West Gate Tunnel Project
Traffic and Transport Review
Expert Evidence Statement

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Client: Western Distributor Authority
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Table of Contents

1. Introduction 1
   1.1 Background 1
   1.2 Qualifications and Experience 1
   1.3 Report Scope 1
   1.4 References 2
   1.5 Assessment Methodology Context 3
   1.6 Statement on Findings 3
     1.6.1 Overview 3
     1.6.2 Strategic Alignment with Policy / Strategy 3
     1.6.3 Project Position 5
   1.7 Tests, Experiments & Assistance 5

2. Project Background & Review Context 6
   2.1 Project Proposal 6

3. Legislation and Policy Framework 9
   3.1 Preamble 9
     3.1.1 Social and Economic Inclusion 10
     3.1.2 Economic Prosperity 10
     3.1.3 Environmental Sustainability 11
     3.1.4 Integration of Transport and Land Use 12
     3.1.5 Efficiency, Coordination and Reliability 12
     3.1.6 Safety, Health and Wellbeing 12
     3.1.7 Summary of Objectives 13
   3.2 State Planning Policy Framework 13
   3.3 Other Strategies and Policies 14

4. Transport Planning Context 16
   4.1 Preamble 16
   4.2 Business Case (2015) 16
   4.3 Eddington Review 2008 19
     4.3.1 Purpose 19
     4.3.2 Issues Identification 20
     4.3.3 Strategies Recommended 21
     4.3.4 West Gate Tunnel Project Alignment 21

5. Strategic Alignment Review 25
   5.1 Preamble 25
   5.2 Inadequate Transport Capacity on the M1 Corridor 25
   5.3 Over-reliance on the West Gate Bridge 32
   5.4 Inadequate Port and Freight Connections 35
5.5 Reduced Amenity in the Inner West 41
5.6 Mismatch between Land Use and Transport 45
5.7 Summary of Strategic Alignment Findings 48
5.8 Alignment with Transport Integration Act (2010) 50

6. Transport Impact Review (EES) 53

   6.1 Preamble 53
   6.2 Project Attributes & Design Features 53
   6.3 Analytic Methodology & Modelling Extents 56
       6.3.1 Metropolitan Area 57
       6.3.2 Local Area 58
       6.3.3 Project Corridor 59
       6.3.4 Modelling Extents 60
   6.4 Level of Service Definitions 62
   6.5 Stakeholder Engagement 62
   6.6 2031 Analytics Summary 63
       6.6.1 Projected Population Growth Assumption 63
       6.6.2 Reported Network Statistics & Traffic Growth 63
       6.6.3 Local Area Statistics Comparison (North & West Melbourne) 67
       6.6.4 Project Corridor Operational Performance 69
       6.6.4.1 Freeway Assessment 70
       6.6.4.2 Interchange Performance 78
       6.6.4.3 Arterial Road Intersections 79

7. Active Travel Considerations 89

   7.1 Introduction 89
   7.2 Existing Conditions Land Use & Network Review 90
   7.3 Strategic Need Review (Policy Context) 93
   7.4 Design Review 103
       7.4.1 Introduction 103
       7.4.2 Design Guidelines 104
       7.4.3 Review of WGT Active Transport Design Elements 105
   7.5 Active Travel Summary 115
   7.6 Alignment with Transport Integration Act (2010) 116

8. Road Design Evaluation of Alignment Legibility, Accessibility and Connectivity 118

   8.1 Preamble 118
   8.2 Project Characteristics 118
   8.3 Design Evaluation Context 119
   8.4 Alignment, Legibility and Connectivity 120
   8.5 Integration with Existing Road Network 121
   8.6 Design Review and Conclusion 121
9. **Construction Management** 124
   9.1 Overview 124
   9.2 Impact on Local Streets 126
   9.3 Additional Peak Period Traffic 128
   9.4 Temporary Lane & Road Closures 128
   9.5 Temporary Closures of Active Travel Routes 128

10. **Public & Stakeholder Submissions** 130
    10.1 Preamble 130
    10.2 Summary of Issues Raised in Submissions 130
       10.2.1 Other Submissions 152
       10.2.2 VicRoads, 473 152
    10.3 Bus Association Victoria, 176 155
       10.3.1 RACV, 317 156
       10.3.2 Yarra Trams, Qualified, 328 157
       10.3.3 Port of Melbourne (PoM), 392 158
       10.3.4 Public Transport Users Association (PTUA), 430 159
       10.3.5 Planning Institute Australia (Victoria), 190 162
       10.3.6 Metropolitan Transport Forum, 426 165
    10.4 Bicycle Network, 449 166
       10.4.1 Individuals and Organisations 168

**Appendices**

A: John Kiriakidis – Curriculum Vitae
B: Matters Raised by PPV Guide to Expert Evidence
C: West Gate Tunnel Active Transport

**Figures**

- Figure 2.1: West Gate Tunnel High Level Project Plan 8
- Figure 4.1: Population and employment comparison: M1 Corridor and rest of Melbourne 17
- Figure 4.2: Eddington Review core study area 20
- Figure 4.3: Road Screen-lines, All day Growth, 2006 to 2031 23
- Figure 4.4: New east-west road connection 24
- Figure 5.1: Victoria’s M1 Corridor 26
- Figure 5.2: AM Peak congestion 27
- Figure 5.3: Population Growth by Region (‘000s), 1996 to 2014 28
- Figure 5.4: 2046 Population and Jobs 29
- Figure 5.5: Change in Daily Traffic Volumes between 2014 and 2031 29
Figure 5.6: Number of public transport trips compared to all traffic trips (2014 versus 2031 without the West Gate Tunnel Project)

Figure 5.7: Rail Origins and Destinations – Maribyrnong River crossing

Figure 5.8: Road Origins and Destinations – West Gate Bridge

Figure 5.9: Capacity Constrained Traffic Volume Assessment

Figure 5.10: Traffic Consequences of the West Gate Bridge being Unavailable

Figure 5.11: Industrial and freight precincts relevant to the M1 corridor (west/north)

Figure 5.12: HPFV Network

Figure 5.13: Victoria’s Goods Moved vs Infrastructure Spend

Figure 5.14: 2016 truck volumes (two-way, 24-hour weekday volumes)

Figure 5.15: Change in daily truck volumes- 2016 to 2031 no project case (two-way, 24-hour weekday volumes)

Figure 5.16: Difference in Daily Truck Volumes- project case vs no project case

Figure 5.17: Growth in Population and Jobs Density Plot

Figure 5.18: Effective Job Density

Figure 6.1: Westgate Freeway Section

Figure 6.2: West Gate Tunnels Section

Figure 6.3: Port/CityLink/CBD Access Section

Figure 6.4: Project Modelling Study Areas

Figure 6.5: Transport Network Design Changes for 2031 Planning Horizon

Figure 6.6: Local Area Model Extents

Figure 6.7: Analytic Methodology

Figure 6.8: Additional Nodes Recommended for Analytical Study Area Inclusion (Part 1)

Figure 6.9: Number of Public Transport trips compared to all Traffic Trips (2031 No Project Case vs 2031 Project Case)

Figure 6.10: Local area 2031 Project Case Traffic Volumes (two-way, 24-hour weekday volumes)

Figure 6.11: Difference in Daily Traffic Volumes – 2031 Project Case vs 2031 No Project Case

Figure 6.12: Local Area 2031 Project Case Traffic Volumes – North Melbourne and West Melbourne (two-way, 24-hour weekday volumes)

Figure 6.13: Difference in Daily Traffic Volumes – West Melbourne North Melbourne – 2031 Project Case vs 2031 No Project Case

Figure 6.14: Project Corridor Zones

Figure 6.15: Location of Grade Separated Interchanges

Figure 6.16: Arterial intersection, No project Footscray Rd corridor (Source: Figure 32)

Figure 6.17: With project Footscray Road Arterial Intersections with project

Figure 6.18: AM Peak 7-8am

Figure 6.19: AM Peak 8am to 9am
Figure 6.20: PM peak 4-5pm 83
Figure 6.21: PM peak 5-6pm 84
Figure 6.22: Aerial View of Intersection of Francis Street / Hyde Street, Yarraville 86
Figure 7.1: WGTP proposed walking and cycling initiatives 89
Figure 7.2: Location of the Bradmill Precinct and Precinct 15 sites 91
Figure 7.3: Pedestrian and cycling missing links and issues (West Gate Freeway section) 92
Figure 7.4: Pedestrian and cycling missing links and issues (Port, Citylink and City Connections) 93
Figure 7.5: State and Territory Investment in Cycling 2015-2016 94
Figure 7.6: Cycling Strategy Framework and Strategic Directions 95
Figure 7.7: Principal Bicycle Network (magenta) surrounding the study area 97
Figure 7.8: The relationship between the PBN, BPR and SCCs 97
Figure 7.9: VicRoads Strategic Cycling Corridors Surrounding the Study Area 98
Figure 7.10: Specific Actions From the Maribyrnong City Council Strategy 99
Figure 7.11: Comparison of journey to work trips (bicycle only) 2011 100
Figure 7.12: Priority cycling corridors within the City of Melbourne 102
Figure 7.13: Design review reference plan 110
Figure 7.14: Footscray Road elevated shared path (veloway) critical gradients 110
Figure 7.15: Footscray Road suspended veloway, Typical Section Detail 112
Figure 7.16: Suspended veloway, Typical Section Detail 113
Figure 7.17: Footscray Road veloway - Artists Impression 113
Figure 7.18: Proposed veloway Emergency Exit Locations 114
Figure 7.19: Veloway Emergency Access (CH815) 114
Figure 8.1: Route Issues Discussion 122
Figure 9.1: Average Number of Heavy Vehicle round Trips per Day: West Gate Freeway 124
Figure 9.2: Average Number of Heavy Vehicle Round Trips per Day: Tunnel 125
Figure 9.3: Average Number of Heavy Vehicle Round Trips per Day: Port, CityLink and City Connections 125
Figure 9.4: Potential Haulage Routes from West Gate Freeway 126
Figure 9.5: Potential Haulage Routes for the Tunnel Works 127
Figure 9.6: Potential Haulage Routes for the Port, CityLink and City Connection Works 127

Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Evidence Report Support Staff (GTA Consultants)</td>
<td>5</td>
</tr>
<tr>
<td>4.1</td>
<td>Works packages and procurement approach</td>
<td>19</td>
</tr>
<tr>
<td>5.1</td>
<td>Industrial area within State Significant Industrial Precincts, Metropolitan Melbourne 2015-16</td>
<td>36</td>
</tr>
<tr>
<td>5.2</td>
<td>Current vacant, and proposed, industrial land 2015-16</td>
<td>36</td>
</tr>
</tbody>
</table>
Table 5.3: Melbourne Current and Forecast Future Population Distribution (Number of People) 39
Table 5.4: Daily Traffic Volumes on Inner West Arterial Roads - 2031 project case vs 2031 no project case 45
Table 6.1: Strategic Model Street Link Daily Traffic Volume Comparison (2031) 62
Table 6.2: Forecast Population Change for Greater Melbourne 63
Table 6.3: Local Area Road Vehicle Trips, Comparison of 2031 Project Case and 2031 No Project Case 64
Table 6.4: Road Network Daily Traffic Comparison (2031) (North Melbourne Area) 69
Table 6.5: Comparison of 2031 project case and 2031 no project case peak Level of Service outputs for Inbound Trips 71
Table 6.6: Comparison of 2031 Project Case and 2031 No Project Case Peak Level of Service outputs for Outbound Trips 73
Table 6.7: Comparison of 2031 Project Case and 2031 No Project Case Peak Level of Service outputs for Northbound / Westbound Trips 75
Table 6.8: Comparison of 2031 project case and 2031 No Project Case Peak Level of Service outputs for Southbound / Eastbound Trips 77
Table 6.9: Grade Separated Interchanges, Level of Service, 2031 Project Case and 2031 No Project Case 79
Table 6.10: AM Peak Arterial Road Intersection 85
Table 6.11: PM Peak Arterial Road Intersection 85
Table 6.12: Footscray Road Corridor Intersection Performance 87
Table 6.13: Footscray Road Corridor Intersection Performance 88
Table 7.1: National Cycling Strategy Priorities and Objectives 94
Table 7.2: Summary of Strategic Direction Alignment Areas with Cycling Strategy Framework 96
Table 7.3: Summary of Alignment Areas (Maribyrnong City Council Bicycle Strategy) 99
Table 7.4: Footscray Road SCC actions and WGTP proposals 102
Table 7.5: Design criteria for Footpaths and Shared Paths in the WGTP[1] 106
Table 7.6: Design review of active travel infrastructure in the WGTP 106
Table 7.7: Summary of general active transport design elements 111
Table 7.8: Review of Alignment with Transport Integration Act (2010) Policy Objectives (Active Travel) 116
1. Introduction

1.1 Background

I was engaged in June 2017 on behalf of the Western Distributor Authority to peer review the Transport Impact Assessment (May 2017) contained in the Environment Effects Statement (EES) prepared for the West Gate Tunnel Project (Project) and consider the extent to which the project aligns with strategic transport policy and relevant legislation.

I have also been engaged to review and respond to submissions on the EES, draft planning scheme amendment and works approval application (Exhibited Documents), relevant to my area of expertise.

I also understand that I may be required to provide comment on any further versions of the Environmental Performance Requirements (EPR’s) to the extent that they relate to my area of expertise.

1.2 Qualifications and Experience

Appendix A contains a statement setting out my qualifications and experience.

1.3 Report Scope

This report sets out:

1. A review of the Project’s strategic transport alignment with planning policy, various planning documents for Greater Melbourne and the legislative framework set out within the Transport Integration Act (2010).

2. A peer review of analytics contained in the Transport Impact Assessment (hereafter referred to Technical Report A) relied on to inform the EES in support of the Project.

The assessment methodology includes a review of the Project’s consistency with the listed objectives set out in the Transport Integration Act (2010). These are set out in Section 3 of the report and reviewed for:

- The Project’s Strategic Alignment with policy (Section 5),
- The Project’s Transport Impact (Section 6),
- The Project’s Active Travel contribution (Section 7),
- The Project’s design as a road based project (Section 8).

The Technical Report A sets out the framework upon which the assessment has been prepared including reference to scoping guidelines set out by the Victorian Government entitled Scoping Requirements for Western Distributor Project (April 2016).

The report sets out the relevant EES objective as it relates to transport. This objective is reproduced below:

‘To increase transport capacity and improve connectivity to and from the west of Melbourne, and, in particular, increase freight movement via the freeway network instead of local and arterial roads, while adequately managing the effects of the project on the broader and local road network, public transport, cycling and pedestrian transport networks’.
A peer review of the technical work set out in Technical Report A and completed in support of the project has been undertaken to test whether the planned and forecast project outcomes are consistent with this overarching goal.

This report seeks to respond to key issues identified through the review process, to the extent necessary, keeping in mind that the Inquiry and Advisory Committee (IAC) have been issued with instructions on the breadth of its review including a ‘purpose’ and ‘terms of reference’. For further context, these are reproduced below:

IAC Purpose:

“The purpose of the Inquiry is to inquire into and provide an integrated assessment of the environmental effects of the construction and operation of the Project”

Investigate in relation to the Project:

i. “The magnitude, likelihood and significance of adverse and beneficial environmental effects;

ii. The adequacy of the proposed environmental management framework, including the proposed environmental performance requirements and environmental management measures contained in the EES, with reference to applicable legislation and policy;

iii. The adequacy of WAA No. S0100269, with reference to applicable legislation and policy;

iv. The adequacy of the impact assessment and whether the proposed environmental performance requirements are being met;

v. Feasible modifications to the design of the Project within or reasonably proximate to the project boundary that could offer demonstrably overall superior outcomes;

vi. All submissions made to the Inquiry in relation to any of the matters set out in paragraphs 13(e)(i) to (v) above; and

vii. Any matter reasonably incidental to the matters set out in paragraphs 13(e)(i) to (v) above.”

For clarity, it is important to note that this review is not exhaustive to the extent that electronic models have been sought, reviewed and validated but rather and more broadly a sensibility evaluation completed which relies on experience with the adopted technical tools, their limitations, the analytic methodology chosen and the general and intuitive acceptability of the modelling outputs.

Assumptions that I have relied on to form my opinions include:

1. Adoption of the VLC Zenith strategic model inputs, assumptions and outputs, and

2. Save where I say otherwise, I have adopted the micro-simulation model initially prepared by VicRoads and adopted by the project team on behalf of the WDA for this project evaluation. I have also had the benefit of observing video footage of the model.

1.4 References

This report relies on material set out in the Environmental Effects Statement (EES) Technical Report A, Transport Part 1 and Transport Part 2 which contain the prepared TIA.

Other references relied upon in compiling this assessment are set out in the body of this report.
1.5 Assessment Methodology Context

This report sets out a review of the transport implications of the project including the transport impact, the projects design including it road and active travel based components.

This report also investigates the strategic alignment of the project with planning policy and strategy.

The approach taken with the planning policy review can be broadly summarised as follows:

i. Validate the transport challenges identified in the EES which form the basis of need for the project.
ii. Determine how these challenges will change with and without the project between now and 2031,
iii. Review strategic planning policies to determine the extent to which the project aligns with established policy and planning for Greater Melbourne,
iv. Examine the EES as it relates to transport by exploring the project’s consistency with objectives set out in the Transport Integration Act (2010).

1.6 Statement on Findings

1.6.1 Overview

A review of the EES Technical Report A package indicates that a substantial body of work has been completed to understand the environment and performance impact of the West Gate Tunnel project as it relates to traffic and transport matters. The work, as previously stated, has been completed to comply with the EES assessment framework guidelines is on my review robust and appropriate. Where I have considered it necessary, I have made in the body of this report, recommendations for further analysis or recommended the project team consider alternate design responses / solutions.

1.6.2 Strategic Alignment with Policy / Strategy

Research and investigations completed in this peer review indicates that the West Gate Bridge is currently at capacity and limited opportunity for east-west travel is available along the Maribyrnong River screen-line in the event of an incident.

Limited opportunities for east-west travel raises issues around network redundancy and resilience for the most significant transport corridor in Greater Melbourne comprising the M1 and West Gate Freeway. This corridor plays a significant role in in supporting economic activity in the State of Victoria with growth between now and 2031 forecast to increase meaningfully as a result of government projected increases in population and employment. In terms of a mismatch between the locations of growth in population and growth in employment in Melbourne research indicates that this is most pronounced in the west, where jobs have not kept pace with the increase in number of residents. This is creating a greater demand for personal travel from the west to inner- and south-east Melbourne. Unless this mismatch is addressed, planning research suggests that the liveability, productivity and potential of the west will be stifled.

The Port of Melbourne plays a significant role in supporting the Victorian economy, growth in Port activity is projected to increase significantly between now and 2031, consistent with population and employment growth forecasts. Investigations indicate that current transport network limitations are expected to constrain Port of Melbourne productivity in the near future and there is a legitimate need to provide:
an overall increase in road network capacity to absorb the increasing freight task,

24/7 access to key freight nodes through an efficient freight network,
sufficient capacity in the transport network links and connections to meet growth requirements, minimise delays and maintain a commensurate level of transport productivity,
sufficient landside capacity to absorb increasing Port freight traffic,
adequate landside buffers to isolate heavy vehicle traffic away from increasingly inner west densified residential areas, and

Efficient, lowest cost and reliable travel times for freight movements.

Analysis\(^1\) undertaken and review of policy documents has suggested that West Gate Tunnel is likely to:

- provide a significant boost to road capacity at Swanson Dock. The completion of the West Gate Tunnel and a minor upgrade to the Sims Street/Footscray Road interchange and underpass means Swanson Dock can grow up to a 4 million TEU capacity without increasing truck night operations\(^2\),

- improve access to the Port of Melbourne and provide efficiency benefits by reducing the cost of freight handling, storage and transport or improving reliability of supply chains (including first and last mile),

- maintain Victoria’s logistics competitive advantage with increased movements to and from Melbourne’s western logistics precincts,

- improve road user safety with further isolation of heavy vehicle movements away from private vehicles and other network users including pedestrians and cyclists\(^3\),

- improve freight reliability and safety through provision of alternative route and network redundancy to the existing West Gate Bridge as key freight link between the Port and industrial areas in Melbourne’s west, and

- have a positive impact on Melbourne’s greater road network and freight productivity as the effects of major incidents on the network reduces.

For local land use the West Gate Tunnel is likely to:

- provide a reliable alternative route to through truck traffic which currently consists of 60 per cent of truck traffic travelling in the inner west area to access the Port 24 hours a day and 7 days a week improving the reliability of supply chains,

- offer benefits of removing trucks away from Francis Street, Somerville Road, Buckley Street and Moore Street, ensuring that the amenity impacts of increased capacity at the Port of Melbourne on residents near the Port and key transport corridors are managed in a sustainable manner,

- improve road user safety with further isolation of heavy vehicle movements away from private vehicles and other network users including pedestrians and cyclists\(^4\), and

- improve freight reliability and safety through provision of alternative route and network redundancy to the existing West Gate Bridge as key freight link between the Port and industrial areas in Melbourne’s west.

\(^1\) West Gate Tunnel Technical Report At
\(^2\) Advice on Securing Victoria Ports Capacity, p74
\(^3\) Infrastructure Victoria 30 Year Strategy, Need 13, p164
\(^4\) Infrastructure Victoria 30 Year Strategy, Need 13, p164
More broadly, the project has been found to have considerable alignment with numerous strategic planning policies and represents one of a range of projects required to deliver an overall multi-modal transport planning outcome for Greater Melbourne.

My general conclusion is that the project is consistent with a sufficient range of objectives set out in the Transport Integration Act (2010) which supports its delivery noting that a range of considerations have been raised in the body of this report to refine the overall project design and delivery.

1.6.3 Project Position

Based on the research and investigations set out in the body of this report, I am satisfied that there is sufficient evidence which demonstrates that the project meets the EES transport objective. Further to the overall objective around capacity, connectivity, public transport and active travel, a comparison of the projects alignment with the range of objectives set out in the Transport Integration Act (2010) reveals a strong correlation.

In general terms I find the exhibited ees and its methodologies competent and supportive of the project.

1.7 Tests, Experiments & Assistance

In preparing this report, a project team of specialists were gathered to review specific disciplines that sit within the broader expertise of traffic and transport planning. Under my instruction, these specialists have contributed to the compilation of advice and commentary set out in the body of this report.

These specialists are identified in Table 1.1.

Table 1.1: Evidence Report Support Staff (GTA Consultants)

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisational Position</th>
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<tbody>
<tr>
<td>Peter Wills</td>
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<td>Paul Mantella</td>
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<td>Phoebe Hollins</td>
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<td>Anna Burnett</td>
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<td>John Morris</td>
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<td>Leonardo Ortiz</td>
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<td>Bryan Li</td>
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<td>Phil Gray</td>
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<tr>
<td>Craig Gist</td>
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<tr>
<td>Shu-Hao Wu</td>
<td>Associate Director</td>
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<tr>
<td>David Graham</td>
<td>Director</td>
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2. Project Background & Review Context

2.1 Project Proposal

Details surrounding the Westgate Tunnel project are set out in detail at Section 2 of Transport Technical Report A. It is not the intention of this report to duplicate content contained in the broader EES documentation and this technical report but rather provide a high-level outline of the project and its primary components to assist with overall project context.

Guidance on the project (transport infrastructure) composition has been sourced from the EES summary document which states:

“The West Gate Tunnel Project is a major new freeway project designed to relieve traffic pressure on the Monash/CityLink/West Gate Freeway (the M1 corridor – the main connecting route between Melbourne’s east and west), reduce the city’s reliance on the West Gate Bridge, provide a direct freight link to the Port of Melbourne and remove significant volumes of trucks from residential areas in the inner west.”

The project has been divided into three identifiable project components including the Westgate Freeway section, Tunnels section and Port / City Link / City access section. I have reproduced the commentary on each of these three sections from the summary report as follows (with text in bold my emphasis):

- **The West Gate Freeway component** would include upgrade and widening works between the M80 Ring Road interchange and Williamstown Road, providing two additional lanes in each direction to generally increase capacity to six through lanes in each direction (and auxiliary lanes as required). The six lanes would be configured as two sets of three lanes in each direction. The outer three lanes would provide access at all existing connections to the West Gate Freeway and link to the tunnels under Yarraville. The inner three lanes would provide express lanes between the M80 Ring Road and the West Gate Bridge. Elevated ramps would provide a new connection between the West Gate Freeway and Hyde Street.

- **The tunnels component** would include two tunnels – one inbound, one outbound – under Yarraville catering for three lanes of traffic in each direction. The tunnels would extend from two separate southern Portals (entrances/exits) located along the West Gate Freeway to the west of Williamstown Road and to the west of the Newport Freight Railway Line to a northern Portal located east of the intersection of Whitehall Street and Harris Street, to the west of the Maribyrnong River in Footscray. The outbound tunnel would have a length of approximately 4.0 kilometres and the inbound tunnel approximately 2.8 kilometres. A tunnel ventilation structure would be located at each exit Portal.

- **The Port, CityLink and city connections component** would include a bridge crossing of the Maribyrnong River, connections to the Port of Melbourne, an elevated road along Footscray Road and connections to CityLink and the central city. Connections would be provided to both sides of the Port of Melbourne via MacKenzie Road and Appleton Dock Road. Inbound and outbound connections would be provided to CityLink, along with connections to Footscray Road, Dynon Road and a widened Wurundjeri Way extended through to Dynon Road.”

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The project includes significant upgrade to walking and cycling paths along the western freeway corridor. The summary report sets out the project deliverables for active travel as follows:

“Over 14 kilometres of new and upgraded walking and cycling paths would be delivered by the project, creating a continuous link from Werribee to central Melbourne, providing new and safer connections and offering people in the city’s west more travel choices. Upgrades would include the Federation Trail, replacing existing pedestrian bridges in the vicinity of Wembley Avenue and Rosala Avenue, a new veloway over Footscray Road, and new pedestrian bridges over Williamstown Road, Stony Creek, Whitehall Street, Moonee Ponds Creek, Footscray Road, the new Footscray Road connection to the east of CityLink, and new pedestrian bridge adjacent to Dynon Road bridge.”

A graphical representation of the project, the various project components including surface level, elevated and tunnel project components is provided in Figure 2.1 on the following page.
Figure 2.1: West Gate Tunnel High Level Project Plan
3. Legislation and Policy Framework

3.1 Preamble

The Environmental Effects Statement attachments set out the legislative and policy framework upon which this project needs to be considered. Attachment I, sub-section 5 sets out those frameworks which relate to the Traffic and Transport components of the project. These documents vary from legislative frameworks enacted by the Victorian Parliament to various policy positions which have been informed by a specialist evidence base, research and consultation.

These documents have been considered by Technical Report A at Section 4 (Part 1) and have been reviewed further by my office in compiling this report and its findings.

For evaluation purposes, guidance on the development and expansion of the Victorian transport system is derived from various policies, in particular the Transportation Integration Act (2010) which sets out a range of principles and objectives which help guide the appropriateness of this project.

The Transport Integration Act 2010 came into effect on 1 July 2010 and is Victoria’s principal transport statute. The Act requires that all decisions affecting the transport system be made within the same integrated decision-making framework and support the same objectives. The Act recognises the aspirations of Victorians for an integrated and sustainable transport system that contributes to an inclusive, prosperous and environmentally responsible state. Logically, numerous other policies and strategies help guide decisions made within the framework of this document.

The Transportation Integration Act (2010) sets out the following purpose and vision statement:

**Purpose:**

“The purpose of this Act is to create a new framework for the provision of an integrated and sustainable transport system in Victoria consistent with the vision statement."

**Vision Statement:**

“The Parliament recognises the aspirations of Victorians for an integrated and sustainable transport system that contributes to an inclusive, prosperous and environmentally responsible State."

Beyond the purposes and vision statement, the Transportation Integration Act (2010) sets out a range of transport system objectives. These are reproduced below.

1. Social and Economic Inclusion,
2. Economic Prosperity,
3. Environmental Sustainability,
4. Integration of Transport and Land Use,
5. Efficiency, Coordination and Reliability,

Background and context on each of these objectives is provided in the ensuing report sections.
3.1.1 Social and Economic Inclusion

Transport plays an important role in developing social and economic inclusion by removing barriers to the use of the transport system. It also has a capacity-building role where opportunities for social and economic participation are maximised in partnership with communities.

Improving the affordability, availability and accessibility of the transport system will support both individuals and businesses to access employment, markets, education and services and ensure future growth for Victoria. Providing a reliable, affordable and safe transport system ensures people and communities that are excluded or at risk of exclusion are able to contribute.


3.1.2 Economic Prosperity

Transport has an important role in facilitating economic prosperity. An efficient and reliable transport network assists the productivity of existing businesses, as well as helping people have access to a wide range of job opportunities.

Transport’s role in supporting business access to markets for their goods and services is a key consideration in the investment decisions of firms, and is a core component of our competitiveness as a state.
3.1.3 Environmental Sustainability

The transport sector is a significant consumer of energy, and a major source of urban air pollution. It is important to minimise the resources used by transport.

Environmentally-responsible decisions protect, conserve and improve the natural environment. This ensures that we have the ability to maintain and improve living conditions needed to sustain people and other species.


3.1.4 Integration of Transport and Land Use

The transport system should provide for the effective integration of transport and land use, and facilitate access to social and economic opportunities by:

- improving accessibility and transport efficiency with a focus on—
  - maximising access to residences, employment, markets, services and recreation
  - planning and developing the transport system more effectively
  - reducing the need for private motor vehicle transport and the extent of travel
  - facilitating better access to, and greater mobility within, local communities.
- the transport system and land use should be aligned, complementary and supportive and ensure that—
  - transport decisions are made having regard to the current and future impact on land use
  - land use decisions are made having regard for the current and future development and operation of the transport system
  - transport infrastructure and services are provided in a timely manner to support changing land use and associated transport demand.
- improving the amenity of communities and minimise impacts of the transport system on adjacent land uses.

3.1.5 Efficiency, Coordination and Reliability

The transport system should facilitate network-wide efficient, coordinated and reliable movements of persons and goods at all times by:

- balancing efficiency across the network so as to optimise the network capacity of all modes of transport and reduce journey times
- maximising the efficient use of resources including infrastructure, land, services and energy
- facilitating integrated and seamless travel within and between different modes of transport
- providing predictable and reliable services and journey times and minimise any inconvenience caused by disruptions to the transport system.

3.1.6 Safety, Health and Wellbeing

The transport system should be safe, and support health and wellbeing by:

- seeking to continually improve the safety performance of the transport system through—
  - safe transport infrastructure,
  - safe forms of transport,
  - safe transport system user behaviour.
- avoiding and minimising the risk of harm to persons arising from the transport system
- promoting forms of transport and the use of forms of energy which have the greatest benefit for, and least negative impact on, health and wellbeing.
3.1.7 Summary of Objectives

Based on the foregoing, a summary of the Transportation Integration Act (2010) objectives and their corresponding sub-categories have been developed to inform a further review in the ensuing report sections on the Project’s relative alignment as it relates to the traffic engineering and transport planning discipline.

<table>
<thead>
<tr>
<th>Policy Objectives</th>
<th>Policy Objective Sub-Category Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social and Economic Inclusion</td>
<td>1. Remove barriers to access</td>
</tr>
<tr>
<td></td>
<td>a. + Respond to user expectations</td>
</tr>
<tr>
<td></td>
<td>b. + Make transport more widely available</td>
</tr>
<tr>
<td></td>
<td>c. + Improve transport affordability</td>
</tr>
<tr>
<td></td>
<td>2. Build capacity</td>
</tr>
<tr>
<td></td>
<td>a. + Engage and collaborate in planning and delivery</td>
</tr>
<tr>
<td></td>
<td>b. + Support others to take action on transport challenges</td>
</tr>
<tr>
<td></td>
<td>c. + Create a positive legacy</td>
</tr>
<tr>
<td>Economic Prosperity</td>
<td>3. Better use of transport assets</td>
</tr>
<tr>
<td></td>
<td>4. Improve access to work and education</td>
</tr>
<tr>
<td></td>
<td>5. Support business clustering</td>
</tr>
<tr>
<td></td>
<td>6. Provide value for money infrastructure and services</td>
</tr>
<tr>
<td></td>
<td>7. Improve business access to market</td>
</tr>
<tr>
<td></td>
<td>8. Keep transport cost down</td>
</tr>
<tr>
<td>Environment Sustainability</td>
<td>9. Reduce distances traveled to access people places and goods</td>
</tr>
<tr>
<td></td>
<td>10. Make transport activity more resource-efficient and reduce its environmental impacts</td>
</tr>
<tr>
<td></td>
<td>11. Use environmentally sustainable transport more</td>
</tr>
<tr>
<td></td>
<td>12. Make transport infrastructure more resource-efficient and reduce its environmental impacts</td>
</tr>
<tr>
<td></td>
<td>13. Make transport resilient to climatic extremes</td>
</tr>
<tr>
<td>Integration of Transport and Land Use</td>
<td>14. Provide for effective integration of transport and land use and facilitate access to social and economic opportunities</td>
</tr>
<tr>
<td></td>
<td>15. Without limiting (14), transport and land use be integrated to improve accessibility and transport efficiency</td>
</tr>
<tr>
<td></td>
<td>a. + Maximise access to residences, employment, markets, services and recreation</td>
</tr>
<tr>
<td></td>
<td>b. + Planning and developing the transport system more effectively</td>
</tr>
<tr>
<td></td>
<td>c. + Reducing the need for private motor vehicle transport and the extent of travel</td>
</tr>
<tr>
<td></td>
<td>d. + Facilitating better access to and greater mobility within local communities</td>
</tr>
<tr>
<td></td>
<td>16. Without limiting (14) transport system and land use be aligned, complementary and supportive and ensure that</td>
</tr>
<tr>
<td></td>
<td>a. + transport decisions are made having regard to current and future impact on land use</td>
</tr>
<tr>
<td></td>
<td>b. + transport decisions are made having regard to current and future development and operation of the transport system</td>
</tr>
<tr>
<td></td>
<td>c. + transport infrastructure and services are provided in a timely manner to support changing land use and associated transport demand</td>
</tr>
<tr>
<td></td>
<td>17. Without limiting (14) improve the amenity of communities and minimise impacts of the transport system on adjacent land uses</td>
</tr>
<tr>
<td>Efficiency, Coordination and Reliability</td>
<td>18. Facilitate network-wide efficient, coordinated and reliable movements of persons and goods at all times</td>
</tr>
<tr>
<td></td>
<td>19. Without limiting (18) transport system should</td>
</tr>
<tr>
<td></td>
<td>a. + Optimise the network capacity of all modes and reduce journey times</td>
</tr>
<tr>
<td></td>
<td>b. + Maximise the efficient use of resources</td>
</tr>
<tr>
<td></td>
<td>c. + Facilitate integrated and seamless travel</td>
</tr>
<tr>
<td></td>
<td>d. + Provide predictable and reliable services and journey time and minimize any inconvenience caused by disruptions to the transport system</td>
</tr>
<tr>
<td>Safety, Health and Wellbeing</td>
<td>20. Improve safety performance</td>
</tr>
<tr>
<td></td>
<td>21. Minimise the risk of harm to persons</td>
</tr>
<tr>
<td></td>
<td>22. Promote sustainable transport</td>
</tr>
</tbody>
</table>

Source: Adapted from (1) Documenting Your Thinking: A Guide for Transport Bodies and (2) Transport and the Triple Bottom Line

3.2 State Planning Policy Framework

The purpose of State Planning Policy Framework (SPPF) is to provide a range of state planning policies that planning and Responsible Authorities need to consider when planning and administering in their respective areas. It seeks to ensure that the objectives set out in Section 4 of
the Planning and Environment Act 1987 are fostered through appropriate land use and development planning policies and practices.

The SPPF provides a guiding framework to assist in planning the project so that:

- It is provided in a way that is efficient, equitable, accessible and timely.
- It achieves the greatest overall benefit to the community and with regard to making the best use of existing infrastructure, minimising impacts on the environment and optimising accessibility, safety, emergency access, service and amenity.
- It minimises disruption of residential communities and their amenity.

### 3.3 Other Strategies and Policies

In compiling, this report a broad range of transport strategies, policies and documents have been reviewed which are considered relevant to the underlying strategic rationale for the Project. These are listed as follows:

#### State legislation and Policy
- Transport Integration Act 2010
- State Planning Policy Framework (SPPF)
- Plan Melbourne 2017-2050
- Infrastructure Victoria 30 year strategy
- Network Development Plan – Metropolitan Rail 2012
- Project 10,000

#### Local government policies and documents
- West Melbourne Structure Plan (2005)
- West Growth Corridor Plan
- Western Transport Strategy – Leadwest Alliance 2012
- Maribyrnong Integrated Transport Strategy 2012
- Hobsons Bay Integrated Transport Strategy 2006

#### Past and present studies
- East-West Link Needs Assessment (Eddington Review) 2008
- Truck Action Plan 2009
- Planning for Future Growth
- Westgate Distributor Business Case 2015
- Westgate Distributor 2014
- East West Link western section 2014
- WestLink 2010

#### Freight related studies
- Infrastructure Victoria’s Advice on Securing Victoria’s Ports Capacity 2017
- Western Intermodal Freight Terminal (WIFT) Pre-Feasibility Study 2017
- Victorian Freight & Logistics Plan 2013
- Committee For Melbourne Review of VFLP 2013
- Container Trade Forecast Growth – Melbourne Margaret Bux 2015
- Trends and Forecasts for Australian Container Growth BIRTE 2012-13
- Trade to Trump Protectionists and Boost Global Growth World Trade Organisation + Deloitte 2017
- Freight Intermodal Terminal Systems for Port of Brisbane, Melbourne and Sydney 2006

Active Travel related studies
- Cycling into the Future 2013-2023
- Hobsons Bay Strategic Bicycle Plan 2013.
4. Transport Planning Context

4.1 Preamble

The EES documentation sets out the strategic framework upon which the project should be considered and Technical Report A specifically explores the West Gate Tunnel Project’s ability to address five critical transport challenges including:

- Inadequate transport capacity on the M1 corridor
- Over-reliance on the West Gate Bridge
- Inadequate Port and freight connections to cater for growth
- Reduced amenity in the inner west
- Mismatch between land use and transport.

These challenges are assessed below by reference to the Project Business Case (2015) and Eddington Review (2008). Section 5 of this report tests these challenges and the extent of correlation or alignment with the various objectives contained within the Transport Integration Act’s (2010) vision and policy objectives.


The genesis of the Business Case was a market-led proposal from Transurban to the State Government in March 2015 to build a $5 billion Western Distributor Project, funded by new tolls and an extension to CityLink tolls.

The project is being assessed under a five-stage assessment process as outlined in the Market-Led Proposals Guidelines. Under stages one and two, the project scope was revised in response to technical, safety and community feedback. The Business Case, published in November 2015, forms part of the third stage of the assessment.

Project Scope

The scope of the project considered in the Business Case is wider than the scope of the West Gate Tunnel Project. What is now the West Gate Tunnel project was referenced in the Business Case in three components: as the Western Distributor, West Gate Freeway upgrade and associated upgrades to cycling and pedestrian facilities.

The Business Case scope of works includes:

- West Gate Freeway
  - Widening of the West Gate Freeway to provide six lanes in both directions between the Princes Freeway / M80 interchange and Williamstown Road
  - Improvements along the route to cater for HPFVs.

- Western Distributor
  - A new Western Distributor connecting the West Gate Freeway to the Port of Melbourne and CityLink via a tunnel under Yarraville, a new Maribyrnong River Crossing and raised viaduct along Footscray Road.

- Cycling and pedestrian facilities

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*Western Distributor Business Case, Page 15 and 75 (onwards)*
- Improvement and upgrade of the shared path facilities along the corridor including grade separated facilities along Footscray Road with Appleton Dock Road and Sims / Mackenzie intersections. Completion of Federation Trail between Williamstown Road and Hyde Street.

- Port of Melbourne (Webb Dock) Access
  - Webb Dock Access which provides an additional eastbound lane on Cook Street and a direct connection from Cook Street to Ramp M to allow direct access to CityLink without mixing with West Gate Freeway traffic. Ramp M will also be modified to improve the safety of the road and incorporate ramp metering.

- Monash Freeway Upgrade
  - Consisting of an additional lane in each direction between EastLink and Clyde Road and new and improved ramp metering between Warrigal Road and Koo Wee Rup Road.

