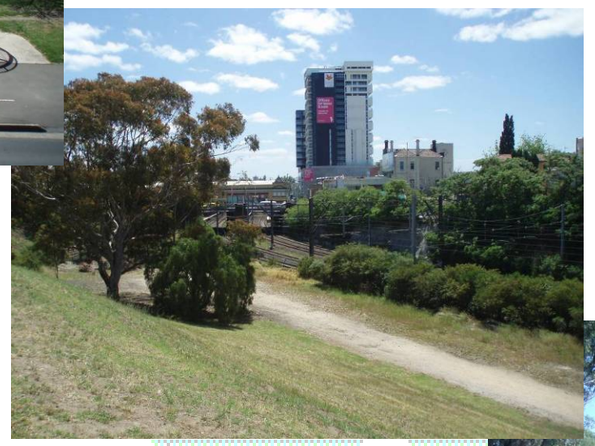

REGIONAL SHARED TRAIL CREMORNE TO ST KILDA EAST STRATEGY REPORT

PREPARED FOR:

VICROADS METROPOLITAN SOUTH EAST REGION

OCTOBER, 2010

OUR REFERENCE: GRP11429 STRATEGY FINAL REPORT SWAN ST TO ALMA RD.DOC

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Appendix A Forrest Hill Precinct Master Plan – Circulation/Traffic Review
Appendix B Cremorne and Church Street Urban Design Framework
Appendix C Creating Better Places: East Richmond Station Precinct
Appendix D Preferred Route – Swan Street, Cremorne to Alma Road, St Kilda East

Revision No.	Comment	Prepared By	Approved By	Date Approved
V1	Draft Report	L. Layzell	A. Coyle	16/03/2010
V2	Draft Final Report (Section north of Yarra River included)	L. Layzell	A. Coyle	04/06/2010
V3	Final Report	L. Layzell	A. Coyle	13/10/2010

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1. INTRODUCTION

Traffix Group has been engaged by VicRoads Metropolitan South East Region to prepare a strategy to provide a high quality regional shared trail between Swan Street in Cremorne and Alma Road in St Kilda East along the Sandringham Rail Corridor.

The pedestrian and bicycle facility is to include road, rail and river crossings.

1.1. STRATEGY AREA

The strategy is focused on a route parallel to the Sandringham rail corridor between Swan Street, Cremorne and Alma Road, St Kilda East as shown in Figure 1. The route has been broken into Sections A to W in order to develop options specific to each different section.

This area encompasses South Yarra, Prahran and Windsor commercial areas and railway stations and crosses the Glen Waverley/Alamein/Belgrave/Lilydale rail line, Railway Crescent, Balmain Street, CityLink, Yarra River, Alexandra Avenue, Toorak Road, Commercial Road, Greville Street, High Street, Green Street, Union Street, Chapel Street and Dandenong Road.

Adjacent streets include Green Street and Oddys Lane in Cremorne, Yarra Street, Darling Street, Osborne Street, Portland Place and Balmoral Street in South Yarra, Porter Street and Charles Street in Prahran and St John Street, Thomas Street and Thomas Street South in Windsor.

1.2. STRATEGY OBJECTIVES

The overall objective of this strategy is to progressively develop and implement facilities to create a high quality regional shared trail (cycling and walking) that generally runs north-south parallel to the Sandringham rail corridor, Chapel Street/Church Street and Punt Road/Hoddle Street between Merri Creek, Abbotsford and St Kilda. As described in Section 1.1 above, this project addresses the section between Swan Street, Cremorne and Alma Road, St Kilda East.

This strategy will provide a basis for funding bids for the detailed investigation, design and construction to be undertaken in stages along the route.

This strategy will provide VicRoads with:

- a preferred alignment of the shared trail,
- advantages, disadvantages and approximate costs of each of the options,
- interim and long term options, and
- priorities for sections along the route.

1.3. STRATEGY DEVELOPMENT

Key steps in the development of the strategy for the route included:

- Reviewed all relevant strategies and plans.
- Undertook detailed site inspections and a 'walk through' with Yarra City Council, Stonnington City Council, Port Phillip City Council, Bicycle Victoria and VicRoads officers.
- Development of options for route, including advantages, disadvantages, implementation requirements and approximate costs.
- Development of the preferred alignment along the route and priorities.
- Conducted a 'workshop' for all relevant parties to discuss options and decide on the interim and ultimate route and priorities.
- Development of a strategy report.

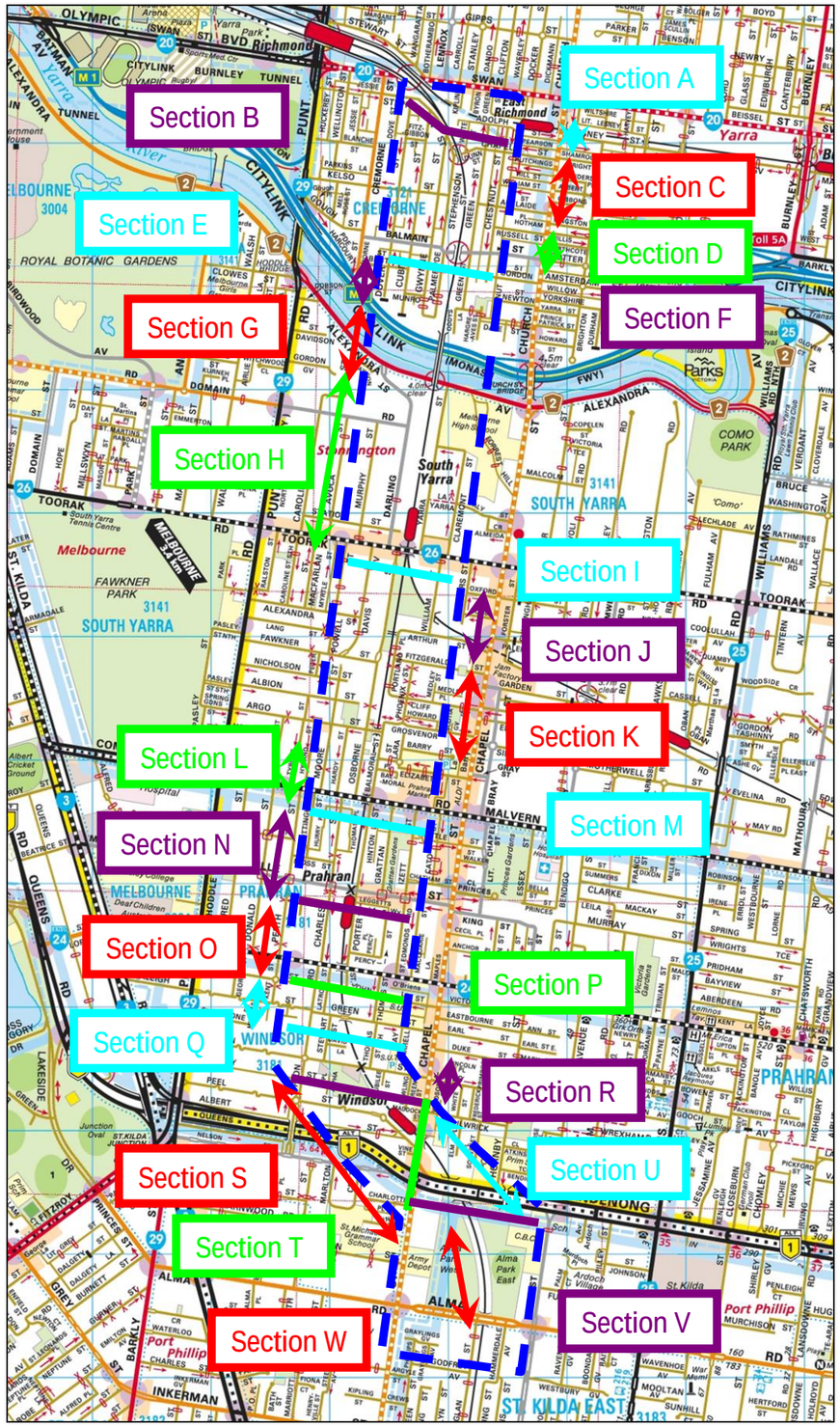

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Figure 1: Locality Plan – Prahran Bicycle Corridor

2. STRATEGIC CONTEXT

The following details strategic documents relevant to the strategy area and proposed shared path.

2.1. PRINCIPLE BICYCLE NETWORK (PBN)

According to VicRoads' "Draft Metropolitan Melbourne Principle Bicycle Network, February 2010":

> The PBN is a network of routes that provide access to key cycling destinations within the Melbourne metropolitan area. The purpose of the PBN is to guide our investment in cycling infrastructure in Melbourne. This investment aims to increase the numbers of people riding bicycles for transport. Cycling for transport includes riding bicycles to work, to school, for shopping, visiting friends and other events.
>
> The PBN is made up of:
>
> - PBN Priority Routes
> - PBN Support Routes.
>
> The PBN is complemented by local routes and routes that have been identified as part of the Metropolitan Trail Network by Parks Victoria.
>
> PBN Priority Routes are the highest priority routes within the PBN and are considered critical for increasing the numbers of people riding bicycles for transport, the development of the bicycle network in Melbourne and in guiding our investment in cycling infrastructure. The purpose of PBN Priority Routes is to provide access for cyclists to the centre of all Central Activities Districts (CADs) and some Principal Activity Centres. A PBN Priority Route reaching the limit of a catchment should aim to anchor at a local destination, especially transport interchanges such as train stations.
>
> PBN Support Routes support the role of the PBN Priority Routes in increasing the numbers of people riding bicycles for transport. PBN Support Routes are considered important routes for increasing the numbers of people riding bicycles for transport, the development of the bicycle network in Melbourne and in guiding our investment in cycling infrastructure.
>
> One of the main purposes of PBN Support Routes is to provide a facility that cyclists can use to access PBN Priority Routes or to access other destinations. A PBN Support Route reaching the limit of a catchment should aim to anchor at a local destination, especially transport interchanges such as train stations or provide access to another adjacent network.

The PBN is currently under review. It is understood that the regional shared trail along the Sandringham Rail Corridor is included in the new PBN, as shown in Figure 2.

The PBN priority routes in the vicinity of the proposed regional shared trail include:

- Swan Street,
- Chapel Street,
- High Street, and
- Alma Road.

The PBN support routes in the vicinity of the proposed regional shared trail include:

- Toorak Road,
- Commercial Road, and
- Dandenong Road.

Off-road MTN routes that intersect the proposed regional shared trail include:

- Main Yarra Trail, along north side of Yarra River, and
- Capital City Trail, along south side of Yarra River.

Source: Draft Principle Bicycle Network

Figure 2: Principle Bicycle Network

2.2. STONNINGTON BICYCLE NETWORK

The City of Stonnington Bicycle Strategy was developed in October 2005 as a 5 year plan to implementing bicycle facilities in the City of Stonnington.

Within the study area the following streets along the proposed shared path alignment are included on the bicycle strategy, as shown in Figure 3:

On-road advisory signage:

- Yarra Street,
- Darling Street,
- Osborne Street,
- William Street,
- Arthur Street,
- Portland Place,
- Balmoral Street,
- Izett Street,
- St Edmonds Road,
- Upton Road, and
- Peel Street.

On-road bicycle lane:

- Chapel Street.

Figure 11

Area 1: South Yarra, Prahran (incl. Williams Road) & Windsor

ARUP

Legend

- Highways/Major Roads
- Local Roads
- Railway Lines
- Railway Stations
- Premium Railway Stations
- Intersection Signals
- Pedestrian Signals
- Stonnington LGA
- Major Activity Centres (Melbourne 2030)
- Principal Activity Centres (Melbourne 2030)
- Other Strip Shopping/Activity Areas
- Schools
- Parks/Reserves
- Hospitals
- Existing On-Road (PBN)
- Existing Metro Trail Network (PBN)
- Proposed On-Road (PBN) (outside study area)
- Proposed Metro Trail Network (PBN) (outside study area)
- Proposed On-Road Bicycle Lane
- Proposed 'Advisory Signage' On-Road Second Stage Location
- Proposed Off-Road Route
- 1 Refer to Items in Proposals Table
- ★ Proposed location for Head Start boxes

Source: City of Stonnington Bicycle Strategy 2005 (Arup)

Figure 3: Stonnington Bicycle Network (South Yarra, Prahran & Windsor)

2.3. CITY OF YARRA BICYCLE STRATEGY

The City of Yarra's Bicycle Strategy 2010-2015 establishes a long term vision for cycling within the City of Yarra. The draft strategy was available for public comment in late 2009 and submissions were received at the December 2009 Council meeting.

The draft bicycle strategy identifies the route between Swan Street and CityLink/Yarra River, along Green Street and Oddys Lane as Council's preferred route, as shown in Figure 4 below.

Source: Draft City of Yarra Bicycle Strategy 2010-2015

Figure 4: City of Yarra Bicycle Strategy

2.4. Other Relevant Strategies

Yarra City Council and Stonnington City Council have developed several strategies that are relevant to the study area. The following summarises the strategies and their relevance to this project.

2.4.1. Inner Melbourne Action Plan (IMAP)

The Inner Melbourne Action Plan (IMAP) is a collaborative partnership between the Cities of Melbourne, Port Phillip, Stonnington and Yarra. Responding to the demands of Melbourne 2030, IMAP aims to 'Make Melbourne More Liveable' within the next 5-10 years by implementing a series of strategies and actions including: linking and improving transport routes; minimising traffic congestion and increasing public transport use; supporting planned residential growth and housing choice; developing the distinctive activity centres, encouraging business investment and tourism; and linking regional open space.

The Action Plan guides a collaborative and consistent approach to the future growth, development and enhancement of inner Melbourne. The actions relevant to the proposed regional shared trail include:

> Action 2.3 Bicycle network legibility – Improve the legibility of the bicycle network (Principal Bicycle Network and local links) with an emphasis on clear delineation of continuous links.
>
> Action 2.4 Walking links and pedestrian priority areas – Implement a Principal Pedestrian Network for the Inner Melbourne Region, that will maintain and enhance permeability and pedestrian safety, with a focus on Activity Centres, regional open space, tourist destinations and long distance walking routes.

Action 2.5 Bicycle network – Review the Principal Bicycle Network (PBN) and work with VicRoads to complete it within five years[1].

2.4.2. Cremorne and Church Street Urban Design Framework

The Cremorne and Church Street Urban Design Framework (UDF) was initiated by the City of Yarra in response to the Victorian Government's metropolitan strategy, Melbourne 2030, as well as market pressure for redevelopment and land use change in the Cremorne area.

The following are recommendations of the UDF that relate to the area between Swan Street and CityLink in the vicinity of the Sandringham rail corridor:

> *Improve access to existing public transport infrastructure*
>
> 84. Improve the quality, amenity and accessibility of the pedestrian bridge, attached to the railway bridge, to South Yarra Station via Yarra Street, and over the River and Alexandra Avenue.
>
> *Improve the internal connectivity of the local circulation network*
>
> 85. Develop a generous walking and cycle route along Green Street, connecting south via the South Yarra rail bridge and north via the underpass near East Richmond Station.
> 86. Improve amenity in the railway underpasses with better lighting, graffiti control, integrated art programs, etc.

The pedestrian and cycle links proposed as part of the Cremorne and Church Street UDF include Oddys Lane, Green Street and Lennox Street, with a short section along Swan Street between Green Street and Lennox Street, as shown Appendix B.

2.4.3. Creating Better Places: East Richmond Station Precinct

The Creating Better Places: East Richmond Station Precinct, developed by the City of Yarra, includes the area bounded by Swan Street, Church Street, Adolph Street and Green Street. Access improvements are proposed for Green Street, between Swan Street and Railway Place, as well as to the rail underpass (along the proposed bicycle corridor) as follows:

- Entry enhancement by patterned paving and special lighting and IMAP signage at Green Street.
- Repaving of Green Street with integrated asphalt and bluestone paving to provide a sense of slow moving traffic and pedestrian priority environment – shared movement area.
- Activation of Green Street by providing glazing or openings.
- Repaving of rail underpass, improvement of lighting and painting of walls with Anti-graffiti paints, with an opportunity for duplication of the underpass ramps to provide easy access to the station I the long term.
- Widening of footpath along Railway Place and replacement of bollards with new Yarra stainless steel bollards.
- Line markings with paint for other major pedestrian and vehicular conflict areas (intersection of Green Street and Railway Crescent).

A copy of the Access Improvement Plan for the Creating Better Places: East Richmond Station Precinct is attached at Appendix C.

2.4.4. Chapel Visions Structure Plan 2007-2031

Chapel Vision Structure Plan 2007-2031 was developed for Stonnington City Council in 2007 in order to guide future development within South Yarra, Prahran and Windsor Activity Centres. The structure plan discusses the growth in the resident population (extra 8,000) and employment (extra 3,000+) in the area in the period to 2021, the inefficient utilisation of off-street parking, the need to upgrade and enhance public transport and movement networks, transport integration, enhancing walkability and insufficient and poorly integrated local and regional bicycle networks. The strategic directions and strategies developed in the structure plan include improving the range of transport options, reducing car dependency, improved physical linkages, improved pedestrian/bicycle networks through residential, retail and commercial areas with an emphasis on safe crossings and streetscape amenity. Strategies for implementation include integrating public transport services and pedestrian networks, promote walking and encourage safe and easy cycling.

2.4.5. Forrest Hill Precinct Master Plan

Forrest Hill Precinct Master Plan was developed for Stonnington City Council in 2008 in order to provide a structure for future development in the area of South Yarra bounded by the rail line, Alexandra Avenue, Chapel Street and Toorak Road. This area has previously been dominated by industrial uses and the master plan aims to change the area to residential with active frontages at street level. During the master plan development, options for traffic movements through the area were developed. The Circulation/Traffic Review from the master plan is attached at Appendix A. The circulation and traffic review considered changing Yarra Street to one-way operation over the full length or limited to the south section only.

After consideration, the Forrest Hill Precinct Master Plan concluded to leave Yarra Street as the existing two-way operation, with the following comment:

> *"… the opportunity to re-consider traffic arrangement can be reviewed at a later date if Council believes this is necessary (i.e. Yarra Street one-way would allow for a bike lane etc)."*

The master plan aims to provide a 2m wide footpath on the east side of Yarra Street.

The circulation and traffic study would need to be reviewed and/or re-visited in order to determine the impact of changing Yarra Street to one-way operation in order to construct a bicycle path along Yarra Street (see Option B2 and Option B3 in Section 5.

2.4.6. City of Stonnington Public Realm Strategy (Draft)

City of Stonnington Public Realm Strategy (Draft) was developed in June 2009 in order to provide a strategy to further enhance the public spaces within the City of Stonnington. Recommended actions of the strategy relevant to this study include:

South Yarra:

- Implementation of concepts from 'Chapel Vision' to ensure South Yarra Sidings Reserve is fully linked with Toorak Road and Portland Place, and has improved internal circulation.
- Implementation of concepts form 'Chapel Vision' to construct a new public plaza at the Toorak Road rail bridge.
- Create a full length pedestrian/bicycle link along the Sandringham rail line. Acquire properties south of South Yarra Sidings Reserve to link the station with Portland Place.

Prahran:

- Create a full length pedestrian/bicycle link along the Sandringham rail line. High priority link between High Street and Prahran Station.

[1] www.imap.vic.gov.au

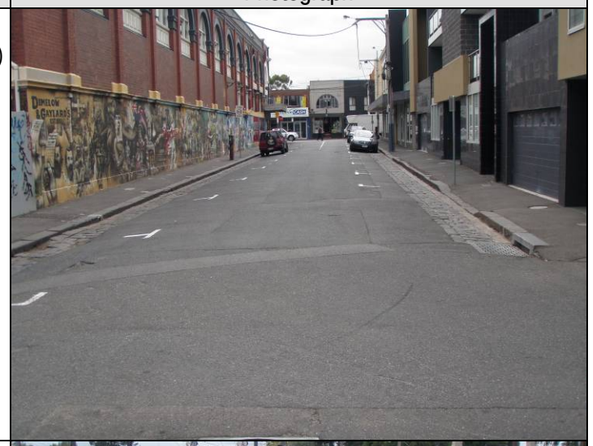
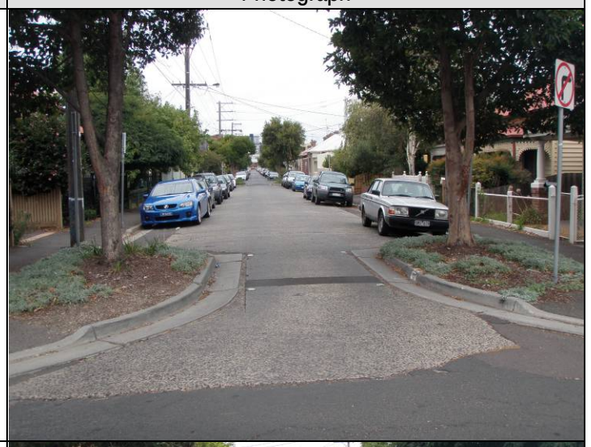
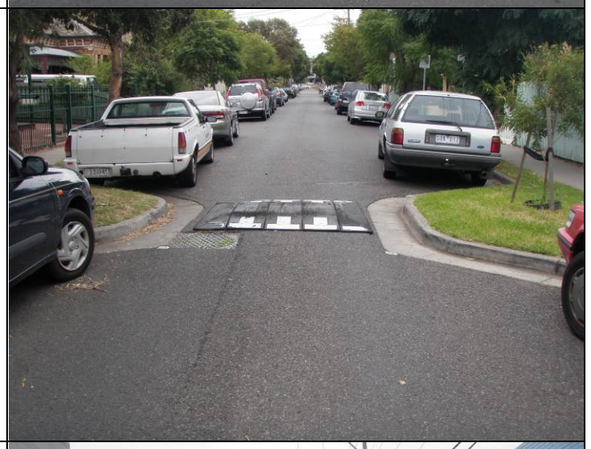
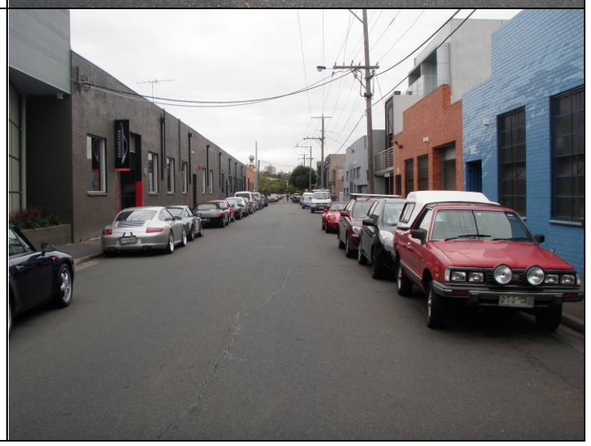
3. EXISTING CONDITIONS

3.1. ADJACENT STREETS

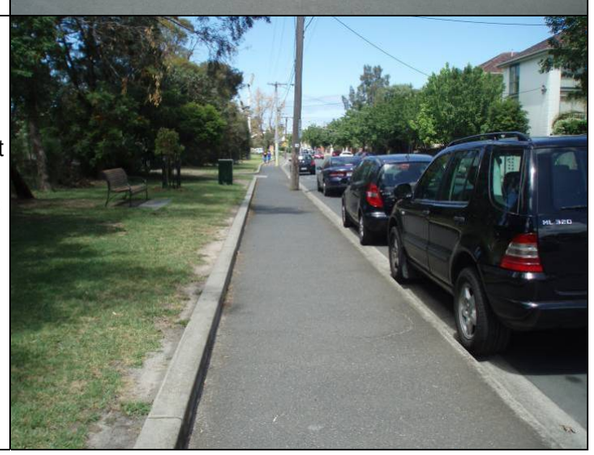
There are several streets that run parallel and adjacent to the Sandringham Rail Corridor within the study area.

