

City of Boroondara

Camberwell Junction Access Study

Access Plan

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This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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1 Introduction

1.1 Study Background

The Camberwell Junction Structure Plan (2008) identified a range of strategic measures to guide land use and development over the next two decades within the Camberwell Junction Activity Area (CJAA). A key component of the Structure Plan was to improve access into and within the CJAA.

The Plan identifies a number of high-level strategies to give priority to walking, cycling, and public transport. In addition improvements to vehicle access and methods to minimise non-residential traffic and parking in residential areas were also identified.

In November 2011, Arup was commissioned by the City of Boroondara to build on the transport strategies identified in the Structure Plan and to undertake a comprehensive Access Study for the CJAA.

The overall aim of this study is to maximise access through supporting greater transport choice and balance mobility networks with amenity needs. The terms of reference for the study identified the following key objectives:

- undertake research that informs transport initiatives to improve the health, amenity, liveability and economic vitality of the Activity Area;
- better understand the access characteristics and catchment dynamics of each respective transport mode to the Activity Area;
- maximise access, equity and transport choice to the Activity Area;
- develop a strategic framework to inform a decision process that includes the SmartRoads (VicRoads) and Principal Pedestrian Network (Department of Transport Planning and Local Infrastructure) process;
- identify key pedestrian and bicycle networks and measures that support safe active access to the Activity Area;
- identify measures to maximise transport integration between modes;
- identify spatial streetscape requirements and conflicts and outline balanced outcomes where required;
- provide a vision of improvements to streetscapes supported by a strong analytical, consultation and research foundation;
- develop an integrated Parking Study that includes a review of parking access arrangements, parking management initiatives, developer contributions and existing/future parking rates/requirements; and
- advise on changes to the Camberwell Junction Structure Plan in terms of supporting access and personal safety.

It is recognised that the Camberwell Junction Activity Area is also known as the Camberwell Shopping Centre, Camberwell Shopping Precinct and the Camberwell Junction Activity Centre. For the purposes of reporting the Camberwell Junction Activity Area (CJAA) is used as defined by the state government.

1.2 Study Process

The Camberwell Junction Access Study is made up of three key components, each interacting to achieve the key study objectives and to ensure that any proposals developed provide a global view of the study area (rather than simply focussing on individual modes or issues).

The process of the Access Study is illustrated in Figure 1 below and incorporates the following research areas:

- a Transport Needs Analysis process investigates extensive survey data to provide an overall view of conditions and community sentiment within the CJAA;
- the Access Plan outlines proposals for improved transport to the CJAA for various modes, including walking, cycling, public transport and driving; and
- the Parking Study develops a set of initiatives for improved parking and vehicle circulation within the CJAA.

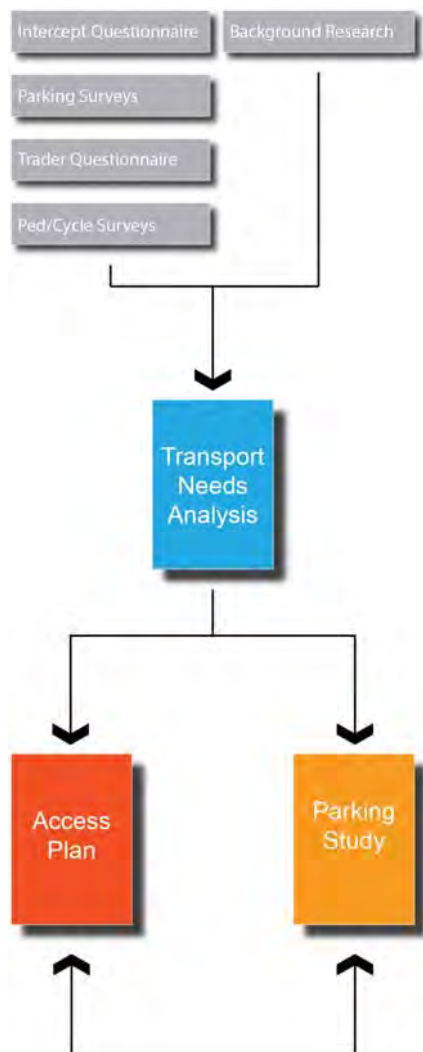


Figure 1: Study Process

This report documents the findings and recommendations of the Access Plan.

1.3 Purpose of this Report

The Access Plan aims to promote healthy and sustainable modes of travel to the CJAA, including active and public transport. Active transport comprises walking and cycling, and has demonstrated health and environmental benefits. The Access Plan is based on two central themes: health and wellbeing and community travel behaviour.

Ensuring that transport planning in the CJAA incorporates health, wellbeing and liveability initiatives is essential as transport can be a major contributor to either health concerns or benefits for residents and visitors. Further, reducing reliance on private vehicles to access the CJAA adheres to Council's and the community's strategic vision for the area.

The Access Plan is based on extensive data collection and research conducted between 2011 and 2012 and complements the Camberwell Parking Study through the consideration of opportunities to improve access to the centre by modes other than private vehicle.

The Access Plan has been created with reference to key Council and state government documents. Specifically, the City of Boroondara has produced several documents/studies that provide a clear vision for the Camberwell area. This study has utilised publications such as *Our Boroondara: Our City Our Future*, the *Boroondara Integrated Transport Strategy*, the *Boroondara Health and Wellbeing Plan* and the *Camberwell Junction Structure Plan* as guiding documents, particularly for the development of the Access Plan.

The Victorian Transport Integration Act 2010 is Victoria's overarching transport statute and a vital driver of this report. It ensures transport decisions consider social inclusion, sustainability, and health and wellbeing as strategic drivers. Reduction in the number of private vehicles is a stated aim of the Act: this need for mode shift away from cars and has been reflected in many of the proposals developed as part of this study.

It is anticipated that the Access Plan will assist Council to identify transport network improvements, streetscape modifications, and possible amendments to the Camberwell Junction Structure Plan.

During the development of the Access Plan a review of the Camberwell Structure Plan has commenced and this may further inform Access Plan recommendations.

1.4 Study Area

The study area comprises the CJAA and adjacent land uses. The area is generally bounded by Canterbury Road, Burke Road, Victoria Road, Auburn Road, Riversdale Road, Tooronga Road, Pleasant Road, Seymour Grove, Trafalgar Road and Stanhope Grove. However, each transport mode has different catchment dynamics and consideration needs to be given accordingly – for example walking to local facilities and services, bicycle links that connect with a broader network and public transport that integrates with Melbourne wide networks.

The broad study area is shown below.

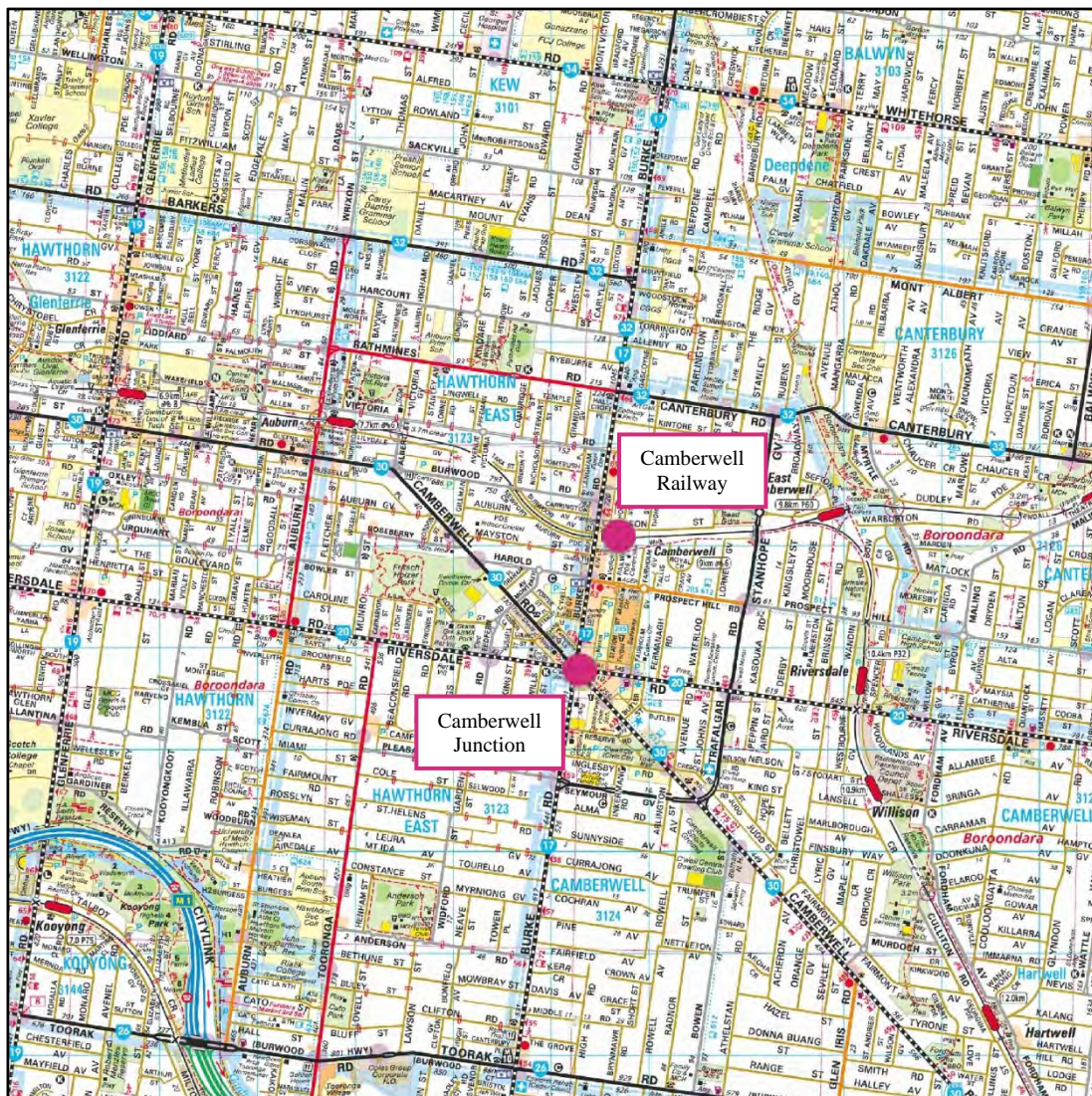


Figure 2: Camberwell Junction Study Area (source: Melway Publishing Pty Ltd)

The study area contains a wide variety of land uses, which influence transport access and parking demand. Of particular importance are specific social, commercial and service areas including:

- retail strips such as Burke Road;
- The Well and Woolworths supermarket ;
- Council offices and the Camberwell Civic Centre on Inglesby Road;
- Rivoli Cinema on Camberwell Road;
- Camberwell Fresh Food Market on Riversdale Road;
- Camberwell Primary School on Camberwell Road;
- multiple religious institutions; and
- Camberwell Railway Station.

1.5 Structure of Report

This Access Plan outlines a list of initiatives based on transport mode that will encourage varied access to the centre and support the overall aims of supporting greater transport choice.

A framework for access to the CJAA has been created based on these outlined aims and broad objectives of the study. Further, a shortlist of key initiatives/proposals for each mode is provided, identifying priority and high level cost estimates.

This report presents key issues for the centre in terms of:

- pedestrian access;
- bicycle access;
- public transport; and
- private vehicles.

These objectives are documented in detail below in Section 3.

This report is structured as follows:

- Section 2 outlines the policy context of the report which provide a foundation to the outlined recommendations;
- Section 3 outlines the existing transport network and travel characteristics of the CJAA. This includes discussions of land, transport supply, and transport demand;
- Section 4 details the key objectives for the study and outlines research undertaken;
- Section 5 lists the proposed access framework for the CJAA;
- Section 6 sets out the key recommendations for improving access to the CJAA;
- Section 7 highlights the implementation plan for these recommendations;
- Section 8 highlights the planning scheme amendment for the Access Plan and Parking Study; and
- Section 9 outlines the proposed next steps.

2 Policy Context

2.1 Overview

A number of State and Local strategies and policies apply to the CJAA with respect to access and parking. The following section examines some of the key documents applicable to the study area and highlights relevant policy information.

State and local policy provide an important foundation to the study. These indicate a consistent position to improve and promote walking, cycling and public transport, and to reduce car reliance.

2.2 State Government

Chief among the relevant Victorian policies is the Victorian *Transport Integration Act (2010)*. The Act is Victoria's major transport statute and provides a vision of the transport network as a single system working towards economic, environmental and social improvements. Importantly, it incorporates safety, health and wellbeing as central objectives of the Act. Section 11 of the Act also states the need to reduce reliance on private vehicles, a core focus of this study. Councils have an important dual role to play within the framework of the act, being recognised as both a 'transport body' and an 'interface body'.

A transport body is responsible for implementation of transport decisions and includes the State Minister and various governance authorities. An interface body is typically a planning or administrative body such as Parks Victoria. Councils therefore have a central role in planning and delivering transport outcomes.

SmartRoads has been developed by VicRoads to improve the long-term operational management of the road network and guide decisions that affect the way the road network operates. SmartRoads is strongly aligned with the Victorian *Transport Integration Act (2010)*. The Act sets out requirements for a transport system that manages the efficient movement of people and goods, and the promotion of public transport, cycling and walking. In addition there is a requirement to integrate transport and land use to reduce the need for private motor vehicle transport, improve the amenity of communities, minimise the impact on adjacent land use, and consider the impacts of transport and land use decisions on each other. (based on extracts from the SmartRoads Guidelines, VicRoads).

2.3 Local Government

By understanding the values and strategic drivers of the City of Boroondara over the long term, targeted advice that aligns with and is applicable to Council's vision can be provided. The directions for the study are outlined in *Our Boroondara – Our City Our Future (2008)*, the *Boroondara Integrated Transport Strategy (2006)*, the *Boroondara Road Safety Strategy 2007-2012*, *Creating an Age Friendly Boroondara 2009-2014* and the *Camberwell Structure Plan (2006)*.

The **Our Boroondara** report was the result of an extensive community engagement and consultation process and delivered two critical long term and strategic issues for the City of Boroondara that have particular relevance for this study. These two most important aims for a better Boroondara are “community connectedness and sustainability”.

Most people viewed that reducing dependency on cars and increasing use of public and community transport, cycling and walking as an important area of Council involvement to improve transport connections in the City of Boroondara. Vision theme four (connecting our city) highlights that Council will:

- encourage and promote connections between individual and community health and wellbeing, and walking and cycling;
- advocate for affordable, safe, efficient and effective public transport networks, with an emphasis on increased frequency, connectivity and reduced travel time;
- ensure that pedestrian safety and the local road network structure will be key features of Council's planning and management;
- advocate for the public transport system in Boroondara to be compliant with accessibility legislation;
- advocate for improvements to the management of through traffic in Boroondara;
- work to complete the Principal Bicycle Network; the missing links in the Metropolitan Trail Network; and upgrade and expand the walking and cycling recreational path networks under Council's jurisdiction; and
- advocate to ensure there is improved public transport integration, and enhancements to cycling and walking routes in areas of high activity such as shops and schools.

The *Boroondara Integrated Transport Strategy (2006)* aims to "to define transport and travel issues for Boroondara and provide a five year plan (within a long-term framework) for improving travel and access". The defined vision in the strategy focuses on providing residents with better access to sustainable transport modes (walking, cycling, public transport) and is as follows:

"To provide improved travel and access within, to and from Boroondara. In particular to provide improved public transport, walking and cycling provision and manage private car travel more effectively, as part of overall Council goals to pursue social, environmental and economic well-being and to protect and improve the built and natural environment."

The *Boroondara Road Safety Strategy 2007-2012* is a five year plan to improve road safety and reduce the number of road crash fatalities and injuries within the City. The study highlights significant pedestrian and bike safety concerns. Pedestrian concerns also impact significantly on public transport users as walking is a component of the journey. The report highlights that 45% of those killed are pedestrians, and the majority being over 75 years of age. The City of Boroondara is ranked second highest of the 16 municipalities in the Melbourne south-east metropolitan area for pedestrian fatalities and serious injuries, and highest for cyclist fatalities and serious injuries.

Creating an Age Friendly Boroondara 2009-2014 highlights transport and accessibility as an important issue that can help deliver improved liveability and age friendly environments. According to the 2006 ABS census, ageing well is an issue relevant to approximately 30,000 older adults in the City of Boroondara (*Creating an Age Friendly Boroondara 2009 – 2014*). Active ageing is the process of optimising opportunities for health, participation and security in order to enhance quality of life as people age (WHO, 2002). Key issues that arose through consultation as part of the study *Creating an Age Friendly Boroondara* included:

- transport is an important factor to support social connections, independence and ageing in place; and
- it is important to develop accessible transport, including a range of alternative transport options.

The *Camberwell Junction Structure Plan (2008)* identified a range of strategic measures to guide land use and development over the next two decades within the Camberwell Junction Activity Area (CJAA). A key component of the Structure Plan was to improve access into and within the CJAA. The Plan identifies a number of high level strategies to give priority to walking, cycling, and public transport. In addition, improvements to vehicle access and methods to minimise non-residential traffic and parking in residential areas were identified.

3 Existing Transport and Land Use

3.1 Overview

The following section outlines the existing transport network and travel characteristics of the CJAA. A comprehensive understanding of the transport network ensures that access proposals are grounded in a sound analytical basis.

This section documents land use, transport supply and transport demand for each key mode.

3.2 Land Use

The CJAA forms a varying mixture of land-uses diversified across 13 distinct precincts (Camberwell Junction Structure Plan). A 2010 land-use survey undertaken by Council identified approximately 300 commercial premises, 314 retail premises, 220 dwellings and 80 other properties forming a mixture of uses.

A summary of the various land-uses within the CJAA is presented in Table 1.

Table 1: Land use for the CJAA (based on Camberwell data provided by Council)

Land-Use	No. Premises	Apx. Floor Space (m ²)
Commercial		
Bank	6	5,465
Hairdresser & Beautician	26	3,874
Hotel	1	1,695
Medical	37	8,502
Office	228	104,847
Tavern	2	306
<i>Sub-Total</i>	<i>300</i>	<i>124,689</i>
Retail		
Food & Drink	-	18,111
- Café	25	-
- Convenience	36	-
- Restaurant	35	-
Retail: Non-Food	202	49,843
Showroom/Bulky Goods	14	2,640
Supermarket	2	4,606
<i>Sub-Total</i>	<i>314</i>	<i>75,200</i>
Residential		
Dwellings	220	5,673
<i>Sub-Total</i>	<i>220</i>	<i>5,673</i>

Land-Use	No. Premises	Apx. Floor Space (m ²)
Place of Assembly		
Gambling	1	161
Leisure and Recreation	4	2,227
Place of Assembly	6	5,251
<i>Sub-Total</i>	<i>11</i>	<i>7,639</i>
Industrial		
Car Wash	1	0
Dry-Cleaner	4	349
Funeral Parlour	1	527
Service Station	2	270
Tram Depot	1	4,180
<i>Sub-Total</i>	<i>9</i>	<i>5,326</i>
Other		
Car Park	6	0
Public Open Space	3	0
School	2	989
<i>Sub-Total</i>	<i>11</i>	<i>989</i>
Vacant		
Vacant	49	9,712
<i>Sub-Total</i>	<i>49</i>	<i>9,712</i>
Total	914	229,228

Table 1 demonstrates that retail and office land uses dominate the makeup of the CJAA. There are a similar number of retail premises as commercial premises. However, it is noted that due to the nature of commercial premises, total commercial floor space is in the order of 170% greater than that observed for retail (this is also in part due to the large number of commercial premises located above ground level retail).

The broader study area predominately comprises residential properties with some light industrial, retail and office land uses located along Burwood Road, Tooronga Road and Auburn Road.

The City of Boroondara: Draft Activity Centres Strategy (Development Capacity Analysis) forecasts land-use within the CJAA in 2026 to represent a 7% increase in commercial floor space, 14% increase in retail floor space, and a 480% increase in residential dwellings (from 263 to 1,263 dwellings).

Individual breakdowns of the forecast increases in land-use beyond the broad categories of retail, commercial and dwellings are not available. However, clearly residential dwellings are forecast to be the single greatest form of development within the CJAA over the next 15 years and any access proposals must consider this projected growth.

3.3 Transport Supply

The following section documents the supply characteristics of the transport network, including current conditions and performance and any existing issues identified. Pedestrian, bicycle, public transport, and road networks are all considered.

3.3.1 Pedestrians

3.3.1.1 Network

The pedestrian network consists mainly of footpaths connected with the broader road network. Permeability between major arterial roads such as Burke Road and Riversdale Road is provided by multiple pedestrian operated signals and signalised vehicle intersections. Currently the core retail area is served by footpaths typically located within the road reserve between the road pavement and property boundary.

The pedestrian network also includes pedestrian malls, green spaces such as the Read Gardens and Fritsch Holzer Park, and active retail frontages. These off-street pedestrian routes are commonly destinations within the CJAA but must be considered when investigating pedestrian amenity and connectivity.

3.3.1.2 Performance

The current network provides functional access between key land uses and activity zones within the CJAA. However, the priority of the network within the overall road space hierarchy is low. This is particularly evident in the crossings of arterial roads between retail land uses. The overall environment is focused around private vehicle throughput rather than pedestrian circulation and permeability.

Pedestrian links between activity areas and locations for community and green space are also limited, with major roads and infrequent crossings reducing permeability between green space, transport hubs, and the core retail area. Accessibility between Fritsch Holzer Park and Burke/Riversdale Road is limited. Smaller green spaces such as the Read Gardens are within close proximity to the core Activity Area but have limited connectivity due to poor quality and incomplete footpaths.

3.3.1.3 Issues

Currently the major issue for the pedestrian network is the provision of high-quality links between the core retail area focused on Burke Road and significant residential areas to the east and west. Currently footpaths do not appear as a high quality access option throughout the centre, with some missing links inhibiting continuity.

Additionally, access for the elderly and mobility impaired is limited along key routes at some decision points. The condition, steepness and transition of existing kerbs can create difficulties for those with prams or mobility aids from traversing the pedestrian network. There are also limited opportunities for rest along some corridors. At night, lighting is an issue at locations in terms of personal safety.

There is also at times confusing and inconsistent pedestrian wayfinding throughout the CJAA, which reduces legibility for visitors when walking between key nodes of activity.

3.3.2 Bicycle

3.3.2.1 Network

Bicycle infrastructure within the City of Boroondara consists of on-road bicycle lanes along parts of the Principal Bicycle Network (PBN) and local routes, as well as off road shared paths. PBN routes for the centre are shown in Figure 3.

Off-road bicycle paths such as the Gardiners Creek Trail and Anniversary Trail are popular cycling links for various different cycling demographics, showing a commuter utilisation in weekdays as well as recreational use.

Based on survey data collected as a component of this study, the most used on-road cycling routes within the CJAA include Riversdale Road and Burke Road.

3.3.2.2 Performance

Current bicycle routes suffer from a lack of wider connectivity, linking the on-road and off-road bicycle network in a direct and convenient manner.

Cycling along arterial roads is currently intimidating for many cyclists due to high traffic speeds and volumes and the lack of dedicated bicycle lanes. In particular, the presence of many 60 km/h roads within the study area creates a safety risk for cyclists. This presents a barrier to mode change towards cycling for CJAA residents and visitors.

Boroondara is ranked highest of the 16 municipalities in the Melbourne south-east metropolitan area for cyclist fatalities and serious injuries; this results in 50-60 bicycle casualty crashes annually¹.

Women, children and the elderly are underrepresented in cycling and this is a direct reflection of the level of equity that the current bicycle network provides. Victorian Activity and Travel Survey (VATS) data from 1997 to 1999 indicates that approximately a quarter of cyclists are female; this disparity is visibly apparent in Boroondara. A measure of a good bicycle network should be the level of parity that exists between men and women cycling. It is apparent across Australia that there is a significant disparity in this balance and European countries through education, lower traffic speeds and often a high level of segregation see a far more balanced outcome².

Off-road bicycle paths within Boroondara are well utilised and maintained and are a positive for cycling within the region as a whole. However, there is limited existing connectivity between paths such as the Gardiners Creek Trail and Anniversary Trail and the core area near the Camberwell Junction.

Bicycle end of trip and parking facilities for people who work within the CJAA also have scope for improvement.

¹ Boroondara Road Safety Strategy 2007-2012

² Rissel C, Garrard J, 2006.

3.3.2.3 Issues

A key issue for bicycles in the centre is integration with the wider bicycle network, including off road paths such as the Gardiners Creek Trail and the Anniversary Trail.

Safety is also a key barrier that needs to be addressed through segregation, reduced road speeds and addressing dangerous behaviour.

In addition, the lack of community or private end of trip facilities is also a potential barrier for employees who would like to cycle to the CJAA but do not have the provision of suitable facilities at their workplace (e.g. parking, change rooms, etc).