**Strategic Importance of the M1 Corridor**

The scope of the project considers the whole M1 Corridor as it is a critical economic corridor for Australia. The M1 Corridor accommodates 37 per cent of the metropolitan population and 44 per cent of the skilled workforce. Moreover, more than half the metropolitan workforce (56 per cent) is employed within this area. The M1 Corridor accommodates key economic assets, including significant employment and education clusters, and major Ports and freight terminals. The M1 Corridor represents:

- a key production and consumption corridor for Australia and Victoria
- a major location for high value employment in Melbourne
- a key contributor to economic output and productivity for the State.

Growth in population along the M1 Corridor is expected to outpace that of the rest of the metropolitan economy. Employment growth is on par (see Figure 4.1).

**Figure 4.1: Population and employment comparison: M1 Corridor and rest of Melbourne**

<table>
<thead>
<tr>
<th></th>
<th>M1 and adjacent corridor</th>
<th>Rest of Melbourne</th>
<th>M1 share of Melbourne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>1,515,300</td>
<td>2,593,000</td>
<td>37%</td>
</tr>
<tr>
<td>2046</td>
<td>2,713,300</td>
<td>4,499,000</td>
<td>38%</td>
</tr>
<tr>
<td>AAGR 2011-46%</td>
<td>2.3%</td>
<td>2.1%</td>
<td>-</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>1,202,100</td>
<td>959,400</td>
<td>56%</td>
</tr>
<tr>
<td>2046</td>
<td>2,164,200</td>
<td>1,716,900</td>
<td>56%</td>
</tr>
<tr>
<td>AAGR 2011-46%</td>
<td>2.3%</td>
<td>2.3%</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Rest of Melbourne is defined as Melbourne Statistical Division, AAGR represents average annual growth rate. 

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7 Western Distributor Business Case, Page 20
8 Western Distributor Business Case, Page 9
9 Western Distributor Business Case, Page 20
Problems the Project seeks to Address

The Business Case outlines four key problems that the project seeks to address, including:

- Transport capacity on the M1 Corridor is inadequate relative to growing demand
- Melbourne is over-reliant on the West Gate Bridge that is currently operating at capacity
- Port and freight connections are inadequate to sustainably cater for growth and cause reduced amenity in the west
- There is a mismatch between transport and land use.

These key problems have been carried through to the EES stage, and are explored in Section 5.

The Business Case presents the West Gate Tunnel as one project in a suite of projects to be implemented in order to address the needs of the rapidly growing population in the west.

Benefits of the Project

The Business Case outlines several key benefits of the project:

- Productivity and growth for Melbourne
- More competitive Port and freight sector
- Reduced reliance on the West Gate Bridge
- A more liveable Melbourne
- Economic development in Melbourne and the west.

Consideration of Strategic Interventions

A range of strategic interventions were considered to address the problems identified for the M1 Corridor. A qualitative assessment for each of the strategic interventions was performed, drawing on the significant work undertaken in the Eddington Review and subsequent transport planning investigations on Melbourne’s key transport corridors undertaken by the Victorian Government. It considered emerging trends in Melbourne’s transport infrastructure performance, Melbourne’s continued higher than expected growth in recent years (refer Section 5.1.1 of Business Case) and projects that are committed or have been delivered in recent years (prior to 2015).

The individual performance of each of the interventions was assessed across four criteria, including:

- Benefits
- Deliverability
- Timing of benefits.

Outcome

The Business Case recommended that the project proceeded as three separate works packages, as summarised in Table 4.
Table 4.1: Works packages and procurement approach

<table>
<thead>
<tr>
<th>Works Package</th>
<th>Procurement Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Distributor &amp; West Gate Freeway widening</td>
<td>The Business Case recommended that this works package be procured as an availability Public Private Partnership (PPP) based on the size and complexity of the Project and the opportunities for innovation and efficient risk transfer to the private sector.</td>
</tr>
</tbody>
</table>
| Webb Dock Access Improvement works    | The Business Case recommended that the Webb Dock Access Improvement Works be split into two elements:  
  ○ Cook Street Widening – Construct only procurement led by VicRoads, noting that other works are currently being completed in this area.  
  ○ Ramp M Works – completed as a variation to the CityLink Tulla Widening (CTW) Project noting the direct interface of these works with CityLink and the ability to coordinate timing of works with the CTW Project. |
| Monash Freeway Upgrade                 | The Business Case recommended that the Monash Freeway Upgrade be delivered as a state led Design & Construct (D&C) project. This reflects the limited scope of operating and maintenance activities that have been included in the business case scope of works. |

4.3 Eddington Review 2008

4.3.1 Purpose

In March 2006, as part of its Meeting Our Transport Challenges action plan, the Victorian Government announced the appointment of Sir Rod Eddington to lead the East West Link Needs Assessment (EWLNA) – an independent investigation into the best transport solutions for connecting Melbourne’s eastern and western suburbs. The report, Investing in Transport, was published in March 2008. For the purposes of this report, this study will be referred to as the Eddington Review.

The Eddington Review intended to inquire into, and report on the following:

i. Current transport volumes and patterns, and the likely changes to these volumes and patterns over the next 30 years, including the impact of Melbourne 2030, other Government policies and anticipated economic growth

ii. The capacity of existing and planned infrastructure to meet these future transport requirements

iii. How to balance the needs of freight traffic with the needs of residents in areas adjacent to freight movements

iv. Development of options to address capacity constraints and future demand, future needs of Port and associated commercial traffic including the Government’s 30/2010 target, and opportunities for public transport in the corridor

v. In developing options, consideration will be given to a range of measures to meet future demands. Contribution to the achievement of Growing Victoria Together transport targets will also be considered as part of the assessment

vi. Funding issues, including sequencing of projects according to public and private funding capacity, and the capacity of the construction industry to deliver.

The study area extended from the Western Ring Road at the Deer Park Bypass to east of Hoddle Street at the Eastern Freeway, as shown in Figure 4.2.
4.3.2 Issues Identification

The Eddington Review predicted that over the next 25 years (from 2008), the demand for travel in Melbourne would grow by over 30 per cent as the population grows by over 1 million people. Alongside that growth, Melbourne’s economic and industrial base is changing as shifting away from traditional manufacturing towards services, knowledge oriented industries and more advanced manufacturing with a high-technology base. The Review also predicted Melbourne’s overall freight task would increase by around 3 per cent a year from 2008 until 2020 and the amount of freight carried by road will grow by more than 50 per cent.

The Eddington Review focussed particularly on the growth in Melbourne’s west – which is undergoing a major transition – as it is anticipated to face considerable travel pressures due to its limited transport connections with the CBD, the inner and middle-east and the Port of Melbourne.

The Eddington Review identified nine key transport-related problems in relation to cross-city (or east-west) travel:

- The growing demand for train travel is placing the rail network under considerable strain
- Melbourne is over-reliant on the West Gate Bridge
- Road congestion is growing
- There is no connected east-west link across the north of the city
- Transport issues are more pressing in the west
- The freight task is growing rapidly
- Connections to the city’s airports are becoming more critical
- Public transport services to Doncaster need improving

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14 Eddington Review, Page 13
15 Eddington Review, Page 16
16 Eddington Review, Page 17
Commuter cycling is booming and should be encouraged.

4.3.3 Strategies Recommended

The Eddington Review identified 20 key recommendations to address the transport-related problems associated with east-west travel with those most relevant to the project highlighted in **bold**.

1. Commence planning for Melbourne Metro.
2. Construct a new rail connection from Werribee to Sunshine.
3. Commence work on the electrification of the network to Sunbury to boost services on the Sydenham line.
4. **Commence planning on the staged construction of a new 18-kilometre cross-city road connection extending from the western suburbs to the Eastern Freeway.**
5. **Implement a Truck Action Plan to remove truck traffic from local streets in the inner west.**
6. Implement rapid, high quality bus services to Doncaster.
7. **Improve cross city cycle connections to cater to the growing number of Melburnians cycling to work.**
8. Escalate city-wide implementation and enforcement of priority measures for trams and buses.
9. Establish a dedicated fund to facilitate the development of Park & Ride facilities.
10. Re-evaluate the 30/2010 rail target, given the clear finding by the Eddington Review that it cannot be met.
11. Take action to increase rail’s share of freight.
12. **The Port of Melbourne Corporation should be given overall responsibility for implementing an intermodal hub network in Melbourne.**
13. **Permit the introduction of high productivity freight vehicles on designated routes.**
14. **Continue to implement Melbourne 2030 and take stronger action to accelerate the development of vibrant suburban hubs in Melbourne’s west.**
15. Pursue measures to bring Australia into line with European CO₂ emissions standards for motor vehicles.
16. Develop a clear strategy for increasing the proportion of low emission, efficient vehicles operating in Melbourne.
17. The Victorian Government should seek early discussions with the Commonwealth Government regarding a funding contribution from AusLink towards some or all of the Eddington Review recommended projects.
18. Consider a funding structure for the proposed new Metro rail tunnel that includes contributions by beneficiaries.
19. Re-evaluate the current road tolling policy to ensure that the long-term benefits of new road investments can be fully realised.
20. A single statutory authority should be created to deliver the EWLNA recommended projects, using a ‘corridor approach’ to planning, managing and delivering the full suite of projects.

4.3.4 West Gate Tunnel Project Alignment

The Eddington Review notes that “even if car use has peaked relative to public transport use, there will continue to be more and more vehicles on Melbourne’s roads for the foreseeable future. In addition, even if the Victorian Government’s goal of 20 per cent public transport use by 2020 is achieved, the vast majority of person trips will still use the road network. This means that for
most Melburnians, access to an efficient, safe and well-managed road network will continue to be vitally important in their daily lives.’

The Eddington Review Study Team rejected the view expressed in some submissions to the Eddington Review that taking a decision in 2008 to build no new major roads in Melbourne represents a viable option for the city’s future. They proposed that it makes little sense to completely close down an option for the city while road based transport still comprises the vast majority of travel and is likely to continue to do so for the foreseeable future – and at a time that is possibly a critical turning point for the development of more sustainable motor vehicles.

They proposed that the evidence indicates that a multi-modal approach is needed to meet growing and changing travel demand within the city. When planning to meet future travel patterns, the objective should be an optimal mix of modes. The Study Team proposed that it should be recognised that different modes of travel are better suited to different types of trips: mass transit systems are very well suited to shifting large numbers of people along defined corridors, while complex, multi-purpose trips suit the flexibility of the motor vehicle. For these reasons, the Team’s view is that – given current congestion problems in the central city – providing additional car access to the CBD should not be a priority for the transport network; however, improving such access by public transport should be a priority.

To examine the need for cross city journeys more closely, the Study Team undertook a screen-line analysis at a number of key locations across the metropolitan area (as shown in Figure 4.3). This analysis counted the number of vehicles crossing all roads intersected by the screen-line (on a daily or peak period basis). It provides an appreciation of the level of expected transport growth on the declared road network across each of the screen-lines.

Of particular interest is the screen-line that roughly follows the line of the Maribyrnong River, from the Bay to Raleigh Road. This screen-line traverses the major constraints in this part of Melbourne’s transport network and is a pivotal crossing for east-west traffic. Modelling performed for the Eddington Review indicated a growth in vehicles travelling across this screen-line of nearly 40 per cent by 2031, with a 50 per cent increase in commercial vehicle volumes over the same period. This equates to an additional 120,000 vehicles.¹³

Further to the west, the screen-lines reveal an even more dramatic picture, with daily growth of around 90 per cent predicted for the roads (although from a lower base volume).

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¹³ Eddington Review, Page 116
The Eddington Review assesses the main existing east-west routes along the Maribyrnong screen-line (West Gate Freeway, Footscray Road, Dynon Road, Ballarat Road – Smithfield Road and Eastern Freeway) and determines that substantial investment in the city’s road network is needed to meet the growth in cross-city travel demand.\(^1\)

The Eddington Review expresses concern about the short- and long-term vulnerability of Melbourne’s transport network as a result of over-reliance on the West Gate Bridge and believes that Melbourne needs the “insurance” of a long-term alternative to the West Gate Bridge as soon as possible.

The Review proposed a road project (later named the “East West Link”) that linked the western suburbs to the start of the Eastern Freeway at Hoddle Street. Two possible routes were proposed, with both routes forming an alternative to the West Gate Bridge and providing connections to Footscray Road, Dynon Road, the Port and CityLink. Whilst the connection from West Melbourne to the Eastern Freeway is not included as part of the West Gate Tunnel project, the western component of the new east-west road proposed in the Eddington Review is included. The two possible routes from the inner west to the Port are shown in Figure 4.4.

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\(^{18}\) Eddington Review, Page 117

\(^{19}\) Eddington Review, Page 133
Cycling Connectivity

The Eddington Review proposed that priority be given to extending the Federation Trail from Millers Road to Hyde Street and upgrade the existing facility from Hyde Street to Footscray Road, which links with the Riverside Park bike path to Williamstown. This extension was proposed to provide a high quality western link all the way from Werribee and Williamstown to Docklands and the central city. The extension of the Federation Trail has been included as a component of the West Gate Tunnel project.

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20 Eddington Review, Page 219
5. Strategic Alignment Review

5.1 Preamble

This section seeks to review the five strategic needs for the project as outlined in the EES:

- Inadequate transport capacity on the M1 corridor
- Over-reliance on the West Gate Bridge
- Inadequate Port and freight connections to cater for growth
- Reduced amenity in the inner west
- Mismatch between land use and transport

The approach taken with this review can be broadly summarised as follows:

i. Validate the transport challenges identified in the EES which form the basis of need for the project,
ii. Determine how these challenges will change with and without the project between now and 2031,
iii. Review strategic planning policies to determine the extent to which the project aligns with established policy and planning for Greater Melbourne,
iv. Examine the EES as it relates to transport by exploring the project’s consistency with objectives set out in the Transport Integration Act (2010).

This section ultimately provides an assessment matrix which identifies consistencies and alignments with the objectives and policies of the Transport Integration Act. This assessment matrix is carried through in proceeding sections where appropriate to assist the IAC with its deliberations of the merits or otherwise of the project.

5.2 Inadequate Transport Capacity on the M1 Corridor

What does the EES say?

One of the factors is that of inadequate transport capacity on the M1 Corridor. The EES outlines that the M1 Corridor is a strategically important corridor that links the western suburbs to central, northern and south-east Melbourne and beyond, and also provides an important freight link to the Port of Melbourne from key industrial areas in Melbourne’s west. The EES claims that traffic data collected in preparing the EES shows that the M1 Corridor does not have sufficient capacity to cater for the significant growth in travel demand forecast in the corridor over the coming decades. It proposes that the steady decline in travel times and reliability, due to increased congestion, will impact the productivity and efficiency of businesses, and stifle productive growth in the west.

To understand whether there is inadequate transport capacity on the M1 Corridor, it is important to:

- understand what we mean by transport capacity,
- understand what existing transport capacity there is within the M1 Corridor,
- understand how that will change in the future, and
- determine whether the increased demand will exceed the existing capacity.
What is Transport Capacity?

Transport capacity is a measure of the effectiveness of a transport facility to accommodate moving traffic. Different modes have different transport capacities. In a freeway context, it is “the maximum hourly rate at which persons or vehicles can reasonably be expected to pass a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic and control conditions”\(^{21}\). In an arterial context, the capacity of a road is normally dictated by the intersection capacity. For signalised intersections, this is how many vehicles can get through an intersection based on the amount of green time provided. For public transport, the capacity is dictated by the number of people per vehicle, and the frequency of the service.

When the practical capacity of a road is exceeded, the road becomes ‘congested’, and traffic is prevented from moving freely, quickly and reliably delivering unstable operating conditions.

What is the current Transport Capacity in the M1 Corridor?

The Western Distributor Business Case defines Victoria’s M1 Corridor as the area that comprises the Statistical Areas (SA2s) encompassing the Princes Freeway, West Gate Freeway and Monash Freeway, i.e. those SA2s lying within one kilometre of the road corridor, as shown in Figure 5.1.

Figure 5.1: Victoria’s M1 Corridor\(^{22}\)

The road network in the west of Melbourne relies on a number of key routes, with capacity constrained by the Maribyrnong River and Yarra River (the Maribyrnong screen-line), which form a natural barrier to vehicle movements. There are only four key river crossings within the M1 Corridor:

- West Gate Freeway (West Gate Bridge)
- Footscray Road/Napier Street (Shepherd Bridge)
- Dynon Road (Hopetoun Bridge)
- Ballarat Road /Smithfield Road (Lynchs Bridge).

\(^{21}\) Highway Capacity Manual (Transportation Research Board, 1994)

\(^{22}\) Western Distributor Business Case, page 17
Of those river crossings, the main transport capacity is provided by the M1 Freeway (Princes Freeway, West Gate Freeway, CityLink and Monash Freeway), as it is the only continuous higher order road connecting the western, eastern and inner suburbs of Melbourne. The West Gate Bridge carries greater than 60 per cent of all trips across the Maribyrnong screen-line, in excess of 220,000 vehicles per day. The West Gate Bridge currently has five traffic lanes in each direction. The three other Maribyrnong River crossings are constrained with only two traffic lanes in each direction, and they each carry between 35,000 and 48,000 vehicles per day.

Under existing conditions on the West Gate Freeway, the AM peak is typically 3.5 to 4 hours, with 2 of those hours under congested conditions with reduced flows and low speeds (regularly below 30km/h, Level of Service F). Whilst ramp metering and Lane Use Management Signs along the M1 Corridor provides greater capacity and allows higher mainline flow rates to be achieved, the existing high demand often exceeds capacity, and causes flow break down along the corridor. The M1 Corridor is particularly vulnerable to crashes on the West Gate Freeway, as no other roads in the Maribyrnong screen-line have sufficient spare capacity to absorb traffic volumes from the West Gate Freeway, which leads to widespread congestion in the road network.

Figure 5.2 shows the existing AM peak congestion in the inner west.

Figure 5.2: AM Peak congestion

What Transport Capacity is Required in the M1 Corridor in 2031?

**Strong population growth and more demand for personal travel**

The predicted population growth in the western suburbs, coupled with the employment growth in the central city and economic and innovation clusters in the south-east is projected to generate high demand for personal travel along the M1 Corridor.

Plan Melbourne predicts that by 2050, Melbourne’s transport system will need the capacity to cope with an additional 10.4 million trips per day. As shown in Figure 5.3, that demand will be greatest in the west as the Western LGAs are growing over twice as fast as the rest of Melbourne.

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23 Eddington Review, page 97
The need for greater transport capacity in the west to meet the needs of a growing population is on my review, a view widely held across planning policy and literature.

Infrastructure Victoria’s 30 year strategy highlighted “capacity constraints will be experienced across the transport network, but are expected to be most pronounced in Melbourne’s west and north growth areas, where the number of jobs has not kept pace with the number of residents.”

The City of Melbourne’s Transport Strategy, 2012 states: The western suburbs need better transport connections with Central Melbourne and the south-eastern employment corridor, as well as with the Port of Melbourne. This would help the west’s capacity to attract and retain businesses and reduce social disadvantage by providing better access to the central city for work, education and other purposes25.

There is currently a mismatch between where population growth is occurring and the location of jobs, as shown in Figure 5.4. This will be discussed in greater detail at Section 5.6. However, it gives rise to a need to have additional capacity in the transport network with more commuters needing to get to and from work each day.

The modelling performed for the EES showed that traffic volumes are expected to grow between 2014 and 2031, as shown in Figure 5.5 on the following page under a no project case outcome.

Specific changes referenced in the EES include:

- Higher growth in the western suburbs (on roads such as Palmers Road, Doherty’s Road, Leakes Road, Melton Highway and Hopkins Road) compared to the eastern suburbs, largely due to the projected growth in areas like Wyndham and Melton.
- A large increase in traffic for the length of the M80 Ring Road because of additional road capacity from the M80 Ring Road upgrade.
- Increases across the freeway network (Deer Park Bypass, Western Freeway, Princes Freeway, Tullamarine Freeway, Calder Freeway, Hume Freeway and Monash Freeway).
- Continued focus on the West Gate Freeway corridor and West Gate Bridge for vehicles travelling to and from the west.

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24 EES Chapter 2, Page 2-2
25 City of Melbourne Transport Strategy 2012, Page 66
Figure 5.4: 2046 Population and Jobs\textsuperscript{26}

Figure 5.5: Change in Daily Traffic Volumes between 2014 and 2031\textsuperscript{27}

\textsuperscript{26} Infrastructure Victoria 30 Year Strategy, Page 132
\textsuperscript{27} Technical Report A, Page 156
The modelling performed for the EES also forecast that demand for public transport would grow significantly, estimating an increase in demand of more than 106 per cent, compared to an increase in road demand of 48 per cent from 2014 to 2031, as shown in Figure 5.6 for the no project case outcome.

**Figure 5.6: Number of public transport trips compared to all traffic trips (2014 versus 2031 without the West Gate Tunnel Project)**

Fast growing Freight Task and a Changing economy

At the same time as Melbourne’s population is growing and the demand for personal travel is increasing, Melbourne’s economy is transitioning from traditional manufacturing to a service- and knowledge-based economy, which is changing the location of jobs and economic activity.

Specialist manufacturing and related industries are moving to outer areas of Melbourne in the west, north and south-east, attracted by large parcels of available land. This shift in economic activity is generating an increased demand for goods movement on the city’s freeways and is also changing preferred access routes to and from the Port of Melbourne. The container trade through the Port of Melbourne is also forecast to grow by 3.5 times the current level by 2035.

The need for greater transport capacity in the west to account for the fast-growing freight task is on my review, widely held in transport planning policy and literature.

The City of Melbourne’s Transport Strategy, 2012 states: The growth of the Port is predicted to 2035, which will require major infrastructure upgrade of rail and road freight distribution systems. In the short term, this freight growth will be taken up on road. Direct and efficient access to the metropolitan freeway/tollway network will be vital.

Does the M1 Corridor have Sufficient Capacity to meet Predicted Demands?

**Strategic Need for Additional Capacity in the M1 Corridor**

There is a strong evidence base for additional transport capacity in the M1 Corridor to meet the needs of the projected population in 2031. This transport capacity can be provided in varying
ways. The transport planning documents reviewed as part of this study support the need to deliver a multi-modal transport network.

On this, while public transport has a role to play in providing additional capacity for the M1 Corridor, research indicates that there is a significant number of users for whom public transport is not sufficiently convenient or viable. Outputs from an Origin Destination analysis completed for the Western Distributor Business Case showed that rail was favoured for trips to the CBD, but road trips had more varied origins and destinations. This is to be expected given the radial nature of Melbourne’s rail network. As a result, trip increases are projected for all mode types, with (as a ratio) the number of road based trips projected to be nearly seven times greater than public transport trips in 2031. Figure 5.7 and Figure 5.8 demonstrate the varied nature of origins and destinations for road-based trips when compared to rail trips.

Figure 5.7: Rail Origins and Destinations – Maribyrnong River crossing

Figure 5.8: Road Origins and Destinations – West Gate Bridge

Importantly, the Eddington Review commented on the notion that ‘Melbourne cannot build its way out of congestion’, and came to the conclusion that a multi-modal approach is needed to meet the growing and changing travel demand within the city, with road based transit playing an important role in servicing complex, multi-purpose trips, as opposed to single purpose mass transit trips that are better suited to rail.

**No Project Case**

Focussing on the M1 Corridor, the modelling performed for the ‘no project case’ in the EES shows that there is insufficient capacity on the network, as the majority of traffic growth is expected to occur outside of peak hours, with guidance offered at Figure 5.9 on this phenomenon. In my experience, the extent of this outcome would be amplified under the no project case scenario.

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29 Technical Report A, Page 104
30 Technical Report A, Page 104
With Project Case

The West Gate Tunnel project will provide additional capacity to road-based trips with an additional four lanes of freeway standard capacity expected to increase inbound (west to east) peak hour capacity by around 20 per cent.

5.3 Over-reliance on the West Gate Bridge

What does the EES say?

The EES and Western Distributor Business Case both highlight the over-reliance on the West Gate Bridge as a driver for the West Gate Tunnel project. The West Gate Bridge carries more than 60 per cent of traffic crossing the Maribyrnong screen-line. As outlined in Section 5.2, the West Gate Bridge already experiences significant congestion, and is susceptible to incidents which can have widespread effects on a network that does not have the capacity to handle the additional traffic. The EES highlights a number of risks that are associated with the West Gate Bridge becoming unavailable or severely constrained for periods of time:

- Costs to road user’s due to waiting in traffic queues, diverting to alternative routes, lost time, missed or late deliveries, and more fuel used
- Additional costs to the transport industry, such as less productivity per shift
- Disruption to the operations of the Port of Melbourne
- Impacts on community amenity from trucks having to use alternative, less suitable routes
- Negative impact on the broader Melbourne and Victorian economies, and on the Geelong economy
- Negative impact on growth and development in Melbourne’s west.

To understand whether there is an over-reliance on the West Gate Bridge, it is important to:

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31 Technical Report A
understand what we mean by over-reliance,
understand whether we are over-reliant on the West Gate Bridge, and what the consequences are, and
determine whether the West Gate Tunnel project will reduce the reliance on the West Gate Bridge.

What does Over-Reliance Mean?
In the context of the West Gate Bridge, I interpret over-reliance as there is too much dependence on the West Gate Bridge, and insufficient redundancy or resilience in the network to sustain traffic flows in the event that the West Gate Bridge is not available for use. Redundancy in a transport network is a measure of the network’s ability to provide alternatives for travellers and continue to function during events such as disasters, shut-downs or accidents. Resilience refers to how flexible the network is to changing conditions like increased demand, congestion or incidents.

Is Melbourne Over-Reliant on the West Gate Bridge?
As outlined in Section 5.2, east-west movements in Melbourne are constrained by the Maribyrnong screen-line. The West Gate Bridge carries greater than 60 per cent of all trips across the Maribyrnong screen-line, in excess of 220,000 vehicles per day. The West Gate Bridge currently has five traffic lanes in each direction. The three other Maribyrnong River crossings are constrained with only two traffic lanes in each direction, and they each carry between 35,000 and 48,000 vehicles per day.

In the event of an incident, there is very limited capacity along the Maribyrnong screen-line to sustain redistributed traffic from the West Gate Bridge. This lack of redundancy can be demonstrated by reviewing how the network copes with an incident on the West Gate Bridge currently.

The West Gate Tunnel Technical Report A highlights that in 2014 there were 850 incidents on the West Gate Bridge and an additional 1,300 incidents on the West Gate Freeway between M80 and Todd Road. The current response time is approximately 10 minutes, but closures can range from momentary closures to complete freeway closures of up to six hours. Technical Report A indicated that if an incident occurs during the middle of the morning peak – around 8.00am – it is likely to take more than two hours for the freeway and adjacent arterial road network to recover. Figure 5.10 shows the impacts on the wider road network in the event of a closure on the West Gate Bridge.

The figure reveals a very heavy reliance on Geelong Road, Footscray Road, Dynon Road as well as Francis Street and Somerville Road.
No Project Case

In the ‘no project’ scenario, by 2031 it is anticipated there will be an additional 45,000 vehicles per day on the West Gate Bridge. As mentioned earlier, this growth is expected to occur during inter-peak as there is limited capacity over the West Gate Bridge to sustain that growth during current peak periods.

Without intervention, the lack of resilience in the M1 Corridor is likely to get worse, as the West Gate Bridge is projected to experience congestion for more hours each day. This is likely to lead to short and long-term issues for the Victorian economy which is presently and forecast to maintain a heavy reliance on both road-based freight and journeys to work. With a projected increase in freight volumes in and out of the Port of Melbourne, redundancy in the road network becomes increasingly important to providing reliable travel times, especially for freight.

The West Gate Bridge is also limiting the ability to leverage gains from managed motorway improvements, as the significant congestion in peak periods effectively limits the capacity of the M1 Corridor.

Strategic Need for more Redundancy and Resilience in the Transport Network

The need for redundancy and resilience in the transport network appears in many transport planning policies:

The Eddington Review stated: Melbourne needs the ‘insurance’ of a long-term alternative to the West Gate Bridge and that action should commence as soon as possible to develop and deliver such an alternative.

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32 Eddington Review, 2008, Page 135
Infrastructure Victoria’s 30-year plan has a key objective to improve the resilience of critical infrastructure and more specifically to develop a multi-modal transport contingency plan, to maintain access on key transport corridors in the event of disruption.  

The City of Melbourne’s Transport Strategy states: Over reliance on the West Gate has created significant risks for industries which depend on efficient cross city freight transport, and these risks are likely to be amplified in coming years with growth in Port activity.

**With Project Case**

The West Gate Tunnel project will supplement and enhance capacity for metropolitan east-west travel. It will assist with forecast growth projections driven by increases in population and employment in broader Melbourne. This capacity increase and to the extent that the Tunnel operates as two traffic lanes in each direction (with accompanying overhead lane management opportunities) will provide additional network resilience and redundancy. This solution, whilst focusing more particularly on one mode of travel forms part of a broader multi-modal solution which more recently includes the Melbourne Metro upgrade.

### 5.4 Inadequate Port and Freight Connections

**What does the EES say?**

The EES highlights that the M1 corridor is critical to facilitate freight movements to and from the Port of Melbourne. With the freight task forecast to triple by 2050, there is a need to provide reliable and timely freight access on a 24/7 basis to the Port and key freight and industrial nodes. The following project objectives have been identified for West Gate Tunnel in the EES document:

- To improve reliability of access to the Port of Melbourne and on the freight network
- To support the travel demands arising from the future freight task
- To enhance state and national competitiveness through freight productivity

To understand whether there is inadequate Port and freight connections to cater for the growth, it is important to:

- understand what are the existing Port and freight connections,
- understand how the freight task is predicted to change in the future, and
- determine whether the increased demand renders the existing connections inadequate.

**How does Freight Currently Access the Port?**

**Where is Freight Currently Located?**

The west is currently home to a significant amount of industrial land within the broader Melbourne region. This is supported by Table 5.1, which presents the industrial buildings across Melbourne by number and total area.

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33 Infrastructure Victoria 30 Year Strategy, Page 208  
34 City of Melbourne Transport Strategy 2012, Page 104
Historically, major distribution centres and industrial land is concentrated in the west, due to the proximity to the Port of Melbourne, and to the Hume Highway. Port-related industries tend to be located close to the Port to benefit from reduced transport costs and increased efficiency, as seen in the Yarraville precinct (including Maribyrnong, Spotswood and Newport) and the Tottenham precinct (including West Footscray, Brooklyn and Millers Road). Further west we are also observing newer industrial estates in Altona, Laverton, Truganina, Tullamarine and Somerton reflecting increased demand for this service.

TOLL Transport stated in 2017 that locating a transport depot in Melbourne’s east versus the west, adds an additional 2 hours transit time between Melbourne and Sydney and directly impacts their preference of the west for new distribution centres. This will drive further preference of West Melbourne sites over the east/south east for industrial land use by major carriers – which is further supported by a remaining availability of larger sites. Table 4.3 shows that the west and north of Melbourne are likely to have more land available that suits freight industry needs.

### Table 5.2: Current vacant, and proposed, industrial land – 2015-16

<table>
<thead>
<tr>
<th>West State Significant Industrial Precinct</th>
<th>North State Significant Industrial Precinct</th>
<th>South State Significant Industrial Precinct</th>
<th>Pakenham/Offer State Significant Industrial Precinct</th>
<th>Hastings State Significant Industrial Precinct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacant Land (Ha)</td>
<td>Proposed Industrial (Ha)</td>
<td>Vacant Land (Ha)</td>
<td>Proposed Industrial (Ha)</td>
<td>Vacant Land (Ha)</td>
</tr>
<tr>
<td>1,857</td>
<td>1,605</td>
<td>1,024</td>
<td>1,135</td>
<td>388</td>
</tr>
<tr>
<td>674</td>
<td>0</td>
<td></td>
<td>935</td>
<td>574</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

In recent years, the establishment and development of major distribution centres in the West continues to add to Melbourne’s greater freight task, particularly inbound and outbound to the west. These new sites are a combination of distribution centres, transport operators, container transport service providers, container parks and manufacturing operations.

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35 Advice on Securing Victoria’s Ports Capacity, Infrastructure Victoria, Page 71
36 Advice on Securing Victoria’s Ports Capacity, Infrastructure Victoria, Page 71
37 New major warehouse facilities in Melbourne’s west opened in the past 3 years include:
- Kmart Distribution Centre – Truganina 77,000m² facility
- Mazda Victorian Distribution Centre – Truganina 12,000m² facility
- Brooklyn Oceania Container Services – Brooklyn 70,000m² site
- Coles Distribution Centre – Truganina 80,000m² site / 10,500m² facility
- Austrans Container Services – Truganina 16,000m² facility
- Country Road National Distribution Centre – Truganina 25,000m² facility
- Fastline-Derrimut 46,000m² site
Port of Melbourne is an import-dominated Port so import supply chains drive investment decisions. Over 80 per cent of imports through the Port of Melbourne are delivered within metropolitan Melbourne.\(^{38}\)

**How does Freight Currently Access the Port?**

Currently the mode share split of road and rail for Port related freight is 90:10.\(^{39}\) Of road-based freight, the M1 carries relatively high volumes of light and heavy commercial vehicles, when compared to other arterial roads and freeways in the Melbourne metropolitan region\(^ {40}\). Figure 5.11 shows the primary existing connections between the major industrial and freight precincts in the north and west of Melbourne and the Port of Melbourne. The existing connections are namely, the M1, in conjunction with the M80, CityLink and Geelong Road. A significant number of trucks also access the Port via local streets in the inner west, but this will be addressed in greater detail later in this report Section 5.5.

Figure 5.11: Industrial and freight precincts relevant to the M1 corridor (west/north)\(^ {41}\)

**Limitations on the Existing Freight and Port Connections**

There are currently limitations on freight movement in the metropolitan road network, primarily truck curfews and bans in the inner west, and no HPFV compliant network to the Port.

- Inenco – Truganina 12,000m² facility
- GAM Steel Truganina 46,000m² site
- Goodyear – Truganina 32,000m² site

\(^{38}\) Advice on Securing Victoria’s Ports Capacity, Page 68

\(^{39}\) Advice on Securing Victoria Ports Capacity, Page 77

\(^{40}\) EES, Chapter 2, Page 2-9

\(^{41}\) Technical Report A, Page 105
There are currently truck curfews and bans on local and arterial roads such as Somerville Road, Moore Street, Francis Street, Whitehall Street, Hudsons Road and Hyde Street. Figure 5.12 shows the HPFV restricted access routes in orange and red. From 1 November 2016, High Productivity Freight Vehicles (HPFVs) or B-doubles that are heavier than 68.5 tonnes require a one-off permit to travel on the West Gate Bridge.

This restriction combined with night time curfews in the inner west mean there is no night time access to the Port of Melbourne for HPFVs travelling from the west. The restriction will not only see the HPFVs that previously had permits to travel on the West Gate bridge find alternate routes, it will also limit the potential increasing use of HPFVs which are expected to help drive freight efficiency.

Figure 5.12: HPFV Network

How is the Freight Task Predicted to Change in the Future?

The Victorian Freight and Logistics Plan predicts significant growth is expected with the road freight task forecast to grow at 3.8 per cent per annum to 2031 and then at 2.6 per cent per annum to 2046. This indicates that road freight will roughly triple over that period. The Melbourne freight task, which is almost entirely a road task at present, will increase by 2.2 times by 2046.43

Infrastructure Victoria’s Advice on Securing Victoria’s Ports Capacity reaffirms that Port of Melbourne will be developed to a capacity of approximately 8 million TEU44, and a second major container Port will not be required until 205545. In other words, the Port of Melbourne will continue in the foreseeable future to be the premier Port for Victoria and be critical to the functioning of the State economy.

With population and economic growth forecast to continue, freight volumes across Victoria are also expected to increase strongly into future. Table 5.3 summarises the current and forecast population distribution in Melbourne. It demonstrates that even with the north-west growing at

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42 Technical Report A, Page 110
43 The Victorian freight and Logistics Plan, Page 14.
44 Twenty-foot equivalent container unit.
45 Securing Victoria’s Port Capacity, Page 5.
nearly twice the rate of the south-east, the historical distribution of Melbourne’s population means the geographical population centre of Melbourne will remain in the south-east but somewhat more balanced.

As Melbourne’s population spread becomes more balanced, there will be significant freight demand across the metropolitan area that requires an appropriate level of connectivity to serve higher levels of cross-city movement as goods travel between the Port, warehouses and retail locations.

Table 5.3: Melbourne Current and Forecast Future Population Distribution (Number of People)

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2021</th>
<th>2031</th>
<th>Annual percentage change 2011-2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>North-west Melbourne</td>
<td>1,488,300</td>
<td>1,899,300</td>
<td>2,339,400</td>
<td>2.3%</td>
</tr>
<tr>
<td>South-east Melbourne</td>
<td>2,170,000</td>
<td>2,504,200</td>
<td>2,830,500</td>
<td>1.3%</td>
</tr>
<tr>
<td>Difference</td>
<td>681,700</td>
<td>604,900</td>
<td>491,100</td>
<td></td>
</tr>
</tbody>
</table>

Work completed as part of the Eddington Review predicted that the Port of Melbourne will most likely be at capacity as early as 2035. By 2035 the report states that Melbourne Port, compared to 2006 levels, will be handling:

- four times the level of containers,
- three times 2006 levels of Bass Strait trade,
- 2 and a half times the number of imported motor vehicles, and
- double the quantity of bulk freight.

The Victorian Freight and Logistics Plan predicts that road based freight will continue to be the dominant mode of freight movement, particularly in urban areas, which cannot be readily serviced by rail. The growing freight task will continue to generate an increasing demand for the movement of goods, adding further pressure to an already congested West Gate Freeway. With an already ‘at capacity’ network, this then adds further urgency to deliver landside transport capacity.

With about 70 per cent of import boxes staged\(^47\) in greater metropolitan Melbourne, the need for freight and the Port to operate on a continual basis (24hrs/7days) will amplify. This flexibility will support movement outside congested periods to meet forecast demand. Removal of barriers that limit night road freight operations will be important in enabling the Port capacity expansion plan to be accomplished in addition to strategies that seek to buffer heavy vehicle traffic away from residential areas.

Are there Adequate Port and Freight Connections to Cater for Growth?

**No Project Case**

In a No Project Case, the overall increase in forecast freight movements would place additional pressure on residential streets across the inner west, resulting in greater conflicts between residential land uses, schools, local amenities and heavy vehicles. This will be discussed in greater detail later in this report.

While the Western Interstate Freight Terminal (WIFT) and Inland Rail Project have the potential to increase the rail mode share of Port of Melbourne, their primary purpose will be to support interstate freight movements. It is unlikely they will be cost effective for international imports which

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\(^{44}\) Adapted by Infrastructure Victoria from Victoria in Future 2016 data.

\(^{47}\) ‘Staged’ refers to the act of locating goods at a specific location to prepare for movement.
are mostly destined for the metropolitan area. As such, moving freight in and out of the Port by truck is likely to be the dominant transport mode for the foreseeable future due to cost effectiveness and flexibility.

Figure 5.11 shows the trend of goods moved and infrastructure spent for the period 2009 to 2015. During this period, we observe strong growth in the freight volume moved from 2009 to 2015 but note that the infrastructure spend has decreased since 2011.

Figure 5.13: Victoria’s Goods Moved vs Infrastructure Spend

This observation supports research which indicates that Australia’s relative International Logistics Performance continues to fall behind other comparable countries.

**Strategic Need for Increased Connections between Freight and Port**

The need for greater connectivity between freight and the Port is on my review, a view widely held across planning policy and literature.

The Eddington Review recommended that the Government should improve the efficient movement of road freight by permitting the introduction of HPFVs on designated routes.

Under the key direction to provide an efficient road freight network, the Victorian Freight & Logistics Plan has suggested that the Government’s highest priority for the road freight network is the delivery of a new East West Link to relieve pressure on the M1 corridor to service increasing freight movements. It recognises the western section would enhance access to the Port. The benefits include travel time savings, vehicle operating cost savings and improvements in travel time reliability as a result of having access to a more completed and connected freeway network.

**With Project Case**

The West Gate Tunnel project will provide an HPFV compliant connection between the Port and the M80, by strengthening the existing bridges along the West Gate Freeway. The Project will also provide an alternative connection between industrial precincts and the Port, to reduce the need to travel via local streets in the inner west.

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49 Australian Supply Chain Report 2015 + Deakin University July 2017
5.5 Reduced Amenity in the Inner West

What does the EES say?

Without an efficient freeway connection between the west and the Port of Melbourne, the growing freight tasks would place even higher pressure on transport infrastructure and reduce amenity for those living in the inner west.