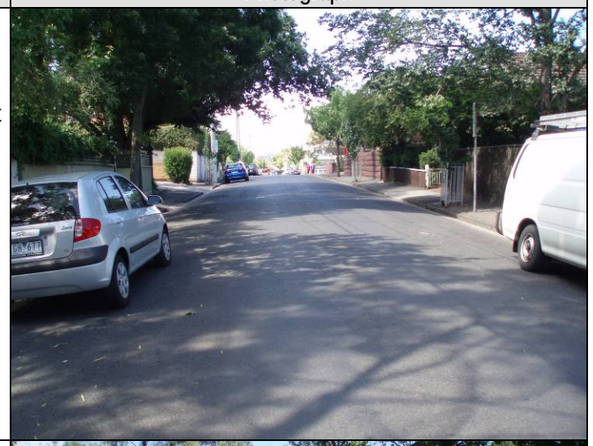
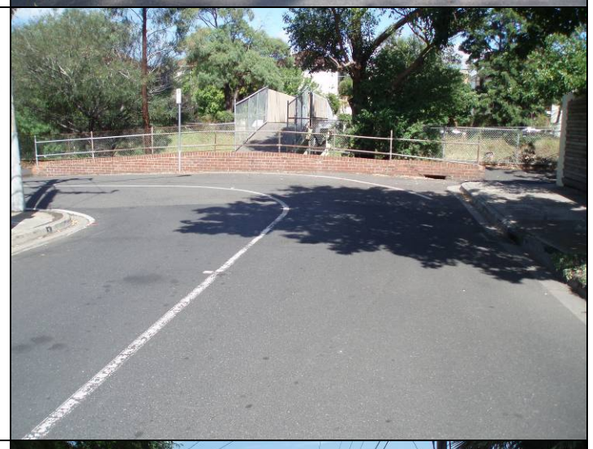
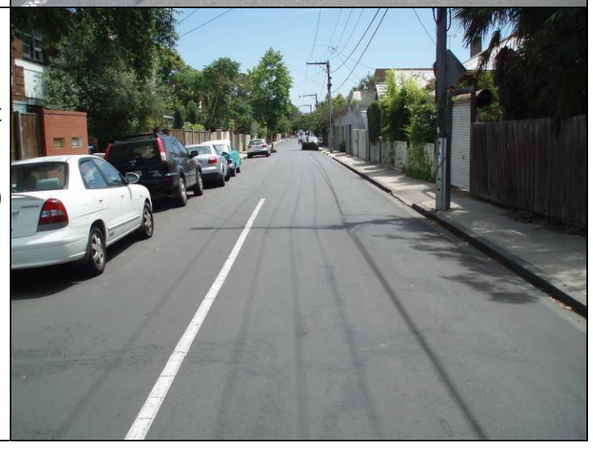
Table 1 below details the existing conditions within these streets.

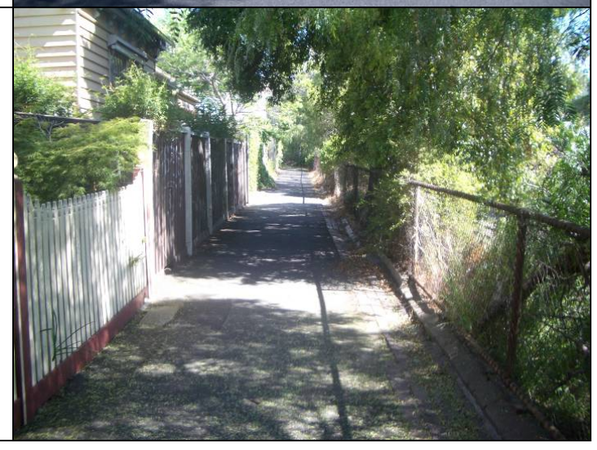
Table 1: Existing Conditions in Adjacent Streets

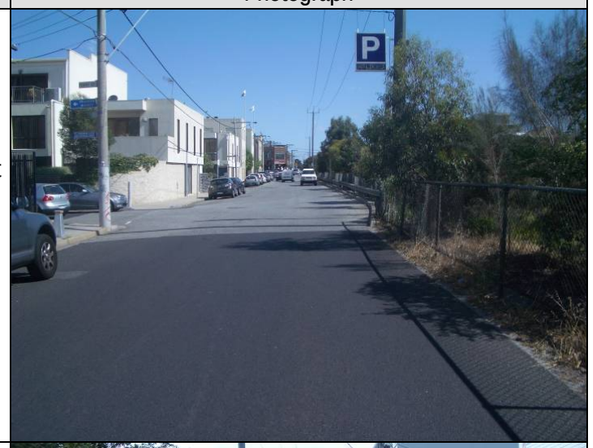
Section of Street	Width/Verge	Photograph
Green Street, Swan Street to Railway Place	• 8.65m road width • Adjacent building (Dimmeys) to be redeveloped	
Rail Underpass	• 2.2m wide ramps • 2.1m wide in underpass • 25m long ramps	
Green Street, Railway Crescent to Dunn Street/ Chapel Street	• 8.6m road width • 2.9-3.1m wide threshold treatments at Dunn Street/Chapel Street • 3.1m wide threshold treatment at Railway Crescent • One-way operation northbound • Restricted parking on both sides	
Green Street, Dunn Street/ Chapel Street to Adelaide Street	• 7.5m road width • 3.0m wide threshold treatment • One-way operation northbound • Restricted parking on both sides	
Green Street, Adelaide Street to Balmain Street	• 8.4m wide • 2.35m wide footpath on both sides • Restricted parking on both sides	

Section of Street	Width/Verge	Photograph
Green Street, Balmain Street to Electric Street	• 8.4m wide • 2.1m wide footpath on east side • 1.6m wide footpath on west side • Unrestricted parking on both sides	
Electric Street, Green Street to Oddys lane	• 8.4m wide • No footpath • Services to adjacent buildings protrude into road • Unrestricted parking on north side only	
Oddys Lane	• 6.0-6.4m wide at south end • Widens to 10.5m at Electric Street • No footpath • Power poles on west side of road • Unrestricted parking on both sides	

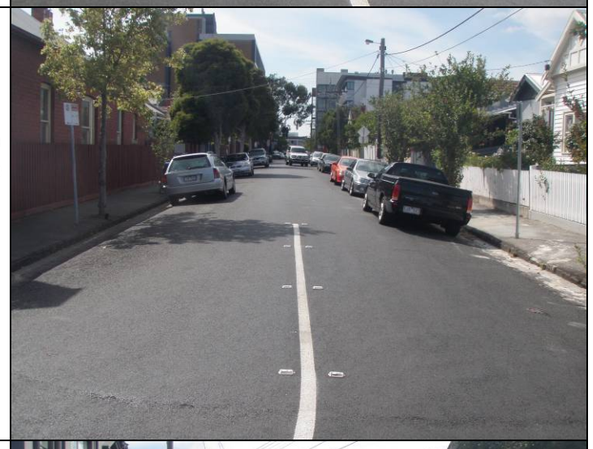
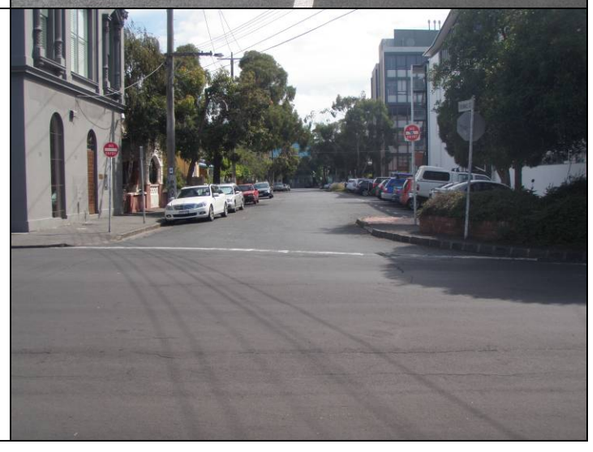
Section of Street	Width/Verge	Photograph
Yarra Street	• 8.2-8.4m road width • No verge adjacent to station on west side • Footpath width varies on east side (1.85m to 2m) • Power poles in footpath on east side • Several driveways on east side • Brick wall adjacent to station west side • Blue stone retaining wall west side (station to Alexandra Avenue) • On-street parking east side	
Darling Street	• 11.8m road width • 2.2m footpath east side • 2.15m footpath west side • Power poles in footpath east side • Approx. 23 driveways east side • On-street parking both sides	
Osborne Street, Toorak Road to Fawkner Street	• 10.75m road width • 2.0m wide path east side • 2.15m wide footpath west side • Power poles within path east side • On-street parking both sides	

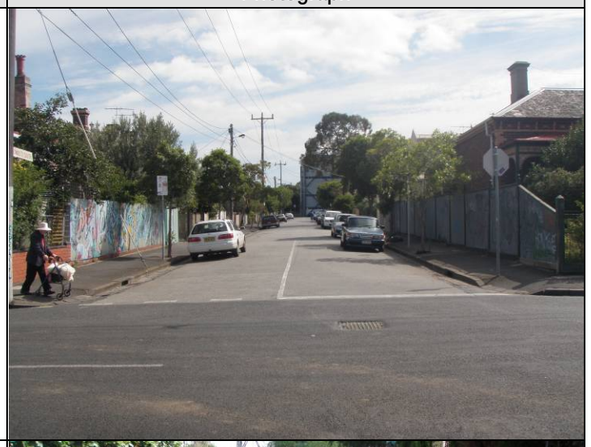
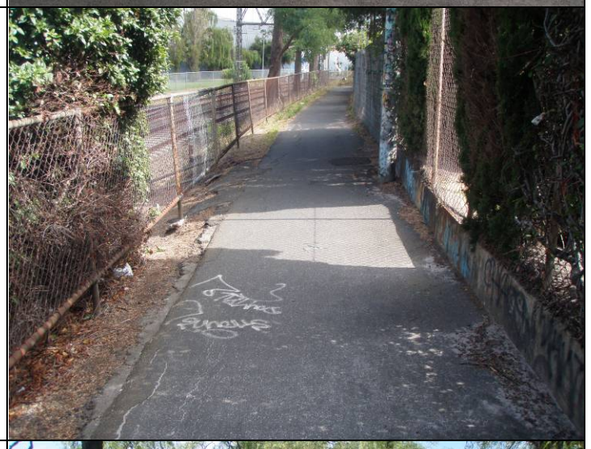
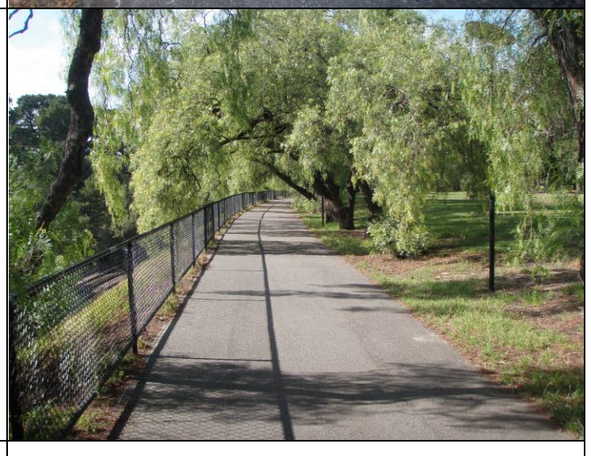
Section of Street	Width/Verge	Photograph
William Street, Toorak Road to Arthur Street	• 8.3m road width • 2m footpath both sides • On-street parking both sides • Power poles in footpath east side	
Arthur Street, William Street to Portland Place	• 6.8m road width • 2.3m footpath both sides • On-street parking both sides • Power poles in footpath south side	
Osborne Street, Fawkner Street to Argo Street	• 7.05m road width • 1.4m footpath east side • 1.5m footpath west side • Power poles in footpath east side • On-street parking alternates sides of road (one side only)	

Section of Street	Width/Verge	Photograph
Osborne Street, Argo Street to Commercial Road	• 7.0m road width • 1.45m footpath east side • 1.7m footpath west side • Power poles in footpath east side • One-way operation southbound • On-street parking on west side of street	
Portland Place, Arthur Street to Cliff Street	• 7.1-7.3m road width • 2.6m footpath east side • 2.0m verge west side • Power poles in footpath east side (on back of kerb) • Many trees in verge west side • On-street parking east side	
Portland Place, Cliff Street to Grosvenor Street	• 2.8m path • Access to properties from path (pedestrian access only)	

Section of Street	Width/Verge	Photograph
Balmoral Street, Argo Street to Commercial Road	• 7.05-7.9m road width, widens to 9.5m south of Percy Street • 1.5m footpath east side • No verge west side • Power poles in footpath east side and western verge • On-street parking east side	
Porter Street, Commercial Road to Greville Street	• 5.1m road width, flares to 8.0m width at Greville Street • 1.4m footpath east side • No verge west side • Power poles in footpath east side • One-way operation southbound • On-street parking east side	
Charles Street, Commercial Road to Greville Street	• 8.5m road width • 2.0m footpath both sides • Power poles in footpath east side • One-way operation northbound • On-street parking both sides	

Section of Street	Width/Verge	Photograph
Porter Street, Greville Street to High Street	• 6.3m road width, 6.9m adjacent to Prahran Station • 2.0m footpath east side • No verge west side • Power poles in footpath east side • One-way operation southbound • On-street parking east side	
Charles Street, Greville Street to High Street	• 8.2m road width • 2.0m footpath both sides (3m verge west side) • Power poles in footpath east side • One-way operation southbound • On-street parking both sides	
Shared Path, Greville Street to High Street	• 2.9-3.1m wide shared path • Shared path bends around Prahran Station building	

Section of Street	Width/Verge	Photograph
St John Street, High Street to Thomas Street (North-South Section)	• 6.8m wide • 1.5m footpath on east side • 1.2m treed verge west side • Power poles in footpath east side • Two-way operation • On-street parking east side (1P 9am-9pm)	
St John Street, High Street to Thomas Street (East-West Section)	• 8.5m road width • 1.4m footpath north side • 1.65m footpath south side • On-street parking north side (Permit Zone 9am-midnight) • On-street parking south side (1P 9am-9pm) • Power poles in footpath south side	
Thomas Street, St John Street to Green Street	• 14.45m road width • One-way operation southbound • 90° parking on east side (3P) • Parallel parking west side (Permit Zone 9am-9pm) • 2.6m footpath both sides • Power poles in footpath west side	

Section of Street	Width/Verge	Photograph
Thomas Street South, Green Street to Union Street	• 8.2m road width • 2.0m footpath both sides • On-street parking both sides • Power poles in footpath west side	
Shared Path – Union Street to Chapel Street	• 2.8m shared path, narrows to west of Bowling Green Street	
Alma Park West	• Separate bicycle only path and pedestrian only path. • Bicycle only path follows rail alignment. • Access to Dandenong Road at west side of park.	
Alma Park East	• Paths are not designated as shared, bicycle or pedestrian. • Access to Dandenong Road at west side of park.	

3.2. Adjoining Municipality Networks

As stated above, the overall objective of this project is to provide a high quality regional shared trail (cycling and walking) that generally runs north-south parallel to the Sandringham rail corridor, Chapel Street/Church Street and Punt Road/Hoddle Street between Merri Creek, Abbotsford and St Kilda.

The section of the overall path to the immediate north of this study area (i.e. north of Swan Street) is within the City of Yarra. Discussions with the Transport Coordinator indicated that the City of Yarra is yet to engage a consultant to undertake the option identification step in the design process. However, it was confirmed that the route within the City of Yarra would aim to use Lennox Street to the north of the study area.

The section of the overall path to the immediate south of this study area is with the City of Port Phillip. An on-site meeting was conducted with one of Council's Traffic Engineers to determine the most appropriate crossing facility across Dandenong Road into the City of Port Phillip. An existing bicycle path is located within Alma Park West, which then links into the Alma Road on-road bicycle lanes.

3.3. Bicycle Foci and Generators

The following details the locations where bicycles and pedestrians are likely to travel to and from along the proposed regional shared trail corridor.

Bicycle Trails:

- Main Yarra Trail, north side of Yarra River, Cremorne, and
- Capital City Trail, south side of Yarra River, South Yarra.

Schools/Educational:

- Kangan Batman TAFE, Balmain Street and Cremorne Street Richmond Campuses,
- Melbourne High School, Chapel Street, South Yarra,
- Swinburne University, High Street, Prahran,
- Presentation College, Dandenong Road, Windsor,
- Christian Boys' College, Dandenong Road, St Kilda East, and
- St Michael's Grammar School, Chapel Street, St Kilda.

Recreation Reserves & Leisure Facilities:

- Darling Gardens, South Yarra,
- South Yarra Sidings Reserve, South Yarra,
- Osborne Street Reserve, South Yarra,
- Grattan Gardens, Prahran,
- Windsor Sidings Reserve, Windsor,
- Alma Park West, St Kilda East, and
- Alma Park East, St Kilda East.

Shopping Centres:

- Swan Street, Cremorne,
- Chapel Street, South Yarra to Windsor,
- Toorak Road, South Yarra,
- Jam Factory, Chapel Street, South Yarra,
- Commercial Road, Prahran,
- Prahran Market, Commercial Road, and
- Pran Central, Chapel Street, Prahran.

Public Transport:

- Swan Street – Route 70 Tram,
- East Richmond Station, Railway Crescent,
- Alexandra Avenue – Route 605 Bus,
- South Yarra Station, Toorak Road,
- Toorak Road – Route 8 Tram,
- Commercial Road – Route 72 Tram,
- Commercial Road – Route 216, 219 & 220 Buses,
- Prahran Station, Greville Street,
- High Street – Route 6 Tram,
- Windsor Station, Chapel Street,
- Chapel Street – Route 78 & 79 Trams,
- Dandenong Road – Route 5 & 64 Trams, and
- Punt Road – Route 246 Bus.

3.4. Bicycle Victoria Super Tuesday Cyclist Counts

Bicycle Victoria undertakes cyclist counts at various locations around Victoria annually. The 2010 count was conducted on Tuesday, 5th March 2010 between 7am and 9am. The data from the Super Tuesday count in the vicinity of the proposed shared path is as follows:

Table 2: Bicycle Victoria Super Tuesday Count Results 2010

Location	Number of Cyclists			
	North Leg	South Leg	East Leg	West Leg
Chapel Street at Windsor Station	262	265	17	n/a
Chapel Street/High Street, Prahran	326	303	154	151
Chapel Street/Toorak Road, South Yarra	406	373	71	90
Chapel Street/Alexandra Avenue, South Yarra	332	451	185	348
Church Street/Swan Street, Cremorne	122	201	171	191
Punt Road/Greville Street, Prahran	35	34	49	44
Punt Road/Toorak Road, South Yarra	17	16	81	86
Punt Road/Swan Street, Cremorne	82	217	234	259
Alexandra Avenue/Yarra Street, South Yarra	9	28	30	37

Table 2 shows that in the 2 hour period, more than 400 cyclists travelled north/south on the Chapel Street/Church Street corridor and more than 200 cyclists travelled on the Punt Road corridor. The proposed shared path facility has the potential to cater for a large number of these cyclists.

4. OPTION IDENTIFICATION

The following details the proposed minimum design criteria and options for the location of the proposed shared path.

4.1. DESIGN OPTIONS

There are several different forms a proposed 'shared path' can take when retro-fitting into an existing environment. They include, but are not limited to, the following:

- Shared path – bicycle and pedestrians utilise the same path, separated by direction of travel.
- Bicycle only path – bicycle path, separated by direction of travel.
- Copenhagen style bicycle path – on-road bicycle path, separated by direction of travel (see Figure 5 for example in Fitzroy Street St Kilda).
- On-road bicycle lanes – in same direction as traffic on each side of road.
- Contra-flow bicycle lanes – on-road bicycle lane at entry to street only (used in this study on one-way streets to provide bicycle access in the opposite direction to the traffic flow).
- Footpath – pedestrians to use footpath where bicycle use separate facility.
- Local bicycle route signage and linemarking.
- Provision of safe crossing points at road crossings.

Figure 5: 'Copenhagen' Style Bicycle Path
(Fitzroy Street, St Kilda)

4.2. DESIGN CRITERIA

The following design criteria were used in identifying appropriate locations for the route:

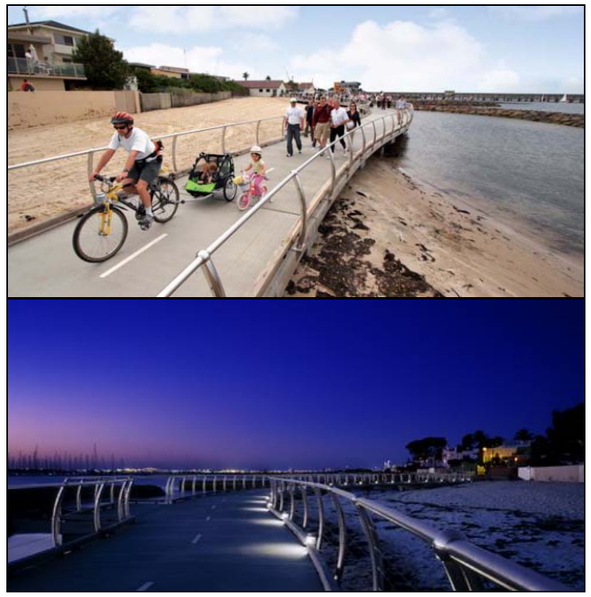
- Shared path – minimum width of 2.5m, preferably 4.0m wide.
- Bicycle only path – minimum width of 2.5m, preferably 3.5m wide.
- Copenhagen style bicycle path – minimum width of 2.5m, preferably 3.5m wide (plus additional kerb).
- On-road bicycle lanes – 1.2m minimum width, desirable width is 1.5m.
- Footpath – minimum width of 1.5m, desirable width of 2m.

