26.3 Proposed arterial road Prohasky St to Graham St
must then search for an available space. Prices per space have gone up since the development was first built, but the current price (2006) is 17,500GBP per parking space.

Only residents who have purchased a space are allowed to park in the garages; visitors are not allowed. Visitors are expected either to park temporarily in the bays on the main road, which are frequently ticketed by the council, or in the public parking lot next to the North Greenwich transit station located 0.8km northwest of GMV.

Cycling and Pedestrian Infrastructure

GMV strives to promote cycling and walking. A network of cycle and pedestrian routes runs throughout the village and beyond, connecting the development to the surrounding areas. For example, a pedestrian walkway leads from GMV to the O2 Arena, a large sports and music venue located in the Millennium Dome on the northern side of the Greenwich Peninsula. Within GMV, secure bicycle storage facilities are provided for every housing unit and 2-3 bicycle parking spaces are provided per unit, including several covered, weather protective bicycle parking facilities.

Carsharing

Two car sharing vehicles, provided by Streetcar, are located to the north of GMV. These vehicles are located in a car bay on John Harrison Way, which borders GMV. In addition, two Streetcar car sharing vehicles are located in a parking lot off of Tunnel Avenue, about half a km south of GMV. Other than these four vehicles, no other car sharing vehicles from any other companies are located on the Greenwich Peninsula. There seems to be a potential to locate more car sharing on this site, particularly inside the GMV parking garages themselves.

Street Layout and Design

Main thoroughfares run along the northwest and southwest borders of the development. Further, two main thoroughfares run through GMV. West Parkside bisects the development, while Southern Way splits off from West Parkside midway through the development and runs southward. A two lane dedicated busway which starts at North Greenwich Station passes through the village along West Parkside, turning into Southern Way. The busway is separated from car lanes by a green median. The busway is distinguished by its brick red colour. On the south side of the village is a road that leads to the school parking lot. Other than these roads, the development is car free and priority is given to cyclists and pedestrians.

Land use Planning and Design

GMV was designed from the beginning as a mixed-use development combining residences, retail, commercial and leisure spaces. Phase 1 of the development consist of blocks of flats 8-10 storeys high, surrounding inner courtyards, with two storeys of parking garages beneath. The highest buildings are located on the northern side of the development, along the Thames River, to provide more waterfront views. Phase 2 includes a mix of lower rise flats up to 6 stories and terraced houses situated around public squares with car parking in a separate block at the side of the development. The residential units include a mix of tenure types.

Urban renewal / transport Case Studies

1. Greenwich Millennium Village, London, UK
http://www.itdp.org/documents/092211_ITDP_NED_GMV.pdf

Greenwich Millennium Village includes homes, primary school, health centre, an ecology park and village square with shops on 20ha.

Parking

As part of its strategy to reduce car dependency, motor vehicle parking at GMV is restricted and generally located away from individual properties. Parking spaces are only available for 80% of units. Two floors of parking garage located beneath two of the apartment building built during Phase 1. In Phase 2, car parking facilities were separated from apartment units and located at the edge of the development. Overall there were 884 parking spaces in the development (1095 units in first 2 phases).

Further parking spaces are unbundled from apartment units, so residents who choose to have a parking space must pay for it separately from their residence. Residents don’t pay for a specific parking space, but rather for a ‘right to park’, which means they can entre the parking garage and
The village square is located near the centre of the development, conveniently located within walking distance of residential units so that residents can easily conduct shopping trips and errands by bike or on foot. The uses of the village square include a small grocery store, a pharmacy, and several cafes.

**Car Ownership Rates**

The rate for GMV falls between that of Inner London where households are generally less car dependant, and that of Outer London, where households are typically more car dependant. GMV car ownership is 0.65 cars per household, Inner London 0.5 per household, outer London 0.95 per household, London ave 0.77 per household.

**Mode Split**

While car ownership in GMV is higher than for inner London, car use in GMV appears to be much lower than for other areas of London, even inner London. Only 18% of trips made by GMV residents are by car, which is much lower than for Greenwich (44%), Inner London (29%) Outer London (51%) and London (43%).

