In areas where development and transport outcomes aspire to be significantly different from a business as usual approach, the way that modelling is used as an analytical tool is important. Strategic modelling needs to iteratively test input assumptions and resulting network impacts to arrive at an 'acceptable' solution for all modes (as defined by the adopted project vision).

This more iterative outcome focused approach to planning could be described as a paradigm shift in transport planning. An overview of this shift and its considerations are outlined in Table 2.3 as a suitable reference for planning of the Fishermans Bend precinct.

Table 2.3: The Changing Transport Planning Paradigm

Concept	Old Paradigm	New Paradigm
Definition of transport	Movement	Accessibility
Modes	Cars (and heavy rail)	Multimodal – walking, cycling, freight, services, public transport, driving
Outcomes	Congestion (free flow versus speeds), time cost savings, vehicle Kms	Congestion, reliability, productivity, regeneration, safety, emissions, urban realm and plan, supporting land use objectives
Impacts Consider	Speeds, congestion (free flow versus speeds) vehicle operating costs and fares, crash and emission based on vehicle kms	Triple bottom line assessment considering economic, social and environmental outcomes
Performance indicators	Speeds	Level of service (all modes), access (catchments), user experience, safety, security, and environmental impacts
Favoured transport improvements	Capacity	Improve all transport options, demand management, and informing city planning
Planning scope	Planning for transport is isolated	Integrated planning that is iterative and supports wider aims and embed consultation in the process.

Table adapted from Litman (2013) *The New Transportation Planning Paradigm*, Institute Transportation Engineers Journal, June 2013.

3. Part 3: Gaps and Key Questions

3.1 Overview

Having established a model approach for best-practice transport planning, gaps were identified between best-practice and the work to date.

The review of work to date covered:

- The recommendations of the Fishermans Bend Ministerial Advisory Committee
- Consultation with the community
- Recent work of the Fishermans Bend taskforce
- Technical reports listed in Appendix B.

The gap analysis, provided over in Table 3.1 (over two pages), considers:

- Transport planning: the steps in an example approach
- What must be done: the requirements of the Transport Integration Act 2010
- Fishermans Bend planning: the review of the work to date
- Gaps & questions for the recast to address to provide justification for the transport network.

This gap analysis informed the subsequent development of the recommended assessment methodology and pathway.

3.2 Key Strategic Gaps

The process also identified key strategic gaps that planning for Fishermans Bend should aim to address. These gaps are listed below and are covered in more detail in subsequent sections.

- Identify agreed and defensible outcomes to drive all technical studies
- Incorporate the city of the future into all analysis
- Ensure that consideration of the employment precinct and Port is completely integrated into the process
- Full consideration of demand management policy levers.

Table 3.1: Gap Analysis and Key Questions for the Recast to Address


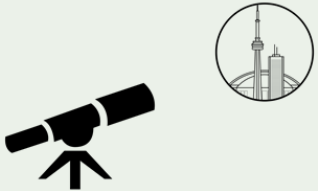









Transport planning: An example approach	What must be done: the TIA 2010	Fishermans Bend planning: the work to date
<p>Define a clear Vision</p> 	<p>Aspirations of Victorians for an integrated & sustainable transport system that contributes to an inclusive, prosperous & environmentally responsible State.</p>	<p>The Draft Vision for Fishermans Bend (2013) sets the baseline for the recast exercise: •A great place for families •The timely provision of infrastructure •A high quality built environment •A place that is easy to get around •Smart environmental solutions •A vibrant mix of uses & activities •Environmental constraints addressed</p> <p>Principles for the road network have been drafted by the Taskforce and agreed with stakeholders.</p>
<p>Establish the need for change - both technically & in a voice that communities can understand</p> 	<p>N/A</p>	<p>Gov rezoning of the land in 2012 commenced the need for change.</p> <p>The Framework Plan provides further clarity on the need for change to realise the 'rezoning opportunity' (1).</p> <p>A number of studies assess the current work capacity and conclude that it is inadequate to meet future demands (2)</p>
<p>Identify your desired outcomes in a way that links to measurement & indicators, these should cover the environmental, social, & economic impacts of the vision</p> 	<ul style="list-style-type: none"> •Social & economic inclusion •Economic prosperity •Environmental sustainability •Integration of transport & land use •Efficiency, coordination & reliability •Safety & health & wellbeing 	<p>Mode shares are the key outcome in Fishermans Bend planning documents. They are used to define the characteristics of different precincts, for example trips to work from Montague are 40% by car (3). Targets were originally developed as part of the ITS including 25% by car (average daily resident trips).</p>
<p>Develop the full range of options, refine this through a transparent process, & prepare a range of scenarios</p> 	<p>N/A</p>	<p>The road network was developed by applying a City-grid to the area – which provides a road network that is 'scalable & adaptable' (1).</p> <p>Options & assessment for the road network have covered:</p> <ul style="list-style-type: none"> - Key junctions (4) - Walking & cycling (5) - Provision of transport and sequencing (6) <p>The updated 'Integrated Transport Plan' should test options for the road network to support the transport system, including the employment precinct.</p>
<p>Develop a robust & defensible Assessment Framework (incl. transport modelling) to test options & scenarios</p> 	<ul style="list-style-type: none"> •triple bottom line assessment •equity •the transport system user perspective •precautionary principle •stakeholder engagement & community participation •transparency 	<p>Assess road network planning to achieve infrastructure & vision.</p> <p>Individual elements of the masterplan have been subject to different assessments.</p>
<p>Detailed assessment of performance against Framework – including assessing deliverability, outcomes & most importantly the vision</p> 	<p>N/A</p>	<p>Assessment of junction & capacity (To be completed)</p> <p>Assessment of Cross sections to facilitate public transport usage (To be completed)</p> <p>30m - State arterial or Council main road</p> <p>22m - Council collector roads</p>
<p>Peer review to ensure transparency, & the full range of options have been explored</p>		<p>Peer review & consultation</p>

Table 3.2: Gap Analysis and Key Questions for the Recast to Address (continued)

Transport planning: An example approach	Gaps & key questions: for the recast to address
<p>Define a clear Vision</p> 	<p>Key question – what is the vision for Fishermans Bend & what does the transport system need to do to achieve this vision?</p> 
<p>Establish the need for change - both technically & in a voice that communities can understand</p> 	<p>Key question - Will the current transport network work for people living & working in Fishermans Bend in 2051?</p> <p>Gaps:</p> <ul style="list-style-type: none"> There is a need to also determine what 'good' looks like, as the reference case against a BAU option. The results of the 'Business As Usual' option for Fishermans Bend needs to be tested & communicated. What does a 'day in the life' look like?
<p>Identify your desired outcomes in a way that links to measurement & indicators, these should cover the environmental, social, & economic impacts of the vision</p> 	<p>Key question – do the target mode shares achieve the vision?</p> <p>Gaps:</p> <ul style="list-style-type: none"> Mode shares need to be linked to the aspirations that they are a measure of, & should have a suitable evidence base. Targets should be specific, measurable, achievable, relevant, time-based. Insufficient work done on mode share by place of employment. Relevance of Targets to transport modelling and KPI's (peak hour vs daily mode share). 
<p>Develop the full range of options, refine this through a transparent process, & prepare a range of scenarios</p> 	<p>Key question – does the proposed street network cater for the full range of demand scenarios?</p> <p>Gaps:</p> <ul style="list-style-type: none"> Public transport option refinement needs to inform the transport network justification – including the phasing of delivery. For example a fine-grain street network needs a purpose e.g. to access a metro station. Key junctions – current designs demonstrate high-level feasibility, but don't yet relate to road use, or a road user hierarchy. Walking and cycling – Recast needs emphasis on intra-precinct connectivity between residents, jobs and services. Transport sequencing – establish the key infrastructure catalysts for achieving mode share targets. Transport studies need outcomes to be aligned, checked for consistency of assumptions, differences explained or a response agreed Need to consider the requirements for freight corridor to service a 24/7 port 
<p>Develop a robust & defensible Assessment Framework (inc transport modelling) to test options & scenarios</p> 	<p>Key question – how do you balance the needs of a 24/7 port & an Employment Precinct with local outcomes?</p> <p>Gaps:</p> <ul style="list-style-type: none"> A multi-criteria assessment framework needs to be used to test the design of the road network. This should include capacity, identification of key challenges & refinement of solutions (e.g. additional demand management or capacity) VITM strategic multi-modal modelling (all trips, all periods).
<p>Detailed assessment of performance against Framework – including assessing deliverability, outcomes & most importantly the vision</p> 	<p>Building on the strategic assessment of the transport network performance, more detailed modelling needs to be provided for major interventions. Gaps:</p> <ul style="list-style-type: none"> A level of confidence in Modelling of future demand (All Users) A road user hierarchy An infrastructure phasing and staging plan that identifies triggers and interdependencies Funding options need to be considered Key junction/ civic designs to accommodate future place functions. 
<p>Peer review to ensure transparency, & the full range of options have been explored</p>	

References:

- | | |
|--|---|
| 1. Fishermans-Bend-Strategic-Framework-Plan-July-2014 | 4. Obrien Traffic Concept Designs, 2015 |
| 2. Transport-Issues-&-Opportunities-Study-AECOM_December-2012 | 5. GTA Principal Bicycle Network Route Assessment, 2013 |
| 3. Fishermans Bend, Population & Demographics Summary document (Fishermans Bend Taskforce) | 6. MPA presentation, 2016 |

3.2.1 Agreed and Defendable Outcomes to Drive Work across Technical Studies

As discussed earlier, transport mode shares serve as a key outcome-focused planning tool. The allocation of trips to different transport modes flows down through the modelling process, and has a critical impact on the assessment of its performance, the range of scenarios and options tested, and the resulting outcomes.

The mode share targets identified in the Fishermans Bend Integrated Transport Plan (ITP) relate to residents only, and are ambitious. Currently there is no compelling evidence to demonstrate that they are achievable.

Future work needs to link the Vision to transport outcomes through target modes shares, covering issues such as:

- i Mode share targets that consider the Employment Precinct, noting that this will be the major generator of external trips. These targets need to be included in the ITP as it is likely that the Employment Precinct will rely on a geographically broad employee catchment of skilled labour as a destination for '21st century jobs'
- ii Mode shares that are specific, relating to particular development timeframes, especially relating to the staged timing and delivery of transport infrastructure
- iii The evidence base needs to consider all factors influencing mode share targets including:
 - o the quality of access provided by infrastructure for each transport mode
 - o demographic profile of residents and employees of Fishermans Bend
 - o the availability of local destinations and the number of residents living near their workplace within Fishermans Bend, which in combination determines the amount of 'self-containment' achieved.

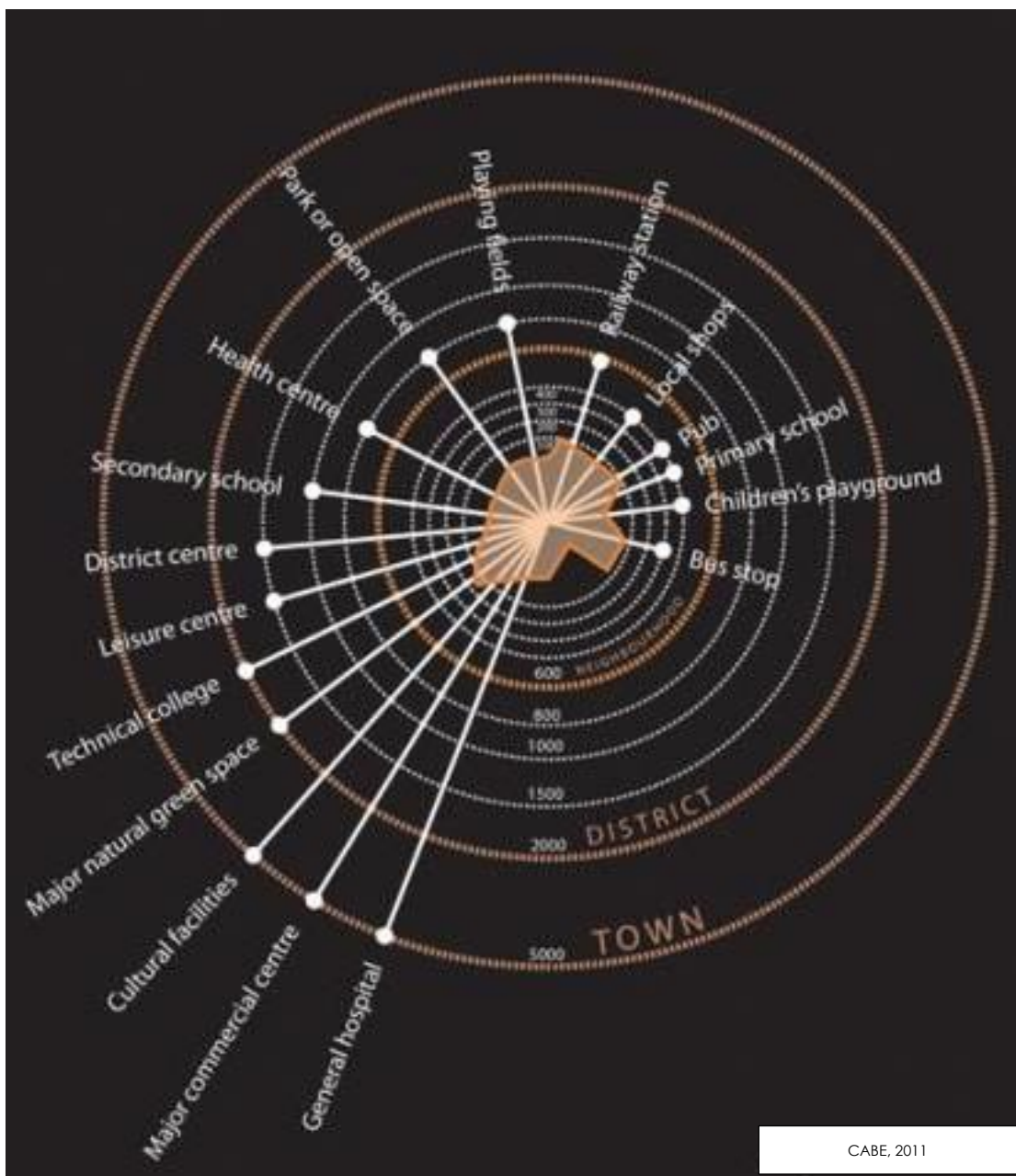
The role of self-containment or localisation

Fishermans Bend is a peninsula.