4.3. EXAMPLES OF SHARED PATHS

There are several examples of shared paths that have been designed to address the needs of pedestrians and cyclists as well as the difficult conditions at the location.

Brighton Beach, Melbourne

A shared path was constructed to provide a missing link between Bay Street and Middle Brighton Baths in Brighton. The elevated shared path below is located just north of Middle Brighton Baths and provides a solution to a problem with the beach and tidal water flows.



Source: www.heartfoundation.org.au

Source: Google Earth

Figure 6: Brighton Beach

Westlink M7, NSW

An elevated shared path runs adjacent to Westlink M7 (approximately 40km west of Sydney). The open rail and mesh barrier provides for passive surveillance, as well as view for cyclists and pedestrians.

Source: www.transit.govt.nz

Figure 7: Westlink M7 Shared Path

HarbourLink, Sydney

A proposed 1.6km long elevated multi-use pathway called HarbourLink is proposed in Sydney to link the Sydney Harbour Bridge to the Warringal Freeway.

Source: www.harbourlink.com.au

Figure 8: Artists Impressions of the Proposed HarbourLink

The Sandringham rail reserve has steep slopes between the adjacent property boundaries and the rail line and as such the design of the shared path within the rail reserve will be required to address the fall of the land beneath it, as per the Brighton Beach example.

In addition, where the shared path crosses the Yarra River and CityLink, an elevated shared path similar to the Westlink M7 and HarbourLink examples could be constructed adjacent to, or attached to, the existing bridge.

5. ROUTE OPTIONS

The route has been broken up into nine sections in order to simplify the presentation of the options both in tabular and graphic format.

The initial options are presented in Section 5, as follows:

- Section A – Swan Street to Railway Place, Cremorne,
- Section B – Rail Underpass, Cremorne,
- Section C – Railway Crescent to Adelaide Street, Cremorne,
- Section C – Adelaide Street to Balmain Street, Cremorne,
- Section D – Balmain Street Crossing, Cremorne,
- Section F – Balmain Street to CityLink, Cremorne,
- Section G – CityLink, Cremorne to Alexandra Avenue, South Yarra,
- Section H – Alexandra Avenue to Toorak Road, South Yarra,
- Section I – Toorak Road Crossing, South Yarra,
- Section J – Toorak Road to Arthur Street, South Yarra,
- Section K – Arthur Street to Argo Street, South Yarra,
- Section L – Argo Street to Commercial Road, South Yarra,
- Section M – Commercial Road Crossing, Prahran,
- Section N – Commercial Road to Greville Street, Prahran,
- Section O – Greville Street to High Street, Prahran,
- Section P – High Street Crossing, Prahran,
- Section Q – High Street to Green Street, Windsor,
- Section R – Green Street to Union Street, Windsor,
- Section S – Union Street to Chapel Street, Windsor,
- Section T – Chapel Street Crossing, Windsor,
- Section U – Chapel Street to Dandenong Road, Windsor,
- Section V – Dandenong Road Crossing, Windsor, and
- Section W – Dandenong Road to Alma Road, St Kilda East.

The options identified and considered along each of the sections are discussed in Table 3 to Table 25 and Figure 9 to Figure 25.

Table 3: Section A Options – Swan Street to Railway Place, Cremorne

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section A – Swan Street to Railway Place									
A1	Existing Green Street	• Linemark bicycle symbols on road pavement to indicate local bicycle route.	• Awareness of bicycles by all road users. • Utilises the existing footpath.	• Bicycles do not get a separate, defined road space. • Redevelopment of Dimmeys site is likely to require access via Green Street.	75m		N/A	Existing	City of Yarra: Include green bicycle pavement and logos at Railway Place intersection.
A2	Green Street Shared Zone	• Construct a shared zone between Swan Street and Railway Place, removing on-street parking (by others).	• Low speed environment.	• Bicycles do not get a separate, defined road space. • Redevelopment of Dimmeys site is likely to require access via Green Street.	75m		• Implementation of Creating Better Places project.	Intermediate/ Medium-Term	
A3	Green Street Bicycle Lanes	• Linemark bicycle lanes on Green Street. • Remove parking on both sides of Green Street.	• Provides a defined space for bicycles.	• Redevelopment of Dimmeys site is likely to require access via Green Street.	75m		• Council agreement to remove on-street parking.	Intermediate/ Medium-Term	

Table 4: Section B Options – Rail Underpass, Cremorne

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section B – Rail Underpass, Cremorne									
B1	Improve Rail Underpass	• Improve lighting and amenity of underpass (by others). Part of proposal for Creating Better Places: East Richmond Station Precinct.	• Utilises the existing rail underpass.	• Existing ramps are not DDA compliant.	25m + 25m + 25m	Nil.	• Implementation of Creating Better Places project.	Simple/ Short-Term	City of Yarra: Widening of the rail underpass should also be included.
B2	Lengthen Underpass Ramps	• Extend the underpass ramps to ensure DDA compliance.	• Provides DDA compliant ramps for access by all users.	• Extends the existing ramps past the Green Street intersection.			• Approval to lengthen ramps within rail reserve.	Intermediate Medium-Term	
B3	Rail Overpass	• Construct an overpass over the rail reserve.	•	• Height required over rail reserve (i.e. 7.5m) requires space for the long ramps.			• Approval to build over rail reserve.	Difficult Long-Term	

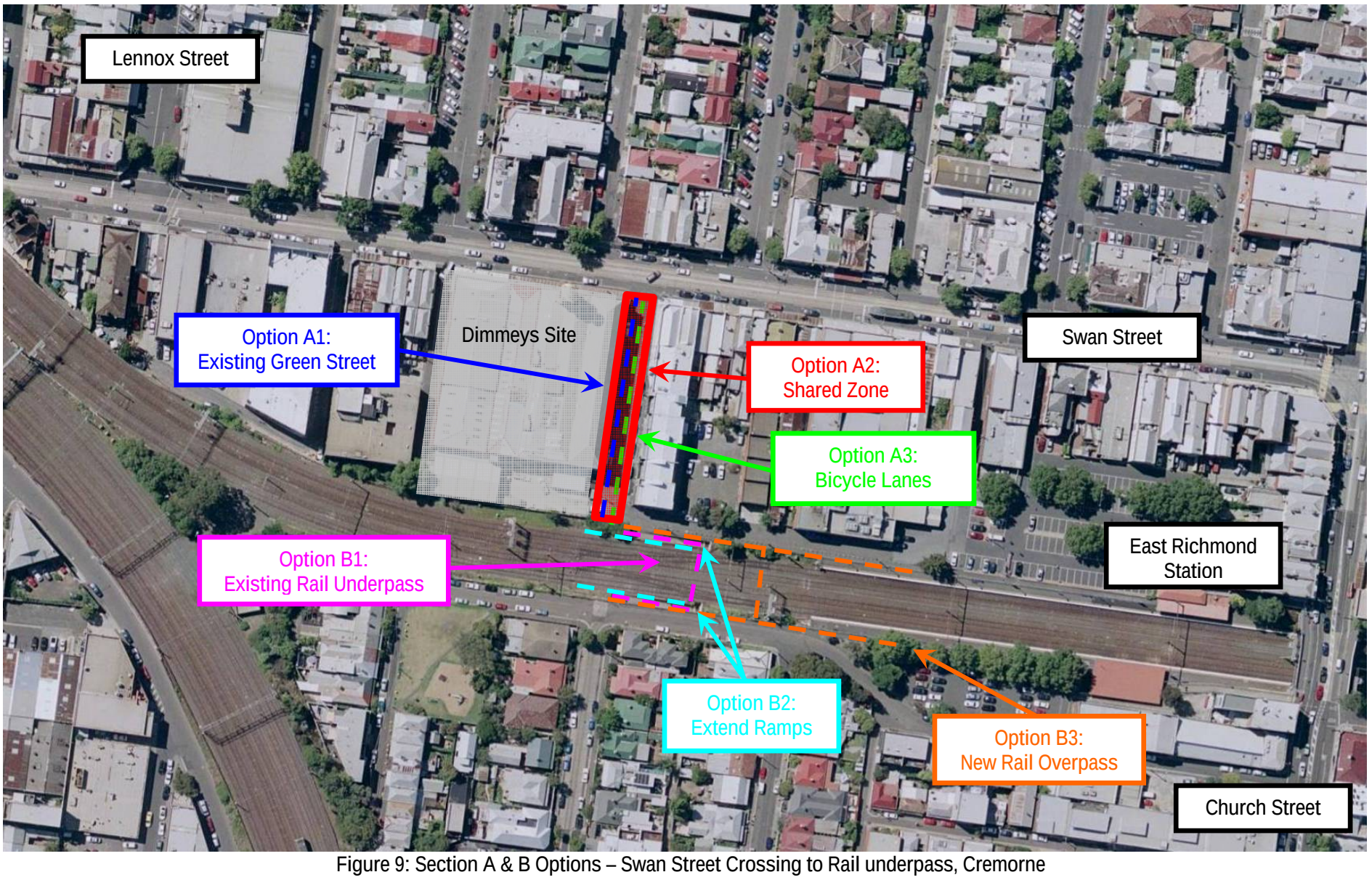


Figure 9: Section A & B Options – Swan Street Crossing to Rail underpass, Cremorne

Table 5: Section C Options – Railway Crescent to Adelaide Street, Cremorne

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section C – Railway Crescent to Adelaide Street									
C1	Railway Crescent/Green Street Raised Intersection	• Construct a raised platform at the intersection of Railway Crescent and Green Street.	• Low speed environment for bicycles and pedestrians accessing the rail underpass. • Poor road pavement at intersection and issues with street trees can be overcome.	• Some pit lids will be required to be raised.	15m		• Drainage design.	Intermediate Short-Term	City of Yarra: Include green bicycle pavement and logos at Railway Place intersection.
C2	Existing Green Street (Railway Crescent to Adelaide Street)	• Linemark bicycle symbols on road pavement to indicate local bicycle route. • Construct contra-flow entry points at Railway Crescent and Dunn Street/Chapel Street for southbound cyclists. • Construct a contra-flow exit point at Dunn Street/Chapel Street and Adelaide Street to delineate road space for southbound cyclists.	• Awareness of bicycles by all road users. • Utilises the existing footpath.	• Bicycles do not get a separate, defined road space.	250m		Nil.	Simple/ Short-Term	
C3	Green Street Bicycle Lanes (Railway Crescent to Dunn street/Chapel Street)	• Remove parking on east side of Green Street (10 spaces). • Linemark southbound bicycle lane. • Construct a contra-flow entry point at Railway Crescent for southbound cyclists. • Construct a contra-flow exit point at Dunn Street/Chapel Street to delineate road space for southbound cyclists.	• Provides wider road space for bicycles to mix with vehicles, particularly southbound bicycles.	• Indented spaces will be closer to the property boundary.	70m		• Approval from Council to remove parking spaces.	Intermediate/ Short-Term	
C4	Green Street Bicycle Lanes (Dunn Street/Chapel Street to threshold treatment)	• Indent parking on west side of Green Street between Dunn Street/Chapel Street and threshold treatment (12 spaces). • Modify threshold treatment. • Linemark southbound bicycle lane. • Construct a contra-flow entry point at Dunn Street/Chapel Street for southbound cyclists.	• Provides wider road space for bicycles to mix with vehicles, particularly southbound bicycles.	• Indented spaces will be closer to the property boundary.	95m		• Approval from Council to indent parking spaces.	Intermediate/ Medium-Term	
C5	Green Street Bicycle Lanes (threshold treatment to Adelaide Street)	• Remove parking on west side of Green Street between threshold treatment and Adelaide Street (10 spaces). • Linemark southbound bicycle lane. • Construct a contra-flow exit point at Adelaide Street to delineate road space for southbound cyclists.	• Provides wider road space for bicycles to mix with vehicles, particularly southbound bicycles.	• Removal of parking may affect some residents, although residents adjacent to parking to be removed generally have off-street parking.	70m		• Approval from Council to remove parking spaces.	Intermediate/ Short-Term	

Table 6: Section D Options – Adelaide Street to Balmain Street, Cremorne

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section D – Adelaide Street to Balmain Street									
D1	Existing Green Street	• Linemark bicycle symbols on road pavement to indicate local bicycle route.	• Does not adversely affect adjacent businesses.	• Bicycles do not get a separate, defined road space.	155m		Nil.	Simple/ Short-Term	
D2	Green Street Bicycle Lanes	• Remove parking on east side of Green Street. • Change operation of Green Street (Adelaide Street to Balmain Street) to one-way). • Linemark bicycle lanes on Green Street.	• Provides bicycles with separate bicycle lanes. • Utilises existing footpaths for pedestrians.	• Adjacent businesses are mainly car related and use the on-street parking extensively. • Adjacent businesses would be affected by the removal of some on-street parking.	155m		• Approval of Council and adjacent businesses to remove parking.	Intermediate/ Medium-Term	

Figure 10: Section C & D Options – Railway Crescent to Balmain Street, Cremorne

Table 7: Section E Options – Balmain Street Crossing, Cremorne

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section E – Balmain Street Crossing									
E1	Existing Green Street/ Balmain Street Intersection	• Retain existing intersection	•	• Alignment of Balmain Street through the Green Street intersection is poor.	-		•		City of Yarra: Include green bicycle pavement and logos at Balmain Street intersection.
E2	Change Priority at Green Street/ Balmain Street Intersection	• Change intersection to give Green Street priority over Balmain Street (linemarking only).	• Poor Sight lines from Green Street south approach to oncoming traffic from west would be addressed.	• Alignment of Balmain Street through the Green Street intersection is poor and linemarking may not delineate appropriately.	-		• Approval from Council.	Simple/ Short-term	City of Yarra: Council would prefer that the kerb extensions be built (as per Option E3) rather than painted in the short-term.
E3	Change Priority and Kerb Extensions at Green Street/ Balmain Street Intersection	• Change intersection to give Green Street priority over Balmain. • Construct kerb extensions in Balmain Street to delineate intersection.	• Poor Sight lines from Green Street south approach to oncoming traffic from west would be addressed. • Intersection could be raised at a later date, if required.	• Possible drainage design issues.	-		• Approval from Council. • Drainage design.	Intermediate/ Short to Medium-term	
E4	Green Street/ Balmain Street Raised Intersection	• Construct a raised intersection treatment.	• Reduces speed in this section of Balmain Street.	• Alignment of Balmain Street through the Green Street intersection is poor.	-		• Approval from Council. • Drainage design.	Intermediate/ Medium-term	
E5	Balmain Street Crossing Point	• Construct a crossing point for bicycles and pedestrians.	•	• Alignment of Balmain Street through the Green Street intersection is poor. • The bicycle treatments in Green Street are proposed to be on-road.	-		• Approval from VicRoads for pedestrian crossing.	Intermediate/ Medium-term	

Table 8: Section F Options – Balmain Street to CityLink, Cremorne

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section F – Balmain Street to CityLink									
F1	Existing Green Street	• Linemark bicycle symbols on road pavement to indicate local bicycle route.	• Retains on-street parking.	• Bicycles do not get a separate, defined road space.	180m		Nil.	Simple/ Existing	
F2	Oddys Lane	• Remove parking on west side of Oddys lane to provide road width for bicycles to share road space. (could mostly be replaced after Option G2 is constructed)	• Short-term solution until ramp is built, when parking can be re-instated.	• Bicycles do not get a separate, defined road space. • Removal of parking for employees.	120m		• Approval from Council to remove parking spaces.	Intermediate/ Short-term	
F3	Oddys Lane & Electric Street (Oddys Lane to Green Street)	• Construct separated bicycle path on west side of Oddys Lane and north side of Electric Street (to link to new ramp – Option G2). • Remove on-street parking on west side of Oddys Lane (north of ramp) and north side of Electric Street. • Provide on-street parking on west side of Oddys Lane south of the new ramp.	• Reinstates parking on west side south of ramp.	• Removes on-street parking at north end of Oddys Lane and on Electric Street.	140m		• Approval from Council to remove parking spaces.	Intermediate/ Long-term	

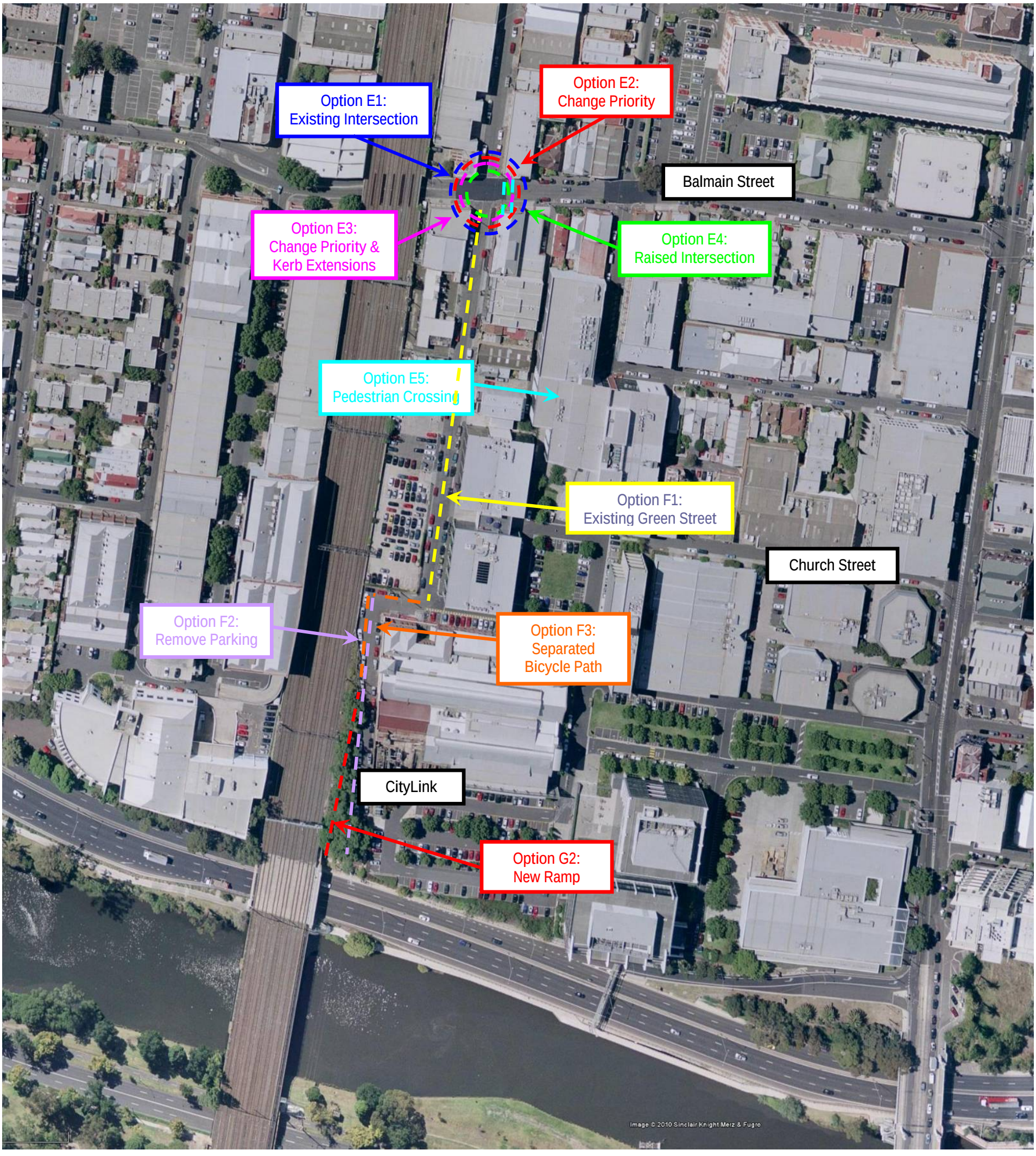


Figure 11: Section E & F Options – Balmain Street to CityLink, Cremorne

Table 9: Section G Options – CityLink, Cremorne to Alexandra Avenue, South Yarra

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section G – CityLink to Alexandra Avenue									
G1	Existing Stairs to Oddys Lane.	• Install metal ramp sections on existing concrete stairs to aid cyclists traversing stairs.	• Provides higher level of access than the existing stairs. • Retains existing on-street parking spaces.	• Restricted access for families with trailers or child seats on the bicycle, tandems, recumbents and anyone unable to carry their bike up or down the stairs.	20m	$20,000		Simple/ Short-term	
G2	New Ramp to Oddys Lane.	• Construct a new ramp utilising the sloping treed area between the rail reserve and Oddys Lane.	• Provides access for all users. • Retains existing on-street parking spaces. • Opportunity for architectural landscaping to enhance the area.	• Removal of some trees.	100m	$800,000	• Determination of land ownership. • Removal of trees. • Planting of replacement trees.	Intermediate/ Medium-term	City of Yarra: New ramps to be DDA compliant.
G3	Existing Bridge across CityLink & Yarra River	• Utilise existing pedestrian bridge (1.6m wide).	• No additional works.	• Not wide enough for two-way shared path.	135m	N/A	N/A	Existing	
G4	New Bicycle Bridge across CityLink & Yarra River.	• Construct a bicycle bridge adjacent to existing pedestrian bridge.	• Provides a separate facility for cyclists and pedestrians. • Opportunity for architectural landscaping to enhance the amenity of the bridge structure.	• Conflict points between pedestrian and cyclists at access to the stairs or ramps.	135m	$3,300,000	• CityLink approval to work overhead. • A heritage overlay (H0122) exists over area.	Difficult/ Medium-term	City of Yarra: New bicycle bridge to be DDA compliant.
G5	Existing Stairs at Main Yarra Trail.	• Utilise existing stairs at Main Yarra Trail (north side of Yarra River, adjacent to CityLink) – stairs have existing metal ramps.	• No additional works.	• Restricted access for families with trailers or child seats on the bicycle, tandems, recumbents and anyone unable to carry their bike up or down the stairs.	N/A	N/A	N/A	Existing	
G6	New Ramp at Main Yarra Trail.	• Construct a new ramp to the Main Yarra Trail (north side of Yarra River, adjacent to CityLink).	• Provides access for all users. • Opportunity for architectural landscaping to enhance the area.	• Restricted space between CityLink, Yarra River and Main Yarra Trail.	100m	$800,000	• Removal of trees. • Planting of replacement trees.	Difficult/ Medium-term	City of Yarra: New ramps to be DDA compliant.
G7	Existing Stairs at Capital City Trail.	• Utilise existing stairs at Capital City Trail (south side of Yarra River) – stairs have existing metal ramps.	• No additional works.	• Restricted access for families with trailers or child seats on the bicycle, tandems, recumbents and anyone unable to carry their bike up or down the stairs.	N/A	N/A	N/A	Existing	
G8	New Ramp at Capital City Trail.	• Construct a new ramp to the Capital City Trail (south side of Yarra River).	• Provides access for all users. • Opportunity for architectural landscaping in line with Forrest Hill Precinct Master Plan.	• Loss of parkland.	100m	$700,000		Intermediate/ Medium-term	City of Yarra: New ramps to be DDA compliant.
G9	Existing Stairs to Alexandra Avenue/ Yarra Street.	• Install metal ramp sections on existing concrete stairs to aid cyclists traversing stairs.	• Provides higher level of access than existing.	• Restricted access for families with trailers or child seats on the bicycle, tandems, recumbents and anyone unable to carry their bike up or down the stairs.	20m	$20,000	• A heritage overlay (H0122) exists over area.	Simple/ Short-term	
G10	New Ramp to Alexandra Avenue/Yarra Street.	• Construct a new ramp utilising the sloping treed-area between the rail reserve and Yarra Street.	• Provides access for all users. • Use rail reserve to separate bicycles and traffic. • Opportunity for architectural landscaping in line with Forrest Hill Precinct Master Plan.	• Removal of some trees. • Excavation into slope.	100m	$700,000	• Determination of land ownership. • Removal of trees. • Planting of replacement trees.	Intermediate/ Medium-term	City of Yarra: New ramps to be DDA compliant.
G11	Signalised Intersection at Alexandra Avenue/ Yarra Street.	• Signalise the intersection of Alexandra Avenue and Yarra Street. • Proposed as part of Melbourne High School Master Plan.	• Provides at grade crossing point.	• Delays due to crossing traffic on Alexandra Avenue. • Potential sight line issues to signals due to bridge structure. • Extensive infrastructure work may be required.	N/A	By others	• Melbourne High School Master Plan development. • VicRoads approval of signals.	Intermediate/ Medium-term	