The GMV data was collected through a survey of residents conducted to fulfill the requirements for the Section 106 Agreement, and included in the Travel Monitoring Study 2005 Report.

Public transport use is high in GMV, particular for trips to work. Indeed, the majority of GMV commuters (79%) travel to work by public transport. The breakdown by type of public transport shows that 73% of commuters travel to work by London Underground. This is not surprising given GMV’s easy access to the Jubilee Line, and the high cost of driving to central London due to the city’s congestion charge.

Although a small proportion of GMV residents walk or cycle to work, a much higher number walk or cycle for other trip purposes, such as travelling to school or shopping. Nearly one third of those who study walk to school, however, almost a quarter drive. These results are likely due to the mix of student types; children are more likely to walk or cycle to school within the village while adults taking classes outside the district might be more likely to drive.

**Lessons learned**

While GMV residents drive less than their neighbours due to strong policy and design measures, overall car ownership remains higher than some of the other communities we reviewed. This is due in part to the location of GMV, far from central London, which demonstrates the importance of locating new developments as close as possible to existing development.

GMVs good public transport access, combined with the existence of London’s congestion fee, has resulted in an impressive commute mode share of 79% by Public transport.
These solutions include rails at traffic lights which cyclists can rest against so that they do not need to put their feet down, and mirrors placed at low-visibility intersections so that cyclists can see what is happening around the corner. Different types of lighting will be tested along the route to improve night time visibility. In addition, several mini service stations have been set up where cyclists can pump air into their tyres and carry out simple repairs.

The City of Malmo has even given cyclists priority at thirty traffic lights across the city. Radar sensors have been fitted at these crossings to detect approaching cyclists and give them a green light. This allows cyclists to flow more smoothly in traffic and clearly demonstrates the city’s commitment to promoting cycling.

Public transport

Vastra Hamnen is well served by public transport. At least on bus stop is located within 300m of every apartment, and buses run at seven minute intervals throughout the day. Many investments have been made to improve the quality of public transport in the area. Buses are given priority at traffic lights. Bus stops have elevated platforms to make boarding faster and easier and many stops not have weather protection to make waiting more comfortable.

The southern border of Vastra Hamnen is just 1km to Malmo Central Station. This station will be connected to the Oresund Bridge through the new City Tunnel which was scheduled to open in December 2010 and will link train travel north of the city to southern connection points including Copenhagen.

Car Sharing

In 2005 the City of Malmo started a program to introduce carsharing in Malmo. There are two carsharing locations in Vastra Hamnen. One location is situated next to B001 and has seven vehicles. The other location is in Univeristetsholmen and has one vehicle. A survey in 2010 found that 3% of Vastra Hamnen residents have carsharing membership.

Parking

Parking in the B0001 development was limited to 0.7 parking spaces per household, as compared with the typical Malmo requirement of 1.1 parking spaces per household. However, local residents’ demand for parking exceeded that available, indicating that the scheme has ecological expectations more ambitious than current behaviour warranted. Eventually, a multi-storey parking garage was built in conjunction with a new development.

The parking issue was readdressed during the planning process of Vastra Hamnen’s newest neighbourhood, Fullriggaren which requires just 0.75 parking spaces per household.

The parking issue was readdressed during the planning process of Vastra Hamnen’s newest neighbourhood, Fullriggaren which requires just 0.75 parking spaces per household.

Further, the inner area of B001 is car-free, consisting of only pedestrian ways and cycle paths. This structure makes it easy for cars to cross Vastra Hamnen, but provides a safer environment with reduced car traffic within its various neighbourhoods.

Public Space design

Vastra Hamnen has several parks – the planners wanted citizens to be able to walk from Vastra Hamnen to the city centre of Malmo through parks and green spaces.