The EES identified the West Gate Tunnel project can improve community amenity on local streets in the inner west by addressing the strategic challenges below:

- To reduce freight on local streets
- To improve safety on local streets

To understand whether there is reduced amenity in the inner west, we must:

- Understand whether there is reduced amenity in the inner west,
- Understand the causes of reduced amenity in the inner west,
- Understand how the amenity of the inner west will change in future,
- Determine whether the Project will improve amenity in the inner west.

What do we mean when we say reduced amenity in the inner west?

The use of local roads in the inner west by heavy commercial vehicles has been a long-standing issue for local residents, who are concerned about their safety and loss of amenity from noise and air pollution, as well as the potential negative impacts on land values and restrictions on future land uses.

What are the causes of reduced amenity in the inner west?

**Competing Needs between Truck Access to Port and Residential Land Uses**

As outlined in Section 5.4, major distribution centres and industrial land is commonly clustered in precinct around the west of Melbourne. Each precinct has a varying level of accessibility to the West Gate Freeway and different preferred routes to the Port. At present, access via Somerville Road, Francis Street, Buckley Street and Moore Street is critical to most operators. This combination produces a volume of freight activity in the inner west that contributes to congestion and creates environmental and amenity impacts in local residential neighbourhoods.

At the same time, due to its proximity to the city centre and land availability, we are observing strong urban renewal in the inner west that creates a more diverse and dynamic economic base attracting new residents and businesses.

**60 per cent of Trucks travelling on Inner West are Through Traffic**

Many of the freight movements through the Maribyrnong municipality take place on roads which traverse through residential areas, creating a range of adverse impacts to the amenity and safety of local communities. Similarly, freight activity is a major issue in the Hobsons Bay area as it sits as a primary gateway for freight movement within the industrial areas in the municipality, for the Port and for freight traffic from the west.

**How is amenity in the inner west currently being managed?**

In 2001 and 2002, night time and weekend truck curfews were introduced on sections of Francis Street and Somerville Road. From January 2015, a new curfew on Moore Street and extended

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50 Hobsons Bay Integrated Transport Strategy 2006, p5-7
truck curfews on Somerville Road were introduced. Whilst these initiatives have helped address community concerns around safety, noise and air quality in the inner west, they have imposed significant constraints on 24/7 freight access to Port.

Figure 5.14 shows 2016 daily two-way truck volumes in the inner west.

Figure 5.14: 2016 truck volumes (two-way, 24-hour weekday volumes)\(^{51}\)

Typically truck traffic consists of 5 to 20 per cent of total traffic on each of the Maribyrnong River crossings, and represents 6 to 26 per cent on the arterial roads in the inner west. The higher truck volumes observed at the eastern end of Francis Street and southern end of Hyde Street are due to tankers being exempted from curfews when visiting local fuel terminals. Compared to 2015, there was an 8 per cent decrease of truck volumes within Yarraville and Footscray particularly along Somerville Road, Williamstown Road and Francis Street\(^{52}\), indicating general adherence to curfews.

How will the amenity of the inner west change by 2031?

The Maribyrnong Integrated Transport Strategy predicts that significant population growth in excess of 30,000 new residents is expected to occur within Maribyrnong by 2030 – as Footscray CAA continues to develop and intensification of development at Highpoint and the Maribyrnong Defence Site take place. At the same time, the growing freight task will place higher pressure on transport infrastructure and further reduce amenity for those living in the inner west.

An additional 9,000 trucks per day are expected to use the West Gate Freeway and the West Gate Bridge by 2031 and truck volumes are forecast to grow in the inner west with larger increases on Francis Street and Buckley Street followed by moderate increases on Somerville Road and Moore Street\(^{53}\).

\(^{51}\) Technical Report A, Page 251  
\(^{52}\) VicRoads 2016 Inner West Truck Count Results  
\(^{53}\) West Gate Tunnel Technical Report A, section 6.6.3
No Project Case

The changes of daily truck volumes by 2031 under no project case are shown in Figure 5.15.

Figure 5.15: Change in daily truck volumes - 2016 to 2031 no project case (two-way, 24-hour weekday volumes)

Under a no project case, the conflicts between trucks and residential land uses are likely to continue and be exacerbated by growth in freight and population.

Strategic Need for Improved Amenity in the Inner West

The Eddington Review proposed that community amenity in the inner west should be restored by implementing a Truck Action Plan to remove truck traffic from local streets in the inner west. The scope of the West Gate Tunnel project includes implementing 24-hour truck bans on Francis Street, Somerville Road, Buckley Street and Moore Street when the project opens in 2022.

The Western Transport Strategy has recognised that maintaining and protecting the Western Region’s strategic advantage in freight and logistics is the key strategic challenge for freight. The East West Link western section is an important response to provide access to the Port, and reduce over time the adverse impacts of growing freight volumes.

With Project Case

The tunnel component of the with project case provides direct access for freight vehicles to move between the West Gate Freeway and east of the intersection of Whitehall Street and Harris Street. This will remove the need for through truck traffic to access Francis Street and Somerville Road, and allows for the implementation of extended truck bans to improve the conflicts between trucks and residential land uses.

Extended Truck Bans

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54 Technical Report A, Page 220
The ramps to Hyde Street and Simcock Avenue would provide an alternative route for fuel tankers and trucks from the west, currently using local residential routes to reach destinations in Yarraville and Spotswood. These combined routes would support an extended truck curfew involving full time bans on Francis Street and Buckley Street.

The extended truck ban would include:

- Full-time truck bans on Francis Street (from Robert Street to Hyde Street) and Somerville Road (from Geelong Road to Whitehall Street),
- Full time truck bans on Buckley Street (from Geelong Road to Whitehall Street) and Moore Street (from Hopkins Street to Ballarat Road),
- Existing truck curfews would be removed on Hyde Street south of Francis Street and Whitehall Street south of Somerville Road, and
- Existing truck curfews would remain on sections of Hyde Street, Hudsons Road and Douglas Parade.

For the purpose of the transport modelling for the EES (which provides the forecast daily traffic volumes below), traffic management measures were considered on Blackshaws Road between Grieve Parade and Melbourne Road, and Hudsons Road between Melbourne Road and Booker Street to reduce the likelihood of trucks using these routes to avoid tolls.

Figure 5.16 compares the daily traffic volumes (2-way) in the inner west between 2031 project case and 2031 no project case with these truck bans in place.

Figure 5.16: Difference in Daily Truck Volumes - project case vs no project case

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55 West Gate Tunnel TIA Report, Figure 158
Notable changes to local arterial roads in the inner west are summarised in Figure 5.4.

Table 5.4: Daily Traffic Volumes on Inner West Arterial Roads - 2031 project case vs 2031 no project case

<table>
<thead>
<tr>
<th>Arterial roads</th>
<th>2031 Project Case minus 2031 No Project</th>
<th>Net traffic impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Francis Street</td>
<td>-4000 to -5000</td>
<td>Reduction of 84 to 94%</td>
</tr>
<tr>
<td>Moore Street</td>
<td>-600</td>
<td>Reduction of 84 to 94%</td>
</tr>
<tr>
<td>Somerville Road</td>
<td>-1500 to -2500</td>
<td>Reduction of 87%</td>
</tr>
<tr>
<td>Buckley Street</td>
<td>-4500</td>
<td>Reduction of 77%</td>
</tr>
<tr>
<td>Blackshaws Road</td>
<td>+600</td>
<td>Increase</td>
</tr>
<tr>
<td>Millers Road</td>
<td>+4500</td>
<td>Increase</td>
</tr>
<tr>
<td>Melbourne Road</td>
<td>+800</td>
<td>xx</td>
</tr>
</tbody>
</table>

The traffic forecasts indicate that:

- The extended truck bans would restrict through truck traffic movements using Francis Street, Somerville Road and Buckley Street, and Moore Street,
- A meaningful increase of truck volumes on Millers Road is likely to be effect of traffic redistribution from the proposed truck ban on Somerville Road, Francis Street, Buckley Street and Moore Street, and truck avoiding toll points on the West Gate Freeway between Grieve Parade and Millers Road,
- Some increase of traffic on Blackshaws Road and Melbourne Road is likely due to truck traffic diversion to avoid toll points on the West Gate Freeway.

5.6 Mismatch between Land Use and Transport

What does the EES say?

The structure of the State’s economy and associated employment base has undergone significant change, which has influenced the location of jobs and economic activity in Melbourne. In some parts of the city, the transport network is struggling to keep pace with and adequately service these changing patterns of land use. This is most apparent in the shift of transport-reliant manufacturing activity from inner Melbourne to outer metropolitan Melbourne, and in the mismatch between population and employment growth within Melbourne.

To understand whether there is a mismatch between land use and transport, we must:

- understand what we mean by a mismatch between land use and transport, and where and how this is occurring,
- understand how that will change in the future, and
- understand what the strategic need is to address this problem.

Is there a Mismatch between Land Use and Transport?

The shift of manufacturing to outer metropolitan Melbourne, and the lack of infrastructure to adequately support this move has been discussed earlier in this report, in Sections 5.2 and 5.4.

This section will focus more so on the mismatch between the locations of population and employment growth. The growth in population in the western LGAs is outpacing the population growth in greater Melbourne. This is due to a combination of land use change, urban renewal in...
the inner suburbs and residential development of the outer suburbs. The western regions of Melbourne have typically been large parcels of land developed around limited and poorly connected roads, however as land uses have changed, the networks’ configuration is struggling to match denser residential development.

The structure of the State’s economy and associated employment base has undergone significant change, influencing the location of jobs and economic activity in Melbourne. Increasingly, professional and knowledge-intensive services are concentrated in inner urban areas, and around NEICs in south-east Melbourne.

How will this Mismatch Change in the Future?

This mismatch is forecast to grow. Over the next three decades Melbourne is expected to accommodate around three million additional people and grow its employment base by approximately 1.7 million. However, while half of Melbourne’s population growth to 2050 will be in the west and north, only 30 per cent of jobs growth will be in these areas. Figure 5.17 demonstrates the forecast mismatch between population and jobs in the western suburbs.

Figure 5.17: Growth in Population and Jobs Density Plot

No Project Case

In a no project case, people in the west will continue to be disadvantaged, with 18 per cent of all resident workers travelling outside of the region for work, compared with 7 per cent for the east. As a result, significant travel flows will be required in both directions; skilled workers in the west will need to access jobs and services in the east, while production companies will need to access households and warehouses in the west for distribution. This east-west movement will need to occur within a transport network that does not have sufficient capacity to sustain this level of growth.

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58 West Gate Tunnel EES, Volume 1, Chapter 2, Page 2-14
59 Western Distributor Business Case, page 37
Figure 5.18 demonstrates how the effective job density in the east is greater than the west leading to a disadvantaged west.

Figure 5.18: Effective Job Density\(^{43}\)

With Project Case

In a ‘with project’ scenario, there will be greater connectivity between the population in the west, with the jobs in inner- and south-east Melbourne. Modelling undertaken by SGS Planning for the Business Case indicates that the improved accessibility provided by the West Gate Tunnel Project would contribute to the renewal of the western Melbourne economy. The SGS modelling shows that, with the project, the employment levels in Melbourne’s west are expected to rise by 2,200 in 2031 and 3,200 in 2046. Of these jobs, 50 per cent are expected to be high value knowledge intensive jobs. Suburbs in the inner west are expected to experience the most uplift in terms of employment and housing growth.

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\(^{43}\) Western Distributor Business Case, page 38
Strategic Need to Address Mismatch between Transport and Land Use

The need to address the mismatch between transport and land use appears in many transport planning policies.

The Eddington Review highlights areas in Melbourne’s east as being more accessible than those in the west, and there is no improvement in job catchments predicted for Melbourne’s west\(^\text{61}\).

The Eddington Review also stated: There is a need for better transport connections from, to and within the western suburbs, with the most critical links for the west being with central Melbourne, the inner and middle east, and the Port of Melbourne.

Plan Melbourne identifies that the distribution of jobs across Melbourne is uneven, and projects such as Metro Tunnel and level crossing removals will better connect people to job opportunities in key areas, particularly in Melbourne’s west and south-east\(^\text{62}\).

(Policy 1.2.2) is to facilitate investment in Melbourne’s outer areas to increase local access to employment. It states that “improving connections to national employment and innovation clusters can increase access to high-value knowledge jobs from outer areas and create job opportunities for people in outer area.”\(^\text{63}\) The West Gate Tunnel will provide increased connectivity for people in the western suburbs to NEICs such as Parkville, Fishermans Bend, Monash and Dandenong.

Infrastructure Victoria 20 Year Plan identifies that there is a large shift in Melbourne to a polycentric city. It is identified that there is an increased pressure on demand to and from central Melbourne for work, leisure and specialist services, in particular during peak periods.

5.7 Summary of Strategic Alignment Findings

Based on the research and investigations completed in compiling this review, the following summary is provided to assist the Inquiry and Advisory Committee with its deliberations over its consideration of the ‘strategic alignment’ of the project with policy.

**Inadequate Transport Capacity on the M1 Corridor and Over-Reliance on the West Gate Bridge**

Initially, it is important to note that there is a strong body of evidence which indicates that the West Gate Bridge is already at capacity for several hours each day, and there is limited capacity on the broader road network, particularly along the Maribyrnong screen-line, to sustain redistributed traffic volumes in the event of an incident on the West Gate Bridge. This limited redundancy along the Maribyrnong screen-line means the M1 Corridor has little resilience against incidents. Given the well established strategic economic importance of the M1 Corridor, the reliance on the West Gate Bridge means that Melbourne faces both short and long-term strategic risks should the bridge become unavailable.

**Inadequate Port and Freight Connections**

The evidence presented in this section suggests that current freight access to Port is insufficiently developed to meet demand. For logistics businesses to remain efficient, a significant catalyst is needed to provide:

- an overall increase in road network capacity to absorb the increasing freight task.

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\(^{61}\) Eddington Review, Page 38  
\(^{62}\) Plan Melbourne, Page 36  
\(^{63}\) Plan Melbourne, Page 37
24/7 access to key freight nodes through an efficient freight network,
sufficient capacity in the transport network links and connections to meet growth requirements, minimise delays and maintain a commensurate level of transport productivity,
sufficient landside capacity to absorb increasing Port freight traffic,
adequate landside buffers to isolate heavy vehicle traffic away from increasingly inner west densified residential areas, and
Efficient, lowest cost and reliable travel times for freight movements.

Analysis undertaken and review of policy documents has suggested that West Gate Tunnel is likely to:

provide a significant boost to road capacity at Swanson Dock. The completion of the West Gate Tunnel and a minor upgrade to the Sims Street/ Footscray Road interchange and underpass means Swanson Dock can grow up to a 4 million TEU capacity without increasing truck night operations,

improve access to the Port of Melbourne and provide efficiency benefits by reducing the cost of freight handling, storage and transport or improving reliability of supply chains (including first and last mile),
maintain Victoria’s logistics competitive advantage with increased movements to and from Melbourne’s western logistics precincts,
improve road user safety with further isolation of heavy vehicle movements away from private vehicles and other network users including pedestrians and cyclists,
improve freight reliability and safety through provision of alternative route and network redundancy to the existing West Gate Bridge as key freight link between the Port and industrial areas in Melbourne’s west, and
have a positive impact on Melbourne’s greater road network and freight productivity as the effects of major incidents on the network reduces.

Reduced Amenity in the Inner West

For local land use, investigations indicate that the growing freight task through the Port of Melbourne, will amplify existing network deficiencies for competing needs between truck access to Port, residential land uses in the inner west as well as the growing role of the west as a hub for logistics and distribution. This results in a significant number of trucks travelling through the inner west on their way to and from the Port of Melbourne which impacts the local community, through noise and emission as well as safety.

Analysis undertaken and policy indicates for local land use that the West Gate Tunnel is likely to:

provide a reliable alternative route to through truck traffic which currently consists of 60 per cent of truck traffic travelling in the inner west area to access the Port 24 hours a day and 7 days a week improving the reliability of supply chains,
offer benefits of removing trucks away from Francis Street, Somerville Road, Buckley Street and Moore Street, ensuring that the amenity impacts of increased capacity at the Port of Melbourne on residents near the Port and key transport corridors are managed in a sustainable manner.

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64 West Gate Tunnel Technical Report A
65 Advice on Securing Victoria Ports Capacity, p74
66 Infrastructure Victoria 30 Year Strategy, Need 13, p164
67 West Gate Tunnel Technical Report A
o improve road user safety with further isolation of heavy vehicle movements away from private vehicles and other network users including pedestrians and cyclists48, and
o improve freight reliability and safety through provision of alternative route and network redundancy to the existing West Gate Bridge as key freight link between the Port and industrial areas in Melbourne’s west.

Mismatch between Land Use and Transport

In terms of a mismatch between the locations of growth in population and growth in employment in Melbourne research indicates that this is most pronounced in the west, where jobs have not kept pace with the increase in number of residents. This is creating a greater demand for personal travel from the west to inner- and south-east Melbourne. Unless this mismatch is addressed, the liveability, productivity and potential of the west will be stifled.

On mismatch outcomes, analysis undertaken and review of policy documents suggest that the West Gate Tunnel project is likely to:

o Support an increase in jobs in the western suburbs, and
o Provide greater connectivity between the growing population in the west with jobs in the inner and south-east Melbourne.

5.8 Alignment with Transport Integration Act (2010)

Based on the research and investigations undertaken in the foregoing sections, a review has been completed of the Project’s strategic alignment with the objectives outlined earlier in the Transport Integration Act (201). This comparison is provided on the following page and reveals a high level of alignment with objectives.

---

48 Infrastructure Victoria 30 Year Strategy, Need 13, p164
<table>
<thead>
<tr>
<th>Policy Objectives</th>
<th>Policy Objective Sub-Category Considerations</th>
<th>Strategic Alignment Review</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inadequate Transport Capacity on M1 Corridor</td>
</tr>
<tr>
<td>Social and Economic Inclusion</td>
<td>1. Remove barriers to access</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>a. + Respond to user expectations</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>b. + Make transport more widely available</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>c. + Improve transport affordability</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>2. Build capacity</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>a. + Engage and collaborate in planning and delivery</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>b. + Support others to take action on transport challenges</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>c. + Create a positive legacy</td>
<td>Y</td>
</tr>
<tr>
<td>Economic Prosperity</td>
<td>3. Better use of transport assets</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>4. Improve access to work and education</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>5. Support business clustering</td>
<td>Y</td>
</tr>
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<td></td>
<td>6. Provide value for money infrastructure and services</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>7. Improve business access to market</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>8. Keep transport cost down</td>
<td>Y</td>
</tr>
<tr>
<td>Environment Sustainability</td>
<td>9. Reduce distances travelled to access people places and goods</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>10. Make transport activity more resource-efficient and reduce its environmental impacts</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>11. Use environmentally sustainable transport more</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>12. Make transport infrastructure more resource-efficient and reduce its environmental impacts</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>13. Make transport resilient to climatic extremes</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>14. Provide for effective integration of transport and land use and facilitate access to social and economic opportunities</td>
<td>Y</td>
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</table>
15. Without limiting (14), transport and land use be integrated to improve accessibility and transport efficiency

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<tbody>
<tr>
<td>a.</td>
<td>+ Maximise access to residences, employment, markets, services and recreation</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>b.</td>
<td>+ Planning and developing the transport system more effectively</td>
<td></td>
<td></td>
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<tr>
<td>c.</td>
<td>+ Reducing the need for private motor vehicle transport and the extent of travel</td>
<td></td>
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<tr>
<td>d.</td>
<td>+ Facilitating better access to and greater mobility within local communities</td>
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16. Without limiting (14) transport system and land use be aligned, complementary and supportive and ensure that

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<tbody>
<tr>
<td>a.</td>
<td>+ transport decisions are made having regard to current and future impact on land use</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>b.</td>
<td>+ transport decisions are made having regard to current and future development and operation of the transport system</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>c.</td>
<td>+ transport infrastructure and services are provided in a timely manner to support changing land use and associated transport demand</td>
<td></td>
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17. Without limiting (14) improve the amenity of communities and minimise impacts of the transport system on adjacent land uses

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<td></td>
<td>Y</td>
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18. Facilitate network-wide efficient, coordinated and reliable movements of persons and goods at all times

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<tbody>
<tr>
<td>a.</td>
<td>+ Optimise the network capacity of all modes and reduce journey times</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>b.</td>
<td>+ Maximise the efficient use of resources</td>
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<tr>
<td>c.</td>
<td>+ Facilitate integrated and seamless travel</td>
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<tr>
<td>d.</td>
<td>+ Provide predictable and reliable services and journey time and minimize any inconvenience caused by disruptions to the transport system</td>
<td>Y</td>
<td>Y</td>
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19. Without limiting (18) transport system should

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<tbody>
<tr>
<td>a.</td>
<td>Optimise the network capacity of all modes and reduce journey times</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>b.</td>
<td>Maximise the efficient use of resources</td>
<td></td>
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<tr>
<td>c.</td>
<td>Facilitate integrated and seamless travel</td>
<td></td>
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<tr>
<td>d.</td>
<td>Provide predictable and reliable services and journey time and minimize any inconvenience caused by disruptions to the transport system</td>
<td>Y</td>
<td>Y</td>
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20. Improve safety performance

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21. Minimise the risk of harm to persons

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<td>Y</td>
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22. Promote sustainable transport
6. Transport Impact Review (EES)

6.1 Preamble

The following section sets out a review of the operational performance of the project largely set out at Section 5, 6 and 7 within Technical Report A, Transport Part 1 and various Appendices contained at Technical Report Part 2.

The project incorporates a range of physical additions and modifications to the transport network which are subsequently tested against identified study objectives and scoping requirements set out at Section 1.4 and 1.5 of Technical Report A (Part 1). Amongst other things, the project design response has been tested against the ‘objectives and decision-making principles of the Transport Integration Act 2010’. The project scoping context within the EES (reproduced earlier at Section 2 of this report) provides an analytic framework for the various technical studies. That which relates to transport, capacity and traffic management states a requirement:

“To increase transport capacity and improve connectivity to and from the west of Melbourne, and, in particular increase freight movement via the freeway network instead of local and arterial roads, while adequately managing the effects of the project on the broader and local road, public transport, cycling and pedestrian networks.”

Detailed responses are provided within the EES on the projects responsiveness to each of the identified scoping requirements. These are contained at Table 3 (commencing page 3) of the Technical Report A (Part 1). I have had regard to these in my review of the projects alignment with the identified scoping context noting however that this part of my review concentrates on the operational performance of the proposed transport network to the extent that can be determined from the adopted analytic methodology and the various outputs provided in the technical documentation. Further commentary on other project features including the proposed active travel design response is set out separately and later in this report.

For contextual purposes, Section 6.2 sets out an initial project position as it relates to projects physical road based transport network attributes and modifications.

6.2 Project Attributes & Design Features

Key project features which are proposed to enhance operational throughput for road based transport include by project section:

**Westgate Section**

- Widening the freeway to six through lanes in each direction (an additional two through lanes each way) and auxiliary lanes as required between Williamstown Road and M80 interchange.
- Widening of Princes Freeway between M80 interchange and Kororoit Creek Road. This would include provision of an additional westbound lane on the Princes Freeway (from four lanes to five) to tie-in to the widened West Gate Freeway.
- Reconfiguring and channelising (separating) lanes to provide for the express movement of traffic between the Princes Freeway/M80 Ring Road and the West Gate Bridge (with no opportunity to exit the freeway from these express lanes).
○ Maintaining connectivity to all routes currently connected to the West Gate Freeway and upgrading existing interchanges with the M80 Ring Road, Grieve Parade, Millers Road and Williamstown Road.

○ Constructing new ramps to connect the West Gate Freeway to Hyde Street. These ramps would be used to divert placarded loads from the project tunnels and local roads and to provide direct access to industrial sites on Hyde Street adjacent to the Maribyrnong River.

○ Installing a freeway management system and ramp metering to monitor and manage the flow of traffic and minimise the risk of congested traffic conditions.

**Figure 6.1: Westgate Freeway Section**

### Tunnels Section

○ Connecting the West Gate Freeway to the Port of Melbourne precinct and the western edge of the central city via twin tunnels under Yarraville, with a length of four kilometres (westbound) and 2.8 kilometres (eastbound) from Port al to Port al.

○ Cross passages between the tunnels around every 120 metres to meet safety and operational requirements.

○ Southern tunnel Portals located at two separate locations along the West Gate Freeway. The eastbound Portal would be sited 300 metres west of Williamstown Road, on the north side of the existing West Gate Freeway eastbound carriageway. The westbound Portal would be located approximately 1.2 kilometres west of the inbound Portal, on the south side of the existing West Gate Freeway westbound carriageway.

○ Both northern tunnel Portals (eastbound and westbound) located 100 metres east of Whitehall Street, 330 metres north of Somerville Road, near the intersection of Harris Street.

○ Two ventilation structures: one located in close proximity to the southern westbound Portal and one in close proximity to the northern Portal. These ventilation structures would be approximately 45 metres high, enclosed with an architecturally clad exterior that varies from approximately 40 metres to 55 metres high.
- Each tunnel catering for three lanes of traffic.
- Realignment of the North Yarra Main Sewer to the east.
- A tunnel management system to allow speed limits to be varied, as well as message signs to alert road users of incidents and enable effective responses to incidents.
- Exclusion of over-dimensional vehicles and placard loads from the tunnels, including signage and alarm systems. Over-dimensional and placard loads would gain access to the Port of Melbourne via the new Hyde Street ramps.

Figure 6.2: West Gate Tunnels Section[^70]

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**Port / City Link / City Access Section**

- A new bridge over the Maribyrnong River.
- Direct access from the West Gate Tunnel Project to the Port of Melbourne via MacKenzie Road (for West Swanson Dock) and Appleton Dock Road (for East Swanson Dock, Victoria Dock and Appleton Dock), with access to MacKenzie Road via dedicated (on and off) bridges over the Maribyrnong River.

[^70]: EES Summary Report, Page 38
- Twin elevated road structures dedicated to traffic using the West Gate Tunnel Project above Footscray Road between the Maribyrnong River and the intersection of Footscray Road and Appleton Dock Road.
- New connections between the Footscray Road twin elevated road structures and CityLink, Dynon Road and the existing Footscray Road.
- Extension of Wurundjeri Way to the west, connecting into Dynon Road to the east of Moonee Ponds Creek, providing a bypass of the CBD area.
- Widening of Wurundjeri Way by one lane in each direction between Dudley Street and Finders Street.

Figure 6.3: Port/CityLink/CBD Access Section

6.3 Analytic Methodology & Modelling Extents

For analytical purposes, the project traffic impact assessment has been broken down into three hierarchical geographic areas (Figure 6.4), each covering a different level of network detail:

- Metropolitan Melbourne
- Local Area
- Project Corridor

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21 EES Summary Report, Page 47
For each geographic area, a different analytic tool was used. This is consistent with conventional practice which encourages more granular analysis in the proximities of the project, where microscopic tools are more suitable tools than strategic models.

Discussion on each of these geographies is provided below.

6.3.1 Metropolitan Area

For the Melbourne Metropolitan Area, network wide statistics such as Vehicle Kilometres Traveled (VKT), Vehicle Hours Traveled (VHT) and Average Speeds were used to evaluate the traffic impact. Outputs from the Strategic Model were used as the source of this data.

The Strategic Model was developed by Veitch Lister Consulting (VLC) and is known as the Zenith model, which is a standard four-step multi-modal link-based model that contains the ability to simulate public transport systems and services as well as the characteristics and performance of the road system\(^2\).

The Zenith model relies on population and employments demographic forecasts prepared by the State Government for Melbourne consistent with those contained within the Victorian Integrated Transport Model (VITM) which is created and managed by Department of Economics Jobs Transport and Resources (DEJTR). It includes all proposed transport infrastructure projects which are expected to be delivered by government before the 2031 planning horizon including:

1. Melbourne Metro
2. M1 (Monash) Freeway upgrade (under construction)
3. M80 Ring Road upgrades, CityLink – Tullamarine Widening project

4. West Gate Distributor Stage 1 
5. Outer Suburban Arterial Road (OSAR’s) works package, 
6. Webb Dock Access upgrade, 
7. Planned 24-hour truck curfews for Francis Street and Somerville Road.

High level guidance on the 2031 network changes contained within the Zenith model can be sourced from Figure 95 of Technical Report A (Part 1) for the No Project Case outcome which is reproduced below.

Figure 6.4: Transport Network Design Changes for 2031 Planning Horizon

In my experience, the Zenith model is well regarded as (presently) being the most robustly available predictive strategic model for Melbourne and was previously used to consider the now uncommitted East-West Link project considered by the previous State Government.

Under the EES guidelines, the evaluation is required to consider a 10-year post implementation design horizon. In this case, the design assessment period has been selected as the 2031 design year with modelling considering a 2031 with project and without project case comparison to appreciate the benefits and or otherwise on the performance of the transport network.

6.3.2 Local Area

At the local area level, a combination of strategic highway models and a spreadsheet model were used to estimate operational traffic demand. The extents of this analysis covered the main project’s parallel arterial routes which are likely to show changes in traffic volumes (Figure 6.5). Outputs from the Zenith Model have been used to feed a subnetwork Vissim Highway Model and

---

a spreadsheet model where link volumes where constrained to ensure modelled outcomes reflect practicable capacity network limitations.

Figure 6.5: Local Area Model Extents

6.3.3 Project Corridor

The outputs of this process represent a set of design volumes used for evaluation within the final detailed review completed using VISSIM micro-simulation analytic software. This platform model individual vehicles across a range of classifications including passenger cars, light and heavy commercial vehicle types.

The micro-simulation modelling considered a 4-hour period for the AM and PM road network peaks including warm-up and warm-down periods with data disaggregated into 15-minute time periods to better reflect the dynamic nature of traffic demand.

The process assessment methodology is set out diagrammatically at Figure 6.6 for reference.
6.3.4 Modelling Extents

**Western End**

On review, it would have been preferred that the micro-simulation model extents at the western end of the project include the first major node on either side the Grieve Parade, Millers Road and Melbourne Road interchanges to more confidently test potential nodal interference where uplift in link volumes is projected for each of these interchanges and corresponding access intersections onto these interchanges.

If this were to be completed, it would include intersections between Grieve Parade and Blackshaws Road, Grieve Parade and Geelong Road, Millers Road and Geelong Road, and Millers Road and Blackshaws Road. These are identified diagrammatically in Figure 6.7.

As an alternate to micro-simulation, isolated intersection modelling would suffice subject to appropriate and considered calibration.
To satisfy myself about the extent of modelling at the eastern edge of the corridor, I have reviewed the technical work completed by my office which informed Planning Scheme Amendments (C190, Arden Macaulay) and (C196, City North). This technical work revealed that both precincts, which constitute the broader North Melbourne study area considered in the EES, are subject to high levels of traffic demand which in many cases equals available capacity for both the existing condition at the time (2011) and projected outcomes as a consequence of land use changes forecast to occur under the two Amendments.

A closer inspection of demands and flow patterns in these precincts as part of those studies revealed that large quantities of non-local or through traffic using the North Melbourne road network are doing so to access to Melbourne CBD and broader suburban areas to the north-west. Key roads subject to this demand include Arden Street, Macaulay Road and Boundary Road.

Both Amendments were subsequently approved on the basis of new land use delivered in these precincts displacing non-local traffic with this traffic either shifting to other more convenient traffic routes offering a better level of service or driving behaviour change whether it be modal or the time of travel, particularly for discretionary trips.

To better contextualise the West Gate Tunnel project outcomes with those estimated during planning for each of the Amendments, I have reviewed the daily traffic volume link plots extracted from the VITM strategic model relied upon for C190 (Arden Macaulay) and C196 (City North).
Select higher order road links have been compared for projected 2031 network volumes relied upon to inform the Amendment’s with those forecast under the project case in relation to the proposed West Gate tunnel. This comparison for those (higher order) links is provided in Table 6.1 with lower volumes shaded in green, higher volumes in red and orange where predicted demands are comparable.

<table>
<thead>
<tr>
<th>Road Link</th>
<th>2031 Amendment's C190 &amp; C196</th>
<th>2031 West Gate Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flemington Rd north of Gatehouse St</td>
<td>55,700 vpd</td>
<td>44,000-54,000 vpd</td>
</tr>
<tr>
<td>Flemington Rd south of Gatehouse St</td>
<td>49,400 vpd</td>
<td>36,000-43,000 vpd</td>
</tr>
<tr>
<td>Macaulay Rd north of Arden St</td>
<td>27,900 vpd</td>
<td>19,000-24,000 vpd</td>
</tr>
<tr>
<td>Arden St east of Macaulay Rd</td>
<td>21,400 vpd</td>
<td>17,000-21,000 vpd</td>
</tr>
<tr>
<td>Victoria St east of Curzon St</td>
<td>13,200 vpd</td>
<td>18,000-22,000 vpd</td>
</tr>
<tr>
<td>Victoria St west of Curzon St</td>
<td>18,500 vpd</td>
<td>10,000-13,000 vpd</td>
</tr>
<tr>
<td>Grattan St east of Royal Pde</td>
<td>26,700 vpd</td>
<td>17,000-21,000 vpd</td>
</tr>
<tr>
<td>Royal Parade north of Grattan St</td>
<td>20,700 vpd</td>
<td>28,000-34,000 vpd</td>
</tr>
<tr>
<td>Elizabeth St south of Pelham St</td>
<td>33,800 vpd</td>
<td>32,000-39,000 vpd</td>
</tr>
</tbody>
</table>

Table 6.1 indicates for the most part, transport volumes on key roads in North Melbourne area under the Amendments as higher than those projected with the Westgate Tunnel Project. Given that this is the case, I am more comfortable with the extent of detailed micro-simulation modelling which has been completed for the North Melbourne area where some uplift in activity is projected between the project and no project case. This is explored in more detail at Section 6.6.3 of this report.

### 6.4 Level of Service Definitions

The Highway Capacity Manual (HCM2010) has been used to assess network performance for key areas typical assessed including, weaving, merge, diverge and basic freeway segments. These level of service definitions nominate a the highest and best and LOS A and the worst and poorest performing level as LOS F.

Section 6 (Microsimulation Overview) at Technical Report A Part 2 sets out in detail the Freeway assessment, interchange assessment and arterial intersection criteria definitions relied upon to assess the project noting the following:

- **Freeway Assessment:** Application of Density based criteria
- **Interchange Assessment:** Application of delay based criteria
- **Arterial Intersection Assessment:** Degree of Saturation

The project’s operational performance requirement has been set at Level D or better for all freeway sections with intersections targeting a demand to capacity ratio of 0.9 or better.

A review of the EES technical work reveals that not all freeway sections, interchanges and intersections return aspired LOS benchmark targets. Where identified benchmarks have not been met, investigations have been undertaken to understand the rationale for accepting an alternate level of operational performance. This is explored in this report section.

### 6.5 Stakeholder Engagement

Section 3.5 of Technical Report A (Part 1) sets out at Table 11 (Page 41) the extent of stakeholder engagement completed with key stakeholders and the community. A review indicates that over
75 engagement sessions were completed with over 4,000 participants. A summary of received
feedback is provided at Table 12 (Page 43) with references to specific sections contained in the
overall EES documentation provided on issues raised.

6.6 2031 Analytics Summary

6.6.1 Projected Population Growth Assumption

Section 6 and 7 of Technical Report A (Part 1) provides a substantive summary of anticipated
analytical performance of the transport network. Both the 2031 No Project and 2031 With Project
cases have been developed and consider growth in population and employment within the
Melbourne LGAs. Table 28 of Technical Report A (Part 1) indicates an increase in the Greater
Melbourne from 4.628 million to 6.055 million by 2031. This compares with a Greater Melbourne
estimate of 8 million by 2050 within Plan Melbourne. A summary is provided at Table 6.2 for
reference.

Table 6.2: Forecast Population Change for Greater Melbourne

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated Population</th>
<th>%Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>4.63 million</td>
<td>-</td>
</tr>
<tr>
<td>2031</td>
<td>6.05 million</td>
<td>31%</td>
</tr>
<tr>
<td>2050</td>
<td>8.0 million</td>
<td>32%</td>
</tr>
</tbody>
</table>

Table 6.2 indicates an increase of over 30 per cent between present day and the 2031 design
horizon as well as a similar change between 2031 and 2050. These compare with growth in the
Western LGA’s predicted to increase by 69 per cent and the Melbourne LGA by 69 per cent
between 2016 and 2031. Based on forecasts, it is evident that projected population demands will
disproportionately increase pressures on resources accessing amongst other areas the Melbourne
CBD from the west and south-west regions of Melbourne.

6.6.2 Reported Network Statistics & Traffic Growth

A series of network performance statistics have been extracted from the work completed as part
of the EES technical transport review. A summary of key statistics for the existing condition and
2031 no project and project case is provided for context.

Public Transport

Figure 6.8 highlights the change in public transport usage for the three models, including 2014
(existing condition), 2031 no project case and 2031 project case.

Within the western LGAs, the public transport usage is projected to increase from 10 per cent in
2014 to 13 per cent in 2031, for both the no project and project case.

Within Greater Melbourne, public transport usage is projected to increase from 15 per cent in
2014 to 20 per cent in 2031, again for both the no project and project case.

There is no forecast change in public transport usage in the western LGA’s and Greater
Melbourne between 2031 no project case and 2031 project case. i.e. this project is not forecast
to have any direct impact on the level of public transport usage.
These predictions have been derived from the strategic model relied upon to inform the EES. That model (refer Section 3.4.4 of the EES) identifies that some road links within the network will achieve demand levels which exceed practical capacity.

Whilst efforts have been made to consider demand behaviour on links where demand exceeds capacity involving a shift of the expected activity profile to shoulder peaks, the reality will involve some of that activity choosing to modify their mode choice. The extent of change is difficult to predict but in practise, the strategic model will tend to underestimate the level of mode change expected. The public transport usage estimates therefore, in my view, represent an underestimation of likely usage for all evaluated scenarios.

**Network Trips and Average Speed**

Table 6.3 summarises the local area network performance for the 2031 no project case and 2031 project case. For this evaluation, only trips with origin or destination within the local study area were assessed. The analysis shows that the estimated VKT is higher in the 2031 project case than then the 2031 no project case. This is an expected result produced by the re-routing of local traffic that is attracted to the project and is willing to travel a longer distance to the nearest entry to access the project.

**Table 6.3: Local Area Road Vehicle Trips, Comparison of 2031 Project Case and 2031 No Project Case**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Category</th>
<th>2031 No Project Case</th>
<th>2031 Project Case</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trips</td>
<td>229,000</td>
<td>229,000</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>VKT (1,000km)</td>
<td>5,051</td>
<td>5,521</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>VHT (hours)</td>
<td>107,600</td>
<td>111,633</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Ave Speed (km/h)</td>
<td>47</td>
<td>49</td>
<td>5%</td>
</tr>
<tr>
<td>Weekday</td>
<td>AM Peak (7am-9am)</td>
<td>Trips</td>
<td>31,000</td>
<td>31,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VKT (1,000km)</td>
<td>729</td>
<td>837</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VHT (hours)</td>
<td>23,100</td>
<td>23,147</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ave Speed (km/h)</td>
<td>32</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>PM Peak (4pm-6pm)</td>
<td>Trips</td>
<td>43,000</td>
<td>43,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VKT (1,000km)</td>
<td>773</td>
<td>873</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VHT (hours)</td>
<td>21,400</td>
<td>21,967</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ave Speed (km/h)</td>
<td>36</td>
<td>40</td>
</tr>
</tbody>
</table>

74 Adapted from Figure 155 and Figure 96 from Technical Report A Transport Part 1
75 Adapted from Table 29 and Table 79. Technical Report A Transport Part 1
Network Traffic Volumes

Figure 6.9 highlights the local area 2031 project case traffic volumes. Within this area, heaviest daily traffic flows can be seen along West Gate Freeway (up to 284,000) and West Gate Bridge (up to 240,000), M80 Ring Road (up to 255,000) and City Link (up to 155,000).

Figure 6.9: Local area 2031 Project Case Traffic Volumes (two-way, 24-hour weekday volumes78)

Figure 6.10 shows the following changes in traffic between the 2031 No Project Case and 2031 Project Case:

- There will be fewer vehicles on local roads, notably along key roads including Francis Street, Sommerville Road, Buckley Street and Geelong Road,
- There will be fewer vehicles on the West Gate Bridge,
- There will be fewer vehicles on City Link, to the south of Dynon Road. This observation, coupled with the reduced vehicles on West Gate Bridge, identifies that the new link provides attractive bypass route that allows vehicles travelling north on City Link to avoid the city, and
- There will be more vehicles on West Gate Freeway, as it will provide more throughput to accommodate an increase.