Significant effort therefore will be needed to integrate it with surrounding areas, particularly to support the labour catchment of the Employment Precinct.

Conversely, the connectivity of transport infrastructure to external areas will significantly influence future travel patterns, self-containment, and the style of urban area ultimately achieved.

In this sense, supply-side transport capacity provision is a key lever shaping self-containment and by extension the day-time and night-time population mix of the urban area. Other influences such as demand management measures and pricing may be used as levers in planning.



3.2.2 The City of the Future

Melbourne in the future is likely to look far different to that of today. It will be considerably larger, its residents will be far more connected and people will move around the city differently.

Previous transport planning for Fishermans Bend provided some consideration of emerging technology and trends. However, given the speed that technology is moving (and the resulting impact), technology that is commonplace today was not anticipated four years ago.

For example, shared transport networks are now a reality (e.g. Uber operates in 73 countries and 473 cities). These networks are constantly evolving and will be a more important part of the future of urban transport systems.

Some considerations that were discussed in our review and gap analysis are outlined in Table 3.3.

Table 3.3: GTA's View of 'City of the Future' Trends to be Considered in Planning

Key Transport Related Trends	Examples of the Outcomes of Trends to Consider
Changing Demographics of Melbourne	<ul style="list-style-type: none"> ○ Melbourne will likely have more people from non-English speaking backgrounds. ○ Less access to cars. ○ Greater movements internationally.
The next generation is likely to interact with the City in a different way	<ul style="list-style-type: none"> ○ The 'home-work' trip will become more blurred. ○ Streets become social spaces (virtually as well as in reality)
Movement vs. Connectivity	<ul style="list-style-type: none"> ○ People are likely to be completely connected and have constant access to real-time personalised information.
E-commerce	<ul style="list-style-type: none"> ○ Online shopping is likely to be common place, which will drive increased deliveries of all goods. ○ Home-based services are likely to increase.
Changing Work Places	<ul style="list-style-type: none"> ○ Potentially there will be some impact, shared workspaces may become more common place.
Shared Transport Networks or Ride sharing	<ul style="list-style-type: none"> ○ Likely to have a significant impact on transport network. ○ The industry is likely to grow and new models will develop.
Connected Autonomous Vehicles	<ul style="list-style-type: none"> ○ Have the potential to be important but the technology and its application is still in early days. ○ Self-driving buses and trucks are all likely to be a reality in the near future. ○ The need to safeguard mass movement corridors is likely to apply with autonomous vehicles as individual vehicles will not be able to undertake the significant carrying capacity of mass transit.

3.2.3 The Employment Precinct

Based on the experience of the team involved in the review, it was unanimously agreed that the provision of heavy rail and suitable stop locations is an essential part of realising the aspiration for 60,000 jobs in the Employment Precinct.

The process identified a number of strategic gaps relating to planning for the Employment District. These gaps raised the following key questions:

- *How does the precinct integrate with the CBD?*
- *Will aspirational jobs in the area be generated by any particular type of land use or transport connections (and how will this transition over time)?*
- *The area is likely to need to draw in employees from a metropolitan-wide and regional catchment, but how far is this and what infrastructure is needed?*
- *How does the accessibility of the area increase and link to neighbouring suburbs (including Intra-Fishermans Bend Connectivity)?*
- *'Knowledge Arc' and relationship with Footscray → Arden Macaulay → the CBD → Southbank and further south to St Kilda.*

3.2.4 Demand Management

The Fishermans Bend ITP should consider a Demand Management Strategy, which Infrastructure Victoria refers to as 'changing behaviour, managing demand'.

This strategy should incorporate a range of levers that can contribute to achieving transport outcomes.

The plan needs to be comprehensive. Todd Litman of the Victoria Transport Policy Institute conducted research into travel demand management and behaviour change. An extract of his considerations from his paper *How Land Use Factors Affect Travel Behaviour* is given in Table 3.4. This research demonstrates the wide range of factors that can influence travel behaviour.

These considerations could be used to inform demand management in the Fishermans Bend ITP.

Table 3.4: Land Use Factors Affect Travel Behaviour

Land Use Factors	Transport Impacts	Planning Objectives
Regional accessibility	Vehicle ownership	Congestion reduction
Density	Vehicle trips and travel (mileage)	Road and parking cost savings
Land use mix	Walking	Consumer savings and affordability
Centeredness	Cycling	Improved mobility for non-drivers
Road and path connectivity	Public transit travel	Traffic safety
Roadway design	Ridesharing	Energy conservation
Active transport (walking and cycling conditions)	Telecommuting	Pollution emission reduction
Public transit service quality	Shorter trips	Improved public fitness and health
Parking supply and management		Habitat protection
Site design		Improved community livability
Mobility management		
Integrated smart growth programs		

Source: Litman (2016) *Land Use Impacts on Transport: How Land Use Factors Affect Development*, <http://www.vtpi.org/landtravel.pdf>

3.3 Testing Assumptions with Government

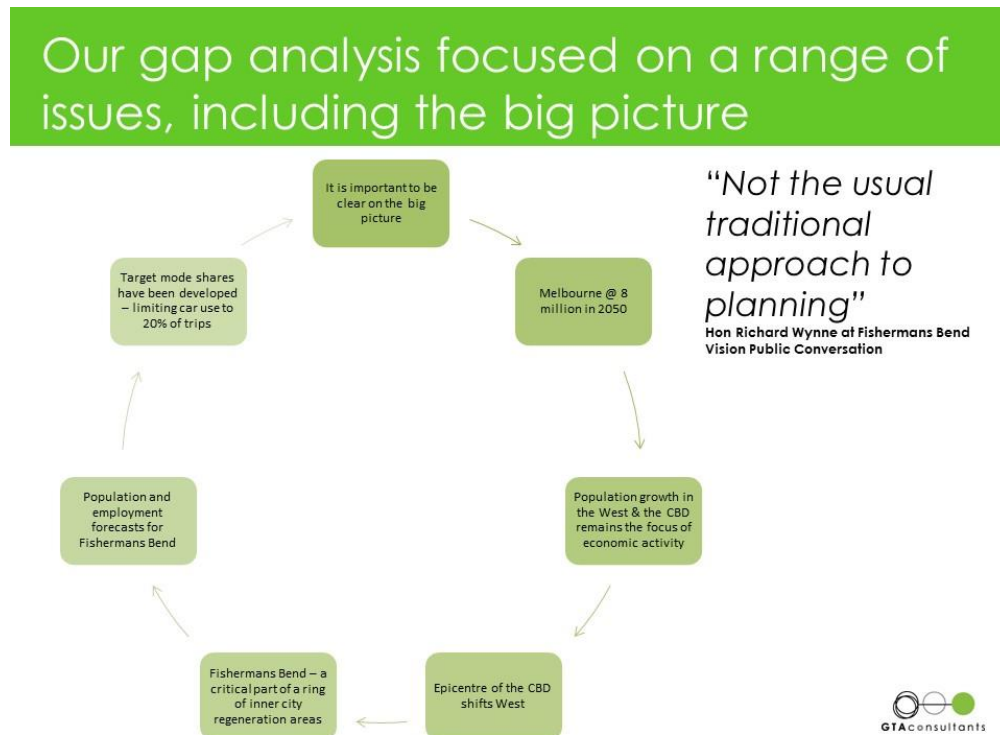
Aligned with the Government's commitment to consult on the Fishermans Bend recast, this study including engagement with stakeholders across State and Local Government and Agencies to adopt a whole-of-government view.

The primary mechanism for consultation involved a cross-government workshop. This aimed to test, align and agree relevant principles. Through this workshop, the team gained critical insights from across Government and was able to explore emerging gaps. Example inputs to the workshop are provided below in Figure 3.1.

These workshops were used to inform the development of the pathway forward. The outcomes of can be summarised strategically as:

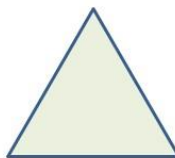
- an agreement that Fishermans Bend is different and needs to be treated with a non-traditional approach
- agreement that a business as usual approach will not deliver outcomes which align with government and community aspirations
- a robust evidence base for transport planning is essential
- case studies are likely to be an important source of evidence going forward
- identification of specific pieces of research (e.g. research into laneways).

Figure 3.1: Inputs to Workshop 2



Transport capacity modelling

A **top-down** approach – starts with a defined vision and objectives and other factors tailored to suit.



A **bottom up** approach – based on detailed demand and supply data.



Figure 3.2: Inputs to Workshop 2 (continued)

Harbourfront, Toronto, Canada



- 4 ha on Toronto Harbour and south of Toronto CBD (Fishermans Bend is circa 250)
- Streetcar (tram) line along Queens Quay (boulevard)
- Mixture of entertainment, recreational and residential development
- **Auto: 25%, Transit: 34%, Walk or Cycle: 41% (Transportation Tomorrow Survey 2011)**



The challenge

The challenge:

Deliver a Framework that is driven by outcomes

And

Deliver an evidence base that will stand up to external scrutiny through the planning system

The Vision:

1. The creation of 21st century jobs
2. The timely provision of infrastructure
3. A place that is easy to get around
4. A vibrant mix of uses and activities
5. Distinctive and diverse neighbourhoods
6. A great place for families
7. A high quality built environment
8. Smart environmental solutions
9. Environmental constraints addressed
10. Strong partnerships and effective governance



4. Part 4: Combine Input and Design a Pathway Forward

4.1 Overview

This chapter outlines our recommended pathway, or a course of action to deliver a robust evidence base that will support the planning of Fishermans Bend.

It incorporates and builds on the work that has already been done (and is currently underway) to outline a clear and defensible pathway.

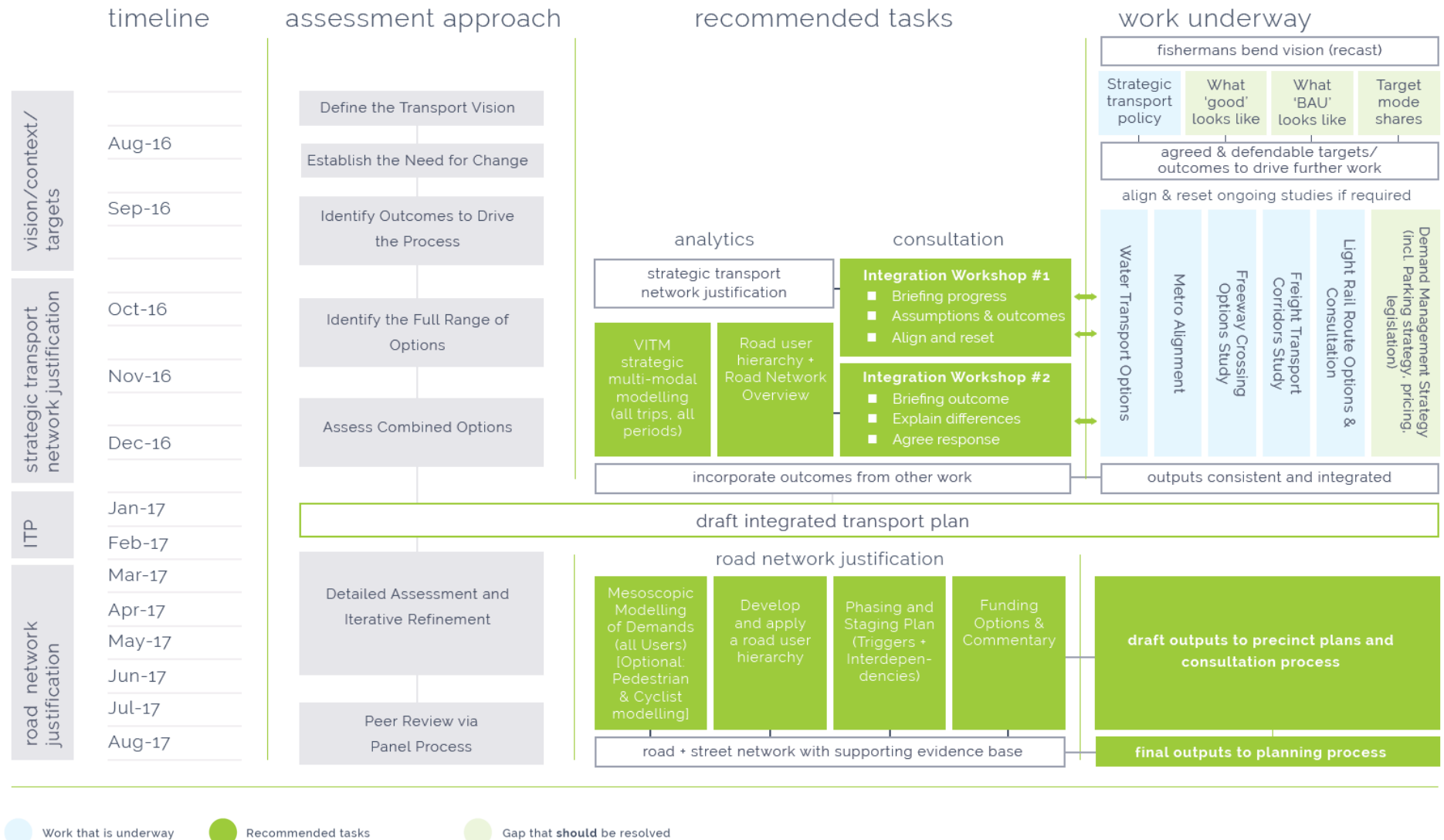
The pathway is summarized in Figure 4.1 and Section 4 provides the outline of recommended future work, with discussion of the different options.