Mobility Management

Malmo has recognised that simply building a sustainable development is not enough; ongoing effort is needed to encourage residents to adopt sustainable lifestyles. Therefore, Vastra Hamnen was provided with its own Mobility Management office to carry out travel habit inquiries, develop informational material and create campaigns to encourage sustainable mobility habits. One such campaign was recently carried out in Flagghusen. The project entitled “New Address – New Travel Patterns – Flagghusen” consisted of three steps: 1. A welcome letter was sent by mail to residents, 2. Residents were contacted by phone, and 3. Mobility advisors provided customised mobility advice to residents and mailed information based on the telephone conversation. The phone conversations discussed travel habits, attitudes towards different modes of transport, car ownership, how to take advantage of different modes of transport, and information on car sharing.

Residents were given various offers, depending on their travel choices, in order to encourage them to use more sustainable modes of transport. For example, those who mainly drive and do not own a bike were offered a free bike for a month.

In Vastra Hamnen, 44% of residents commute to work by non-motorised modes versus 36% of Malmo residents. Furthermore, a smaller percent of Vastra Hamnen residents commute by car (33% vs 45%).
3. Poynton Shared Space, UK


Poynton is a Cheshire village with a population of 16,000, situated on the southern fringe of the Greater Manchester Conurbation. The historic focus of the village is Fountain Place, a crossroads at the junction of the London Road (A523), Chester Road (A5149) and Park Lane. Fountain Place was a busy signal controlled junction and the village civic and commercial centre has moved eastwards to Park Lane. Park Lane and Fountain Place jointly form the commercial and social centre of Poynton. As such they have a critical place function for the village, helping to define its identity and local distinctiveness, requiring a high quality environment that will encourage social interaction and economic vitality.

Park Lane and Fountain Place also have an important movement function, for both vehicles and pedestrians. Park Lane is the main route into Poynton from the east and carries flows of 10,500 vehicles per day. Much of this is local traffic and there are no practical alternative routes at present to divert. Fountain Place is the junction of Park Lane, the A523 London Road and the A5149 Chester Road, carrying turning flows of some 27,000 vehicles per day including 6% HGVs.

Long-standing proposals for a Poynton bypass would not be progressed in the foreseeable future, so the streetscape enhancements proposed needed to accommodate existing traffic patterns, both on Park Lane and through Fountain Place.

The final scheme cost was around £3m, coming from a number of funding sources including a contribution from the DfT Links to Communities programme.

The resultant Village Improvement Scheme, developed in partnership with Ben Hamilton-Baillie, involved the creation of a sequence of informal crossings highlighting pedestrian desire lines, a central reservation to assist pedestrians to cross, narrow traffic lanes to keep vehicular speeds low, and repaved footways, including the re-paving of the private shop forecourts to enhance the pedestrian environment.

The design identified five locations for gateways to highlight the transition from highway, with its predominant movement function, to the village centre, where other activities and functions are equally important.

The design for Fountain Place replaced the existing traffic signal control and strongly defined arrangement of footways and carriageway with a design based on shared space principles, comprising two distinct but interconnected circular spaces. In view of the heavy traffic flows, paving materials and low kerbs were used to define the areas for traffic circulation as a guide for drivers and other users, but these physical clues are subtle and also emphasise the pedestrian desire lines through the space.
28 Monitoring

As part of further work, monitoring tools will need to be developed to measure performance against objectives. Suggested measures would include:

- population and employment figures
- development activity
- community feedback
- demographics
- public transport patronage figures
- traffic data
- road safety data collection.

PART C

FBURA Transport Working Group
process documentation

(Process, background investigations and data)
29 Project Governance

Places Victoria has been tasked with coordinating the preparation of an overarching Strategic Framework Plan and Development Contributions Plan to guide future development in the FBURA. Places Victoria has established a Project Control Group to oversee the development of these plans.

The Department of Transport, Planning & Local Government (the former Department of Transport) chaired the FBURA Transport Working Group and has coordinated the transport input to this Integrated Transport Plan, in partnership with Places Victoria, the Department of Planning & Community Development (DPCD), Public Transport Victoria, VicRoads, the City of Melbourne, the City of Port Phillip, the Office of the Victorian Government Architect and the Port of Melbourne Corporation.