Broadly, the project delivers meaningful uplift in throughput along the West Gate Freeway corridor and helps manage projected demand.

78 Technical Report A Transport Part 1, Figure159, Page 252
Beyond the Freeway / Tollway network, Millers Road between the West Gate Freeway and Geelong Road will be subject to a meaningful uplift in traffic activity including a substantial increase in truck traffic. Investigations reveal two factors contributing to this occurrence including:

1. Permanent rather than evening truck curfews in the inner west suburbs, and
2. Toll points on the network including an initial toll point between the Grieve Parade and Millers Road interchange.

Millers Road is an arterial road and provides direct access to a freeway network. Its functional role and classification supports a high movement function. With project predictions indicating somewhere between 34,000 and 42,000 vehicles per day. Broadly, these values are within the acceptable range for an arterial road containing a divided four lane cross-section. Notwithstanding, Millers Road is projected to carry a level of heavy vehicle traffic nearing 50 per cent of the total traffic predicted. This coupled with residential land uses and a residential land use zone adjoining the west side of the road is not ideal and gives rise to concern over operational performance if it were to operate at activity levels close to or at the upper end of the predicted range including safety and amenity.

Given these identified circumstances, I would recommend that further ‘sensitivity’ analysis be completed which reviews toll point outcomes created by the removal of a toll point gantry between the Grieve Parade and Millers Road interchange.

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Figure 6.10: Difference in Daily Traffic Volumes – 2031 Project Case vs 2031 No Project Case

Technical Report A Transport Part 1, Figure158, Page 251
6.6.3 Local Area Statistics Comparison (North & West Melbourne)

Figure 6.11 shows the 2031 project case traffic volumes identified within North and West Melbourne. Figure 6.12 identifies the difference in daily volumes between the 2031 project case and the 2031 no project case.

Figure 6.11: Local Area 2031 Project Case Traffic Volumes – North Melbourne and West Melbourne (two-way, 24-hour weekday volumes)\textsuperscript{a0}

\textsuperscript{a0} Technical Report A Transport Part 1, Figure161, Page 255
Figure 6.12 shows that the 2031 project case option will see a general reduction in vehicle movements in the Melbourne CBD for the analysed study area, with increases in trips predicted in the North Melbourne and West of Melbourne areas over the no project case.

I expect that the activity uplift predicted in the North Melbourne area is a derivative of the increased (east-west) connectivity provided for vehicular movement including capacity created through the re-distribution of traffic previously using Dynon Road and Spencer Street as access to the south side of the CBD which is now using Wurundjeri Way.

Table 6.4 has been created using key volumes from available bandwidth plots for comparative purposes. A review of this comparison indicates that while there is some forecast upward change to the network in the North Melbourne, the increases are somewhat modest. By way of example,

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81 Technical Report A Transport Part 1, Figure160, Page 254
the increase along Dryburgh Street of up to 3,500 vehicles per day equates to an increase of approximately 350 vehicles in a peak hour period (assuming a peak to daily ratio of 10 per cent). This is equivalent to just under 3 vehicles per minute in each direction assuming balanced two-way flows.

Table 6.4: Road Network Daily Traffic Comparison (2031) (North Melbourne Area)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flemington Road (north of Harker Street)</td>
<td>44,100-54,100</td>
<td>44,000-54,000</td>
<td>-100</td>
</tr>
<tr>
<td>Flemington Road (south of Harker Street)</td>
<td>35,900-42,900</td>
<td>36,000-43,000</td>
<td>+100</td>
</tr>
<tr>
<td>Harker Street (west of Flemington Road)</td>
<td>17,500-21,500</td>
<td>20,000-24,000</td>
<td>+2,500</td>
</tr>
<tr>
<td>Wreckyn Street (west of Flemington Road)</td>
<td>14,300-18,300</td>
<td>15,000-19,000</td>
<td>+700</td>
</tr>
<tr>
<td>Royal Parade (north of Grattan Street)</td>
<td>28,000-34,000</td>
<td>28,000-34,000</td>
<td>0</td>
</tr>
<tr>
<td>Grattan Street (between Bouverie Street and Swanston Street)</td>
<td>16,100-20,100</td>
<td>17,000-21,000</td>
<td>+900</td>
</tr>
<tr>
<td>Elizabeth Street (between Haymarket Roundabout and Queensberry Street)</td>
<td>31,400-38,400</td>
<td>32,000-39,000</td>
<td>+600</td>
</tr>
<tr>
<td>Arden Street (between City Link and Dryburgh Street)</td>
<td>17,000-21,000</td>
<td>17,000-21,000</td>
<td>0</td>
</tr>
<tr>
<td>Arden Street (between Dryburgh Street and Curzon Street)</td>
<td>19,500-23,500</td>
<td>22,000-26,000</td>
<td>+2,500</td>
</tr>
<tr>
<td>Queensberry Street (between Dryburgh Street and Curzon Street)</td>
<td>9,600-11,600</td>
<td>10,000-12,000</td>
<td>+400</td>
</tr>
<tr>
<td>Queensberry Street (between Curzon Street and Peel Street)</td>
<td>12,500-15,500</td>
<td>14,000-17,000</td>
<td>+1,500</td>
</tr>
<tr>
<td>Queensberry Street (between Elizabeth Street and Swanston Street)</td>
<td>16,000-20,000</td>
<td>17,000-21,000</td>
<td>+1,000</td>
</tr>
<tr>
<td>Peel Street (between Haymarket Roundabout and Victorian Street)</td>
<td>32,400-39,400</td>
<td>33,000-40,000</td>
<td>+600</td>
</tr>
<tr>
<td>Victoria Street (between Peel Street and Hawker Street)</td>
<td>15,000-19,000</td>
<td>18,000-22,000</td>
<td>+3,000 [3]</td>
</tr>
<tr>
<td>Victoria Street (between Hawker Street and Dryburgh Street)</td>
<td>9,400-12,400</td>
<td>10,000-13,000</td>
<td>+600</td>
</tr>
<tr>
<td>Dryburgh Street (between Spencer Street and Arden Street)</td>
<td>12,500-15,500</td>
<td>16,000-19,000</td>
<td>+3,500 [3]</td>
</tr>
</tbody>
</table>

[1] Obtained from Technical Report A Transport Part 1, Figure 161
[2] Calculated from Figure 160 and Figure 161 from Technical Report A Transport Part 1, Figure 160
[3] Where multiple difference volumes were provided on one section of road, the higher value was adopted.

Based on the above as well as commentary provided at Section 6.3.4 of this report, I am satisfied that the local area impacts forecast in the areas north and west of the Melbourne CBD are acceptable and do not warrant further detailed investigation as part of the EES review.

6.6.4 Project Corridor Operational Performance

The project corridor impacts have been assessed on the West Gate Freeway and Footscray Road Corridors for both the 2031 project case and 2031 no project case. The assessment of operational performance has been undertaken in three sections:
Throughout the project, the following operational performance targets have been set:

- All freeway sections are to be designed to a Level of Service D or better
- All intersections are to be designed to a Level of Service D or better, or degree of saturation of 0.9 or better, where possible.

While it is desirable that a Level of Service D is met in all cases, I have been instructed and observe that in some specific cases, certain limitations deliver Level of Service E or F outcomes. These are identified and discussed in the following sub sections.

6.6.4.1 Freeway Assessment

As mentioned above, the project corridor is split into two sections. The first is the West Gate Freeway corridor and the second the Footscray Road Corridor, as highlighted in Figure 6.13. The freeway assessment has been extracted from the microsimulation model, including the following criteria:

- Weaving segment
- Merge segment
- Diverge segment
- Basic freeway segment

Figure 6.13: Project Corridor Zones

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End of excerpt.
West Gate Freeway Section Inbound

Table 6.5 provides the Level of Service for the West Gate Freeway Inbound, between M80 and the West Gate Bridge. The table is separated into AM and PM peak hour periods.

Table 6.5: Comparison of 2031 project case and 2031 no project case peak Level of Service outputs for Inbound Trips

<table>
<thead>
<tr>
<th>Project Corridor</th>
<th>Project Corridor</th>
<th>AM</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>7-8am</td>
<td>8-9am</td>
</tr>
<tr>
<td>M80/Princes Freeway Merge</td>
<td>C</td>
<td>C</td>
<td>F</td>
</tr>
<tr>
<td>Grieve Parade Merge</td>
<td>D</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>Millers Road Diverge</td>
<td>D</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>Millers Road Merge</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Millers Road to Williamstown Road/ Hyde Street Ramp Mid-block</td>
<td>C</td>
<td>C</td>
<td>NA</td>
</tr>
<tr>
<td>Diverge to Williamstown Road/Hyde Street Ramp</td>
<td>B</td>
<td>B</td>
<td>E</td>
</tr>
<tr>
<td>Diverge to Hyde Street Ramp</td>
<td>D</td>
<td>E</td>
<td>NA</td>
</tr>
<tr>
<td>West Gate Tunnel Project Entrance to Tunnel</td>
<td>E</td>
<td>E</td>
<td>NA</td>
</tr>
<tr>
<td>West Gate Tunnel Project Mid-Block</td>
<td>E</td>
<td>E</td>
<td>NA</td>
</tr>
<tr>
<td>Williamstown Road Merge</td>
<td>E</td>
<td>F</td>
<td>E</td>
</tr>
<tr>
<td>West Gate Bridge Mid-Block</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

AM Peak Hour

In the AM, there is a significant improvement when comparing the 2031 project case to the 2031 no project case, notably between M80 and Millers Road, where the Level of Service F is reduced to a Level of Service C and D in the inbound direction.

It is evident that some segments during the AM inbound trip fall short of satisfying LOS targets (LOS D) including the diverge to the Hyde Street ramp, the West Gate tunnel entrance, West Gate Tunnel mid-block section, the Williamstown Road merge and West Gate Bridge mid-block sections. These are discussed below.

- **Diverge to Hyde Street Ramp & West Gate Tunnel Project Entrance to Tunnel & West Gate Tunnel Project Mid-Block**

These three road sections deliver a projected Level of Service of greater than D for at least one of the time periods in the AM peak.

Investigations reveal that the reason for this higher level of service stems from the merging of eastbound lanes within the West Gate Tunnel. The West Gate Tunnel has three lanes that merge...
to two shortly after segregating from the main carriageway. This merging results in delay along the West Gate Tunnel as well as the preceding sections.

It is understood that the project provides sufficient width to deliver three trafficable lanes on the inbound tunnel, however only two have been coded within the analytic assessment. Clarification provided by the project team indicates that the project team have preferred to maintain two operational inbound lanes in favour of delivering a higher level of network redundancy and resilience. Under these arrangements, the third passive lane could be used for emergency services, breakdowns or could (should it be preferred) provide additional capacity if other parts of the network such as the West Gate Bridge experience a capacity reducing incident.

Advice provided to GTA indicates that the Level of Service along this corridor would be improved by the opening of the third lane to a level above the LOS target D. Given available flexibility, I am satisfied with the document LOS performance outcome.

- **Williamstown Road Merge**

The Williamstown Merge sees Level of Service E and F during the 7am-8am and 8am-9am period respectively. In comparison, the project case sees an improvement compared to the no project case from 7am-8am.

Investigations reveal that the Williamstown Road and the Westgate Freeway interchange is being reconfigured as part of this project. While this was not a requirement of the project team, it was chosen to be upgraded by the tenderer to improve operational performance at this interchange.

At the northern intersection of this interchange, there are three right turn lanes from the south turning onto the West Gate Freeway on ramp (compared to the existing two), and a left turn slip lane from the north which is given a dedicated lane. There are a resulting four lanes heading eastbound towards the West Gate Freeway which converge after the adopted ramp metering point to three lanes. The capacity upgrade at the interchange increases throughput onto the West Gate in the Citybound direction and delivers an increased level of turbulence where the proposed four-to-three lane merge exists.

I have been instructed that a sensitivity test was undertaken to consider three lanes on the ramp to avoid the required merge however this resulted in significant queues back out onto Williamstown Road from the interchange. Consequently, the project team determined that whilst targeted LOS levels are not achieved for the interchange as a whole for a short period of the day, the increased throughput, particularly from the south (Hobsons Bay City Council LGA) compensated projected project performance outcomes, satisfactorily. To address this issue, substantive works would need to be completed on the network which include modifications to the West Gate bridge.

Given the level of substantive works required to address this issue, I am satisfied that the proposed outcome, including acknowledgement that the performance outcomes are limited to the AM peak hour is acceptable.

- **West Gate Bridge Mid-Block**

The Level of Service on the West Gate Bridge remains at F during the inbound AM peak hour periods. A review of the EES indicates that the bridge is at capacity now, and while the project case will see some traffic diverted to the West Gate Tunnel, the capacity made available will be absorbed by projected growth or latent demand on the network.

Given this is the case, I am satisfied with the reported level of service outcomes for this part of the network.
**PM Peak Hour**

The Level of Service along the West Gate Freeway corridor for inbound trips is at a maximum Level of Service D in the PM peak hour, which is consistent with project analysis which seeks to deliver infrastructure design outcomes capable of accommodating peak flows which change by direction over the course of a typical business day.

**West Gate Freeway Section Outbound**

Table 6.6 provides the Level of Service for the West Gate Freeway Outbound, between M80 and the West Gate Bridge. The table is separated into AM and PM peak hour periods.

Table 6.6: Comparison of 2031 Project Case and 2031 No Project Case Peak Level of Service outputs for Outbound Trips*

<table>
<thead>
<tr>
<th>Project Corridor</th>
<th>AM Project</th>
<th>AM No Project</th>
<th>PM Project</th>
<th>PM No Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Gate Bridge Mid-Block</td>
<td>D</td>
<td>B</td>
<td>F</td>
<td>E</td>
</tr>
<tr>
<td>Williamstown Road Diverge</td>
<td>D</td>
<td>B</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>West Gate Tunnel Project Mid-Block</td>
<td>B</td>
<td>B</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>West Gate Tunnel Project Exit from Tunnel</td>
<td>B</td>
<td>B</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Williamstown Road/Hyde Street Ramp Merge</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Williamstown Road/Hyde Street Ramp Merge with Ramp from WGF Mainline</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Mid-block between Hyde Street/Williamstown Road and West Gate Tunnel Project</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>NA</td>
</tr>
<tr>
<td>Weave between Williamstown Road/Hyde Street and Millers Road</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Millers Road Merge</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>Grieve Parade Diverge</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>M80/Princes Freeway Diverge</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>E</td>
</tr>
</tbody>
</table>

*Adapted from Table 98 and 100 from Technical Report A Transport Part 1
AM Peak Hour

In the AM, there is improvement when comparing the 2031 project case to the 2031 no project case, notably between M80 and Millers Road. The table indicates that LOS D is achieved in accordance with project targets.

PM Peak Hour

In the PM peak there is a significant improvement when comparing the 2031 project case to the 2031 no project case, notably between M80 and Millers Road, where the Level of Service E is reduced to a Level of Service C and D in the outbound direction.

It is evident that some segments during the PM outbound trip fall short of satisfying LOS targets (LOS D) including the diverge to the West Gate Bridge mid-block and the Williamstown Road diverge. These are discussed below.

- Williamstown Road Diverge

The Williamstown Diverge sees Level of Service E during the 4-5pm and 5pm-6pm periods. Investigations indicate that the Williamstown Road westbound off-ramp is a single lane, despite their being available space for two lanes. The off-ramp is by a small margin carrying more vehicles than its single lane has capacity for at the exit, and as such has a higher than preferred Level of Service.

Enquiries with the project team indicate that this existing ramp sits outside the project area and given that projected outcomes are no worse than the projected no project outcome, the forecast level of service is acceptable.

- West Gate Bridge Mid-Block

Comments provided earlier in the inbound direction also apply to the outbound direction insofar as latent demand utilising capacity generated on the network.
### Footscray Road Corridor Section

Table 6.7 and Table 6.8 set out the Level of Service for the Footscray Road Corridor, between the West Gate Tunnel and City Link. The table is separated into AM and PM peak hours.

Table 6.7: Comparison of 2031 Project Case and 2031 No Project Case Peak Level of Service outputs for Northbound / Westbound Trips

<table>
<thead>
<tr>
<th>Direction</th>
<th>Project Corridor</th>
<th>Northbound / Westbound (Inbound/Outbound)</th>
<th>AM</th>
<th>Project</th>
<th>No Project</th>
<th>PM</th>
<th>Project</th>
<th>No Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>7-8am</td>
<td>8-9am</td>
<td>4-5pm</td>
<td>5-6pm</td>
<td>4-5pm</td>
<td>5-6pm</td>
</tr>
<tr>
<td>Westbound</td>
<td>CityLink Onramp Merge</td>
<td>A</td>
<td>A</td>
<td>NA</td>
<td>NA</td>
<td>B</td>
<td>C</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>CityLink to Footscray Road Mid-Block</td>
<td>A</td>
<td>A</td>
<td>NA</td>
<td>NA</td>
<td>B</td>
<td>C</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Footscray Road Onramp Merge</td>
<td>A</td>
<td>A</td>
<td>NA</td>
<td>NA</td>
<td>B</td>
<td>C</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Footscray Road to Mackenzie Road Midblock</td>
<td>B</td>
<td>B</td>
<td>NA</td>
<td>NA</td>
<td>D</td>
<td>D</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Mackenzie Onramp Merge</td>
<td>C</td>
<td>C</td>
<td>NA</td>
<td>NA</td>
<td>D</td>
<td>E</td>
<td>NA</td>
</tr>
<tr>
<td>Southbound</td>
<td>Footscray Road Entrance</td>
<td>C</td>
<td>C</td>
<td>NA</td>
<td>NA</td>
<td>D</td>
<td>E</td>
<td>NA</td>
</tr>
<tr>
<td>Northbound</td>
<td>CityLink Northbound Mid-Block</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>Footscray Road Off-Ramp Diverge</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>CityLink Midblock between Footscray Road off and on-ramps</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>Footscray Road On-Ramp</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>Dynon Road On-Ramp</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

Comment on Table 6.7 outputs are provided on the following page.

---

85 Adapted from Table 123, 124, 129 and 130 from Technical Report A Transport Part 1
AM Peak Hour

The Level of Service along the Footscray Road corridor for outbound (northbound and westbound) trips is at a maximum Level of Service D in the AM peak hour, which is to be expected given the AM commuter peak is for inbound trips.

PM Peak Hour

It is evident that some segments during the PM outbound trip fall short of satisfying LOS targets (LOS D) including the Mackenzie on-ramp merge, the southbound tunnel entrance and the Dynon Road on-ramp.

- Mackenzie On-Ramp Merge & Southbound Tunnel Entrance

Before providing discussion on this section it is important to note that the westbound carriageway within the West Gate Tunnel has been modelled utilising all three lanes for the exit to deal with identified turbulence on the tunnel exit during the PM peak hour. I have been instructed that the modelled three lanes commence at the invert of the tunnel. This assumption is not replicated in the MAP book design drawings and will need to be addressed through an updated design to ensure modelled performance is replicated upon project delivery. In comparison, the AM model on the other hand has been coded as a two-lane exit from the tunnel.

Further up the network at the McKenzie Road on-ramp and the Southbound Tunnel merge, it is evident that the model predicts LOS outcomes for traffic entering the tunnel system from the Port of Melbourne which are outside the LOS D target for the 5.00pm to 6.00pm time-period.

Given the availability of a third lane within the tunnel at the entrance and at the McKenzie Road on-ramp further consideration should be given to activating this lane on a more permanent basis noting that operational needs ideally should be balanced against project resilience and redundancy objectives.

Given that operational performance issues are limited to the 5.00pm to 6.00pm modelled period, the design includes an ability to activate the third lane to resolve the issue and the Environmental Performance Requirements (EPR’s) include a two-year post implementation review period, a decision to address this performance issue can be made once the project is operational and observations around actual performance can be made.

- Dynon Road On-Ramp

I have been instructed that Dynon Road on-ramp represents an existing condition and sits outside the scope of this project. An exception has subsequently been issued by government on meeting LOS D at this location.
### Table 6.8: Comparison of 2031 project case and 2031 No Project Case Peak Level of Service outputs for Southbound / Eastbound Trips

<table>
<thead>
<tr>
<th>Direction</th>
<th>Project Corridor</th>
<th>Southbound / Eastbound (Outbound/Inbound)</th>
<th>AM</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Project No Project Project No Project</td>
<td>7-8am</td>
<td>8-9am</td>
</tr>
<tr>
<td>Eastbound</td>
<td>Northbound Tunnel Exit</td>
<td>C D NA NA B B NA NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MacKenzie Road Off-Ramp Diverge</td>
<td>C D NA NA B B NA NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MacKenzie Road to Appleton Dock Road Mid-Block</td>
<td>C C NA NA A B NA NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Appleton Road Off-Ramp Diverge</td>
<td>C C NA NA A B NA NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CityLink Off-Ramp Diverge</td>
<td>B C NA NA A B NA NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southbound</td>
<td>Dynon Road Off-Ramp Diverge</td>
<td>E F E F C D C D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Footscray Road Off-Ramp Diverge</td>
<td>D E D E C D C D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CityLink Midblock Between Footscray Road Off and On-Ramps</td>
<td>C D D D B B C C C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Footscray Onramp Merge</td>
<td>C D D E C C C D</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CityLink Southbound</td>
<td>D E E E C D D D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comment on Table 6.8 outputs are provided below.

**AM Peak Hour**

It is evident that some segments during the AM the eastbound and southbound trips fall short of satisfying LOS targets (LOS D) including the Dynon Road off-ramp diverge, the Footscray Road off-ramp diverge, the Footscray on-ramp merge and the CityLink southbound. These are discussed below.

- Dynon Road Off-Ramp Diverge & Footscray Road Off-Ramp Diverge

---

Adapted from Table 121, 122, 131 and 132 from Technical Report A Transport Part 1
The Dynon Road and Footscray Road off-ramp diverges see Level of Service E and F during the AM peak hours. It is understood that this is due to the separation of off-ramp noses (i.e. the point where they divert from the main carriageway) which are not separated according to required standards. As a result, drivers will have less decision time which will result in more weaving, and longer queues.

An exception has been granted for the separation of the off-ramp noses as it is an existing problem outside the scope of this project.

CityLink Southbound

The Footscray On-Ramp merge and CityLink southbound are at Level of Service E during the AM peak hours.

Investigations reveal that volumes along CityLink were not provided by the tenderer, and as such the estimated volumes that were adopted are very conservative on the high side. This, coupled with the separation of off-ramps identified above sees a higher Level of Service along the southbound CityLink during the AM peak hour period.

An exception has been granted as this is an existing problem outside the scope of this project.

PM Peak Hour

The Level of Service along the West Gate Freeway corridor for inbound trips is at a maximum Level of Service D in the PM peak hour, which is to be expected given the PM commuter peak is for outbound trips.

6.6.4.2 Interchange Performance

The three grade separated interchanges are identified in Figure 6.14. Table 6.9 demonstrates that the 2031 Project Case will improve the Level of Service from E to D at Millers Road and Williamstown Road. At Grieve Parade the Level of Service will downgrade from B to C during the 7am-8am time period.

The project case level of service outcomes satisfies project objectives.

Figure 6.14: Location of Grade Separated Interchanges

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67 Technical Report A Transport Part 1, Figure 174, Page 284
### Table 6.9: Grade Separated Interchanges, Level of Service, 2031 Project Case and 2031 No Project Case

<table>
<thead>
<tr>
<th>Grade Separated Interchange</th>
<th>2031 No Project Case</th>
<th>2031 Project Case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7am-8am</td>
<td>8am-9am</td>
</tr>
<tr>
<td>Grieve Parade</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Millers Road</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>Williamstown Road</td>
<td>D</td>
<td>E</td>
</tr>
</tbody>
</table>

#### 6.6.4.3 Arterial Road Intersections

Arterial road intersection performance has been completed for those intersections located within the micro-simulation study area for the No Project and With Project cases.

Maps from within the EES have been reproduced to assist with an appreciation of the intersections analysed. Intersections have been broadly classified into the Westgate and Footscray Road corridors.

The No Project Westgate corridor arterial road intersections are reproduced below in Figure 6.15.

**Figure 6.15: Arterial Intersection, No project Footscray Rd corridor** (Source: Figure 32)

The with Project Westgate Corridor and Footscray Road Corridor arterial road intersections are reproduced in Figure 6.16 and Figure 6.17 on the following page.

---

*Adapted from Table 50 – 55 and Table 103 – 108, Technical Report A Transport Part 1*
Figure 6.16: Westgate Freeway Section Arterial Road Intersections with Project

Figure 6.17: With project Footscray Road Arterial Intersections with project

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[^10]: Technical Report A, Page 305
Network summaries are available for the Without Project evaluation scenario. These are provided in Figure 6.18 to Figure 6.21 for reference. Intersections boxed in red represent those intersections considered and analysed in the No Project case evaluation.
Figure 6.19: AM Peak 8am to 9am²

²Technical Report A, Page 313
Figure 6.20: PM peak 4-5pm

93 Technical Report A, Page 314
Figure 6.21: PM peak 5-6pm

94 Technical Report A, Page 315
Intersection Performance Comparison

Analytics prepared for the No Project and With Project cases include summaries of Level of Service (LOS) performance for both the Westgate and Footscray Road corridors. Tables from the EES have been reproduced comparing the two 2031. The Westgate corridor comparison tables are provided below in Table 6.10 and Table 6.11 for reference.

Table 6.10: AM Peak Arterial Road Intersection

<table>
<thead>
<tr>
<th></th>
<th>2031 project case</th>
<th>2031 no project case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level of Service</td>
<td>Level of Service</td>
</tr>
<tr>
<td></td>
<td>7 am to 8 am</td>
<td>8 am to 9 am</td>
</tr>
<tr>
<td>Hyde Street/Francis Street</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Hyde Street off-ramp/Hyde Street</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Douglas Parade/Simcock Avenue</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

Table 6.11: PM Peak Arterial Road Intersection

<table>
<thead>
<tr>
<th></th>
<th>2031 project case</th>
<th>2031 no project case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level of Service</td>
<td>Level of Service</td>
</tr>
<tr>
<td></td>
<td>4 pm to 5 pm</td>
<td>5 pm to 6 pm</td>
</tr>
<tr>
<td>Hyde Street/Francis Street</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Hyde Street off-ramp/Hyde Street</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Douglas Parade/Simcock Avenue</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

Analysis for the Westgate Corridor indicates acceptable operating conditions in the AM period for the project case outcome, an improvement over the 2031 No project case outcome. In comparison PM period conditions at the Hyde Street / Francis Street intersection replicate Level of Service (LOS) outcomes equivalent to Level F which falls short of project objectives LOS outcomes equal to Level D.

A review of analysis outputs (Table 27 versus Table 74) for the PM period indicates a No project case outcome summary as follows:

- 4.00pm to 5.00pm: 106 seconds delay, Int. Volume 2,560 vehicles
- 5.00pm to 6.00pm: 103 seconds delay, Int. Volume 2,600 vehicles

This compares with the project case outcome as follows:

- 4.00pm to 5.00pm: 87 seconds delay, Int. Volume 2,960 vehicles
- 5.00pm to 6.00pm: 87 seconds delay, Int. Volume 2,950 vehicles

Operationally, the north approach is contributing greatest to the intersections overall level of poor performance with the reviewer noting that limited ability exists to upgrade the intersection to assist with projected delays over around 200 seconds during the 4.00pm to 6.00pm PM

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95 Technical Report A, Appendix, Page 94
operating period. This compares with an existing condition of around 250 seconds during these same periods.

Analysis indicates that demand on the east approach of the intersection turning left into Hyde Street is largely responsible for the operational outcome with this demand requiring a disproportionate share of available intersection green time.

An aerial review of site constraints around potential upgrade can be appreciated in Figure 6.22 below showing the existence of petroleum chemical storage infrastructure.

Figure 6.22: Aerial View of Intersection of Francis Street / Hyde Street, Yarraville

It is evident that any intersection upgrade is challenged by existing road reservation constraints and an inability to make practicable alterations. Accordingly, and given signal timing changes together with varied traffic distribution patterns are forecast to benefit intersection efficiency (+15 per cent), I am satisfied that the project outcome is acceptable.

I have also been instructed that the intersection sits outside the project area, representing an existing condition and therefore not subject to the same performance requirement.

The Footscray Road corridor comparison tables are provided below in Table 6.12 and Table 6.13 for reference.
Table 6.12: Footscray Road Corridor Intersection Performance

<table>
<thead>
<tr>
<th>Location</th>
<th>Project case</th>
<th>No project case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7 am - 8 am</td>
<td>8 am - 9 am</td>
</tr>
<tr>
<td>Footscray Road/Lincoln Entrance</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Footscray Road/Dock Link Road</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Footscray Road/Appleton Dock Road</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Footscray Road/CityLink NE off ramp</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Footscray Road/CityLink SE on ramp</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Footscray Road/Pearl River Road</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Footscray Road/Waterfront Way</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Footscray Road/Wurundjeri Way</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Wurundjeri Way/Dudley Street</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Wurundjeri Way/Bourke Street</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Wurundjeri Way/Flinders Street</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Dynon Road/West Gate Tunnel Project Link Road</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Dynon Road/CityLink SE off ramp</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Dynon Road/Dryburgh Street</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Dynon Road/Wurundjeri Way Extension</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Wurundjeri Way extension/West Gate Tunnel Project</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>Footscray Road Link/West Gate Tunnel Project Mainline</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Mackenzie Road Off-ramp</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Mackenzie Road On-ramp</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Table 6.12 reveals general levels of improvement for all tested arterial road intersections during the AM period with the lowest level of performance Level D consistent with project objectives. Accordingly, performance outcomes for the Footscray Road corridor during the AM period are considered satisfactory.

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98 Technical Report A, Appendix, Page 110
Table 6.13: Footscray Road Corridor Intersection Performance

<table>
<thead>
<tr>
<th>Location</th>
<th>Project case</th>
<th>Project case</th>
<th>No project case</th>
<th>No project case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 pm - 5 pm</td>
<td>5 pm - 6 pm</td>
<td>4 pm - 5 pm</td>
<td>5 pm - 6 pm</td>
</tr>
<tr>
<td>Footscray Road/Linlithgow Entrance</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>Footscray Road/Dock Link Road</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Footscray Road/Appleton Dock Road</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>F</td>
</tr>
<tr>
<td>Footscray Road/CityLink NB off ramp</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Footscray Road/CityLink SB on ramp</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>E</td>
</tr>
<tr>
<td>Footscray Road/Pearl River Road</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>Footscray Road/Waterfront Way</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Footscray Road/Wurundjeri Way</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Wurundjeri Way/Dudley Street</td>
<td>D</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Wurundjeri Way/Bourke Street</td>
<td>B</td>
<td>D</td>
<td>B</td>
<td>D</td>
</tr>
<tr>
<td>Wurundjeri Way/Finders Street</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Dynon Road/West Gate Tunnel Project Link Road</td>
<td>B</td>
<td>B</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Dynon Road/CityLink SB off ramp</td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Dynon Road/Clyde Street</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>E</td>
</tr>
<tr>
<td>Dynon Road/Wurundjeri Way Extension</td>
<td>C</td>
<td>C</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Wurundjeri Way extension/West Gate Tunnel Project</td>
<td>B</td>
<td>B</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Footscray Road/Linlithgow Entrance</td>
<td>B</td>
<td>B</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Mackenzie Road Off-ramp</td>
<td>B</td>
<td>B</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Mackenzie Road On-ramp</td>
<td>B</td>
<td>B</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Table 6.13 reveals comparable levels of performance for all tested arterial road intersections during the AM period with the lowest level of performance Level D consistent with project objectives. Accordingly, performance outcomes for the Footscray Road corridor during the PM period are considered satisfactory.

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7. Active Travel Considerations

7.1 Introduction

Successful cities adopt an integrated approach to mobility by providing tailored infrastructure and facilitating mode choice options. Active transport represents an important mode in the transport planning framework and should be considered in the context of a growing, sustainable transport mode with many societal benefits.

**Active travel definition:**
Active travel refers to any form of human powered mobility, which can include: walking, using a wheelchair or other personal mobility device, pushing a pram, riding a bicycle, tricycle electric bike, scooter, skateboard, or rollerblades.  

Walking, cycling and riding – whether for recreation or transport – provide many benefits for individuals, families, businesses and local communities, including:

- easing congestion on the road network
- improved public health and reduced healthcare costs
- improved community wellbeing and social cohesiveness
- reduced environmental impacts
- increased economic activity in the local area.

For public transport trips, a walking element is typically included at either (or both) ends of the journey. With a high proportion of journeys to work into the CBD being on public transport, this equates to significant walking trips at the journey beginnings and ends. This highlights the importance of providing high quality facilities to support multi-modal trips.

The Government has outlined a commitment to include new and upgraded active transport infrastructure in association with major transport infrastructure projects. The WGTP is an example of this commitment.

The WGTP includes a range of proposals designed to improve the safety and accessibility of pedestrians and cyclists along the study corridor. The key initiatives are summarised in the WGTP Walking and Cycling Fact Sheet, and the location of the treatments is shown in Figure 7.1.

Figure 7.1: WGTP proposed walking and cycling initiatives

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100 ACT Government, Building an Integrated Transport Network – Active Travel, 2015 p. vi

101 ACT Government, Building an Integrated Transport Network – Active Travel, 2015 p. 1

102 West Gate Tunnel Project, Walking and Cycling fact sheet (April 2017). Page 2
The walking and cycling proposals shown in Figure 7.1 are summarised below.

1. Upgrade of the Kororoit Creek trail between Geelong Road and Grieve Parade to connect with Federation Trail in the north and Crofts Reserve and the future Kororoit Creek Trail extension in the south.
2. Wider, well-lit paths under the West Gate Freeway at Millers Road and Williamstown Road, along with new shared use bridges over the Freeway at Lunch Reserve and Fogarty Avenue.
3. Completion of the Federation Trail missing link between Fogarty Avenue and Hyde Street, including upgrades to the trail from Kororoit Creek to Fogarty Avenue.
4. A shared path near the Newport freight rail line at New Street, South Kingsville that provides a connection to the Federation Trail, Bradmill and Precinct 15 sites.
5. A new shared path connection from Federation Trail to Hyde Street Reserve and Spotswood Station to improve access with Spotswood and Yarraville communities.
6. Upgraded shared path facilities along the east side of Hyde Street and south side of Harris Street.
7. A new shared path bridge over Whitehall Street to create a link between Yarraville Gardens and Maribyrnong River.
8. New landscaping associated with the existing shared use path on the south side of Footscray Road.
9. New 2.5km elevated veloway along Footscray Road, suspended between the proposed elevated Freeway structure between Shepherds Bridge and Pearl River Road.
10. Upgrade and widen existing shared path on Footscray Road over the Moonee Ponds Creek.
11. A new shared path bridge over Footscray Road to connect with the Capital City Trail.
12. A new shared path bridge at Dynon Road to improve crossing of Moonee Ponds Creek and the rail lines.

The above proposals include over 14km of new and upgraded walking and cycling paths and would enable a continuous off-road journey from Werribee to the City. Further details of the proposals are included in Section 7.4 - Design Review.

7.2 Existing Conditions Land Use & Network Review

The various benefits afforded by active transport have been well documented and include (but not limited to) improved health, environmental, economic, and social outcomes. Many of these align with objectives set out in the Transport Integration Act (2010) set out in Section 3 of this report.

Considerations to support active travel are included in all key strategic transport plans for the State. Research set out earlier in this report indicate that the western suburbs of Melbourne are experiencing and will continue to experience some of the City’s highest population growth. Along the West Gate Freeway section of the WGTP, there will be a particularly concentrated increase in residences, businesses and services associated with the large future urban renewal sites including the Bradmill Precinct located in the Maribyrnong Local Government Area and Precinct 15 located in the Hobsons Bay Local Government Area. The location of these sites is shown in Figure 7.2.
The new communities and trips created by these developments should include a level of integrated transport planning that seeks to harness and encourage usage of as many sustainable transport modes as practically possible. These sites are located within 10km of the CBD and cycling as a mode of transport over this distance can be a viable option for many people if there is safe infrastructure to facilitate this. There is an increasing demand for more transport choices across the Melbourne Metropolitan area and supporting and encouraging cycling for transport (commuting) is an important strategic state goal.\textsuperscript{107}

The inner west has long been overlooked with respect to the provision of safe, continuous bicycle infrastructure. The cycle network in the west remains fragmented, with many missing links and barriers to cycling. Perhaps the most significant and long-standing gap in the network is the missing connection between Federation Trail and Hyde Street. Completing this missing link would improve access from the west to the City and also allow connections to the Bay West Trail, the Maribyrnong River Trail and the Footscray Road shared path.

The WGTP EES has identified various missing links and issues concerning pedestrian and cycling infrastructure. These are broadly summarised in the following sections.

**Missing Active Travel Links Review**

The West Gate Freeway itself presents a barrier for residents to the south of the Freeway. There are only two pedestrian overpasses provided and the arterial road crossings do not have adequate provision for cyclists. There is a need to improve access and permeability across the Freeway for pedestrians and cyclists. These missing links and issues are shown in Figure 11-8 of the EES and has been reproduced in Figure 7.3.

\textsuperscript{106} EES Main Report, Volume 2, Chapter 16, Figure 16-1, Page 16-3
\textsuperscript{107} Plan Melbourne, Policy 3.1.6 – Support cycling for commuting
As shown in Figure 7.3, there is a missing connection on the Kororoit Creek Trail to the south of the Princes Highway. If the trail was extended to connect with the Hobsons Bay Coastal Trail, this would create a continuous walking and cycling path between Ardeer and Port Phillip Bay.

The WGTP EES has also highlighted various pedestrian and cycling issues and opportunities around the Port, Citylink and City end of the project area. The issues consist of missing links, crossing issues, and associated connectivity opportunities. The location of the issues is shown in Figure 7.4 on the following page, with a summary provide below.

Summary of active travel network issues:

1. Missing link between Federation Trail and Hyde Street
2. Poor connection between CityLink and Dryburgh Street on Dynon Road
3. Poor connection between Footscray Road shared path and Sunshine Road
4. Shared path unsignalised crossings of Sims Street slip lanes (high truck volumes)
5. Non-signalised slip lanes at Dock Link Road and Appleton Dock Road
6. Poor staged crossing at Pearl River Road/Footscray Road/CityLink ramp intersection (insufficient storage capacity on islands for bikes)
7. Narrow shared path across Moonee Ponds Creek
8. Poor lighting (and personal security) on shared path beneath CityLink
9. Missing link between Dynon Road Trail and Maribyrnong River Trail
10. Poor connectivity between North Melbourne and Docklands

The summary of issues and missing links described above, highlight the fragmented nature of the cycle network surrounding the city. Cumulatively these issues and lack of network cohesion create barriers to the uptake of walking and cycling.

Figure 7.4: Pedestrian and cycling missing links and issues (Port, Citylink and City Connections)

7.3 Strategic Need Review (Policy Context)

National Planning

Australia’s National Cycling Strategy sets out a range of priorities and objectives that focus on creating a comprehensive network of safe and attractive routes, provide a safe environment for cycling and provides for cycling through integrated planning. The vision of the strategy sought “to double the number of people cycling in Australia by 2016.” This vision was accompanied by six key priorities and objectives (Table 7.1).
Table 7.1: National Cycling Strategy Priorities and Objectives

<table>
<thead>
<tr>
<th>No.</th>
<th>Priority</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cycling Promotion</td>
<td>Promote cycling as both a viable and safe mode of transport and an enjoyable recreational activity</td>
</tr>
<tr>
<td>2</td>
<td>Infrastructure and Facilities</td>
<td>Create a comprehensive network of safe and attractive routes to cycle and end-of-trip facilities</td>
</tr>
<tr>
<td>3</td>
<td>Integrated Planning</td>
<td>Consider and address cycling needs in all relevant transport and land use planning activities</td>
</tr>
<tr>
<td>4</td>
<td>Safety</td>
<td>Enable people to cycle safely</td>
</tr>
<tr>
<td>5</td>
<td>Monitoring and Evaluation:</td>
<td>Improve monitoring and evaluation of cycling programs and develop a national decision-making process for investment in cycling</td>
</tr>
<tr>
<td>6</td>
<td>Monitoring and Evaluation:</td>
<td>Develop nationally consistent technical guidance for stakeholders to use and share best practice across jurisdictions</td>
</tr>
</tbody>
</table>

State Planning Considerations

Victoria is falling behind other states and Territories in relation to annual investment into cycling. A recent review of the outcomes from the Strategy indicated that between 2015-2016 Victoria ranked second lowest (only above SA) for cycling expenditure, with an investment of $3.01 per head of population – well below the national average of $5.29 (see Figure 7.5). This equates to $17.3 million and is the lowest amount for Victoria since 2010. For the 2016-2017 period, however, Victoria’s bicycle budget is $33.2 million, which shows a promising upturn in cycling investment.