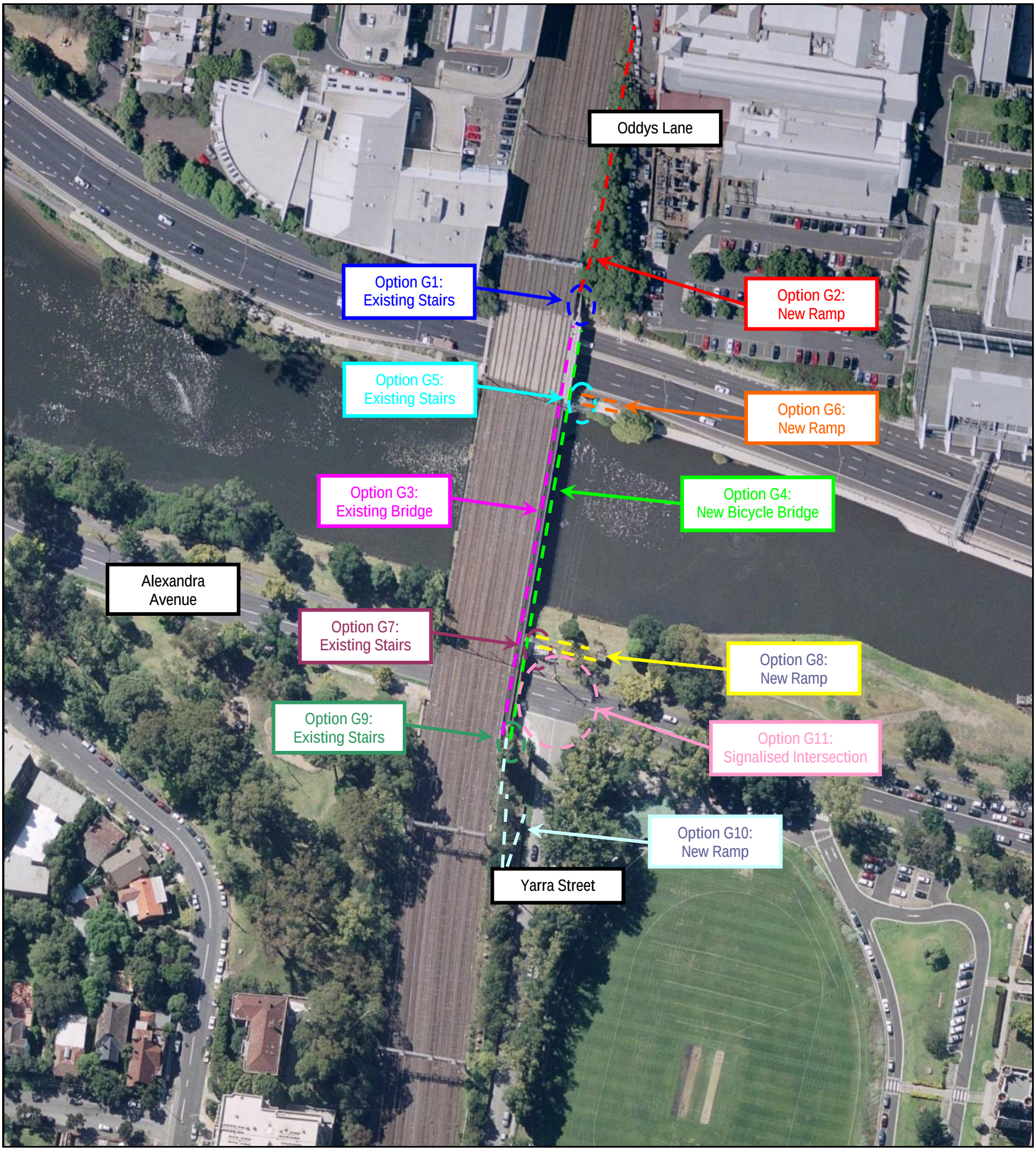


Figure 12: Section G Options – CityLink, Cremorne to Alexandra Avenue, South Yarra

Table 10: Section H Options – Alexandra Avenue to Toorak Road, South Yarra

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section H – Alexandra Avenue to Toorak Road									
H1	Existing Yarra Street.	• Bicycles to utilise road and pedestrians to utilise footpath (east side) in Yarra Street. • Footpaths to be widened as part of Forrest Hill Precinct Master Plan.	• Utilises the widened footpath developed in Forrest Hill Precinct Master Plan. • Pedestrians and bicycles separated.	• Bicycles do not get a separate, defined road space. • Limited road space due to rail wall on west side of Yarra Street.	550m	N/A	N/A	Existing	
H2	Shared Path in Yarra Street (west side).	• Construct a shared path on the west side of Yarra Street on the existing road space. • Remove on-street parking or change Yarra Street to one-way operation (undertake traffic study to determine impact of one-way operation).	• Separate facility for pedestrians and cyclists.	• On-street parking to be removed. or • One-way operation of Yarra Street may not be appropriate – traffic study to be undertaken to determine.	550m	$1,200,000	• Agreement to remove parking or change to one way operation. • Traffic study. • A heritage overlay H0122 exists over the north end of Yarra St and H0150 over the south end.	Intermediate/ Medium-term	
H3	Bicycle Path in Yarra Street (west side).	• Construct a bicycle path or Copenhagen style path on the west side of Yarra Street on the existing road space. • Remove on-street parking or change Yarra Street to one-way operation (undertake traffic study to determine impact of one-way operation). • Pedestrians to use footpath on east side.	• Separate facility for cyclists. • Utilises the widened footpath developed in Forrest Hill Precinct Master Plan. • Keeps pedestrians on same side of street as commercial properties (active frontages).	• On-street parking to be removed. or • One-way operation of Yarra Street may not be appropriate – traffic study to be undertaken to determine.	550m	$1,200,000	• Agreement to remove parking or change to one way operation. • A heritage overlay H0122 exists over the north end of Yarra St and H0150 over the south end.	Intermediate/ Medium-term	
H4	Shared Path in Darling Street & Darling Gardens.	• Construct a shared path on the east side of Darling Street and through Darling Gardens. • Access to bridge over Yarra River and CityLink via footpath under bridge (south side).	• Separate facility for pedestrians and cyclists.	• Approximately 23 driveways (conflict points) to properties on the east side of Darling Street. • Relatively steep hill in Darling Street. • Access to the bridge over the Yarra River and CityLink.	450m Darling St + 120m Darling Gardens	$1,200,000	• A heritage overlay H0122 exists over the north end of Darling St.	Intermediate/ Medium-term	
H5	Bicycle Path in Darling Street & Darling Gardens.	• Construct a bicycle only path or Copenhagen style path on the east side of Darling Street. • Construct shared path through Darling Gardens. • Access to bridge over Yarra River and CityLink via footpath under bridge (south side).	• Separate facility for cyclists. • Pedestrians utilise the existing footpath.	• Approximately 23 driveways (conflict points) to properties on the east side of Darling Street. • Access to the bridge over the Yarra River and CityLink.	450m Darling St + 120m Darling Gardens	$1,200,000	• A heritage overlay H0122 exists over the north end of Darling St.	Intermediate/ Medium-term	
H6 H6A	Shared Path on west side of rail reserve.	• Construct a shared path on the west side of the rail reserve, behind the Darling Street properties. • Construct shared zone in Station Street, between rail reserve and Darling Street. • Construct shared path on east side of Darling Street, between Station Street and Toorak Road. or • Access between rail reserve and Toorak Road through building owned by VicTrack.	• Separate facility for pedestrians and cyclists. • Opportunity for architectural landscaping in line with Forrest Hill Precinct Master Plan.	• Removal of approx. 3No. 1P on-street parking spaces and loading zone for shared path in Darling Street. • This section of Station Street primarily provides access to approx. 17No. parking spaces. • Loss of vegetation.	500m rail reserve + 45m Station St + 45m Darling St	$5,000,000 Unknown cost	• VicTrack approval to utilise rail reserve. • VicRoads approval required for shared zone and access through building. • Agreement to remove parking. • Removal of trees. • Planting of replacement trees. • A heritage overlay H0122 exists over the north end of Darling St and H0106 over the VicTrack building.	Intermediate/ Long-term	
H7	Elevated Shared Path in Yarra Street (west side).	• Construct an elevated shared path linking to the bridge over Alexandra Avenue (Section A). • Shared path to link to South Yarra Station. • Possibility to incorporate into future airspace development over South Yarra Station and rail corridor.	• Shared path can be provided without removing on-street parking or changing Yarra Street to one-way operation and with limited conflict points. • Opportunity for architectural landscaping and public art in line with Forrest Hill Precinct Master Plan.	• Access to and from the path is required at various locations along the elevated path to street level. • A link through South Yarra Station has considerable constraints.	550m	$5,300,000	• VicTrack approval to utilise rail reserve. • Development of air space over South Yarra Station. • Exact location of link through South Yarra Station to be determined.	Difficult/ Long-term	

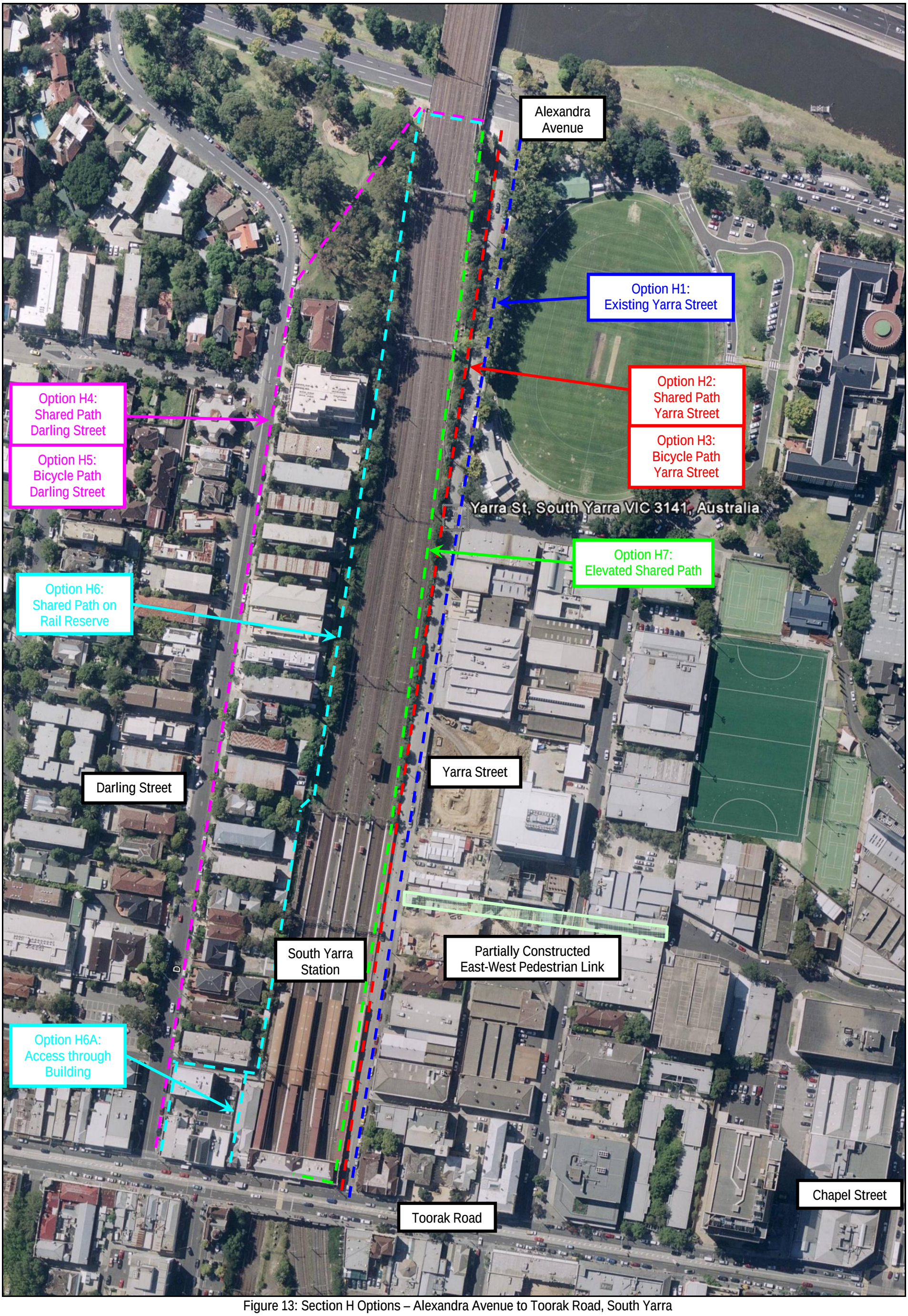


Figure 13: Section H Options – Alexandra Avenue to Toorak Road, South Yarra

Table 11: Section I Options – Toorak Road Crossing

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section I – Toorak Road Crossing									
I1	Widen Existing Pedestrian Crossing.	• Widen the existing pedestrian crossing at South Yarra Station.	• Minimal additional works.	• Bicycles have to mix with pedestrians at a very congested location to cross Toorak Road.	15m	$100,000	• Relocation of pedestals.	Simple/ Short-term	
I2	New Tram Platform Stop* Pedestrian Crossings.	• Utilise either of the two pedestrian crossing associated with the options proposed for a tram platform stop.*	• The proposed pedestrian crossings are better aligned with the proposed bicycle corridor.	• Bicycles have to mix with pedestrians to cross Toorak Road. • Issues associated with the proposed tram platform stop may not be resolved.	15m each	$400,000 each (may be funded by others)	• Construction of the tram platform stop. • Agreement to remove parking. • VicRoads approval of pedestrian crossing.	Intermediate/ Medium-term	
I3	New Pedestrian Crossing.	• Construct a new pedestrian crossing at either Yarra Street or Darling Street, linked to the existing pedestrian crossing.	• The new pedestrian crossing would be aligned with the proposed bicycle corridor. • A separate location from South Yarra Station will move cyclists away from most pedestrians.	• Possible delays to trams on Toorak Road. • Close proximity of new crossing to existing crossing. • Removal of on-street parking in Toorak Road.	15m	$400,000	• Agreement to remove parking. • VicRoads approval of pedestrian crossing.	Difficult/ Medium-term	
I4	Elevated Path.	• Construct an elevated shared path over Toorak Road. • Provide access to South Yarra Station and Toorak Road (lift). • Possibility to incorporate into future development over South Yarra Station.	• No conflict between pedestrians and bicycles on the shared path and vehicles and trams on Toorak Road. • Opportunity for architectural landscaping in line with Forrest Hill Precinct Master Plan.	• Access to South Yarra Station and Toorak Road via lift, stairs or similar only. • Significant vertical level difference.	35m	$700,000 (excluding lifts)	• VicTrack approval to utilise rail reserve. • Development of air space over South Yarra Station. • A heritage overlay H0150 exists over the area.	Difficult/ Long-term	
I5	'Cantilevered' Shared Path.	• Construct a shared path to the south of the existing Toorak Road bridge. • Proposed as part of bridge widening for tram platform stop.*	• Pedestrians and bicycles on the shared path and Toorak Road footpath to bypass tram passengers waiting on the existing footpath. • Opportunity for architectural landscaping in line with Forrest Hill Precinct Master Plan. • Links shared path to 'Lovers' Walk' (path on east side of Frankston/Dandenong rail reserve).	• Minor deviation for pedestrians on Toorak Road.	55m	$900,000 (potential funding contribution by others)	• VicTrack approval to utilise rail reserve. • Development of air space over South Yarra Station (south side). • A heritage overlay H0150 exists over the area and H0107 exists on the south side of Toorak Road.	Difficult/ Medium-term	

* The proposed tram platform stop at South Yarra Station is currently on hold due to constraints associated with Clearways and removal of on-street parking.

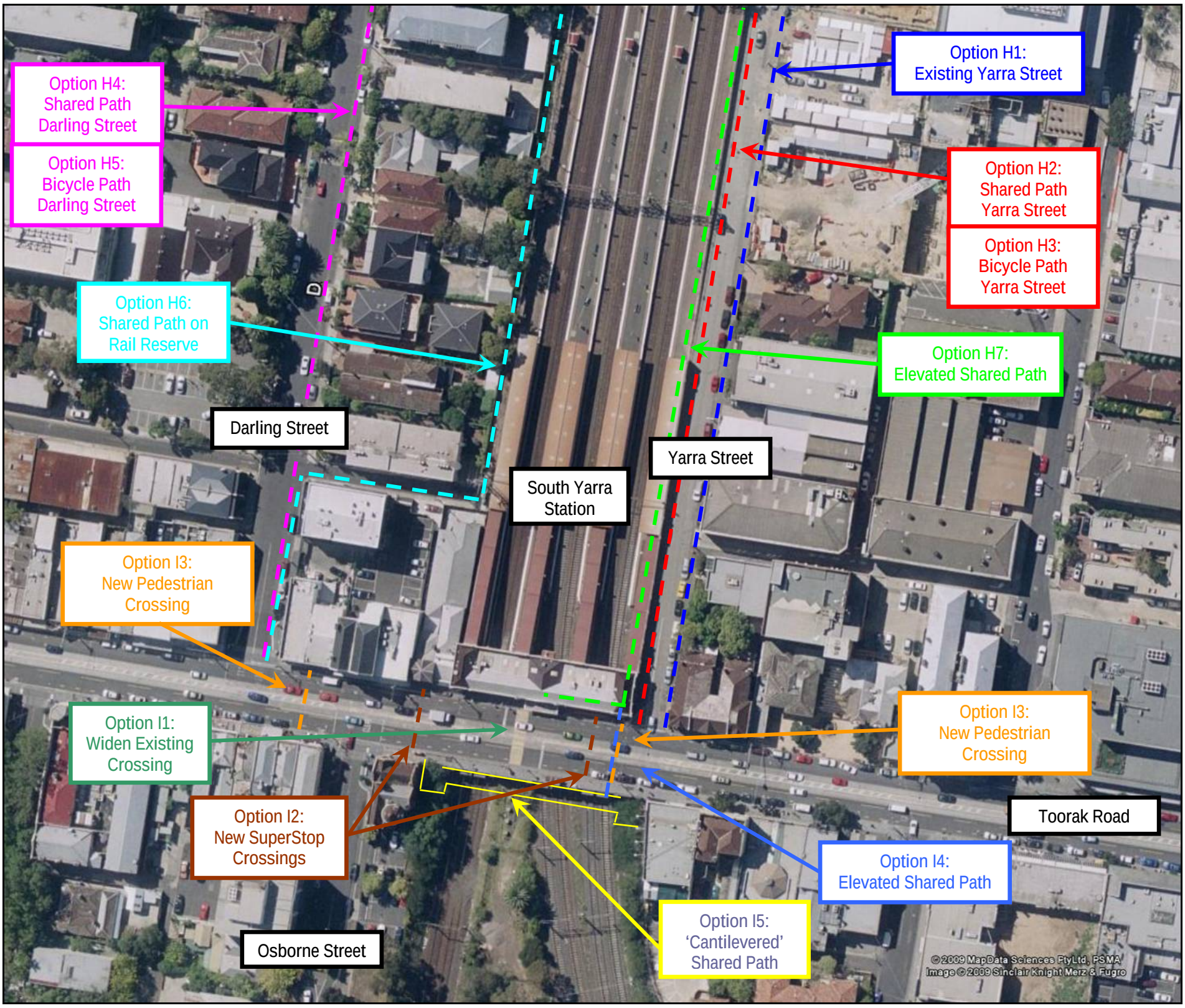


Figure 14: Section I Options – Toorak Road Crossing, South Yarra

Table 12: Section J Options – Toorak Road to Arthur Street, South Yarra

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section J – Toorak Road to Arthur Street									
J1	Elevated Shared Path & Ramp to South Yarra Sidings Reserve.	• Construct an elevated shared path from the proposed 'Cantilevered' shared path at Toorak Road to the South Yarra Sidings Reserve (Crown land). • Construct ramp to lower level of South Yarra Sidings Reserve. • Possibility to incorporate into future air space development over South Yarra Station and rail corridor.	• Provides a link to the South Yarra Sidings Reserve from the Forrest Hill Precinct in line with Council's Master Plan (i.e. residents of apartments in precinct will have access to open space). • Provides access to an underutilised area.	• Does not link to Osborne Street (many people were observed walking along the path in Osborne Street).	200m	$2,400,000	• VicTrack approval to utilise rail air space. • Development of air space over South Yarra Station. • A heritage overlay H0150 exists over the area.	Difficult/ Long-term	
J2	Elevated Shared Path to Osborne Street.	• Construct an elevated shared path from the 'Cantilevered' shared path at Toorak Road to the Osborne Street Reserve. • Possibility to incorporate into future air space development over South Yarra Station and rail corridor.	• Provides a link to Osborne Street Reserve away from the congested Toorak Road footpath. • Can be constructed in conjunction with Option D1.	• Loss of parkland.	35m	$400,000 (if built in conjunction with or after Option D1)	• VicTrack approval to utilise rail air space and reserve. • Development of air space over South Yarra Station. • A heritage overlay H0150 exists over the area.	Difficult/ Long-term	
J3	Widen Osborne Street Reserve Path.	• Widen footpath between Toorak Road and Osborne Street Reserve (east side). • Widen the path along Osborne Street Reserve to provide a shared path.	• Utilises an existing route (many people were observed walking along the path in Osborne Street).	• Removal of approx. 3No. 1P on-street parking spaces. • Power poles located in footpath. • Footpath crosses 2No. crossovers. • Relocate or re-level water pits.	45m footpath widening + 210m path widening	$1,400,000 (includes allowance for service relocation)	• Agreement to remove parking. • VicTrack approval to utilise rail reserve (east side of existing path). • Relocation of water pits along east side of path. • A heritage overlay H0150 exists over the area.	Intermediate/ Medium-term	
J4	'Cantilevered' Shared Path	• Construct a shared path adjacent to the properties at the west end of Arthur Street to link from South Yarra Sidings Reserve to Portland Place.	• Provides an additional link to South Yarra Sidings Reserve. • Does not require land acquisition from adjacent properties (as identified in the Draft Public Realm strategy).	• Loss of vegetation. • Slope within rail reserve.	50m	$800,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees. • A heritage overlay H0150 exists over the area.	Intermediate/ Long-term	
J5	Duplicate Arthur Street Rail Bridge.	• Construct a new bridge across the rail reserve at Arthur Street adjacent to the existing bridge (1.9m wide).	• Provides for two-way shared path flow across the rail reserve.		25m	$2,100,000	• VicTrack approval to utilise rail reserve.	Difficult/ Medium-term	
J6	Existing Lovers' Walk, William Street and Arthur Street	• Utilise the existing shared path on the north-east side of the rail reserve between Toorak Road and William Street, known as Lovers' Walk. • Bicycles to utilise road and pedestrians to utilise footpath in William Street and Arthur Street.	• Utilises the existing shared path and footpath.	• Bicycles do not get a separate, defined road space in William Street and Arthur Street. • Bend at intersection of Arthur Street and Portland Place has poor sight lines to oncoming traffic.	155m + 110m + 100m	N/A	N/A	Existing	