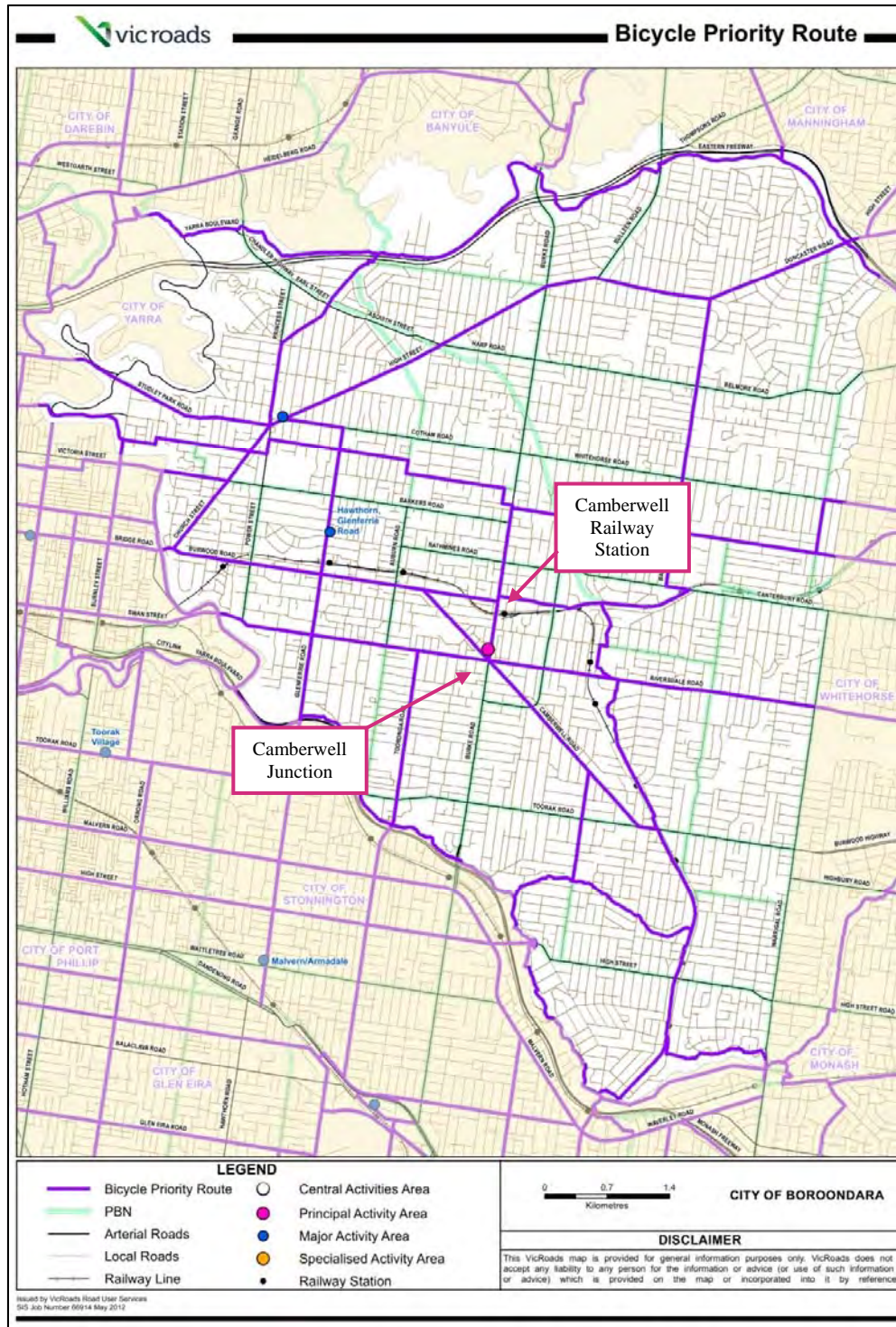


Figure 3: City of Boroondara Principal Bicycle Network (source: VicRoads 2012)

3.3.3 Public Transport

3.3.3.1 Network

The CJAA is well served by public transport with three train lines, three tram lines and two bus routes travelling through the area. Key services include:

- tram route 70 (Waterfront City Docklands – Wattle Park) operates along Riversdale Road;
- tram route 72 (Melbourne University – Camberwell) operates along Burke Road;
- tram route 75 (City (Spencer St) – Vermont South) operates along Riversdale Road;
- bus route 285 operates from the Station Street terminus;
- bus route 612 operates southbound from the Station Street bus stop; and
- Camberwell Rail Station, located on Burke Road south of Cookson Street. Camberwell Railway Station services the Alamein, Belgrave, and Lilydale lines.

The overall public transport network for Boroondara is shown below in Figure 4 – with public transport provision for the CJAA shown in Figure 5.

3.3.3.2 Service Provision

The service provision for the above public transport routes is listed below. AM peak period (7:00 AM – 9:00 AM), PM peak period (5:00 PM – 7:00 PM), and daily services are all shown.

Table 2: Tram Route Service Provision

Mode	Service	AM Peak Period services	PM Peak Period services	Daily services
Route 70	To Wattle Park	8	13	99
	To Waterfront City Docklands	8	13	99
Route 72	To Camberwell	8	13	93
	To Melbourne University	10	9	88
Route 75	To Vermont South	10	14	106
	To City (Spencer Street)	16	11	105

Table 3: Train Route Service Provision (Stopping at Camberwell Railway Station)

Mode	Service	AM Peak Period services	PM Peak Period services	Daily services
Alamein Line	To Camberwell	6	8	63
	To Alamein	6	7	62
Belgrave Line	To Camberwell	4	6	38
	To Belgrave	4	11	42
Lilydale Line	To Camberwell	6	7	40
	To Lilydale	5	10	46
Camberwell Railway Station	To City	21	27	143
	From City	23	20	139

Table 4: Bus Route Service Provision

Mode	Service	AM Peak Period services	PM Peak Period services	Daily services
Route 285	To Camberwell Shopping Centre	2	3	16
	To Doncaster Shoppingtown	4	3	19
Route 612	To Box Hill	2	4	27
	To Chadstone Shopping Centre	5	5	28

3.3.3.3 Performance

The three tram routes operate along arterial roads within shared tram/traffic lanes and as a result are affected by vehicle congestion. This slows running times for both modes and means that trams are frequently delayed.

The existing tram stop locations also do not always correlate with key pedestrian desire lines and land-uses or facilitate transport interchange, often requiring use of multiple pedestrian crossings or requiring pedestrians to travel back on themselves.

Bus routes currently have low levels of service provision, typically operating at approximately 25 minute frequencies during peak commuter periods and 60 minute frequencies on weekends, presenting a barrier to increased use. Bus stops within the CJAA are sometimes not aligned with DDA tactile pavers, directing visually impaired passengers to the wrong location. Advertising at bus stops can also obscure the presence of potential passengers as is the case to the southern side of Station Street.

Camberwell Rail Station is a premium rail station forming the confluence of the Lilydale, Belgrave and Alamein train lines. However, it is noted that some express services do not stop at Camberwell Railway Station during peak times.

In 2011, Metro and PTV undertook changes to the timetable for the Belgrave, Lilydale and Alamein Lines to accommodate additional services to the CBD in the morning peak. As a result of these changes, six Belgrave and five Lilydale train services bypass Camberwell Railway Station from 7:30 to 9:00 AM.

3.3.3.4 Issues

While providing a high level of public transport access, it is noted that there are some key missing links servicing Camberwell. Specifically, these include direct links servicing the northern suburbs along Burke Road north of Cotham Road and northwest suburbs along the Hurstbridge rail line, and southern suburbs along Burke Road between Malvern Road and Caulfield.

Gaps in the overall network are highlighted below based on the outcomes of site inspections and local knowledge. These include:

- limited connectivity with the Doncaster Activity Area based on one bus route with infrequent services;
- no direct public transport links servicing Kew Junction and northwest suburbs;
- poor public transport connectivity with communities north of the Yarra; and
- no public transport connection with Caulfield Station and Tram Routes 3, 5 and 6.

The locations of some existing tram stops do not provide a high level of connectivity within the CJAA or require passengers to cross major intersections/roads to access key points of activity. Their positioning at intersections within the junction has also been observed to exacerbate traffic congestion.

Bus stop services are currently limited in non-peak and weekend periods, and some bus stops could be relocated to improve connectivity and ensure access to DDA infrastructure.

Integration between public transport modes is currently limited and could be improved to leverage the rich overall provision of options within the CJAA.

Changes to train timetables have also seen a decrease in services from Lilydale and Belgrave stopping at Camberwell Railway Station, resulting in extended journey times and necessitating interchange movements.

There is limited DDA compliance at tram stops and there is notable work to deliver an inclusive, accessible and age friendly Boroondara. Due to the cost and difficulties of delivering DDA compliance, dispensation until 2032 under the Human Rights and Equal Opportunities Commission Act 1999 has been granted. However, interim benchmarks exist and all tram stops will eventually become DDA compliant which present spatial and operational challenges within street environments.

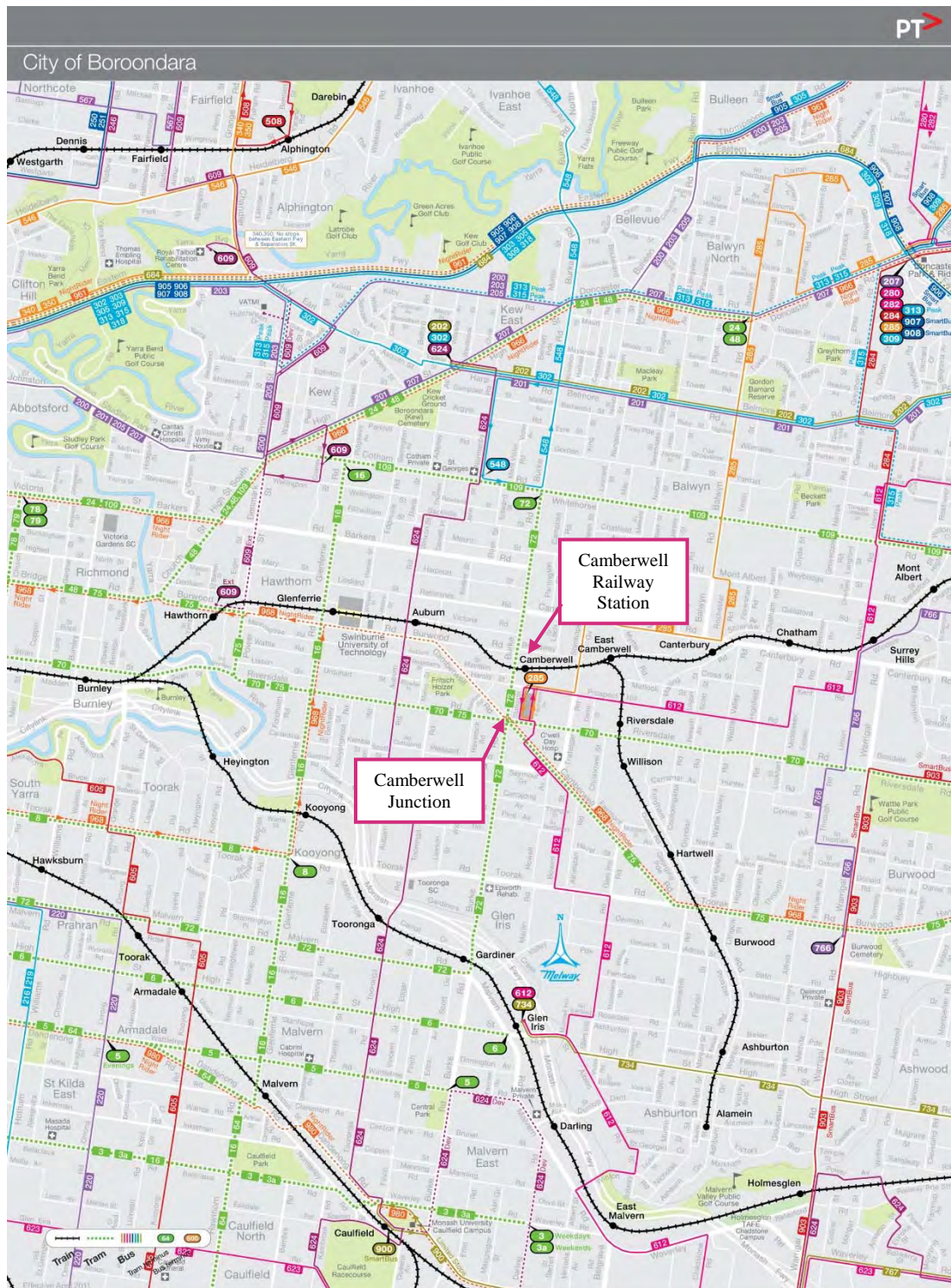




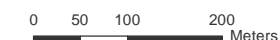
Figure 4: Boroondara public transport network (source: Public Transport Victoria)

FIGURE 5

Existing Public Transport Network

DRAFT

-  Bus Routes (with Bus Stop)
 Tram Line (with Tram Stop)
 Rail Line (with Railway Station)



3.3.4 Road Network

3.3.4.1 Network

The road network in the CJAA ranges from major arterial roads such as Burke Road, Riversdale Road, and Camberwell Road through to local roads managed by Council. The road network is a central feature of the CJAA area, with the intersection of these arterial roads forming Camberwell Junction, one of the focal points of the precinct.

A high level investigation of the broader road network shows that the CJAA has good transport links between other suburbs and Activity Areas within Boroondara, the CBD, and external suburbs.

Stanhope Grove/Trafalgar Road is a major road accommodating significant volumes of traffic. Further, it forms VicRoads preferred traffic route for the precinct under the VicRoads SmartRoads Hierarchy.

The CJAA also has extensive car parking facilities ranging from on-street provision on most roads to several off-street car parks including The Well (off Burke Road) and Woolworths (off Station Street).

Further, signalised intersections within the CJAA have been identified. Signalised intersections provide opportunities to manage traffic and also pedestrian crossing locations. These are shown below in Figure 6.

The alignment of Burke Road, Camberwell Road and Riversdale Road is such that the Camberwell area, within the vicinity of the junction, does not form a typical grid network subdivision: this leads to a number of atypical intersection arrangements as well as ‘short-cuts’ bypassing the arterial network. Over the years a number of turn bans have been implemented to reduce vehicle conflicts and prevent the utilisation of local streets for ‘rat running’.

All right turns are banned at Camberwell Junction. At Riversdale Road and Havelock Road (eastbound to southbound) no right turns are permitted 4-6pm (Monday-Friday). The right turn is banned 7-9am from Burke Road into Harold Street.

Many roads within the CJAA also experience high traffic speeds. High traffic speeds in Activity Centres present a barrier to increased walking and cycling as it decreases the attractiveness of the road environment as well as increasing the safety hazard for pedestrians and cyclists. A summary of posted speed limits within the CJAA area is summarised below:

- 60 km/h areas: Burke Road south of Camberwell Junction and north of Victoria Road, Riversdale Road, Camberwell Road, Auburn Road, Tooronga Road, Toorak Road, Trafalgar Road, Glen Iris Road, Canterbury Road, Rathmines Road, Barkers Road, and Mont Albert Road;
- 40 km/h areas: Burke Road between Denmark Hill and Victoria Road, Reserve Road, Inglesby Road between Inkerman Road and Burke Road, the area bounded by Christowel Street, Murdoch Street, and Lansell Crescent, Prospect Hill Road east of Spencer Road, the area bounded by Burke Road, Cookson Street, Russell Street, and Kintore Street, Torrington Street, Woodstock Street, Irilbarra Road, Mangara Road, Deepdene Road north of Deepdene Place, and Whitehorse Road east of Austin Street; and

- 10 km/h areas: Cambridge Street, Inglesby Road between Inkerman Road and Camberwell Road.

It is noted that other roads within the study area are 50 km/h as per Victorian standard road speed limits.

3.3.4.2 Performance

The major roads within the CJAA experience high levels of traffic. This leads to considerable congestion and reduced traffic speeds on arterial roads during peak periods.

Traffic circulation on local roads allows connectivity within the CJAA; however, crossing arterial roads can be difficult due to congestion. Lack of signalised intersections at some locations including Redfern Road/Monteath Avenue/Camberwell Road increases this difficulty of access for the local community.

Further, an investigation of road crash data has been undertaken in order to gauge the performance of the road network with respect to safety.

The location of crash hotspots can identify areas of high risk for road users, including drivers, pedestrians, and cyclists. An assessment of the crash history for the study area was undertaken by analysing crash data for the past five years (1 January 2007 to 31 December 2011) of available State Accident Records.

The state accident database contains all reported casualty crashes, which include the categories of Fatal, Serious Injury and Other Injury Crashes. Non-injury or property damage only crashes are not included in this database.

The categories of crash severity are defined as follows:

- Fatal: one or more persons are killed in the crash, or die within 30 days from injuries sustained in the crash;
- Serious Injury: one or more persons are admitted to hospital as a result of injuries sustained in the crash; and
- Other Injury: one or more persons are given medical treatment for injuries sustained in the crash.

Figure 7 to Figure 9 identify the location and severity of casualty crashes, pedestrian crashes and bicycle crashes respectively within the broader study area.

3.3.4.3 Issues

Traffic congestion on Burke Road is a key concern that affects multiple stakeholders both within and beyond the CJAA. There is limited scope to reduce this traffic at a local level: potential turn bans into Burke Avenue and Commerce Lane could have a positive minor impact on Burke Road traffic.

The presence of many roads at 60 km/h has the potential to increase risk of collision between vehicles and pedestrians/cyclists. It also leads to the perception of the CJAA as a car dominated environment where private vehicles enjoy the highest priority.

Local north-south traffic connectivity is hampered by the lack of signalised intersections at locations such as Redfern Road/Monteath Avenue/Camberwell Road.

Based on an analysis of crash data within the CJAA, the following key crash patterns have been reached:

- major crash hotspots occur on the key arterial roads within the CJAA (Burke Road, Camberwell Road, and Riversdale Road). Arterial roads within the CJAA typically have high traffic speeds and significant traffic volumes, increasing the risk of vehicle collisions;
- the Burke Road/Prospect Hill Road/Harold Street intersection is the worst intersection for pedestrian casualty crashes: six casualty accidents were recorded between 1 January 2007 and 31 December 2011 at this location. Crashes at this location may be due to significant traffic volumes and the offset geometry of Harold Street and Prospect Hill Road;
- three pedestrian casualty crashes were recorded at the intersection of Prospect Hill Road, Railway Parade and Station Street between 1 January 2007 and 31 December 2011. Lack of formalised pedestrian crossing facilities increases the risk of vehicle-pedestrian crashes;
- arterial roads account for the vast majority of cycling crashes within the CJAA, as shown in Figure 9. Research shows that bicycle-vehicle crashes are more likely to occur when there is no clear separation of road space between cyclist and vehicle lanes and traffic speeds are high;
- three cyclist casualty crashes occur at the intersection of Council Street and Camberwell Road. This suggests utilisation of some of the north-south routes parallel to Burke Road as informal bicycle 'shimmy' routes;
- the location with the highest number of total casualty crashes is the Burke Road/Prospect Hill Road/Harold Street intersection, with 11 crashes between 1 January 2007 and 31 December 2011. Further, an additional three crashes occur on approach to the intersection on Burke Road and Harold Street. This further identifies this intersection as a critical priority area in terms of road safety; and
- a high number of vehicle adjacent and vehicle opposing intersection casualty crashes have been identified as occurring within the last five years at Rathmines/Canterbury/Burke Roads; Riversdale /Trafalgar Road; Seymour Grove/Burke Road; Tooronga Road/Riversdale Road; Auburn Road/Riversdale Road; and Harold Street/Prospect Hill Road/Burke Road. These are the major intersections for vehicle crashes within the CJAA and require further investigation.



FIGURE 6
Signalised Intersections

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Traffic Signals

Pedestrian Signals



0 50 100 200
Meters



FIGURE 7
CrashStats Results: Total Casualty Crashes

1

2 - 4

5+

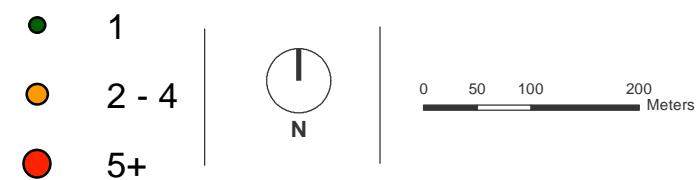
N

050100200

Meters



CrashStats Results: Pedestrian Casualty Crashes



City of Boroondara

Camberwell Junction Access Study

Access Plan

222686-00

Final Issue | 13 May 2014

Adopted | 16 June 2014

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 222686-00



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3.4 Transport Demand

Following the investigation into transport supply for the different access networks, a study of transport demand has been undertaken. This was based on an extensive data collection process detailed below. Analysis of transport demand also included investigation of the Victorian Integrated Transport Model (VITM), the SmartRoads framework for the CJAA, and analysis of trip origins from study surveys.

3.4.1 Data Collection

As a part of this study process, a range of surveys were undertaken. These were conducted in November 2011, January 2012, May 2013 and June 2013, and included the following:

- intercept questionnaire survey (Burke Road/Camberwell Road/Riversdale Road) on 10, 12, and 23 November 2011;
- parking occupancy and duration surveys on 10 and 12 November 2011;
- pedestrian and bicycle surveys on 10 and 12 November 2011; and
- trader questionnaire on 30 January 2012;
- intercept questionnaire survey (Station Street/The Well) on 30 May (wet weather conditions), 2 and 4 June 2013 (fair weather conditions).

The visitor intercept questionnaire provided a broad snapshot of both transport access modes and overall activities performed by people visiting the centre. Surveys were undertaken by approaching pedestrians along Burke Road, Camberwell Road and Riversdale Road over three days in November 2011. Extensive parking surveys were undertaken as part of the study that identified the duration of stay and occupancy of car spaces within the study area during the daytime periods. It is noted that the parking surveys form a central component of the Parking Study conducted parallel to this Access Plan.

Pedestrian and cyclist video counts were conducted across two days using fixed video cameras at 20 sites selected in consultation with Council across the study area. While video footage was captured for the full periods, the methodology selected was to count the first 15 minute period of each hour and extrapolate out for that hour.

The trader questionnaire survey involved a mail back questionnaire sent to all non-residential properties within the study area. The questionnaire aimed to gauge the views on the local business community, with particular reference to modes of transport for employees and customers as well as transport related issues impacting their business.

Additional pedestrian counts and intercept questionnaire surveys were undertaken in May/June 2013 along Station Street adjacent to Woolworths, Target and The Well. Surveys were undertaken on a Thursday (in very wet weather conditions), a Sunday (fair weather, moved from Saturday due to extreme weather) and on the following Tuesday (fair weather).

3.4.2 Pedestrians

Pedestrian demand within the CJAA was captured through video surveys of the study area.

Pedestrian surveys were conducted on Thursday 10 November and Saturday 12 November 2011 across 20 sites within the CJAA. These counts provide a snap-shot of walking as a mode of access at key locations across both a typical weekday and weekend. As stated in Section 3.4.1, it is noted that video counts captured the pedestrian traffic for the first 15 minutes of each hour. These 15 minute volumes have been extrapolated to determine hourly volumes. Figure 10 shows the sum of all pedestrian movements surveyed for weekday and weekend survey periods.

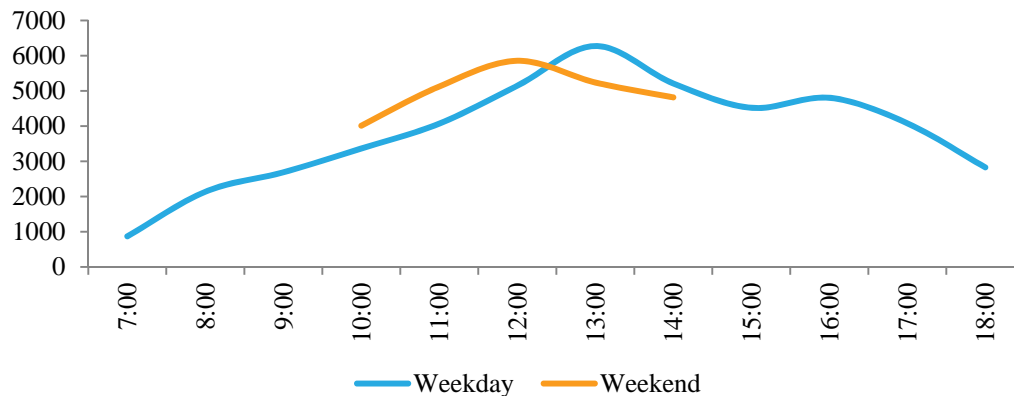


Figure 10: Total of all pedestrian movements captured across survey sites

Observations show that 1,280 pedestrians walk along Burke Road in the peak hour during the November 2011 survey. It is noted that this volume incorporates northbound and southbound movements and gives a snap-shot of bidirectional pedestrian flow.

Weekday pedestrian movements along Station Street in 2013 are significantly lower than Burke Road with 182 pedestrians counted in the peak hour during the Tuesday count and only 85 pedestrians counted in the peak hour during the wet weather conditions on the Thursday. These counts can be compared with overall counts within Figure 11.

Sunday pedestrian movements were significantly higher during the Camberwell Market with 858 pedestrians counted in the peak hour adjacent to Target and a similarly high pedestrian count adjacent to Woolworths. Pedestrians crossing the road adjacent to Woolworths was recorded at a similar peak hour pedestrian flow as Burke Road at 1,201 pedestrians during the peak hour under Camberwell Market conditions.

Peak hour pedestrian movement adjacent to The Well was similar between weekday and weekend (Sunday) conditions. Saturday counts were not undertaken due to extreme weather conditions. East-west along Burke Avenue, 573 pedestrian movements were observed during the peak hour (Sunday) mainly to the northern side of Burke Avenue. Pedestrian movements were also notably high to the north western corner of The Well with 316 pedestrians crossing the pedestrian crossing and 262 pedestrians walking north-south to the northern side of the pedestrian crossing during the peak hour on the Sunday.

Figure 11 shows pedestrian survey locations and volumes recorded during the weekday peak hour (1:00 PM to 2:00 PM).

The survey data reinforces that the central draw for pedestrians is the precinct immediately surrounding the Camberwell Junction. Therefore, promoting links that better serve the movement towards the Burke Road shopping strip and Camberwell Junction will improve amenity for this existing pedestrian population and potentially lead to increased walking for short trips from people who currently use other modes.

Sunday surveys indicate very high pedestrian movements along Station Street during Camberwell Market conditions. The peak hour pedestrian movements are similar to that along Burke Road, however available pedestrian width and amenity is significantly less.

Survey data suggests that pedestrians primarily access the centre using key arterials and other significant roads such as Prospect Hill Road, Harold Street and Cookson Street. This is likely due to the direct nature of these corridors but may also include a high degree of passive surveillance and/or higher lighting levels both contributing to perceived and actual safety.

Approximately 20% of those interviewed in November 2011 in the area of Burke Road, Camberwell Road and Riversdale Road had walked.

Interview surveys were also undertaken in May /June 2013 along Station Street and adjacent to The Well. At The Well, 19% of those interviewed had walked. Along Station Street, this was much lower at 11%, although the proportion that had arrived by public transport was much higher on Station Street than at The Well. It should be noted that winter wet conditions prevailed throughout the weekday survey which would have impacted on walking participation.