Figure 7.5: State and Territory Investment in Cycling 2015-2016

The National Cycling Strategy is aligned with the National Road Safety Strategy 2011-2020 which is firmly based on Safe System principles and is framed by the guiding vision that no person should be killed or seriously injured on Australia’s roads. Safe Roads is the first (of four) cornerstones in the Strategy, and makes the following recommendation with respect to cyclists:

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111 This figure does not include investment made by local government.
“Implementing infrastructure measures to physically separate bicyclists and motor vehicles on higher-speed roads with significant bicycle usage.”\textsuperscript{113}

Ensuring the safety of vulnerable road users is a theme that is carried through into the Victorian Road Safety Strategy 2016-2020, where the Government is investing $100 million in the Safer Cyclists and Pedestrian Fund. The focus of the fund is “on improving routes to train station and the CBD, filling the ‘missing links’ in the existing bicycle network and pedestrian crossings, markings and signs.”\textsuperscript{114}

The funding package will also include investment in separated bicycle paths on strategic cycling corridor and principal and priority bicycle networks, along with supporting cycling on low speed, low volume roads. All of these measures are designed to create safer environments for pedestrians and cyclists and reduce barriers to increasing walking and cycling.

Active transport can make a significant contribution towards creating and maintaining healthy, active communities, reducing congestion and offering a sustainable alternative transport mode to private vehicles. Strengthening infrastructure to support cycling trips diversifies transport options, enabling more route choices and spreading travel demands across networks. Increasing cycling mode share is necessary to maintain Melbourne as a ‘liveable’ city.

This is supported at a state level through Victoria’s Cycling Strategy objective “to grow and support cycling participation to improve the well-being of Victorians, provide better places to live, grow jobs, support a stronger economy and contribute to a healthier environment.”\textsuperscript{115}

In working to create a more bike-friendly state, the Strategy outlines a strategic framework with three steps that the Government will adopt to grow and support cycling. Each step is designed to build upon the other to achieve the overall objective of growing and supporting cycling. Six strategic directions have been identified to assist with achieving the steps in the framework. The strategic framework and interaction with the strategic directions are highlighted in Figure 7.6.

Three strategic directions are most relevant to the WGTP and these are summarised in Table 7.2, together with the corresponding alignment with the WGTP.

\textsuperscript{113} Australian Transport Council, National Road Safety Strategy 2011-2020, p. 56
\textsuperscript{114} Victorian Road Safety Strategy 2016-2020
\textsuperscript{115} Cycling into the Future 2013-23, Victorian Cycling Strategy
\textsuperscript{116} Cycling into the Future 2013-23
### Table 7.2: Summary of Strategic Direction Alignment Areas with Cycling Strategy Framework

<table>
<thead>
<tr>
<th>Direction No.</th>
<th>Strategy Description</th>
<th>WGT Project Alignment Areas</th>
</tr>
</thead>
</table>
| 3             | **Reduce safety risks:** we will reduce conflicts and risks to make cycling safer. We will identify risks that pose a hazard to the safety of bike riders and take action to reduce these risks. | The WGT project includes a suite of measures designed to improve the safety of cyclists, through the creation of new and replacement bridges, new and upgraded paths and a grade-separated veloway. These include:  
- Completion of Federation Trail off-road path.  
- 2.5km long elevated veloway  
- New cycling and pedestrian bridges across Moonee Ponds Creek, Footscray Road and Whitehall Street  
- Improvements to crossings under the Freeway |
| 4             | **Encourage cycling:** we will help Victorians feel more confident about cycling and make cycling more attractive. We will make it easier for people to cycle and address barriers that prevent them from cycling. This includes providing information about where and how to cycle and supporting community programs to help people cycle and improve their confidence in cycling. | Real and perceived safety risks contribute to lower uptake of cycling by vulnerable road users. The WGT project will reduce barriers to cycling through new or improved (or grade separated) crossings of major roads and upgrades of existing shared paths to make them safe and attractive for all ages and abilities. The completion of the Federation Trail missing link will also create a continuous connection that is likely to attract and encourage higher cycling numbers. |
| 6             | **Plan networks and prioritise investment:** we will plan and prioritise urban cycling networks, making it easier to cycle to destinations and helping people to get out and about on their bikes. We will also plan and set priorities for regional trails and specialist cycle sport infrastructure. | The WGT project includes over 14km of new and upgraded walking and cycling paths that contribute towards creating a more connected network of cycle paths. The proposed new paths and trails are designed to cater for all users.[1] |

[1] The proposed veloway may not be used by all user’s due to its design and location. It is likely to primarily be used by high-speed commuters (and predominantly males)

A fundamental enabler to facilitating an increase in cycling mode share is the creation of a high quality, hierarchical cycle network that provides direct, priority connections to key trip attractors and generators and also a fine grain network of feeder routes from local neighbourhoods that promote early adoption of cycling by children.

VicRoads has long had a plan for a Principal Bicycle Network (PBN) for metropolitan Melbourne. This is a relatively comprehensive network and typically includes routes on many arterial roads. While extensive, large sections of the network remain as ‘proposed’ and therefore without facilities, and out of reach for potential riders. An extract of the PBN is shown in Figure 7.7.
Strategic Cycling Corridors (SCCs) form a sub-set of the PBN and are considered the priority routes for investment. SCCs are intended to provide:

- “a long-term vision for a network of safe, direct and high-quality cycling corridors connecting activity centres, public transport hubs and other key locations
- a step-change in cycling facilities to encourage cycling of all ages and abilities – using a combination of high quality a) off-road paths, b) on-road separated bike lanes and c) traffic-calmed local streets
- a focused planning and investment effort along these key corridors.”

The relationship between the PBN and SCCs are shown in Figure 7.8.

An extract of the SCC network surrounding the project area is shown in Figure 7.9.
From Figure 7.9 it can be seen that there are SCCs along several roads within the WGTP. These strategically important corridors will need to be programmed for future development by the State irrespective of whether the WGTP is implemented. The WGTP presents an opportunity to fast-track investment in these cycling corridors due to the efficiencies achieved through integrating with a major infrastructure project. Due to uncertainty around Government funding cycles and competing priorities, while there is a strategic need for completing these corridors, it is difficult to predict what the timing would be for future investment in these corridors.

It is acknowledged that the active transport infrastructure contributions are proposed as part of the broader project and provide a cost-effective opportunity to deliver benefits to pedestrians and cyclists as part of a major infrastructure project. This is entirely consistent with recommendations in Victoria’s Cycling Strategy to incorporate cycling into major public infrastructure projects.

"Building bike paths at the same time as upgrading a road, developing a rail corridor, or improving tram stops minimises disruption to the transport system and reduces the costs of developing urban cycling networks." - Cycling into the Future 2013-23

Delivering all of the WGTP active transport measures in isolation would add considerable cost to the overall budget that would be required and it is highly likely that the scale and quality of the proposals would be less than the works included in the WGTP proposal.

Local Government Considerations

The WGTP passes through three local government areas (LGA): Hobsons Bay City Council, Maribyrnong City Council and Melbourne City Council. There are synergies between connecting bicycle routes through all of the LGAs – particularly between Hobsons Bay City Council and Maribyrnong on either side of the West Gate Freeway. Both these Councils recognise the importance of completing the missing Federation Trail link and the multiple treatments proposed

to improve north-south connectivity between the Councils will assist in connecting local communities and facilitate more short, local bicycle trips.

The Maribyrnong Bicycle Strategy (2014) has the overarching objective “to guide planning for cycling in Maribyrnong to enable more people to ride more often and to make Maribyrnong more liveable by reducing car dependency.” This is consistent with the National Cycling Strategy’s vision of getting more people cycling. The Maribyrnong Bicycle Strategy outlines several key focus areas. The areas that align with the WGTP are summarised in Table 7.3.

Table 7.3: Summary of Alignment Areas (Maribyrnong City Council Bicycle Strategy)

<table>
<thead>
<tr>
<th>Strategy Area</th>
<th>WGT Project Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintaining investment in premier bike routes</td>
<td>The WGT project includes a suite of measures designed to improve the safety of cyclists. The project specifically improves the treatment of the premier bike route between Shepherds Bridge and the West Gate through an upgraded shared path along Hyde Street, a new cycling and pedestrian bridge over Whitehall Street and a new off-road path connecting with the Federation Trail between Fogarty Avenue and Hyde Street.</td>
</tr>
<tr>
<td>More riders cycling more often</td>
<td>The WGT project includes over 14km of new and upgraded walking and cycling paths that contribute towards creating a more connected network of cycle paths.</td>
</tr>
<tr>
<td>Major projects and bike infrastructure</td>
<td>The WGT project includes a suite of measures designed to improve the safety of cyclists, through the creation of new and replacement bridges, new and upgraded paths and a grade-separated veloway. These will directly benefit cyclists in Maribyrnong and include:</td>
</tr>
<tr>
<td></td>
<td>• Completion of Federation Trail off-road path</td>
</tr>
<tr>
<td></td>
<td>• 2.5km long elevated veloway</td>
</tr>
<tr>
<td></td>
<td>• New cycling and pedestrian bridges across Moonee Ponds Creek, Footscray Road, Whitehall Street</td>
</tr>
</tbody>
</table>

The last chapter in the Strategy identifies 60 specific actions to improve the bike network. The actions near the WGTP are circled (red) in Figure 7.10. The WGTP addresses half of these actions, with descriptions included at Appendix C.

Figure 7.10: Specific Actions From the Maribyrnong City Council Strategy

121 Maribyrnong Bicycle Strategy 2014
The Hobsons Bay Strategic Bicycle Plan (2013-2017) has adopted the pragmatic objective “to further build on the existing bicycle network to develop a highly connective bicycle network... so that commuter cyclists, recreational cyclists, sports cyclists, and tourists can move to and from major focal points within Hobsons Bay”

Council acknowledges that cycling numbers in Hobsons Bay are low, although they are growing and that many of the current cycling trips are of a recreational nature. The Bay Trail is the most popular bike route. This provides a good, scenic, recreational path but is generally too circuitous to be attractive as a commuter cycling route. The only other potential alternative north-south bike route in Hobsons Bay is the on-road bike lanes on Millers Road. Millers Road is a divided, primary arterial road with a 60km/h posted speed limit (outside school zones). This does not offer a safe and conducive cycling environment for riders of all ages and abilities and the bike lanes do not continue all the way to the West Gate Freeway.

The Plan has a strong focus on delivering tangible outcomes through prioritised actions designed to create a complete network that is accessible to the whole community.

The key issues identified from a review of the Strategic Bicycle Plan include:

- Many remaining gaps within the existing bicycle network.
- Inadequate resources to undertake maintenance of assets.
- Decline in levels of funding and funding programs provided by the state government over recent years is affecting the development of specific projects and the connective bicycle network.
- Many major projects are too large/costly for the Council to fund alone and require various approvals.
- Many major projects are the responsibility of other government agencies who rate higher priority projects in other municipalities ahead of projects in Hobsons Bay.
- Steady increase in the numbers of cyclists and range of cyclists (e.g. commuters, sports training, recreational) using the network, with more conflict on off-road trails between cyclists and pedestrians/dog walkers reported.

The WGTP provides opportunities to address some of the network connectivity issues across the Freeway through the upgrade of two pedestrian bridges and several road crossings beneath the Freeway.

The City of Melbourne has the most recent Bicycle Plan (2016-2020) and, commensurately has the highest ridership numbers and most connected bicycle network of the three Councils. Figure 7.11 compares bicycle journey to work trips between Councils, based on 2011 census data and shows Melbourne with a 3.92 per cent proportion of bicycle only work trips.

Figure 7.11: Comparison of Journey to work trips (bicycle only) 2011

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123 Bicycle Network Bike Account (bikeaccount.com.au), accessed 24/07/17
The vision of the City of Melbourne Bike Plan is to “Make Melbourne a cycling city”. This is also the key direction from the City of Melbourne Transport Strategy 2012 which emphasises the highest priority that is afforded to bicycles. The Bike Plan outlines seven goals to achieve the vision:

1. “Plan for future growth that includes high quality bicycle infrastructure, security and parking.
2. Deliver an interconnected network for people of all ages and ability to ride bikes.
3. Increase bicycle-friendly facilities, support stations, and parking to make it easy to travel by bike and park.
4. Deliver a safer and well-lit environment for people to ride bikes.
5. Reduce the risk of riding a bicycle in the city and to promote motorists’ awareness of cyclists on the road.
6. Encourage more people to take up riding or ride more frequently.
7. Evaluate changes, manage data and continuously improve our performance.”

It can be seen that many of these goals will benefit from the cycling infrastructure proposals associated with the WGTP. The Maribyrnong River forms the boundary between the City of Melbourne and the City of Maribyrnong. A major bicycle entry point into the City is Shepherds Bridge, with 720 (two-way total) cyclists recorded over a 2-hour period in the morning peak. Since cyclists are not permitted on the West Gate Bridge, this is the main gateway for riders from the west and south-west. An alternative is for riders to use the Westgate punt service between Spotswood and Port Melbourne (Fishermans Bend) which operates at 20-minute frequencies, Monday to Friday during the morning and evening peak periods.

The actions in the City of Melbourne Bike Plan include “a commitment to work with and support the Victorian Government to develop strategic cycling corridors linking central Melbourne.” Four priority strategic cycling corridors have been identified in the Melbourne Bike Plan and these are shown in Figure 7.12.

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124 Bicycle Network Super Tuesday results, March 2015 (source: WGTP EES Main Report, Volume 4, Port, CityLink and city connections, Chapter 25, p. 25-7
125 Costs $2.70 one-way (source: https://www.ptv.vic.gov.au/getting-around/westgate-punt/) accessed 24/01/17
126 City of Melbourne Bike Plan 2016-2020, p. 3
The blue route is the Sunshine to Box Hill strategic cycling corridor and Table 7.4 includes a summary of the proposed actions for Footscray Road and the corresponding proposal by the WGTP.

Table 7.4: Footscray Road SCC actions and WGTP proposals

<table>
<thead>
<tr>
<th>City of Melbourne Footscray Road Actions</th>
<th>WGTP proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve continuity and reduce conflict points along the shared path on the south side of Footscray Road, between Shepherd Bridge and CityLink overpass</td>
<td>Provide an elevated (fully grade-separated) bicycle expressway (‘veloway’) above Footscray Road.</td>
</tr>
<tr>
<td>Improve connection to Moonee Ponds Creek Trail</td>
<td>A new shared path bridge across Moonee Ponds Creek (replacing an existing rail bridge) and a new shared path bridge over Footscray Road (east of Pearl River Road) connecting with the Capital City Trail.</td>
</tr>
<tr>
<td>Investigate feasibility of a dedicated bicycle lane underpass crossing Footscray Road</td>
<td>See note above.</td>
</tr>
</tbody>
</table>

127 City of Melbourne Bike Plan 2016-2020, Figure 9, Page 16
From Table 7.4, it can be seen that the WGTP initiatives address all of the actions identified for Footscray Road in the City of Melbourne Bike Plan (the ‘Plan’). The Plan also indicates that the City of Melbourne “strongly supports the development of cycling corridors, particularly:

- Sunshine to Box Hill
- River Corridor
- Batman to Elsternwick
- Coburg to St Kilda”

While it is evident that the WGTP bicycle infrastructure treatments for Footscray Road provides a high quality, grade-separated exclusive bicycle path, and shared path bridges, it is recognised that the proposed veloway (in its current design format) may not attract the full spectrum of riders that the City of Melbourne aims to cater for (i.e. all ages and abilities). The proposal is designed to cater for high-speed commuter cyclists. Since the veloway is elevated and only has two emergency exits (one at CH815, X51 and a second at C1567, X52) it is likely that there may be perceptions regarding personal safety and that this could limit the use of the facility. On my review of the project, the veloway is not intending to be a replacement for the existing, heavily patronised shared path on the south side of Footscray Road, but rather a complementary alternative for commuters seeking a direct, unobstructed (frictionless) route into the City.

It is believed that further refinements to the concept veloway design may contribute towards making it more attractive to a wider spectrum of users. Further comment on this is provided in Section 7.4 Design Review.

The City of Melbourne Bike Plan outlines several key targets that it hopes the Plan will achieve by the end of its lifespan in 2020. These are:

<table>
<thead>
<tr>
<th>Melbourne Bike Plan 2020 Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Transport infrastructure projects will include facilities or viable alternatives for people riding bikes</td>
</tr>
<tr>
<td>o Major bicycle routes north/south and east west will connect the community to schools, shops and community facilities by 2020</td>
</tr>
<tr>
<td>o On-street bicycle parking will be increased by 2000, concentrating on busy public areas. Planning for large scale, safe parking facilities at transport hubs will be progressed</td>
</tr>
<tr>
<td>o Bicycle maintenance stations will be available at entrances to the city</td>
</tr>
<tr>
<td>o Zero fatalities and serious injury crashes</td>
</tr>
<tr>
<td>o One in four vehicles entering the central city in the morning peak will be bicycles</td>
</tr>
<tr>
<td>o Seven per cent of total trips to, within and from the City of Melbourne will be made by bike to meet our targets of 10 per cent cycling mode share by 2030</td>
</tr>
<tr>
<td>o Provide transparent data and complete a Bicycle Account in 2017 and 2019</td>
</tr>
</tbody>
</table>

From the targets, it can be seen that the active transport proposals associated with the WGTP may contribute towards achieving some of the targets (in **BOLD**).

### 7.4 Design Review

#### 7.4.1 Introduction

This review has been completed for the active travel infrastructure components of the WGTP. It has considered the designs based on the plans available in the project’s Map Book, including

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128 City of Melbourne Bike Plan 2016-2020, p. 15
horizontal and vertical alignment plans, noting that the plans are not detailed design plans. Therefore, the assessment considers only those elements where sufficient detail is provided on the plans. It is also noted that bicycle volumes and vehicle volumes have not been reviewed. In addition to general design and connectivity elements, the review has had broad regard for safety and potential risks and opportunities.

The review excludes the following:
- Civil and structural elements (including bridge design details),
- Formal road safety audit,
- Adequacy of the proposal based on forecasted patronage volumes.

This review considers:
- An overview of general widths, grades, path intersection designs and connectivity,
- A need to for further support by the appropriate level of peer review and independent road safety audits to be completed in subsequent stages.

References are limited to EES and associated technical reports, appendices and Map Books.

7.4.2 Design Guidelines

In completing the design review, the following standards and guides were referenced:
- Cycling Aspects of Austroads Guides 2017,
- Guide to Road Design Part 6A: Paths for Walking and Cycling 2017,
A note about Bicycle Facility Separation:

It is generally acknowledged that it is preferable (on safety grounds) to separate cyclists from pedestrians. Separated paths can reduce potential conflicts between fast-moving cyclists and slow-moving pedestrians and lead to more pedestrians using pathways.

Historically, Australian practices have typically focused on providing paths that are shared between pedestrians and cyclists. Reasons for this can include: low cycling numbers, space requirements and cost. At low cycling speeds and low volumes, it may be acceptable to provide shared paths, however as rider volumes and speeds increase, this increases the potential for conflict and can discourage walking by more vulnerable pedestrians (including elderly and children).

Victoria Walks (a walking health promotion charity for the state) believes that creating shared paths reducing the attractiveness of the paths to all users.\(^\text{129}\) Instead, Victoria Walks cites Austroads Guidance\(^\text{130}\) on the threshold for separating paths, which suggests that separate bicycle and pedestrian paths should be provided when pedestrian volumes are ≥ 50 per hour and cyclist volumes are ≥ 50 per hour (and cycle speeds are above 20\(\text{km/h}\)).

This guidance differs from the Austroads Guidance relating to the determination of path width, which suggests (for a 50/50 directional split) that shared paths are considered acceptable when pedestrian volumes are less than 100 pedestrians per hour (two-way) and peak hour (two-way) cyclist volumes are generally less than 600 cyclists per hour.\(^\text{131}\)

With cyclist volumes increasing in Melbourne, best practice would suggest that the provision of separated bicycle and pedestrian path infrastructure will provide the best level of service for both pedestrians and cyclists and build in capacity to cater for future growth in cycling numbers.

7.4.3 Review of WGT Active Transport Design Elements

Before considering the design elements of the proposal it is first necessary to understand the key bicycle network features required for a high-quality bicycle network. These can be summarised as:\(^\text{132}\)

1. **Safety** – should have minimal risk of traffic-related injury, low perceived danger, space to ride and minimum conflict with vehicles.

2. **Coherence** - infrastructure should form a coherent entity, link major trip origins and destinations, have connectivity, be continuous, signed, consistent in quality, easy to follow, and have route options

3. **Directness** – route should be direct, based on desire lines, have low delay through routes for commuting, avoid detours and have efficient operating speeds

4. **Attractiveness** – lighting, personal safety, aesthetics, integration with surrounding area, access to different activities

5. **Comfort** - smooth skid-resistant riding surface, gentle gradients, avoid complicated manoeuvres, reduced need to stop, minimum obstruction from vehicles

Since all the infrastructure associated with pedestrians and cyclists relates to off-road infrastructure, the design review primarily focuses on cross-section, gradient, path intersections,

\(^{129}\) Victoria Walks, Shared Paths – the issues, v3.0, 2015 (Discussion Paper)
\(^{130}\) Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling, 2017, Appendix C, Figure C1-1, p. 106
\(^{131}\) Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling, 2017, Figure 5.4, p. 28.
\(^{132}\) Cycling Aspects of Austroads Guide 2017, p. 8
safety and clearances. Elements such as lighting, finished surfaces and product details have not been considered at this design stage.

The infrastructure proposed for the WGTP generally includes four main types:

1. New or upgraded shared Path
2. New at-grade road crossing (shared path)
3. New Pedestrian and Bicycle Bridge
4. Bicycle-only path (veloway)

The design criteria specified for walking and cycling paths in the WGTP only relates to footpath and shared path widths and is reproduced in Table 7.5. It is noted that criteria for gradients and vertical clearances have only been provided for the road elements of the project.

Table 7.5: Design criteria for Footpaths and Shared Paths in the WGTP

<table>
<thead>
<tr>
<th>Criteria</th>
<th>West Gate Freeway</th>
<th>Local road connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian paths (minimum width)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New pedestrian paths – 1.5m</td>
<td></td>
<td>New pedestrian paths – 1.5m</td>
</tr>
<tr>
<td>Modifications to existing pedestrian paths would match the existing path</td>
<td></td>
<td>Modifications to existing pedestrian paths would match the existing path</td>
</tr>
<tr>
<td>New pedestrian bridges – 3.0m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared paths (minimum width)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New shared paths – 3.0m</td>
<td></td>
<td>New shared paths – 3.0m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Footscray Road new shared path – 4.0m</td>
</tr>
</tbody>
</table>

[1] WGTP EES Main Report, Volume 1, Section 5.3.1, p. 5

A summary of the findings of the design review is provided in Table 7.6 noting that the matters raised are likely to be addressed during the next phase of detailed design. The following table is therefore a prompt to assist the project team with its review. A reference map shown in Figure 7.13. For clarity, the table includes guidance on whether the proposal offers a net improvement compared to the existing condition or whether an opportunity for improvement might warrant exploration as follows:

- **Tick** = net improvement
- **Light bulb** = potential opportunity for further improvement

Procedurally, I expect that where matters have been highlighted for further consideration, they can be considered within the framework of the Environmental Performance Requirements (EPR’s) and in particular EPR TP1 which seeks to optimise design performance.

Table 7.6: Design review of active travel infrastructure in the WGTP

<table>
<thead>
<tr>
<th>Ref</th>
<th>WGTP Proposal</th>
<th>Design Response</th>
<th>Improved [1]</th>
</tr>
</thead>
</table>
| 01  | Upgraded Kororoit Creek Trail between Geelong Road and Grieve Parade (works beyond these limits are to be completed by Hobsons Bay City Council). Upgrade is on both sides of the Creek beneath the Freeway and only on the western side beneath Geelong Road | - It is assumed that the path will be upgraded to a minimum 3.0m shared path.  
- Clearances of 1.0m (absolute min 0.5m) should be considered to barriers or fixed objects.  
- No details of gradients are provided – it is assumed that they will be similar to existing. | ✓            |
| 02  | Rehabilitation of the Federation Trail between Kororoit Creek and Princes Highway | - A minimum 3.0m shared path should be considered.  
- There are currently two existing sign-controlled path crossings at Jones Road and the access to Cleanaway. Both roads carry large proportions of heavy vehicles. The crossings should be considered for upgrade as amore formal crossing (e.g. kerbing, raised platform to reduce vehicle speeds, signage). | ✓            |
<table>
<thead>
<tr>
<th>Ref</th>
<th>WGTP Proposal</th>
<th>Design Response</th>
<th>Improved [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>Existing signalised crossing of the Federation Trail at Princes Highway (nothing proposed by WGTP)</td>
<td>○ There are service roads on both sides of the road with zebra crossings. These do no provide priority for cyclists. It is recommended that consideration be given to replacing the zebra crossings with raised platform priority crossings for pedestrians and cyclists.</td>
<td>No Change</td>
</tr>
<tr>
<td>04</td>
<td>New shared use bridge connecting Rosala Avenue and Lynch Road Reserve</td>
<td>○ The bridge is proposed to be 3.0m wide based on the Drawing No. WDA-WGTP-ESDP-003. This provides lower level of clearance to abutting walls than desirable. A minimum of 0.5m clearance should be considered to the walls on either side. ○ The bridge has right angled corners at either end which can result in poor sight distance for approaching riders and pedestrians. Where possible a sight splay should be provided, or convex mirrors. ○ Straight ramps on the bridge could lead to high speed cyclists at the bottom of the ramps. Care needs to be taken to ensure conflict is managed and sight lines remain clear.</td>
<td>✔</td>
</tr>
<tr>
<td>05</td>
<td>Wider, well-lit paths on both sides of Millers Road beneath the Freeway</td>
<td>○ A minimum 3.0m shared path should be considered. ○ Clearances of 1.0m (absolute min 0.5m) should be provided to barriers or bridge piers. ○ The shared paths do not link to any cycling facilities on the south side of the Freeway. Millers Road between the Freeway and Beuron Road is shown as a proposed on-road bike road (linking to the existing on-road bike lanes south of Beuron Road). It is recommended that a safe transition and connection to Millers Road be considered. ○ Upgrades are proposed to the path on the western side of Millers Road, north of the Freeway, however no change is proposed to the uncontrolled crossing of Primula Avenue. It is recommended that either a signalised or raised path priority crossing be considered for installation across Primula Avenue. ○ Upgrades should include compliant lighting for personal security and visibility.</td>
<td>✔</td>
</tr>
<tr>
<td>06</td>
<td>New shared path connection on the west side of the Newport Freight Railway line, beneath the Freeway to link the Precinct 15 site on the south and the Bradmill Precinct to the north of the Freeway</td>
<td>○ A minimum 3.0m shared path should be considered. ○ Clearances of 1.0m (absolute min 0.5m) should be considered to barriers or bridge piers. ○ Gradients have not been assessed. ○ The path/path intersection on the north side of the Freeway intersects at an angle (T-intersection) and could promote high-speed entry and exit manoeuvres. It is recommended that the path intersection be realigned closer to a T-intersection and/or the area around the intersection kept clear of obstructions to maintain sight lines.</td>
<td>✔</td>
</tr>
<tr>
<td>07</td>
<td>New shared use bridge over the Freeway at Fogarty Avenue</td>
<td>○ The bridge is proposed to be 3.0m wide based on Drawing No. WDA-WGTP-ESDP-006. This provides lower level of clearance to abutting walls than desirable. A minimum of 0.5m clearance should be considered to the walls on either side. ○ Same comments as Ref 04.</td>
<td>✔</td>
</tr>
<tr>
<td>08</td>
<td>New shared use bridge (Federation Trail) over Williamstown Road ramp W1 and connection to existing pedestrian bridge over Stony Creek to Eirene Street</td>
<td>○ The proposed bridge provides a grade-separated crossing of Williamstown Road and the Williamstown Road exit ramp. ○ No bridge cross-section was available for review, it is recommended that consideration be given to providing the bridge will be a minimum 3.0m wide (plus clearances).</td>
<td>✔</td>
</tr>
<tr>
<td>Ref</td>
<td>WGTP Proposal</td>
<td>Design Response</td>
<td>Improved</td>
</tr>
<tr>
<td>-----</td>
<td>---------------</td>
<td>-----------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A proposed shared path connection is provided to the Stony Creek pedestrian bridge. This bridge appears narrow. It is recommended that consideration be given to widening the bridge to a minimum of 3.0m wide.</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The shared path connections to Williamstown Road and Melbourne Road do not link with a continuing bicycle facility and end abruptly. On-road bike routes are proposed for these roads in the Hobsons Bay Bicycle Network Plan. It is recommended that consideration be given to shared path connections transitions to the nearest connecting bicycle route.</td>
<td>![Icon]</td>
</tr>
<tr>
<td>09</td>
<td>Elevated shared path (Federation Trail) between Williamstown Road and Werribee railway line, includes a new shared use path over Stony Creek to Hyde Street Reserve/Hughes St and a connection under the Freeway to Hall Street and Spotswood Railway station.</td>
<td>The bridge is proposed to be 4.5m wide (external measurements) based on the Drawing No. WDA-WGTP-ESDP-008. This is likely to leave at least 3.0m clear travel path.</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A proposed shared path bridge connection is provided over Stony Creek. No details have been provided for this bridge. Consideration should be given to providing a minimum 3.0m wide (plus clearances).</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The shared path ramp connecting the new elevated Federation Trail to the Freeway underpass, intersects at an acute angle and may be difficult for riders to negotiate. Design needs to ensure clear sight lines can be achieved.</td>
<td>![Icon]</td>
</tr>
<tr>
<td>10</td>
<td>Upgraded shared path on the eastern side of Hyde Street between Somerville Road and Harris Street and the southern side of Harris Street.</td>
<td>Consideration should be given to providing a bridge with a minimum 3.0m width (plus clearances).</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No details have been provided of the proposed signalised crossing at Hyde Street. The crossing should be in accordance with Austroads Guide to Road Design Part 4: Intersections and Crossings.</td>
<td>![Icon]</td>
</tr>
<tr>
<td>11</td>
<td>New shared use bridge and elevated path from Harris Street across Whitehall Street linking Yarraville Gardens and Maribyrnong River</td>
<td>The bridge is proposed to be 3.0m wide based on the Drawing No. WDA-WGTP-ESDP-027. This does not allow for desirable clearance to the abutting walls. A minimum of 0.5m clearance should be considered on either side.</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>There is no ramp connection from the elevated shared path to the existing shared use path on the eastern side of Whitehall Street.</td>
<td>![Icon]</td>
</tr>
<tr>
<td>12</td>
<td>Connection with Maribyrnong River Trail and Shepherds Bridge.</td>
<td>New elevated shared path (assumed to be 3.0m wide) continuing from the shared use bridge across Whitehall Street.</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provides an improved, separated facility away from traffic on Moreland Street and includes new wetlands and public space on the west bank with pedestrian amenity.</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eliminates the need to cross three unsignalised side road crossings on the Moreland Street shared path.</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lighting and passive surveillance will need to be considered in this area to ensure personal safety and security is maintained.</td>
<td>![Icon]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Design will need to manage potential conflict between pedestrians and cyclists. There may be high volumes of cyclists accessing the Footscray Road.</td>
<td>![Icon]</td>
</tr>
<tr>
<td>Ref</td>
<td>WGTP Proposal</td>
<td>Design Response</td>
<td>Improved [1]</td>
</tr>
<tr>
<td>-----</td>
<td>---------------</td>
<td>-----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>14</td>
<td>Proposed 2.5km long elevated veloway suspended between the West Gate Tunnel Project Structures above Footscray Road</td>
<td>shared path (Shepherds Bridge) or the proposed veloway. Consideration needs to be given to manage the transition from the exclusive bicycle use veloway to the shared path environment.</td>
<td>✓</td>
</tr>
</tbody>
</table>
| 15  | Elevated veloway north of Footscray Road, passing beneath the ramps to CityLink and Dynon Road | ○ Provides a fully segregated (from traffic) path between the Capital City Trail near Pearl River Road and Whitehall Street.  
○ Some of the gradients of the path are greater than desirable to achieve the height clearances above the grade separated crossings. These are summarised in Figure 7.14.  
○ The clear width of the veloway is 4.0m wide between rails. With 0.5m clearance either side, this leaves an operating path width of 3.0m. To allow for future growth in cycling, consideration could be given to providing an operating path width of 4.0m (clear width of 5.0m).  
○ There are only two emergency exit points along the enclosed veloway section and these do not appear to provide departure access for bikes – only a stairwell. If no lift is to be provided, a bicycle wheel channel should be considered on the stairs.  
The veloway design discussed further below. | ✓ |
| 16  | Crossing of Moonee and Creek on a new shared path bridge | ○ Replaces an existing rail bridge with a new shared path bridge (assumed to be 3.0m wide) providing a link from the veloway to the Moonee Ponds Creek Trail.  
○ Need to manage conflict at location where exclusive bike path (veloway) transitions to shared path. | ✓ |
| 17  | New shared path along the north side of Footscray Road to the east of Pearl River Road including a new shared path bridge crossing Footscray Road | ○ Consideration should be given to providing a minimum 3.0m wide bridge (plus clearances).  
○ Bridge provides a completely separated crossing of Footscray Road, linking Capital City Trail to Moonee Ponds Trail.  
○ Aerial plans show an at-grade crossing of the left-in, left-out access to E-Gate – this should desirably be grade separated. | ✓ |
| 18  | New shared use bridge over Moonee Ponds Creek on the south side of Dynon Road, including an elevated shared path over the rail infrastructure to connect with Ireland Street and North Melbourne Station | ○ Consideration should be given to providing a minimum 3.0m wide bridge (plus clearances). This will be an improvement compared to the existing shared use path with no off-set to the traffic lanes.  
○ Connection with Dynon Road shared path (west) still appears to cross the Dynon Road CityLink entry-ramp at-grade, without signals –a path controlled crossing should be considered. | ✓ |

[1] Whether the proposal offers a net improvement compared to the existing conditions. Tick = net improvement, Light bulb = opportunity for further improvement.
The Transport Technical Report A\textsuperscript{133} has identified locations on the proposed veloway that require relatively steep grades for short sections in order to achieve the necessary height clearances across key roads. The locations with the steepest grades are summarised below with the most critical locations typically occurring over a distance of 150m or less. This is summarised in Figure 7.14.

Figure 7.14: Footscray Road elevated shared path (veloway) critical gradients\textsuperscript{134}

<table>
<thead>
<tr>
<th>Location</th>
<th>East approach grade</th>
<th>East approach distance</th>
<th>West approach grade</th>
<th>West approach distance</th>
<th>Elevation gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sims Street</td>
<td>5.5%</td>
<td>150</td>
<td>0.4%</td>
<td>650</td>
<td>11 metres above Sims Street (which is at ground level)</td>
</tr>
<tr>
<td>Appleton Dock Road</td>
<td>2.2%</td>
<td>350</td>
<td>3.1%</td>
<td>520</td>
<td>9.3 metres above Appleton Dock Road (which is 10 metres above ground level)</td>
</tr>
<tr>
<td>West Gate Tunnel Project</td>
<td>7.5%</td>
<td>95</td>
<td>6.7%</td>
<td>98</td>
<td>6 metres above ground level</td>
</tr>
<tr>
<td>Footscray Road off-ramp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

While it is acknowledged that the gradients are less than desirable, they occur over relatively short distances and the benefits afforded through the separation of riders from vehicles (through grade separation) outweigh the inconvenience of marginally steep grades.

The proposed active transport provisions outlined in Table 7.6 indicate that there are consistent design elements in the treatments proposed. In this regard, a summary of the general proposals and design responses has been provided in Table 7.7.

\textsuperscript{133} WGTP Technical Report A, Part 1

\textsuperscript{134} Technical Report A, Part 1, Table 149, Page 349
### Table 7.7: Summary of general active transport design elements

<table>
<thead>
<tr>
<th>WGTP Design Element</th>
<th>General Design Response</th>
<th>Likely Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgraded shared path</td>
<td>It is recommended that upgraded shared paths would adopt the design criteria(^\text{[12]}) for new shared paths and be 3.0m wide. Any shared paths upgrades should ideally include full resurfacing of the path (rather than partial widening) and be a preferred minimum of 3.0m wide. Upgrades should also seek to provide connections into the surrounding local pathway network and/or continue to the nearest on-road facility where practicable.</td>
<td>Any upgrade to existing shared paths is considered advantage if it provides greater amenity for pedestrians and cyclists. Designs should be developed in consultation with the relevant local Council.</td>
</tr>
<tr>
<td>New shared path</td>
<td>New shared paths should preferably be 3.0m wide. Path usage should be monitored and if pedestrian numbers approach 100 pedestrians per hour (two-way) in the peak period, consideration should be given to providing separated bicycle and pedestrian paths in accordance with Austroads guidance.(^\text{[18]})</td>
<td>New shared paths will provide a direct benefit to the community and assist to expand and create a continuous and permeable walking and cycling network that facilitates more active mode trips. Note consideration relating to potential separation of modes (pedestrians vs. cyclists).</td>
</tr>
<tr>
<td>New shared path bridge</td>
<td>New shared path bridges (also referred to as 'Pedestrian Bridges' in the WGTP EES) should be a preferred minimum 3.0m wide. The operational width of the bridges should preferably be 3.0m (exclusive of clearances). Adding 0.5m clearance either side would result in a clear width of 4.0m between obstructions. Attention needs to be paid to the design of transition points to ensure adequate sight lines and speed management is addressed.</td>
<td>New grade shared path bridges provide the highest level of safety through complete grade separation of pedestrians and cyclists from vehicular traffic.</td>
</tr>
<tr>
<td>Elevated shared path structure (^\text{[1]})</td>
<td>The elevated path structures include proposed paths that are elevated either on pylons or attached to the side of the proposed Freeway structure. These paths are similar to the proposed new bridges.</td>
<td>Provides a high level of service and safety, although may be less appealing to pedestrians due to the elevated nature of the proposals and frequency of entry/exit points.</td>
</tr>
<tr>
<td>Veloway</td>
<td>Unique, elevated cycle-expressway that is suspended beneath the proposed Freeway structures over Footscray Road. Provides a direct, grade-separated facility that is likely to target confident, high-speed commuter cyclists. Personal safety needs to be addressed in the next phase of detailed design. It is expected that the proposed design would undergo further refinements and design iterations before receiving full community support.</td>
<td>Provides a high quality, direct cycle path (akin to a cycle freeway) for commuters travelling to the city from the west. Currently over 16 per cent of all vehicles travelling to the central city along Footscray Road during the morning peak are cyclists.(^\text{[17]}) The proposed veloway provides an alternate option to the existing shared path on the south side of Footscray Road, which would continue to provide for those riders who prefer to avoid the additional increases in elevation. If the design is improved to address personal security and safety, it is likely to provide an attractive route choice for commuters to the central city.</td>
</tr>
<tr>
<td>Path intersections</td>
<td>Specific design details have not been provided for the intersections of the paths with other paths and also with roads. These locations can create potential conflict between path users if adequate sight lines and clearances are not provided.</td>
<td>If designed appropriately, improved path intersections can reduce conflict and improve safety between users. Where possible, path intersections and transitions to the surrounding road network should be developed in conjunction with the relevant Council or Road Authority.</td>
</tr>
</tbody>
</table>

\(^\text{[1]}\) Not the veloway – e.g. shared path beside the Hyde Street off-ramp

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126 WGTP EES Main Report, Volume 1, Section 5.3.1, p. 5-5
126 Cycling Aspects of Austroads Guides, 2017, Section 7.5.4, p. 96
127 City of Melbourne Bike Plan 2016-2020, Table 1, p. 6
**Wayfinding:**
Wayfinding is also an important design consideration and should be included as part of the active transport offerings provided by the project. Wayfinding reassures users about their location and can assist in attracting new users to the network. When people understand where they are, they feel safer, more comfortable walking and cycling and more likely to walk and cycle to accessible destinations. A successful wayfinding system instils confidence in a wide variety of users and encourages walking and cycling for transport and recreation. Wayfinding should be considered on a network basis – ideally adopting a uniform standard based on the recommendations in Austroads Research Report AP-R492-15 Bicycle Wayfinding.