Figure 15: Section J Options – Toorak Road to Arthur Street, South Yarra

Table 13: Section K Options – Arthur Street to Argo Street, South Yarra

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section K – Arthur Street to Argo Street									
K1	Existing Portland Place	• Bicycles to utilise road and pedestrians to utilise footpath (east side) in Portland Place. • Resurface existing pedestrian laneway between Cliff Street and Grosvenor Street.	• Utilises the existing footpath.	• Bicycles do not get a separate, defined road space.	250m + 85m pedestrian laneway	$20,000	N/A	Simple/ Existing – Short-term	
K2	Shared Path Rail Reserve West	• Continue widening of Osborne Street Reserve path to Fawkner Street. • Construct a shared path on the west side of the rail reserve behind Osborne Street properties, between Fawkner Street and Argo Street.	• Separate facility for pedestrians and cyclists.	• Loss of vegetation. • Passive surveillance is limited.	105m path widening + 225m shared path	$2,500,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees.	Difficult/ Medium-term	
K3	Shared Path Portland Place	• Construct a shared path on the west side of Portland Place on the existing road space and verge/rail reserve. or • Construct a shared path on the west side of Portland Place on the existing road space and remove on-street parking or change Portland Place to one-way operation. • Resurface existing pedestrian laneway between Cliff Street and Grosvenor Street.	• Separate facility for pedestrians and cyclists.	• Loss of vegetation. • Slope of rail reserve. • On-street parking to be removed. • One-way operation of Portland Place may not be appropriate.	250m on-street + 85m pedestrian laneway	$1,300,000	• Agreement to remove parking or change to one way operation. • VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees. • A heritage overlay H0145 exists over the path only section of Portland Place.	Intermediate/ Medium-term	
K4	Existing Osborne Street	• Bicycles to utilise road and pedestrians to utilise footpath (east side) in Osborne Street.	• Utilises the existing footpath.	• Bicycles do not get a separate, defined road space.	330m	N/A	N/A	Existing	
K5	Shared Path Osborne Street	• Continue widening of Osborne Street Reserve path to Fawkner Street. • Construct a shared path on the east side of Osborne Street on the existing road space. • Remove on-street parking or change Osborne Street to one-way operation.	• Separate facility for pedestrians and cyclists.	• On-street parking to be removed. or • One-way operation of Osborne Street may not be appropriate.	110m widened path + 215m on-street	$700,000	• Agreement to remove parking or change to one way operation.	Intermediate/ Medium-term	
K6	Argo Street Pedestrian 'Wombat' Crossing	• Construct a pedestrian crossing (zebra) across Argo Street, at either the west or east end of the rail bridge.	• Provides a safe crossing point. • Bicycle can cross without dismounting.	• Sight lines to the pedestrian crossing to be considered due to vertical alignment of rail bridge.	10m	$210,000	• VicRoads approval of pedestrian crossing.	Simple – Intermediate/ Medium-term	

Figure 16: Section K Options – Arthur Street to Argo Street, South Yarra

Table 14: Section L Options – Argo Street to Commercial Road, South Yarra

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section L – Argo Street to Commercial Road									
L1	Existing Balmoral Street.	• Bicycles to utilise road and pedestrians to utilise footpath (east side) in Balmoral Street.	• Utilises the existing footpath.	• Bicycles do not get a separate, defined road space.	225m	N/A	N/A	Existing	
L2	Shared Path Rail Reserve West.	• Construct a shared path on the west side of the rail reserve behind the Osborne Street properties, between Argo Street and Commercial Road.	• Separate facility for pedestrians and cyclists.	• Loss of vegetation. • Slope of rail reserve. • Limited passive surveillance.	225m	$2,200,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees.	Difficult/ Medium-term	
L3	Shared Path Balmoral Street.	• Construct a shared path on the west side of Balmoral Street on the existing road space and verge/rail reserve. or • Construct a shared path on the west side of Balmoral Street on the existing road space and remove on-street parking or change Balmoral Street to one-way operation.	• Separate facility for pedestrians and cyclists.	• Loss of vegetation. • Slope of rail reserve. • On-street parking to be removed. • One-way operation of Balmoral Street may not be appropriate.	100m north of Percy St + 125m south	$1,500,000	• Agreement to remove parking or change to one way operation. • Removal of trees. • Planting of replacement trees.	Intermediate/ Medium-term	
L4	Existing Osborne Street.	• Bicycles to utilise road and pedestrians to utilise footpath (east side) in Osborne Street. • Linemark a contra-flow bicycle lane at entry points to Osborne Street.	• Utilises the existing footpath. • Cyclists are able to travel northbound.	• Bicycles do not get a separate, defined road space.	225m	$10,000		Simple/ Short-term	
L5	Shared Path Osborne Street	• Construct a shared path on the east side of Osborne Street on the existing road space.	• Separate facility for pedestrians and cyclists. • Enough width in existing road space to accommodate shared path. • Very few crossovers on east side.	• Narrow traffic and parking lane widths.	225m	$300,000		Intermediate/ Medium-term	

Figure 17: Section L Options – Argo Street to Commercial Road, South Yarra

Table 15: Section M Options – Commercial Road Crossing, Prahran

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty/ Timeframe	Stakeholder Comments
Section M – Commercial Road Crossing									
M1	Existing Signalised Intersection	• Utilise existing signalised intersection of Commercial Road/Balmoral Street/Porter Street.	• No works required. • Links to existing footpath on Balmoral Street and Porter Street.	• Narrow footpaths adjacent to existing crossing. • Pedestrians and cyclists would have to cross Balmoral Street and Porter Street to access pedestrian crossing for shared path options.	15m	N/A	N/A	Existing	
M2	Additional Crossing at Signalised Intersection	• Install an additional crossing of Commercial Road on the west side at the Balmoral Street/Porter Street signalised intersection.	• Links to proposed shared path options on Balmoral Street and Porter Street.	• Narrow footpaths adjacent to existing crossing.	15m	$60,000	• Relocation of hold line and tram stop. • Minor traffic signal works. • VicRoads approval of additional crossing point.	Simple/ Short-term	
M3	New Pedestrian Crossing	• Construct a new pedestrian crossing across Commercial Road to the west of the rail reserve.	• Links to proposed shared path options on Osborne Street. • New crossing could be located with future tram platform stop (if location is appropriate).	• Crossing would be located close to existing signalised intersection.	15m	$400,000	• Future construction of the tram platform stop. • VicRoads approval of pedestrian crossing.	Intermediate/ Medium-term	
M4	Commercial Road Underpass	• Investigate options to provide a pedestrian and bicycle underpass adjacent to the rail bridge.	• Pedestrians and bicycles do not conflict with Commercial Road traffic and trams.	• Ramps up to street level would be required. • Structural changes required to rail bridge may be prohibitive.	25m	$6,900,000	• VicTrack approval to utilise rail reserve.	Difficult/ Long-term	

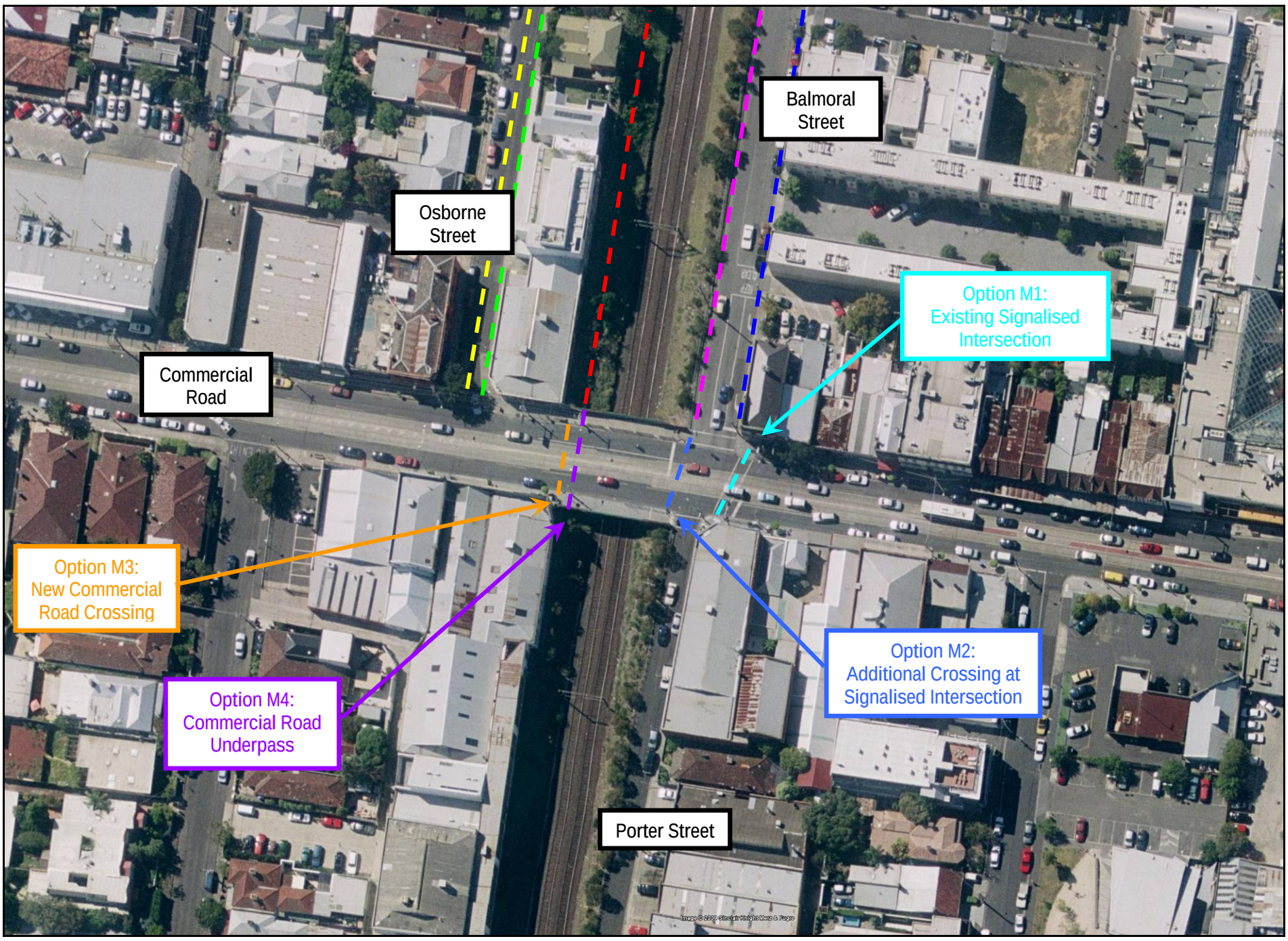


Figure 18: Section M Options – Commercial Road Crossing, Prahran

Table 16: Section N Options – Commercial Road to Greville Street, Prahran

Option	Option Description	Scope	Advantages	Disadvantages	Length	Approx. Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section N – Commercial Road to Greville Street									
N1	Existing Porter Street	• Bicycles to utilise road and pedestrians to utilise footpath (east side) in Porter Street. • Construct contra-flow entry at Greville Street.	• Utilises the existing footpath.	• Bicycles do not get a separate, defined road space.	290m	$20,000	•	Existing – Simple/ Short-term	
N2	Shared Path Rail Reserve West.	• Construct a shared path on the west side of the rail reserve behind Thomas Place and Charles Street properties, between Commercial Road and Greville Street.	• Separate facility for pedestrians and cyclists. • Opportunity for redevelopment of sites on west side of rail reserve to incorporate shared path.	• Loss of vegetation. • Slope of rail reserve. • Limited passive surveillance. • Long length of isolated shared path without access points, only access option is at Thomas Place (east-west section). • Some buildings along the west side of the rail reserve have been built on the rail reserve in the past, this would need to be resolved through future development in order for this option to be viable.	290m	$2,900,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees. • Resolution of rail reserve boundary. • A heritage overlay H0126 exists over the Greville Street precinct.	Difficult/ Medium-term	
N3	Shared Path Porter Street.	• Construct a shared path on the west side of Porter Street verge.	• Separate facility for pedestrians and cyclists.	• Loss of vegetation. • Slope of rail reserve.	290m	$2,800,000	• Agreement to remove vegetation in verge. • Removal of trees. • Planting of replacement trees. • A heritage overlay H0126 exists over the Greville Street precinct.	Intermediate/ Medium-term	
N4	New Greville Street Crossing (East)	• Construct a pedestrian crossing on the east side of the rail level crossing.	• Links to proposed shared path options in Porter Street.	• Close proximity to rail level crossing – cars may store on rail line while waiting at pedestrian crossing. • Cost of linking signals to rail level crossing.	10m	$1,100,000	• VicRoads approval of pedestrian crossing. • A heritage overlay H0126 exists over the Greville Street precinct.	Intermediate/ Medium-term	
N5	New Greville Street Crossing (West)	• Construct a pedestrian crossing on the west side of the rail level crossing.	• Links to existing and proposed shared path options on west side of rail reserve.	• Close proximity to rail level crossing – cars may store on rail line while waiting at pedestrian crossing. • Cost of linking signals to rail level crossing.	10m	$1,100,000	• VicRoads approval of pedestrian crossing. • A heritage overlay H0126 exists over the Greville Street precinct.	Intermediate/ Medium-term	

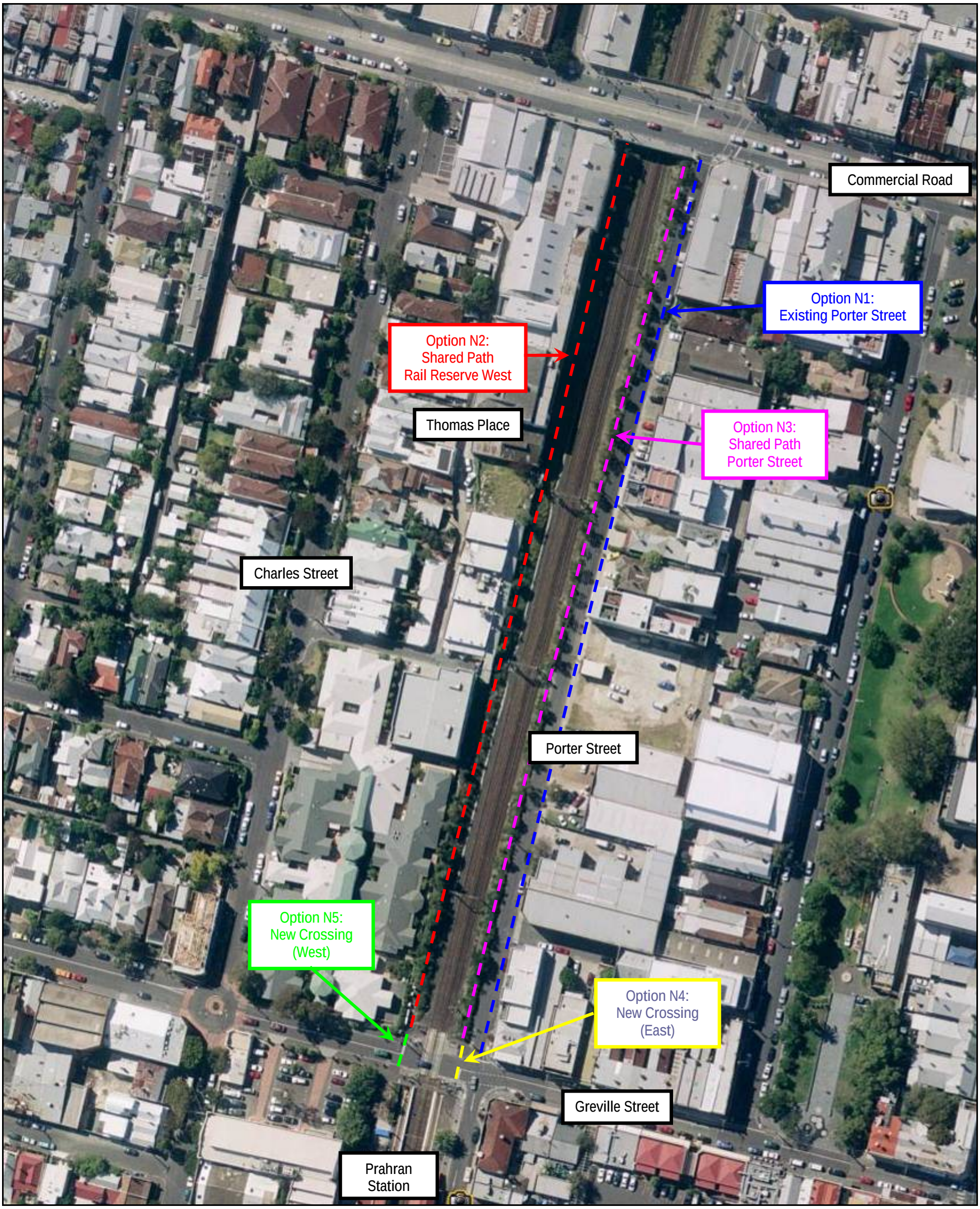


Figure 19: Section N Options – Commercial Road to Greville Street, Prahran

Table 17: Section O Options – Greville Street to High Street, Prahran

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section O – Greville Street to High Street									
O1	Existing Shared Path	• Upgrade the existing shared path on the west side of the rail reserve, accessing Prahran Station (lighting, surface etc).	• Utilises existing shared path. • Opportunity for redevelopment of sites on west side of rail reserve to incorporate shared path.	• Does not provide access to the east side of Prahran Station (Sandringham bound platform). • Sight lines are restricted along the path. • Limited passive surveillance.	240m	$50,000	• A heritage overlay H0126 exists over the Greville Street precinct.	Simple/ Short-term	
O2	Shared Path Porter Street	• Construct a shared path on the west side of Porter Street on the existing road space and treed verge/rail reserve.	• Separate facility for pedestrians and cyclists. • Observed demand for path on west side of Porter Street to Prahran Station (particularly from Swinburne University).	• Removal of vegetation. • Slope of rail reserve.	240m	$2,100,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees. • A heritage overlay H0126 exists over the Greville Street precinct.	Intermediate/ Medium-term	

Table 18: Section P Options –High Street Crossing, Prahran

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section P – High Street Crossing									
P1	New High Street Crossing (East)*	• Construct a new pedestrian crossing across High Street, east of the rail bridge.	• Links to proposed shared path options on Porter Street. • New crossing could be located with future tram platform stop.	• Vertical alignment of High Street rail bridge may affect sight lines to crossing.	15m	$400,000	• Future construction of the tram platform stop. • VicRoads approval of pedestrian crossing.	Intermediate/ Medium-term	
P2	New High Street Crossing (West)*	• Construct a new pedestrian crossing across High Street, west of the rail bridge.	• Links to the existing shared path on west side of rail reserve. • New crossing could be located with future tram platform stop.	• Vertical alignment of High Street rail bridge may affect sight lines to crossing.	15m	$400,000	• Future construction of the tram platform stop. • VicRoads approval of pedestrian crossing.	Intermediate/ Medium-term	
P3	High Street Underpass*	• Investigate options to provide a pedestrian and bicycle underpass adjacent to the rail bridge.	• Pedestrians and bicycles do not conflict with High Street traffic and trams.	• Ramps up to street level would be required. • Structural changes required to rail bridge may be prohibitive.	25m	$6,900,000	• VicTrack approval to utilise rail reserve.	Difficult/ Long-term	

* There is potential for the rail platforms to be extended by ramping them up to High Street.