30 Development of this Integrated Transport Plan

The Transport Integration Act 2010 (TIA) creates a framework for the provision of an integrated and sustainable transport system. Under the TIA, the former Department of Transport (DOT) is responsible for:

a) Ensuring that a transport system is provided consistent with the vision statement of the TIA;

b) Determining strategic policies which specify priorities for the transport system that address current and future challenges;

c) Ensuring collaboration with transport bodies and other bodies that policies and plans for an integrated and sustainable transport system are developed, aligned and implemented.

The Department of Transport, Planning & Local Infrastructure (formerly Department of Transport) developed this Integrated Transport Plan using the methodology below:
### 31 Existing Conditions Review

**Summary of existing conditions (AECOM, 2012):**

- **Walking:**
  - Large blocks reducing walkability.
  - Land uses not conducive to walking.

- **Cycling:**
  - Inadequate routes to the south coast and St Kilda.
  - Separation of activities needed for cycling safety.

- **Public Transport:**
  - The “ring road” concept needs to be explored.

- **Traffic and Parking:**
  - Traffic levels are in the range of 50,000–60,000 vehicles per day per direction.
  - This is at the higher end for the local road network.

- **Traffic Volume Data:**
  - 94% of vehicles recorded were cars.
  - Montague Street recorded the highest volume of vehicles in both directions.
  - Cecil Street in the northbound direction recorded the lowest one-way traffic volume.
  - The site which recorded the greatest proportion of heavy vehicles was Williamstown Road in the westbound direction.
  - Williamstown Road carries a significantly greater volume of car traffic than Plummer Street.
  - Plummer Street has a higher percentage of heavy vehicles but a slightly lower volume of heavy vehicles compared to Williamstown Road.
  - The data suggests that Plummer Street provides a role as an alternative truck route and is assisting to reduce the number of east-west truck movements along Williamstown Road.

### 32 Development Staging – FBURA Discussion Scenario

Places Victoria developed the following development staging assumptions which were used for transport modelling and analysis.

<table>
<thead>
<tr>
<th>Precinct</th>
<th>2015-2020</th>
<th>2020-2025</th>
<th>2025-2030+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montague</td>
<td>3156 (34.4%)</td>
<td>4595 (41.8%)</td>
<td>4870 (44.3%)</td>
</tr>
<tr>
<td>Lorimer</td>
<td>1090 (10.5%)</td>
<td>1570 (12.8%)</td>
<td>4707 (43.2%)</td>
</tr>
<tr>
<td>Sandridge 1st</td>
<td>556 (1.8%)</td>
<td>957 (2.3%)</td>
<td>3535 (6.6%)</td>
</tr>
<tr>
<td>Sandridge 5th</td>
<td>164 (0.6%)</td>
<td>343 (2.2%)</td>
<td>575 (1.3%)</td>
</tr>
<tr>
<td>Wirraway East</td>
<td>168 (0.6%)</td>
<td>2455 (9.1%)</td>
<td>2505 (9.0%)</td>
</tr>
<tr>
<td>Wirraway West</td>
<td>145 (0.5%)</td>
<td>452 (1.5%)</td>
<td>375 (1.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>5730 (54.8%)</td>
<td>10,205 (91.3%)</td>
<td>10,670 (96.0%)</td>
</tr>
</tbody>
</table>

**Stage 1 (2015-2020) of Workers (Total and % of Precinct):**

- **Montague:**
  - 3156 (34.4%)
- **Lorimer:**
  - 1090 (10.5%)
- **Sandridge 1st:**
  - 556 (1.8%)
- **Sandridge 5th:**
  - 164 (0.6%)
- **Wirraway East:**
  - 168 (0.6%)
- **Wirraway West:**
  - 145 (0.5%)
- **Total:**
  - 5730 (54.8%)

**Stage 1 and 2 (2015-2030) of Workers (Total and %):**

- **Montague:**
  - 3156 (34.4%)
- **Lorimer:**
  - 1090 (10.5%)
- **Sandridge 1st:**
  - 556 (1.8%)
- **Sandridge 5th:**
  - 164 (0.6%)
- **Wirraway East:**
  - 168 (0.6%)
- **Wirraway West:**
  - 145 (0.5%)
- **Total:**
  - 5730 (54.8%)