Our recommendation builds on the commentary in the 2015 Ministerial Advisory Committee Report, which identified the need for a strategic assessment prior to more detailed work.

The pathway provides a three-phased approach to preparing the road network justification, consistent with this recommendation.

- i **Vision, Context and Targets:** Sets the scene and importantly requires stakeholders to agree that more of the same is not an option; therefore, target mode shares are required to drive outcomes and to support the Vision.
- ii **Strategic Transport Network Justification:** Aligns the range of other studies currently underway in developing the strategic justification for the transport network. This is achieved through consultation with other transport work streams and the use of new strategic modelling as an analytical platform. This becomes a key input into the Integrated Transport Plan for consultation.
- iii **Road Network Justification:** Provides an evidence base through undertaking the detailed assessment and iterative refinement of options. This step includes more detailed modelling of all demand, road capacity analysis and delivery planning (including commentary on staging, phasing, triggers and funding).

Figure 4.1: A Framework for Transport Network Justification



4.2 Fishermans Bend Agreed and Defendable Targets to Drive Further Work

Our analysis identified three strategic tasks that are not in the Fishermans Bend work program (but are potentially a part of the wider Taskforce work). An outline of the process to address these tasks is provided below.

4.2.1 What Good Looks Like

The ground rules for development of Fishermans Bend can be created through clearly defining what good looks like.

The Fishermans Bend draft vision sets out good on a precinct basis e.g. 'exemplar of sustainable and mixed-use development, and is the lynchpin for Fishermans Bends identity as a world class urban renewal area'.

Good needs to be translated to transport to show what it means for people travelling to, from and within Fishermans Bend in 2025, 2035 or 2051.

Defining this should be part of the Integrated Transport Plan (and engagement) and should consider questions such as:

- *Is the expectation that 20% of people will be cycling from day 1 or is there a gradual transition?*
- *Is it an exemplar from day 1, year 1 or year 10?*

4.2.2 What BAU Looks Like

Business as usual (BAU) refers to the ongoing state of affairs without any major intervention.

The case for change at Fishermans Bend has been based on the opportunity that it creates as a large redevelopment precinct. However, the land ownership, the pace of change and the capacity of the existing infrastructure means that the BAU outcomes are likely to result in a number of strategic challenges (e.g. unreasonable congestion, air quality and noise).

These challenges need to be carefully reviewed to ensure that they support both state infrastructure commitments and private sector investment in the area. This may include a day in the life of Fishermans Bend, or the use of different scenarios to visualise the challenges and the response.

4.2.3 Target Mode Shares

As discussed in detail earlier in the report, mode shares are a critical strategic input to planning and the basis of the recommend pathway forward. Mode share can be defined through either a top down or bottom up approach.

A top-down approach is arguably mandated by the Fishermans Bend Vision. Given this, reference to case studies provide the evidence to justify planning assumptions, including mode share targets to be reflected in strategic transport modelling.


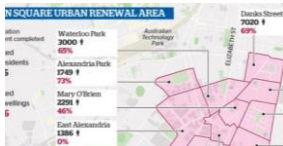





Mode share assumptions should inform strategic and more detailed modelling and the subsequent assessment of all transport options.

The end product, which forms part of the ITP, should cover the following:

- Background and rationale for using mode share targets

- A long list of case studies to determine applicability to Fishermans Bend. An assessment of example case studies applicable to Fishermans Bend is provided in Table 4.3
- Detailed analysis of the most applicable case studies
- Transport modelling process and testing of different assumptions.

Table 4.1: Mode Share Targets: Example Case Studies and a Strategic Assessment of their Applicability to Fishermans Bend

	Example Case Study	Applicability
	Harbourfront, Toronto, Canada <ul style="list-style-type: none"> ○ 4 ha on Toronto Harbour and south of Toronto CBD (Fishermans Bend is circa 250) ○ Streetcar (tram) line along Queens Quay (boulevard) ○ Mixture of entertainment, recreational and residential development ○ Car: 25%, Transit: 34%, Walk or Cycle: 41% 	? - Limited employment, small scale, non-car mode shares align
	Green Square, Sydney, NSW <ul style="list-style-type: none"> ○ 278 ha site between Sydney CBD and Sydney Airport ○ 30,500 population in 2016; 2030 population forecast for 61,000 ○ High density residential with 22,000 people / sq km ○ Target mode share for train travel is 63% 	? - The development is in planning stage. Early outcomes are potentially relevant.
	Battersea Power Station, London <ul style="list-style-type: none"> ○ 59 ha site on former Power Station site on south side of Thames River. Future extension to the Northern Underground Line funded partly by the developer ○ Public transport now accounts for the same number of trips as by private car ○ Public transport and private car both account for 37% of trips and active travel 26%. 	✓ - Phasing, delivery model and demand management
	Docklands, Melbourne <ul style="list-style-type: none"> ○ 200 ha site immediately west of Melbourne CBD ○ Docklands has been heavily criticised but is reshaping the city to the west. Home of major company's head offices and rents are higher than the city. 15 years into a 25-year plan ○ Public transport and active travel account for 54% of trips 	✓ - Provides valuable lessons learnt and reference mode shares
	Western Harbour, Malmö <ul style="list-style-type: none"> ○ Industrial area developed into carbon neutral environment ○ Bicycles and pedestrians focused planning ○ Area can be reached from the rest of Malmö on biogas buses ○ Non-motorized Mode Share: 60%, Public Transport Mode Share: 17%, Car sharing 3%, Car 20% 	* - Cycling and pedestrian mode shares too high
	Hammarby Sjöstad, Stockholm <ul style="list-style-type: none"> ○ Ex-industrial location located 6.2km from central Stockholm. 11,000 apartments ○ 10,000 jobs. Development targeted towards family dwellings ○ Car accounts for 21% of Hammarby trips, compared with 32% for Stockholm as a whole 	✓ - Achieved high mode shares while catering for families
	Barcelona, Spain (population 1.6m) <ul style="list-style-type: none"> ○ The streets of Barcelona have been transformed and now prioritise walking, cycling and place functions ○ Barcelona has 20% private car use 	✓ - Mode shares similar to Fishermans Bend Vision

Detailed Case Study: Barangaroo Sydney

Barangaroo near the centre of Sydney is comparable to Fishermans Bend. A comparison of the two urban renewal areas is detailed in Table 4.2.

Table 4.2: Comparison of Transport and Land Use between Barangaroo and Fishermans Bend

Barangaroo	Fishermans Bend
26,000 jobs in 2019 and 3000 residents	60,000 jobs and 80,000 residents
No existing transport services to the site	Very limited existing transport services
The site's waterside location, resulting in limited road access	Constrained by limited access points, which are already operating above capacity in peaks
A congested road network in the Northern CBD	A congested road network in surrounding area, including the CBD (main connection with area)
Steep grades between the Northern CBD and the Barangaroo foreshore,	Larger walking distances. Yarra river crossings
The Western Distributor/Harbour Bridge approach dissecting the city	West Gate Freeway bisects the precinct

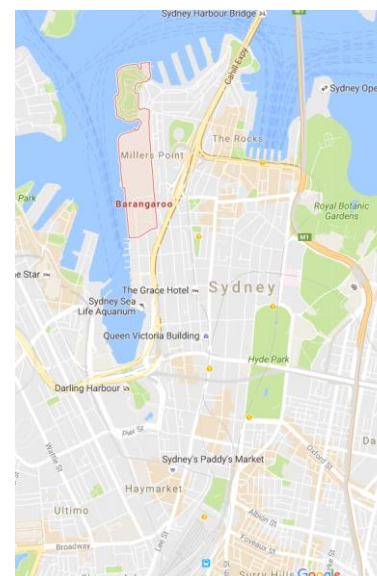
In the case of Barangaroo planning, early traffic modelling recognised the sites limited road access, and planning approval for Barangaroo South was based on the principle of achieving high usage of sustainable transport, i.e. public transport, walking and cycling.

As a result of planning approval, mandated mode share targets resulted in a top-down approach to transport planning for Barangaroo. In terms of private vehicle trips to Barangaroo, the target was 5% from initial occupancy. This was achieved through a comprehensive Travel Demand Management strategy.

The Barangaroo Transport Plan recommends short term initiatives and detailed planning for longer term initiatives to achieve the mode share targets. These activities complement the broader strategies and action plans as part of the NSW Long Term Transport Master Plan.

The modelling approach for the Barangaroo Transport Plan was as follows:

- i Target mode shares were used to estimate Barangaroo trips by mode by year
- ii Additional future transport services were modelled
- iii Trips were superimposed on the new transport network
- iv A gap analysis identified the shortfall and recommendations were made to resolve these gaps.



Source: Barangaroo Integrated Transport

Key Lessons from Case Studies

- Defining the policy for transport is essential. The policy should outline the outcomes that the transport should deliver. Internationally targets that are most commonly used are mode shares.
- Modelling is one part of the process. Modelling identifies the challenges, gaps and tests the response to provide the evidence base that will deliver on the vision.
- The vision for Fishermans Bend is achievable but requires the ongoing commitment of Government to adopting a non-traditional approach.

4.3 Strategic Transport Network Justification

This phase - the strategic transport network justification - provides the preliminary evidence base for inclusion in the Integrated Transport Plan (ITP). It allows a number of the Ministerial Advisory Committee outputs to be addressed, and allows key elements, such as a draft user hierarchy, to be circulated for consultation.

The three phase transport (and road) network planning process provides the basis for agreement, approval and implementation of the transport network. The justification of the strategic transport network requires both consultation and a supporting analytic platform based on modelling.

4.3.1 Integration

The purpose of the consultation is to align the technical inputs and outputs across all transport related studies. This provides the foundation for designing an integrated transport network.

The proposed process is incorporated into the current project program and is delivered through two workshops, but could also be part of the Fishermans Bend Transport Working Group Meetings. The purpose and scope of these workshops is outlined in Table 4.3

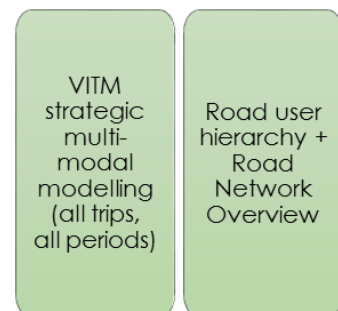
Table 4.3: Consultation Milestones

Objective	Scope
Integration Workshop #1 aligns all technical studies.	<ul style="list-style-type: none"> ○ Technical work streams update on progress ○ Align assumptions & outcomes ○ Align and reset
Integration Workshop #2 refines strategic transport network design, including the road network.	<ul style="list-style-type: none"> ○ Technical work streams update on outcomes of study ○ Explain differences ○ Agree response

4.3.2 Analytical Platform

The analytical approach builds on the integration workshops to provide the strategic justification of the transport network. The analytical work is made up of three parts:

- Bespoke use of VITM (all trips, all periods).** We recommend a bespoke assignment model run that includes more detailed analysis of the Fishermans Bend mode shares and network impacts. The process uses the VITM road network. Highway trips are then loaded on the network to test mode shares and provide insight into network use and congestion. A range of scenarios are then tested to measure network performance. This approach to modelling is similar to the that undertaken to support Barangaroo planning. This iterative



method provides an understanding of the mode shares that are required to achieve a reasonable level of service on the road network into the future.

- ii **Network design.** The early definition of a strategic road network allows the Integrated Transport Plan to form the basis for the next steps in this work.
- iii **Approach to defining a user hierarchy.** Setting the strategic plan sets the approach and objectives in the consultation documents, which helps to legitimise the subsequent application of the user hierarchy to streets.

The specifics of the task, the benefits and the actions are provided in Table 4.4. These three parts inform the Integrated Transport Plan. Critically, it provides a fit-for-purpose evidence base for the transport (and road) network and allows detailed assessment and iterative refinement.

Relevant Ministerial Advisory Committee recommendations:
Modelling to better understand the future transport task, particularly the interface of Fishermans Bend with the other Central City Precincts (Docklands, Southbank, Dynon and Webb Dock etc.).