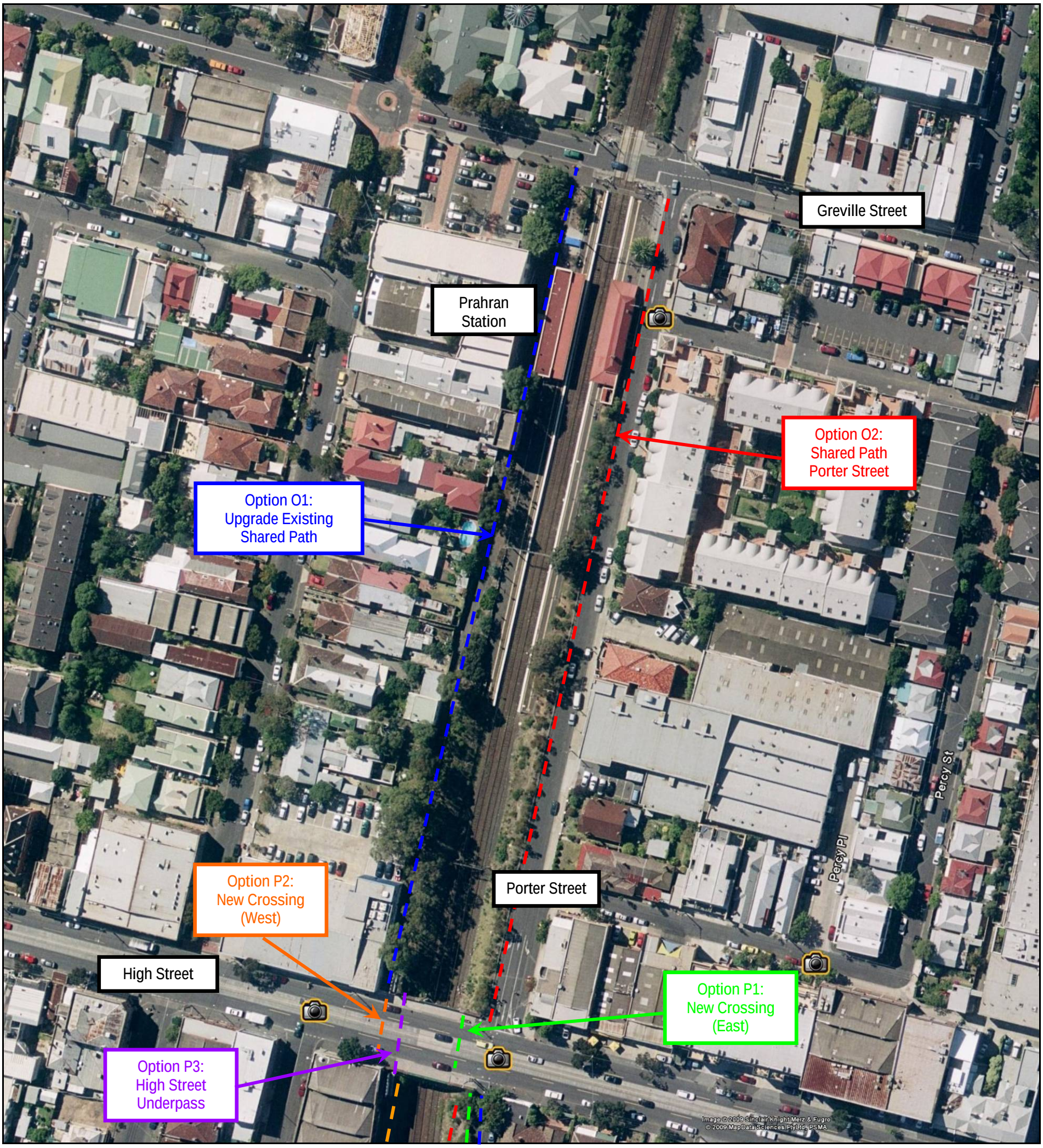


Figure 20: Section O & P Options – Greville Street to High Street, Prahran

Table 19: Section Q Options –High Street to Green Street, Windsor

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section Q –High Street to Green Street									
Q1	Existing St John Street and Thomas Street	• Bicycles to utilise road and pedestrians to utilise footpath in St John Street and Thomas Street. • Provide contra-flow lane in Thomas Street between St John Street and Green Street.	• Utilises the existing footpath.	• Bicycles do not get a separate, defined road space. • Thomas Street is one-way southbound so bicycles could not travel northbound on this section without a contra-flow lane. • On-street parallel parking in Thomas Street makes contra-flow lane more hazardous.	170m + 80m	$20,000	• Appropriate location of contra-flow lane.	Existing/ Short-term	
Q2	Shared Path Rail Reserve East.	• Construct a shared path on the east side of the rail reserve behind St John Street and Green Street properties, between High Street and Green Street.	• Separate facility for pedestrians and cyclists.	• Loss of vegetation. • Limited passive surveillance. • Some buildings along the east side of the rail reserve have been built on the rail reserve in the past (sheds), this would need to be resolved in order for this option to be viable.	155m	$1,600,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees. • Resolution of rail reserve boundary.	Difficult/ Medium-term	
Q3	Shared Path St John Street and Thomas Street.	• Construct a shared path on the west side of St John Street verge (north-south section). • Construct a shared path on south side of St John Street (east-we • Construct a shared path on west side of Thomas Street.	• Separate facility for pedestrians and cyclists.	• Loss of vegetation. • Slope of rail reserve. • Removal of on-street parking on east side of St John Street and north side of St John Street. • Change St John Street to one-way operation from Thomas Street to High Street.	75m + 100m + 70m	$1,200,000	• Agreement to remove vegetation in verge. • Removal of trees. • Planting of replacement trees. • Agreement to remove parking and change to one-way operation.	Intermediate/ Medium-term	
Q4	Shared Path Rail Reserve West.	• Construct a shared path on the west side of the rail reserve behind La Trobe Street properties, between High Street and Green Street.	• Separate facility for pedestrians and cyclists. • Length of path is broken up by La Trobe Street East.	• Loss of vegetation. • Limited passive surveillance.	155m	$1,600,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees.	Difficult/ Medium-term	
Q5	Green Street Pedestrian 'Wombat' Crossing (West).	• Construct a crossing point across Green Street on the west side of the rail reserve.	• Safe crossing point for bicyclists and pedestrians. • Bicycle can cross without dismounting.	•	7m	$300,000	• Sight lines to/from oncoming.	Simple/ Long-term	
Q6	Green Street Pedestrian 'Wombat' Crossing (East).	• Construct a crossing point across Green Street on the east side of the rail reserve.	• Safe crossing point for bicyclists and pedestrians. • Bicycle can cross without dismounting.	•	7m	$300,000	• Sight lines to/from oncoming.	Simple/ Long-term	
Q7	Green Street Crossing Point at Thomas Street.	• Construct a crossing point across Green Street from Thomas Street shared path to Thomas Street South Shared path.	• Safe crossing point for bicyclists and pedestrians.	• Intersection is staggered by 15m.	20m	$100,000	• Redesign of intersection.	Intermediate/ Medium-term	

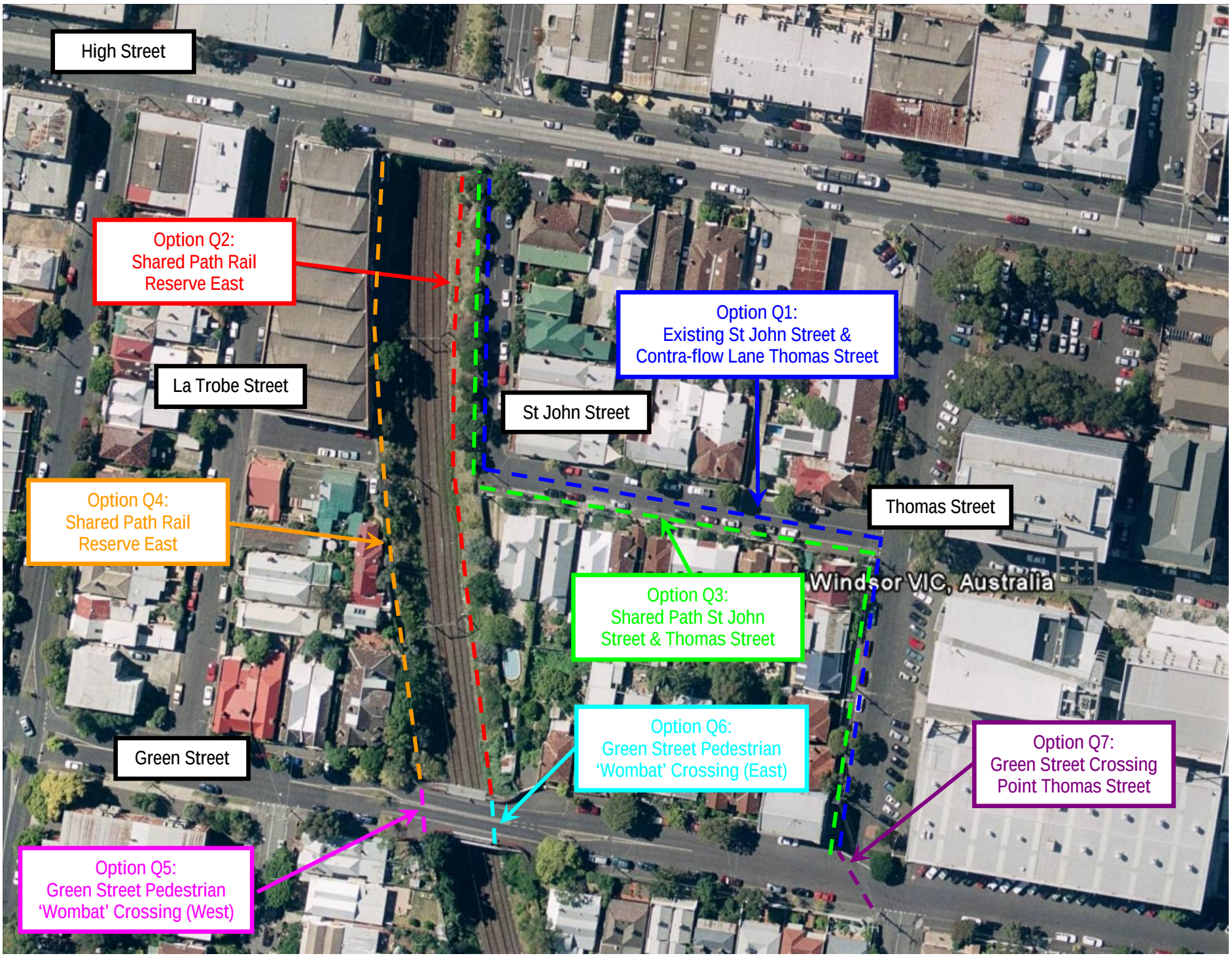


Figure 21: Section Q Options –High Street to Green Street, Windsor

Table 20: Section R Options – Green Street to Union Street, Windsor

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section R – Green Street to Union Street									
R1	Existing Thomas Street South	• Bicycles to utilise road and pedestrians to utilise footpath in Thomas Street South.	• Utilises the existing footpath.	• Bicycles do not get a separate, defined road space.	140m	N/A	•	Existing/ Short-term	
R2	Shared Path Rail Reserve East.	• Construct a shared path on the east side of the rail reserve behind Thomas Street South properties, between Green Street and Union Street.	• Separate facility for pedestrians and cyclists.	• Loss of vegetation. • Limited passive surveillance. • Long length of isolated shared path without access points.	160m	$1,600,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees.	Difficult/ Medium-term	
R3	Shared Path Rail Reserve West.	• Construct a shared path on the west side of the rail reserve behind Stewart Street properties, between Green Street and Union Street..	• Separate facility for pedestrians and cyclists. • Length of path is broken up by La Trobe Street East.	• Loss of vegetation. • Limited passive surveillance. • Long length of isolated shared path without access points, only access option is at David Lane.	160m	$1,600,000	• VicTrack approval to utilise rail reserve. • Removal of trees. • Planting of replacement trees.	Difficult/ Medium-term	
R4	Shared Path Thomas Street South.	• Construct a shared path on the west side of Thomas Street South.	• Separate facility for pedestrians and cyclists.	• Removal of on-street parking on west side of Thomas Street South. • Change Thomas Street South to one-way operation.	140m	$400,000	• Agreement to remove vegetation in verge. • Removal of trees. • Planting of replacement trees. • Agreement to remove parking. • Agreement to change to one way operation.	Intermediate/ Medium-term	
R5	Union Street Crossing Point (west side).	• Construct a crossing point across Union Street on the west side of the rail reserve. • Link to level rail crossing signals.	• Safe crossing point for bicyclists and pedestrians.	•	11m	$1,100,000	•	Simple/ Medium-term	
R6	Union Street Crossing Point (east side).	• Construct a crossing point across Union Street on the east side of the rail reserve. • Link to level rail crossing signals.	• Safe crossing point for bicyclists and pedestrians.	•	11m	$1,100,000	•	Simple/ Medium-term	
R7	Union Street Crossing Point at Thomas Street South.	• Construct a crossing point across Union Street from Thomas Street South shared path to existing shared path.	• Safe crossing point for bicyclists and pedestrians.	•	11m	$40,000	• .	Simple/ Medium-term	

Figure 22: Section R Options – Green Street to Union Street, Windsor

Table 21: Section S Options – Union Street to Chapel Street, Windsor

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section S – Union Street to Chapel Street									
S1	Upgrade Existing Shared Path (North-East side)	• Upgrade the existing shared path on the north-east side of the rail reserve, accessing Windsor Station (some widening, lighting, surface etc).	• Upgrades existing facility to high standard.	• Redevelopment around Windsor Station entrance may affect alignment.	250m	$200,000	• Commencement of redevelopment around Windsor Station entrance.	Intermediate/ Short to Medium Term	
S2	Upgrade Existing Shared Path (South-West side)	• Upgrade the existing gravel shared path on the south-west side of the rail reserve, accessing Windsor Station, Windsor Sidings Reserve and the BMX track (path construction, lighting etc).	• Upgrades existing partial facility to high standard.	• Redevelopment around Windsor Station entrance may affect alignment.	310m	$1,300,000	• Commencement of redevelopment around Windsor Station entrance.	Intermediate/ Medium Term	

Table 22: Section T Options – Chapel Street Crossing, Windsor

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section T – Chapel Street Crossing									
T1	Existing Pedestrian Crossing	• Utilise existing pedestrian operated signals.	• No works required.	• Bicyclists have to dismount to use crossing. • Alignment of crossing requires bicyclists to travel along Chapel Street for up to 30m.	12m	N/A	N/A	Existing/ Short-term	
T2	Widen Existing Pedestrian Crossing	• Widen existing pedestrian operated signals to provide a bicycle crossing point.	• Bicyclists are able to cross without dismounting.	• Alignment of crossing requires bicyclists to travel along Chapel Street for up to 30m.	12m	$90,000	•	Intermediate/ Medium-term	
T3	Relocate Pedestrian Operated Signals	•	•	•			•		

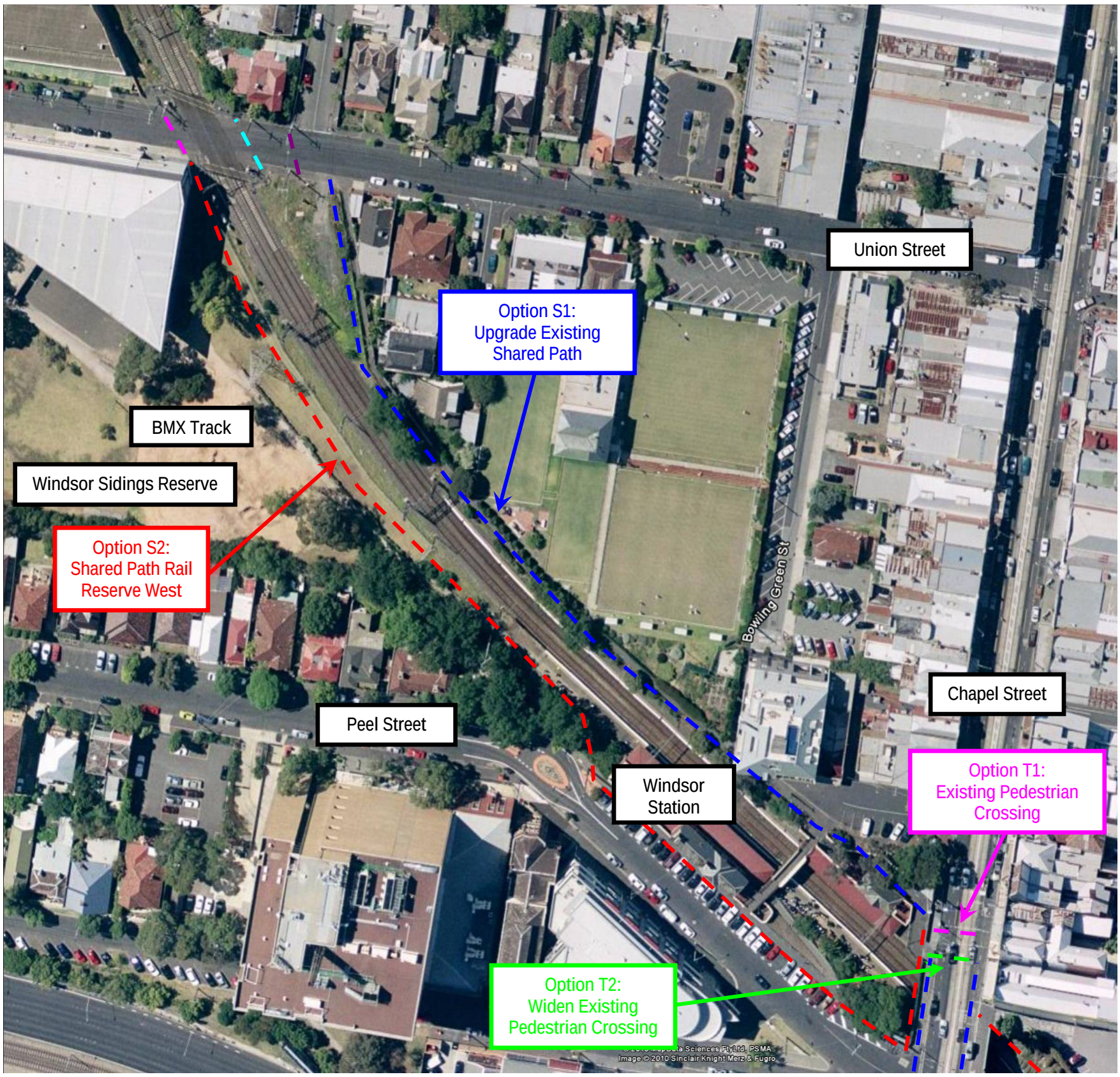


Figure 23: Section S & T Options – Union Street to Chapel Street, Windsor

Table 23: Section U Options – Chapel Street to Dandenong Road, Windsor

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section U – Chapel Street to Dandenong Road									
U1	Existing On-Road Bicycle Lanes	• Utilise the existing on-road bicycle lanes on Chapel Street between Windsor Station and Dandenong Road.	•	• Existing southbound bicycle lanes end 30m prior to intersection. • Congestion in Chapel Street and at Dandenong Road intersection.	130m	N/A	•	Existing/ Short-term	
U2	Shared Path Rail Reserve East	• Construct cantilevered shared path on north-east side of rail reserve.	• Provides direct access between Windsor Station and Presentation College Windsor. • Safer off-road link.	• Removal of landscaping. • Slope within the rail reserve.	170m	$1,700,000	• Redevelopment of land on south-west side of rail reserve, with implications on Council carpark access. • Council's enforcement of shared path provision.	Difficult/ Long-term	Stonnington City Council: A land swap may be possible between Council and Presentation College to provide the shared path along the east side of the rail reserve within the existing Presentation College site.
U3	Shared Path Rail Reserve West	• Construct shared path on south-west side of rail reserve.	• Provides direct access between Windsor Station and Presentation College Windsor. • Safer off-road link.	• Steep slope within the rail reserve requires redevelopment of properties on south-west side in order to provide a shared path.	170m	$1,700,000	• Redevelopment of land on south-west side of rail reserve. • Council's enforcement of shared path provision.	Difficult/ Long-term	

Table 24: Section V Options – Dandenong Road Crossing, Windsor

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section V – Dandenong Road Crossing									
V1	Upgrade Existing Pedestrian Crossing	• Upgrade the existing pedestrian crossings on the north and east approaches of the Chapel Street/Dandenong Road intersection signals. • Installation of bicycle lanterns and widening of pedestrian crossing points.	• Utilises existing facilities.	• Bicyclists are required to move between on and off-road facilities at congested intersection.	75m	$40,000	•	Intermediate/ Short-term	City of Port Phillip: Requires cyclists to use footpath on south side of Dandenong Road, which would need to be designated for cyclists. A bicycle storage box is to be reinstated on the Chapel St south-east approach.
V2	New Pedestrian Crossing	• Construct new pedestrian operated signals across Dandenong Road (approx. 120m east of Chapel Street intersection. • Link new signals to Chapel Street signalised intersection.	• Provides direct access across Dandenong Road. • Provides access across Dandenong road for Presentation College Windsor and Christian Brothers College St Kilda students.	• Intersection controller may not be able to accommodate additional crossing.	50m	$800,000	• VicRoads approval of pedestrian crossing.	Intermediate/ Medium-term	City of Port Phillip: Will need to address potential conflict between cyclists and pedestrians.
V3	Upgrade Existing Pedestrian Overpass	• Upgrade pedestrian overpass to provide ramps to each side of Dandenong Road and tram stops.	• Provides a crossing facility accessible by all pedestrians and cyclists.	• Ramps are required to be a considerable length, may not be enough room in median and nature strip. • May require removal of significant street trees.	4 x ramps	$1,700,000	• Council approval to remove street trees.	Difficult/ Long-term	
V4	Bicycle Crossing	• Provide bicycle crosswalk adjacent to the existing pedestrian crosswalk at Dandenong Road/Chapel Street intersection traffic signals.	• Provides cyclists with a separate facility from the existing narrow crosswalk.	• Only provides for cyclists accessing the path through Alma Park, not cyclists continuing along Chapel Street.	50m	$40,000	• VicRoads approval of bicycle crossing.	Intermediate/ Medium-term	City of Port Phillip: This option may not be required or could be placed on both to balance the level of service and reduce conflicts.