**All Stages (2015-2030+) of Workers (Total and %):**

- **Montague:**
  - 3156 (34.4%)
- **Lorimer:**
  - 1090 (10.5%)
- **Sandridge 1st:**
  - 556 (1.8%)
- **Sandridge 5th:**
  - 164 (0.6%)
- **Wirraway East:**
  - 168 (0.6%)
- **Wirraway West:**
  - 145 (0.5%)
- **Total:**
  - 5730 (54.8%)
33 Travel demand & modelling

As part of the Issues & Opportunities Review, AECOM developed the following illustrative maps highlighting likely directional travel demand. These maps indicate:

a) the significant number of potential daily strips and b) strong travel demand particularly between FBURA and the CBD, followed by FBURA and Domain and FBURA and North Melbourne / Arden.

As part of the Central City Urban Renewal & Transport Framework, DTPLI undertook VITM modelling to better understand travel demand for test case light rail connections to Fishermans Bend. This modelling appears to confirm strong travel demand between FBURA and the CBD, Domain and North Melbourne / Arden.
35 Summary of transport investigations

- Light rail route alignment options
- Bus route development
- Principal Bicycle Network corridor investigations
- Origin-Destination traffic survey
- Arterial road network planning
- Metro Rail options investigation
- Street concept design
- Capital & Operating cost estimates
- Transport modelling (Central City)
- SmartRoads/SmartPlaces street hierarchy development

36 Light Rail route options

Option 1 (Collins St, North Wharf, Rogers St, Ingles St, Fennell St, Plummer St)
Option 2 (Harbour Esq, Charles Grimes, Lomimer St, Fennell St, Plummer St)
Option 3 (Collins St, Point Park, Fennell St, Plummer St)
Option 4 (Collins St, Point Park, Lomimer St, Ingles St, Fennell St, Plummer St)
Option 5 (Port Melbourne Light Rail, Ingles St, Fennell St, Plummer St)

<table>
<thead>
<tr>
<th>Option</th>
<th>Score</th>
<th>Score</th>
<th>Score</th>
<th>Score</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Low/Medium</td>
<td>Medium</td>
<td>Med/High</td>
<td>High</td>
</tr>
<tr>
<td>Option 1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Option 2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Option 3</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Option 4</td>
<td>4</td>
<td>3</td>
<td>2</td>
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<td>5</td>
</tr>
<tr>
<td>Option 5</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

TRIM Ref: DOC/13/02558

159 of 174
The tunnel extension from Southern Cross to Fishermans Bend would provide improved network connectivity to assist the future development of the Fishermans Bend area. This project would enable a fast and frequent train service to be provided into Fishermans Bend connecting to the Mernda - Southern Cross Line. This would provide all commuters in the area with a direct rail connection to the CBD and would help to support the growth of Fishermans Bend as a new rail terminal and commercial hub.

Key benefits of the Southern Cross to Fishermans Bend Extension are:

- Improved network reach by extending the new tunnel into Fishermans Bend urban redevelopment area
- Provides a staging opportunity for an ultimate extension from Fishermans Bend to Newport to facilitate connection toWerribee and Sunbury lines and relieving capacity constraints.

The information provided in this report is intended to inform a preliminary assessment of potential alignments and to support further detailed alignment analysis to be undertaken in future stages. Further work will be required to inform the final design and costs of the project, including detailed planning, land acquisition, and construction works. This will be undertaken in future stages of the project.

This project is highly dependent on the activity centres proposed in these locations. The proposed scheme locates the stations within the road reserve to minimize the land requirements and other operational requirements. The extension of the Mernda - Southern Cross Line to Fishermans Bend will provide improved travel time and access to and from growing residential and employment precincts, taking pressure off the road network.

Summary

This note summarises the findings of a rapid assessment of options to extend metro rail services to Fishermans Bend. The study is based on preliminary land use plans for the area and incorporates the views of a range of organisational stakeholders in the project.