Camberwell Railway Station is a key destination for pedestrians with high pedestrian volumes observed along approaches during AM and PM peak periods. Trip origin analysis can also further inform key routes and missing links. As a component of questionnaire surveys conducted on Thursday 10 November, Saturday 12 November and Wednesday 23 November 2011, respondents were asked how they accessed the centre and which suburb they came from. This has been analysed to produce a map showing the origins of pedestrian visitors to the CJAA. This origin map is shown below in Figure 12.

Figure 12 shows that suburbs immediately to the east and west are more popular for walkers: this could be due to the generally 'flatter' topography in these suburbs. The suburb of Camberwell has the highest number of respondents who walked to the centre (31 responses), appreciably more than Hawthorn East (19). This suggests access from east of Burke Road is currently easier than access from the west.

However, it is noted that the presence of the Auburn and Glenferrie Activity Areas may reduce short trip demand from the west. These Activity Areas provide a variety of uses that pedestrians commonly walk to, which may be preferred to Camberwell due to proximity.

Nevertheless, this increases the value of western links such as Harold Street, Riversdale Road, and Burwood Avenue in order to remove barriers to pedestrian access. Barriers to access to Hawthorn East and Hawthorn include the lack of permeability across Camberwell Road due to limited pedestrian signals, particularly south of Harold Street.



Figure 11: Weekday Peak Hour Pedestrian Volumes (1:00 PM – 2:00 PM)

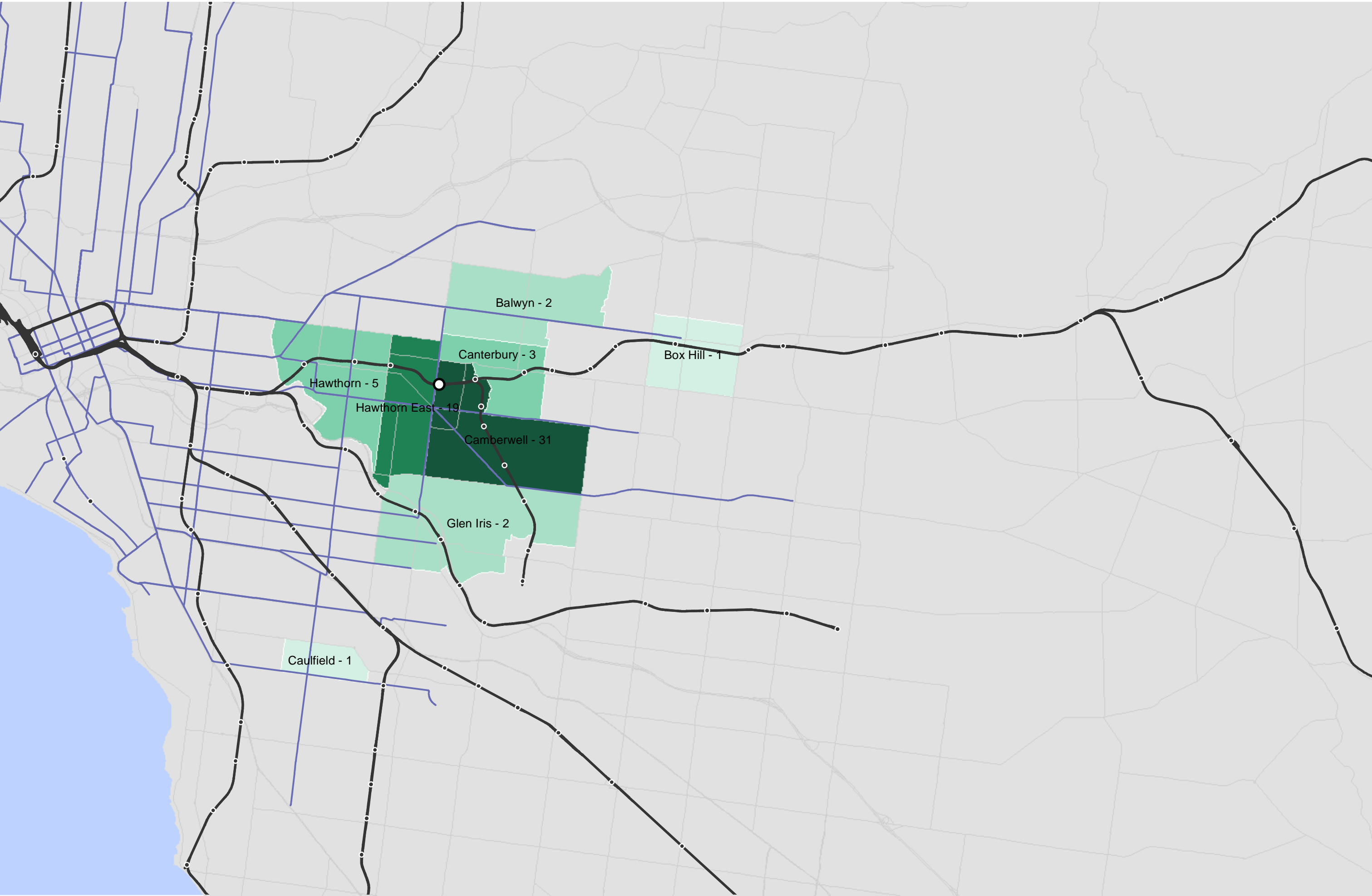
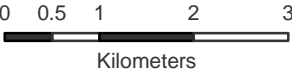


FIGURE 12

Trip Origins: Pedestrians

Number of trips

- < 1
- 1 - 2
- 2 - 5
- 5 - 10
- 10 - 25
- >25



3.4.2.1 Level of Service Calculations

Recognising Burke Road as a key pedestrian route and the focus of activity for the study area, an estimate of pedestrian Level of Service (LoS) has been conducted to inform the appropriateness of available footpath widths. Level of Service calculations provide a quantitative value for pedestrian comfort, based on analysis of pedestrian movement and waiting behaviour conducted by Dr John J Fruin in 1971. LoS levels correspond to pedestrian congestion experienced in different environments, where LoS A corresponds with a free flowing environment when pedestrians are able to travel at their desired speed and LoS F corresponds with a highly congested environment where personal space is compromised. A more detailed breakdown of these levels is provided below.

Table 5: Level of Service Description (source: Pedestrian Planning and Design, John J Fruin, 1987)

Level of Service	People per minute per metre width	Description
A	23-	Normal walking speed can be freely selected & slower pedestrians can be easily overtaken. Crossing conflicts can be easily avoided
B	23-33	Sufficient space is available to select normal walking and to bypass other pedestrians in primarily one-directional flows. Where there is reverse-direction or crossing movements, minor conflicts will occur.
C	33-49	Restricted ability to select normal walking speed & freely pass others. High probability of conflict where crossing movements & counter-flows exist. Conflict avoidance requires frequent adjustment of walking speed & direction. Flow is reasonably fluid, however considerable friction & interaction between pedestrians is likely to occur.
D	49-66	Restricted walking speed; overtaking slower pedestrians is difficult. Counter-flows & crossing movements severely restricted. Some probability of reaching critical density causing temporary stoppages.
E	66-82	Walking speed & passing ability is restricted for all pedestrians. Forward movement is possible only by shuffling. Counter-flows & crossing movements extremely difficult. Flow volumes approach limit of walking capacity.
F	82+	Severely restricted walking speed; frequent unavoidable contact with others; reverse or cross movements are virtually impossible. Pedestrian flow is sporadic & unstable.

Burke Road has an approximate footpath width on each side of the road of 3-4metres (building line to kerb); locally this available width is reduced to 1.7m – 1.8m in association with road side furniture and other obstructions along notable lengths of the footpath. Utilising these pinch points, an estimate of LoS for Burke Road can be derived based on a measured minimum footpath width of 1.7m and combined bidirectional flow on Burke Road of 1,280 people.

Assuming an even distribution across the peak hour, a pedestrian LoS value of 12.5 people per minute per metre has been calculated for Burke Road (based on a minimum width of 1.7m), corresponding to a Level of Service A.

Based on previous experience of pedestrian environments; LoS B is the upper limit for comfortable bidirectional walking movements in the public realm with LoS A ensuring a high quality pedestrian environment. Maintaining a LoS A environment should be the goal to provide a high quality walking environment.

The performance outlined above assumes that pedestrian demand is distributed evenly across the peak hour. It is likely however those areas adjacent cross walks and tram stops will be impacted by surges in pedestrian demand. Therefore while the assessment indicates LoS A it is likely that one-on-one conflicts still remain. An alternative approach to a LoS assessment would be to consider the amenity of pedestrians by maintaining a width that allows for two opposing directions of pedestrian movement to pass unhindered, i.e. at a minimum there should be sufficient footpath width to cater for bidirectional movement between an accessibility-impaired (DDA) resident in a wheelchair and a walking pedestrian, with additional space to cater for pedestrians entering and exiting retail spaces.

Australian Standard AS-1428.2 provides guidance on what the minimum widths for mobility impaired pedestrians should be. This standard indicates that the minimum width for a wheelchair user is 1.2 m. Fruin and other pedestrian movement guidelines indicate that the typical width for a pedestrian is 0.6 m. These two widths, combined with a 0.6 m activation for retail (e.g. due to window shoppers), leads to a minimum requirement of 2.4m on Burke Road

Accordingly, based on an assessment of pedestrian flows it is considered that these locations which have a footpath width of less than 2.4m do not provide a high amenity and accessible pedestrian space along Burke Road. Further, any substantial increase in pedestrian traffic on Burke Road is likely to result in an uncomfortable walking environment for pedestrians and contribute to a less enjoyable public realm.

To maintain existing levels of pedestrian activity and to encourage further growth in pedestrians as a mode of travel the environment provided for pedestrians will need to be improved, specifically the removal of pinch points as well as provision of additional rest areas and green space.

3.4.3 Bicycles

Cyclist volumes across major roads within the study area were captured through video survey across weekday and weekend periods. The results of the surveys are shown in Figure 13 below. The cyclist peak hour volumes across the study area are summarised in Figure 14.

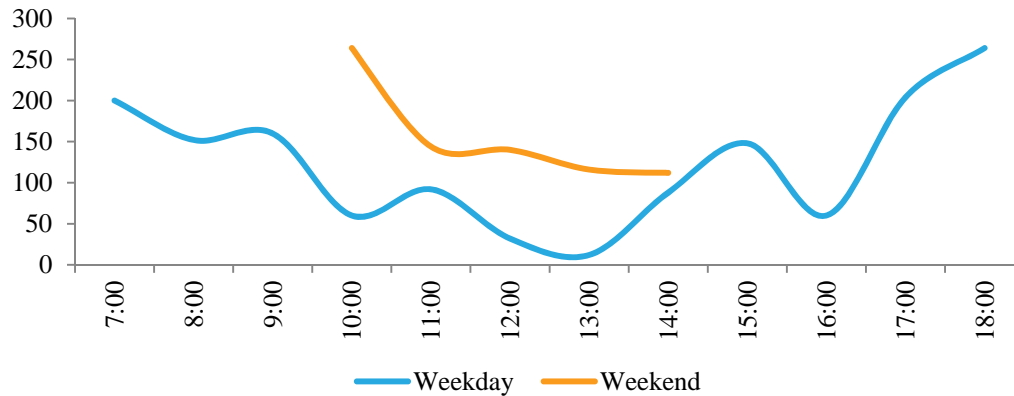


Figure 13: Total Bicycle Demand

Figure 13 identifies the difference in total cyclist traffic over weekday and weekend periods. There were two peak hour volumes of 264 cyclists captured during the data collection process: 6:00 PM on weekdays and 10:00 AM on weekends.

The weekday peak coincides with the evening cycle commute home, suggesting a reasonable degree of commuter cycling through the CJAA. In comparison the weekend peak suggests a similar level of recreational cyclists passing through or accessing the centre.

Notably, there are mid-day peaks of cycling activity at 11:00 AM and 3:00 PM that do not correlate with a commuter movement. These suggest that a proportion of cyclists within the CJAA use bicycles for ‘utility trips’, or general activities. This signifies there are diverse existing cycling behaviours currently within the CJAA. The incidence of non-commuter cycling provides clear evidence of background demand for cycling within the CJAA over and above the dominant commuter movement.

While the surveys suggest that Camberwell experiences a diverse range of cyclists travelling through the centre, the extent to which Camberwell is currently a cycling destination is unclear with few bicycles observed parked in CJAA and only a few cyclists interviewed.

Figure 14 shows the major cycling routes for the weekday peak hour. Notably, the highest traffic is along Riversdale Road heading east. Further, the Trader Questionnaire Survey indicated that few employees or customers cycle to local businesses. The Trader Questionnaire asked businesses if there was sufficient bicycle parking for customers. Of 34 commented responses to this question, 16 (47% of all responses) indicated that few customers/employees arrive by bicycle. Further, 10 responses (29%) indicated that they were unsure of cycle parking near their business. Only seven responses (21%) stated that bicycle parking was insufficient.

Analysis of daily cycling volumes and peak hour routes aligns with anecdotal advice that a significant proportion of cycling traffic moves through, rather than to Camberwell. Nevertheless, the survey volumes highlight Riversdale Road as a major east-west cycling corridor within the CJAA, and therefore a priority destination for improvements to cycling safety and amenity.

In addition to the survey results, the study area was also analysed in detail to determine the key cycling routes within the CJAA and missing links that prevent further increases in cycling mode share.

Further, gaps in the broad cycling network have been identified. Utilising the survey results, the outcomes of site inspections and local knowledge a series of strategic gaps within the cycling network have been identified. These include:

- lack of a clear east-west connection to the Anniversary Trail;
- barriers connecting to communities west of Camberwell Road; and
- lack of clear connection with the Gardiners Creek Trail.



Figure 14: Cyclist Survey Volumes (6:00PM-7:00 PM)

3.4.4 Public Transport

As described in Section 3.3.3, the public transport network includes trams, trains and buses servicing the area.

Interview surveys conducted during November 2011 along Burke Road, Camberwell Road and Riverdale Road indicated that approximately 30% of those interviewed had arrived by public transport. Interview surveys undertaken in May/June 2013 indicated that at Station Street approximately 20% had arrived by public transport and at The Well 11% had arrived by public transport. Given the proximity of the 2013 surveys adjacent to the core car parking areas, a lower public transport mode share would be expected.

3.4.4.1 Trams

Tram boarding and alighting data was captured in association with this study across two Thursdays: 27 October 2011 and 10 November 2011 (7:00 AM – 1:15 PM). 12 tram stops were surveyed within the CJAA region across three routes. Tram stops servicing Route 70, 72, and 75 were all recorded. Table 6 below shows results from the survey period (7:00 AM – 1:15 PM) and peak 15 minute period (8:30 AM – 8:45 AM).

Table 6: Key Tram Survey Results

Route	Stop Number	Location	Survey volume (7:00 AM – 1:15 PM)	Peak 15 minute volume (8:30 AM and 8:45 AM)
72	60	Campbell Rd/Burke Rd	95 Boarding 98 Alighting	9 Boarding 12 Alighting
	61	Camberwell Junction/Burke Rd	193 Boarding 210 Alighting	13 Boarding 23 Alighting
	64	Camberwell Railway Station/Burke Rd	167 Boarding 337 Alighting	16 Boarding 52 Alighting
70	38	Hastings Rd/Riversdale Rd	46 Boarding 15 Alighting	6 Boarding 0 Alighting
	39	Camberwell Tram Depot/Riversdale Road	68 Boarding 42 Alighting	13 Boarding 9 Alighting
75	38	Hastings Rd/Riversdale Rd	17 Boarding 32 Alighting	2 Boarding 6 Alighting
	40	Camberwell Junction/Riversdale Rd	134 Boarding 238 Alighting	6 Boarding 26 Alighting
	42	Camberwell Primary School/Camberwell Road	28 Boarding 40 Alighting	0 Boarding 10 Alighting

Of the three routes servicing the CJAA, Route 72 experiences the highest recorded total patronage throughout the day: with 1,369 people observed boarding and alighting between 7:00 AM and 1:15 PM.

The peak 15 minute period for passengers was observed between 8:30 AM to 8:45 AM when a total of 281 people were observed boarding or alighting one of the three tram routes. Of the three lines Route 72 has the highest patronage in the peak 15 minute period with 145 people boarding and alighting across the three stops surveyed.

The survey data has also identified several highly utilised stops within the CJAA. Between 7:00 AM and 1:15 PM, the highest patronage stop is stop 64 (Camberwell Railway Station) on Burke Road south of Burwood Road, serviced by route 72. Across the survey period a total of 504 passengers were recorded utilising the stop (167 boarding and 337 alighting).

Route 72 is the busiest total route within the CJAA and also has stops with the highest concentration of activity within the peak 15 minute period. There is a high correlation of these busy stops and proximity to key destinations such as the Burke Road shopping strip and Camberwell Rail Station. The presence of heavy alighting loads at these destinations suggests trams are a key link to the CJAA, rather than a majority through movement. There were no tram stops surveyed on Route 72 that had an overall low utilisation. While there are some tram stops that have a high utilisation during the peak 15 minute period, there are also some stops that have a very low peak utilisation. When coupled with low overall utilisation, these tram stops present candidates for rationalisation.

Stop 38 on Route 70 (Hastings Road/Riversdale Road – west of the Junction) shows the lowest utilisation on Route 70 for both the peak 15 minute period (six passengers) and overall total utilisation (61 passengers between 7:00 AM and 1:15 PM). This stop also shows low utilisation of Route 75 tram users, with eight passengers recorded in the peak 15 minutes and 49 passengers across the day.

In addition to the results of the tram stop surveys, a review of trip origins for visitors who accessed the CJAA by tram (identified by the Intercept Surveys) has also been undertaken. The results of the trip origin analysis for visitors who arrive to the centre by tram are shown in Figure 16.

Notably, people accessing the centre via tram do so over a closer geographical area than those who drive. Southern suburbs are heavily represented, which corresponds with the 70, 72 and 75 tram routes. As expected, origin suburbs closely correlate to suburbs with tram routes. Notably, some visitors are considered to utilise multiple modes where no direct public transport connection exists.

The Doncaster Rail Study - Phase One Recommendations Report (Draft) presents background information regarding patronage growth along tram routes 72 and 75. The study shows that tram route 72 patronage could experience a 4.2% annual increase and patronage could more than double between the years 2011 and 2031 to over 8,000 trips in the am (two hour) peak period. In addition, tram route 75 patronage could experience a 5.7% annual increase and patronage could triple between the years 2011 and 2031 to almost 9,000 trips in the am (two hour) peak period.

3.4.4.2 Trains

Demand for trains at Camberwell Railway Station has been catalogued by the Department of Transport Planning and Local Infrastructure. This analysis included estimated station entries by Access Mode. Mode Share to Camberwell Railway Station for the period 2010-2011 is shown below in Figure 15.

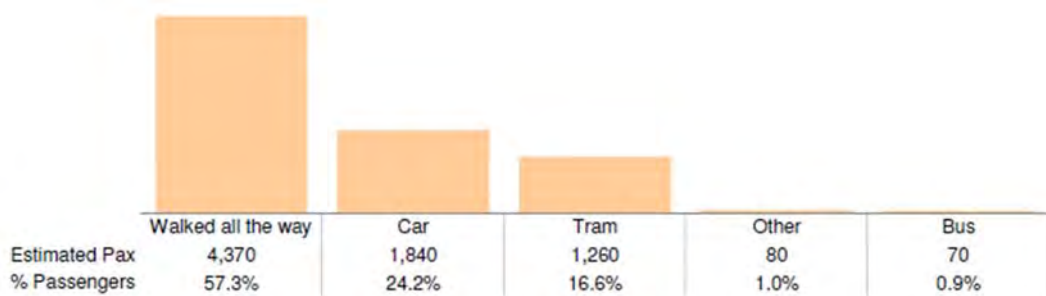


Figure 15: Camberwell Railway Station Access Modes 2010-2011 (source: Department of Transport)

Notably, the majority of all passengers that use the station walked all the way (57.3%). This provides clear evidence that walking is a vital access mode to Camberwell Railway Station, and that walking is perceived as a viable mode of access for people who wish to take the train from surrounding residential areas.

Other major modes of access to Camberwell Railway Station were car (24.2%) and Tram (16.6%). Increasing the number of people who walk or take public transport to the Station aligns with the overall access objectives of this study.

As stated in Section 3.3.3.3, 2011 changes to the train timetabling for the Belgrave and Lilydale lines decreased the number of services that stop at Camberwell Railway Station. This restricts demand from eastern suburbs and inhibits direct access to the CJAA. During the AM peak period (7:30 AM to 9:00 AM) a total of seven Belgrave services and five Lilydale services express Camberwell. In comparison, under the previous timetable, only one Belgrave service expressed Camberwell.

Reduced train services means that employees, students and visitors from eastern suburbs must interchange trains at a station between Ringwood and Box Hill to access Camberwell Railway Station. Council has received community feedback that this timetable change has resulted in people who previously commuted by train to the CJAA now using private vehicles.

In addition to the results of the train timetables, a review of trip origins for visitors who accessed the CJAA by train (identified by the Intercept Surveys) has also been undertaken. The results of the trip origin analysis for visitors who arrive to the centre by train are shown in Figure 17.

Evidently, suburbs with train lines in them comprise the majority of origins. Overall, west movements are well utilised, while there is negligible train demand from the east. There is notable overlap between car driver demand and train provision: this represents the possibility of a catchment for increased train use.

3.4.4.3 Buses

Based on intercept questionnaire surveys, buses within the CJAA experience a very low utilisation. This could be due to a number of factors, including low service frequencies in non-peak times and weekends, lack of clarity in the community on bus routes and bus stop locations, bus routes duplicating tram or train services, and poor integration between bus and other public transport modes.

Regarding integration between bus and other modes of public transport, there is a low integration of bus and train services within the CJAA. From Figure 15 less than 1% of people accessing Camberwell Railway Station did so using a bus. This is despite a relatively low distance between bus stops on Station Street and Camberwell Railway Station.

To further understand the role of buses within the study area, analysis of the 2009/2010 Victorian Integrated Survey of Travel and Activity (VISTA) data has also been undertaken. This provides a snap-shot of bus utilisation in Boroondara. VISTA data contains bus usage to and from Boroondara for a range of trip purposes, including retail, work, and recreational.

Similar to intercept surveys, buses have an overall low utilisation with only 1.1% of all trips from Boroondara using buses and 1.0% of all trips to Boroondara using buses.

While overall bus utilisation is low, buses form a significant component of all public transport trips for some specific purposes. Notably, 32% of all public transport trips to Boroondara undertaken for 'Personal Business' purposes take buses. 46% of all public transport trips from Boroondara for 'Personal Business' purposes take buses. Further, 22% of public transport trips to Boroondara for education purposes take buses.

This shows that buses, whilst having a low overall utilisation, are heavily used for some specific trip purposes.

Improvement of bus route frequencies and connections with other modes is highly likely to increase patronage, and provide a greater demand for linked bus services.