**Veloway Design Considerations**
The veloway is a unique and specific design that warrants a more detailed response. The veloway generally consists of a dedicated cycle-only path suspended between the two elevated structures on Footscray Road. The central veloway would be 4.0m wide to accommodate high volumes, high speed cycle movements. Typical details of the proposed veloway design are shown in Figure 7.15, Figure 7.16, and Figure 7.17.

Figure 7.15: Footscray Road suspended veloway, Typical Section Detail

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138 WGTP EES Main Report, Volume 1, Section 5.6.7, p. 5-31
139 WGTP Development and Urban Design Plans, Attachment 3: Port, CityLink and city connections, Elevated Structures Design Plans WDA-WGTP-ESDP-94, Sheet 94 of 105
Further consideration of the proposed design and operational elements is provided below.

- **Personal security** – the current design (noted that it is only conceptual) does not appear to fully address personal safety requirements. The veloway is effectively designed as an enclosed structure with two emergency access points along its length. These emergency access points are located at CH815 and CH1567 (refer Figure 7.18), with the typical layout shown in Figure 7.19. The locations proposed for the emergency exit locations are industrial, in nature, with the western site near Dock Link Road and the eastern site near the base of the existing Footscray Road bridge. These locations are not likely to have good levels of passive surveillance – particularly at night. At the design detail stage, details should be provided regarding the provision of an emergency telephone or possible CCTV within the facility.

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140 WGTP Development and Urban Design Plans, Attachment 3: Port, CityLink and city connections, Elevated Structures Design Plans WDA-WGTP-ESDP-94, Sheet 94 of 105
141 WGTP Development and Urban Design Plans, Attachment 3: Port, CityLink and city connections, WDA-WGTP-PER-035, Sheet 48 of 54
Height clearance of the veloway at the emergency access locations is shown as a minimum of 2.0m. While this is acceptable, if practicable consideration should be given for a 2.4m head clearance. Additionally, there is no lift or provisions to assist a rider to get their bicycle down the stairs. It is suggested that bicycle wheel ramps be provided on the emergency access stairs to allow a cyclist to wheel their bike down the stairs.

- **Pollution Exposure** – the proposed design is situated below the elevated freeway structures and approximately 7.5m above Footscray Road. A mesh screen has been proposed over the top of the veloway to “catch” any potential debris from the elevated freeway. It is understood that the position of the veloway is sufficient to avoid...
unacceptable levels of pollutants from freeway traffic above it\textsuperscript{145}. Similarly, while the veloway is relatively high above Footscray Road, there may be a level of increased pollutants from vehicular traffic, however this may not be too different to existing exposure levels on the shared path on Footscray Road. The design has included mesh-style walls which should assist in cross-ventilation of the veloway, however the size of the holes in the mesh will determine the potential effectiveness of this. Other experts with specialist skills in air quality may wish to elaborate on this issue.

- **Lighting** – no details have been provided regarding potential lighting within the veloway. It is likely that the light conditions may be low within the veloway if no external lighting is provided.
- **Passive Surveillance** – the location of the veloway means that it is an enclosed facility that does not benefit from passive surveillance. This can further exacerbate personal safety concerns and reduce the attractiveness of the facility to all users (e.g., families, children, women).

On balance, the proposed veloway offers an alternate, direct (without delays) option to the existing Footscray Road shared path. It is likely to be used by confident riders who are regular commuters to the city from the west and north. From a road safety perspective, it delivers a safe system design, however it considered that the design could be further refined to make it more attractive to all users and improve the level of personal safety and rider amenity.

### 7.5 Active Travel Summary

Collectively, the suite of active transport provisions proposed by the WGTP, will strengthen the existing walking and cycling network, complete some key missing links – particularly the Federation Trail – and provide several new safe options for crossing busy arterial roads.

On balance, the proposed designs generally meet with minimum requirements, however consideration also needs to be given to ensuring that the designs are ‘future-proofed’ to cater for anticipated future growth in cycling and walking. Volumes of cyclists using the Footscray Road are already quite high and if the veloway is constructed, this is likely to increase demand further.

The other important design consideration is to provide separate pedestrian and bicycle paths where possible (and where space permits). This is considered best practice and has the greatest impact on encouraging walking and associated recreation activities.

To further strengthen the alignment of the WGTP active travel initiatives with the Victorian Cycling Strategy’s strategic directions, the following recommendations are suggested against Direction 4 and Direction 6:

#### Strategic Direction No. 4 – Encourage Cycling

- The WGTP should include a comprehensive pedestrian and cycling wayfinding strategy that provides clear guidance and navigation along the corridor – particularly at intersecting locations with other key trails such as the Moonee Ponds Creek Trail, the Maribyrnong Creek Trail and the Capital City Trail. With the addition of several bridges and grade-separated paths, navigation around the network can become more complicated and less intuitive for pedestrians and cyclists. Wayfinding should be developed with input from the surrounding Councils to ensure consistency.
- Another opportunity to support and encourage more cycle trips is through the provision of suitable end-of-trip facilities at key locations within the project area. This would

\textsuperscript{145} Personal communication with WGTP team, July 2017.
primarily involve secure parking provisions and could also include public tool stations and drinking fountains to service both pedestrians and cyclists.

**Strategic Direction No. 6 – Plan Networks and Prioritise Investments**

- While the proposals outlined in the WGTP contribute to the creation of a more connected cycling network, additional consideration could be given to ensuring that local access connections are provided. This may mean continuing proposed connections further into the surrounding neighbourhoods and addressing (in partnership with Council) missing links identified in Council bike plans adjacent to the project corridor. It could also involve creating additional entry points to new, elevated pathways. Providing appropriate ‘feeder’ routes is key to attracting users to the new and upgraded path network.

These recommendations also apply to the following strategy area from the Maribyrnong Bicycle Strategy:

**More riders cycling more often**

Extending proposals further to provide improved local access, along with the provision of end-of-trip facilities will contribute towards Council’s objective of encouraging more people to ride more often.

**7.6 Alignment with Transport Integration Act (2010)**

As it relates to helping satisfy the vision and objectives set out in the Transport Integration Act (2010) a summary of active transport alignment, in relation to the policy objectives is provided in Table 7.8.

<table>
<thead>
<tr>
<th>Policy Objectives</th>
<th>Policy Objective Sub-Category Considerations</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social and Economic Inclusion</td>
<td>1. Remove barriers to access</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. * Respond to user expectations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. * Make transport more widely available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. * Improve transport affordability</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>2. Build capacity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. * Engage and collaborate in planning and delivery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. * Support others to take action on transport challenges</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. * Create a positive legacy</td>
<td>Y</td>
</tr>
<tr>
<td>Economic Prosperity</td>
<td>3. Better use of transport assets</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>4. Improve access to work and education</td>
<td>Y</td>
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<td></td>
<td>5. Support business clustering</td>
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<td></td>
<td>6. Provide value for money infrastructure and services</td>
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<td></td>
<td>7. Improve business access to market</td>
<td>Y</td>
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<tr>
<td></td>
<td>8. Keep transport cost down</td>
<td></td>
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<tr>
<td>Environment Sustainability</td>
<td>9. Reduce distances travelled to access people places and goods</td>
<td>Y</td>
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<tr>
<td>10. Make transport activity more resource-efficient and reduce its environmental impacts</td>
<td>Y</td>
<td></td>
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<tr>
<td>11. Use environmentally sustainable transport more</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>12. Make transport infrastructure more resource-efficient and reduce its environmental impacts</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>13. Make transport resilient to climatic extremes</td>
<td></td>
<td></td>
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<tr>
<td>14. Provide for effective integration of transport and land use and facilitate access to social and economic opportunities</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>15. Without limiting (14), transport and land use be integrated to improve accessibility and transport efficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. * Maximise access to residences, employment, markets, services and recreation</td>
<td>Y</td>
<td></td>
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<tr>
<td>b. * Planning and developing the transport system more effectively</td>
<td></td>
<td></td>
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<tr>
<td>c. * Reducing the need for private motor vehicle transport and the extent of travel</td>
<td>Y</td>
<td></td>
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<tr>
<td>d. * Facilitating better access to and greater mobility within local communities</td>
<td>Y</td>
<td></td>
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<tr>
<td>16. Without limiting (14) transport system and land use be aligned, complementary and supportive and ensure that</td>
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<td></td>
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<tr>
<td>a. * transport decisions are made having regard to current and future impact on land use</td>
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<tr>
<td>b. * transport decisions are made having regard to current and future development and operation of the transport system</td>
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<tr>
<td>c. * transport infrastructure and services are provided in a timely manner to support changing land use and associated transport demand</td>
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<tr>
<td>17. Without limiting (14) improve the amenity of communities and minimise impacts of the transport system on adjacent land uses</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>18. Facilitate network-wide efficient, coordinated and reliable movements of persons and goods at all times</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>19. Without limiting (18) transport system should</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. * Optimise the network capacity of all modes and reduce journey times</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>b. * Maximise the efficient use of resources</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>c. * Facilitate integrated and seamless travel</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>d. * Provide predictable and reliable services and journey time and minimize any inconvenience caused by disruptions to the transport system</td>
<td>Y</td>
<td></td>
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<tr>
<td>20. Improve safety performance</td>
<td></td>
<td></td>
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<tr>
<td>21. Minimise the risk of harm to persons</td>
<td></td>
<td></td>
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<tr>
<td>22. Promote sustainable transport</td>
<td></td>
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</tbody>
</table>
8. Road Design Evaluation of Alignment Legibility, Accessibility and Connectivity

8.1 Preamble

To assist the Independent Advisory Committee (IAC) with its consideration of the project, an evaluation has been completed on the overall West Gate Tunnel Project’s alignment legibility, accessibility and connectivity. This review draws on information provided within the EES and associated technical reports, appendices and Map Books, the evaluation is based upon a broad overview of the following aspects of the project:

- Modifications to existing transport infrastructure, being the West Gate Freeway, interchanges as well as current connection points to key destinations along the corridor
- Addition of ramps and traffic lanes included as part of the design
- Relativity of merging/diverging points along the alignment between interchanges and/or tunnels
- Ease of travel from origin to destination via route guidance and lane selection criteria, from a driver’s perspective, with the view of informing progression of design.

The evaluation does not focus on specific issues surrounding compliance with design and technical standards, as the map book drawings whilst detailed are absent of specific design detail that convey project design nuances and design standards e.g. kerb radii, lane widths, signal hardware and street lighting componentry. It is expected that for a project of this scale and complexity that the designers which have prepared the drawings are suitably qualified and understand the requirements of the various Austroads and VicRoads road design standards.

For clarity it is noted that this evaluation does not include commentary on the horizontal and vertical geometry, design within the tunnels, or the specific barrier systems for bridge piers/columns, etc. that will need to be implemented to address any identified safety issues. In addition, this evaluation does not focus on locations where there are existing established and known traffic capacity issues and proposed design improvements to address these.

8.2 Project Characteristics

It is acknowledged that the design generally adopts and builds upon the existing alignment of the West Gate Freeway (M1) to include additional features such as new tunnels below Yarraville, a second crossing of the Maribyrnong River to facilitate direct access and connections into the Port of Melbourne, CityLink, Footscray Road, Dynon Road and Wurundjeri Way on the northwest of Melbourne CBD precinct.

Focussing on the specific components of the design, it is also acknowledged that the existing West Gate Freeway will be upgraded to include the following:

- Widening of the West Gate Freeway to six through lanes in each direction. This will be achieved by adding two additional through lanes in each direction between Williamstown Road/Melbourne Road and the Princes Freeway (M1)/Western Ring Road (M80) interchange.
- Further to the above, the six lanes in each direction is configured into three centrally located Express Lanes that provide for continuous, uninterrupted flow between the West Gate Bridge and the M1/M80 interchange. As such, for traffic travelling along the
Express Lanes, there will be no exit points between the M1/M80 interchange and the West Gate Bridge. The Express Lanes are physically separated by barriers from outer lanes, that have been termed Collector Lanes. These Collector Lanes enable traffic to travel along the West Gate Freeway from end to end but also to access interchange ramps that connect to at grade arterial roads such as Williamstown Road, Millers Road and Grieve Parade as per the existing arrangement.

- Widening of Princes Freeway between the M1/M80 interchange and Kororoit Creek Road via the provision of an additional westbound lane (from four lanes to five) to tie-in to the widened West Gate Freeway.
- Connections to all routes that currently exist to the West Gate Freeway will be maintained along with upgrades to existing interchanges at the M1 and M80, Grieve Parade, Millers Road and Williamstown Road/Melbourne Road.
- Construction of new ramps to connect the West Gate Freeway to Hyde Street and facilitate the diversion of placarded loads from the tunnels and local roads, as well as providing direct access to industrial sites on Hyde Street adjacent to the Maribyrnong River.
- Upgrading and strengthening of existing bridges along the West Gate Freeway to accommodate High Performance Freight Vehicles (HPFV) at higher mass limits.
- At the eastern end of the design, a new bridge over the Maribyrnong River will enable direct access via new ramps to the Port of Melbourne. Continuing towards the Melbourne CBD, twin elevated road structures will be constructed above Footscray Road between the Maribyrnong River and the CityLink for dedicated traffic seeking access to the tunnels and ultimately the West Gate Freeway. The Footscray Road twin elevated road structures will also provide new connections to the CityLink, Dyon Road and Footscray Road.
- The design will incorporate extension of Wurundjeri Way to the west and connection into Dyon Road to the east of Moonee Ponds Creek, thereby providing a bypass of the Melbourne CBD area. Wurundjeri Way will also be widened by one lane in each direction between Dudley Street and Flinders Street.

Within the context of the above, the design seeks to redistribute traffic on Melbourne’s road network, reduce the reliance and use of the West Gate Bridge and local roads within the inner west of Melbourne by heavy vehicles, reduce congestion on the road network serving the west of Melbourne, introduce capacity increases across the Maribyrnong and Yarra River crossings which in turn enhances the resilience and redundancy of the network serving the west of Melbourne. More importantly, it is understood the design is consistent with addressing and implementing key transport strategies identified previously at the State and local government levels for addressing anticipated traffic volume increases and other transport issues associated with the west of Melbourne.

8.3 Design Evaluation Context

In undertaking the broad level evaluation of the design, particular attention has been given to the points at which decisions regarding route selection for the desired destination are needing to be made, and how the road layout, in its own right, i.e. in isolation of supplementary guidance systems such as signage responds to providing a high level of legibility simply by virtue of the design. The question being asked here is whether or not visual cues to what the road system is expected to look like when approaching from points at which decisions are being required, is in fact designed into the project to a level of comprehensibility and expectation, rather than confusion.
To elaborate on this, the best case would be that, for example, lanes that are required to merge do so over the appropriate length, as determined by applicable road design standards, or by planning for lane changes to occur well in advance of exit ramps such that high speed weaving to select the correct lane discipline does not occur. As the project relies upon introducing a new section of roadway, being the West Gate Tunnel, together with access to major arterial road systems such as Footscray Road, Dynon Road, Wurundjeri Way, and significant land uses such as the Swanson and Appleton Docks as well as established residential, industrial and commercial precincts, and the Melbourne CBD, it involves a complex and expansive system of elevated roadways, ramps and linkages all of which will carry a mixture of traffic with very different operating requirements and characteristics.

A high level of understanding of the proposed operation, layout and extents of Express Lanes, Collector Lanes, entry and exit ramps, and connections to the existing road network at grade and those that are grade separated has been gained. My overall impression is that the design comprises a reasonable approach to the strategy of how the system design integrates and connects to established major road network and land uses. A key attribute is that major interchanges along the West Gate Freeway, between the Western Ring Road (M80) and the West Gate Bridge, maintains existing interchange configurations and locations, with the addition of extra capacity through additional lanes and the introduction of barrier separated Express Lanes and Collector Lanes, all of which are shown to be functional and logical.

The following provides the findings of my broad level design evaluation and presents some recommendations. As previously referenced, this design evaluation is not technically detailed but rather seeks to identify elements of the design, on a broad level, that are considered reasonable as well as identifying elements that could be refined and/or guide future design finalisation.

8.4 Alignment, Legibility and Connectivity

Starting at the M1/M80 interchange, as previously noted above, the alignment is generally based on the existing alignment of the West Gate Freeway with addition of the Express Lanes, Collector Lanes and associated widenings. The Express Lanes provide for continuous, uninterrupted flow (from the ‘friction’ introduced by interchanges) between the West Gate Bridge and the M1/M80 interchange with access to these Express Lanes only available from the Princes Freeway (M1) and the M80, at the western extent, and the West Gate Bridge.

The Collector Lanes are primarily accessed from the proposed West Gate Tunnel, inbound and outbound, as well as the aforementioned arterial roads via the existing interchanges. Further, access onto the Collector Lanes is also available from the West Gate Bridge, in advance of the southern West Gate Tunnel Portal, as well as from the Princes Freeway (M1) and the M80. There are no points at which the Express Lanes can be entered from the Collector Lanes between the southern West Gate Tunnel Portal (outbound) or beyond the ramps from the Princes Freeway (M1) and the M80 (inbound).

Based on the above, I note that entry into the Express Lanes and Collector Lanes from the M1/M80 interchange (inbound) and the West Gate Bridge (outbound) are characterised by high standard interchanges and ramps consisting of good sight lines, ability to provide appropriate lane discipline and good separation between multiple decision points.

The West Gate Tunnel can only be accessed from the Collector Lanes on the West Gate Freeway (inbound) and from Footscray Road, CityLink and Dynan Road (as well as the Swanson and Appleton Docks) at the outbound end. As noted, this design evaluation does not cover the West Gate Tunnel. To the east of the West Gate Tunnel, the design continues as an elevated structure that crosses Maribyrnong River and sits above Footscray Road. This section does not propose any
Express Lanes or Collector Lanes. There are direct connections into and out of Swanson Dock via freeway type entry and exit ramps. Appleton Dock is indirectly accessed from new exit ramps that intersect at existing intersections along Footscray Road, as such making use of much of the existing infrastructure. These intersections and existing/new ramps also provide access to Dynon Road, and Wurundjeri Way extension, which will also be widened to accommodate additional lanes in each direction between Dudley Street and Flinders Street. There is a new entry ramp proposed from Footscray Road, just west of the Appleton Dock Road signalised intersection, which connects to the elevated structure that leads directly to the West Gate Tunnel.

A review of connection points along the elevated structure over Footscray Road I am satisfied that the critical decision points are characterised by high standard interchanges and ramps consisting of good sight lines, with an ability to provide appropriate lane discipline and good separation between multiple decision points.

The interchange with CityLink proposes a number of new elevated structures and ramps that provide access onto and from the West Gate Tunnel, Dynon Road and Footscray Road. The route from CityLink is simplistic and largely continuous, as such being connected by large radius half circular ramps. Whilst this interchange may appear large and circuitous, it is my view that the arrangement is logical and highly legible for the driver. The general layout and geometry of the interchange would also appear to cater well for the movement of a higher proportion of heavy commercial vehicles, given the proximity to the Port of Melbourne and the need to ensure that accessibility is high and that connectivity is direct, such that the need for sharp turns and alternate routes are not required via lower capacity routes.

8.5 Integration with Existing Road Network

As previously noted, the design has retained and built upon the existing West Gate Freeway, Footscray Road and CityLink alignment and interchanges. Whilst this observation is made, it would appear to me that the design has maximised the use of the existing corridor width and seeks to minimise encroachment over adjoining boundaries and reservations at the same, maintaining a reasonable level of adherence to design standards and principles.

As an extension to the above, I would anticipate that at the upgraded interchanges, significant alterations to traffic signal hardware and road lighting would be required to introduce compliance with current design standards and practices (for example, new hardware, reprogramming and phasing, monitoring, etc.).

8.6 Design Review and Conclusion

In understanding the general arrangement of the design, as set out above, I have identified a number of locations along the route where the general layout is constrained by the existing road network, structure and other infrastructure. To assist with the explanation of these, we have prepared a diagram that presents the locations and conclusion that may form the basis of finalising the design. This is provided at Figure 8.1.
These are broadly summarised below:

Figure 8.1: Route Issues Discussion

- Segment 1:...
1. I note the inclusion of Express Lanes and Collector Lanes are a new concept introduced to the West Gate Freeway. With consideration of these, it is imperative that selection of routes are enhanced by the introduction of a comprehensive guidance scheme, comprising the use of overhead lane guidance scheme, static and dynamic signage and line-marking, inclusive of pavement text that supplements route and lane selection for drivers.

2. Varying speed limits may need to be applied for the Express Lanes and the Collector Lanes. Specifically, lower speed limits may need to be considered along the Collector Lanes where entry and exit ramps to and from the existing road network exist as well as proposed. Notably, I raise the potential for ‘weaving’ to occur between interchanges where spacing for merging/diverging/lane change is reduced as a result of existing constraints and competing design objectives. The effects of ‘weaving’ have a relationship to traffic capacity, and the general effect on traffic flow, and also on road safety. ‘Weaving’ is particularly evident where freeway interchanges and ramps are closely spaced, when through lane traffic cuts across merging traffic entering through lanes in order to access an exit ramp. We have identified the potential for this at the exit of the West Gate Tunnel southern Portal (outbound) with consideration of entering and merging traffic from the Hyde Street/Melbourne Road on ramp, outbound traffic from the West Gate Bridge and Millers Road interchange.

3. As an extension to the previous point, there may be a potential consideration for measures such as a ramp extension or braided ramps to accommodate ‘weaving’ clear of the outbound Collector Lanes from the West Gate Tunnel southern Portal. Further analysis may be warranted here.

4. I note there are a number of locations within the design where the forecast Level of Service (LOS) is at or below E as outlined within Section 6 of this report. Given this, we have undertaken an evaluation of the proposed design conditions to establish any correlation between these and the forecasted LOS. These locations primarily include:

   For the AM peak:
   - Williamstown Road inbound on-ramp to the West Gate Bridge (ramp metering and reduction from 4 lanes to 2 lanes and subsequent merging of these 2 lanes into 1 lane on the West Gate Bridge).
   - Combined off-ramp from CityLink to Footscray Road and the proposed elevated structure over Footscray Road heading towards the West Gate Tunnel where it is proposed to be a secondary decision point introduced (i.e. ramp off a ramp). Further, it is noted the close proximity of the existing Dynon Road off-ramp in advance of the combined off-ramp in question.

   For the PM peak:
   - MacKenzie Road outbound on-ramp heading into the West Gate Tunnel (multiple merges occurring between traffic merging from 3 lanes to 2 lanes approaching the West Gate Tunnel as well as traffic merging into the same stream from the MacKenzie Road outbound on-ramp).

Given the above discussion, I am of the view that a correlation exists between the arrangement proposed at these locations that may contribute to the forecasted LOS. Further consideration of this correlation should be undertaken noting comments provided earlier in this report at Section 6.
9. Construction Management

9.1 Overview

In order for the project to achieve its objectives it is important that the impacts of the construction of the project are mitigated to the furthest extent practicable. Section 8 of the Technical Report A, Part 1 deals with the transport impact of the construction process.

Broadly, it is proposed to establish a number of construction sites and compounds, from which construction would be occurring concurrently. The most significant construction site with regard to heavy vehicle traffic will be at the northern tunnel Portal on the east side of Whitehall Street near Somerville Road, which is expected to generate up to 600 truck movements a day associated with the disposal of spoil from the tunnel construction. Other sites will generate less traffic.

Data from Technical Report A indicates the expected construction traffic volumes associated with the key worksites, and Figures 219, 221 and 223 of Technical Report A show the resulting average daily heavy vehicle volumes on key roads generated by the construction works. These are reproduced in Figure 9.1, Figure 9.2 and Figure 9.3.

Figure 9.1: Average Number of Heavy Vehicle round Trips per Day: West Gate Freeway

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1 Technical Report A, Table 155, Page 357
1 Technical Report A, Page 361
Figure 9.2: Average Number of Heavy Vehicle Round Trips per Day: Tunnel

Figure 9.3: Average Number of Heavy Vehicle Round Trips per Day: Port, CityLink and City Connections

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149 Technical Report A, Page 371
I note that the expected volume of daily truck traffic generated by the site travelling on the West Gate Freeway is only shown as 600+ vehicles per day.

I consider the key potential transport issues regarding the construction process to be the following:

i. Additional trucks on local streets, which could create safety and amenity issues for residents.

ii. Additional traffic in peak periods, which could result in additional congestion and delays for other motorists and public transport vehicles.

iii. Temporary closures of lanes or roads, which could result in delays or access issues for other motorists and public transport vehicles.

iv. Temporary closures of active travel facilities such as shared paths, which could impact on the mobility of cyclists and pedestrians.

I will consider below how each of these key issues is addressed in Technical Report A, and in the proposed Environment Performance Requirements (EPR’s).

### 9.2 Impact on Local Streets

Figures 218, 220 and 222 of Technical Report A, Part 1 nominate the proposed heavy vehicle routes for travel to/from the construction sites. These are reproduced in Figure 9.4, Figure 9.5 and Figure 9.6 below.

**Figure 9.4: Potential Haulage Routes from West Gate Freeway**¹⁵⁰

¹⁵⁰ Technical Report A, Page 360
Where possible, it is proposed to make use of freeways and higher order arterial roads, including Footscray Road, for construction traffic, which is considered appropriate. Importantly, the proposed route for tunnel spoil trucks is for all such vehicles to travel to/from the West Gate.
Freeway via the Bolte Bridge, Footscray Road and Whitehall Road, with no tunnel spoil trucks to use the road network to the south and northern tunnel Portal worksite.

Table 161 indicates possible mitigation measures for the tunnel construction. These include:

- **“Haulage to be minimised on residential roads. Where possible, alternate routes must be used.”**
- **Construction haulage shall be on arterial roads wherever possible.**
- **Haulage along local residential roads shall not be permitted at night.”**

I consider all of these to be appropriate mitigation measures to minimise impact of the proposed construction works on local streets. Indeed, these mitigation measures should be implemented for not just the tunnel construction but all construction activities associated with the project.

### 9.3 Additional Peak Period Traffic

 Whilst any traffic associated with the construction of the project could adversely impact other motorists and public transport vehicles, the most significant impacts would occur through additional traffic during the road network peak hours, particularly truck traffic. Therefore, any construction traffic during the road network peak hours should be minimised.

The text in the Technical Report indicates that this will be addressed through prohibiting spoil truck traffic during the peak traffic periods. It also indicates that the workers would be operating in shifts and would unlikely be accessing the site during the AM and PM peak periods. These measures are considered to be appropriate. However, they are not reinforced by being specifically recorded in Table 161 of the Technical Report. Also, minimising construction truck traffic during the road network peak hours should occur for the whole project, not just the tunnel spoil trucks. Further, construction worker shifts should be timed, where possible, to avoid shift change overs in the road network peak periods.

### 9.4 Temporary Lane & Road Closures

The TIA indicates that four through lanes will be maintained on the West Gate Freeway in both directions during peak periods, with any lane closures limited to off-peak periods. Temporary lane closures are likely to be needed on some of the arterial roads, which are also proposed to occur during off-peak periods. There would also be some isolated road closures overnight or in non-peak periods for items such as installing a gantry above a road.

It is unrealistic to expect that a project of this size would be able to be delivered without any temporary lane closures or road closures. The proposal to ensure that all lanes on key roads including the West Gate Freeway remain open during road network peak periods is considered to be an appropriate balance to minimise the impact of the construction whilst ensuring that necessary construction activities are able to occur.

### 9.5 Temporary Closures of Active Travel Routes

The proposed works will require the temporary closure of some active travel routes. The most significant impact will be the closure of the Federation Trail between Millers Road and the Newport railway line while the works are being undertaken to the West Gate Freeway. It is proposed to temporarily re-route the Federation Trail via Millers Road, Francis Street, Hardie Road, Cawley Road and then through to the Coates facility.

When temporarily re-routing any bicycle facility it will be important to consider the needs of different cyclists. A cyclist who is comfortable to ride along an off-road shared path trail may not
be comfortable with using on-road lanes. Therefore, any temporary re-routing of bicycle facilities should be provided through a similar type of facility (i.e. replacement of a shared path with a temporary shared path along a different route).
10. Public & Stakeholder Submissions

10.1 Preamble

The EES was publicly released on 29 May 2017, and was available for public submissions until 10 July 2017. Five hundred and four (504) submissions were received from a range of organisations including Councils, agencies, community groups and individuals. Approximately 60 per cent of submissions were not supportive, with 10 per cent providing qualified support and 30 per cent not stating a preference for the project. A summary of issues is provided below.

10.2 Summary of Issues Raised in Submissions

For reasons of brevity submissions with matters relevant to transport have been grouped into the following themes. Three hundred and seventeen (317) are not supportive 50 qualified and unstated:

- Justification of project
- Alignment with Strategic Transport Planning
- Preference for Alternate Proposals (Freight rail or PT or alternate corridor)
- Operation of Network (Traffic Impact)
- Project integration
- Safety
- Truck Bans
- Impact on Public Transport
- Transport Modelling
- Construction impacts
- Pedestrian and cycle network
- Tolling
- LATM
- Land use planning

The following section sets out a summary of the issues and themes identified and provides a comment on each of the matters raised. Issues raised by each of the local government agencies are dealt with first on an agency-by-agency basis followed by other submissions including VicRoads and the Bus Association Victoria. All other submissions are clustered and responded to after that using a tabulated format. In some cases, submissions repeat issues which have already been raised. In those cases, and for the benefit of brevity, I have chosen not to repeat the issue.

1. Melbourne City Council, 184

1.1. Melbourne City Council’s submission provides numerous points in response on the WGT project summarised as follows:

- Misalignment with integrated city and transport planning
- Project justification insufficient
- Incompatibility with urban renewal areas
- The need for alternate projects
- Project integration
- Port of Melbourne Access
- EES objectives
- Traffic modelling
Project design

1.2. The submission outlines how a road project is outdated and will increase the movement of vehicles into the city, rather than prioritising more productive travel modes such as public transport.

Response: The West Gate Tunnel project is one project in a suite of projects that need to be implemented in order to address, amongst other things the needs of the rapidly growing population in the west. While public transport has a role to play in providing additional capacity for the M1 Corridor, there is a significant number of users for whom public transport is not viable. A multi-modal approach is needed to meet the growing and changing travel demand forecast for broader Melbourne, with road based transit playing an important role in servicing complex, multi-purpose trips, as opposed to single purpose mass transit trips that are better suited to rail.

Traffic forecasting for the project indicates that the proposal will assist with providing stronger access links on the north side of the Melbourne CBD, reducing cross-city trips in the north-south direction and reducing demands on the western edge of the CBD in the 2031 planning horizon.

1.3. The City of Melbourne’s Transport Strategy (2012) has strong targets for commuter movements by sustainable transport and a total of 80 per cent of trips to be undertaken by sustainable transport modes.

Response: The WGT project does not preclude the road authorities from completing further works to improve operational conditions for sustainable travel modes. Reference is made to Section 6.8.2 of this report, where it is outlined that the project is not forecast to have any direct impact on public transport usage. Indeed, research completed in connection with the EES indicates that the relativity of use between the no project and with project cases remains equal.

Further, the project makes a meaningful investment in improving active travel accessibility between the west and the Melbourne CBD. This investment will help resolve existing gaps in active travel infrastructure and assist the City of Melbourne with in achieving its target.

1.4. The submission outlines the investment that has been made over three decades into reducing the negative impact of traffic in local areas by prioritising public transport, walking and cycling. The submission has highlighted that additional east-west traffic (in the order of 2,900-3,500 vehicles per hour) would conflict with the north-south public transport and active travel routes servicing the central city core.

Response: I understand that the quoted increase reflects a cumulative increase across a range of east-west traffic routes in the North Melbourne area rather than a single link in the network. Having said that I do not arrive at a figure anywhere near that value. Not-with-standing, reference is made to VicRoads’ submission on this project, which outlines that north-south public transport priority will be maintained.

The WGT project does not preclude the road authorities from completing further works to improve operational conditions for sustainable travel modes. Reference is made to Section 6 of this report, where it is outlined that the future level of traffic activity across three separate scenarios (no project, project and Arden-Macaulay Precinct full build out) are generally similar by order of magnitude.

1.5. Lack of strategic or policy rationale for the Project to provide additional motor vehicle access to the central city.

Response: this issue is considered at Section 3, 4 and 5 of this report. More specifically, guidance on the planning and policy rational of this project is perhaps most suitably sought from Plan Melbourne. The
key projects committed under Plan Melbourne\textsuperscript{153} to achieve targeted transport related objectives include:

- Metro Tunnel
- Western Distributor
- Removal of 50 level crossings
- A series of public transport improvements
- $100 million Safer Cyclist and Pedestrian Fund

The delivery of the West Gate Tunnel project (referenced as the Western Distributor) is committed under Action 37 of the Plan Melbourne Implementation Plan\textsuperscript{154}. The project also aligns with several components of Plan Melbourne.

1.6. WGT project inconsistent with strategic policy including Future Melbourne 2026, CoM Council Plan 2017, Plan Melbourne, Arden Vision and Framework, CoM MSS and other endorsed CoM policies, Infrastructure Victoria - Infrastructure Strategy, Victoria’s Port Capacity 2017 and raise concern the WGT project will undermine West Melbourne Structure Plan.

Response: The project’s strategic alignment with policy is set down in Section 5 of this report. It is not unusual that a specific project can be both consistent and inconsistent with expressed policy positions and a review of those policies listed by CoM indicates that on many occasions, alignments can be identified.

By way of example, the West Melbourne Structure Plan (2005) (or WMSP) identifies a number of influences for the area. This includes “the high levels of traffic traversing the study area via King Street and Spencer Street\textsuperscript{155}”. The project forecasts a decrease in traffic activity through the reduction of cross-city north-south movement which aligns with outcomes sought of the WMSP.

\textsuperscript{153} Plan Melbourne Implementation Plan, Page 16
\textsuperscript{154} Plan Melbourne Implementation Plan, Page 18
\textsuperscript{155} Section 3, page 6.
Figure 10 from the WMSP sets out the objectives for movement with accompanying text seeking:

“To improve public transport, pedestrian and bicycle environment throughout the study area, to improve pedestrian and bicycle links to key destinations such as North Melbourne Station, Errol Street Shopping Precinct, Flagstaff Gardens, Docklands, CAD and recreational open spaces. To minimise the impact of through traffic on the area and to implement traffic calming measures in local streets.”

I am satisfied that the project does not preclude these objectives from being delivered and therefore not undermine the WMSP.

Project justification insufficient (page 6, section 3.1)

1.7. The City of Melbourne summarise that the WGT project is not in line with the Eddington Review, which stated that “providing car access to the CBD should not be a priority for Melbourne’s transport network.”

Response: I acknowledge that the Eddington Review did highlight that car access to the CBD should not be a priority. However, the Eddington Review did state that the need for improved transport solutions from the western region of Melbourne is necessary. The Report highlighted five regional issues that are critical to improving connectivity for the west. The West Gate Tunnel addresses four of the five regional issues:

- Increasing road capacity across the Maribyrnong River
- Reducing Melbourne’s reliance on the West Gate Bridge
- Increasing access to businesses, services and jobs in the inner and middle eastern suburbs
- Improving access to the Port of Melbourne (while reducing the number of trucks on local roads in the inner west).

The Eddington Review went on to say: There is a need for better transport connections from, to and within the western suburbs, with the most critical links for the west being with central Melbourne, the inner and middle east, and the Port of Melbourne. These connections will support the region’s most important economic journeys. Substantial new investment in the city’s road network is needed to meet the growth in cross-city travel demand. A failure to make this investment will lead to significantly increased congestion, greater transport disadvantage, and unnecessary constraints upon economic growth, especially in the central city and the west.
1.8. The idea of additional network resilience is challenged noting that the EES has failed to demonstrate that the traffic network can cater for the closure of the West Gate Bridge.

Response: Refer to Section 5.3 of this report for discussion on network resilience. Based on my investigations, I am satisfied that there is a strong body of evidence which indicates that the WGT will provide a higher capacity detour route in the event of an incident on the West Gate Bridge, improving network resilience.

Designing a project with sufficient redundancy to cope with the closure of the West Gate Bridge would require an equivalent 10-lane design solution which would be at odds with a range of other observations made by the CoM on the projects lack of alignment with policy. This observation by the CoM is therefore unclear as to the outcome its seeks for the project or its position.

Incompatibility with urban renewal areas (page 7, section 3.1)

1.9. Arden-Macauley precinct - impacts not adequately assessed regarding connectivity between Arden-Macauley and surrounding areas and impact on new Metro Station and surrounding employment centre in the area.

Response: This matter is addressed at length in the body of the report, refer GTA Sections 6.4 and 6.8.3. For reasons provided, no further analytics is considered necessary for this area.

The need for alternate projects (page 8, section 3.1)

1.10. The City of Melbourne articulates that the EES does not demonstrate that the WGT project is the highest priority project for Victoria. The submission outlines that the most appropriate way to improve that access to increase the capacity of public transport supported by active travel infrastructure. Melbourne Metro 2 is given as an example of such a project.

Response: The EES sets out a review of the Environmental Effects of the proposal. It is not the role of the EES to demonstrate the project’s priority standing against other possible candidate projects. In support of this observation, the IAC’s terms of reference specifically require the committee to “inquire into and provide an integrated assessment of the environmental effects of the construction and operation of the project.”

1.11. Infrastructure Victoria’s work, whilst not specifically assessing the WGT project outlines many projects relevant to improving transport for residents of the inner west Melbourne, such as: Melton Rail electrification, expanding the SmartBus network, reforming the bus network, increasing the capacity of the Regional Rail Link Corridor, transport network pricing and high capacity rail signalling. Infrastructure Victoria did not recommend any road projects as high priorities for access to central Melbourne.

Response: The WGT project is one a range of projects necessary to address this issue. It is not the role of the EES to determine the order of projects recommended by Infrastructure Victoria for consideration.

Project Integration

1.12. Given the State does not have a Transport plan and the WGT project has been developed without a wider strategic context for transport the project is not compliant with Transport Integration Act.

Response: The strategic context which exists in support of this project is set out in Section 3, 4 and 5 of this report. The extent of alignment with the Technical Report A (2010) is specifically considered at Section 5.7. The project has been identified as meeting many of the objectives set down in the Technical Report A (2010) for an assessment of compatibility and appropriateness.
Whilst there is an absence of a specific Transport Plan for Melbourne, it should not preclude the approval of this project noting that other recent projects such as Melbourne Metro have been approved without an adopted Transport Plan.

1.13. The submission outlines that the WGT projects integration with the transport network is poor, citing the following specific examples:
- Connecting toll roads to local streets
- Delivering poorly designed cycling infrastructure (namely the Veloway)
- No specific improvements to public transport
- Excessive road space on Footscray Road

Response:

Dot point 1: Environmental performance requirements TP1 and TP6 will provide a framework to mitigate the detailed impacts of this arrangement.

Dot point 2: A review of the design of the active travel component of the project is provided at (Section 7) of this report which finds the proposed design generally acceptable.

Dot point 3: My review has set out the extent of alignment the WGT project has with strategic transport policy. It is evident that the proposal is not a public transport project per se and efforts will need to continue which prioritise road based public transport travel. In broad terms, capacity improvements to the road network will improve performance for all road based activities and enable more substantive road based public transport prioritisation which would sensibly follow project implementation. This further investigation is considered in the drafted Environmental Performance Requirements.

Dot point 4: VicRoads as the responsible authority for the road have provided the following response to the EES on Footscray Road.

‘Footscray Road (at grade) will continue to play a significant role in the transport network as a primary traffic route and any potential downgrade would have significant economic and transport implications…VicRoads supports maintaining the current capacity and capability levels to ensure that freight access and efficiency can be maintained and future growth in transport movements’. It is critical to maintain the capacity of Footscray Road (both elevated and at grade) as a network redundancy option to keep Melbourne connected in circumstances where lane closures occur on the Westgate. VicRoads has already consented, as part of the Project, to a reduction in the through carriageway width of Footscray Road to accommodate the elevated viaduct structures and to maintain width in the outer separator on the north side for planting of trees.