Metro Rail station location options

This assessment identifies a preferred alignment for the extension of the proposed Mernda to Southern Cross line to two new stations within the Fishermans Bend area. The new stations are proposed in the vicinity of Ingles / Fennell Streets and Plummer / Salmon Streets as these locations appear to offer the best land use outcomes, integrate with the proposed surface public transport nodes at these sites, and maximize population / employment catchments. It should be noted that this recommendation is highly dependent on the activity centres proposed in these locations.

The proposed scheme locates the stations within the road reserve to minimize the land requirements. Nevertheless, some private land will be required for the purposes of station entrances and other operational requirements. The proposed scheme locates the stations within the road reserve to minimize the land requirements. Nevertheless, some private land will be required for the purposes of station entrances and other operational requirements.
Fishermans Bend station location investigations

The Department of Transport, Planning & Local Infrastructure (DTPLI) coordinated preliminary investigations relating to potential station locations within the Fishermans Bend in conjunction with PTV. Raylink Consulting and Eric Keys & Associates were contracted to provide technical advice to DTPLI and PTV.

The following process was applied:

- Background information review
  - A 2008 study into metro rail through the area. This report is confidential to PTV.
  - Technical information provided by the PTV Melbourne Metro project. This information is confidential to PTV.
  - A desktop geotechnical study prepared for Places Victoria. This report is confidential to Places Victoria.
  - Indicative/preliminary land use plans for Fisherman’s Bend prepared by Places Victoria.
  - Established land uses in the surrounding area.

Station location options workshop

A stakeholder workshop was held in April 2013 to:

1. Identify constraints and opportunities
2. Identify objectives for station(s) within Fishermans Bend
3. Identify candidate locations

The following constraints and opportunities were documented:

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Opportunities</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. High cost of infrastructure due to ground/roll conditions limiting choices for track alignment and station location</td>
<td>1. Maximising pedestrian and cyclist access to the station</td>
<td>1. Ensuring sufficient land use densities to meet demand</td>
</tr>
<tr>
<td>2. Duplication role of light rail services</td>
<td>2. Ensuring integration with other modes of public transport (light rail and buses) as well as to the rest of the heavy rail network</td>
<td>2. Being able to influence developments to enable cost-effective track alignment and station location options</td>
</tr>
<tr>
<td>3. Interface with access requirements for freight movements in port area</td>
<td>3. Integrating station precincts with activity centres (e.g. Box Hill, Footscray)</td>
<td>3. Use of ‘best practice’ to develop station precincts</td>
</tr>
<tr>
<td>4. Climate change issues including flooding</td>
<td>4. Maximising community benefits by integrating with public realm</td>
<td></td>
</tr>
<tr>
<td>5. Ability to protect private land for station square</td>
<td>5. Being able to serve to neighbouring areas to RR</td>
<td></td>
</tr>
<tr>
<td>6. Ability to reserve land for stations without compromising open spaces</td>
<td>6.</td>
<td></td>
</tr>
</tbody>
</table>

The following objectives and measures were documented:

<table>
<thead>
<tr>
<th>STATION OBJECTIVES</th>
<th>POSSIBLE MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enabling maximum user catchment area</td>
<td>Number of people within 800m of station (residential and employment)</td>
</tr>
<tr>
<td>2. Catalyst for development/Supports mixed uses/Integrates with activity centres</td>
<td>Potential for associated development due to available land within a larger area</td>
</tr>
<tr>
<td>3. Integration with other modes of public transport</td>
<td>Linked to tram and bus routes</td>
</tr>
<tr>
<td>4. Supports sustainable travel choices</td>
<td>Ease of connecting (within minutes) to existing and new walking and cycling paths</td>
</tr>
<tr>
<td>5. Ability to serve the neighbouring areas</td>
<td>Meeting PT guidelines requirements</td>
</tr>
<tr>
<td>6. Value for money, based on constructability</td>
<td>Locations that would be able to serve Garden City and/or Fishermans Bend North</td>
</tr>
</tbody>
</table>

163 of 174

164 of 174
Stakeholders were invited to nominate potential locations on a map. The area considered was wider than the Fishermans Bend Urban Renewal Area and is shown in blue below. The locations with the highest number of nominations are shown in red.