Table 4.4: Analytics to Provide Strategic Justification for Supporting Transport Network

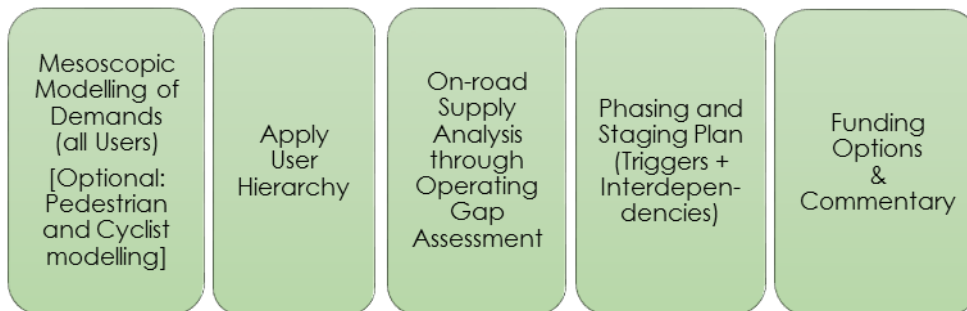
The task	The benefits of the task	The specific actions
Strategic transport network design	Integrate all transport requirements from the road network Define connections within and beyond Fishermans Bend	Hold two workshops with technical work streams, covering: i Transport integration and impact on the road network ii Align outcomes Refine the road network based on inputs from integration workshops
Strategic transport modelling	Clearly identify the scale of the challenge for the road network serving Fishermans Bend Interface of Fishermans Bend with the other Central City Precincts	Utilise the VITM reference case as a starting point Create a model run to determine the impacts/benefits of the road network as a result of lower car use Compare or determine the required mode share for the road network to achieve similar results to the reference case Map strategic model outputs and provide insight to road use and performance across journey purposes (e.g. trips to employment precinct)
Approach to user hierarchy	Identifies the approach to balancing priorities across the road network Applies a non-traditional approach to planning for Fishermans Bend Defines assessment guidelines to be consulted on and applied in the following stages of planning	Define an approach to balancing road functions and achieving the aims of the area Develop a road user hierarchy framework. Examples of possible approaches are included in Appendix C

4.4 Developing a Road Network Plan

4.4.1 Process Overview

Alongside wider public consultation on the ITP, detailed assessment and iterative refinement provides the evidence base for road network justification. Figure 4.2 provides an overview of the key tasks recommended in support of an evidence based road network plan.

Figure 4.2: Road Network Justification: Detailed Assessment Tasks



4.4.2 Multimodal Demand Analysis

Understanding the throughput of road users (all modes) provides a critical component of the evidence base to support the road network justification.

Given this, there are significant benefits in investing in evidence based transport modelling tools for the area. These tools also enable network demand and supply to be assessed and managed during the ongoing development of Fishermans Bend.

It is essential that all users (i.e. travel modes) are considered.

The demand analysis has three key tasks:

- i Detailed assessment of on-road demands, traffic and public transport
- ii Detailed assessment of precinct walking patterns
- iii Cycling demand modelling.

These tasks provide evidence to support and test the street designs, but also provide a wider range of long term planning benefits inclusive of the more detailed precinct plans to follow.

The work would also consider the broader social and environmental context around the use of the road and street network for a range of activities, including opportunities for public open space.

An overview of tasks, benefits and specific actions to provide suitable demand analysis to test and justify the road network at Fishermans Bend is provided in Table 4.5.

Table 4.5: Fit-for-Purpose Demand Analysis to Assess the Road Network Serving Fishermans Bend

The task	The benefits of the task	The specific actions
1 Detailed assessment of on-road demands: traffic, freight and public transport	<ul style="list-style-type: none"> Provides detailed road network capacity analysis for all vehicles including freight to/from Webb Dock Allows road designs to be adapted to future changes in public transport investment Can be a key input to Infrastructure business cases Enables the assessment of the performance of new road links Supports operational planning and implementation of transport policy Forms a critical input to transport impact assessments of individual developments Can inform public transport route and frequency planning 	<p>Develop mesoscopic model capable of assessing the network performance for on road vehicles and public transport. This should include:</p> <ul style="list-style-type: none"> a broader study area including Fisherman's Bend and key connections and nodes including a 24/7 port operating at Webb Dock utilising the demands obtained from the strategic model as an input into more detailed origin and destination trip patterns (shorter trip lengths) establishment of the fine grained Fisherman's Bend Road network and land use generators establishment of public transport operation characteristics (routes, alignments and stops) intersection control and other capacity constraints influencing performance.
2 Detailed assessment of precinct walking patterns	<ul style="list-style-type: none"> Justifies cross sections Assists in justifying key walking links Allows with and without assessments An input to assessing the quality of links 	<p>Develop an active travel module capable of estimating future walking and cycling movements in the Fisherman's Bend precinct. This would include:</p> <ul style="list-style-type: none"> split the model zones into smaller walking and cycling zones calculate more refined mode shares for walking and cycling estimate walking and cycling volumes for each zone determine origin and destination patterns.
3 Cycling demand modelling	<ul style="list-style-type: none"> Justifies cross sections Justifies key cycling links Allows demand responsive design of facilities (to maximise the efficient use of limited road space) 	

What is a Mesoscopic Model and Why Would We Use It?

Mesoscopic modelling is a transport analytics tool that enables modelling of the operational performance of the road network for a nominated land use and/or infrastructure scheme.

It provides a greater level of detail compared with strategic modelling as it includes and accounts for specific information such as:

- Intersection and midblock geometries
- Traffic flows (queues, shockwaves)
- Lane by lane operation
- Vehicles as platoons
- Truck volumes (sizes/class)
- Different control systems (signals, ramp meters, stop signs)
- Public transport (routes, stops)
- Travel choice behaviour including route selection.

Mesoscopic modelling sits between traditional strategic transport models (four step) and microsimulation models (that are used for understanding the detail operations of schemes).

The advantage of mesoscopic modelling is that it can account for specific and more detailed capacity constraints, such as the build-up and dissipation of queues and their effect on surrounding intersection congestion. Larger geographical areas can be modelled and assessed with shorter development and processing times (and less cost) than microsimulation models.

4.4.3 Developing a Road User Hierarchy

Road user hierarchies provide a framework for the planning and operational management of the network.

To ensure that the network for Fishermans Bend meets expectations by supporting the objectives of each precinct, there must be a balance between road functions and liveability of the area. This needs to be achieved in the context of the Employment Precinct and the nearby 24/7 port at Webb Dock.

Given the above, the process for the user hierarchy (or road user framework) should be:

- Build on the approach to the user hierarchy identified in the Integrated Transport Plan
- Develop a matrix of indicators to measure performance including those which consider urban design
- Use transport mesoscopic modelling as an input to define the number of users and, as a result, the potential role of different streets
- Cross-reference with the Fishermans Bend vision.

Three example approaches of good practice are provided in Appendix D, these being:

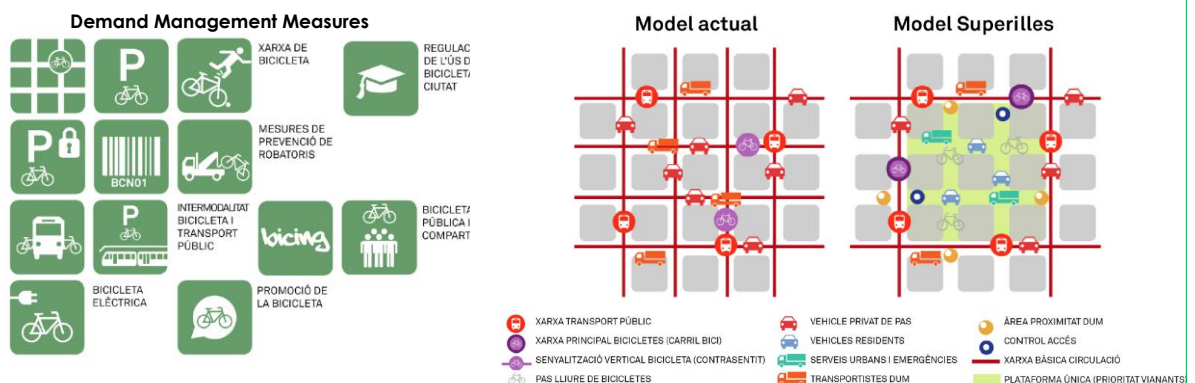
- Transport for London's Roads Taskforce Plan
- Transport for NSW's application of Movement and Place for the Parramatta Light Rail project
- VicRoads' Smartroads Framework.

Case Study: Barcelona, Spain

Barcelona has adopted a 'Model Superilles' – a superblock approach to road network planning where traffic is limited on interior streets.

Barcelona's mobility plan 'Model Superilles' is the key road network policy and is supported by a range of Demand Management Measures. The plan aims to achieve a 'use of car' level of 21% of all trips in 2018.

Barcelona has a mature road network and the new 'Model Superilles' approach is being led to deliver enhanced liveability and improve economic prosperity by reducing congestion.



4.4.4 Applying a Road User Hierarchy

Adopting a road user hierarchy is intended to provide certainty regarding any existing or future road reserve requirements for public transport, traffic capacity, freight movements, active travel or any other function occurring within the road reserve as a public space. The tasks involved are set out in Table 4.6.

The process should be:

- Create assessment guidelines that include movement and place indicators
- Define how the network should be operating by assessing the level of service by mode
- Undertake an assessment of new and existing streets.

Table 4.6: Tasks to Apply a Road User Hierarchy

The Task	The Benefits of the Task	The Specific Actions
Develop performance criteria road network (based on movement / place framework).	Allows the qualitative and quantitative assessment of streets.	Develop performance outcomes by street and use.
Assess the proposed new links against agreed performance criteria.	Provides a targeted evidence base for new streets. Cross-checks the justification and rationale for all proposed streets. Enables iterative refinement at a finer level of detail.	Develop and undertake a checklist of performance outcomes for all streets (see Table 4.7 for an example checklist).

To check that there is an evidence base for all new or enhanced streets, a 'checklist', or performance matrix, should be developed. An example checklist for new connecting links (e.g. smaller pedestrian lanes off existing streets) is provided in Table 4.7.

Table 4.7: Example Checklist of Precinct Assessment of Proposed New Laneways

Item	Assessment Tool	Example Assessment
Designate function of new streets (movement versus places) and provide descriptive analysis of function of the lane. Examples of laneway designation include: connecting laneways, commercial lanes and enhance existing laneways. ¹	Yes – qualitative assessment on a precinct basis.	Defined as a 'connecting laneway'.
Transport benefits – improved journey time through increased opportunity to follow an alternate path.	Quantitative – pedestrian, supported by VITM/mesoscopic modelling.	Modelling demonstrates that pedestrians save 3 mins walk time with new link.
Residential benefits of greater walkability and connectivity.	Quantitative – pedestrian, supported by VITM/mesoscopic modelling.	The modelling provides the volume of pedestrians benefiting from the new lane.
Commercial benefits of greater walkability and connectivity.	Quantitative – pedestrian, supported by VITM/mesoscopic modelling.	Benefits are dependent on the nature and extent of ground level activation.

4.4.5 Phasing and Staging Plan

The movements to and from Fishermans Bend are planned to be primarily by public transport, however this is not from 'day 1', as public transport to Fishermans Bend is currently poor and upgrades will take time.

¹ [http://www.portphillip.vic.gov.au/Report_7_-_Attachment_1_-_Activating_Laneways_Strategy_-_July_2011_\(Proposed_Final\).pdf](http://www.portphillip.vic.gov.au/Report_7_-_Attachment_1_-_Activating_Laneways_Strategy_-_July_2011_(Proposed_Final).pdf)

In this context, it is important that the road network responds to the phasing of infrastructure investment through adopting either flexibility (e.g. links protected through public acquisition overlays/development agreements/planning conditions) or certainty (e.g. links constructed early).

A key issue for Fishermans Bend is the limited government ability to stage development. Private landholders have the ability to submit planning permit applications at any time and subsequently commence construction. This presents a challenge to safeguard in the development efficient and effective future movement and place networks to support the liveability and economic prosperity of Fishermans Bend.

The phasing and staging plan should include:

- A transport network staging plan (covers all modes) to support transport investment and transition the area to the vision for 2051
- Give certainty for the development industry
- Lock in the benefits of adopting a mix of flexibility and certainty.

4.4.6 Funding Options

The road network justification should provide a full assessment of funding options to act as discipline that the transport network can be delivered and to give clarity to the community and development sector. The funding plan should cover all relevant statutory considerations, including:

- Infrastructure contributions (infrastructure contributions through a standard levy and/or a supplementary levy)
- Levy on development (e.g. extension of the Melbourne's Congestion Levy)
- Resolve all public acquisition overlay (PAO) requirements
- assess the ability for the market to deliver some outcomes (e.g. fine grained pedestrian network)
- Special rates schemes
- Other value capture mechanisms.

Any funding discussion needs to consider the mix of Government funds (via taxes) versus user charges versus beneficiary pays. The solution will likely involve a package of all three funding sources above.

Relevant Fishermans Bend Ministerial Advisory Committee Recommendations:

Road network needs to be refined to a level of detail which enables design which is robust enough to be costed and included in the Infrastructure Plan and associated funding strategies.
(page 46)

5. Summary

Many of our recommendations will require a willingness to be bold and adopt a non-traditional approach to planning.