Port of Melbourne

1.14. Specifically, in relation to the Port of Melbourne
- Further information required on assumptions made in in EES in relation to Port
- Reasons for Coode Road closure not explained
- The need to consider changes to the Port, including importance of Webb Dock

Response: The inputs and assumptions relied upon to inform the project work sits outside the scope of the peer review that has been completed. Clarity on these issues will need to be sought directly from the project team.
EES Objectives

1.15. The WGT project does not meet the EES objectives

Response: I reproduce the EES objective as it relates to transport at Section 1.3. Report Sections 4, 5, 6, 7 and 8 of this report consider this matter. On balance, I am satisfied that the project meets its transport objectives.

Traffic Modelling

1.16. Concerns are raised about overstating the travel times documented in the EES. The extent of the model does not cover the full impact of the increased congestion caused by the project.

1.17. The WGT project doesn’t adequately assess induced demand.

1.18. The modelling overestimates the background traffic growth in the 'no project' scenario.

1.19. Traffic impacts are not modelled for those travelling north-south north (north of the city) and those using the Eastern Freeway.

Response: Section 6 provides discussion on the above issues. Induced demand and traffic growth is being dealt with by others and is not part of this peer review.

Project Design

The following provides a summary of the suggestions for design alternatives:

1.20. Council submits the Dynon Road connection should not be delivered as it is considered impacts associated with this section cannot be managed. No alternative solution proposed.

Response: The impacts of the Dynon Road connection have been discussed within Section 6 of this report. Briefly, these impacts are considered manageable and broadly consistent with the no project case. Removing access from Dynon Road would considerably reduce capacity and place more significant pressures on access via Footscray Road and Wurundjeri Way than that anticipated on a project which delivers a more distributed traffic access outcome.

1.21. Extension and widening of Wurundjeri Way there is an opportunity to lower height of the extension and possibly bring to ground level.

Response: The Map Books do not contain sufficient detail for me to review and comment on this matter. It is suggested that guidance is sought directly from the project team on the feasibility of reducing the height of this part of the project.

1.22. Maribyrnong River crossing:

- redesign as tunnel and eliminate bridges
- if elevated structures remain, MacKenzie Rd ramps to better align with PoM land and minimise impact to River.

Response: Environmental performance requirements TP1 and TP7 will provide a framework to optimise this arrangement where practical. My peer review focuses on the project contained in the exhibited EES. The project technical team may be able to comment on the feasibility of these project modifications.

1.23. Footscray Road elevated structure - 18 lanes is considered an unacceptable outcome. There has been a failure of the EES to test options for alternative solutions including a Footscray Rd tunnel, at ground-level or higher elevated structure with a reduction of lanes at ground level.

Response: as outlined earlier in this section VicRoads have supported the level of capacity along Footscray Road and its configuration for resilience, economic and capacity reasons. I have reviewed
the traffic impact of the project in Section 6 of this peer review. Again, my peer review focuses on the project contained in the exhibited EES. The project technical team may be able to comment on the feasibility of these project modifications.

1.24. Footscray Rd at surface suggest not retaining all existing lanes

Response: as outlined earlier in this section VicRoads have supported the level of capacity along Footscray Road and its configuration for resilience, economic and capacity reasons. I have reviewed the traffic impact of the project in Section 6 of this peer review. This traffic impact review does not specifically explore the need or otherwise of the existing lane configuration on Footscray Road. The project technical team may be able to comment on the feasibility of these project modifications.

1.25. Appleton Dock Rd alignment of this connection be reconfigured to minimise footprint

Response: Environmental Performance Requirements TP1 and TP6 will provide a framework to optimise this arrangement where practical.

1.26. CityLink Connection - reduce footprint of connection, enabled by removal of Dynon Rd connection

Response: Comments are provided earlier on the need to retain project access via Dynon Road. A footprint reduction can however be considered under EPR’s TP1 and TP6.

1.27. Veloway:

- veloway should be at ground level

Response: If the veloway was located at ground level, this would make it more accessible, and improve personal safety through passive surveillance and access. To retain the features of the veloway at ground level, the road crossings would need to be grade-separated. This is not particularly practical and it would duplicate to some extent the existing shared path, which will continue to serve those riders who prefer to ride at ground level. One advantage of having the veloway elevated/suspended is that it does not require any space at ground level to accommodate it.

  - if elevated, Veloway should be to north side of elevated structure, open to the air and allow for views out

Response: the summary of the design elements in Table 7.7 outlines that the design could be improved and it is expected it will undergo further refinement during the detailed design phases to address this amenity issue and ensure it is as attractive as possible for all users. I defer to the IAC on considering the issue of views and the importance which should be imposed on those attributes as a basis to locating the veloway in an alternate position.

  - wider design of approx 6m width (currently too narrow)

Response: Table 7.6 suggests the need to review the width of the path. The current proposed width of the veloway is 4.0m. When clearances are considered, this leaves an effective operating width of approximately 3.0m. Based on our experience, the veloway should be as wide as possible with a preferred minimum of 5.0m if achievable.

1.28. Shared User Path:

- SUP crossing of Footscray Rd should move further east to align with Hawke St West Melbourne future connection and ramp down to both northern and southern sides of Footscray Rd.

Response: The future proposed link between West Melbourne – E-Gate -Docklands is outlined in the West Melbourne Structure Plan. This includes a connection linking Hawke Street to Footscray Road via a
grade separated structure. The indicative alignment is shown below, along with the proposed WGTP alignment. The proposed bridge location of the WGTP provides an at-grade connection on the east side of Waterfront Way. It is possible that Waterfront Way may serve as a key bicycle access point to Docklands. Moving the bridge further to the east to align with Hawke Street would remove this access point. Consideration should be made in the design of the bridge to allow a future continuation of the SUP on the northern side of Footscray Road to link with the future connection shown in the West Melbourne Structure Plan.

Lastly, there is currently no path on the north side of Footscray Road, so unless there will be one proposed in the future, a ramp down on the north side of Footscray Road would offer no broader network connectivity.

- Extend the SUP on northern side of Footscray Rd to connect to Dudley and LaTrobe Streets

Response: The existing Capital City Trail path provides access to Dudley Street and La Trobe Street, however it requires crossing Harbour Esplanade. There are currently no bicycle provisions on Dudley Street. Consideration could be given to providing these connections, or alternatively, improve the safety and priority of the bike crossings at the intersection of Harbour Esplanade and La Trobe Street.

- Dynon Road SUP should be widened to 4m to accommodate future capacity

Response: This recommendation is supported to allow for future growth in cycling.

2. Maribyrnong City Council, 158

2.1. Maribyrnong City Council’s submission addressed numerous issues of which four relate to transport. The transport related issues are:

- Preventing toll avoidance
- The Paramount Road connection
- McKenzie Street ramps & Port connections
- Construction impact mitigation
- Terms of the proposed EPRs

Preventing Toll Avoidance

2.2. The submission articulates concern over the temporary nature of truck curfews, noting the project does not have bipartisan support at state politics level. Maribyrnong City Council outline that ‘those who choose to work and live in residential areas should be entitled to a high level certainty that heavy freight movements will be directed to designated freight routes.’

Response: My assessment is based on the curfews being installed on a permanent basis.

2.3. Maribyrnong City Council recommendations to the IAC on toll avoidance (page 8, section 1.23 of the submission) are as follows:

- ‘Enshrining the curfews in an Act of Parliament
- Providing compensation for the road operator if the curfews are altered
- Alternative road upgrades be considered to avoid the attractiveness of alternate toll free routes to the Port of Melbourne
- Development of warning systems to discourage trucks of a certain height from passing through local roads / key local intersections
- Review as part of the WGT project an upgraded connection linking Tottenham to the West Gate Freeway (via the Paramount Road corridor).’

Response: The first two matters raised are of a legal nature and I defer to others on addressing their need or otherwise. The third and fourth matters (alternative road upgrades) are dealt with in the post implementation EPR’s which require monitoring and review of the project for a period of two years. If issues are identified, I expect the post implementation review process will consider an appropriate course of action. The fifth matter is a consideration in the Business Case (2015) and is recommended for delivery at some stage in the future but does not form part of this project and in my view sits outside the remit of the IAC in its capacity to review the EES.
**McKenzie Street ramps & Port connections**

2.4. Maribyrnong City Council query the assumption around the closure of Coode Road and the strategic need for the McKenzie Street ramps (the ramps). The Council recommends the ramps are not delivered as part of the WGT project.

Response: The Technical Report relies on the future closure of Coode Road as a basis to requiring the McKenzie Road ramps. On the basis of the closure occurring, the McKenzie Road ramps provide an important link into Swanson Dock west. Without them, access would be constrained and require a highly circuitous travel route to and from this part of the Port.

2.5. Alternate options have been put forward, with a view to avoiding additional ramps over the Maribyrnong river as follows:

- An off-ramp providing access to Dock Link Road should be investigated
- A direct connection from the Appleton Dock Road intersection to the elevated sections of Footscray Road, in lieu of the proposed on and off ramps to Footscray Road (page 40, section 4.39.2)
- The ramps can be staged and delivered only if Coode Road is closed in the future.

Response: Given the earlier assumption around the closure of Coode Road, none of these alternate options provide a legitimate accessibility alternative to Swanson Dock west.

2.6. Maribyrnong City Council summarised findings by Infrastructure Victoria (IV), which suggested in 2046 the freight task in the inner west of Melbourne will be significantly reduced as a result of the implementation of a second Port. Conclusions are made (page 44, section 4.51), that as a consequence the existing Port connections along Footscray Road should be adequate and the McKenzie Road ramps are not required and should be staged or only delivered if required in the future.

Response: Forecasting for the West Gate Tunnel project anticipates growth in production at the Port of Melbourne. Forecast growth has been tested in the corridor model for various Port access scenario’s, testing future access requirements. This analysis confirms the need to deliver the McKenzie Road ramps or the second Port access to ensure LOS performance outcomes are met.

2.7. Summarises that the Port of Melbourne’s new owner has not outlined specifically that the closure of Coode Road is to occur as part of its submission to IV.

Response: This is a matter which sits outside my peer review.

2.8. Would like to understand the assessment criteria to evaluate and rank the ramp options for this component of the WGT project. Maribyrnong City Council raises (page 65, Section 6.43) the need to assess within the EES a previously considered option of a connection to Hyde Street (previously known as Option 4).

Response: This matter sits outside the extent of my peer review. The project technical team however maybe able to advise on the rationale of not adopting Option 4.

**Construction Impact Mitigation**

2.9. The submission on construction impact mitigation was not completed by Maribyrnong City Council due to the lack of time available and the level of detail provided by WDA. It was highlighted the need to ensure opportunities are explored to minimise the effects of construction traffic routes on the community. Greater clarity was requested and that construction impact mitigation be dealt with in detail as part of the IAC process.
Response: Section 9 of this report peer reviews the construction impact mitigation associated with the WGT project. Environmental performance measures TP1 and TP3 have been included within the EES to address this particular matter.

**Harris Street Shared Path**

2.10. Maribyrnong City Council supports the cycling connection that crosses Whitehall Street and connects to the river front to complete the Federation Trail. Whilst supportive in principle of the path, the submission queries detail of the connectivity from the northern end of Hamner Reserve to the proposed shared use path along with the local alignment of the path along Hyde Street.

Response: Further details of the proposed (upgraded) SUP on Hyde Street and Harris Streets should be provided to ensure appropriate access and alignment issues are addressed.

2.11. Additional items have been suggested to improve the connectivity of the new shared use path (crossing point at Hyde Street and Harris Street, and a connection to the elevated path structure at Whitehall Street).

Response: An additional ramped connection from the elevated path to the shared path on the east side of Whitehall Street is supported. As above, further details of relevant crossings should be provided to better assess the comments relating to the crossing at Hyde St and Harris St.

3. Moreland City Council, 357

3.1. Moreland City Council’s submission focuses on five key points that relate to transport as follows:

- WGT project objectives
- Strategic transport focus
- Traffic modelling and impacts on existing roads
- Impacts upon the public transport network
- Incremental impacts of building demand for other additional major road projects

**Project Objectives**

3.2. Moreland City Council believe that not all the critical challenges as set out in the EES are being achieved and that the ‘Vision, Objectives, Principles and Statements of Policy Principles in the Transport Integration Act are not being achieved.’

Response: The Transport Integration Act sets out a series of objectives and I refer to Section 5.2 of GTA report for my review of the projects extent of alignment with these objectives. The project has been identified as offering an alignment with a number of listed objectives making it a compatible project suitable for adoption.

**Strategic Transport Focus**

3.3. Moreland City Council outlines that State Government has not completed a comprehensive transport plan as required in the Transport Integration Act. Advancing the project without this review lacks strategic transport focus.

Response: The strategic context which exists in support of this project is set out in Section 5 of this report. The extent of alignment with the Technical Report A (2010) is specifically considered at Section 5.7. The project has been identified as meeting a number of objectives set down in the Technical Report A (2010).

Whilst there is an absence of a specific Transport Plan for Melbourne, it should not preclude the approval of this project noting that other recent projects such as Melbourne Metro have been approved without an adopted Transport Plan.
Traffic modelling and impacts on existing roads

3.4. The traffic model does not extend north-east of Dynon Road. Moreland City Council has concern over a detrimental impact upon east-west arterials such as Bell Street, Brunswick Road and Moreland Road.

Response: Section 6 provides discussion on the above point. Traffic growth outside the study area is being dealt with by others and is not part of this peer review. I understand VLC will be providing further information on the strategic transport model.

3.5. The submission challenges volume forecasts and the traffic model outputs, which suggest reduced traffic volumes on significant arterial roads. The Council calls upon the IAC to contain, and even reduce, traffic volumes on the metropolitan arterial road network to ensure the only alternative isn’t forcing motorists onto tollways.

Response: Traffic growth outside the study area is being dealt with by others and is not part of this peer review. I understand VLC will be providing further information on the strategic transport model.

3.6. Moreland City Council highlights the requirement on the Port operator to develop a rail shuttle plan and suggests this should be completed in parallel with sustainable transport initiatives and prior to the delivery of the West Gate Tunnel project.

Response: The IAC’s terms of reference relate to the adequacy of the environmental effect statement which I reproduce at Section 1.3 of this report. As an extension of that, the remit of the IAC allows it to consider any feasible modifications to the design that are within or reasonably proximate to the project boundary as well as any matters which may be reasonably incidental to the key matters of its review. Accordingly, the requirement to prepare a rail shuttle plan is considered something well beyond any reasonable adjunct to the project plan and outside the remit of the IAC enquiry.

Impacts on the Public Transport Network

3.7. Increase east-west traffic volumes will reduce the performance of the five tram routes serving the City of Moreland and impact upon the Arden Street and Macauley Road level crossings (which may impact on the ability to provide additional services on the Upfield line).

Response: Reference is made to Section 6 of this report, where it is outlined that the future level of traffic activity across three separate scenarios (no project, project and Arden-Macauley Precinct full build out) are similar, limiting the difference in impact under the project case.

3.8. Coupled with the provision of employment opportunities Public transport investment is required in the western and south-western growth areas.

Response: The West Gate Tunnel project is one project in a suite of projects that need to be implemented in order to help address the needs of the rapidly growing population in the west. While public transport has a role to play in providing additional capacity for the M1 Corridor, there is a significant number of users for whom public transport is not viable. A multi-modal approach is needed to meet the growing and changing travel demand within the city, with road based transit playing an important role in servicing complex, multi-purpose trips, as opposed to mass transit single-purpose trips that are better suited to rail. This project represents an investment in one of the multi-modal access opportunities required to service forecast transport demand.

Incremental impacts of building demand for other additional major road projects

3.9. The submission outlines concern of impact upon access to Melbourne Airport and will lead to a further widening of the Tullamarine Freeway, which is likely to require impact upon Council’s open space.
Response: The terms of reference of the IAC is to determine the suitability of the WGT project from an environmental effects point of view. In my view, the matters raised above are outside of the remit of the IAC.

3.10. The WGT project will provide further pressure to construct more major road projects, such as the East West Link (Eastern Section).

Response: The West Gate Tunnel project in itself, will not place pressure on constructing more road projects but rather continual growth in population and employment in Greater Melbourne. The EES considers one such project in response to projected and expected growth and settlement patterns using predictive modelling tools which estimate travel behaviours within the planning horizon set down in the EES framework guidelines.

4. Hobson Bay City Council, 378

4.1. Hobsons Bay City Council’s submission outlined numerous items that relate to traffic and transport. The key issues are summarised as follows:

Toll avoidance

4.2. The model extent is not large enough to assess the traffic impacts across the wider Hobsons Bay area. Hobsons Bay City Council have outlined that Millers Road, Kororoit Creek Road, Blackshaws Road, Mason Street, Melbourne Road, Hudsons Road and North Road are likely to experience higher traffic volumes resulting from toll avoidance and detouring around truck bans.

Response: The model extent has been considered in Section 6 of this report. The local area model prepared for the project includes a considerable Portion of the Hobsons Bay LGA (refer GTA Figure 6.5) and includes specific consideration of Millers Road, Blackshaws Road, Melbourne Road and Hudson Road. Recommendations are set out in Section 6.7.2 of my report on conducting some further sensitivity testing around eventual toll point locations. I prefer to review outcomes associated with that testing before confirming the adequacy of outcomes surrounding toll point avoidance and the like.

Truck bans

4.3. These bans north of the Freeway result in the displacement of vehicles into Hobsons Bay. Council sights a lack of mitigation measures to address this impact.

Response: There is no substantive evidence indicating that the proposed full-time truck curfews will increase truck volumes within the Hobsons Bay LGA by any meaningful amount. On my review, there is some potential for toll avoidance on Blackshaws Road. Sensitivity testing has been recommended to appreciate whether an alternate toll point strategy might help reduce this potential. Lastly, EPR TP2 includes a monitoring mechanism to implement local area traffic management works should they be required in areas such as the Hobsons Bay LGA.

Existing Congestion Issues

4.4. No improvement to the level of congestion at Millers Road and Melbourne Road Freeway interchanges. Millers Road / West Gate Freeway interchange identified in 2016 by Council and VicRoads as a major congestion point due to traffic accessing land parcels such as Precinct 15 on Blackshaws Road. Estimate threefold increase in truck traffic on Millers Road will exasperate this issue.

Response: A review of reported operational performance outcomes indicates level of service improvements at both these interchanges between the no-project and with-project outcomes (refer GTA Table 6.9). Analysis indicates more substantial improvements at the Williamstown (Melbourne Road) Road interchange. Enquiries with the project team indicates that the Bradmill
Precinct and Precinct 15 have been included in the population and employment estimates contained in the VLC model for 2031. For Precinct 15, the VLC model assumes 2700 dwellings and approximately 7000 people.

**Transport Network Planning**

4.5. Consideration should be given for an additional north south road link across the Freeway to reduce demand on already congested routes, specifically Williamstown Road/Melbourne Road, Millers Road and Grieve Parade.

Response: A review of the transport impact outcomes associated with the project indicates that forecast network loads can be accommodated satisfactorily and that a further link over the West Gate Freeway is not required.

4.6. Lack of additional Freeway ramps at Grieve Parade or Dohertys Road to improve north-south connectivity to the M80 from the Altona North Industrial Precinct.
Response: West facing ramps at Grieve Parade create significant challenges with weaving given the proximity of the Western Road and Princes Freeway connection. On my review, the Western Ring Road and Princes Freeway connection merge and diverge at Grieve Parade, removing any legitimate possibility of delivering western facing ramps. Dohertys Road accessibility includes a proposal for a north facing on-ramp onto the Western Ring Road to supplement the existing Boundary Road facility and south facing on-ramp onto the Princes Freeway to supplement the existing Kororoit Creek Road facility. To the extent necessary to address identified network issues, these ramp connections would fall outside those necessary to achieve identified project objectives.

Increase in traffic on arterial roads

4.7. Hobsons Bay City Council have raised concern with the level of capacity that is being generated in the system with particular emphasis shown in the network plan below.
Response: Section 6 of this report, sets out a review of the traffic impact for this project.

Operational and safety concerns

4.8. The use of Simcock Avenue to access a Freeway entry ramp from Hyde Street has been queried given the impact on the access to local business along Simcock Avenue.

Response: A review of the network and positioning of the intersection of Simcock Avenue and Douglas Parade and the ramps development for the Melbourne Road interchange (outbound) indicates some challenges with providing ramp access at an alternate location. In the circumstances, the proposed Simcock Avenue ramp access is considered appropriate.

4.9. Design changes are suggested to address traffic impacts on Douglas Parade and Hyde Street (localised congestion), e.g. Intersection treatments, parking and local access consideration, truck curfews.

Response: A summary of operational performance is provided at GTA Table 6.10 and 6.11 for these intersections. The performance outcomes for the with-project outcomes are consistent with project objectives and in all cases returning very good levels of service. Performance at the Hyde Street / Francis Street intersection returns and LOS of F in the PM peak and Section 6.7.4.3 of the GTA report discusses the acceptability of this outcome. Accordingly, no design changes are recommended for this part of the network.

4.10. Lack of information about likely tunnel closures and the impacts of such closures.

Response: Some information is provided within the EES (Section 3.3, Risk Assessment, Technical Report A, Part 1) around the risk profile for a tunnel closure. More detail is provided at Appendix B of Technical Report A, Part 2. The risk profile is considered low, the consequence minor and likelihood guide rating it as possible. The impacts of such a closure have not been specifically tested however I expect that the result would be similar to a no-project outcome which has been well documented. Lastly, an incident response plan has been reviewed to explore network redundancy at Section 7.6 of the EES, Technical Report A, Part 1 documenting the procedure that would be implemented should it be required.
4.11. Area bounded by the West Gate Freeway, Kyle Road, Blackshaws Road and Millers Road. Request for the impacts on this area to be critically evaluated as result of the WGTP and the cumulative impact of surrounding development.

Response: Enquiries with the project team indicates that the technical review considers this cumulative impact to the extent forecast by state government up to and including the 2031 design horizon.


Response: This is a broad statement. On my inspection of the intersection I did not readily identify any sight distance issues. EPR TP1 gives rise to an opportunity to review this issue if further specifics are provided by Council.

Construction Traffic Impact

4.13. Outlines that construction traffic should be managed with minimal disruption and impact to pedestrians and cyclists with increased safety measures introduced due to increased volumes of construction vehicles.


4.15. Concerns noted about haulage routes – The Council does not support the construction compound at the northern end of Hall Street and the use of Hall Street as a construction traffic route, due to impacts on the Emma McLean Kindergarten.

Response: Section 9 of this report reviews the construction impact mitigation associated with the WGT project. Environmental performance measures TP1 and TP3 have been included within the EES to address these particular matters. The Emma McLean Kindergarten is located on the corner of Hope Street and The Avenue on the opposite side of the Williamstown Railway Line, creating a physical separation. Accordingly, the issues being raised by Council do not appear to be of a traffic and / or transport nature.

Public Transport Provision

4.16. Lack of public transport improvements associated with the project. Highlighted the deficiencies in the existing public transport infrastructure that services Hobsons Bay and the need to improve the level of service both during construction and post WGT project.

Response: The West Gate Tunnel project is one project in a suite of projects that is proposed to be implemented in order to address the needs of the rapidly growing population in the west. While public transport has a role to play in providing additional capacity for the M1 Corridor, there is a significant number of users for whom public transport is not viable. A multi-modal approach is needed to meet the growing and changing travel demand within the city, with road based transit playing an important role in servicing complex, multi-purpose trips, as opposed to mass transit single-purpose trips that are better suited to rail.

The WGT project does not preclude the road authorities from completing further works to improve operational conditions for sustainable travel modes. Reference is made to Section 6.8.2 of this report, where it is outlined that the project is not forecast to have any direct impact on public transport usage or projected operational performance compared to the 2031 no-project outcome.

EPR TP4 has been included to develop and implement measures to minimise to the extent practicable disruption to impacted public transport during construction. Lastly, it is worth noting that the project before the IAC is largely a combined road based and sustainable (active) travel project. Upgrades to public transport to/from the Hobsons Bay LGA would logically represent a separate and isolated study.
Active Travel

4.17. The submission outlined several queries around the detail, quality and provision of the shared user paths.

Response: Further details of the SUP design requirements are expected to be provided at the next design stage and shared with key agencies under EPR TP7 (Traffic Management Liaison Group), noting that they will need to be in accordance with the WGTP design criteria.

4.18. Definition is required for the proposed connections with the existing network.

Response: Broad-level details have been provided in the WGTP EES, however the specifics will be determined at the next design stage and shared with key agencies under EPR TP7 (Traffic Management Liaison Group), noting that local access connectivity is considered important.

4.19. Provision of a shared path along the disused land along the edge of the WGF and connecting the state government land to the west of Beevers Street (could also be used for emergency access).

4.20. Upgrade to Federation Trail west of Millers Road be full reconstruction in concrete rather than resurface to provide a more durable and long-lasting SUP.

Response: This recommendation is supported.

4.21. Recommends a grade separation of the Federation Trail at Hyde Street with a connection to the Coastal Bay Trail providing a safer more efficient outcome.

Response: This recommendation should be investigated further, and considered in combination with providing an at-grade connection. A grade-separated crossing of Hyde Street would provide the safest and most direct link to the Coastal Trail, and there would be efficiencies in providing this connection as part of the project works.

4.22. A SUP between the end of the Federation Trail and the West Gate bike punt to improve access to the Fisherman’s Bend precinct.

Response: There is an existing shared path on the eastern side of Hyde Street that leads to the West Gate Bike Punt.

4.23. A SUP connection from the New Street SUP under the Freeway to Edwards Reserve, South Kingsville.

Response: This connection could be considered with Council.

Concern that the project lacks strategic alignment with sustainable transport and integrated land use planning outcomes for the west of Melbourne

Response: There are various local and state policies that have components of alignment with the project. These are set out in Section 7.3 of the GTA. The forecasting prepared for the project maps projected land use growth through population and employment uplift and seeks to devise a strategy which responds to that demand. The modelling is multi-modal and considers public transport usage.

5. City of Yarra, 388

5.1. The City of Yarra's submission has two main points as follows:

- The impact of increased traffic volumes in North and West Melbourne as a result of the WGT project. In particular the impact on Victoria Parade, which has recently had measures installed to provide dedicated bus and bicycle routes.

- Opposition to this toll road and which may ‘provide further pressure to construct more major road projects, such as…East West Link.'
Response to first dot point: The model outputs indicate an increase of around 2,000 vehicles per day at the easternmost end of the study area and closest to the City of Yarra LGA. Growth projections forecast most of this growth to occur outside the network peak periods. A more cautious approach would suggest around 10 per cent of activity will occur in the network peak which would on a balanced (east-west) outcome deliver around 200 extra vehicles in the peak hour, two-way. This would equate to 1-2 extra vehicles per minute in each direction which I do not foreshadow will have any material impact on network performance.

Response to second dot point: The West Gate Tunnel project in itself, will not place pressure on constructing more road projects but rather continual growth in population and employment in Greater Melbourne. The EES considers one such project in response to projected and expected growth and settlement patterns using predictive modelling tools which estimate travel behaviours within the planning horizon set down in the EES framework guidelines.

5.2. The submission highlights the need for the government to prepare a long and medium-term transport plan having regard to the transport objectives and decision-making principles of the Transport Integration Act (2010). The City of Yarra submit that the WGT project is ‘contrary to proper transport planning in accordance with the requirements of the Transport Integration Act and thus should not proceed.’

Response: The strategic context which exists in support of this project is set out in Section 5 of this report. The extent of alignment with the Technical Report A (2010) is specifically considered at Section 5.7. The project has been identified as meeting a number of objectives set down in the Technical Report A (2010).

Whilst there is an absence of a specific Transport Plan for Melbourne, it should not preclude the approval of this project noting that other recent projects such as Melbourne Metro have been approved without an adopted Transport Plan.

6. City of Port Phillip, 387

6.1. The City of Port Phillip’s submission raises four main themes as follows:

- Lack of WGT project justification and rationale
- Immediate impact of the WGT project
- Transport Demand Management (TDM) measures
- Broader, longer term impacts of the WGT project

Lack of WGT project justification and rationale

6.2. Council has highlighted the need to factor in induced demand when assessing the overall benefits of the project. This component of the project has a low benefit cost ratio. The City of Port Phillip expects that the WGT project will provide additional stress upon the Tullamarine Freeway, Monash Freeway, inner city streets and arterial roads impacting on the liveability of surrounding neighbourhoods.

Response: Induced demand has been considered to the extent outlined in the work completed by VLC. Consideration of induced demand is not a specific review area for this peer review.

In relation to concern about additional traffic travelling on freeways, inner city streets and arterial roads, environmental performance requirements (EPR) have been established with the objective of manage the effects of proposed works on the broader and local transport networks. More specifically, EPR TP01 and TP02 sets out the requirements to optimise the design, and monitor traffic. This includes a requirement to monitor traffic in selected streets and implement local area traffic management works in consultation with the local relevant Councils.
6.3. The WGT project should include a detailed options assessment of rail freight connectivity to realise some of these benefits, with less negative impacts.

Response: The Business Case assessed a range of alternative strategic interventions including constructing a Port-rail shuttle. The assessment determined that ‘while this intervention is likely to reduce truck traffic to the Port of Melbourne, it is expected to require major investment on key rail corridors to accommodate the number of freight trains required to have that significant impact. It is also unlikely to significantly address other problems identified along the M1 Corridor.’ This matter sits with the IAC to consider the various benefits and dis-benefits of the WGT project as a whole and determine the overall strategic and technical merit of the proposal noting that rail freight connectivity in itself falls short of delivering the more wide-ranging benefits offered by the West Gate Tunnel project. I am therefore satisfied that in this case, it is not a case of choosing one project over the other as they each contribute differently to the overall transport outcome for Greater Melbourne.

6.4. The WGT project does not align with various policies such as:
   - The Council Plan 2017-2027
   - Council’s ‘Road user hierarchy’
   - State funds would be better spent on improving public transport and providing service to the Fishermans Bend Urban Renewal Area
   - The Transport Integration Act

Response: There are various local and state policies that have components of alignment with the project. With respect to the strategic policies outlined by the City of Port Phillip, the IAC (following a review of the discussions within this report and others) needs to determine whether sufficient compliance exists in support of the project. On my review, sufficient policy alignment does exist in support of the project.

Immediate impact of the WGT project

6.5. The documentation supporting the project provides limited information on the 2022 (day 1) scenario and does not allow the quantification of the initial benefits upon project opening. The Council acknowledges some of the benefits of the project (page 4, section 2) and outlines the key transport goals and policies of the Fishermans Bend Vision and Plan Melbourne. These goals and policies talk to a high level of sustainable travel usage, an integrated approach to transport planning, discouraging car usage and the creation of 20-minute neighbourhoods.

Response: The framework upon which the project has been evaluated is set down in the EES guidelines. The guidelines require a 10yr post implementation (design horizon) review. The technical report contemplates this impact, accounting for land use uplift in accordance with those guidelines. The project will not prejudice an ability to achieve more sustainable transport outcomes and indeed, the project includes meaningful upgrades to sustainable transport infrastructure in support of expressed policy positions.

Transport Demand Management (TDM) measures

6.6. The City of Port Phillip outline that the West Gate Freeway currently constrains demand due to the level of congestion experienced during peak periods. This constraint encourages people to change modes (such as public transport), retime travel or reroute.

Response: I agree that limited network capacity conditions contribute to an overall TDM strategy. In this case the West Gate Tunnel project delivers a range of outcomes well beyond the concept of increased network capacity but rather a level of connectivity which helps overcome a range of short-
comings in the broader network. I am of the view that the contribution made by the overall project outweighs the dis-benefit of achieving TDM in the short to medium term.

6.7. The Council has suggested the following alternatives to TDM:
   - New buses are investigated linking the western suburbs with Fishermans Bend (over the West Gate Bridge).
   - Additional capacity along the freeway network (Tullamarine, West Gate Bridge and Tunnel) provided for trucks only that could potentially be shared with high occupancy vehicles such as buses.

Response: in my opinion, these suggestions fall well short of achieving the objectives of the project which primarily revolve around improving network connectivity to amongst other things resolve current land-use / freight access challenges in the residential areas immediately west of the Port.

Broader, longer term impacts of the WGT project

6.8. Council has interrogated the supplied results and note that within five years of the WGT project being completed the traffic levels on the West Gate Bridge would return to 2016 levels.

Response: The project material indicates that existing conditions on the West Gate Bridge deliver a demand to capacity ratio of around 1. Forecast demand will achieve the same outcome within the design horizon for the project. Projected outcomes are a product of forecast uplift in population and employment growth. Overall the project will increase east-west capacity but more importantly deliver connectivity to the Port of Melbourne which is presently deficient and has the potential to stifle the economic productivity of that asset.

6.9. The submission highlights the following longer-term impacts:
   - The impact on local amenity
   - Severance
   - Increased traffic on arterial roads

Response: Environmental performance requirement (EPR) TP01 and TP02 sets out the requirements to optimise the design, and monitor traffic to adequately manage the effects of the works on the broader and local transport networks. This includes a requirement to monitor traffic in selected streets and implement local area traffic management works in consultation with the local relevant councils.
10.2.1 Other Submissions

10.2.2 VicRoads, 473

No specific comment is offered on supportive submissions but an outline of the position is provided to benefit the IAC.

VicRoads supports the WGT project and outlines that the project will:
- relieve traffic pressure on, and improve the resilience of Melbourne’s east west M1 corridor;
- improve capacity across the Maribyrnong and Yarra Rivers;
- reduce reliance on and increase the resilience of the West Gate Bridge;
- improve freight connectivity to and from the Port of Melbourne;
- facilitate significant reductions in truck volumes in Melbourne’s inner west;
- provide a CBD bypass;
- relieve congestion;
- improve travel times and reliability; and
- introduce over 14 kilometres of new and upgraded walking and cycling links.

The submission states that the WGT project aligns with VicRoads’ Corporate Plan by:
- Moving more freight, more efficiently, with less impact.
- Delivering more predictable journeys for customers.

The submission outlines the following:

‘VicRoads has played an integral role in the development of the Project as it has evolved through its various phases including the market led proposal, the business case and the planning phase.’

VicRoads has had the following roles within the WGT project:
- Member of the Steering Committee key role as part of the governance framework
- Formal member of the Technical Reference Group (TRG)
- Facilitator of the Transport sub-committee of the TRG
- Lead technical role in the assessment and selection of the design that has been assessed by the EES.

The statement goes into more detail with the following sections of Design and Network Connectivity:
- West Gate Freeway Section
- North South Connectors to the West Gate Freeway
- Hyde Street ramps
- Port and City Connections
- Pedestrian and Bicycle Access

**West Gate Freeway Section**

‘VicRoads supports the proposed new West Gate Freeway section with separated carriageways and braided ramps to the West Gate Bridge and the West Gate Tunnel... At the M80 Interchange, the additional lane in the southbound direction on the Princess Freeway to Kororoit Creek Road is necessary to achieve required levels of service... Given the complexity of the M80 interchange and the close proximity of the cross roads such as Geelong Road, Grieve Parade and Dohertys Road... VicRoads supports the EES position of not providing west facing ramps at Grieve Parade Interchange... VicRoads supports the relocation of the southern tunnel Portal in the westbound direction on the West Gate Freeway which is away from sensitive areas.’
North South Connectors to the West Gate Freeway

- "VicRoads supports the improvements proposed at the interchanges at Grieve Parade, Millers Road and Williamstown Road for all road users."
- "VicRoads supports the continuing role of Millers Road in providing unrestricted access for general and freight traffic."
- "VicRoads supports the upgrade of the Grieve Parade overpass to enable improved freight connections particularly to the south of West Gate Freeway. VicRoads submits that any future connectivity enhancements should be invested in Millers Road."
- "VicRoads supports the continuing role of Williamstown Road and Melbourne Road to provide unrestricted access for general and freight traffic."

Hyde Street Ramps

- "VicRoads supports the provision of the New Hyde Street Ramp connections to the West Gate Freeway along the proposed alignment."
- "The proposed provision of ramps at Hyde Street are necessary to ensure adequate network access for placarded loads (i.e. trucks carrying hazardous goods) which are not, for obvious safety grounds, permitted to access road tunnels (as is currently the case for existing CityLink tunnels)."
- "The Hyde Street ramps also provide flexibility and network redundancy during emergency response and scheduled maintenance activities."
- As a result of the new Hyde Street ramps and the projected increase in truck traffic on Hyde Street south of Francis Street, VicRoads acknowledges the amenity concerns from home owners that currently reside on Hyde Street between Francis Street and the proposed new ramps."
- "While the project scope of the West Gate Tunnel Project does not require the acquisition of the properties, VicRoads has been in contact with affected residents."

Port and City Connections

- "VicRoads supports the following proposed Port and City connections of the Project…"

Role of Footscray Road at Grade

"Footscray Road (at grade) will continue to play a significant role in the transport network as a primary traffic route and any potential downgrade would have significant economic and transport implications…VicRoads supports maintaining the current capacity and capability levels to ensure that freight access and efficiency can be maintained and future growth in transport movements… It is critical to maintain the capacity of Footscray Road (both elevated and at grade) as a network redundancy option to keep Melbourne connected in circumstances where lane closures occur on the Westgate. VicRoads has already consented, as part of the Project, to a reduction in the through carriageway width of Footscray Road to accommodate the elevated viaduct structures and to maintain width in the outer separator on the north side for planting of trees. VicRoads submits that the intersection of the Sims Street loop and Footscray Road should be signalised to facilitate safe and efficient egress of freight traffic from McKenzie Road and Sims Street originating from the Port or Westgate Tunnel."

Wurundjeri Way and Wurundjeri Way Extension

"VicRoads supports the Network role of Wurundjeri Way and the new Wurundjeri Way Extension as a City Bypass route to: • 
- redistribute traffic destined to Docklands from Dynon Road;"
provide for High Productivity Freight and Over-dimensional freight movement to and from the Port;

- support the future expansion of Webb Dock and continued reliance on transporting goods via roads and between various parts of the Port of Melbourne in conjunction with Footscray Road; and

- provide for future access and capacity needs associated with redevelopment of E-Gate and continued growth in Docklands.’

**Dynon Road Connection**

‘VicRoads supports the new connection from the West Gate Tunnel Project to Dynon Road as part of the integrated package of bypass connections to facilitate movement and disperse traffic around the CBD, while noting that there is no increase to the inbound two lane capacity on Dynon Road Bridge.’

**Roads in West and North Melbourne**

‘VicRoads supports the proposed new connections to Dynon Road and Wurundjeri Way Extension to redistribute traffic around the CBD, while reducing traffic through the CBD...As a result of forecast changes in volumes, when comparing the 2031 Project case with the “No Project” case, the following comments and suggestions are made:

- VicRoads supports the proposed Peak Hour City Access Charge to manage the full morning peak hour demand.

- VicRoads notes that the EES articulates small daily volume changes as a result of the Project on east-west roads such as Victoria Street, Queensberry Street, Arden Street and Grattan Street, which currently carry relatively high volumes of traffic. VicRoads suggests that an hourly volume profile analysis will provide an indication of the periods of the day when capacity is likely to be exceeded resulting in congested operation on each of these roads. –

- VicRoads will continue to maintain high levels of tram priority across North and West Melbourne... and changes in volume will not result in additional delay to trams

- VicRoads supports the improvements proposed to Dryburgh Street. This presents an opportunity to review how the arterial road network is managed through the West Melbourne area and specifically, how parts of Dryburgh Street, Victoria Street, Spencer Street (west of Hawke Street) and Curzon Street could work together to move people between the Project’s City connections area and both the University and Biomedical precincts. This could include reviewing capacity at several key intersections (particularly left and right turning movements) and how changes to the operation of traffic signals could support and enhance efficiency of these movements.

- It should be noted that Melbourne City Council is developing the West Melbourne Structure Plan to guide and manage future change in an area that will experience significant population growth in the coming years...Any changes to the operation of the road network as mentioned above should be sensitive to potential future operational changes to Spencer Street while enhancing the movement function of other roads in West Melbourne.

- The Project (subject to the provision of the proposed city connection at Dynon Road and extension of Wurundjeri Way to Dynon Road) presents an opportunity to review the future role and function of Spencer Street, particularly in the CBD grid between LaTrobe Street and Flinders Street, to achieve greater pedestrian and public transport priority in the vicinity of Southern Cross Station and in the city’
Pedestrian and Bicycle Access

"VicRoads supports the integrated and extensive active transport infrastructure proposed as part of the project, including:

Since the Project was first proposed in March 2015, VicRoads has been involved with the technical assessment of Transurban’s initial market led proposal which culminated in the development of the Victorian Government’s Business Case. VicRoads was an integral partner in development of the scope and cost articulated in the business case to meet the Project Objectives. Key aspects of VicRoads’ involvement related to:

- Traffic and transport solutions relating to the West Gate Freeway, Managed Motorway operation, City Bypass connections and Interchange Operation, especially the M80;
- Freight productivity enhancements including increasing the load carrying capacity of the route through bridge strengthening and connections to the Port; and
- Amenity improvements through further initiatives to remove trucks from the inner west, and increasing cycling connectivity.