**Station location evaluation workshop**

DTPLI undertook a preliminary evaluation of the proposed locations against the identified objectives. Stakeholders reviewed and modified the evaluation at a second workshop in April 2013. A scoring system of 1 (Low) to 5 (High) was used. (It should be noted that the workshop assumed that at least two stations would be provided due to the size of the study area and assumed density of development.)

Locations L1, L5 and L8 scored highest, as shown below:
Potential metro rail alignments

A high level alignment assessment was undertaken based on heavy rail allowable curvature, vertical gradients and the indicative geotechnical information from the earlier study. This assessment indicates that a number of alignments would appear to be technically feasible between:

- Southern Cross and any of the three top-scoring stations individually, marked in red below (SX-L1, SX-L5, SX-L8)
- Southern Cross and any logical combinations of two of the top three station locations (SX-L8-L1, SX-L8-L5, SX-L1-L5). Of these combinations, it is considered highly unlikely that the SX-L8-L1 alignment would merit further investigation.

Of the top three station locations, the two in the vicinity of Ingles / Fennell Streets and Plummer / Salmon Streets appear to offer the best land use outcomes, integrate with the proposed surface public transport nodes at these sites and maximise population / employment catchments. It should be noted that this outcome is highly dependent on the activity centres proposed in these locations.

Therefore, based on this high level assessment, alignment SX-L1-L5 is seen to be a preferred alignment, subject to more detailed investigations. Note that although this alignment appears to duplicate the planned short term light rail line along Plummer / Fennell Street, it is anticipated that the light and light rails would perform different and complementary roles in the network and that the heavy rail line provides the additional capacity required at full build-out of the Fishermans Bend area.
Any tunnel alignment will be constrained by a number of significant issues including:

a) the unfavourable ground conditions which are known to exist in the area (e.g. Moray Street Gravel, Fishermans Bend silt);

b) building foundations in the Yarra Edge area between the M1 freeway and the Yarra River; and

c) the foundations for the evaluated sections of the M1 freeway.

In light of these constraints, it is anticipated that any future metro tunnel is likely to be deep (50-60m) in the vicinity of the station at Ingles / Fennell Street as shown in the diagram below. As the alignment moves further west it may be feasible to have either shallow (30m) or deep (50-60m) alignment in the vicinity of the Plummer / Salmon Street station.
38  Street hierarchy development

A SmartRoads / SmartPlaces process is currently underway to determine the street hierarchy for FBURA and surrounding areas. This process aims to:

1. Balance competing demands for road space
2. Support Activity Area objectives
3. Encourage walking and cycling
4. Emphasise moving people and goods
5. Promote more informed decision making and collaboration with wider groups

The methodology included:

1. The identification of key destinations within FBURA and surrounding areas (see figure A below)
2. Reviewing the existing hierarchy (see Figure B below)
3. Applying SmartRoads / SmartPlaces principles (see Figure C below) to develop a new street hierarchy

Figure A - Identification of key destinations within FBURA & surrounding areas (VicRoads, 2013)
Figure B – SmartRoads/SmartPlaces Principles (VicRoads, 2013)

Figure C – Original SmartRoads Hierarchy (VicRoads, 2012)
PART D

Appendices

(Background Reports)

• “Fishermans Bend Issues & Opportunities Study” (AECOM, November 2012)
• “Fishermans Bend Traffic Study” (GHD, May 2013)
• “Fishermans Bend Principle Bicycle Network Route Assessments” (GTA, May 2013)
• “Fishermans Bend Metro Rail Summary for Places Victoria” (DTPLI, May 2013)
• “Fishermans Bend Arterial Road Investigations” (Parsons Brinckerhoff, May 2013)
• “Fishermans Bend Interim Transport Guidelines” (DTPLI, June 2013)