An evidence based justification for the design of the transport network, including the road network, will be the result of a logical plan supported by policy, and a process of robust modelling.

- i The Taskforce should seek to resolve the following strategic gaps as early as possible:
 - **Resolve the transport vision**, including evidenced and achievable mode share outcomes at key development timeframes to drive decision making
 - **Resolve the specific nature of the Employment Precinct**, its interface with the CBD and the transport requirements of a 60,000-person labour force catchment across Fishermans Bend. Current job density aspirations warrant servicing by rail connections to the wider network (potentially via two stations) at the earliest possible time
 - **Incorporate the 'City of the Future'** into all analysis. The transport needs of Fishermans Bend in 2051 will be different to today, and as such the plan will require flexibility and adaptability to meet the challenges of the city of the future
 - Develop a **Demand Management strategy** alongside infrastructure investment.
- ii Economic and transport policy positioning statements signify the vital importance of commitment to public and active transport. It is important that investment trigger points be identified to promote confidence and private investment in the long term vision. A delivery phasing commitment also presents a key input to scenario-based transport modelling required to justify the proposed road network through the planning process.
- iii A three phase plan is recommended as the basis for implementation of the transport network as set out in Figure 4.1.

Phase 1: Vision, Context and Targets

- Sets the scene and importantly requires stakeholders to agree that more of the same is not an option and therefore target mode shares are required to drive outcomes and to support the Vision.

Phase 2: Strategic Transport Network Justification

- Align and consolidate concurrent studies as soon as possible to form a sound 'starting point' for strategic justification of the transport network (and in that, the road network). This process will facilitate information flow across the transport work streams via two Integration Workshops.
- Undertake strategic modelling to build on the integration workshops, inclusive of three parts, allowing the Integrated Transport Plan to proceed:
 1. Modelling to test road network with different mode shares
 2. Define a road user hierarchy
 3. Define a strategic road network.

The subsequent Integrated Transport Plan and Fishermans Bend Framework can then provide an over-arching transport policy framework for ongoing development. It should provide the strategic basis and rationale for all transport elements included in the Precinct Plans.

Phase 3: Develop a Road Network Plan with Detailed Evidence

- Undertake mesoscopic modelling to allow detailed assessment of on-road demands, inclusive of traffic, freight and public transport operating conditions
- Undertake a detailed assessment of precinct walking and cycling patterns through demand modelling.
- Develop and apply a road user hierarchy to provide a framework for ongoing planning and management of the network.
- Prepare a delivery plan identifying trigger points for infrastructure delivery as well as funding mechanisms covering all relevant statutory considerations.

The recommended pathway forward is designed to provide government, community and the development industry with clarity and certainty for the consultation and planning and implementation staging timeframes and process to follow. This is expected to include introduction of other relevant statutory planning mechanisms for funding and/or delivery of transport infrastructure.

Appendix A

Workshop Agendas and Notes

Agenda of Workshop #1

Job No:	16M1997000	Date:	22/6/16
Job Name:	Fishermans Bend Recast – Road Network Justification	Time:	8:30am- 12:00pm
Client:	Fishermans Bend Taskforce	Location:	GTA Boardroom
Purpose:	Internal Workshop		

Attendees:	Christian Griffith (CRG), Will Fooks (WF), John Kiriakidis (JK), Rory Rathborne (RR), John Devney (JD), Reece Humphreys (RH), Paul Mantella (PM), Mark Sheppard (MS), Andrew Wisdom (AW)
	Chair and time keeper: Will
	Notes: Rory Rathborne

Part	Item	Description	Time	Lead
Part 1: Why are we here?	1	Welcome and Introductions (10mins)	8:30-8:40	WF
	2	Fishermans Bend Recast Overview: Then and Now (10mins) <ul style="list-style-type: none"> From initial reception to interim planning What has changed. Spatially. Land use intensity. Transport 	8:40-8:50	WF RH
	3	Our Involvement (10mins) <ul style="list-style-type: none"> Why does Government need this work? What have we been asked to do? Process outline – Ideas, Gaps, Way Forward 	8:50-9:00	WF/CRG
	4	Cities Context (10mins) <ul style="list-style-type: none"> Melbourne @ 8 million Opportunities and Innovation 	9:00-9:10	AW
	5	Roundtable discussion <ul style="list-style-type: none"> Headline thoughts 2 minutes each (strict cut off) 	9:10-9:30	ALL
Part 2: Ideas and Themes	6	Facilitated discussion forum <ul style="list-style-type: none"> Principles Assumptions Options Case studies 	9:30-10:30	WF+CRG / ALL
Break			10:30-10:45	
Part 2 (cont)	7	Discussion continued	10:45 – 11:30	ALL
Part 3: Outline the Roadmap	8	Towards the next project phases <ul style="list-style-type: none"> Identify the gaps establishing an evidence base 	11:30-11:45	ALL
	9	Next Steps (15mins) <ul style="list-style-type: none"> Follow up actions Next Workshop Wednesday 5/7 	11:45-12:00	WF

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Meeting Notes (Workshop #1)

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	Chair and time keeper: Will Notes: Rory Rathborne

Theme	Comment
Transport demands	<ul style="list-style-type: none"> 47,000 trips/day generated by Fishermans Bend – need to better understand how this has been calculated Mode share targets do not appear to be a product of robust analytics Previous review of census data for nearby area shows most trips are to the CBD and with a high active + public transport mode share There are a range of levers that influence mode share outcomes
Transport Modelling Methodology	<ul style="list-style-type: none"> How do we set the parameters within our planning system? Mode shift targets and their relationship to strategic modelling needs to be clearer VITM alone is only part of the tools - a range of tools are available Modelling needs to be fit-for-purpose Assumptions: Those which are fixed vs. those which are negotiable or influenced Levels of service for each mode Modelling objectives and KPI's need to be well defined – what do we consider 'acceptable' for this area?
Consultation and Planning Process	<ul style="list-style-type: none"> The fundamental requirement is to provide an evidence base for strategic decisions – local decision fit within this context Extensive community consultation and 'getting things done' needs to be balanced There is pressure to 'get it right' but often this is not the same Timeframes are challenging and should be looked at New mechanisms – development levy on parking spaces? (notwithstanding relationship car ownership vs. car use) Will there be additional value capture opportunities beyond the existing Development Contributions Plan? Stakeholder signoff on the strategy at the right levels is key
Transport Network	<ul style="list-style-type: none"> How can Metro 2 be brought forward or funded earlier? Role of Metro vs. role of tram needs to be clearly explained The service provided by the mode is critical Not just widths but also alignment of networks – flexibility vs. certainty Any 'transport network' needs to justify road space allocation Conventional levels of car ownership unlikely to stack up and unlikely to be the reality in the future
Land Use	<ul style="list-style-type: none"> The market will respond to certainty Land use assumptions need to be challenged Sense of 'identity' behind the land use – what does a day in the life of a person living in Fishermans Bend look like? Residential development approval without employment cannot keep occurring

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Theme	Comment
<i>Employment Precinct</i>	<ul style="list-style-type: none"> ○ The Employment Precinct scale will influence level of self-containment able to be achieved ○ Employment Precinct will need access to a significant labour catchment – Metro will play a key role ○ Particularly non-descript – needs economic analysis? Will affect trip catchments. ○ Need to figure out how it links with the residential and the Port. ○ Should influence the alignment of Melbourne Metro ○ Connectivity will be a key influence to private sector demand for non-residential use
<i>Urban Trends</i>	<ul style="list-style-type: none"> ○ Projections would result in more density than Manhattan ○ Not an expansion of Port Melbourne/South Melbourne ○ Not business as usual ○ Self-containment is critical – for people to live in a 20-minute city ○ Density is not a vision ○ Movement vs. Connection ○ Flexible street grid ○ Will road pricing play a role? Ownership, planning structure to enable pricing in future? ○ Precinct development iteration – different life cycles + renewal ○ Staging the transition to low-car or no-car cities ○ Influence of e-commerce ○ Game changers – automated vehicles.
<i>Freight</i>	<ul style="list-style-type: none"> ○ Freight model – how will the development of freight routes link into the transport planning ○ Web Dock will protect its accessibility ○ Changing profile of operations and supply chain ○ Port capacity project – increase in volumes ○ Rail reserve along riverfront ○ No connection over the river ○ Rail freight could return
<i>Development Process and Staging</i>	<ul style="list-style-type: none"> ○ Natural inclination for an iterative approach ○ Cap on development prior to servicing by rail? (i.e. Stage 2 of Arden Macaulay contingent of train system, not a new concept) ○ A new development authority?
<i>Case Studies</i>	<ul style="list-style-type: none"> ○ Toronto – linear transit oriented development + defined vision ○ Docklands – superblock theory. Underprovided in terms of infrastructure. Payment plan for public transport didn't work. Capacity issues for servicing employment. Large street sections. ○ Southbank – driven by small number of developers. Wouldn't develop without a connection to St Kilda Road. Low internal walkability. Capital City Zones changes came too late. Street space interventions occurring after the fact. ○ City North/Arden Macaulay – Local trips displace non-local trips. Metro was uncertain at time of rezoning. Development flowing from a transport solution. ○ Barangaroo, and Macquarie Park – Mode shift and transport planning ○ Portland – developer contributions model based on non-car and understanding of economic impacts ○ The Bays – role of authority (but single landowner) ○ Transport facilitating land use outcomes – Gold Coast, Bogota, Copenhagen extension, Curitiba, Piermont ○ What is behind their success/failure?

Agenda

Job No:	16M1997000	GTA Rep:	WF	Date:	05/07/2016
Job Name:	Fishermans Bend Peer Review of Road Network Planning (Future road network justification)			Time:	9:00am – 11:00am
Client:	Fishermans Bend Taskforce (DELWP)			Location:	Lvl 14 Rm 02/Melb 1 Spring St - DTPLI
Purpose:	Agree key gaps and approach to road network justification with relevant technical stakeholders				

Attendees (as invited):	Charles Waingold (PTV), Dimitri Lolas (DEDJTR), Jeremy Hanlin (MPA), Julie Hallyburton (DSE), Katherine Grech (DEDJTR), Katrina Hynes (DEDJTR), Lawrence Seyers (VicRoads), Paul Noisette (VicRoads), Richard Smithers (CoM), Rod Burke (Taskforce), Simon Rooney (DEDJTR), Tom Courtice (City of Port Phillip), Christian Griffith (GTA), John Kiriakidis (GTA), John Devney (GTA), Sasha Yarwood (DEDJTR)
Apologies:	Neil Giles
Distribution:	All Attendees

Item		Action	Mins
1	Welcome and Introductions	All	5
2	Meeting purpose and outcomes	GTA	5
3	An overview of the Fishermans Bend Taskforce recast exercise and the wider program of work	SY	5
4	The study approach and process to date <i>As a part of the wider recast exercise, the purpose of this project is to review previous planning reports and policies to identify the critical pieces of work to justify the transport network (with a focus on the road network) serving Fishermans Bend precinct.</i>	GTA	15
5	Roundtable inputs <i>Each attendee will have 2 minutes to provide any headline thoughts or a summary of any current work in Fishermans Bend area, specifically relating to the Road Network or Transport assessment (e.g. VITM modelling)</i>	All	30
6	Group Discussion: Gaps in evidence and areas for further assessment <i>Meeting attendees will be asked to provide input to the study by:</i> a. <i>Helping identify any key gaps in evidence (based on their organisations guidelines or objectives)</i> b. <i>Given these gaps, start to outline potential pathways to deliver an acceptable evidence base</i>	All - led by GTA	25
7	Next steps	SY	5

This views of the attendees were not taken as the considered view of Government therefore the outcomes of the meeting informed the direction of this report but no notes are published.

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Agenda of Workshop #3

Job No:	16M1997000	Date:	14/07/16
Job Name:	Fishermans Bend Recast – Road Network Justification	Time:	13:00 - 15:00
Client:	Fishermans Bend Taskforce	Location:	55 Collins St, Exhibition
Purpose:	Workshop 3		
Attendees:	Christian Griffith (CRG), Will Fooks (WF), John Kiriakidis (JK), Rory Rathborne (RR), Reece Humphreys (RH), Mark Sheppard (MS), Andrew Wisdom (AW)		
	Chair: Will		
	Notes: Rory Rathborne		

Item	Description	Time	Lead
1	Update on progress and workshop with Client Refer to Summary presentation	15 mins	WF/JK/CRG
2	Key outcomes from today 1. Agreement on the key questions and gaps 2. A defined pathway forward	5 mins	WF
3	Key questions and gaps Refer to <i>Summary of Key Questions and Gaps</i>	30mins	All
4	Pathway forward Refer to <i>Summary of Work Program</i>	30 mins	All
5	Options – SWOT analysis	30 mins	All
6	Close and next steps	10 mins	WF

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Meeting Notes (Workshop #3)

Job No:	16M1997000	Date:	14/07/16
Job Name:	Fishermans Bend Recast – Road Network Justification	Time:	13:00 - 15:00
Client:	Fishermans Bend Taskforce	Location:	55 Collins St, Exhibition
Purpose:	Workshop 3		
Attendees:	Christian Griffith (CRG), Will Fooks (WF), John Kiriakidis (JK), Rory Rathborne (RR), Reece Humphreys (RH), Mark Sheppard (MS), Andrew Wisdom (AW)		
	Chair: Will Fooks		
	Notes: Rory Rathborne		

Summary of points raised in the meeting

	Description
	An 'Inner City Framework' is being prepared, and FB forms an important part of this regeneration narrative.
	City of Melbourne has completed some key pieces of work which may be used to inform and provide a level of rigour to defendable outcomes
	Fishermans Bend current projections are out of place in terms of its location on the mode share scale (Figure presented)
	Peer review work as defined in the Taskforce transport work programme needs to "frame objectives" of other studies being prepared
	A "check-in" point needs to be built into the transport programme or other studies to ensure consistency with key principles
	Metro to Fishermans Bend is unlikely to eventuate in the next 20 years. There are limitations to what can be provided in terms of public transport. The limitations need to be made clear.
	Transport modelling should work to the ultimate scenario but also assess interim scenarios, clearly indicating the shortcomings/issues to be addressed.
	The transport work programme and any modelling should not separate "road network" vs. "transport network".
	The modelling being proposed as an evidence basis supporting the Fishermans Bend recast is insufficient. Government encounters a risk if adequate modelling is not pursued
	Can an efficiently operating Port and the Fishermans Bend precinct exist? Work is needed to ensure that this is achieved.
	The incremental development and staging of transport infrastructure will require re-allocation of road space. There is a need to consider how development would trigger this. Re-allocation will be a major challenge but is an operational level of detail that can be resolved through good strategic planning.