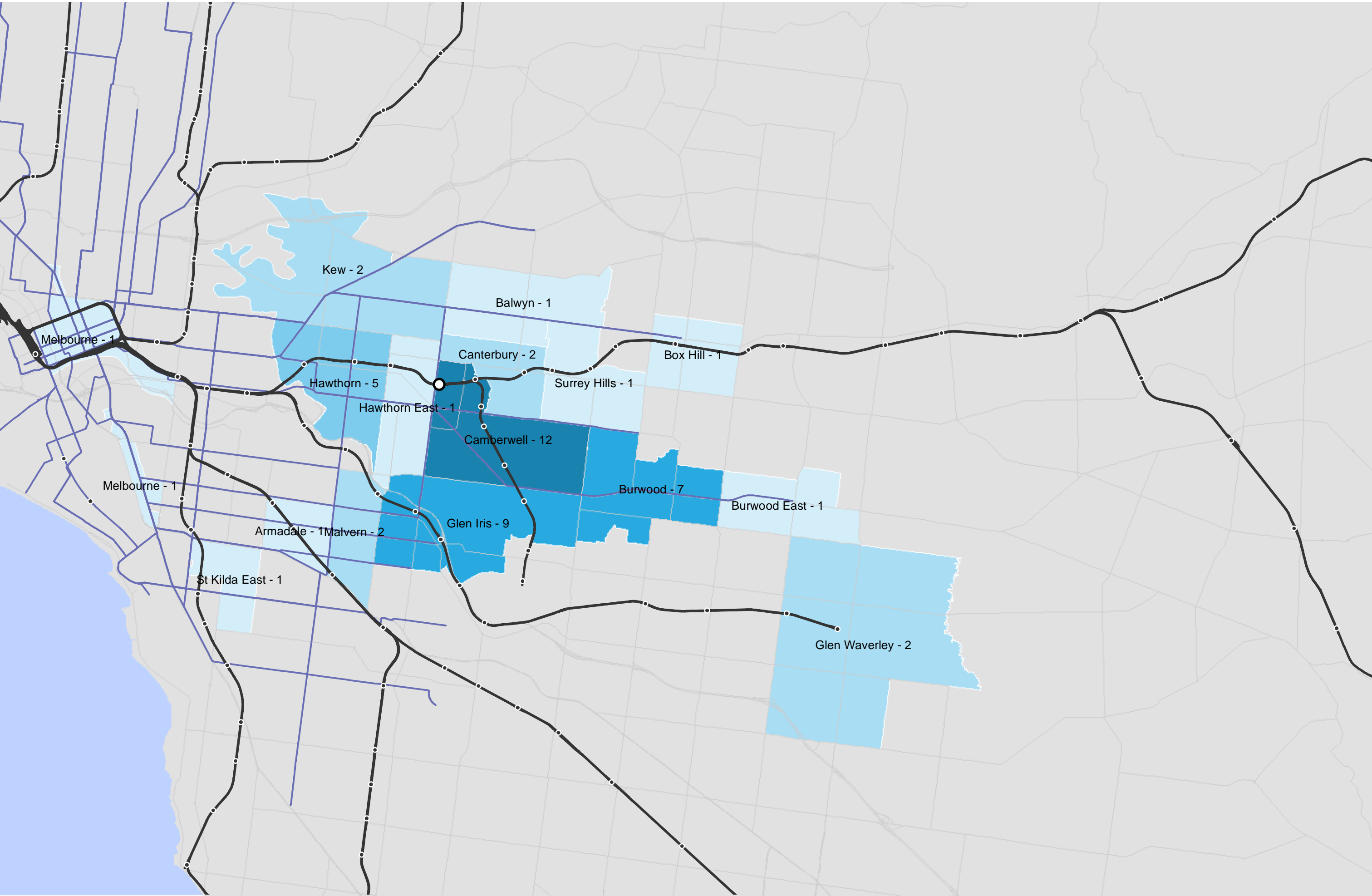


FIGURE 16
Trip Origins: Tram

Number of trips

- < 1
- 1 - 2
- 2 - 5
- 5 - 10
- 10 - 25
- > 25

0 0.5 1 2 3

Kilometers

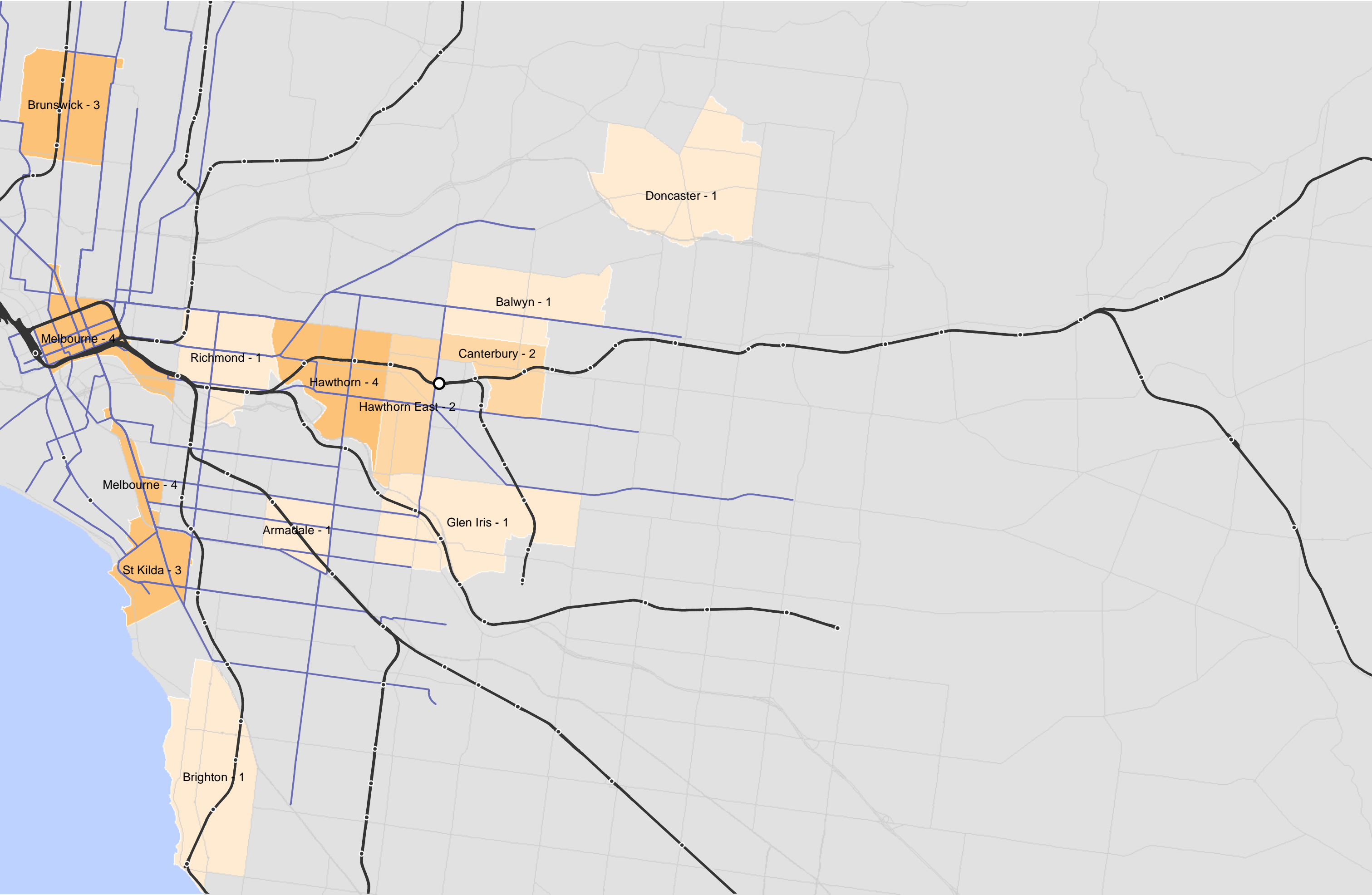
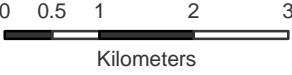


FIGURE 17
Trip Origins: Train

Number of trips

- < 1
- 1 - 2
- 2 - 5
- > 5



3.4.5 Traffic

Traffic in the form of private vehicles and commercial vehicles are a core component of transport demand to the centre. In particular, the arterial roads that comprise the Camberwell Junction carry significant traffic volumes and result in congestion at peak times.

Both intercept surveys and Victorian Integrated Transport Model results provide an overview of traffic movements through Camberwell Junction. The model also presents insights in terms of potential future public transport provision required to provide mode choice.

In Camberwell, the car is an important mode of access to the Activity Area; however, questionnaire surveys undertaken along Burke Road, Camberwell Road and Riversdale Road in November 2011 reveal that half of those interviewed had walked or arrived by public transport. Interview surveys undertaken along Station Street and adjacent to The Well in May and June 2013 indicated a slightly higher car mode share with two thirds of respondents arriving by car. Considering the location of the 2013 surveys adjacent to the core parking areas, the location of the surveys adjacent to Coles and Woolworths supermarkets, and given persistent wet weather conditions during the weekday survey, a higher car mode share would be expected.

3.4.5.1 Vehicle Trip Origins

A review of trip origins for visitors who accessed the CJAA by car was undertaken (identified by the Intercept Surveys). The results of the trip origin analysis for visitors who drove a private vehicle to the CJAA are shown in Figure 18.

Figure 18 shows a far greater catchment area than walking, but also the same strong relationship with the surrounding suburbs. This could partially be due to tasks that mandate private vehicle use, such as large shopping trips. However, the large amount of vehicle use also provides an opportunity for some of this mode share to be changed to uses such as walking or public transport.

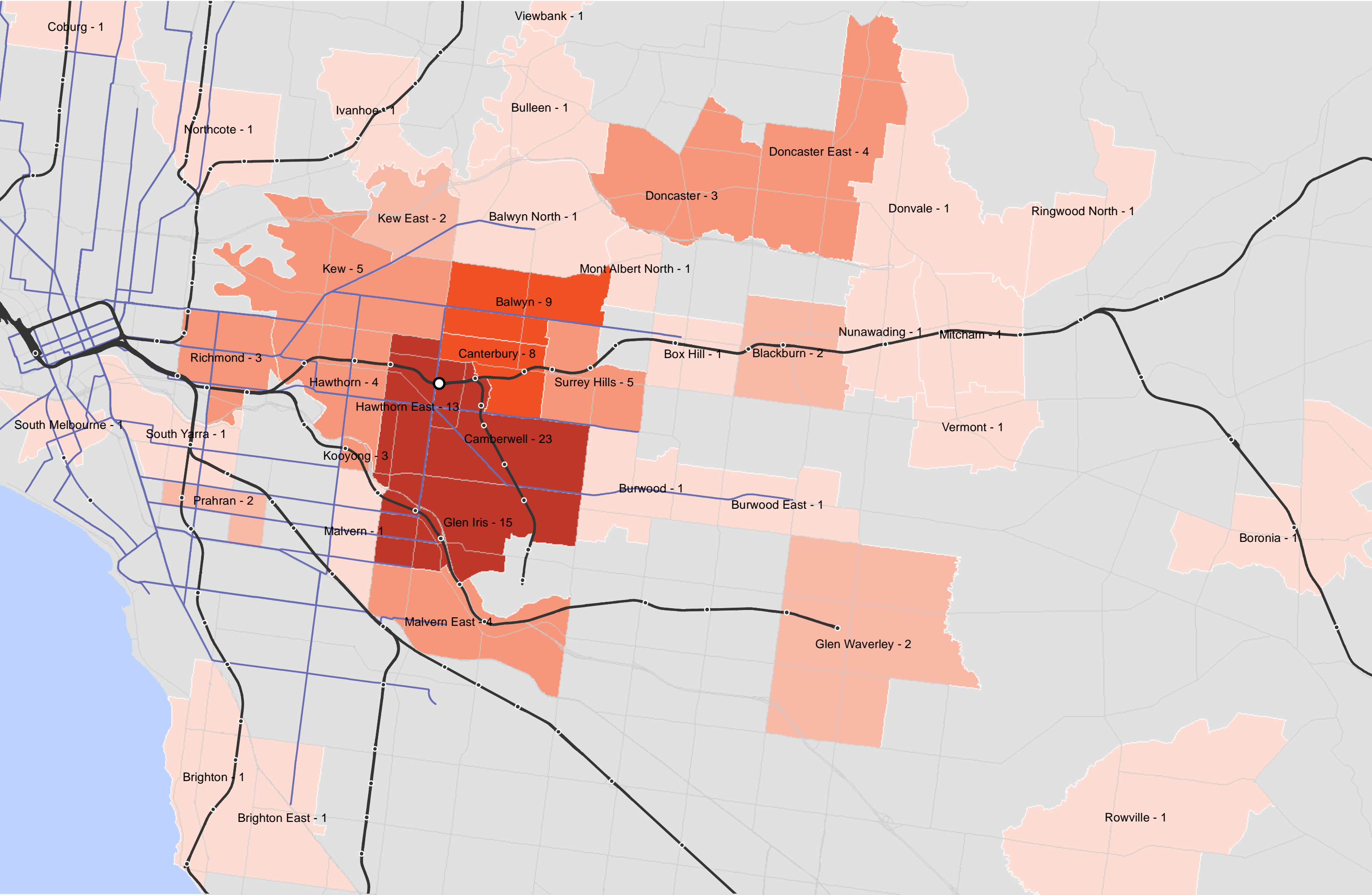


FIGURE 18
Trip Origins: Car

Number of trips

- < 1
- 1 - 2
- 2 - 5
- 5 - 10
- 10 - 25
- > 25

0 0.5 1 2 3

Kilometers

3.4.5.2 Travel Patterns (VITM)

In addition to the analysis of trip origins, a review of the Victorian Integrated Transport Model (VITM) has been undertaken to review projected road volumes. VITM is a comprehensive traffic model developed by the Victorian Department of Transport that simulates future traffic demands across Victoria.

VITM select link analyses were generated for this study identifying the origin/destination and route taken by vehicles that travel through an identified point.

A select link analysis has been conducted for all vehicles that travel through Camberwell Junction (i.e. along Burke Road, Riversdale Road or Camberwell Road through the Junction intersection). The results of the select link analysis for existing and forecast AM and PM peak 2 hour periods is shown in Figure 19 to Figure 22.

The thickness of lines indicates the magnitude of traffic volume along routes. It is noted that the model is unable to identify whether vehicles stop and contribute to activity within the CJAA or travel through the Junction.

In addition to identifying strategic origins and destinations of vehicles, the model can also be reviewed for forecast years to identify increases in traffic volumes along specific routes. As can be seen from the select link plots there is limited change in the volume profile through the Junction between 2011 and 2031.

This suggests the Junction is currently reaching capacity and that any increase in traffic through the junction would be required to displace traffic onto other adjacent routes. Accordingly, to ensure the future prosperity of Camberwell and increase visitor traffic across all modes, alternative access provisions to those currently served by private vehicles will also need to be developed.

VITM outputs can also be read in conjunction with existing public transport networks to identify trip areas not serviced by public transport. Hence, non-existent or inadequate public transport provision in certain areas can lead to higher traffic volumes as there is no alternative to car access.

The significant volume of traffic operating along Burke Road to the north and south of the Camberwell Junction shows the prominence of Burke Road as a traffic through route. One key factor that influences the extent of traffic on Burke Road is the lack of fully connected public transport.

Based on the select link analysis, Camberwell Junction is a key traffic node for the following strategic routes:

- northern suburbs such as South Morang and Greensborough through Camberwell southeast to Chadstone, Glen Waverly and Dandenong via the Monash Freeway;
- links from the CBD eastbound to Doncaster and the Eastern Freeway;
- north-south links from South Morang through Ivanhoe to coastal suburbs including Oakleigh and Brighton; and
- east-west connections west of the West Gate Freeway to Burwood and Box Hill via the Princes Highway.

Accordingly, strengthening public transport connections and services to accommodate these routes provides an opportunity to decrease car trips and traffic through the Camberwell Junction.

While Tram Route 72 currently operates along Burke Road, there is missing public transport connectivity with Cotham Road/Whitehorse Road and south of Malvern Road. Increasing the connectivity of Route 72 with Tram Routes 48 and the Hurstbridge Rail line to the north could reduce the need for significant vehicle traffic along Burke Road.

Similarly, connections along Burke Road south to connect with Tram Routes 3, 5, 6, and Caulfield Rail Station could further reduce traffic along this route. Increased public transport provision along Burke Road would aid in reducing vehicle congestion, which VITM modelling suggests is rapidly reaching capacity.

Improved public transport connectivity between Camberwell and Doncaster Hill is required to provide transport choice and this can be achieved through improved Bus 285 services, an extension of Tram Route 48 to Doncaster Park and Ride (with Trams 72 connecting with Tram 48), and/or the development of the Doncaster Rail Line and a interchange with Tram 72.

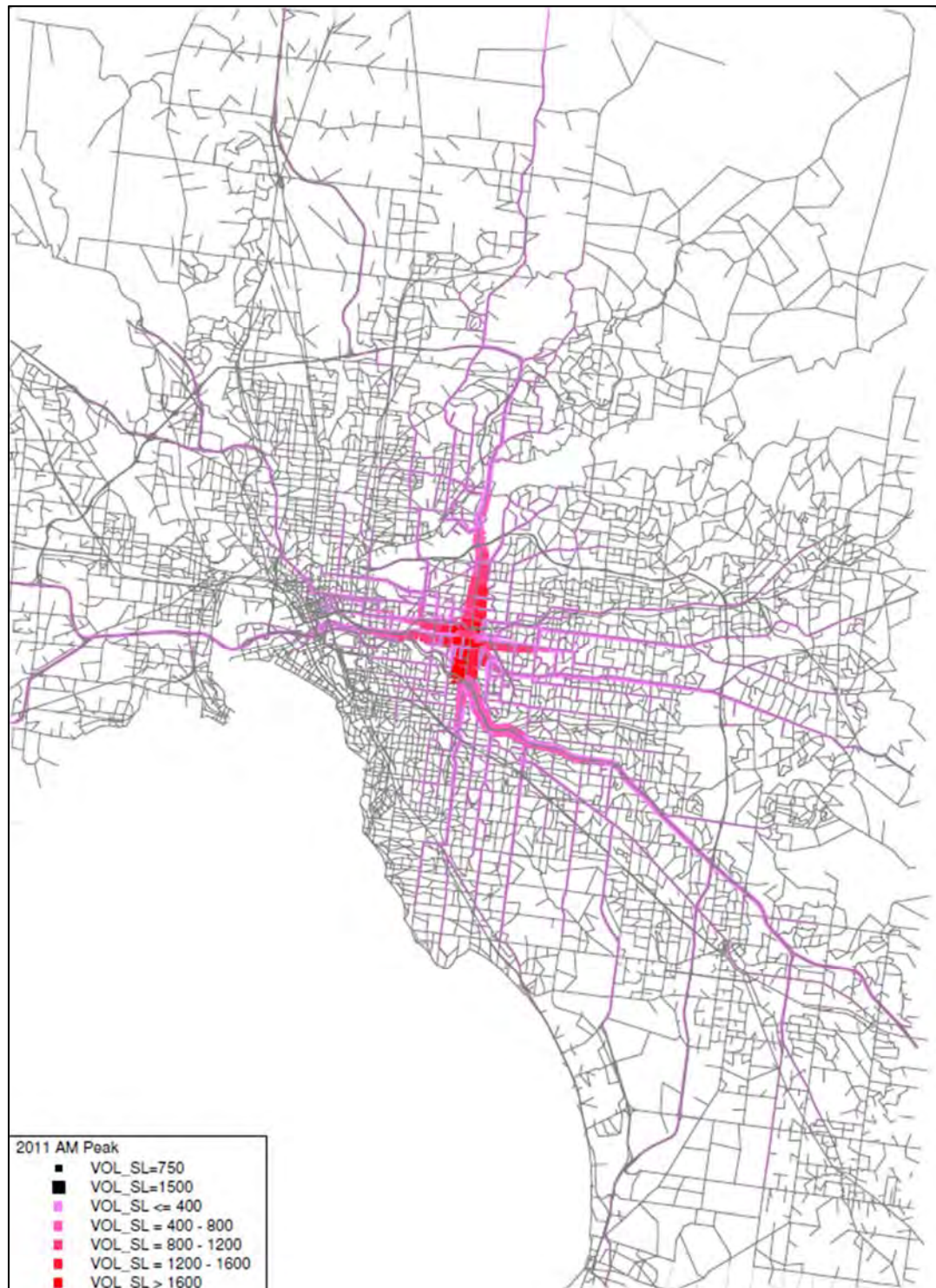


Figure 19: VITM Outputs - 2011 AM peak

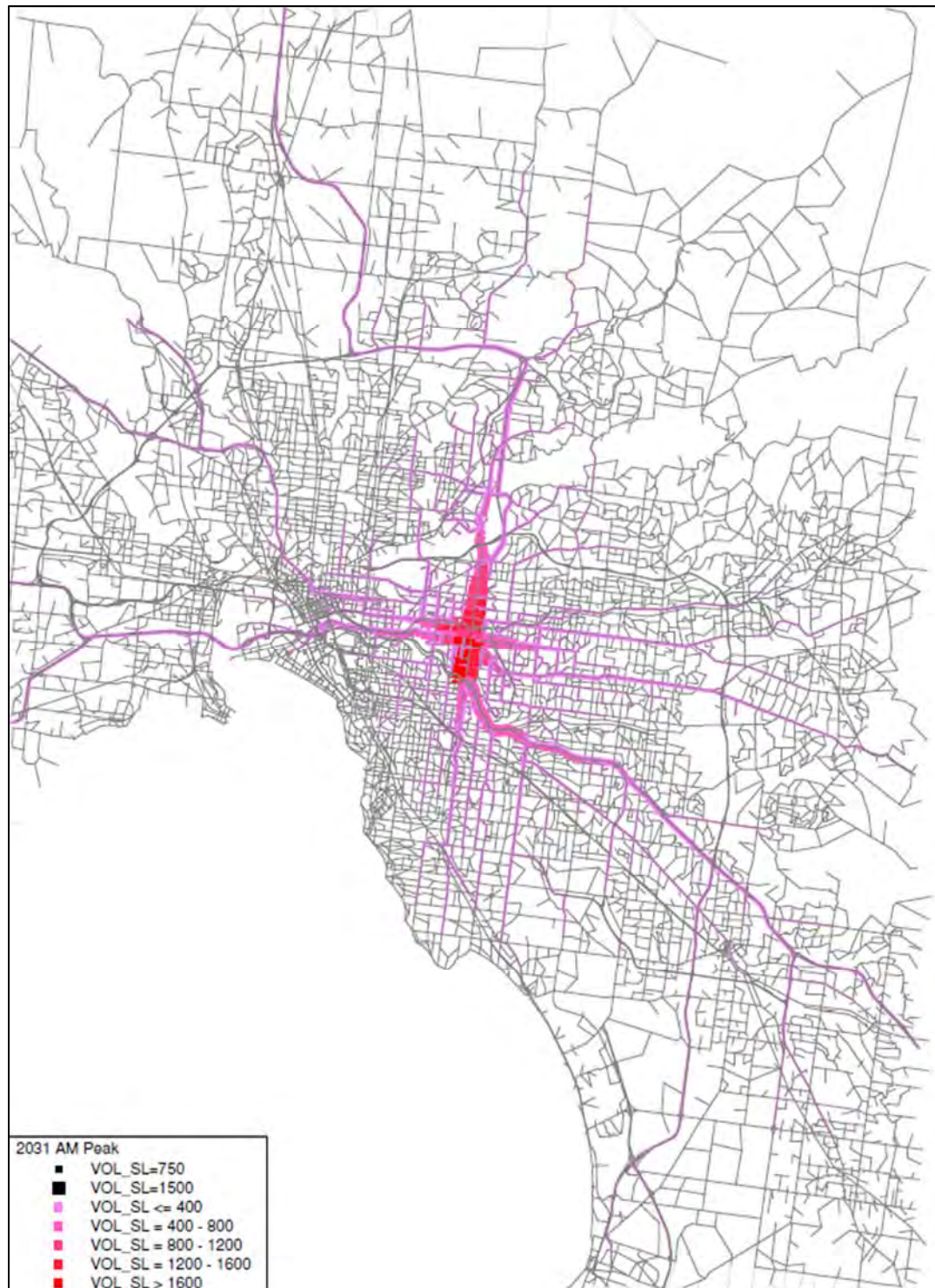


Figure 20: VITM Outputs - 2031 AM peak

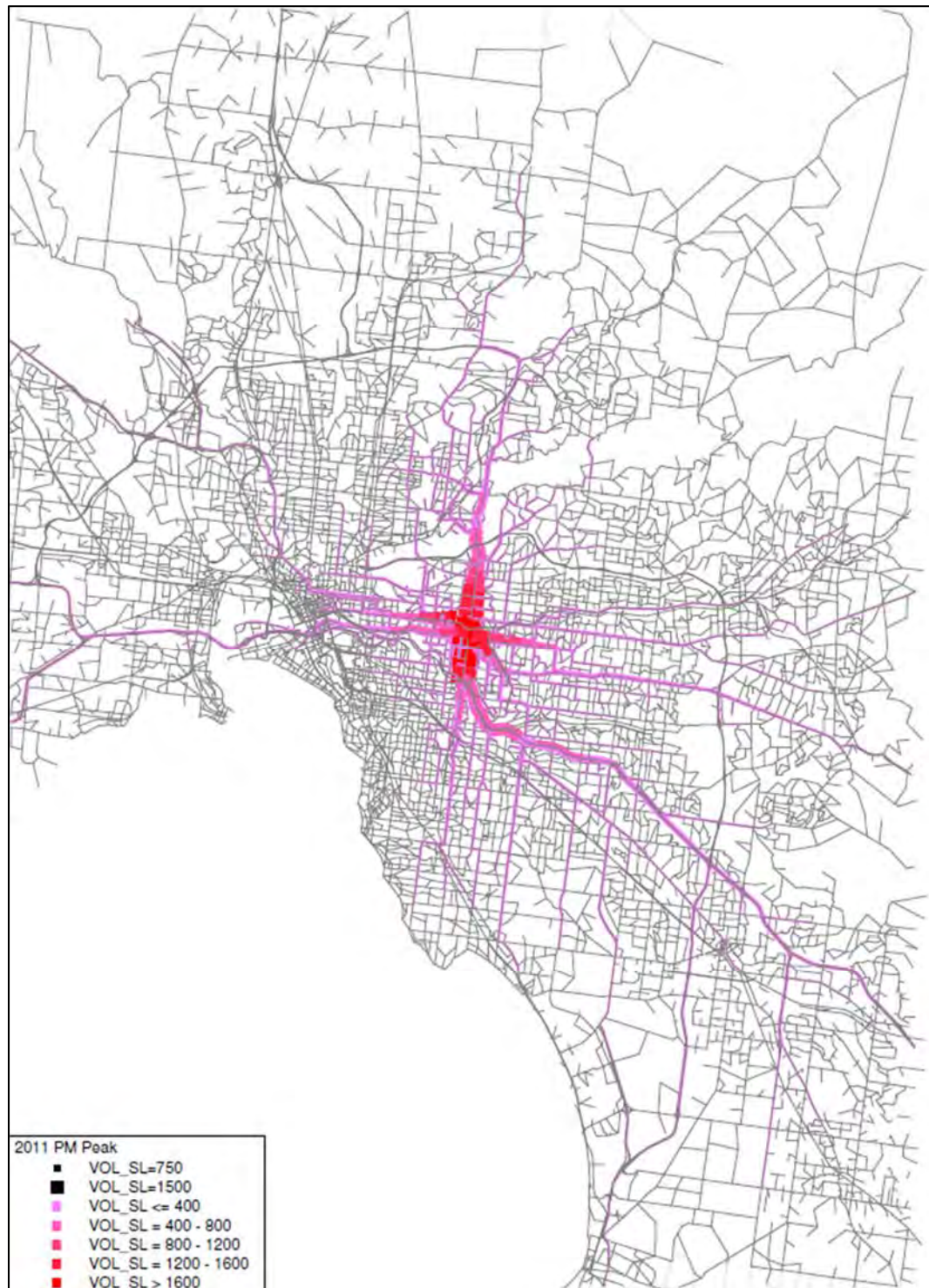


Figure 21: VITM Outputs - 2011 PM peak

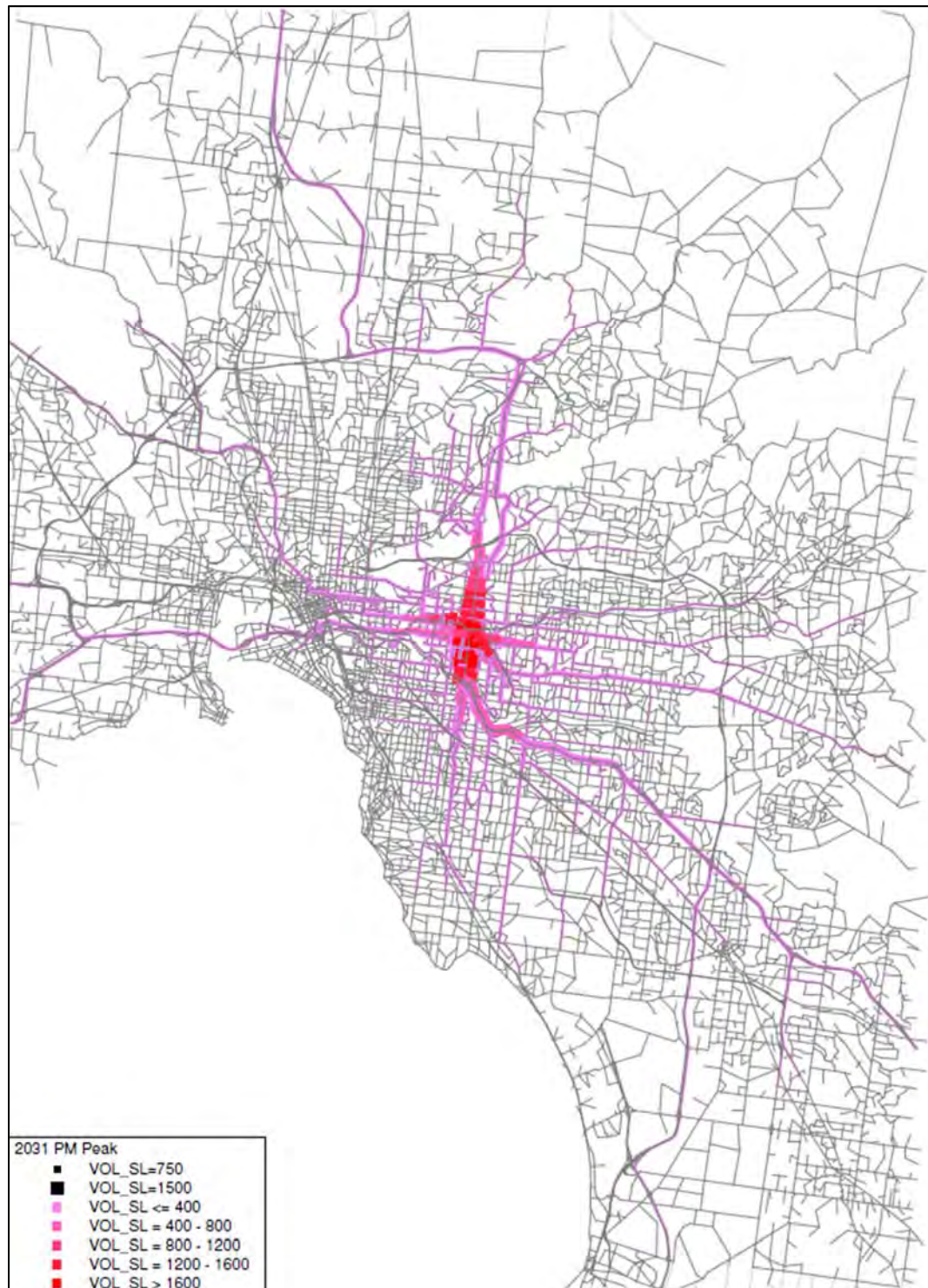


Figure 22: VITM Outputs - 2031 PM peak

3.5 Strategic Network Analysis

In addition to investigation of transport supply and demand, the broader transport networks influencing the CJAA were also assessed. These include the Principal Pedestrian Network (PPN) and the SmartRoads framework.