Figure 24: Section U & V Options – Chapel Street to Dandenong Road, Windsor

Table 25: Section W Options – Dandenong Road to Alma Road, St Kilda East

Option	Option Description	Scope	Advantages	Disadvantages	Length	Cost	Implementation Requirements	Implementation Difficulty	Stakeholder Comments
Section W – Dandenong Road to St Kilda Road									
W1	Existing Alma Park West Bicycle Path	• Utilise existing bicycle path in Alma Park West.	• Uses the existing facility.	•	450m	N/A	N/A		
W2	Upgrade Existing Alma Park East Shared Path	• Upgrade existing shared path in Alma Park East to provide high standard facility.	•	•	400m	$90,000	•		

Figure 25: Section W Options – Dandenong Road to Alma Road, St Kilda East

6. PREFERRED OVERALL ROUTE

A workshop was conducted on Wednesday, 3rd February, 2010 with the relevant parties to discuss the identified route options along each section of the proposed shared path and to determine the preferred ultimate and interim options, and priorities. The workshop was attended by representatives of VicRoads Metropolitan South East Region, Stonnington City Council, Bicycle Victoria and members of the Traffix Group team. The members at the workshop concluded that the priority should be to provide safe crossing points across the main roads and that the mid-block sections would be developed subsequently. In addition, site inspections were undertaken with both Yarra City Council and Port Phillip City Council officers to discuss the sections within their municipalities. The short term and ultimate routes were agreed during these site inspections.

The preferred short-term, medium-term and long-term (ultimate) routes developed within the workshop, site inspections and subsequent discussions with VicRoads officers and are summarised in Table 26 and Appendix D.

Table 26: Preferred Route and Priorities

Section		Short-Term Treatments				Medium-Term Treatments				Ultimate (Preferred) Treatments			
		No.	Option Description	Cost (Indicative Only)	Comments	No.	Option Description	Cost (Indicative Only)	Comments	No.	Option Description	Cost (Indicative Only)	Comments
A	Swan Street to Railway Place	A1	Bicycle symbols and route signage on Green Street.	$ 3,000	Council, community and Bicycle Victoria agreement required					A2	Shared Zone in Green Street (by others).	n/a	Part of Creating Better Places: East Richmond Station Precinct project.
B	Rail Underpass	B1	Improve lighting and amenity rail underpass (by others)	n/a	Part of Creating Better Places: East Richmond Station Precinct project.					B2	Extend underpass ramps to make DDA compliant.	$ 300,000	Council, VicTrack and Bicycle Victoria agreement required
C	Railway Crescent to Adelaide Street									C1	Construct raised platform at Green Street/Railway Crescent intersection.	$ 75,000	Council, community and Bicycle Victoria agreement required
		C2	Green Street for northbound cyclists and Railway Crescent, Chestnut Street and Adelaide Street for southbound cyclists, including bicycle symbols and route signage.	$ 7,000	Council, community and Bicycle Victoria agreement required					C3	Contra-flow bicycle lane on Green Street (Railway Crescent to Chapel Street/Dunn Street) for southbound cyclists, including removal of on east side on-street parking and installation of bicycle symbols and route signage.	$ 6,000	Council, community and Bicycle Victoria agreement required
										C4	Contra-flow bicycle lane on Green Street (Chapel Street/Dunn Street to threshold treatment) for southbound cyclists, including indenting and removing some west side on-street parking and installation of bicycle symbols and route signage.	$ 60,000	Council, community and Bicycle Victoria agreement required
										C5	Contra-flow bicycle lane on Green Street (threshold treatment to Adelaide Street) for southbound cyclists, including removal of west side on-street parking and installation of bicycle symbols and route signage.	$ 6,000	Council, community and Bicycle Victoria agreement required
D	Adelaide Street to Balmain Street	D1	Bicycle symbols and route signage on Green Street.	$ 3,000	Council, community and Bicycle Victoria agreement required						Short-term treatment is the ultimate treatment.		
E	Balmain Street Crossing	E2	Change priority and linemark kerb extensions at the Green Street/Balmain Street intersection.	$ 10,000	Council, community and Bicycle Victoria agreement required					E3	Change priority and construct kerb extensions at the Green Street/Balmain Street intersection.	$ 30,000	Council, community and Bicycle Victoria agreement required
F	Balmain Street to CityLink	F1	Bicycle symbols and route signage on Green Street.	$ 4,000	Council, community and Bicycle Victoria agreement required						Short-term treatment is the ultimate treatment.		
		F2	Remove on-street parking on west side of Oddys Lane and linemark bicycle symbols and route signage on Oddys Lane & Electric Street.	$ 5,000	Council, community and Bicycle Victoria agreement required					F3	Separated bicycle path from ramp to Green Street.	$ 20,000	Council, community, DoT, VicTrack and Bicycle Victoria agreement required
G	CityLink to Alexandra Avenue	G1	Install/provide concrete strips to existing stairs.	$ 20,000	Minor works can commence 2010/11. Council, BV and VicTrack agreement received.					G2	New Ramp to Oddys Lane.	$ 800,000	Council, DoT and VicTrack agreement required
		G3	Utilise existing footbridge (1.2m wide).	n/a						G4	New Bicycle Bridge across CityLink & Yarra River.	$3,300,000	DoT and VicTrack agreement required
		G5	Utilise existing stairs with metal strips.	n/a						G6	New Ramp at Main Yarra Trail.	$ 800,000	Council, DoT and VicTrack agreement required
		G7	Utilise existing stairs with metal strips.	n/a						G8	New Ramp at Capital City Trail.	$ 700,000	Council and Parks Vic agreement required
		G9	Install/provide concrete strips to existing stairs.	$ 20,000	Minor works can commence 2010/11. Council, BV and VicTrack agreement received.					G10	New Ramp to Alexandra Avenue/Yarra Street.	$ 700,000	Council, DoT and VicTrack agreement required

Section		Short-Term Treatments				Medium-Term Treatments				Ultimate (Preferred) Treatments			
		No.	Option Description	Cost (Indicative Only)	Comments	No.	Option Description	Cost (Indicative Only)	Comments	No.	Option Description	Cost (Indicative Only)	Comments
H	Alexandra Avenue to Toorak Road									H7	Alexandra Avenue to Claremont Street – shared path in rail reserve (possibly elevated).	$2,000,000	Council, community, Bicycle Victoria, DoT and VicTrack agreement required
		H1	Bicycle symbols and route signage on Yarra Street. Proposed footpath cross-section in Forrest Hill Precinct Master Plan is 2m wide (no bicycles).	$ 20,000	Council, community and Bicycle Victoria agreement required					H7	Claremont Street to Toorak Road – shared path as part of airspace development over South Yarra Station (possible as part of a developer funded project).	$3,300,000	Council, community, Bicycle Victoria, DoT, VicTrack and developer agreement required
I	Toorak Road Crossing	I6	Install innovative 'Keep Clear' coloured pavement at Yarra Street intersection for cyclists to cross under the shadow of the POS.	$ 3,000	Further investigations for an innovative treatment are required. Approved by RRC 31/5/10.					I2	Install new pedestrian/cyclist crossing/s in consultation with DoT, Council and VicTrack as part of Tram Platform Stop (options being developed by VicRoads). Options are currently being investigated by VicRoads.	$ 400,000	Council, community, Bicycle Victoria, DoT and VicTrack agreement required
J	Toorak Road to Arthur Street	J7	Install bicycle symbols and route signage on Osborne Street.	$ 10,000	Council, community and Bicycle Victoria agreement required	J3	Develop Osborne Street Reserve Path widening.	$ 20,000	Council and community agreement required	J1	Elevated Shared Path to South Yarra Sidings Reserve.	$2,400,000	Council, community, Bicycle Victoria, DoT, Rail Operator and VicTrack agreement required
		J8	Use existing Arthur Street footbridge.	n/a						J9	Piazza on south side of Toorak Road with links to South Yarra Sidings Reserve and Osborne Street Reserve (by others).	n/a	
										J4	'Cantilevered' Shared Path around Arthur Street properties or Council acquisition of part of property to provide path (part of Chapel Vision).	$ 800,000	Council, community, Bicycle Victoria, DoT and VicTrack agreement required
K	Arthur Street to Argo Street	K4	Bicycle symbols and route signage on Osborne Street.	$ 10,000	Council, community and Bicycle Victoria agreement required					K3	Shared Path Portland Place (within rail reserve).	$1,300,000	Council, community, Bicycle Victoria, DoT and VicTrack agreement required
										K6	Argo Street Pedestrian 'Wombat' Crossing.	$ 210,000	Council, community and Bicycle Victoria agreement required
L	Argo Street to Commercial Road	L4	Contra-flow bicycle lane on Osborne Street for northbound cyclists, including bicycle symbols and route signage, and intersection treatment. Route signage on Balmoral Street.	$ 75,000	Council, community and Bicycle Victoria agreement required					L3	Shared Path Balmoral Street (within rail reserve).	$1,100,000	Council, community, Bicycle Victoria, DoT and VicTrack agreement required
M	Commercial Road Crossing	M1	Utilise existing signalised intersection.	-		M5	Install pedestrian operated signals at Osborne Street/Charles Street.	$500,000	Proposal could be developed by November 2010.	M2	New crosswalk on west side of signalised intersection.	$ 60,000	
N	Commercial Road to Greville Street	N1	Porter Street for southbound cyclists and Charles Street for northbound cyclists, including bicycle symbols and route signage.	$ 15,000	Council, community and Bicycle Victoria agreement required					N3	Shared Path Porter Street (within rail reserve).	$2,800,000	Council, community and Bicycle Victoria agreement required
										N4	New Greville Street Crossing (east side of rail reserve).	$1,100,000	Council, community, Bicycle Victoria, DoT and VicTrack agreement required
O	Greville Street to High Street	O1	Upgrade Existing Shared Path (surface, linemarking, lighting etc), including bicycle symbols and route signage.	$350,000	Council, community and Bicycle Victoria agreement required as well as Determining path ownership and Heritage issues (HO 126)		Development on west side of existing shared path to provide passive surveillance.	n/a		O2	Shared Path Porter Street (within rail reserve).	$2,100,000	Council, community and Bicycle Victoria agreement required
P	High Street Crossing	P3	New crossing at Porter Street/St John Street intersection. Widening of footpath on north side of High Street rail bridge to link new crossing to existing shared path.	$500,000	A proposal could be developed by November 2010. Council, Bicycle Victoria and community agreement required						Short-term treatment is the ultimate treatment.		
Q	High Street to Green Street	Q1	Use St John Street & install northbound contra-flow lane on Thomas Street, including bicycle symbols and route signage, and intersection treatment.	$ 15,000	Council, community and Bicycle Victoria agreement required					Q2	Shared Path on east side of Rail Reserve.	$1,600,000	Council, community and Bicycle Victoria agreement required
										Q6	Green Street Pedestrian 'Wombat' Crossing (East).	$ 300,000	Council, community and Bicycle Victoria agreement required

Section		Short-Term Treatments				Medium-Term Treatments				Ultimate (Preferred) Treatments			
		No.	Option Description	Cost (Indicative Only)	Comments	No.	Option Description	Cost (Indicative Only)	Comments	No.	Option Description	Cost (Indicative Only)	Comments
R	Green Street to Union Street	R1	Install bicycle symbols and route signage on Thomas Street South.	$ 4,000	Council, community and Bicycle Victoria agreement required					R2	Shared path on east side of rail reserve.	$1,600,000	Council, community, Bicycle Victoria, DoT and VicTrack agreement required
		-	-	-						R6	Union Street Crossing (East)	$1,100,000	Council, community and Bicycle Victoria agreement required
S	Union Street to Chapel Street	S1	Upgrade Existing Shared Path on north-east side of rail reserve (surfacing, signage, linemarking, lighting etc).	$100,000	Council, community, Bicycle Victoria and VicTrack agreement required and determining path ownership and managing timelines					S2	Construct shared path through Windsor Sidings Reserve to Chapel Street (west side).	$1,300,000	Council, community, Bicycle Victoria, DoT and VicTrack agreement required
						S3	Widen existing shared path on north-east side of rail reserve locally and develop path adjacent to Windsor Station entrance (through Council proposed Piazza).	$200,000	Council, community, DoT and VicTrack agreement required				
T	Chapel Street Crossing	T1	Use existing pedestrian crossing.	n/a		T2	Widen existing pedestrian crossing and construct kerb extensions to provide wider footpath in vicinity.	$ 90,000	Council and community agreement required	T3	Relocate pedestrian operated signals to south to align with new shared path.	$ 500,000	Council, community and Bicycle Victoria agreement required
U	Chapel Street to Dandenong Road	U1	Use existing on-road bicycle lanes.	n/a						U2	Shared Path on east side of Rail Reserve (requires removal of a significant number of mature trees). Or Council to land swap with Presentation College to provide a shared path on east side of rail reserve on existing school land.	$1,700,000	Council, VicTrack, community, Bicycle Victoria and Presentation College agreement required
										U3	Shared path on west side of rail reserve as part of redevelopment.	$1,700,000	Council, DoT, VicTrack, Bicycle Victoria and Developer agreement required
V	Dandenong Road Crossing	V1	Utilise existing pedestrian facilities at the Dandenong Road/Chapel Street intersection.	n/a		V4	Provide bicycle crosswalk adjacent to existing pedestrian crosswalk at Dandenong Road/Chapel Street intersection traffic signals	$ 40,000	Council and community agreement required	V2	New pedestrian crossing.	$ 800,000	Council, community and Bicycle Victoria agreement required
W	Dandenong Road to Alma Road									W1	Existing bicycle path.	n/a	

* Cost of works are indicative only. Actual costs will depend on method of construction. Construction within rail reserve is subject to additional access requirements.

6.1. Staging and Funding Opportunities

By separating the route between Cremorne and St Kilda East along the Sandringham rail corridor into several sections, the route can be broken down into several defined projects of varying sizes. In addition, the project implementation could be staged over several years' budgets, with the short-term treatments defining the route and longer term treatments providing a high quality facility.

Funding for each of the sections may be gained from various sources including Council, VicRoads, Department of Transport and private developer contributions.

6.2. Construction Issues

The following provides a summary of construction issues associated with building within and around the rail reserve.

6.2.1. Construction within the Rail Reserve

Where the shared path is to be constructed wholly or partly within the rail reserve, numerous construction issues must be considered.

Any construction within the rail reserve is constrained by the requirements of VicTrack and the rail operators (Metro). These requirements include limitations to construction time and rail safety.

Where no other access is possible, construction equipment would have to utilise the rail tracks to access the site and to work from, including lifting sections into place as well as digging footings.

The hours that the construction would be able to occur are limited to approximately 1:00am to 3.30am (between last and first trains).

6.2.2. Construction across Yarra River

Where the bridge across the Yarra River is proposed to be widened to provide a bicycle bridge Melbourne Water approval is required.

6.2.3. VicTrack Design Guidelines

VicTrack's guidelines '"Shared User pathways on VicTrack Land – Design Guidelines for Applicants, June 2009" outlines the approval process for developing shared user paths on VicTrack land, as well as design criteria.

The approval process is conducted in four phases, as follows:

Phase 1 – VicTrack "in principle" approval following consultation with internal stakeholders and the Department of Transport (DoT).

Phase 2 – Accredited VicTrack Engineer approval (engineering compliance).

Phase 3 – Rail operator Approval (considers rail operations and any impact that the shared user pathway may have on those rail operators.

Phase 4 – VicTrack letter of offer and licence.

VicTrack's design criteria includes clearances required from rail infrastructure, fencing requirements and landscaping. The minimum clearances from rail infrastructure to proposed shared paths include:

- 8m from the centre line of the nearest track,
- 5m from the top of any cutting or toe of any embankment supporting the track,
- 1.5m from trunking, or underground power, signal and communications cables,
- 5m from aerial services, equipment and platforms.

It is noted that some sections of the Sandringham rail corridor within this strategy do not provide these widths (i.e. less than 8m to rail reserve boundary from centre line of the nearest track, or less than 5m from top of cutting to rail reserve boundary and the proposed shared path will encroach within these works).

South of South Yarra Station the communications cables are buried along the western side of the rail reserve.

6.2.4. Shared Path Cross-Sections

There are three general cross-sections to consider, as follows:

1. Shared path adjacent to private property fence (totally within rail reserve)

Figure 26 below shows a location where the shared path is to be located within the rail reserve, adjacent to private property fences.

Figure 26: View South from St John Street

A shared path within the rail reserve, adjacent to private properties would have to be constructed from within the rail reserve. The shared path would consist of:

- footings,
- a 'U-shaped' section as a support between each span, and
- a pre-fabricated shared path deck (5m to 10m spans), with a 1.8m fence on each side.

The fences will provide security on the property side and safety on the rail side.

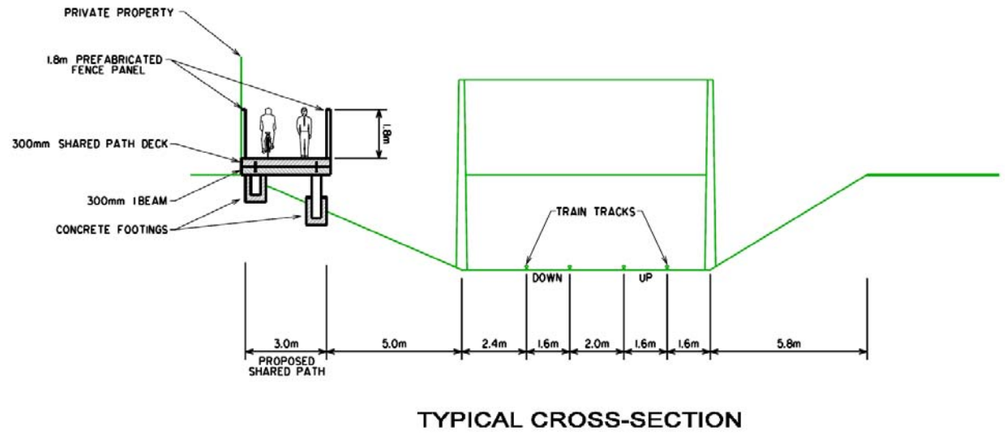


Figure 27: Shared Path Within Rail Reserve Adjacent to Properties

Figure 27 shows that through this section, the shared path would be overhanging the cutting.

2. Shared path flush with kerb (partially within rail reserve)

Figure 28 below shows a location where there is some width available in the verge between the road and the rail reserve boundary.

Figure 28: Portland Place – View South from Arthur Street

In this situation, the path can be partially constructed within this verge and partially within the rail reserve. The majority of construction would be able to be undertaken from Portland Place, with some restrictions due to the encroachment into the rail reserve. The shared path could be constructed of concrete and the slope within the rail reserve reconstructed accordingly.

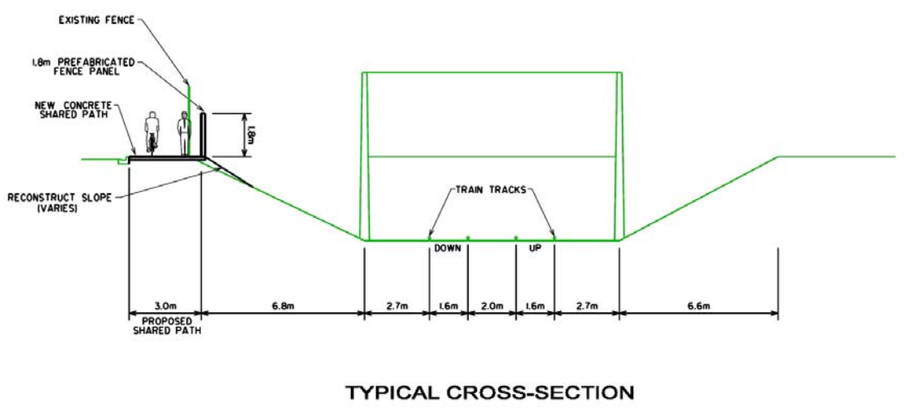


Figure 29: Shared Path Flush with Kerb

Figure 29 shows that through this section, the shared path would be located near the top of the cutting, with some localised reconstruction works required to stabilise the cutting.

3. Shared path adjacent to road with no kerb (totally within rail reserve)

Figure 30 below shows a location where the adjacent road has no kerb and ends at the rail reserve boundary fence.

Figure 30: Porter Street – View South to High Street

A shared path along this section of road would be constructed similar to the shared path adjacent to private properties, with footings, a 'U-shaped' section as a support between each span and a pre-fabricated shared path deck, with a fence on each side. The fence on the road side would offer protection to cyclists and pedestrians and would be approximately 1.5m in height. The fence on the rail reserve side would remain at 1.8m in height. The majority of construction would be able to be undertaken from Porter Street, with some restrictions due to the encroachment into the rail reserve. The shared path could be constructed of concrete and the slope within the rail reserve reconstructed accordingly.

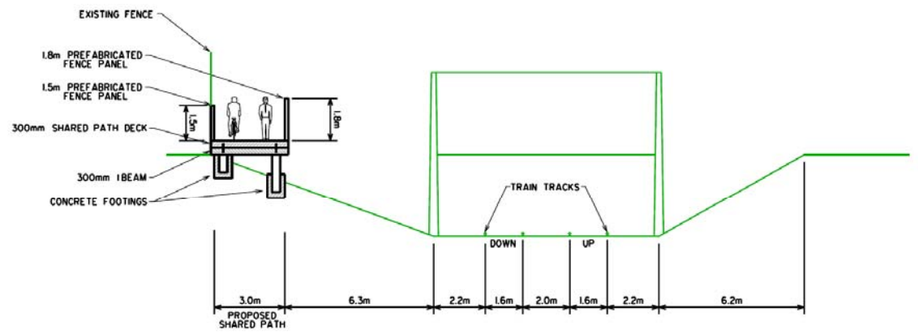


Figure 31: Shared Path Adjacent to Road with No Kerb

Figure 31 shows that through this section, the shared path would again be overhanging the cutting.