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Appendix B

Key Reference Documents

B.1 Fishermans Bend Background Reports

The review covered the following previous planning reports and policies:

- Fishermans Bend Draft Transport Work Plan, Taskforce, May 2016
- Fishermans Bend Economics and Transport Positioning Paper, MPA, Oct 2015
- Fishermans Bend Integrated Transport Plan, DTPLI, July 2013
- Fishermans Bend Ministerial Advisory Committee Report 1, October 2015
- Fishermans Bend Potential Critical Transport Sequencing, MPA, Oct 2015
- Fishermans Bend Road Network Justification, CoPP, September 2014
- Fishermans Bend Road Use Hierarchy Network Plans and Cross-Sections, July 2014
- Fishermans Bend: An Extension to the Central City – Intersection and Implementation Workshop Paper, CoPP, October 2014
- Arterial Road Connection Feasibility Study, Parsons Brinckerhoff, June 2013
- Cycling Route Evaluation, GTA, July 2013
- Light Rail Alignment Study, Aurecon, May 2013
- Light Rail Options Assessment, Aurecon, May 2013
- Summary of Metro Rail Investigations, DTPLU, May 2013
- Traffic Study, GHD, April 2013
- Transport Issues and Opportunities Study, AECOM, Nov 2012
- Utilities Infrastructure Plan, GHD, June 2013

B.2 Transport Planning Case Studies

A model approach to transport planning mapped against best practice in Figure 5.1 is adapted from the following sources:

- https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427073/webtag-tag-overview.pdf
- <http://www.infrastructurevictoria.com.au/document-library>
- <http://www.dtf.vic.gov.au/Investment-Planning-and-Evaluation/Understanding-investment-planning-and-review/Guide-to-the-investment-planning-process>

Appendix C

Review of Relevant Background Documents

Report	Content	Status/Relevance
Fishermans Bend Ministerial Advisory Committee Report (MPA, 1 October 2015)	Provides the scope of planning matters which need to be addressed as part of the Recast exercise.	The Advisory Committee Recommendations have been a key point of reference for the conclusions in this report.
Fishermans Bend Draft Transport Work Plan, Taskforce, May 2016	Provides a delivery framework for lead-up to the Fishermans Bend Framework Plan, including Precinct Plans and other relevant overlays.	An overview of the activity of the Taskforce which formed the starting point for the Framework for Fishermans Bend Justification.
Fishermans Bend Road Network Justification,	Established high-level 'first principles' guiding the Fishermans Bend recast.	Relevant context for informing the Strategic Road network justification
Fishermans Bend Population & Demographics - Summary	Provides demographic projections by precinct between 2016 to 2051. Includes % car ownership and mode splits by precinct. Confirms the overall development intensity of 40,000 dwellings, 80,000 persons, 60,000 jobs.	Highly relevant. Land use assumptions set the context for the transport network. The primary journey to work mode shares require an evidence basis that links to objectives and wider modelling task.
Fishermans Bend Potential Strategic Transport Sequencing (MPA, Dec 2015)	This presentation provides a potential transport infrastructure sequencing, inclusive of all modes. It is understood that this responds to the Ministerial Advisory Committee for recommendation that: <i>'An early in principle decision on the timing and route/s of the tram network, and any future Metro line through the Area is critical and must precede further decisions about possible development yield, density outcomes and fine grain neighbourhood planning'</i>	Relevant, but major need for evidence basis and feasibility testing of appropriateness of the staged infrastructure.
Fishermans Bend Economics and Transport Positioning Paper, MPA, Oct 2015	Key aspects: <ul style="list-style-type: none"> Importance of PT/active transport critical to achieving the vision (p.12) Potential staging approach: <ul style="list-style-type: none"> 1) Bus rapid transit 2) Upgrade existing and connect new light rail. 3) Consider heavy rail (p. 13-14) <ul style="list-style-type: none"> Need for analysis to identify 'trigger points' for transport infrastructure to support public announcements (p14) Development certainty without sacrificing flexibility → "real options approach". 	Provides recommendations for further work that are supported by this report, specifically: <ul style="list-style-type: none"> the importance of public transport and active transport to foster investor confidence assessment of transport demand scenarios detailed assessment of Traffic flows resulting from Webb Dock.
Fishermans Bend Ministerial Advisory Committee Report (MPA, 1 October 2015)	Provides the scope of planning matters which need to be addressed as part of the Recast exercise.	The advisory Committee recommendations have been a key point of reference for the conclusions in this report, and as a result they have been highlighted throughout.
Fishermans Bend Integrated Transport Plan, (DTPLI, July 2013)	Provides a sequenced delivery of transport infrastructure for +10 year, +20 year and +30 year horizons: <ul style="list-style-type: none"> Early works: light rail, walking and cycling extension from Collins along Plummer St + bus improvements Second decade: extend Plummer St light rail west of Graham St, ped/cycle connections to Docklands, Port Melbourne, Westgate Park Third decade: extension of the Mernda-Southern Cross metro line to Fishermans Bend (2 stations) 	A good context document but given the omission of the employment precinct requires rework.

Report	Content	Status/Relevance
Fishermans Bend Road Use Hierarchy Network Plans and Cross-Sections, July 2014	Provides principal networks (by mode) to be delivered within the four Capital City Zoned precincts, road reserve widths (but not splays at intersections) and access control across frontages.	Requires update to include Employment Precinct and current facilitating projects. Make-up of the road (incl. reserve) needs to be defined to allow scenario testing in the transport modelling phase. Can be used as a starting point to integrate workstreams.
Arterial Road Connection Feasibility Study, Parsons Brinckerhoff, June 2013	Provides a recommended heavy vehicle route for further detailed investigation (between Graham Street and the Prohasky Street/West Gate Freeway ramps intersection)	Requires further investigation and decision on alignment, with regard for future Freight network and access to the Employment Precinct and any impacts on developable area. Input to Integration workshops and Road Network Justification.
Fishermans Bend Principal Bicycle Route Assessment, GTA, July 2013	Identifies corridors for delivery of walking and cycling infrastructure, including design solutions. Recast needs emphasis on intra-precinct connectivity between residents, jobs and services in Fishermans Bend. Particularly needs to address connectivity across barrier formed by the Westgate Freeway.	Partially outdated, requires consideration for current strategic cycling links including emphasis on intra-precinct connectivity and considering connectivity across the Westgate Freeway.
Light Rail Options Assessment, Aurecon, May 2013	Investigation and design for options of a light rail connection across the Yarra River and into Fishermans Bend.	Partially outdated. Study required to consider relative merit against the AECOM Collins Street bridge extension proposal and decision made. Feasibility of connection to Employment Precinct not yet considered/
Summary of Metro Rail Investigations, DTPLU, May 2013	High level assessment of rail station locations based on high level alignments which would <i>'appear to be technically feasible'</i>	Outdated. New alignment under investigation.
Traffic Study, GHD, April 2013	Provides data on existing traffic patterns.	Relevant as provides baseline traffic flows and (possible) trend analysis if updated
Transport Issues and Opportunities Study, AECOM including addendum, Nov-Dec 2012	Summary of relevant considerations for transport planning at Fishermans Bend.	Partially relevant as provides trip destination analysis

Appendix D

Approaches to Developing and Applying a Road Use Hierarchy

Figure 13a: London street family

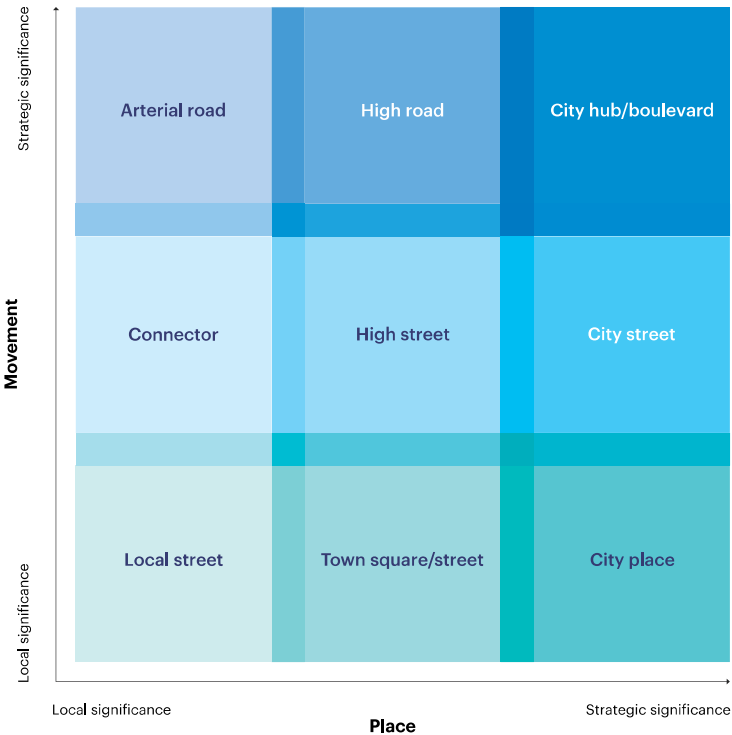
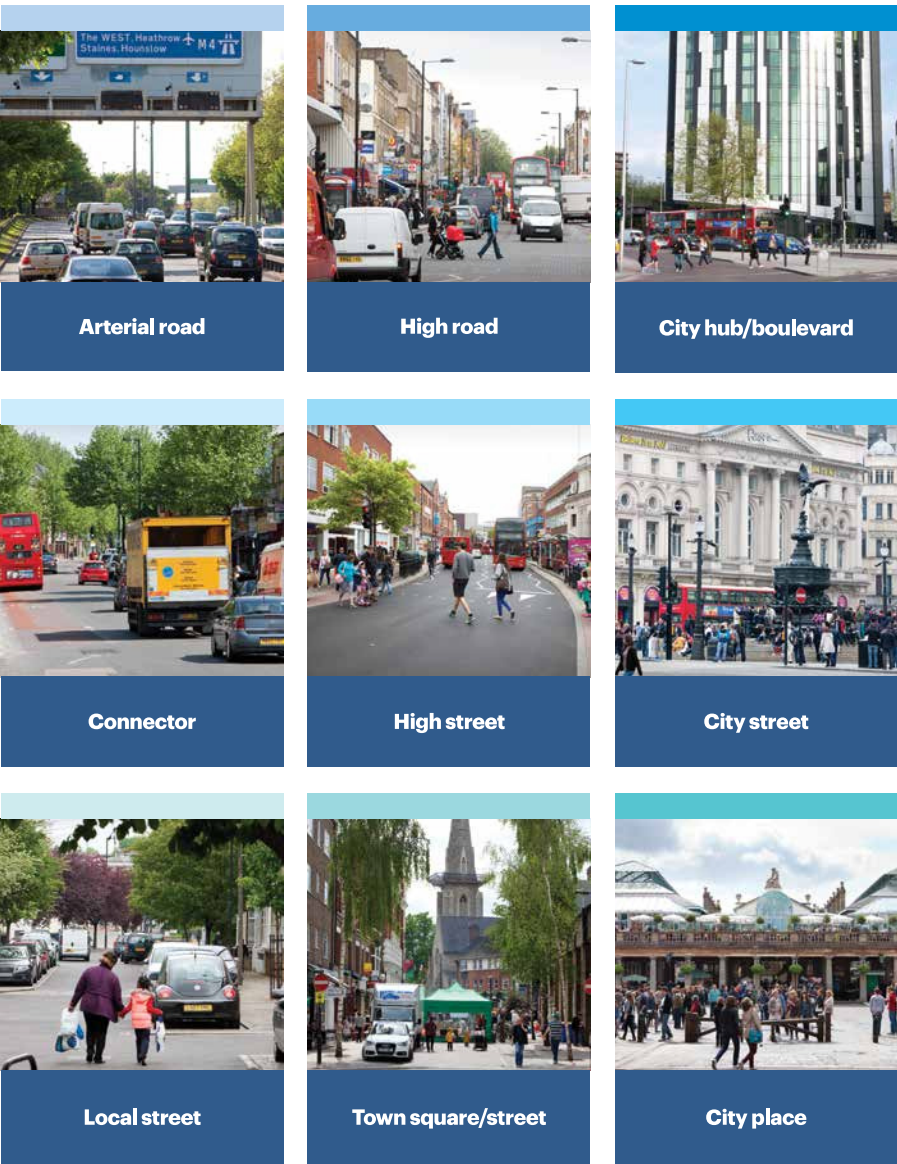


Figure 13b: London's street family illustrated



There will also be a focus on the corridor that these roads form part of and the aim to provide a reasonably congestion-free route. But this route will also go through areas of varying importance, which will change the balance in different places.