VicRoads submits that safe system principles be adopted during the detail design phase

VicRoads supports the integrated and extensive active transport infrastructure proposed as part of the project, including:

- Completing missing links such as Federation Trail to a high grade separated standard including enabling connections with existing trails.
- Improving north south connections across the West Gate Freeway to better connect existing and future through the replacement of two pedestrian bridges and new connections across Interchanges, rail lines and Creek crossings.
- Providing new grade separated shared use connections across Whitehall Street, along the Footscray road “Veloway” and across Footscray Road to provide separation between cyclists, vehicles and trucks.
- Providing new shared use connections along Dynon Road over Moonee Ponds Creek and Rail infrastructure.

10.3 Bus Association Victoria, 176

BusVic and its members support the development of the WGT project. From a bus industry perspective, the WGT project will provide improved access to and from the CBD for Skybus and V/Line coach services. Improved traffic flow will result in less congestion related delays to the operation of route and school bus services in Melbourne’s inner west.

BusVic have highlighted the need for appropriate management of the construction phase of the project to minimise impacts on public transport operation during this period.

BusVic have cited a lack of engagement to date on the project and requests direct involvement going forward.

Response: Environmental performance requirement (EPR) TP01 and TP07 sets out the requirements to optimise the design to support (amongst other transport modes) public transport and the need to for a Traffic Management Liaison Group to be formed including suitable representatives from state and local transport agencies.

The submission queries strategic modelling inputs as it relates to patronage forecasts, growth and vehicle capacity.
Response: Each of these strategic modelling matters are being addressed by others.

The submission requests that report please state the level of decline in service efficiency for the bus network in the corridor area in the with WGT project case.

Response: Section 7.10 of the EES Technical Report A, Part 1 sets out changes to bus services within the inner west. Table 150 of that report estimates no decline in journey travel times but rather small improvements during the AM and PM peak periods (-1 per cent).

10.3.1 RACV, 317

RACV supports the WGT project and provides a summary as to why the project is a viable option for the City of Melbourne. “RACV has long supported an alternative to the West Gate Bridge and a new East-West Link connecting the Eastern Freeway to CityLink then to the Western Ring Road.”

The submission states how Melbourne’s west is growing and continue to grow, including the growth of Geelong and no one mode of transport has sufficient capacity to accommodate for the growth. Also states how the Port of Melbourne will continue to increase truck volumes and the need for an alternative to the West Gate Bridge for when there are accidents or traffic works.

“The proposed West Gate Tunnel can fulfill these objectives in the short to medium-term, by expanding capacity in the M1 West Gate Freeway corridor and in providing an alternate route to the West Gate Bridge, in lieu of a new western freeway corridor that was proposed by Sir Rod Eddington (East West Link Stage 2). However, RACV proposes that its design must retain options that permit the eventual construction of the East-West Link Stages 1 and 2 in the longer-term as recommended by Sir Rod Eddington”

The report goes into further details in the following areas (of relevance to this report):

- Design
- Tolling
- Road Safety Cameras
- Veloway and bicycle paths

**Design**

“Apart from providing additional capacity in this vital corridor, a critical objective of the project is redundancy should a crash or other incident restrict flow or close the West Gate Bridge.”

“However, RACV believes it is critical that the project be modified to incorporate a direct connection between the elevated road along Footscray Road and Bolte Bridge.”

“An incident or closure of the West Gate Bridge would divert a significant flow of cars and trucks via the West Gate Tunnel.”

Response: The option of connecting Footscray Road to the Bolte Bridge is not included in the project design.

**Tolling**

“RACV opposes the AM peak toll for city access and believes it should not be included in the project. An objective of the project is to provide a direct high capacity route to the inner-northern suburbs and northern CBD.”

Response: This matter is outside the extent of this peer review and subject to commercial terms between state government and toll road operator.
Veloway and Bicycle Paths

“RACV supports a dedicated bicycle way being provided that will separate high volumes of bicycle riders from motor vehicles and pedestrians, and reduce delays at road crossings.”

A general observation is that wherever possible, bicycle paths should be separated from pedestrian paths.

Response: I agree with the sentiment around delivering independent pedestrian and cyclist facilities where practicable.

10.3.2 Yarra Trams, Qualified, 328

Yarra Trams provided a submission focussing on three topics as follows:

- Safe Separation
- Consistent Traffic Light Priority
- Proposed performance mitigation

Safe Separation

Yarra Trams is cautious about how many accidents are caused by drivers colliding with trams. 28 collisions occurring in just over two years in a section of the network that will be most directly affected by the redistributed and induced traffic generated by West Gate Tunnel (north and west Melbourne).

Yarra Trams note that the increased safety risk posed by additional traffic on tram corridors generated by the Project is not assessed in the Transport Impact Assessment. Their recommendation is ‘The EES and associated Transport Impact Assessment should address the change in safety risk to tram services that will arise from strategic changes in traffic volumes along these streets.’

Response: Section 6 of this report identifies that the level of activity on that part of the network where tram services operate will not be subject to any material difference between the project and no project case. Whilst I have no objection to the review of safety risk in this context I do not consider it necessary as part of the West Gate Tunnel project.

Consistent Traffic Light Priority

Yarra Trams are concerned that the additional traffic in North and West Melbourne as a result of the WGT project will be detrimental to tram travel times and efficiency. Even though the Technical Report directly addresses the matter Yarra Trams have raised concerns of contradiction as follows:

The submission reproduces from the Technical Report as follows ‘The average delay per tram at an intersection due to the additional traffic would be approximately nine seconds and this would not result in significant service delays. Where required, traffic signals on the surrounding arterial road network could be re-phased to meet the additional east-west movements. However, it is highly likely that priority would remain focused on trams (Technical Report A page reference 25-20)’

‘Trams are currently provided with high levels of priority across North Melbourne and West Melbourne which will be maintained with the introduction of the West Gate Tunnel Project. This means that while the project predicts additional traffic within North Melbourne and West Melbourne, this will not result in any additional delays to trams.’

Response: For reasons set out earlier around only a small difference between the with-project and no project volumes and again small differences with volumes predicted in work completed in support of Arden Macaulay and City North Structure Plans, no specific action is considered necessary as part of the project to review tram priority measures.
Proposed Performance Requirements

Yarra Trams recommends that:

- There should be a clear Performance Requirement incorporated into the Technical Report A.
- Deliver signal phasing changes where required
- Monitor the tram travel times and provide mitigations
- Monitor the changes in the safety trends

Response: Network performance requirements are set out in the Technical Report and reinforced in the Environmental Performance Requirements for the construction and post implementation phase of the project. These mechanisms would support performance monitoring and determine the need for signal phasing changes.

10.3.3 Port of Melbourne (PoM), 392

PoM is supportive of the project but provide comments on how the Project can be improved. PoM are engaged directly with the Western Distributor Authority (WDA) regarding the project interactions with Port land. The submission focuses on three categories that relate to transport as follows:

- Design considerations
- Operating outcomes and performance.
- Construction and delivery;

Design Considerations

The list of recommendations with respect to design considerations are:

- The detailed design elements of the WGT project should seek to adopt a planning horizon consistent with the 50-year lease for the Port of Melbourne.
- The WGT project detailed design vehicle and road design standards should be shared with the freight industry to ensure that the design vehicle used is reflective of forecast industry demand and ensure the future capacity of the proposed WGTP investment.
  - It is recommended that a minimum 120 tonnes GVM, 42 metre, Level 3B Restricted Access Vehicle be adopted – subject to further industry engagement and confirmation.
- Broader engagement is recommended in regard to the relevant road standards and lane width considerations to enable long term mixed traffic use including HPFV access.

Response: The design horizon of the project is consistent with the EES Framework Guidelines. The project has been designed to cater for the part requirements of side-by-side turning of a 35.4m B-triple and 26m B-double. The former is the largest design vehicle for Melbourne road network.

Operating Outcomes and Performance

The list of recommendations with respect to operating outcomes and performance are:

- Further traffic modelling be undertaken to assess road and intersection performance over the term of the Port lease to 2066.
- Consideration be given to balancing traffic management arrangements with the orderly routing of essential truck movements for the inner west during the construction phase. (Effect on PoM trucks being unable to enter the Port during curfew).

Response: A response earlier sets out the basis for adequacy of the 2031 design horizon. The second matter in relation to construction can be satisfactorily dealt with under the EPR guidelines.
Construction and Delivery

The list of recommendations with respect to construction and delivery are:

- Construction planning for the WGTP should:
  - adopt a collaborative approach with PoM, Port tenants and Port users;
  - seek to maintain the current level of service to Port traffic throughout the construction period;
  - identify and adopt mitigation measures to minimise disruption on the efficient movement of Port related traffic;
  - include PoM as a member on the Traffic Management Liaison Group;

- It is recommended that the emergency management and response arrangements for the project are fully integrated with the existing Port of Melbourne Emergency Management Plans.

Response: EPR TP7 supports a collaborative approach during construction and will consider impacts on Port accessibility including measures required to minimise disruption. I would have no objection to the PoM having a representative on the Traffic Management Liaison Group.

10.3.4 Public Transport Users Association (PTUA), 430

The PTUA have submitted an 11-page document that is very much opposed to the project. Seven separate deductions have been used to argue against the project and they are:

- Decision making context
- Mission creep
- Sustainable Freight Solutions
- Air Quality
- Ill-Judged Cycling Provision
- Flawed Modelling, and
- Alternatives ignored.

Decision Making Context

“The Transport Integration Act 2010 (‘the Act’) provides a common framework for all decisions affecting the transport system in Victoria. Among the transport system objectives set out in the Act is §10(c):

“promoting forms of transport and the use of forms of energy and transport technologies which have the least impact on the natural environment and reduce the overall contribution of transport-related greenhouse gas emissions.”"

The West Gate Tunnel (WGT) project is a ‘market-led proposal’ by Transurban, the operator of Melbourne’s CityLink toll road.

“It is PTUA’s specific contention that the WGT proposal runs contrary to key objectives set out in the Act, and specifically §10(c).”

- “The WGT does not promote network ‘resilience’ in the sense usually meant by calls for an “alternative to the West Gate Bridge.””
- “The WGT is unlikely to ease freight movement in Melbourne, due to the induced traffic likely to be created.”
- “The WGT (excluding the elements that were part of the original WGD scope) does not promote increased amenity in the west”
Response: The proposed West Gate Tunnels provide an alternate east-west Maribyrnong River crossing which together with the tunnel design comprising two operable lanes and one emergency lane as well as braided ramp provisions along the West Gate freeway help build resilience on the network.

Induced demand has been dealt with in the work completed by VLC.

Amenity considerations largely (but not entirely) relate to areas located in the inner west adjacent to the Port of Melbourne including Francis Street and Somerville Road. The project address' these amenity issue well with the inclusion of permanent 24hour truck curfews. Areas further west will remain exposed to amenity impacts generated by freight movement until Stage 2 (as contemplated in the Business Case) is delivered which includes the upgrade and use of Paramount Road as a further access to the Port.

Mission Creep

"Compared to the original WGD proposal, the WGT contemplates a massive expansion of the M1 corridor between the Western Ring Road and central Melbourne."

"The location of these eastern exits makes plain that the intent of this project is to provide additional road capacity feeding directly into the northern end of Melbourne CBD."

"This positioning of the WGT as primarily a city access road—an echo of the LA-style commuter freeways of the 1960s—belies its original advertised justification as a ‘freight’ project."

"This secondary benefit, if it exists at all, is bound to be short lived. The existence of ‘induced demand’ (new traffic brought into being by an expansion of road capacity) is now well attested. This conclusion has only been reinforced by subsequent evidence, whether from the UK, Australia or elsewhere."

"Unfortunately, as discussed below, the EES still forecasts a travel time benefit from the WGT on the M1 corridor because the modelling tools relied on do not account correctly for induced traffic."

Response: The EES sets out a range of objectives (refer Section 1.3 of this report) including:

i. Increasing transport capacity, and
ii. Improving network connectivity.

VLC provide commentary on induced demand considerations. On travel time benefits, the 10yr planning horizon provides guidance on expected travel time savings which I do not consider a primary benefit of the project. Indeed, I agree that further uplift in population and employment is likely to diminish short to medium term improvements delivered by the project. The project more importantly delivers a connected network which ultimately provides this and future governments flexibility to manage demand on the asset through technologies and / or transport network pricing consistent with (exploration) recommendations of Infrastructure Victoria.

Sustainable Freight Solutions

"The futility of trying to speed up freight by building a central-city commuter road brings up another general point concerning measures to assist freight movement. In Melbourne as elsewhere, road freight vehicles share the same road space as passenger cars, and it is the latter that makes up the vast majority of traffic."

"In Melbourne, there has long been a plan, fully funded at State and Federal level, to establish multimodal ‘inland Ports’ at locations including Laverton North and Somerton, with a ‘Port Rail Shuttle’ moving goods efficiently between these locations and the Port of Melbourne."

"The WGT directly undermines the business case for the Port Rail Shuttle, and does so while flooding central Melbourne with more private car traffic and almost certainly increasing delays to road freight."
The matter of moving freight by rail is addressed in the body of this report. It is accepted that moving freight using rail has benefits in reducing road based freight activity levels however many areas around metropolitan Melbourne cannot be reasonably serviced through rail and road based freight transport will remain the primary source of movement in the foreseeable future.

**Flawed Modelling**

“The EES relies for many of its assessment criteria on modelling of the effects of the WGT on travel times and congestion on the M1 corridor and other road routes in the general area.”

Response: My review seeks to assess the projects alignment with policy and strategy rather than rely on short to medium term travel time benefits.

“It is important to understand that this modelling, undertaken by the project team and reported in Technical Report A, compares the performance of the WGT not with current conditions on the road network, but with hypothetical conditions in a ‘no build’ scenario constructed for 2031.”

Response: This is consistent with expectations of comparing growth in transport activities for the planning horizon required under the EES assessment guidelines.

“The modelling undertaken by the project team uses a conventional ‘four-step’ procedure, which has been a de facto standard since the first such models were constructed by American consultants for highway studies in the 1950s.”

“The limitations of these four-step models are now well documented. They were summarised by PTUA in our October 2016 submission on Victoria’s Draft Infrastructure Strategy, and have been echoed in the submission to this EES by University of Melbourne researcher Nathan Pittman (Pittman 2017).”

Response: In my experience, the most comprehensive calibrated strategic model currently available for the prediction of transport demand flows in Greater Melbourne is the VLC model. Activity Based Modelling (ABM) is being considered and developed as an evolution of traditional four-step strategic modelling tools. Infrastructure Victoria identifies a need in the next 0-5 year period to advance the development of predictive modelling tools to better predict likely usage patterns and demands. Discussion on this topic is provided in the Infrastructure Victoria Options Book. No calibrated or tested ABM is available at present for usage on this project nor is there a potential for this to occur in the near term.

The two most critical errors worried about in the modelling are undershooting and overshooting.

“First, it is likely that forecast results in the ‘no build’ scenario are pessimistic, and do not in fact reflect probable traffic levels in 2031.” “Forecast results for the ‘project’ scenario are likely optimistic, and fail to account for induced demand effects that may in fact push traffic levels well above even those in the ‘no build’ scenario.”

Response: The no project and project outcomes are predicated on the same transport loadings being generated over the course of typical business day. This can be observed at Table 6.3 of this report where local trips are estimated as 229,000 trips for both model scenarios. More trips are however accommodated in the corridor, reflecting a higher level of realised trips on the network as a consequence of increased corridor throughput.

**Alternatives Ignored**

“Public expenditure of this magnitude must always be assessed in light of possible alternative measures that may achieve similar objectives.”
“PTUA has set out a list of alternative measures which are likely in our view to achieve similar objectives to those claimed for the WGT, and with a greater chance of success. These include:”

- “Building the Port Rail Shuttle and developing the inland Ports”
- “Running trains every 10 minutes on all lines through the western suburbs, all day every day.”
- “Bringing forward rail electrification to Caroline Springs and Melton”
- “Building the short connecting track from Werribee to Wyndham Vale planned as part of the original Regional Rail Link scope”
- “Identifying and rolling out a new network of Smartbus services running every 10 minutes during the day, 7 days a week.”
- “Extending tram route 57 from West Maribyrnong to Milleara Mall via Avondale Heights”
- “Developing targeted road network solutions in consultation with the community to get large trucks off residential streets.”

“Ensuring all road widening projects in growth areas include provision of full time bus lanes, and a commitment to provision of bus service every 10 minutes along the road in question.”

- “Fully funding the implementation of the Principal Bicycle Network in the western suburbs.”

Response: Consideration of these options sits outside the IAC terms of reference as they reflect a major deviation rather than a refinement of the project.

10.3.5 Planning Institute Australia (Victoria), 190

**PIA Victoria considers that:**

“Measures are required to ensure that freight traffic from the Port can be managed more satisfactorily to protect residential amenity.”

Response: The EPR framework provides a rationale for this to be achieved.

“There is the need to better manage the risks associated with an over-reliance on the West Gate Bridge.”

Response: The West Gate Tunnel assists with managing identified risks.

“The growing disconnect between projected jobs and population growth across Melbourne is a major economic and social issue which must be addressed.”

Response: This matter sits outside the IAC terms of reference.

PIA reasons the project can be contested through:

- “Capacity issues on the M1 corridor are a result of inadequate investment in alternative transport options and the unbalanced land use structure of the city and will not be solved in the long term by exacerbating demand for the road network.”
- “There are a variety of other solutions which could be used to manage the lack of river crossings.”
- “Increasing the volume of freight on rail should be considered to help manage Port landside capacity.”
- “A mismatch between transport and land use emphasises the need for Government to support jobs growth in western Melbourne rather than encouraging long distance commuting, which is ultimately unsustainable and will exacerbate social and economic spatial disparity.”

The submission then responds to the EES’s evaluation objectives with the following headings”
Transport capacity, connectivity and traffic management
Flawed approach to long term planning
City exit impacts
Freight
Cycling
Build Environment
Health, amenity and environmental quality
Social, business, land use, public safety and infrastructure
Landscape, visual and recreational values

Flawed approach to long term planning
The methodology outlined for the traffic modelling (Section 3.4 of Technical Report A Transport) suggests a linear ‘predict and provide’ approach to the planning for the project; a method of transport planning which is discredited and simply results in an extrapolation of existing conditions, rather than planning which seeks to effect change in accordance with a strategic plan.

The modelling in the EES appears to be only for the year 2031, which will only be a few years after the completion of the project, if it were to proceed
The danger with modelling to such a close date is that it masks future issues associated with unsustainable patterns of transport based around private vehicles.

A productive central city can best be facilitated by high quality public transport as evidenced by major business hubs around the world. If this objective of Plan Melbourne is to be achieved, then encouraging private vehicle use is the least productive and efficient transport option available.

Given Melbourne’s rapid projected growth, high quality long-term planning demands a robust assessment of other options.

Response: The modelling design horizon is consistent with the EES framework guidelines. Other matters raised in this issue have been dealt with elsewhere in the report and other submission responses.

City exit impacts
Whilst the project provides a significant increase in east-west network capacity, it does not meet the second test in the EES’ evaluation objective due to the detrimental effects on the broader transport network.

They are then worried about Dynon Road and Wurundjeri Way extensions leading straight into the city and then in turn supplying the city with too much traffic.

There will be a projected increase in traffic across the inner north. It is noted that this is an area which will be subject to increasing demands on its local transport network over the next 30 years or more due to a number of large scale regeneration projects such as Arden-Macaulay.

Response: VicRoads Smartroads policy provides an important insight into the key traffic routes in and around the Melbourne CBD (refer Figure 23 contained in Technical Report A Part 1. This policy identifies Wurundjeri Way and Dynon Road as ‘traffic routes’. The project proposes to leverage off those classifications, delivering consistency with an existing planning framework which has involved input from the City of Melbourne and others.

Issues around the future regeneration of Arden Macaulay have been dealt with earlier in response to other submissions.
Freight
PIA Victoria see the issues surrounding the Port of Melbourne and need to identify access to it but concerned with the isolated approach without considering other solutions including rail freight.

“Plan Melbourne policies 3.4.1 and 3.4.2 foreshadow improving freight capacity and the volume of freight carried on rail by pursuing the Western Interstate Freight Terminal and Beveridge Interstate Freight Terminal.”

Response: as has been stated earlier, the West Gate Tunnel project is one amongst a range of projects necessary to deliver a multi-modal transport outcome for Greater Melbourne.

Cycling
PIA Victoria would recommend that concerns about the treatment of the proposed elevated “veloway should be addressed, including its connectivity, lack of passive surveillance and/or other safety measures such as adequate lighting or CCTV.”

Response: Section 7 of this report raises similar concerns and recommends the project team consider solutions to improve surveillance in this facility.

Built environment
“not adequately considered Plan Melbourne and the SPPF’s directions in relation to inner city urban renewal. Major concerns have been identified about the effect on future urban regeneration opportunities, such as the E-Gate and Dyon precincts.”

Whilst a design response to Footscray Road will be required whatever is there, that response will be very different for an elevated freeway versus an at-grade arterial road.

The E-Gate precinct also represents a major potential lost opportunity.

The introduction of large scale road infrastructure within inner Melbourne is contrary to the emphasis on place-making proposed by Plan Melbourne.

Response: This matter is broader than my area of expertise as a traffic and transport planner.

Health, amenity and environmental quality
“The assessment of human health impacts (Chapter 13) is premised upon the project merely involving a “redistribution of traffic” relative to the ‘no project’ scenario. This conflicts with globally accepted evidence that construction of additional road capacity results in increased overall usage of private motor vehicles, an effect referred to as ‘induced demand’.”

Response: Outputs contained in the EES Technical Report indicate that by and large modal activities between the with-project and no project case remain the same. Concepts of induced demand are addressed in that report.

Social, business, land use, public safety and infrastructure
“Shorter travel times are likely to be temporary (with no projection offered in this section for the timeframe before current congestion levels recur).” “Claiming this as a positive impact on community connectivity seems misleading.”

Response: Commentary on this issue has been provided earlier. I agree that travel time benefits will be eroded in future years as further growth occurs in population and employment unless interventions such as transport user pricing is adopted by government.
10.3.6 Metropolitan Transport Forum, 426

The submission provides comments on the project under the following transport headings:

- A metropolitan-wide transport plan
- Moving vehicles, not people
- Project rationale and policy context
- Consistency with other transport projects.
- Future uncertainty, prediction unreliability

**A metropolitan-wide transport plan**

‘The MTF has long campaigned for the need for a metropolitan-wide fully integrated transport plan, such as required by the Transport Integration Act. This is required to provide the surety that major transport projects are an essential component of a metropolitan strategic network and hence justify the expense, disruption and loss of social and environmental amenity.’

‘Neglect of transport infrastructure, particularly in a period of rapid population growth, has led to a situation where congestion of a scale to damage the economy and create intolerable amenity loss has created overwhelming pressure to build extra capacity.’

Response: This matter is considered out of the scope of this review

**Moving vehicles, not people**

‘Allowing market-led proposals to drive metropolitan transport planning, risks selecting projects chosen for revenue generation rather than triple bottom line criteria. A market-led proposal will seek to provide additional capacity in a congested corridor with large latent demand to guarantee toll income stream to support the investment. The MTF would prefer to see proposals that:

- Satisfy excess demand through more efficient transport means (high occupancy lanes, bus lanes, rail).
- Satisfy demand by facilitating destinations closer to home, such as local employment. ‘No build’ transport works by fostering complementary land uses to reduce travel.
- Plan and invest in a full range of multi-modal transport infrastructure in line with development, evaluated on triple bottom line criteria.’

Response: A range of alternate proposals are listed. Consideration of these in my view sits outside the IAC terms of reference.

**Project rationale and policy context**

‘The policy frameworks are to provide guidance to develop a project of ‘best fit’, but appear to have been used selectively to justify the project. The discussion of the project rationale in Chapter 2 is unconvincing as the only option available.’

Response: The strategic alignment of the project has been considered in Section 5 noting that this project is one of a range of projects required to deliver a complete transport solution for Greater Melbourne.

**Consistency with other transport projects.**

‘There is assurance that the Westgate tunnel project is consistent with other plans for the western region, namely the Westlink (or Eddington) tunnel/freeway connecting to the Western Ring Road. However, discussion is brief and the diagram in Figure 3-2 shows only a multi-direction arrow in the Citylink/WestMelbourne/Port area and little detail as to how an additional road project could be brought through this constrained area.’
Response: This matter is considered at Section 4 and Section 5 of this report.

Future uncertainty, prediction unreliability

‘Transport disruption through new technologies, autonomous cars, electric vehicles, extensive job automation, 3D printing reducing import of manufactured goods - there are many changes ahead which may substantially change freight and personal travel. There is no sensitivity testing, or even discussion of such uncertainties; the entire justification for this project is fully based on business as usual.’

Response: These technologies and their influence on human travel behaviours sit outside the scope of my peer review.

Comments on the project layout, configuration

‘The Westgate corridor was assessed against the Eddington study northern corridor and generated a higher benefit cost ratio ‘driven primarily by the ability to delivery network benefits earlier and greater benefits over time’. (Ch. 3.4) However the western suburbs generally, particularly employment centres and development sites, are much better served by the Westlink (or Eddington) alignment’. 

‘Discussion of the central city approaches demonstrates the very limited access capacity to the city from the west, limited to Dynon Road, Dudley Street and an extended Wurundjeri Way, presumably allowing access to Finders Street. All have limited capacity to absorb more traffic, and given the Westgate bridge already provides city entry, it is hard to see the need to do so. The report states This option provides a means of distributing traffic efficiently and responsibly at the eastern end of the project through three connections to the arterial road network however the extended Wurundjeri Way and long freeway ramps occupy valuable space at the western edge of City of Melbourne which has been earmarked for strategic land use purposes. Also additional traffic in Dynon Road will increase traffic in the local road network and undermine long-held policies and plans for inner city liveability. Additional city access is best served by public transport.’

Response: Origins and destinations of traffic transport were considered by VLC and the project team in determining the alignment and connectivity. My peer review sits outside testing these and exploring the benefits or otherwise of a northern rather than southern alignment. My review of the business case indicates that the northern alignment remains relevant and is earmarked for delivery in the future.

Transport support during construction

‘The MTF was surprised to hear from the WDA team presentation that there will be no alternative transport arrangements during construction, which would seem an ideal time to develop more sustainable transport choices, in line with federal, state and local government policy.’

Response: I cannot comment on what was stated at consultation sessions for the project.

10.4 Bicycle Network, 449

The bicycle network was consulted on the initial design of the WGT project and provide qualified support. The impacts on cycling are categorised into ten sections and listed below with a brief description.

Truck traffic reductions

Reducing the truck volumes on the bicycle network to the west will provide the riders with safer trips and resulting in more cyclists on the road.

Footscray Road and Moonee Ponds Creek Crossing / Trail.

By elevating the cycling facilities along and over Footscray Road major traffic risks are eliminated creating a fast, direct cycling corridor to the west.
Docklands E-Gate connection

Bicycle Network suggests that a path along the east side of Footscray Road to Dudley Street would be an advantageous addition.

Response: Any path along the north side of Footscray Road would duplicate substantial facilities already in existence on the south side of the road. This supplementary provision is considered unnecessary.

Dynon Road

‘These improvements, taken in conjunction with expected new bike facilities over Hopetoun Bridge at the west end of Dynon Road – delivered as part of another project – will create another option for people in the west, particularly in the rapidly developing residential areas in Footscray.’

Shepherd Bridge, Maribyrnong River.

The difficult crossing at Sims Street/Mackenzie Road to Footscray Road on ramp will be eliminated.

Moreland Street, Footscray

The project will create a new link from Harris Street at the Yarraville Gardens through to Maribyrnong Street.

Federation Trail.

The trail will get refurbished in parts that are currently in poor condition as well as finishing the trail to create a new cycling corridor in the west. The design will require detailed consideration to ensure a safe and operational path.

Kororoit Creek Trail

The project has undertaken to build new sections of trail on Kororoit Creek that will further extend the trail to the south, and better utilise the nearby connection with the Federation Trail.

Impacts on inner Melbourne Traffic

The bicycle network is concerned that with the Project bringing more traffic into West Melbourne that this could create an unsafe environment for cyclists and this could lead to a drop in cyclists as the priority on the road moves from cyclists back to vehicles.

Response: on impacts within inner Melbourne around increased traffic, reference is made to Section 6 of this report, where it is outlined that the future level of traffic activity across three separate scenarios (no project, project and Arden-Macaulay Precinct full build out) are generally similar by order of magnitude.
### 10.4.1 Individuals and Organisations

In addition to the submissions received from organisations in the order of 500 other individual or smaller organisation submissions were provided. The submissions with relevance to transport have been grouped into the following key themes:

<table>
<thead>
<tr>
<th>General Context</th>
<th>Submission Theme</th>
<th>Number of Submission</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative Options</td>
<td>Prefer money was spent on alternative proposals</td>
<td>350</td>
<td>Refer remit of the IAC as per section 1.3</td>
</tr>
<tr>
<td>Traffic Impact</td>
<td>Blackshaws Road</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Millers Road</td>
<td>107</td>
<td>Refer section 6.8 detailing the analytics summary.</td>
</tr>
<tr>
<td></td>
<td>North and West Melbourne</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Local streets</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rat Running</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inadequate</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>Design and active travel</td>
<td>104</td>
<td>Refer section 7 detailing the active travel considerations and section 8 detailing the design section.</td>
</tr>
<tr>
<td>Trucks</td>
<td>Concern with enforcement and extent of truck bans</td>
<td>135</td>
<td>Environmental performance requirements respond to these matters</td>
</tr>
<tr>
<td>Modelling</td>
<td>Methodology</td>
<td>60</td>
<td>Refer section 6.3 detailing the analytic methodology.</td>
</tr>
<tr>
<td>Justification</td>
<td>Objectives not met</td>
<td>80</td>
<td>Refer section 5 which discusses the strategic alignment of the project.</td>
</tr>
<tr>
<td></td>
<td>Project not justified</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>Construction traffic impacts</td>
<td>73</td>
<td>Refer section 9 and environmental performance requirements</td>
</tr>
<tr>
<td>Public Transport</td>
<td>Impact to PT, and PT should be incorporated (bus jump lanes)</td>
<td>54</td>
<td>Refer remit of the IAC as per section 1.3</td>
</tr>
<tr>
<td>Active Travel</td>
<td>Concerns on design of the cycling and pedestrian network</td>
<td>40</td>
<td>Refer section 7 detailing the active travel considerations.</td>
</tr>
<tr>
<td></td>
<td>Support for active travel section</td>
<td>12</td>
<td>Support – note only</td>
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<td>LATM</td>
<td>LATM required</td>
<td>21</td>
<td>Refer section 6, which discusses the traffic impact</td>
</tr>
<tr>
<td>Land Use Planning</td>
<td>Not compatible with the urban renewal area</td>
<td>38</td>
<td>See section 5 which discusses the strategic alignment for the project.</td>
</tr>
<tr>
<td></td>
<td>Not consistent with strategic planning policies</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Tolling</td>
<td>Concerns about the tolling structure</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Truck bans and tolling impact on truck route, or efficiency of truck logistics</td>
<td>11</td>
<td>Tolling outcomes are currently under review and sit outside the remit of my peer review. I have however recommended some further modelling on toll point locations at the western end of the corridor to review outcomes for Millers Road.</td>
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<td></td>
<td>Suggest using Grieve Parade or tolling strategy to reduce flows on Millers Road</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>
Appendix A

John Kiriakidis – Curriculum Vitae
John has served as a consultant in the field of traffic and transport planning since 1994 for a broad cross-section of clients across the Australasian private and public business sector. John has particular expertise in the field of land use planning and design and has considerable involvement in guiding land use development projects across Greater Melbourne including greenfields and a range of urban renewal areas where predictive modelling is required to substantiate and develop a comprehensive transport solution.

John manages a large team of traffic and transport specialists and services a significant client base which delivers land use and transport infrastructure supporting land use.

John has a broad cross-section of experience across a range of transport specialties including design, active travel, analytics including a breadth of modelling tools.

He appears regularly at the Victorian Civil and Administrative Tribunal (VCAT) and Panels Victoria as an independent expert witness in the field of traffic and transport planning.

Office
Melbourne

Qualifications
BE(Hons)(Civ&Comp), Monash University

Memberships and Affiliations
Institute of Engineers Australia (Civil College)
Victorian Planning & Environmental Law Association (VPELA)
Australian Institute of Traffic Planning & Management (AITPM)

Select Project Experience
Transport Planning
Ailkien Boulevard (E14), Northern Corridor
Gunns Gully Road Interchange, Kalkallo
Donnybrook Road, Kalkallo
Doncaster Hill Integrated Transport Plan

Land Use Planning
Arden Macaulay (C190)
City North (C196)
AMCOR Papermill Re-development
Mentfield West (Kalkallo)
Mentfield City Centre (Kalkallo)
Cloverton (Lockertie Estate)
Melbourne Airport
Essendon Airport
Epping North East Structure Plan (450ha)
Numerous PSP’s in Metropolitan Melbourne

Transport Impact
Westfield Doncaster
Westfield Knox
Westfield Southland
Tooronga Village Re-development, Glen Iris
Logis Business Park, Dandenong
Alliance Business Park, Epping
Eureka Tower
Bracken Place
Traffic Engineering
Mentfield Industrial Sub-Division
Craigieburn Train Maintenance Facility
Goodyear Redevelopment, Thomastown

Professional Background
1997 – Present: GTA Consultants
John is proficient in the application of transport planning principles and initiatives to land use and transport planning projects. These principles encompass all motorised and non-motorised transport modes and extend to include advice on infrastructure requirements necessary to support the full spectrum of travel modes. John is experienced in the delivery of all key design facets of traffic and transport planning elements including road networks, intersections, individual roadways, cross-sections and road safety. He is also experienced in interpreting strategic modelling outputs and the delivery of projects using prominent micro-simulation network analytical software including VISSIM and SIDRA. John’s project expertise is extensive and includes a wide range of projects.

1995 – 1997: Grogan Richards, Traffic Engineer
As a Traffic Engineer for Grogan Richards, John assisted in the preparation of impact assessments for a range of land use developments throughout Melbourne and Victoria and was also involved in access and parking assessments and design and the preparation and implementation of traffic and parking surveys.

1994-1995 – Melbourne Water / City West Water
Working in the catchment and drainage department at Melbourne Water, John was a hydraulic modeller, reviewing catchment requirements and predicting flood levels.
Appendix B

Matters Raised by PPV Guide to Expert Evidence
Matters Raised by PPV Guide to Expert Evidence

(a) the name and address of the expert;
   John Kiriakidis
   Level 25, 55 Collins Street Melbourne 3000

(b) the expert's qualifications and experience;
   Refer to CV attached as Appendix A.

(c) a statement identifying the expert’s area of expertise to make the report;
   Traffic and Transport Planning Engineer.

(d) a statement identifying all other significant contributors to the report and where necessary outlining their expertise;
   Refer to table 1.1. in the body of the report.

(e) all instructions that define the scope of the report (original and supplementary and whether in writing or oral);
   Instructed by Clayton Utz Lawyers (in writing and orally).

(f) the identity of the person who carried out any tests or experiments upon which the expert relied in making this report and the qualifications of that person;
   None completed.

(g) the facts, matters and all assumptions upon which the report proceeds;
   Refer to section 1 of the report.

(h) reference to those documents and other materials the expert has been instructed to consider or take into account in preparing the report, and the literature or other material used in making the report;
   Refer section 1.4 and body of the report.

(i) a statement identifying any provisional opinions that have not been fully researched for any reason (identifying the reason why such opinions have not been or cannot be fully researched);
   As contained in the body of the report.

(j) a statement setting out any questions falling outside the expert's expertise and also a statement indicating whether the report is incomplete or inaccurate in any respect.
   As contained in the body of the report. Report complete.
Appendix C

West Gate Tunnel Active Transport
1. West Gate Tunnel Active Transport

The last chapter in the Strategy identifies 60 specific actions to improve the bike network. Of the 60 actions, 23 actions are Priority 1 (highest), 17 actions are Priority 2 and 15 actions are Priority 3 (lowest). The actions near the WGT project are circled (red) in Figure 1 and summarised in Table 1.

Figure 1: Specific actions from the Strategy

WGT Alignment with Strategy

Table 1 summarises the alignments between the Strategy and the WGT project.

Table 1: Summary of alignment areas

<table>
<thead>
<tr>
<th>Strategy Area</th>
<th>WGT Project Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
</tr>
<tr>
<td>Maintaining investment in premier bike routes</td>
<td>The WGT project includes a suite of measures designed to improve the safety of cyclists. The project specifically improves the treatment of the premier bike route between Shepherds Bridge and the West Gate through an upgraded shared path along Hyde Street, a new cycling and pedestrian bridge over Whitehall Street and a new off-road path connecting with the Federation Trail between Fogarty Avenue and Hyde Street.</td>
</tr>
<tr>
<td>More riders cycling more often</td>
<td>The WGT project includes over 14km of new and upgraded walking and cycling paths that contribute towards creating a more connected network of cycle paths.</td>
</tr>
<tr>
<td>Major projects and bike infrastructure</td>
<td>The WGT project includes a suite of measures designed to improve the safety of cyclists, through the creation of new and replacement bridges, new and</td>
</tr>
</tbody>
</table>
### Strategy Area

- WGT Project Alignment
  - upgraded paths and a grade-separated veloway. These will directly benefit cyclists in Maribyrnong and include:
    - Completion of Federation Trail off-road path
    - 2.5km long elevated veloway
    - New cycling and pedestrian bridges across Moonee Ponds Creek, Footscray Road, Whitehall Street

### SPECIFIC ACTIONS

<table>
<thead>
<tr>
<th>Action No.</th>
<th>Strategy Action Description</th>
<th>WGT Project Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Construct a two-way off-road cycleway on south side of Napier Street between Moreland Street and Nicholson Street</td>
<td>Nothing proposed</td>
</tr>
<tr>
<td>10</td>
<td>Complete Federation Trail to Hyde Street</td>
<td>Included in WGT design</td>
</tr>
<tr>
<td>11</td>
<td>Provision of high standard crossing of the Maribyrnong River and remove obstacles on the approaches to Shepherd Bridge</td>
<td>Completed as part of the Shepherd Bridge works</td>
</tr>
<tr>
<td>12</td>
<td>Upgrade the shared path between Shepherd Bridge and the West Gate Freeway</td>
<td>Included in WGT design</td>
</tr>
<tr>
<td>40</td>
<td>Bunbury Street Connection – Whitehall Street to Maribyrnong Street (Item 6 is considered a higher priority)</td>
<td>Nothing proposed</td>
</tr>
<tr>
<td>45</td>
<td>Dynon Road shared path</td>
<td>Dynon Road shared path would be extended from east of CityLink, across Moonee Ponds Creek and the rail lines connecting east of Anderson Street via a new cycling bridge adjacent to Dynon Road. The path would also include a connection to Capital City Trail. [1]</td>
</tr>
<tr>
<td>46</td>
<td>Footscray Road shared path</td>
<td>Upgrades included in WGT design, along with new, elevated veloway.</td>
</tr>
<tr>
<td>48</td>
<td>Kensington Road on-road upgrades</td>
<td>Nothing proposed</td>
</tr>
<tr>
<td>52</td>
<td>Stony Creek link</td>
<td>Proposed Federation Trail includes a connection to the Stony Creek Trail at Fogarty Avenue and provides a grade separated crossing of Williamstown Road</td>
</tr>
<tr>
<td>55</td>
<td>Allow contra-flow bike movements near Somerville Road bridge over the Railway in Yarraville</td>
<td>Nothing proposed</td>
</tr>
<tr>
<td>57</td>
<td>Parkiteer cage for Yarraville Station</td>
<td>Nothing proposed</td>
</tr>
<tr>
<td>58</td>
<td>Install Whitehall/Parker intersection signals</td>
<td>Completed</td>
</tr>
<tr>
<td>59</td>
<td>Delineation of the Maribyrnong River Path</td>
<td>Nothing proposed</td>
</tr>
<tr>
<td>60</td>
<td>Improve the north/south bike linkages along Melbourne Road</td>
<td>Wider, well-lit path beneath the West Gate Freeway at Melbourne Road</td>
</tr>
</tbody>
</table>

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