7. CONCLUSION

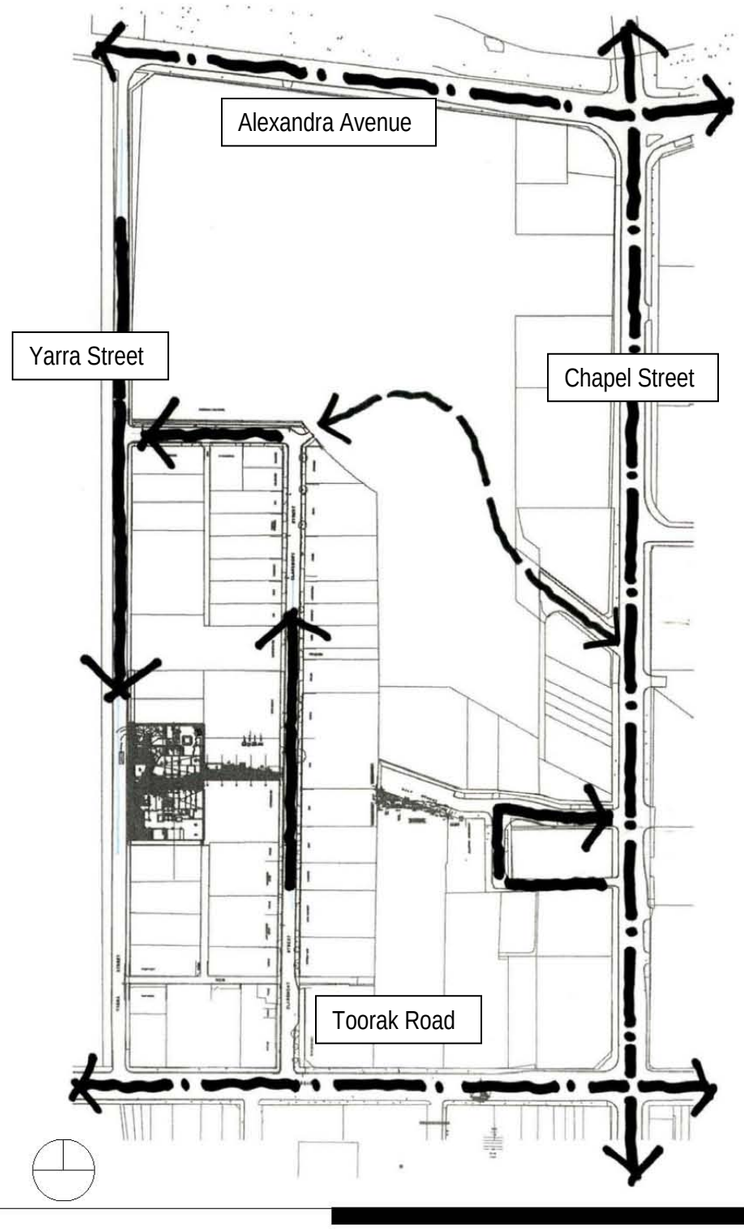
The regional shared trail between Swan Street, Cremorne and Alma Road, St Kilda East will provide a high quality pedestrian and bicycle route parallel to the Sandringham rail corridor, Chapel Street/Church Street and Punt Road/Hoddle Street. This section of the regional shared trail will form part of the link between Merri Creek, Abbotsford and St Kilda as part of the PBN.

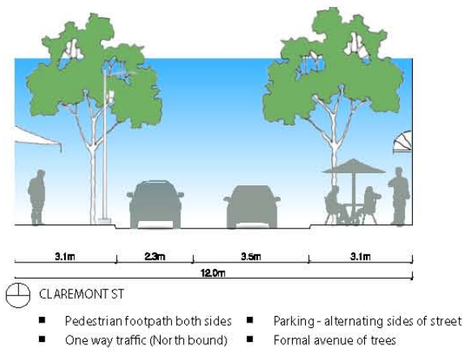
The shared path is to be implemented in stages, with the short-term treatments defining the route and longer term treatments providing a high quality facility.

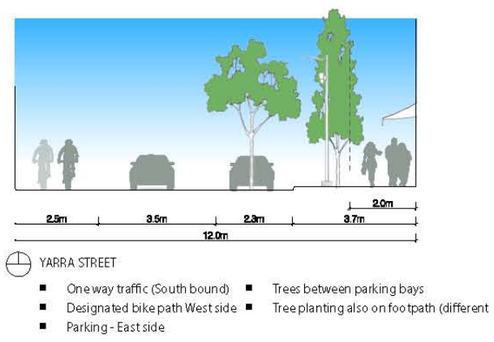
APPENDIX A
FORREST HILL PRECINCT MASTER PLAN – CIRCULATION/TRAFFIC REVIEW

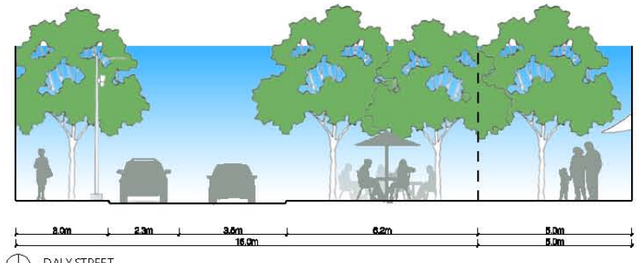
FORREST HILL PRECINCT MASTER PLAN – CIRCULATION/TRAFFIC REVIEW

OPTION 1









3.5 Circulation/Traffic Review

The current traffic circulation was reviewed as part of the process with three alternative options.

Option 1

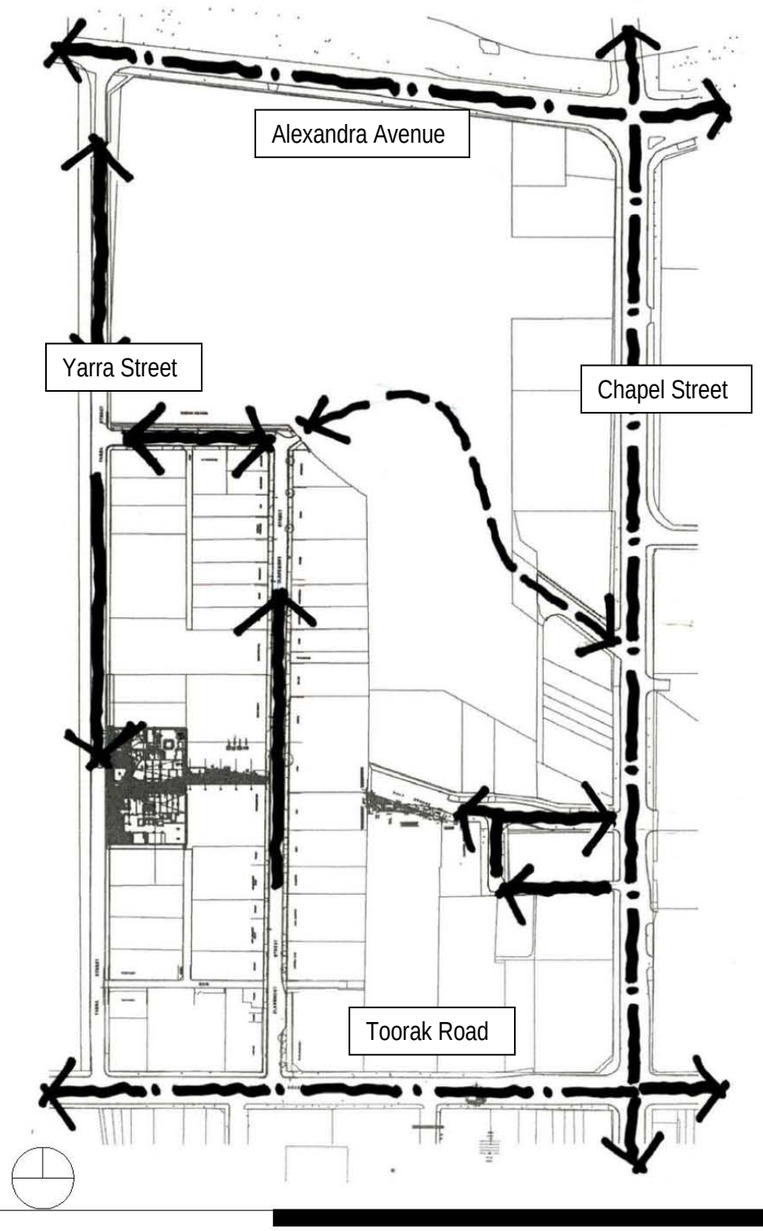
Yarra Street – One way south

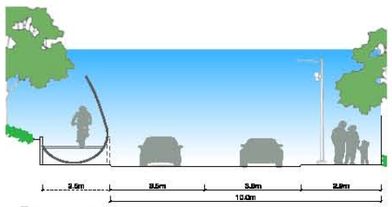
Claremont Street & Claremont Street (north) – one way north and west

Daly Street/Almeida Place – one way loop east

FORREST HILL PRECINCT MASTER PLAN – CIRCULATION/TRAFFIC REVIEW

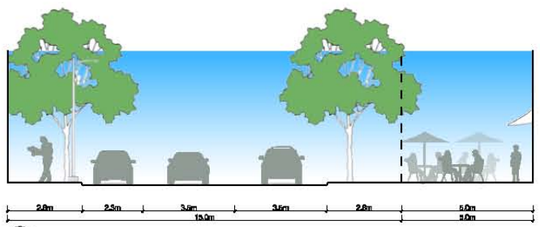
OPTION 2





YARRA ST (NORTH)

- Two way traffic
- No parking
- Borrowed landscape from MHS & rail corridor
- Explore relocation of retaining wall to accommodate
- Cycle access with VicTrack



DALY ST

- Pedestrian accessibility both sides
- Two way traffic
- Parking - North side
- Avenue of trees

3.5 Circulation/Traffic Review (Continued)

Option 2

Yarra Street north – Two way

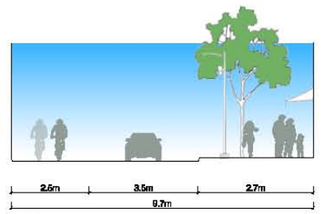
Yarra Street south – One way south

Claremont Street – Two way north

Claremont Street north – Two way

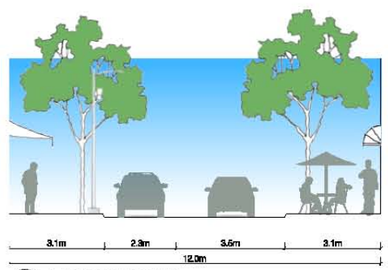
Daly Street – Two Way

Almeida Place – One way west



YARRA ST (SOUTH)

- One way traffic (South bound)
- Designated on road bike path (West side)
- Widened footpath to east with tree planting
- No parking

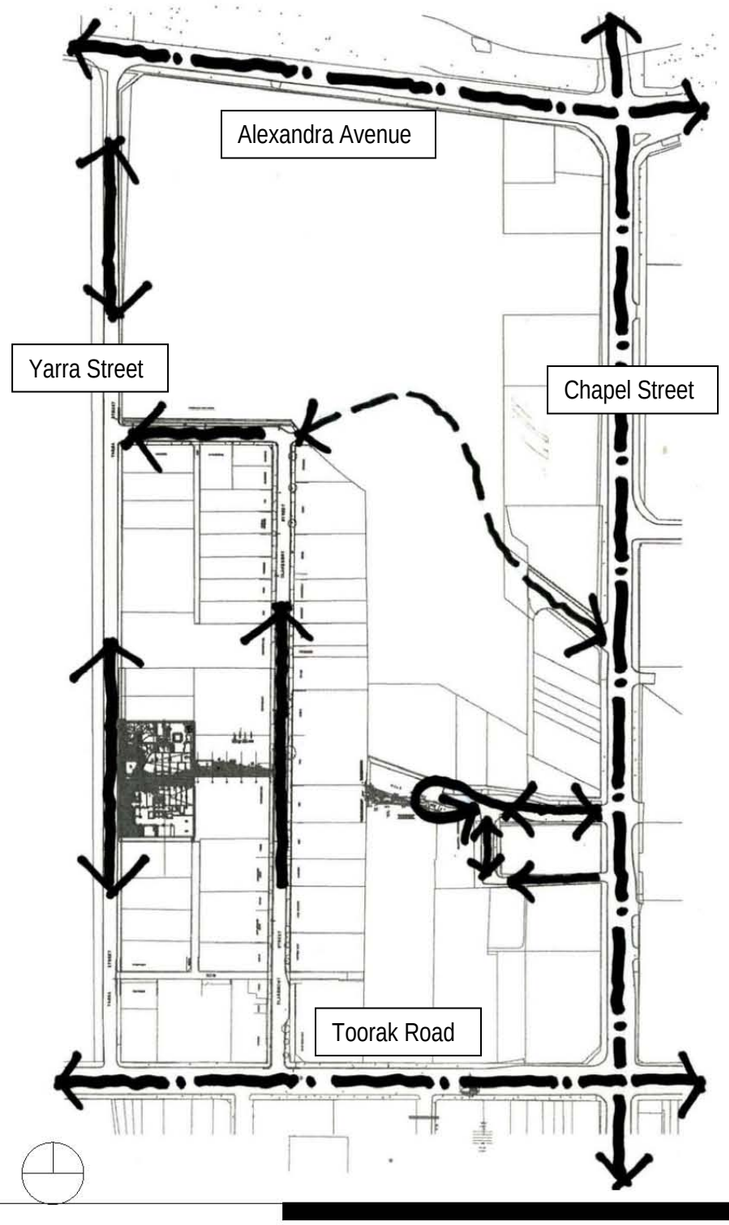


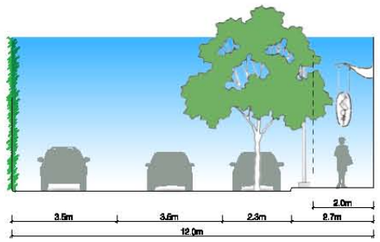
CLAREMONT ST (SOUTH)

- Pedestrian footpath on both sides
- One way traffic (North bound)
- Parking - alternating sides of street
- Formal avenue of trees

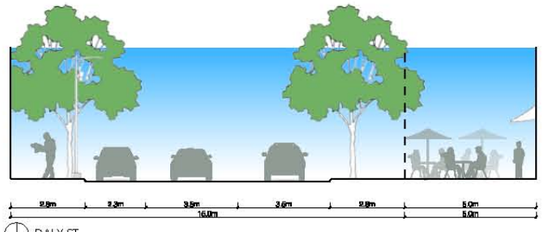
FORREST HILL PRECINCT MASTER PLAN – CIRCULATION/TRAFFIC REVIEW

OPTION 3

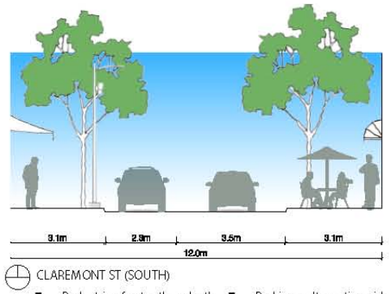




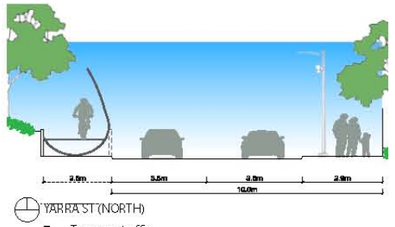
YARRA STREET
- Two way traffic
- Parking - East side
- Trees between parking bays
- 'Green Wall' to existing station wall



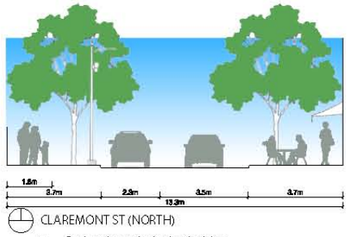
DALY ST
- Pedestrian accessibility both sides
- Two way traffic
- Parking - North side
- Avenue of trees



CLAREMONT ST (SOUTH)
- Pedestrian footpath on both sides
- One way traffic (North bound)
- Parking - alternating sides of street
- Formal avenue of trees



YARRA ST (NORTH)
- Two way traffic
- No parking
- Borrowed landscape from MHS & rail corridor
- Explore relocation of retaining wall to accommodate
- Cycle access with VicTrack



CLAREMONT ST (NORTH)
- Pedestrian priority both sides
- One way traffic
- Parking - North side
- Trees - maximise on south side

3.5 Circulation/Traffic Review (Continued)

Option 3

Yarra Street north – two way

Yarra Street south – two way

Claremont Street – one way north

Claremont Street north – one way west

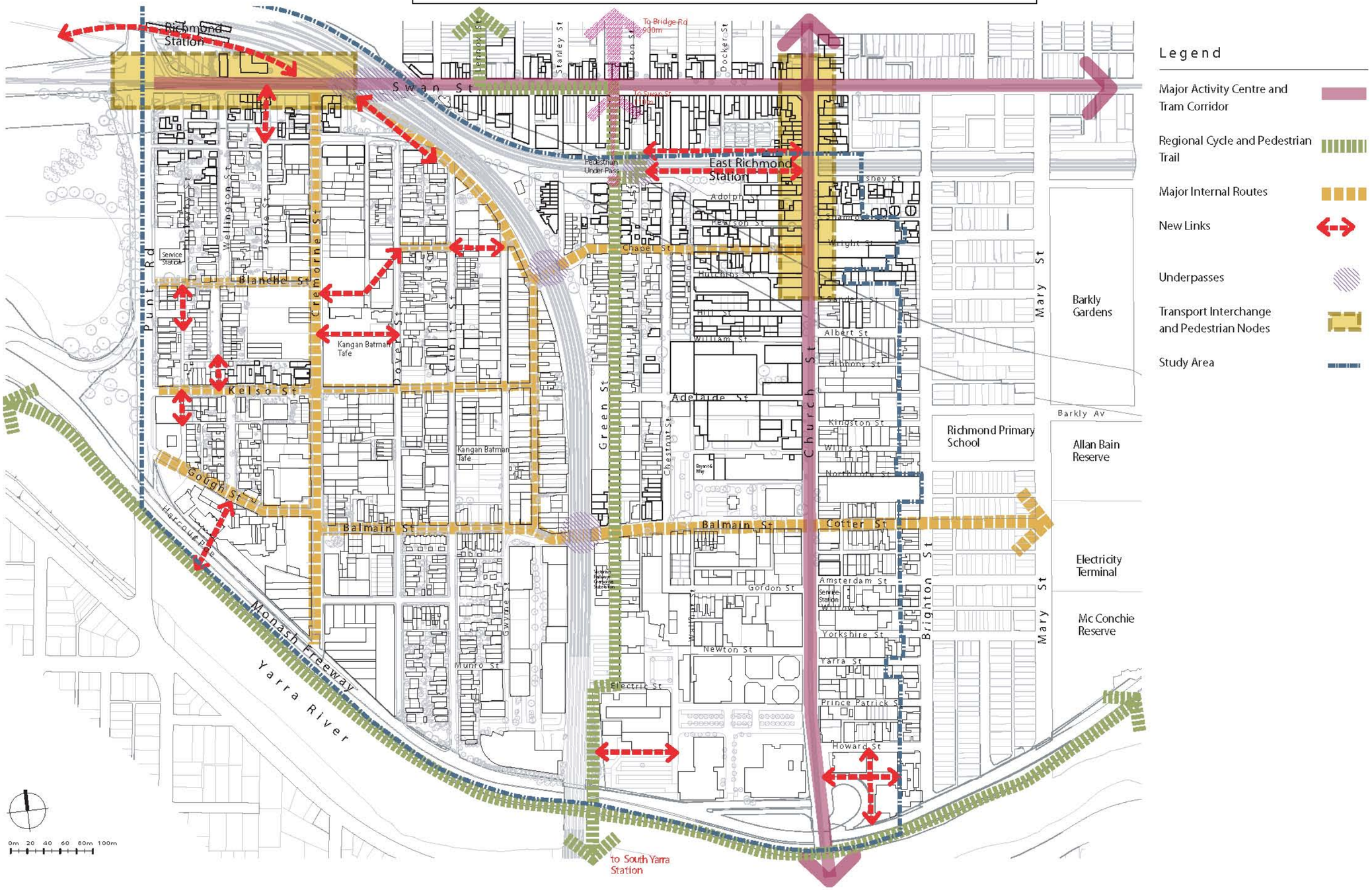
Daly Street – two way, with turn around facility

Almeida Place – one way west, two way north south

Review by Council traffic engineers, together with input from various stakeholders resulted in a clear direction to maintain the current situation at this point in time, Option 3, with a potential two way component at Claremont Street (north). Although this said the opportunity to re-consider traffic arrangement can be reviewed at a later date if Council believes this is necessary (i.e, Yarra Street one way would allow for a bike lane etc).

APPENDIX B
CREMORNE AND CHURCH STREET URBAN DESIGN FRAMEWORK

CREMORNE AND CHURCH STREET URBAN DESIGN FRAMEWORK



Map 6 - Pedestrian and Cycle Links

APPENDIX C
CREATING BETTER PLACES: EAST RICHMOND STATION PRECINCT

CREATING BETTER PLACES: EAST RICHMOND STATION PRECINCT
Access Improvement Plan

Patterned paving and focus lighting to enhance the entry.

IMAP signage at the entry of the laneways.

Alternative paving pattern on streets leading to the Station.

Example Chapel Street Precinct.
Streets such as Green Street, Shakespeare and Royal Place and Adolph Street to have active edges for safety and surveillance.

Key Components

1. Entry enhancement by patterned paving and special lighting and IMAP signage at Royal Place, Shakespeare Place, Adolph and Green Streets.
2. Street furniture replacement at the junction of Church and Swan Streets (south-west corner) including:
   - replacement of seats;
   - removal of pedestrian barrier fence at two places and leaving it only at the corner (subject to a road safety audit);
   - replacement of fire hydrant to a flush with ground fire hydrant; and
   - planting of ornamental trees at regular intervals.
3. Repaving of footpath with concrete along Church Street – west side, between the intersection of Church and Swan Street and Adolph Street.
4. Enhancement of station entry including:
   - reasphalting of ramp from Church Street to the Station;
   - integration of a grass terrace to the ramp giving a sense of wider ramp;
   - installation of seats;
   - installation of IMAP signage at the entry to the ramp; and
   - relocating the bin on the grass ramp.
5. Repaving of streets with integrated asphalt and bluestone paving to provide a sense of slow moving traffic and a pedestrian priority environment – shared movement area.
6. An access ramp (disability access compliant) providing easy access to the Plaza.
7. Activation of streets by providing glazing or openings.
8. Repaving of the underpass, improvement of lighting and painting of walls with anti-graffiti paints, with an opportunity for duplication of the underpass ramp to provide easy access to the station in the long term.
9. Widening of footpath along Railway Place and replacement of bollards with new Yarra stainless steel bollards.
10. Line markings with paint for other major pedestrian and vehicular conflict areas.

Example :Warren Langley, Doncaster underpass.
Aura- integrated lighting opportunity at the underpass.

Replacement of existing bollards with stainless steel bollards.

Example: High Street Kew.
Ornamental trees at regular intervals.

Example : Light Box Art gallery, Hosier Lane, Melbourne CBD.
An opportunity at the laneways.

Yarra style street furniture.

IMAP MAP near the entry ramp.

Brick retaining wall as seating along grass terrace - on station platform side.

Example of textured plants which could be used in grass terrace.

Department of Planning and Community Development

website: www.yarracity.vic.gov.au telephone: 9205 5555 interpreter services: 9280 1940

APPENDIX D
PREFERRED ROUTE
SWAN STREET, CREMORNE TO ALMA ROAD, ST KILDA EAST