The A10 Corridor (see Figure 14) illustrates this, for example. Along its length it changes from an arterial to a high road and finally to a city hub – its street-type shifts along the top row of the matrix.

Where this route goes through a strategic place, the aims for a better quality urban realm, unlocking development, and supporting walking and cycling, will more strongly come to the fore, while still seeking to maintain a relatively high degree of movement function.

The RTF recommends that the speed environment is linked to the different street-types (see Figure 15)

Speed limits will play an important role where movement and place need to be more balanced, where there are high levels of pedestrian and cycling activity and where safety issues need to be tackled.

A slower speed environment could deliver significant benefits in many places and for particular users, with less adverse impacts for movement (for example vehicular flows) than other potential interventions.

Win-win solutions should be the primary aim, and innovative/flexible functionality can help in this.

Some of the street-types, such as city streets, some high streets and town streets, may lend themselves to more of a 'shared space' approach, where a more equal balance can be struck.

It will often be necessary, however, to make clear choices in terms of how capacity is allocated and used (including by time of day). In part, the realities of higher service levels for some users are defined by what is not being delivered for others.

For example, how long a pedestrian should expect to wait to cross a suburban high street will be different to the waiting time on a busy arterial road where the focus on motor vehicle movement and journey time will be greater, and provision for pedestrians consequently less.

This framework should help guide understanding and expectations. Figures 16 and 17 show how particular priorities change across the different street-types.

Within the agreed priorities, there may still be some minimal standards or mitigations to protect non-priority users. For example, along arterial roads, it will be important to mitigate impacts on residents without impacting unduly on vehicular traffic flows – whether in terms of noise by improved screening, or severance by Mile End Bridge-type crossings.

Figure 14: A10 corridor: example of changing street-type

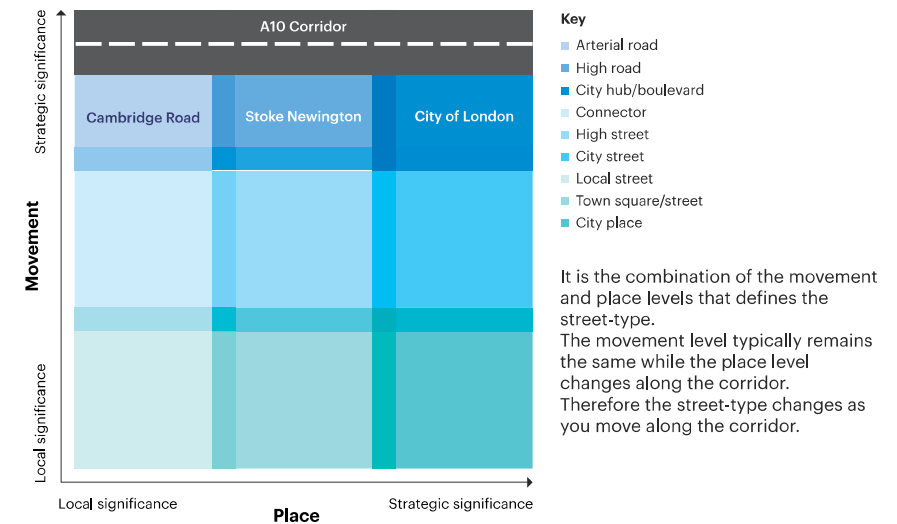
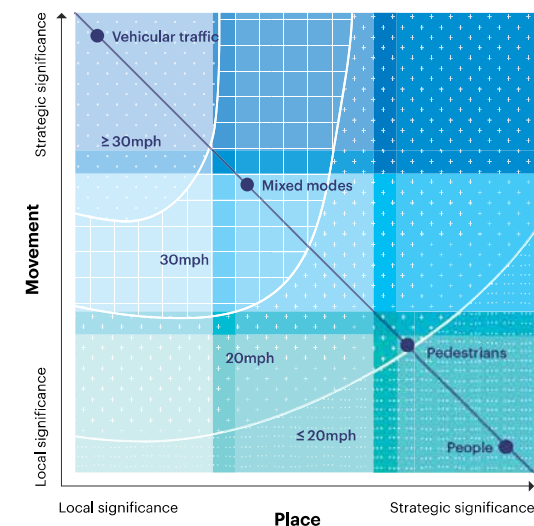


Figure 15: The implications of street-types for the speed environment



At the other end of the spectrum, pedestrian signals were introduced in Sloane Square to help control the very high flows of pedestrians and give vehicular traffic a chance. The priorities remain clear, but some minimal mitigation is provided.

With the different street-types, different users in those particular contexts will be impacted in varying ways, with some gaining and some possibly losing, but there will be benefits for all users across the street family as a whole.

For proposed changes, there must be a proper assessment of the costs/benefits of any proposals versus the current situation, taking into account impacts across the different functions and users.

Annex 2 sets out some further detail about the different street-types and the suggested priorities and potential measures associated with them.

Figure 16: The implications of street-types for vehicle journey time

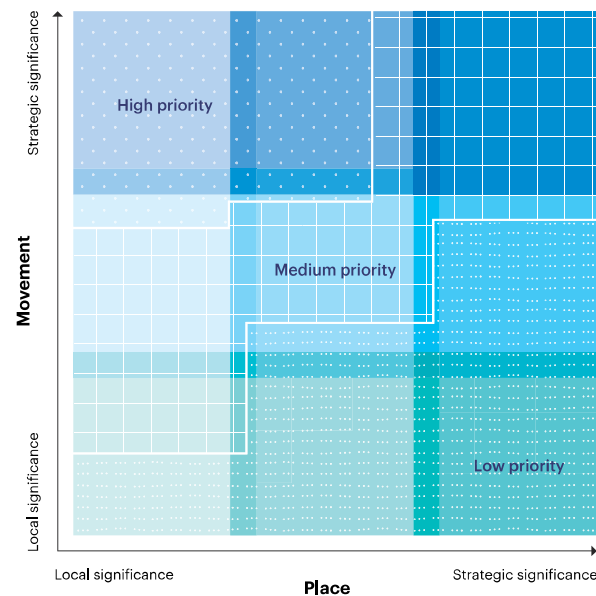
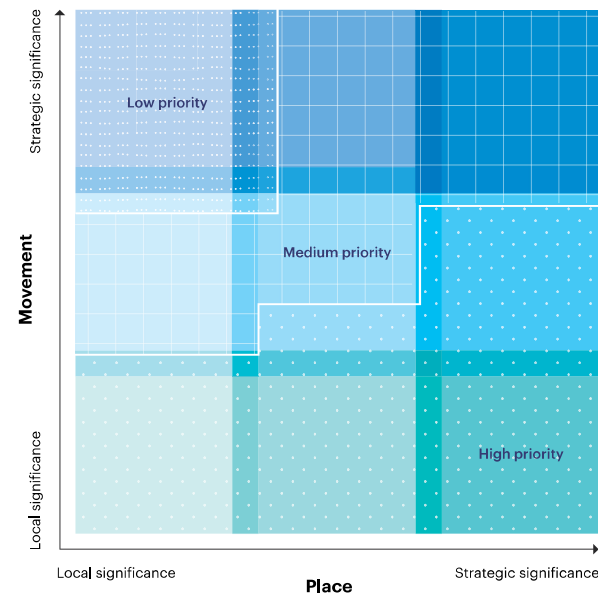


Figure 17: The implications of street-types for pedestrian crossing time



Implementing the street-types

The RTF recommends that TfL and the boroughs jointly develop and implement the street-types framework and tackle priority locations ensuring they contribute to the long-term vision.

From April 2014, any scheme being put forward by TfL or the boroughs should reflect the street-types approach, ahead of this there should be a pilot with willing boroughs.

An agreed framework, key performance standards and designation of an initial set of roads, for example the strategic road

network, should be completed before the end of 2014. All authorities should align, where possible, the three existing definitions of road/street classification (highway, planning and traffic) by June 2016 to ensure consistency in approach between different functions and documents – Local Development Frameworks and Local Implementation Plans.

The approach must be pragmatic and focused on assisting decision-making and delivery, rather than mechanistic and overly complex.

7.0 Link and Place Assessment

7.1 Introduction

One of the many challenges that the Parramatta Light Rail project faces is in creating a sustainable road network and sufficiently planning for the complementary function of movements and land use. There must be a balance between these road functions that supports the liveability of our urban areas and regional centres without compromising the effective movement of people and goods on our roads.

The road network is used for many trips purposes and modes of transport including cars, buses and bicycles, while also being the focal point for people, including passive recreation, shopping and restaurant land uses. The Link and Place Assessment is a tool which will assist in understanding the competing needs of road corridors between movement and place functions by categorising each corridor into one of four typologies.

This report conducts a strategic qualitative assessment of existing conditions for the use of the Strategic Business Case Close-Out. It documents how roads along the preferred project corridor fit into the road planning framework. A more detailed assessment considering both existing and future conditions is proposed to be undertaken for the Final Business Case stage, and is outlined in **Section 7.4**.





7.2 Assessment guidelines

This report uses the NSW Roads Plan developed to provide a framework that acknowledges the important inter-relationship between transport and land use. The plan sets the strategic direction for improving the journey experience through focussing on what is important to the customer, providing the critical policy link for the planning, delivery and operation of the road network across the state.

The first step of the strategic assessment is to separate the preferred light rail route and notable cross roads into like sections. The like sections will be areas that share key characteristics including road category, potential traffic volume and level of place-based activity.

Once the route is broken up, a score is applied to each section based on where it places in significance of both movement and place. The *NSW Roads Plan (2016)* outlines four movement types and four place types that are considered when deciding on the link and place typology of a street, as shown in **Table 7.1**. Each section will score differently in terms of movement and place significance depending on location, road type, land use composition and proximity to major centres.

Table 7.1 Link and place types

Significance	Movement	Place
	Local / collector	Local place
	Sub-arterial	Local centre
	Arterial	Strategic centre or area of high pedestrian activity
	Primary arterial	City centre (e.g. Parramatta or Sydney CBD)

Source: Draft NSW Roads Plan, Roads and Maritime, 2016

The link and place assessment is a tool that provides classification of street segments based on characteristics of movement vs place, usually illustrated on a linear axis-based framework, shown in **Figure 7-1**. The assessment acknowledges the dual role streets play in providing movement and place, while varying in function and performance.

There are four primary typologies identified in the *NSW Roads Plan (2016)* which are considered in a link and place assessment, which are a combination of the above movement and place types. These include:

- Vibrant streets: balance high demand for movement and pedestrian activity with often limited road space within urban areas and regional centres
- Movement corridors: main roads providing safe, reliable and efficient movement between regional centres and within urban areas
- Places for people: combine higher pedestrian activity and lower levels of vehicle movement compared to vibrant streets, creating places of value for local communities and visitors
- Local streets: part of the fabric of suburban neighbourhoods, with a focus on community access and place.

Motorways are also considered as a separate category, characterised by segregated corridors with a sole focus on movement of people and goods over long distances. This category is not considered in the link and place assessment for the Parramatta Light Rail project as the route does not follow any motorway classified roads.



Figure 7-1 Link and Place framework

Source: Draft NSW Roads Plan, Roads and Maritime, 2016

7.3.1 Section 1

The link and place assessment is detailed in **Table 7.2**. A map presenting the assessment outcomes within the proposed light rail corridor is shown overleaf in **Figure 7-3**.

Table 7.2 Link and place assessment outcomes – Section 1

ID	Route Section	Between		Movement Rating (1-5)	Place Rating (1-4)	Road Type	Comments
1	Railway Parade	Park Ave	Hawkesbury Rd	2	3	Places for People	Important local access road to Westmead suburban residential area and small mixed use developments near Westmead Station. High pedestrian concentration between Westmead railway station and hospital site.
2	Hawkesbury Road	Railway Pde	Darcy Road	4	2	Movement Corridor	4-8 lane regional road with bus corridor, large footpaths and high traffic volume.
3	Hawkesbury Road	Darcy Road	Jessie Street	2	3	Places for People	High activity associated with hospital and schools. Narrowing to local road, one lane in each direction from Queens Road, nearby street front shopping, wide footpaths, and midblock pedestrian crossings.
4	Hawkesbury Road, Hainsworth Street and Bridge Road	Hawkesbury Rd / Jessie St	Greenup Dr / Eastern Cot	1	1	Local Streets	Relatively quiet suburban residential area with minor mixed uses.
5	Factory Street	Greenup Dr	Church St	1	2	Local Streets	Relatively quiet suburban residential area with minor mixed uses.

Table 7.8 and Table 7.9 respectively.