3.5.1 Principal Pedestrian Network

A Principal Pedestrian Network (PPN) is a network of pedestrian routes that promotes walking to and within Activity Areas. The PPN provides a framework for improving conditions along pedestrian corridors. Improvements may include adequate footpath provision, road crossing provision appropriate weather protection, landscaping, shade and seating. At this time VicRoads is considering the PPN priority and respective consideration that would be given to pedestrian movements along transport corridors and at intersections in line with SmartRoads.

The Department of Transport has defined a methodology that is used to determine a PPN. The primary objective of developing a Principal Pedestrian Network (PPN) is to prioritise and encourage walking as a viable transport option for regular and essential daily trips including trips to and from work and shops.

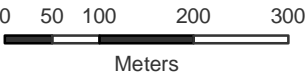
Council has identified a Principal Pedestrian Network (PPN) for the CJAA utilising the pedestrian survey data collected in association with this study to validate the model and identify key links. The PPN adopted for the area is shown in Figure 23.

The process undertaken by Council to establish the PPN is attached in Appendix A.



FIGURE 23

Principal Pedestrian Network



3.5.2 SmartRoads

The VicRoads SmartRoads network establishes a hierarchy for transport access within key Victorian locations, balancing competing transport modes across Melbourne's arterial roads.

Currently, the CJAA is listed as a Principal Activity Area. The existing SmartRoads Hierarchy for the CJAA aims to balance the competing access needs of pedestrians, cyclists, and private vehicle users. An overview of the current SmartRoads Hierarchy for the CJAA is shown in Figure 24.

Additionally, the existing SmartRoads Hierarchies for the CJAA by different times of day are outlined in

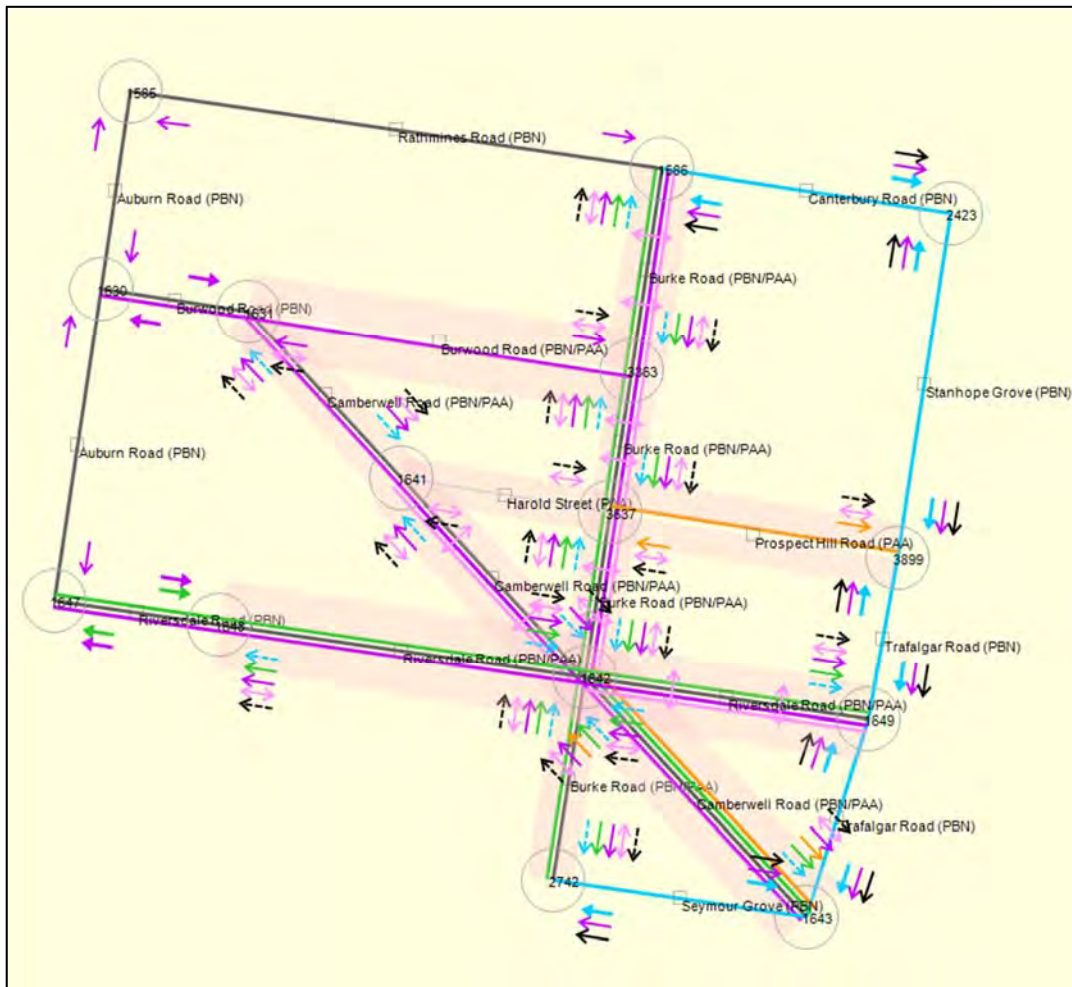


Figure 25 to

Figure 28. Due to the complex nature of the Activity Area, different modes have different priorities depending on the time of day. These figures show the traffic priority at different peak times.

It is noted that the existing Pedestrian Priority Areas for Camberwell currently comprises Burke Road, north of Riversdale Road, Camberwell Road north-west of the Camberwell Junction, and Riversdale Road east of Burke Road. These cover key areas of the Activity Area, but also omit some adjacent roads such as Camberwell Road south of the Junction.

The SmartRoads Hierarchy states that there is a high need for pedestrian priority within Activity Areas. Specifically, the SmartRoads Guidelines (version 2.1) state that “providing for larger numbers of pedestrians to safely and easily move across arterial roads in these areas is increasingly important [for activity areas], as is the movement of public transport.”

Therefore, ensuring that pedestrians and public transport users have priority within Activity Areas is a core function of the SmartRoads Hierarchy. As the broader CJAA extends further south along Burke Road and Camberwell Road, it is reasonable to assume areas along Camberwell Road south of Riversdale Road should be classified as Pedestrian Priority Areas.

As a result, there is scope to further investigate extended Pedestrian Priority Areas around the Camberwell Junction, particularly south of Riversdale Road.

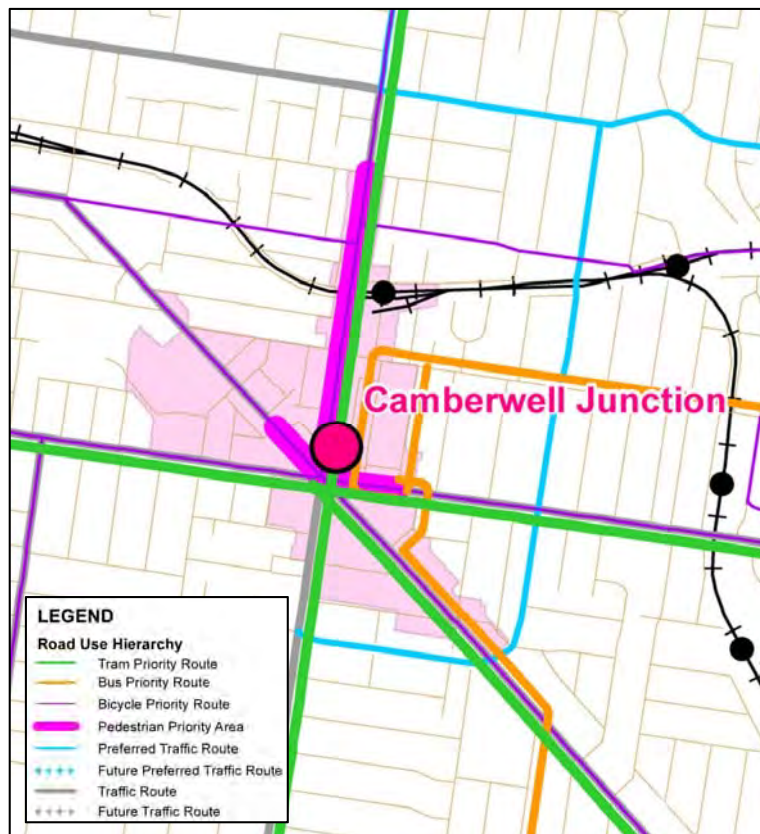


Figure 24: SmartRoads Hierarchy

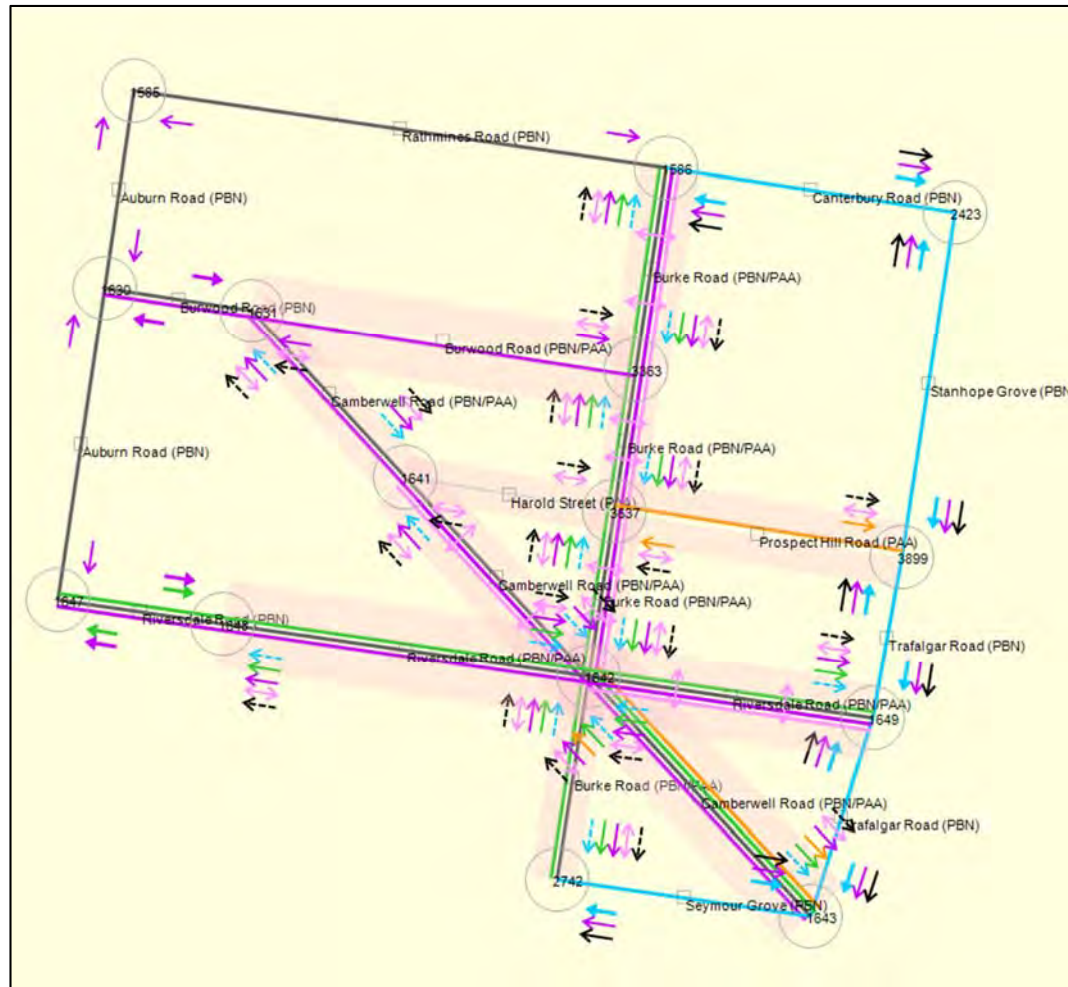


Figure 25: SmartRoads AM Peak Hierarchy

Source: VicRoads NFA Tool

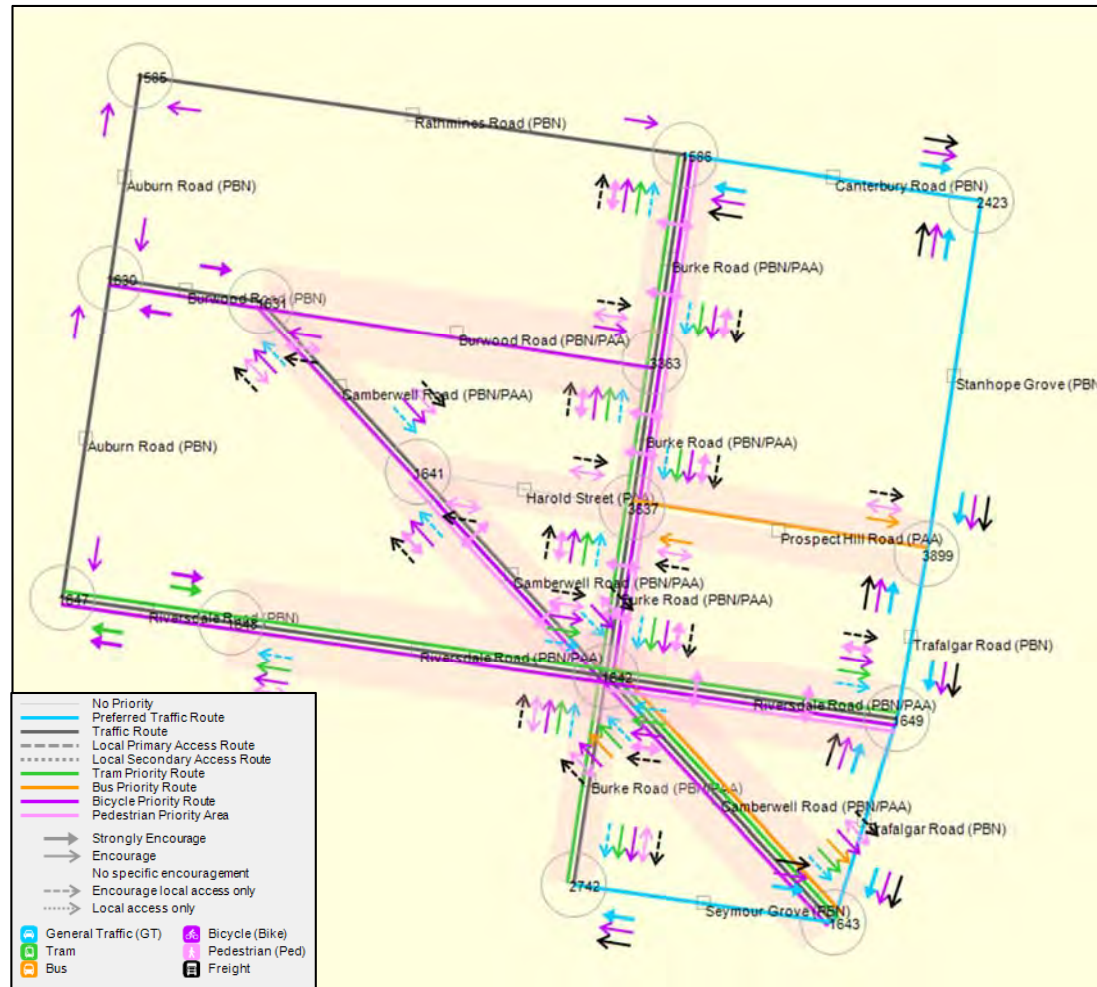


Figure 26: SmartRoads PM Peak Hierarchy

Source: VicRoads NFA Tool



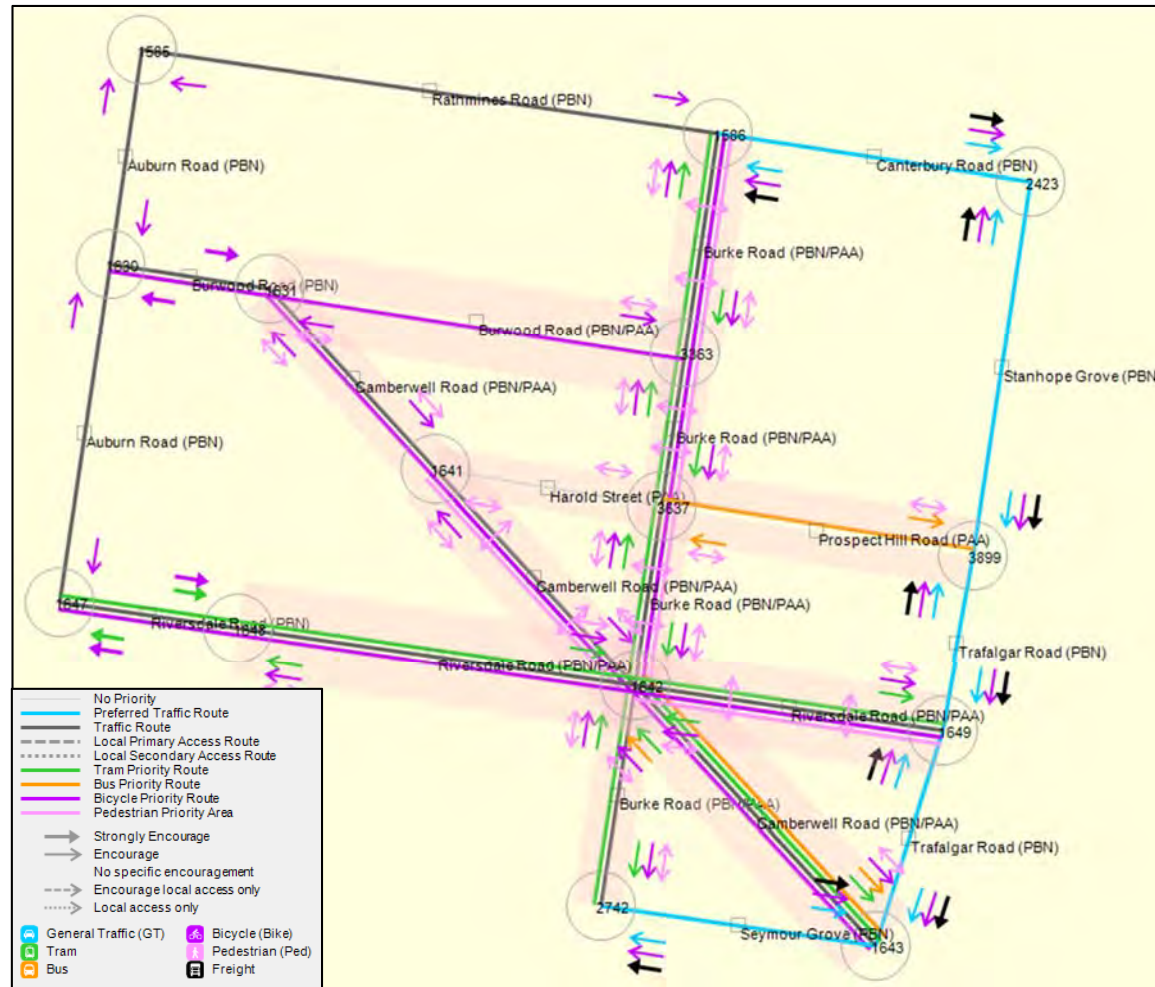


Figure 28: SmartRoads Off-Peak Hierarchy

Source: VicRoads NFA Tool

4 Liveability, Health and Economic Vitality

4.1 Overview

There is a growing body of evidence that relates liveability, health and wellbeing to our urban environments and transport choices. Health and liveability have been identified as a contemporary issue facing the developed world and form a consistent link across Federal, State and Local Government policies. In combination with the policy review and background information, this section further informs the studies recommendations. The section highlights background research and defines high level guidance.

The Victorian Transport Integration Act (2010) states that the transport system should “*promote forms of transport and the use of forms of energy which have the greatest benefit for, and least negative impact on, health and wellbeing*”.

4.2 Physical Activity and Sedentary Lifestyles

Physical inactivity is a key risk factor for cardiovascular disease, cancer and diabetes³. Research has shown that how individuals choose to travel on a daily basis has a relationship with physical activity and healthier lifestyles – key findings of this research are discussed below.

A study in the UK highlighted that if a typical British adult were to walk an hour more per week, the equivalent difference in walking between a typical driver and a non-driver, this would counteract a weight increase of 2 stone over a decade. It would also counteract a longer-term slide into obesity⁴. An additional hour spent in a car per day was associated with a 6% increase in the odds of an individual being obese, while each additional kilometre walked per day was associated with a 4.8% reduction in the odds of being obese⁵.

The Victorian Integrated Survey of Travel and Activity (VISTA) data indicates that people, who used public transport on a particular day, also spent an average 41 minutes walking and/or cycling as part of their daily travel. This is five times more physical activity than those who only use private transport⁶. A West Australian study found that public transport users will on average accumulate approximately seven times more incidental exercise than private motorists⁷.

According to the Victorian Health Promotion Foundation, VicHealth, more than two thirds of Australian adults were classified as sedentary (34.6%) or having low levels of exercise (36.9%)⁸. This has led to increases in obesity rates, which entails increased risks of heart disease and other health risks. Epidemiologists in Monash University highlight that approximately a quarter of Australians are clinically obese. Should weight gain continue to increase at current levels close to

³ World Health Organisation, May 2004. Global Strategy on Diet, Physical Activity and Health

⁴Institute for European Environmental Policy, 2007. Unfit for Purpose

⁵Frank, Andresen and Schmid 2004: noted in Federal Department of Infrastructure and Transport Our Cities Background and Research Paper

⁶Bus association Victoria, 2010. Public Transport Use a Ticket to Health

⁷Socialdata Australia (2000) Mobility Behaviour, City of Melville, Department of Planning and Infrastructure (DPI), Perth

⁸VicHealth, Participation in Physical Activity Research Summary, 2010

80% of Australian adults will be obese by 2025 and a third of children⁹. The estimated cost of obesity in Australia in 2008 was \$58.2 billion¹⁰.

Physical inactivity is also an important contributor towards health costs and is responsible for over 6.6% of the total burden of disease and injury in Australia¹¹. Lack of physical activity also has a high economic burden: the total annual cost of inactivity is estimated to be \$13.8 billion¹². In fact, it has been demonstrated that the direct health costs of physical inactivity cost the Australian healthcare system \$1.5 billion per annum¹³.

In summary, transport has an important role to play within the broader health context as both a contributing factor to the problem and a potential solution. Active transport presents a method to incorporate physical activity into the daily routine of many people. Replacing car usage for short trips in favour of active transport removes a sedentary activity that can lead to obesity and provides opportunity for regular exercise.