Table 7.8 Movement Indicators

Movement			
Mode	Proposed indicator	Proposed metric	Proposed data
General traffic	Traffic volume	Traffic counts	Survey
	Link travel speed	% of link free flow speed	Survey
	Link travel time reliability	% variation in link travel time	Survey
	Link accessibility	Number of controlled intersections	Desktop review
		Mean controlled intersection spacing	Desktop review
Goods vehicles	Link travel speed	% of link free flow speed	Survey
	Link travel time reliability	% variation in link travel time	Survey
	Fleet mix	% HGV	Survey
	Link useability	Lane width	Desktop review
		Load restrictions	Desktop review
		Height restrictions	Desktop review
Buses	Bus volume	Number of buses per hour	Survey
	Bus travel time reliability	% increase in travel time above schedule	PTIPS
	Link useability	Lane width	Desktop review
		Bus signal priority	Desktop review
		Bus lane	Desktop review
Walking	Assessment of walking connectivity and flow	Pedestrian counts	Survey
		Connectivity / permeability	Survey / Desktop review

Movement			
Mode	Proposed indicator	Proposed metric	Proposed data
		Footpath present	Desktop review
		Effective footpath width	Survey / Desktop review
		Number of crossing points	Desktop review
		Mean crossing point spacing	Desktop review
	Assessment of walking environment and facilities	Footpath gradient	Desktop review
		Walking route information	Survey
Cycling	Assessment of cycling connectivity and flow	Bicycle counts	Survey
		Connectivity / permeability	Survey / Desktop review
		Mean controlled intersection point spacing	Desktop review
		Number of controlled intersections	Desktop review
		Link gradient	Desktop review
	Assessment of cycling environment and facilities	Marked cycleway	Desktop review
		85 th percentile traffic speed	Survey
		Kerbside lane width	Desktop review
		Bicycle route and wayfinding information	Survey

Table 7.9 Place Indicators

Place			
Consideration	Proposed indicator	Proposed metric	Proposed data
Parking facilities	Parking availability	Proportion of kerb space devoted to unrestricted and period parking	Survey
		Number of public off-street parking spaces	Survey
		Proportion of disabled parking	Survey
Loading facilities	Loading facility availability	Proportion of kerb space devoted to loading zones and no parking restrictions	Survey
		Number of public off-street loading docks	Survey
Bus stop facilities	Quality of bus stop facilities	Number of bus stops	Desktop review
		Density of bus stops	Desktop review
		Information at bus waiting area	Survey
		Passenger comfort at waiting area	Desktop review
		Kerbside lane width	Desktop review
Pedestrian places	Quality of pedestrian facilities	Footpath present	Desktop review
		Pavement quality	Desktop review
		Dwell	Survey
Bicycle end of trip facilities	Public bicycle parking provision	Number of parking places	Survey
	Security of bicycle parking	Proportion of bicycle parking with 'active' surveillance	Survey

2 SMARTROADS FRAMEWORK OVERVIEW

2.1 The framework

VicRoads has developed a network operations planning framework commonly referred to as SmartRoads. The framework consists of several core elements as shown in the chart below.

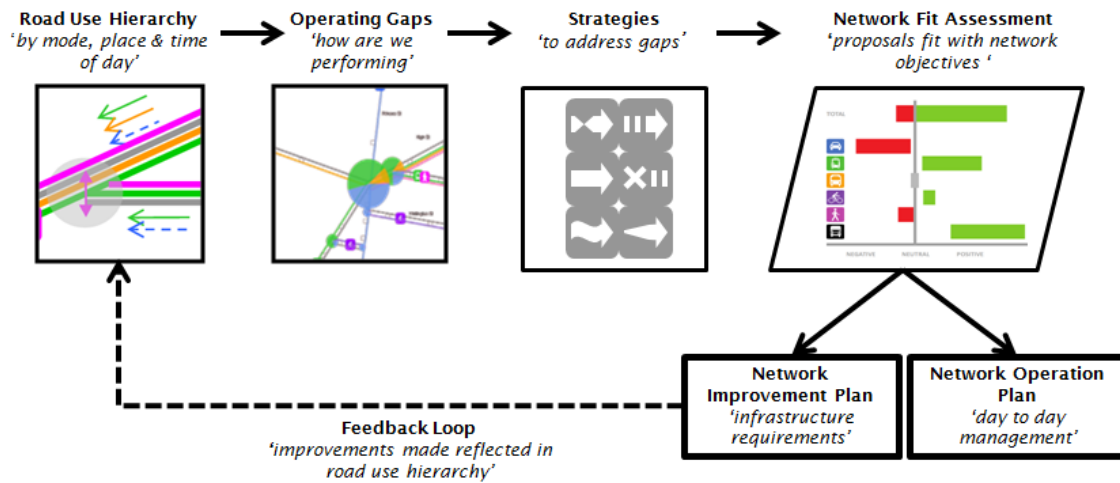


Figure 1 - SmartRoads framework

2.2 Road use hierarchy (Section 4)

The road use hierarchy is made up of the **strategic road use** and the **relative priorities** for each transport mode by mode, place and time of day. It represents a shared vision with stakeholders for how the road network needs to be managed rather than the current operating conditions – *'our agreed aspirational goal'*. It is a high-level strategic document, which has been endorsed by state and local government and influences everything from the day-to-day management of the network through to longer-term planning for major improvements.

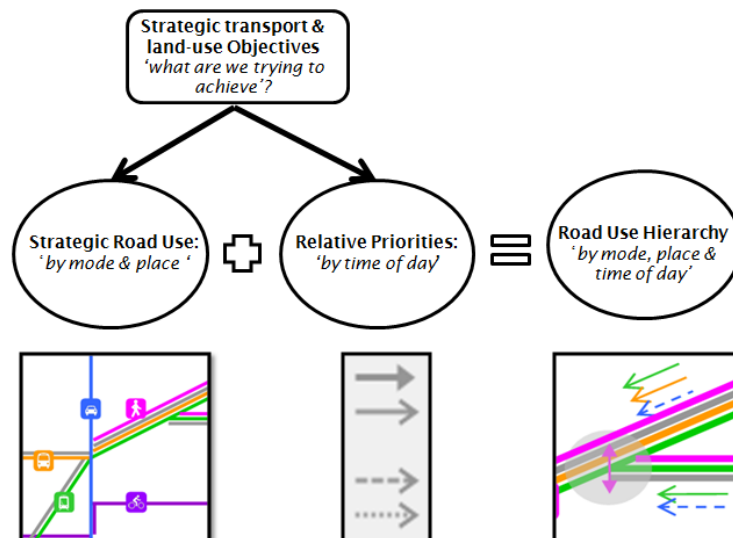


Figure 2 - Forming the road use hierarchy

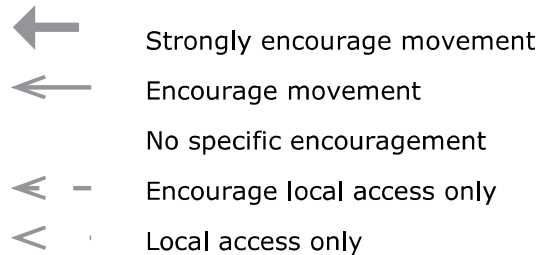
2.2.1 Strategic road use

The strategic road use allocates priority by mode and by place, recognising the relationship between the transport network and the place it is interacting with. It is represented as a map of Melbourne and regional towns/cities showing the modes that have the highest priority on each route across the whole day and has been developed by VicRoads in collaboration with state and local government, transport operators and other relevant stakeholders.

2.2.2 Relative priorities

Relative priority is allocated as one of five levels of encouragement which change for different periods of the day depending on travel demand and surrounding activity. There are four key time periods: morning peak, high off peak, evening peak, and off peak. Changing the encouragement given to modes based on place and time can assist in resolving competing demands for road space.

Relative priority is represented as a level of encouragement given to each mode, represented as an arrow, indicating the extent to which a mode is encouraged based on place and time:



One of these five levels of encouragement is assigned to each mode depending on the features of the location – for example, an activity centre, a strip shopping centre, or a road included in the principal public transport network (PPTN).

The priorities are determined on the basis of a set of rules which are summarised in tables of priority arrows for each mode by time and place. Like the strategic road use, the relative priorities have been developed in consultation with other government agencies and relevant stakeholders

2.3 Operating gaps (Section 5.2)

A method of describing the gap between the favoured performance (aspirational) of the network and its actual performance. This enables us to objectively assess the current performance and therefore to focus on the areas of greatest need across the network. It also enables us to test the impact of proposed changes, to ensure they fit with the strategic intent of the road use hierarchy. The operating gap takes into account:

- how well each mode is operating at a given location (current level of service);

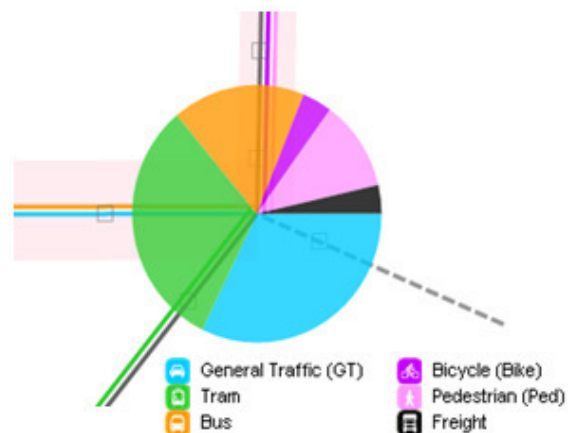


Figure 3 - Operating gap example

- how well the network should be operating (relative level of service);
- the priority assigned to different modes by the RUH, based on government policies and objectives (relative priority);
- how many people or goods the mode can transport (relative efficiency); and
- the future growth predicted for a mode (mode shift factor).

This provides a rich analysis of deficiencies on the road network and enables initiatives to be targeted to achieve the greatest strategic benefit.

The operating gap enables us to capture the complexity of the issues on the network and test possible responses. This is done through the use of the network fit assessment tool (the NFA Tool) which can be used to convert raw data into a more sophisticated assessment of the network.

2.4 Network strategies (Section 6)

Network strategies are developed to guide the process of identifying solutions to address the gaps on the network. While the road use hierarchy provides information about the level of priority given to each mode, the strategies provide additional guidance on the kinds of treatments that could be used to achieve the preferred level of priority. Network strategies generally focus on sub-networks rather than specific sites, for example a local government area or a strategically important corridor.

2.5 Network fit assessment (Section 7)

The network fit assessment (NFA) process is used to determine whether a change to the operation of a road – from modifications to signal timing through to the construction of a new freeway - supports the intent of the road use hierarchy. The assessment is conducted in a workshop to ensure that the process is transparent and that all stakeholders understand the results and the trade-offs between transport modes that may be involved.

The outputs of the SmartRoads NFA Tool include simple graphical representations of the impact of a proposal, as shown in Figure 4. The green and red dots on the map represent the sum of the positive and negative impacts of all modes on that particular location. The bar graph in the bottom right-hand corner shows the range from the worst-case impact to the best-case impact for each mode under consideration. These types of outputs bring key decision-makers, who may not be transport engineers, along on the journey of understanding the potential impacts of a proposal on the transport network.

The NFA process can also be used for post-delivery assessments to determine the effectiveness of the treatment in addressing any operational deficiencies. The post-assessment will also raise any fine tuning that needs to be carried out.

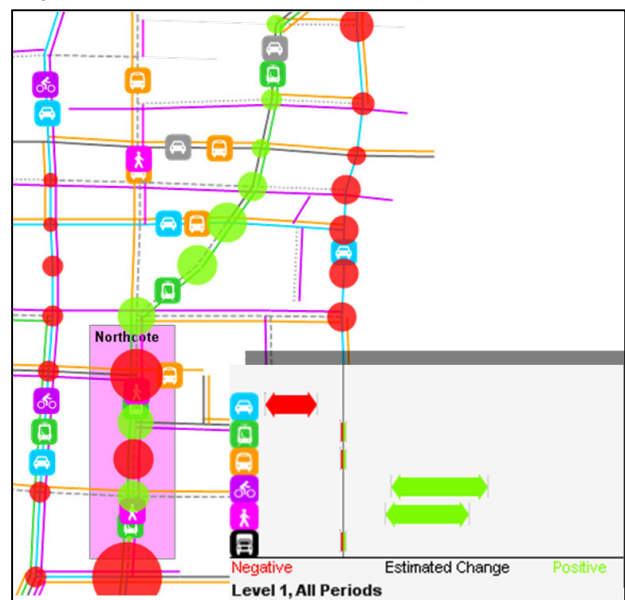


Figure 4 - Example of Network Fit Assessment Tool output

It is important to recognise that the NFA process is assessing the operational impacts, thus it doesn't assess the safety merits of the project. These are determined through a separate process.

2.6 Network Operating Plan and Network Improvement Plan (Section 8)

The final outputs of the SmartRoads process are the Network Operating Plan (NOP) and the Network Improvement Plan (NIP).

The NOP and NIP emerge from the strategic intent and operational objectives of the road use hierarchy, the existing and future operating gaps and the network strategies. The two plans then provide the focus for the two different timeframes for managing the network.

- The **NOP** is concerned with optimising the current day-to-day operation of the existing network in line with the RUH and network strategies.
- The **NIP** sets out possible future projects to improve the operational performance of the network; this may include a priority list.

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