Given Council lists Community Wellbeing as a key vision theme within *Our Boroondara: Our City Our Future*, the health and wellbeing of Camberwell residents and visitors who use the study area is a priority for Council into the future. Hence, improving active modes of transport is a core component of achieving this vision.

4.3 Liveability and Wellbeing

Liveability and the quality of a place is a product of many factors, going well beyond physical design. Liveability includes such considerations as activity levels, air quality, noise pollution, building maintenance, green/community space, pavement surfaces, events or entertainment, how people move, and even the weather conditions.

People are highly sensitive to the conditions of urban environments, and constantly make judgments on place quality by where and how they choose to walk, spend time, interact or recreate outside the home, school or work environments. In turn, this interaction with our urban environments can affect our health, either positively or negatively.

Traffic is the main source of air pollution in Australian cities¹⁴. Although ambient air quality is considered relatively good in Australia, urban air pollution is a significant cause of death and illness in the community contributing close to 3000 deaths in 2003¹⁵; this represents twice the road toll for the same year. Research reports that this burden falls disproportionately on the young and the elderly.

A recent report by the Grattan Institute draws together research that clearly identifies a negative liveability correlation with traffic volume, speed and car

⁹<http://www.modi.monash.edu.au/obesity-facts-figures/obesity-in-australia/>

¹⁰Access Economics, 2008. Growing Cost of Obesity

¹¹VicHealth, Participation in Physical Activity Research Summary, 2010

¹²Commonwealth Department of Health and Aged Care, The Cost of Illness Attributable to Physical Inactivity in Australia, 2000

¹³Medibank Private, 2007. The cost of physical inactivity

¹⁴Department of Transport and Regional Services, 2005. Health impacts of Transport Emissions in Australia: Economic Cost

¹⁵Begg S, Vos T, Barker B, Stevenson C, Stanley L, Lopez A. 2003

commuting¹⁶. For example, in Basel Switzerland, people who live on faster streets (50 kph) are half as likely to be active in the public space¹⁷. Over 80% of Australian drivers find their commute stressful and frustrating¹⁸. Increasing journey times faced by Australia commuters has a correlation with reduced wellbeing and social activity¹⁹.

There has been a renewed focus on the 'human perspective' in the planning and design of urban environments, and an increased drive towards creating cities that are good for people, with a strong emphasis on providing transport choice that reduces the impact of the need to travel and through providing quality public space in the city that encourages improved liveability outcomes.

Trees and green space are reported to have positive impacts on liveability and wellbeing. Trees are "nature's air conditioners" with one tree being equivalent to 5 room air conditioners running 20 hours/day²⁰. Trees remove air pollutants and improve air quality²¹. In Sacramento, the urban forest removes 1,457 tonnes of pollutants annually (ozone, particulates <10µm, nitrogen dioxide and sulphur dioxide), with a value of US\$28,763,000²². Epidemiological studies in Japan highlighted that walkable green spaces (parks and tree lined streets) had positive longevity benefits for senior citizens and this was a significant predictor for survival²³.

Council's principal strategic document, *Our Boroondara: Our City Our Future*, captured community sentiment around connectivity and transport. Based on this consultation, people stated they valued public transport, bicycle paths, and walking paths in parks and open spaces and wanted to enhance these in future planning. Additionally, reducing dependency on cars and increasing use of public and active transport was listed as an important area for Council to involvement.

Council also undertook a Housing Preference Survey in 2012, residents were asked to rank their preferences when choosing a neighbourhood to live. Public transport access was the highest ranked of the criteria. Furthermore, the second and third responses were safety of the area and streets and street trees. It is considered that the above feedback shows a community preference for access options including improved pedestrian and public transport access over vehicle priority. Bicycle access was also rated with an above average priority (5.2 out of 10).

In summary, reducing the impact of transport through improving and encouraging more sustainable transport modes delivers liveability and wellbeing benefits. This in turn has the benefit of allowing the allocation of valuable community space to green infrastructure that is shown to mitigate transport impacts and improve the community environment.

¹⁶Grattan Institute, 2012. Social Cities

¹⁷Sauter and Huettenmoser, 2008. Liveable Streets and Social Inclusion

¹⁸IBM, 2011. Commuter Pain Survey

¹⁹Grattan Institute, Melbourne, 2012, Social Cities

²⁰Grey & Deneke, 1986. Urban Forestry

²¹Grey & Deneke, 1986. Urban Forestry

²²Scott et al., 1998. Air Pollutant Uptake by Sacramento's Urban Forest

²³ Takano et al., 2002; Tanaka et al., 1996

4.4 Safety, Traffic and Speed

A safe public realm should enable people to be safe from hazard and victimisation, and also to ‘feel’ safe. Many factors contribute to the feeling of safety – the presence of others, the feeling of being visible, how calmly traffic behaves, and whether the place is well cared for.

Safety in the public environment is achieved by allowing people to judge risks and navigate their way by creating streets and spaces that are legible, well lit, activated by a range of people and activities, overlooked and incorporate the required infrastructure for movement for all users.

People are likely to be much less inclined to walk or cycle through a risky location and will either avoid what they perceive as unsafe locations or will travel in the security of their car²⁴. Empty streets are also a deterrent given the perception of risk²⁵.

Speed influences active travel choice. When road speeds are high, perceived risk is high and people are less likely to walk or cycle²⁶. The most effective measure for reducing pedestrian road traffic crash deaths and serious injuries is speed reduction²⁷. A study of 6 towns in England reported improvements in liveability after the implementation of 32 km/h zones²⁸. The probability of a fatality increases significantly after 30 km/h and a pedestrian fatality is almost certain at 60 km/h²⁹. The VicRoads Road Safety Strategy notes that a collision between a pedestrian and a car travelling at 60 km/h has a low chance of survival. However, if the car was travelling at 40 km/h the pedestrian has an approximately 80% chance of surviving the crash³⁰.

Heavy traffic is also associated with reduced street-based activities and social interactions between neighbours³¹.

Council undertook a Housing Preference Survey in 2012, examining issues that affect housing preference within Boroondara. A low traffic area was consistently ranked as the highest importance concern for Camberwell residents, with 91% identifying this issue as being of medium/high importance. Parking and street trees were ranked with the second highest priority, with 90% of respondents labelling them as medium/high importance.

In summary, a key aspect of safety for access to the CJAA is road speed. Reduction in road speeds increases safety outcomes for all road space users, including car drivers, cyclists, and pedestrians. Reduced road speeds encourage walking and cycling environments that further activate streets improving perceived and actual personal safety.

²⁴Pucher and Dijkstra, 2003. Promoting safe walking and cycling to improve public health: lessons from the Netherlands and Germany

²⁵Pooley, C. 2011. Understanding Walking and Cycling

²⁶Gerrard 2008; Safe Speed

²⁷ World Health Organization (WHO) 2008. Speed management: a road safety manual for decision-makers and practitioners

²⁸ Baktie Group, 2001. Urban street activity in 20 mph zones

²⁹ World Health Organization (WHO) 2008. Speed management: a road safety manual for decision-makers and practitioners

³⁰ VicRoads Road Safety Fact Sheet, “Speed. Keep it down.”, Publication Number 01341/1

³¹ Appleyard and Lintell 1980; Bosselmann and Macdonald 1999; Hart 2008

4.5 Attractiveness and Maintenance

Good public spaces should appear welcoming, clean and safe, but also appealing to a broad range of potential occupants. Generally streets and spaces which have been invested in and maintained will appear attractive, and will present the first and most immediate positive impression of a locality which is ‘owned’, cared for and valued.

The qualities or characteristics which contribute to enticing places include design, lighting, materials, landscaping, activities, art and many others.

A study involving data on adults in a number of European cities found that more greenery and less litter in residential environments were associated with being physically active and not being overweight or obese³². Epidemiological studies in Japan highlighted that walkable green spaces (parks and tree lined streets) had positive longevity benefits for senior citizens and this was a significant predictor for survival³³.

People will spend time, linger and interact in public spaces that are enticing. An enticing space encapsulates a sense of value and investment in the public environment.

In summary, attractive well maintained public spaces encourage community use and increased physical activity and longevity. In turn greater community use improves both perceived and actual personal safety.

4.6 Economic Vitality

There is an increasing awareness that improved urban spaces, walking, bike use and public transport is good for business. Studies indicate that well-planned non-motorised improvements can increase customers and business³⁴. A comprehensive US study revealed that with the presence of trees there is a positive price increment for products of 12% for large cities and 9% for small cities³⁵. Essentially, this indicates that trees are also good for business.

The Housing Preference Survey undertaken by Council in 2012 asked residents how they would like to see their neighbourhood evolve; Camberwell residents cited increased provision and maintenance of street trees as the majority response (16.7% of responses).

Evidence based studies are also growing in Australia, with clear figures that indicate that motorists are at times a minority and that pedestrians and public transport users in particular often spend more time and visit Activity Areas more often resulting in greater spend³⁶.

Further, improving the urban amenity and walkability of retail precincts has been shown to increase local business activity, particularly with respect to retaining the business of local residents. Global studies have shown that people who take active

³² WHO 2006; Ellaway A, Macintyre S, Bonnefoy X. Graffiti. 2005

³³ Takano et al., 2002; Tanaka et al., 1996

³⁴ Hass-Klau C, 1993. Impact of pedestrianisation and traffic calming on retailing, A review of the evidence from Germany and the UK).

³⁵ Wolf k 2010. City Trees, Nature and Physical Activity

³⁶ Tolley R., 2011. Good for Business

transport to retail areas spend more money per month than those who drove³⁷. This is true of the CJAA: in terms of total annual spending, pedestrians spend more than car drivers or passengers based on intercept surveys. This is due to their higher number of average visits per year when compared with other travel options.

In terms of customer retention, research has shown that areas with high levels of active transport have retail turnover 2.5 times higher per square metre than other, more car dominated areas³⁸.

In addition, a study of Liveable City partner cities has shown key benefits of improving the amenity of retail environments: direct benefits include increased footfall, longer duration of stay, and more expenditure³⁹.

In Camberwell, the car is an important mode of access to the Activity Area, however questionnaire surveys undertaken in November 2011 on Burke Road, Camberwell Road and Riversdale Road reveal that half of those interviewed had walked or arrived by public transport. The following chart illustrates the mode share of questionnaire respondents in the CJAA. This highlights the importance of all modes of access to CJAA.

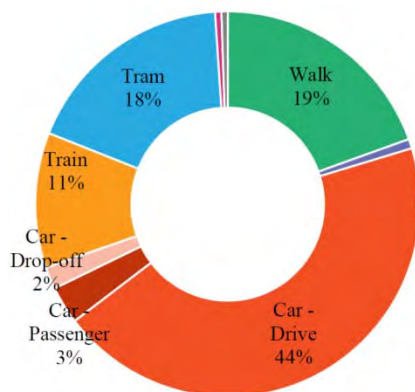


Figure 29: Mode share to Camberwell (source: 2011 interview questionnaire survey)

Interview questionnaire surveys were also undertaken in May/June 2013 along Station Street and adjacent to The Well. Wet weather conditions prevailed during the Thursday survey. A Sunday survey, which captured the Camberwell Market, was undertaken rather than a Saturday survey to avoid extreme weather conditions. At The Well, 19% of respondents walked, 4% had used a bicycle, 11% of respondents had taken public transport and 65% of respondents had driven. Along Station Street, 11% of respondents walked, 1% had used a bicycle, 20% of respondents had taken public transport and 67% of respondents had driven.

In summary, customers are increasingly using healthier more sustainable modes of transport and are increasingly aware of the quality of their urban environment. Improving transport choice and urban environments can be good for business.

³⁷ Tolley R., 2011. Good for Business

³⁸ Tolley R., 2011. Good for Business

³⁹ Loveday, M., 2006. The economic benefits of walking

4.7 Summary

The health implications of our transport decisions are increasingly being understood. Good infrastructure decisions have the potential to provide equity and accessibility in a manner that encourages active lifestyles. Poor infrastructure decisions compound issues of air quality, sustainability, congestion, sedentary lifestyles, social isolation and mental health. The gravity and cost of a car orientated city is of increasing concern. Research now suggests that motor vehicle air pollution causes a similar magnitude of deaths to road traffic accidents; there is a relationship between car use and the lack of physical activity/obesity/sedentary lifestyles; a car orientated city has an impact on social connections and mental wellbeing; the economic cost of congestion and wellbeing will continue to rise significantly with continued and increasingly high car use.

There is evidence that improving transport choice, reducing traffic impacts, allocating space for the community and for green infrastructure, are all measures that are good for business.

Past council surveys and reports highlight that the community is supportive of improving transport choice and reducing the dominance of motorised travel. A private vehicle dominated environment limits travel choice and opportunity, particularly for those without a car. Hence, there is a clear need to improve conditions that allow transport choice in accessing the CJAA for pedestrians and cyclists as well as enhancing the public transport system to ensure it is accessible and integrated.

5 Access Framework

5.1 Overview

Following analysis of the transport supply and demand for the CJAA, a framework for improved access to and within the centre can now be determined. This framework will address the needs for each of the primary modes of access to the centre while adhering to the objectives outlined in Section 4. The following section outlines the need assessment for each mode, presents a diagrammatic network plan showing existing conditions and proposed improvements, and outlines key principles for assessing the framework.

The following modes of access to the CJAA have been assessed:

- pedestrians;
- bicycles;
- public transport; and
- private vehicles.

5.2 Need Assessment

The following section details the need for improvements to each of the key access modes. These will lead to a set of principles for improving access to the CJAA.

5.2.1 Pedestrians

Pedestrian access provides equitable links to the CJAA from adjacent suburbs and land-uses. High-quality pedestrian links encourage walking from nearby population catchments. The central element of pedestrian access is the footpath network which aligns with the road network. However, the pedestrian network also includes off-street shared paths, shopping centres such as the Well, laneways and green spaces.

Suitable pedestrian access should not only allow people to access the centre by walking but should also facilitate transfers between modes and connections between key nodes of activity. Virtually every element of access to Camberwell has some pedestrian component.

Based on the November 2011 interview questionnaire surveys on Camberwell Road, Burke Road and Riversdale Road, 20% of visitors to the centre arrive by walking. Further, the surveys have identified that visitors who access Camberwell on foot are the most frequent visitors to the centre, with over 230 average visits per year. In comparison, car drivers visit the centre 134 times a year.

Interview questionnaire surveys undertaken at The Well in May/June 2013 indicated a 19% walking mode share at The Well and 11% along Station Street despite persistent wet weather conditions on the weekday.

Pedestrians also have a significant economic impact on the study area associated with their large annual visitations. Of all questionnaire survey respondents

interviewed in November 2011 (Camberwell Road/Burke Road/Riversdale Road) who accessed the centre by walking, 46% accessed the centre for retail and/or recreational purposes. Walking visitors were also the highest average spending mode of access to the study area, spending on average \$9,547 per person per year. This average spend is marginally higher (\$100 higher per person) than car drivers.

Surveys undertaken in May and June 2013 along Station Street and adjacent The Well indicated that 80% accessed the centre for retail and/or recreational purposes. The surveys indicated that train passengers were the most frequent visitors followed by those who had walked. Whilst those who had walked to the CJAA did not spend as much as those who had arrived by car per visit, pedestrians visited more often. Spending on average per person per year was again shown to be high for pedestrians (\$7,519) in comparison with those who had driven (\$6,273) and those who had arrived as a car passenger (\$7,456).

Accordingly, pedestrian access is an important economic driver of the Camberwell region as improvements to pedestrian accessibility (and the potential capture of new pedestrian visitors) has the potential to lead to an overall increase in retail spending within the precinct.

There are also appreciable health benefits for individuals and the community associated with walking instead of other sedentary modes of transport, as stated in Section 4.2.

5.2.2 Bicycles

Bicycle access fulfils a unique transport role within the overall access framework. Bicycles are a faster mode of transport for residents and visitors within walking distance of the CJAA and also enlarge the catchment for non-vehicle transport over and above a standard walking catchment.

Cycling to the CJAA typically occurs on the road network, along roads both with and without formalised cycling infrastructure. However, there are also several high-quality off-street bicycle and shared paths within cycling distance of the CJAA, including the Anniversary, Gardiners Creek and Capital City Trails.

According to the interview surveys undertaken in November 2011 as part of this study, only 1% of visitors arrive to the centre via cycling. Interview questionnaire surveys undertaken in May/June 2013 during wet weather/winter conditions indicated that at The Well 4% of respondents had arrived by bicycle and at Station Street 1% had arrived by bicycle. Pedestrian and cyclist movement surveys in November 2011 have identified that there are more cyclists on weekdays than weekends, with 1,880 cyclists identified over a Thursday throughout the overall survey area. In comparison, 732 total cyclists were identified on the weekend.

In general, 36% of all Boroondara households own at least one adult bicycle based on Australian Bureau of Statistics data. Currently there is the perception that cycling is unsafe within Camberwell and that the study area is a place cyclists move through, rather than to.

However, cycling is currently undergoing a significant surge in demand throughout Melbourne. There are several potential bicycle improvements to the Camberwell area through the Victorian Principal Bicycle Network (PBN). These include possible on-road bicycle lanes on Burke Road and Stanhope Grove. Based on the rapid increase in cycling rates within Melbourne in the last several years, it is suggested that there is significant latent demand for cycling within Camberwell, and improved cycling infrastructure would encourage more people to cycle to the centre.

Boroondara has also previously identified issues with cyclist safety: according to Council's 2008 Road Safety Strategy the municipality is ranked highest of the 16 municipalities in the Melbourne south east metropolitan area for cyclist fatalities and serious injuries. Provision of additional bicycle infrastructure, as has occurred since the 2008 study was commissioned, would reduce safety concerns for cyclists.

As with walking, using a bicycle has a wide range of health and wellbeing benefits when compared with private vehicles and public transport.

There is also believed to be scope for increased commuter cycling within Camberwell, with trader survey responses showing that 53% of respondents suggested greater provision of bicycle lanes would encourage cycling.

Our Boroondara: Our City Our Future states that Council will aim to “upgrade and expand the walking and cycling recreational path networks under Council’s jurisdiction”. This highlights Council’s commitment to increasing cycling access within Boroondara.

5.2.3 Public Transport

Public transport links provide equitable and long-distance access to the CJAA, particularly for people who are unable to drive or live outside the walking and cycling catchment for the centre. The CJAA has a diverse provision of public transport, including three tram routes, two bus routes, and a metropolitan train service connecting to the eastern suburbs and the CBD. Suitable public transport access relies on consistent regular services and well-timed interchanges.

November 2011 interview questionnaire surveys along Camberwell Road, Burke Road and Riversdale Road revealed that public transport currently accounts for 29% of all visitor trips to Camberwell, making it the second most popular transport mode for all journeys. Public transport users also account for effectively half of all work-related transport movements (49%).

May/June 2013 interview questionnaire surveys undertaken adjacent to The Well (11%) and along Station Street (20%) revealed a lower public transport mode share. Given the survey locations were immediately adjacent to core parking areas and supermarkets, a lower public transport mode share is not unexpected.

The above data reinforces the centre as a public transport hub for commuters, and demonstrates that strong public transport access can serve as a real alternative to reliance on private vehicles for visitors and commuters to the CJAA (currently 39% of employees arrive to the centre by private vehicle according to the

November 2011 interview surveys). The suburb of Camberwell employs approximately 8,000 people: improving access options for this demographic is a key challenge and opportunity for Council.

Increased public transport patronage reduces carbon emissions and road congestion by removing private vehicles from the road network. This presents an overall environmental benefit, as public transport can serve hundreds of individuals who would previously travel in mostly single-occupied cars.

However, while there is an encouraging mode split for public transport, there is considered to be substantial scope for increased patronage within the Camberwell area: interview surveys show that 31% of people who took a car to the centre could instead use a tram or train. Of all alternative transport modes available, train and tram were most commonly suggested as viable choices. This could suggest a high awareness of public transport options within Camberwell: understandable given the variety of tram and train options within the heart of the study area.

Achieving DDA compliance at tram stops in line with legislative requirements for State Government will be a notable challenge given competing requirements, particularly in terms of potential impacts on car parking. The challenge will be how best to deliver DDA compliant tram stops that present the best fit in terms of their location for the community with limited impacts on parking and the efficiency of the road network.

5.2.4 Private Vehicles

5.2.4.1 Road Safety

Despite continual improvement and a good safety record in Boroondara, the Camberwell region has some persistent areas where road safety is a concern. This is particularly the case in areas where different transport modes interact.

The CJAA has had multiple casualty crashes within the past five years and there is a potential area for safety improvements. Road safety concerns can also act as limiting factors for both pedestrian and cycling demand.

Casualty crashes are also a significant financial cost to the community. The cost per crashes to the community is in the order of:

- Fatality: \$3,180,598;
- Serious injury: \$316,869; and
- Other injury: \$17,511⁴⁰.

VicRoads has reduced the traffic speed limit along Burke Road to 40 km/h from Victoria Road to Denmark Hill where it meets with the 40 km/h school speed zone. However, there are also several potentially Council funded opportunities for increased road safety outcomes within Camberwell.

⁴⁰ Bureau of Infrastructure, Transport and Regional Economics (BITRE). (2009). Road crash costs in Australia 2006. Report 118.

5.2.4.2 Traffic Management

Strategic modelling of future years illustrates that roads within the Camberwell area are operating at or near capacity. This is particularly true of the main arterial roads in the area such as Burke Road, Riversdale Road, and Camberwell Road. Analysis of the Victorian Integrated Traffic Model (VITM) shows negligible change in traffic volumes between 2011 and 2031, which is indicative of roads near capacity.

Today, the car is still a vital component of access to Camberwell, with driving the main single mode of access to Camberwell: from the interview surveys undertaken in November 2011, 44% of all trips to the study area were made by car drivers. Including car passengers and individuals who have been dropped off, half of all people use a car to access the centre. Interview surveys undertaken in May/June 2013 at The Well and along Station Street indicated that approximately two thirds had arrived by car (first weekday affected by wet weather conditions).

Our Boroondara states that traffic is a community concern, and that issues such as through traffic must be managed going forward. While the focus of the Access Plan is to better balance all modes and effectively promote walking, cycling, and public transport, due consideration must be given to increasing efficiency of car movements within the study area.

5.3 Access Principles

In order to address the needs detailed above in Section 5.2, a set of access principles have been determined in consultation with Council officers. These are listed below for each major access mode. An overarching principle of the access framework is to increase community mode choice from private vehicles to sustainable and community forms of transport.

5.3.1 Pedestrian Network

Pedestrian principles include:

- a respectful space that is comfortable and permits walking, talking and resting;
- priority for pedestrian desire lines and the shortest or easiest walking route;
- shade and shelter amenity adjacent to all shops, businesses, and offices;
- active frontages along all PPN corridors that maximises casual surveillance;
- create places for rest and locations in which the community can spend time;
- maximise tree provision to help mitigate heat, noise, and traffic air pollution; and
- priority for lighting upgrades.

5.3.2 Bicycle Network

Bicycle principles include:

- maximise segregation of bicycles from traffic;
- provision for cyclists at origin and destination, ensuring a complete journey;
- provision of a well-connected cycling network;
- reduced speed differential between traffic and bicycles; and
- integration with public transport nodes.

5.3.3 Public Transport Network

Public transport principles include:

- integration between public transport nodes;
- integration of public transport facilities with pedestrian and bicycle desire lines and facilities;
- conducive service and frequency; and
- DDA compliance in line with legislative requirements and equal accessibility for all residents.

5.3.4 Road Network

Private vehicle principles include:

- reduced traffic speeds to benefit the safety of all road users;
- creation of a clear hierarchy to identify status and purpose of different roads;
- managed demand for parking through improvement and encouragement of all access modes; and
- consideration of Camberwell Junction as a community place rather than a traffic thoroughfare.

5.4 Access Framework

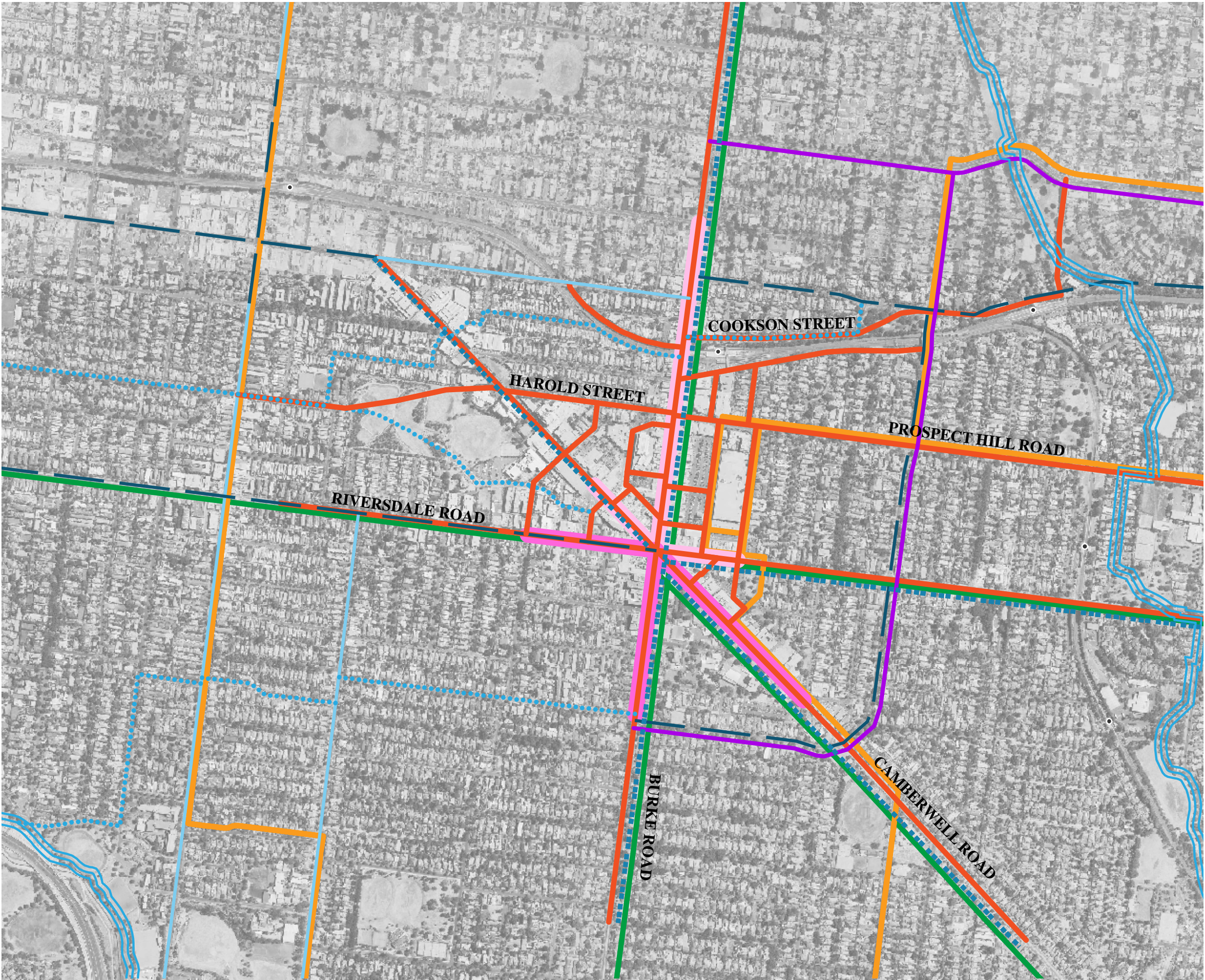
Based on the above objectives, needs and principles, an access framework for the CJAA has been determined. This outlines the existing transport conditions, as well as identified missing links and additional connections.

The vision for this framework is to create a transportation network that will continue to play a key part in the development and growth of the CJAA. The future improvements to the network will encourage people to live and businesses to locate in the CJAA. This will be achieved by:

- developing a well-connected, high quality, safe and pedestrian/cyclist priority centre;
- carefully managing vehicle traffic within and on the approaches to the CJAA;
- refocusing public transport to respond to the activities and community travel needs of a modern centre; and
- improving the permeability of the CJAA – clarity of destination and sense of arrival for all uses through incorporating modern information systems and clear signage.

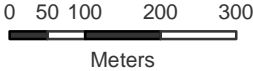
Based on this framework, a series of key recommendations for the CJAA are listed below in Section 6 that aim to encourage other modes of travel to the centre.

Figure 30: outlines the access framework for the study area.



Legend

- Existing Pedestrian Priority Area
- Proposed Pedestrian Priority Area
- Principal Pedestrian Network
- Bicycle Shared Path
- Existing Bicycle Lane
- PBN Proposed Bicycle Route
- Proposed Second Generation Bicycle Lane (PBN)
- Proposed Local Bicycle 'Shimmy'
- VicRoads SmartRoads Preferred Traffic Route
- Existing Bus Route
- VicRoads SmartRoads Tram Priority Route



6 Recommendations

Following analysis of the transport characteristics of the study area and creation of the access framework, key recommendations to improve access to the CJAA have been determined. These cover key access corridors of the CJAA as well as general recommendations. The recommendations below capture high-value opportunities identified during the creation of the Access Plan and propose targeted solutions for the study area.

The following recommendations have been informed through community consultation undertaken by Council in November 2013. A summary of the consultation responses is provided at Appendix B.

6.1 Item 1: Burke Road

Burke Road is one of the major transport corridors within the CJAA. It contains a tram route, the largest volume of pedestrian traffic within the study area and significant traffic volumes. To assist and improve the operation of Burke Road for all modes of transport and as a community place, a series of recommendations have been developed.

Figure 33 below shows the access recommendations for Burke Road. These are summarised in more detail below.

Proposed improvements along Burke Road include:

Recommendation 1.1: Investigate the relocation of tram stops on Burke Road to better connect with Camberwell Railway Station and for tram stops to be DDA compliant in line with legislative requirements.

Recommendation 1.2: Advocate for an improved pedestrian crossing on Burke Road in line with Cookson Street, relocated tram stops and the Camberwell Railway Station.

Recommendation 1.3: Install raised threshold treatments at key intersections to increase the presence and comfort of pedestrians at Cookson Street, Burwood Avenue, Auburn Parade, Mayston Street, Burke Avenue, Reserve Road and Inglesby Road.

Recommendation 1.4: Investigate DDA compliant tram stops that best complement Burke Road and provide improved amenity and place. Investigate a DDA compliant tram stop near the entrance to the Well.

Recommendation 1.5: Advocate that VicRoads review signalised pedestrian crossing timings to minimise delay and encourage increased compliance and use

Recommendation 1.6: Introduce buildouts that accommodate pedestrian amenity and opportunities for the regular spacing of deciduous trees along Burke Road.

Recommendation 1.7: Relocate street furniture to buildouts to improve the comfort of pedestrian movements.

Recommendation 1.8: Advocate in partnership with VicRoads for the provision of on-street bike lanes along Burke Road.

Recommendation 1.9: Investigate shade and shelter provision at Camberwell Junction to the southern corner between Burke Road and Camberwell Road.

Discussion: Burke Road is a destination at the heart of the CJAA and is important in terms of both transport and as a place. From a policy perspective it is a key location where improvements in public transport, walking and bicycle provision can be enhanced to support access other than by car. Given that Burke Road is also a destination and a community place, urban realm improvements equally require consideration.

Burke Road is designated as a Pedestrian Priority Area and a Tram Priority Route under the SmartRoads Road User Hierarchy. The Burke Road shopping strip, primarily between the Camberwell Junction and Victoria Road, is a major centre of activity for the CJAA. Despite these classifications, Burke Road is a vehicle dominated environment and can be greatly improved for pedestrians and as a place for the community. Count surveys indicate that approximately 10,000 pedestrians walk north/south along Burke Road between Burke Avenue and The Well entrance each day. During peak pedestrian periods, over 1,300 pedestrians an hour are observed at this location.

It is a legislative requirement for State Government to ensure that all tram stops become DDA compliant. This has implications for tram stops in and around CJAA. The challenge is to deliver tram stops that present the best fit in terms of their location. DDA compliant tram stops will have an impact on car parking and can also impact on the efficiency of the road network. Relocation of tram stops to service pedestrian desire lines and align with key activities is a central element of a reorganised Burke Road that operates as a space for people, rather than a vehicle dominated through route.

The primary tram stop relocation on Burke Road should be the creation of a DDA compliant tram stop that services Camberwell Railway Station (allowing a direct connection with the south side of Cookson Street). This would serve to accommodate existing pedestrian desire lines crossing the road. Investigation into the feasibility of the placement of a tram stop on the existing Burke Road rail bridge is required in order to ensure appropriate load bearing capacity. It is estimated that the provision of DDA compliant stops to both sides of the carriageway may result in a loss of approximately 6 car parking spaces.

Other tram stop relocations include an upgraded DDA compliant tram stop in line with The Well. In the case of a potential Well tram stop, provision should be made for pedestrian operated signals to one side of the tram stop. This enhances pedestrian permeability and accessibility in line with the objectives of the study. A potential tram stop configuration has been created by the study team; this is shown in Figure 32. It is estimated that the provision of DDA compliant stops to both sides of the carriageway may result in a loss of approximately 12 car parking spaces.

Further investigation into DDA compliant tram stops is required; the emphasis should be on achieving an outcome that best meets the needs of the community including convenient sighting of tram stops for passengers, minimal impacts on parking and the efficiency of the road network.

In addition to tram stop relocations, there are additional treatments to Burke Road that can enhance it as a place for people. The build outs allow regular provision of deciduous trees along Burke Road and break up pedestrian journeys with high-

amenity rest areas. As outlined in the research, trees along Burke Road would help to cool the street, would create a more attractive street environment and they are also potentially good for business. In most places the build outs can integrate with existing pedestrian crossings, intersections or the end of parking areas in a manner that has minimal impact on parallel parking and little or no impact on the efficiency of the road network. It is estimated that the proposed 14 buildouts may result in a loss of 3-4 car parking spaces along the length of Burke Road from Cookson Street to Riversdale Road. Figure 31 illustrates a typical road section inclusive of a build out.

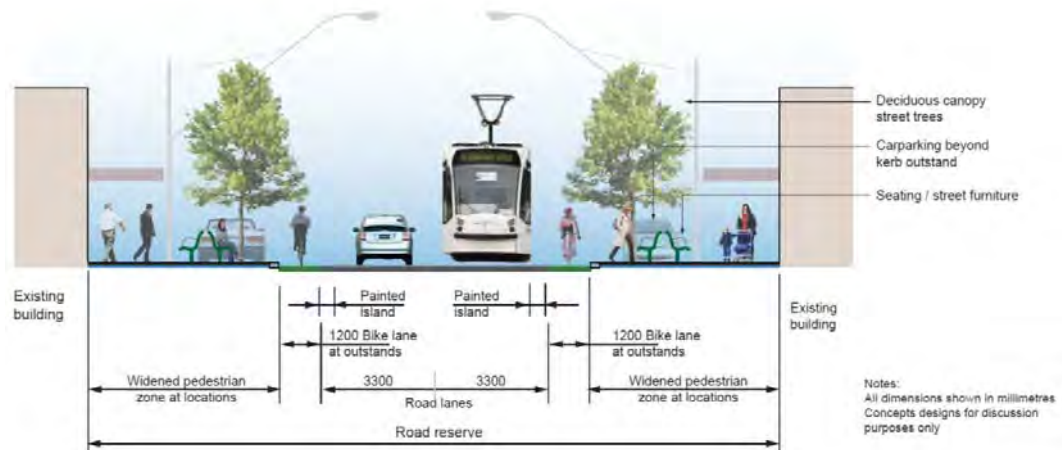


Figure 31: Burke Road Build Out - Typical Section

Source: City of Boroondara

Raised threshold treatments increase the presence of pedestrians and provide a comfortable at grade crossing provision for the elderly and mobility impaired.

Ensuring that the key pedestrian priority area within the CJAA adequately services pedestrian movements is essential to creating a more comfortable and walkable environment. At locations the footpath is narrow in relation to the volume of pedestrian movement. In combination with providing build outs along Burke Road, street furniture provision can be better located with the aim to widen available footpath width for pedestrian movement.

At existing signalised intersections, automatic pedestrian activation would allow pedestrians the opportunity to cross without having to activate the pedestrian crossing. Additionally, provision of pedestrian countdown timers at the intersection of Cookson Street/Prospect Hill Road/Harold Street will also assist to address an identified road safety issue at this intersection.

Marginally increasing the green walk time for pedestrians at Burke Avenue and Cookson Street pedestrian signals could also be undertaken in the "shadow" of the Camberwell Junction signals to avoid any adverse impacts on traffic flow.

It is important not to preclude provision for bicycle users along Burke Road given its status as a destination and increasing cycling participation. To preclude bicycle users would result in a mode shift or limit future mode shift and transport choice. Given that most bicycle users are also car owners, the result would be an additional increase in traffic and parking pressures.

Suggested locations for all Burke Road treatments are identified in Figure 33.

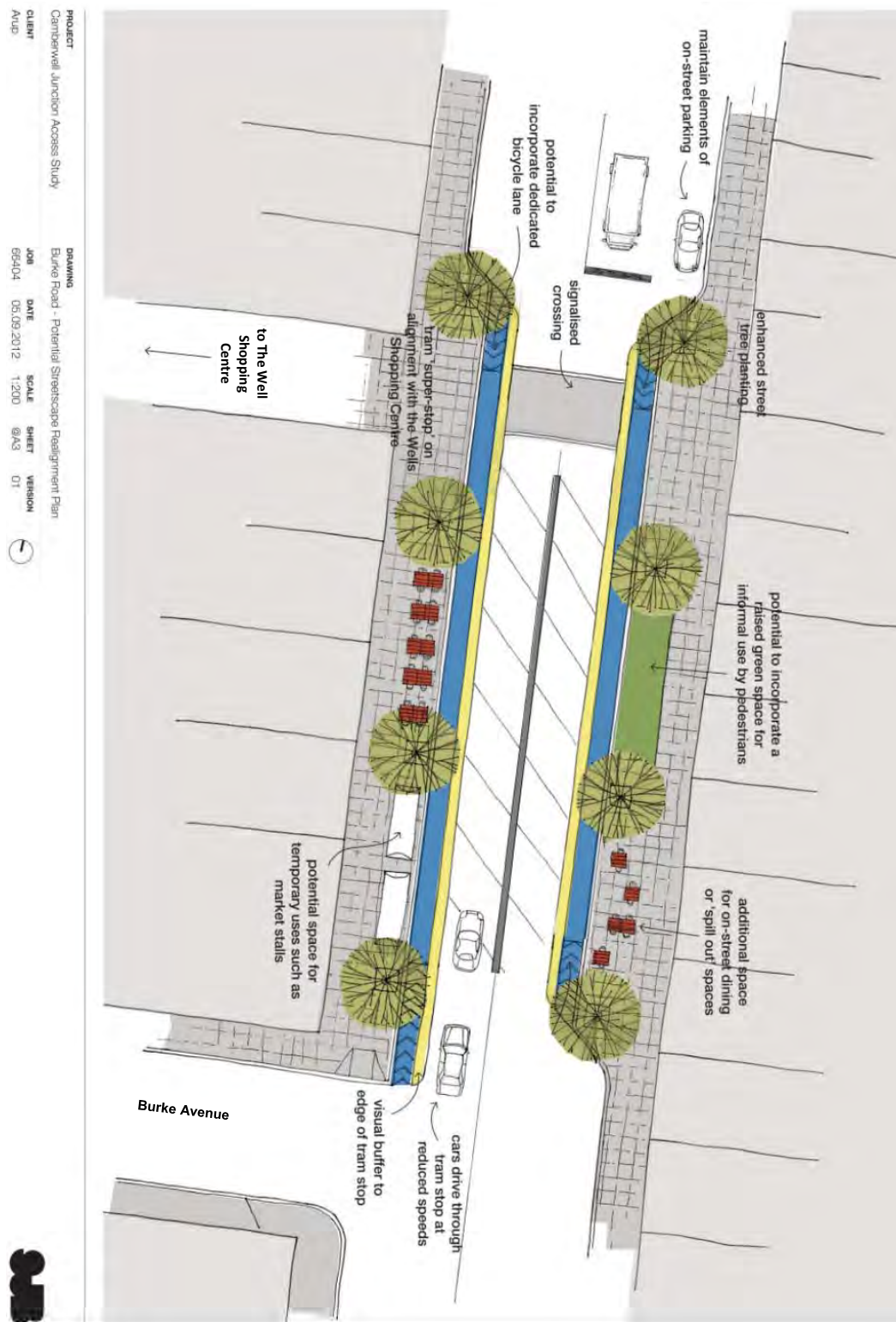


Figure 32: Burke Road Tram Stop Design

6.2 Item 2: Station Street

Station Street accommodates high pedestrian volumes and has the potential to link multiple modes of access within the CJAA. It contains close links to Camberwell Railway Station, bus stops along Station Street and links to Tram Route 70 on Riversdale Road.

Figure 33 below shows the access recommendations for Station Street, with a summary of the various recommendations provided below.

Upgrading the north-south pedestrian link between Riversdale Road and Camberwell Railway Station will require the integration of many components. Considerations should include:

Recommendation 2.1: Provide an informal crossing comprising of buildouts and a central refuge at Prospect Hill Road between Railway Parade and Station Street.

Recommendation 2.2: Provide a footpath to the western side of Station Street utilising the hatched median space.

Recommendation 2.3: Widen footpaths along Station Street to accommodate increased pedestrian movements particularly at constrained bus stop locations.

Recommendation 2.4: Provide raised threshold treatments at car park entrances, particularly at locations where pram ramps gradients are significant.

Recommendation 2.5: Consult on the removal of the taxi zone on Station Street given very limited use and consider the allocation of additional space to improve the comfort of pedestrians.

Recommendation 2.6: Consolidate bus lay-bys into a single location on the east side of Station Street and introduce a kerbside pickup area near the Camberwell Market.

Recommendation 2.7: Create a public plaza that integrates the Camberwell Market environment between Market Place and Riversdale Road.

Recommendation 2.8: Investigate the integration of a future DDA compliant tram stop with a potential Station Street public plaza that best meets the needs of the community.

Discussion: Station Street accommodates high pedestrian volumes and there are notable opportunities to improve pedestrian access and integration with all modes of travel in line with state and local policy. Our Boroondara states Council will *“Advocate for affordable, safe efficient and effective public transport networks, with an emphasis on increased frequency, connectivity and reduced travel time”*.

Sunday surveys indicate very high pedestrian movements along Station Street during Camberwell Market conditions. The peak hour pedestrian movements are similar to that along Burke Road, however available pedestrian width and amenity is significantly less.

The existing pedestrian environment between Riversdale Road and Camberwell Railway Station/Cookson Street is convoluted, narrow and provides a poor level of pedestrian amenity. The limited space and waiting activity at bus stops to the eastern side of Station Street further reduces pedestrian through movements. Taxi and bus provision to the southern side of Station Street is not well used or

designed. Road crossing amenity is not considered at Riversdale Road and Prospect Hill Road despite evident pedestrian desire lines.

The opportunity exists to greatly improve Station Street and connections to the north and south. The objective would be to better accommodate the comfort of existing high pedestrian movements and further encourage walking, particularly to access public transport opportunities.

Enhancing connectivity is essential for maximising the mix of access options within the centre. Station Street can form the core of an integrated transport hub incorporating trams at the south end, buses in the centre, and rail at the northern end.

In terms of the tram stops along Riversdale Road, it is a legislative requirement for State Government to ensure that all tram stops become DDA compliant. The challenge is to deliver tram stops that present the best fit in terms of their location with limited impacts on parking and the efficiency of the road network. A relocated tram stop to the southern end of Station Street in conjunction with a potential public plaza would result in limited impact to parking although bus operations would require access/egress via Fairholm Grove.

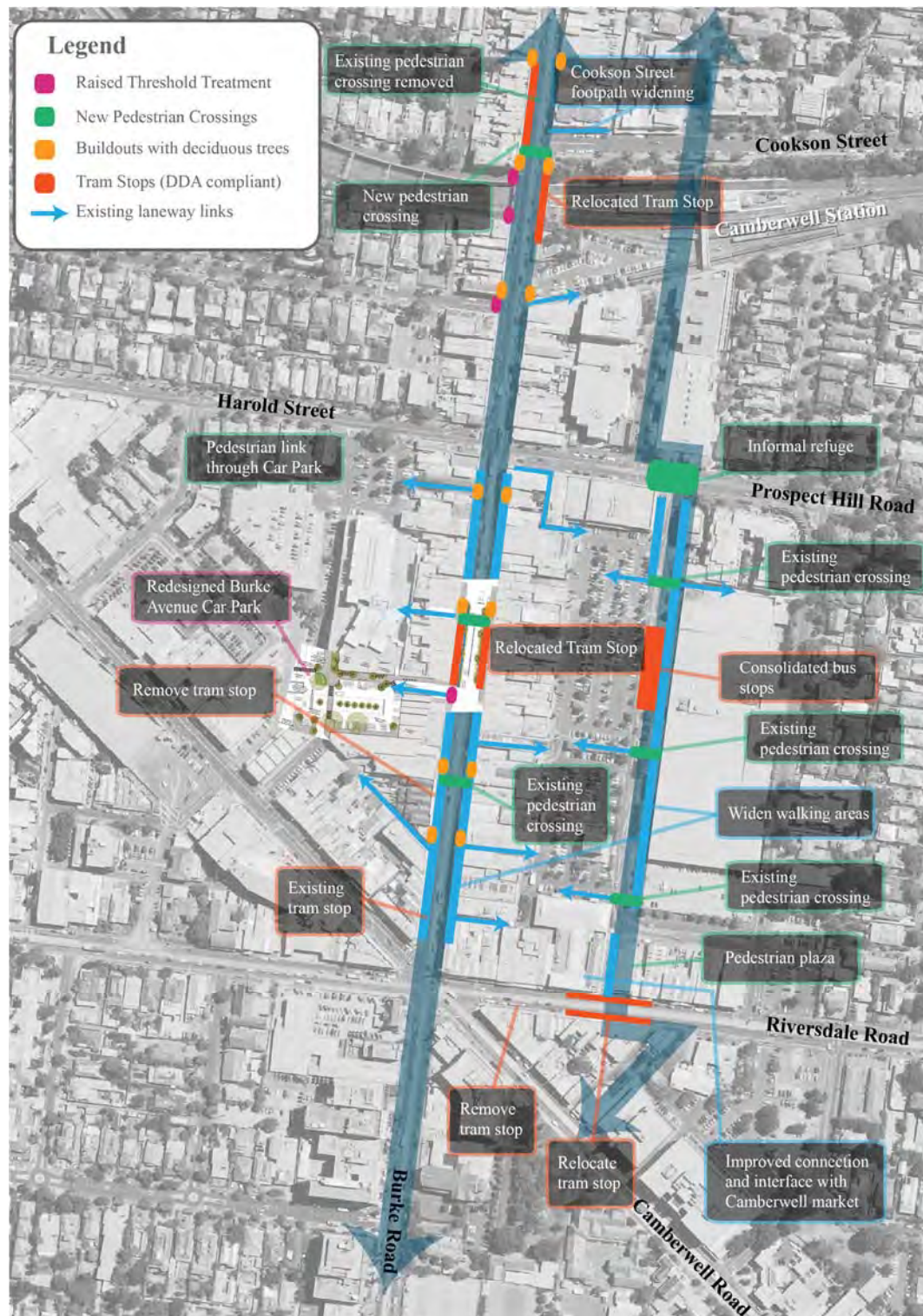


Figure 33: Burke Road/Station Street Recommendations

6.3 Item 3: Cookson Street and Camberwell Railway Station

Cookson Street is an important street given its proximity to the Camberwell Railway Station and Tram Route 72 on Burke Road. Upgrades on Cookson Street would help to improve the station precinct environment and better integrate pedestrian and street activity with tram and train services. Cookson Street also serves access for pedestrians to the station and to the activity area.

The aim is to enhance Cookson Street to the northern side of the Camberwell Railway Station and better integrate transport opportunities and the urban and business realm as follows:

Recommendation 3.1: Install kerb outstands at Cookson Street/Burke Road, narrowing the Cookson Street entry and provide a raised threshold treatment.

Recommendation 3.2: Investigate widening the northern footpath of Cookson Street adjacent to business/retail frontages, inclusive of street trees.

Discussion: Cookson Street's proximity to tram and train infrastructure, as well as its proximity to the Burke Road shopping strip, gives it a high strategic value in terms of public transport integration and as an active and vibrant urban space.

Increasing footpath widths and connectivity along Cookson Street ensures walking is seen as a priority for this route, in particular servicing the 57% of Camberwell Railway Station visitors who walk. Potential kerb outstands also increases the amenity of this street, reducing the road cross section and enabling safe pedestrian crossings to be constructed. This achieves the aim of delivering accessible pedestrian connections for all visitors and residents.

Footpath widening will need to be cognisant of existing activity along Cookson Street, including; Kiss & Ride activity at the station and Rail Replacement Bus Stops.

There is also a safety need for improved crossing facilities at this location; due to short term parking and taxi zones there is the risk of pedestrian-vehicle crashes. Kerb outstands provide safe reservoir space for pedestrians and can facilitate appropriate crossing behaviour.

Further, Cookson Street is also a PPN route. Therefore, improvements to pedestrian amenity are required in order to foster a more accessible and respectful pedestrian space.

Cookson Street also forms part of a key proposed on road bicycle shimmy route that provides east-west connectivity within and beyond the CJAC; this is outlined in detail in Section 6.10 below.

6.4 Item 4: Principal Pedestrian Network (PPN)

With approximately 15,000 pedestrians entering and exiting the CJAA daily, improving pedestrian connections will support community access, healthier transport choice, access to business and retail and assist in reducing traffic and parking pressures.

The aim is to improve pedestrian access and encourage walking as a mode of access to CJAA through improving safety and amenity that better supports pedestrian activity.

Recommendation 4.1: Audit Principal Pedestrian Network (PPN) links that serve the Camberwell Junction and identify pedestrian amenity improvements.

Recommendation 4.2: Advocate for the recognition of the Principal Pedestrian Network by VicRoads and advocate improvements along arterial roads.

Recommendation 4.3: Investigate infrastructure improvements to the Principal Pedestrian Network as outlined in Appendix A. Cookson Street, Fritz Holzer Park and Camberwell Road PPN are considered priority corridors for improvement.

The following recommendations are also proposed following the outcomes of the community consultation:

Recommendation 4.4: Investigate improved pedestrian crossing provision across Broadway from Russell Street.

Recommendation 4.5: Develop a detailed shade strategy along pedestrian footpaths and other pedestrian corridors including parking areas.

Recommendation 4.6: Audit and improve footpath conditions along Riversdale Road between Hastings Road and Camberwell Junction.

Recommendation 4.7: Review pedestrian signal/crossing facilities to understand traffic signal configurations and timings together with pedestrian volumes and frustrations and to advocate to VicRoads for reduced waiting times where necessary. Locations highlighted during the consultation include Mayston Street/Camberwell Road, Fairholm Grove/Riversdale Road, Redfern Road/Riversdale Road/Havelock Road and Inglesby Road/Camberwell Road.

Recommendation 4.8: Investigate improvements to safety for pedestrians crossing Fairholm Grove and Station Street on the south side of Prospect Hill Road.

Recommendation 4.9: Audit seat locations along key pedestrian corridors with the aim of providing regular points of rest that support access to the shopping centre.

Recommendation 4.10: Undertake street lighting audits along Albert Street, Fairholm Grove and Butler Street. These streets also serve pedestrian access to railway stations.

Discussion: State and Council's Integrated Transport Strategy support pedestrian improvements and in particular improvements to connections with important destinations including activity areas and public transport opportunities. The Boroondara Road Safety Strategy indicates that 45% of crash fatalities in Boroondara are pedestrians and most are over 75 years. The PPN provides a

strategic approach to better supporting walking as a mode of accessing CJAA and reducing car reliance and identifies pedestrian routes for audit in line with the Boroondara Road Safety Strategy action plan.

Interview questionnaire surveys undertaken along Burke Road, Camberwell Road and Riversdale Road in November 2011 revealed that 19% of people during the week and 21% during the weekend walked to access the Camberwell Junction Activity Area. These questionnaire surveys highlighted that pedestrians visit more often and annually spend more than any other mode.

May/June 2013 interview questionnaire surveys indicated a walking mode share of 19% at The Well and 11% along Station Street. Given the wet weather conditions it is very likely that this mode share would be much higher during fair and good weather conditions. Pedestrian counts increased between 50% and 100% the following weekday along Station Street during fair weather conditions. The questionnaire survey also indicated that approximately 20% of those who had travelled by car (driver, passenger or dropped off) could have alternatively walked to the centre. 21% of those who took a tram indicated that they could have walked that day.

57% of passengers boarding the train at Camberwell Railway Station arrived at the station by walking (Department of Transport Planning and Local Infrastructure - Camberwell Railway Station Fact Sheet).

Benefits of increasing walking are significant and include greater passing trade, incidental physical activity, less parking pressures, reduced noise and air pollution and improved community interaction.

The Department of Transport Planning and Local Infrastructure has defined a methodology that models walking to key destinations which aim to identify strategic walking routes (PPN) for improvement. Modelling and surveys have been completed and validated against pedestrian counts to identifying strategic walking routes that would best serve walking to the activity centre. Appendix A provides detail surrounding a PPN for the CJAA.

Principles are outlined for the PPN and these include requirements for developers to provide active frontages, weather protection and ease of access (preferably at grade) where a development abuts a PPN corridor.

Whilst there are a notable number of corridors identified, the following community links are highlighted in particular for improvement in their respective order:

- Cookson Street Corridor - Large disparity in walking counts and population catchment with high car use and poor transport choice. Connects with the Anniversary Trail and serves Camberwell Railway Station and Camberwell East Station. There are missing and poor footpaths in places.
- Fritz Holzer Park/Harold Street - Higher residential density, limited transport choice and high car use to access Camberwell. Modelling indicates that the park would provide a convenient path.
- Camberwell Road (southeast) - Largest population origin (schools, council offices, library), some residential growth and flat topography. There are high weekday pedestrian counts and low walking counts in comparison with the nearby population catchment on the weekend.

Further corridors are identified within Appendix A.

Burke Road and Station Street are north-south spines that also represent Principal Pedestrian Network corridors; these have been dealt with above in greater detail given their core/destination nature.

6.5 Item 5: SmartRoads Pedestrian Priority Area

SmartRoads provides a VicRoads framework for assessing infrastructure initiatives with regard to each respective travel mode. The aim is to increase the priority of pedestrians as follows:

Recommendation 5.1: Advocate that Riversdale Road east of Burke Road to Butler Street becomes a Pedestrian Priority Area.

Recommendation 5.2: Advocate that Riversdale Road west of Burke Road to Wills Street becomes a Pedestrian Priority Area.

Recommendation 5.3: Advocate that Camberwell Road south of Riversdale Road to Inglesby Road becomes a Pedestrian Priority Area.

Discussion: The SmartRoads Road User Hierarchy states that there is a high need for pedestrian priority within Activity Areas. Specifically, the SmartRoads Guidelines (version 2.1) state that *“providing for larger numbers of pedestrians to safely and easily move across arterial roads in these areas is increasingly important, as is the movement of public transport.”*

Ensuring that pedestrians and public transport users have priority within Activity Areas is a core function of the SmartRoads Hierarchy. Considering the broader CJAA extends south of Burke Road, it is reasonable to assume additional areas along Camberwell Road and Riversdale Road could be classified as Pedestrian Priority Areas.

Extending the Riversdale Road Pedestrian Priority Area to Wills Street and Butler Street incorporates key retail areas. Extending the Pedestrian Priority Area south on Camberwell Road to Inglesby Road links major community uses with pedestrian catchments, including the Camberwell Library, Camberwell Primary School, and Council Offices.

As a result, nomination of further pedestrian links near the Camberwell Junction as Pedestrian Priority Areas ensures a consistent approach to pedestrian treatments close to the core retail and activity area of the CJAA.

6.6 Item 6: Butler Street/Fairholm Grove Pedestrian Desire Line

The Butler Street car park forms an important pedestrian link. The aim is to recognise and better support this pedestrian desire line as follows:

Recommendation 6.1: Improve the Butler Street car park layout to better accommodate the pedestrian desire line that passes along Fairholm Grove to Camberwell Road.

Discussion: Council's Integrated Transport Strategy is supportive of accommodating and improving pedestrian provision.

The desire line caters for over 1,000 pedestrians that were surveyed crossing Riversdale Road (during a weekday 12 hour period) and walking through the car park towards Camberwell Road.

The Camberwell Junction Structure Plan designates the area between Butler Street, Riversdale Road and Camberwell Road for development. This would impact the direct pedestrian desire line through the existing car park that is not well catered for but heavily used due to its direct nature.

6.7 Item 7: Commerce Lane Pedestrian Improvements

Commerce Lane accommodates high pedestrian flows. The aim is to support a better pedestrian laneway environment as follows:

Recommendation 7.1: Investigate street art to walls or carriageway surface and include trees at select locations along Commerce Lane in recognition of the high pedestrian movements and the need to provide an improved public realm.

Recommendation 7.2: Review street lighting and upgrade as required.

Discussion: Council's Integrated Transport Strategy is supportive of accommodating and improving pedestrian provision.

Commerce Lane is an important pedestrian link between Burke Road and the precinct south-west of The Well. Approximately 1,000 pedestrian movements were observed exiting/entering Commerce Lane in a 12 hour period (7:00 AM - 7:00 PM), far exceeding the use of the lane by vehicular traffic.

While significant reductions in road width to accommodate extended footpaths are not possible due to service vehicle access requirements, there are several treatments that can be made to improve the amenity of the street and recognise the pedestrian nature of the laneway.

Amenity improvements such as tree planting where it does not conflict with vehicle access and a potential vertical garden on the northern wall face will help to promote Commerce Lane as a pedestrian space. Street art to walls or the carriageway surface may further define the space.

Further, additional lighting to ensure the link is safe for night-time use is required to provide an accessible space.

6.8 Item 8: Pedestrian Wayfinding

The aim is to improve pedestrian signage and wayfinding to become an intuitive Camberwell experience.

Recommendation 8.1: Deliver a Wayfinding Strategy.

Discussion: Wayfinding signs improve pedestrian amenity in line with Council policy and can reinforce a sense of place and identity. Action items within the Boroondara Road Safety Strategy include providing better directional and informative signage and distance indicators for pedestrians.

Signage leading to key land uses is currently in a range of formats and does not present a unified system for navigation through the centre.

Improved wayfinding signage throughout the CJAA informs visitors of pedestrian accessibility and encourages further walking. The need to reduce barriers to walking is clear and is a high priority for improving access.

The City of Boroondara has developed conceptual wayfinding signage for the Balwyn Activity Area that incorporates health information with wayfinding. Such signage fosters social awareness of health benefits of active transport as well as informing pedestrians of the direction, distance and travel time to key destinations.

This is a highly valuable and innovative proposal that should be implemented across the CJAA where strategically appropriate. Key decision points include transport interchanges, recreational opportunities and key shopping strips such as Burke Road.

6.9 Item 9: Second Generation Bicycle Lanes

Providing safer and more equitable bicycle on-road provision is a challenge. The aim of this recommendation is to explore and deliver on-road bicycle improvements as follows:

Recommendation 9.1: Advocate for ‘second generation’ bicycle lanes along Burke Road, Camberwell Road and Riversdale Road east of the Camberwell Junction (subject to the outcome of a trial along Glenferrie Road).

Discussion: In keeping with the Boroondara Integrated Transport Strategy, the recommendation aims to improve facilities for and promote cycling.

The City of Boroondara in consultation with VicRoads has outlined a new bike lane arrangement for streets that include parking and tramways. The treatment is intended to be trialled along Glenferrie Road. The objective is to help ensure a higher order of segregation through informing the path of vehicles and bicycles. The markings include door and traffic clearance zones and a green coloured path that informs the lateral position of cyclists and at the same times increases their presence to other road users.

Providing clear and continuous segregation for bicycles is vital for ensuring safety, particularly on arterial roads. From 1 Jan 2007 to 31 December 2011 there have been a total of 40 casualty crashes involving cyclists on arterial roads within the CJAA, largely associated with parking manoeuvres and the opening of car doors. Dedicated bicycle lanes ensure consistency for other road users and will provide clear safety improvements.

It is noted that some clearways restrictions exist on Burke Road and Camberwell Road that may impact the continuity of a bicycle provision. It is proposed that in partnership with VicRoads, these clearways be reviewed in line with SmartRoads Road User Hierarchy and the Principle Bicycle Network.

6.10 Item 10: Provision of Bicycle ‘Shimmy’ Routes

The aim is to investigate bicycle links along residential streets as follows:

Recommendation 10.1: Investigate a 'shimmy' link between the Anniversary Trail and west of Camberwell Road via Cookson Street, Auburn Parade, and Gillman Street. This could then link to suburbs west of the study area via Gordon Street, Roseberry Street, Munro Street, Bowler Street and Urquhart Street.

Recommendation 10.2: Investigate a 'shimmy' link between Pleasant Road and the Gardiners Creek Trail via Miami Street, Scott Street, Robinson Road and Reserve Road.

The 'shimmy' is identified through clear wayfinding as well as infrastructure treatments to facilitate the crossing of key arterial roads.

These shimmy routes are shown on the access framework in Figure 30:

Discussion: In keeping with the Boroondara Integrated Transport Strategy, the recommendation aims to improve facilities for and promote cycling.

Limited road space is available to introduce formalised bicycle routes through the precinct. Municipalities such as the City of Yarra and City of Moreland have implemented local access bicycle 'shimmies' which utilise lower volume local streets to traverse north-south and east-west routes through the local area. Considering that high volume arterial roads including Riversdale, Camberwell and Burke Roads have a history of cyclist crashes, use of local routes for cycling may provide a safer alternative.

The majority of casualty crashes involving cyclists occur on arterial roads. Local roads have less traffic and can provide improved choice for less confident bicycle riders.

The routes outlined provide connectivity for cyclists between CJAA and residential catchment suburbs but also with adjacent off road shared trails.

6.11 Item 11: Connect Mont Albert Road with the Anniversary Trail

The aim of this recommendation is to integrate bicycle corridors and create an improved network as follows:

Recommendation 11.1: Provide a pedestrian and bicycle connection between Mont Albert Road and the Anniversary Trail to improve bicycle access within the CJAA including its rail stations.

Discussion: In keeping with the Boroondara Integrated Transport Strategy, the recommendation aims to improve facilities for and promote cycling.

This fosters a broader Boroondara link from the northeast with the CJAA but also with East Camberwell Railway Station and Camberwell Railway Station. The connection is also highlighted within the Boroondara Bicycle Strategy.

The initiative would result in a node that creates a network between premium east-west and north-south bicycle routes that would serve schools, activity centres and public transport access. Mont Albert Road is recognised as a Priority Bicycle Route (PBR) as part of the Principal Bicycle Network.

“VicRoads will be strongly encouraging the provision of bicycle lanes, paths and improvements on BPRs as the first priority” (VicRoads, 2012 PBN Factsheet). The Anniversary Trail forms part of the Principal Bicycle Network and this connects with the Anniversary Trail and Gardiners Creek Trail to the south and the Main Yarra Trail to the north.

The challenge in providing the connection relates to the topography. With a level difference of 4 metres, there is the potential to connect via an 80 metre ramp at a maximum grade of 1:20.

6.12 Item 12: Advocate for lower speeds along Priority Bicycle Routes

Many of Boroondara's Principal Bicycle Routes are along arterial roads where bicycle crashes are notably high. The aim is to improve safety as follows:

Recommendation 12.1: Investigate and advocate for reduced speeds where bicycle segregation cannot be achieved along 60 km/h roads that are designated as Priority Bicycle Routes.

Discussion: In keeping with the Boroondara Integrated Transport Strategy, the recommendation aims to improve facilities for and promote cycling.

“Lower speed limits increase road safety for all road users” (VicRoads webpage, September 2012). The majority of casualty crashes within Boroondara occur on 60km/h roads and this is predominantly the trend for pedestrian and bicycle crashes (Boroondara Road Safety Strategy 2007-2012).

The strategy needs to consider road speeds that foster safer environments and in particular the sharp decline in survival rates of pedestrians and bicycle users between the ranges of 30km/h to 60km/h (Ashton SJ, Mackay GM, 1979; Pasanen, 1992; Ben Hamilton-Baillie, 2004). *“A pedestrian hit by a car travelling at 60 km/h has little chance of survival. At 50 km/h the chance of survival is 60%”*.

6.13 Item 13: Bike and Ride East Camberwell Railway Station

There is an opportunity to better integrate bicycle access to stations as follows:

Recommendation 13.1: Develop a Bike and Ride initiative that integrates with the East Camberwell Railway Station using the Anniversary Trail. The initiative would include secure bicycle parking, improved connectivity and promotion.

Discussion: In line with the Transport Integration Act (2010) and the Boroondara Integrated Transport Strategy, the recommendation supports cycling as a mode of access and integrates bicycle access with public transport. The Boroondara Integrated Transport Strategy has a particular emphasis on facilitating increased use of public transport, in order to reduce car-based travel.

The Anniversary Trail is an off road pedestrian and bicycle asset that connects a significant community, particularly to the north/east of Camberwell. The trail provides ease of bicycle access for all cycling abilities and ages and can be used to improve access to train services.

This would also aim to help reduce car park and ride pressures surrounding Camberwell Railway Station and more importantly encourage active transport choices.

6.14 Item 14: Rail Services Stopping at Camberwell Railway Station

The 2011 changes to rail services have resulted in many trains not stopping at Camberwell Railway Station despite its evident employment and retail activity.

Recommendation 14.1: Advocate for more Belgrave and Lilydale train services stopping at the Camberwell Railway Station in the peak periods.

Discussion: In line with the Transport Integration Act (2010) and the Boroondara Integrated Transport Strategy, improved integration with land use and between different types of transport is a key objective.

Following 2011 changes to the timetable for the Belgrave and Lilydale lines, six Belgrave and five Lilydale trains bypass Camberwell Railway Station between 7:30 to 9:00 AM.

As a result of these changes, employees, students and visitors from eastern suburbs must interchange trains between Ringwood and Box Hill to access Camberwell Railway Station. Council has received community feedback that this timetable change has resulted in people who previously commuted by train to the CJAA now using private vehicles. There is a maximum 43 minute gap in direct Belgrave services to Camberwell Railway Station.

A key objective of this study is to encourage mode share shift away from private vehicles and towards public transport. Hence, network changes that provide mode change incentives towards private cars runs counter to the aims of this study and the broader strategic objectives of Council.

6.15 Item 15: Advocate for Increased Bus 285 Services

Bus 285 offers a limited service to areas of Boroondara that exhibit limited transport choice.

Recommendation 15.1: Advocate for improved Bus 285 operations that provide increased transport choice for accessing both to the Balwyn Activity Area and the CJAA.

Discussion: Council policy as outlined in the Boroondara Integrated Transport Strategy supports advocating improved north-south public transport links. Limited after-hours and weekend services is highlighted as a key issue.

Bus 285 operates a limited hourly service during weekdays only. This limits transport choice for residents accessing the Balwyn Activity Area, the Camberwell Activity Area and Canterbury Train Station. Bus 285 requires a significant service improvement with areas of northern Boroondara and Doncaster.

The Metropolitan Bus Service Review (Department of Transport) recommended an improved service covering increased hours of operation and weekend services; however, these are yet to be realised.

6.16 Item 16: Extend Tram Route 72

Regional connectivity of Tram 72 can provide a network that provides increased transport choice as follows:

Recommendation 16.1: Advocate for a feasibility study for extending Tram Route 72 to the north to connect with Tram 48, and potentially the Hurstbridge Line and extend Tram 72 south to integrate with Tram Routes 3, 5, 6 and the Caulfield Railway Station.

Discussion: The Boroondara Integrated Transport Strategy supports a position to improve north-south public transport services and integration with other modes of transport. The strategy particularly mentions improvements and extensions to Tram 72.

The Victorian Integrated Transport Model (VITM) shows that Burke Road is unlikely to be able to accommodate any significant increase in traffic provision. Further, any additional traffic over time would likely have to be absorbed by adjacent streets within Camberwell. Tram provision can move people out of cars and onto public transport, reducing Burke Road congestion while providing health and environmental benefits.

VITM analysis also highlights the traffic patterns between origins and Camberwell Junction that are not well served by public transport. Tram 72 extensions would accommodate notable origin destination patterns effectively reducing car reliance and increasing transport choice.

While Tram Route 72 operates along Burke Road to some extent, there are missing public transport links north of Cotham Road and south of Malvern Road. Increasing the connectivity of Route 72 with Tram Routes 24 and 48 and the Hurstbridge Rail line will provide improved transport integration. This would provide increased transport choice for a proportion of over 7,000 work trips that currently travel between Boroondara and the local areas along the Hurstbridge rail corridor to the north of Boroondara (Census 2011).

Similarly, connections along Burke Road south to connect with Tram Routes 3, 5, 6, and Caulfield Railway Station could further reduce traffic along this route, while providing valuable strategic connectivity. This would provide increased transport choice for a proportion of nearly 15,000 work trips that currently travel between the City of Boroondara and the local areas to the south and south-east along Pakenham, Frankston and Cranbourne rail corridors (Census 2011).

It is also noted that the extension of Tram Route 72 could align with a potential heavy rail link to Doncaster, increasing provision of required public transport links between the Doncaster and Camberwell Junction Activity Areas. There are approximately 4,000 existing work trips between Boroondara and Manningham West (Census 2011).

6.17 Item 17: DDA Compliant Tram Stops

It is a legislative requirement for all tram stops to become DDA compliant by 2032. This has implications within the streetscape in which tram services operate.

Recommendation 17.1: Investigate DDA compliant tram stops that best complement the CJAA.

Discussion: It is a legislative requirement for State Government to ensure that all tram stops become DDA compliant. This has implications for tram stops in and around CJAA. The DDA compliance deadline is 2032 and there are interim benchmarks in place.

The challenge is to deliver tram stops that present the best fit in terms of their location. DDA compliant tram stops will impact on parking at locations and can also impact on the efficiency of the road network. There is also the potential to relocate, remove or consolidate tram stop locations.

Challenging locations include Burke Road given the potential impact to on-street parking. Burke Road presents opportunities to limit this impact but also to relocate and consolidate tram stop locations.

Tram stops near traffic signal intersections including Camberwell Junction present notable challenges given that road approaches are essential in terms of junction capacity and these locations are also essential in terms of the walking accessibility and interchange of tram passengers.

At some locations such as adjacent to the Council offices at the Inglesby Road intersection with Camberwell Road, the opportunity exists to introduce DDA compliant tram stops that have limited or no impact on car parking and traffic.

6.18 Item 18: Burke Avenue Car Park Redesign

There are notable opportunities to improve the Burke Avenue car park environment with no or very limited loss in parking.

Recommendation 18.1: Deliver an improved Burke Avenue car park inclusive of public space, pedestrian connections, bicycle parking and improved car parking arrangement.

Discussion: The Camberwell Junction Structure Plan recommends to “Explore opportunities to create a new public space at the junction of Burke Road and Evans Place”.

The existing car park environment is unattractive and uncomfortable for pedestrians and traffic alike. Pedestrian movements are poorly considered despite significant pedestrian volumes.

Commerce Lane, Evans Place and Stanley Place each attract approximately 1,000 pedestrian movements in a 12 hour period (7:00 AM -7:00 PM). Desire lines often connect with pedestrian activity along Burke Avenue which also sees significant footfall.

Figure 33 illustrates how improved pedestrian connections, traffic circulation and a new public space can be achieved with no net loss in parking. Further options should be explored in consultation with stakeholders and the community.

Bicycle parking can be improved through provision of bicycle hoops rather than simple wedges at wheel level, and the sighting of bicycle hoops at prominent corners.

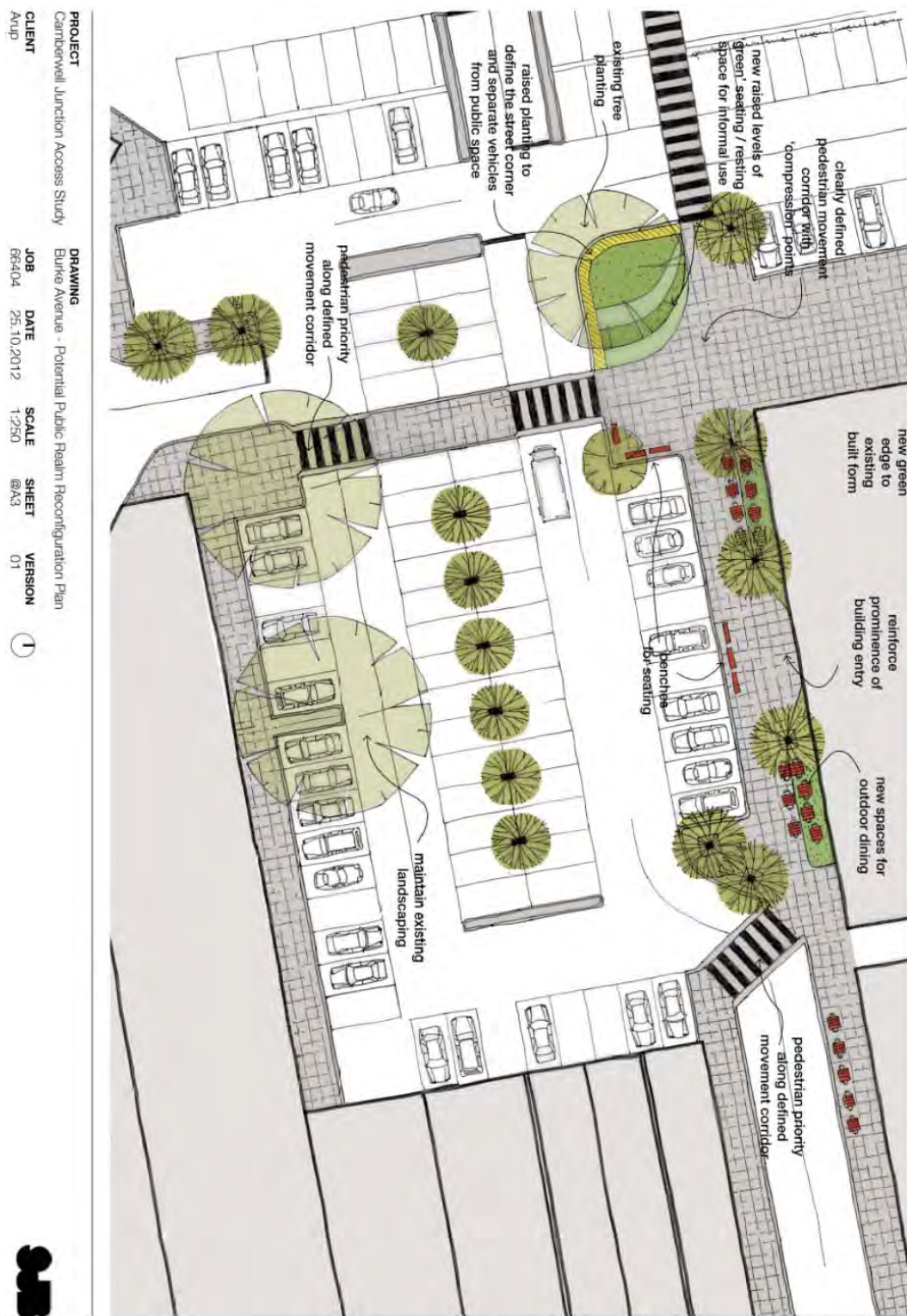


Figure 34: Burke Avenue car park concept

6.19 Item 19: Camberwell Grove and Harold Street Car Park

East-west connectivity between parking areas and the unnamed laneway is notably poor and ramped access to The Well results in safety concerns.

Recommendation 19.1: Improve pedestrian connections and urban environment to the western and northern side of The Well.

Discussion: The Camberwell Structure Plan outlines the need to maintain and enhance east-west pedestrian connections from car parks through to Burke Road.

The poor urban design and integration has resulted in an environment surrounding the Camberwell Grove and Harold Street Car Park that is unattractive and uncomfortable for pedestrians.

Pedestrian links with car parking areas and the surrounding environment abruptly start and end. Pedestrian amenity in terms of attractiveness, footpath widths, footpath grades and surveillance is relatively poor and substandard for a principal activity area.

Measures for improvement include:

- increasing north/south footpath widths
- a connection with the unnamed laneway to the northern side of The Well
- pedestrian connections with the Junction West multi-deck car park.

A potential solution to the pedestrian connection issues to the northern side of The Well is illustrated in Figure 35. The concept links the Junction West multi-level car park, the northern edge of The Well, and the unnamed laneway adjacent to Burke Road. The concept illustrated will require the removal of approximately 6 car parking spaces.



Figure 35: Pedestrian Link to the North of The Well

6.20 Item 20: Implement 40 km/h Residential Speed Limit

Slower traffic speeds are conducive to safer pedestrian and cycling environments and improved liveability.

The public consultation for the Access Plan (refer to Appendix B) identified high support for this proposal within Postcode 3124.

Recommendation 20.1: Improve road safety through reducing residential speed limits to 40 km/h surrounding the CJAA.

Discussion: New VicRoads guidelines will encourage Councils to identify residential areas that warrant 40 km/h speed limits to protect pedestrians. Residential streets surrounding the CJAA are important pedestrian environments that support walking access. The risk of serious injury to pedestrians significantly increases at speeds above 40 km/h.

There is a sharp decline in survival rates of pedestrians and bicycle users between the ranges of 30km/h to 60km/h (Ashton SJ, Mackay GM, 1979; Pasanen, 1992; Ben Hamilton-Baillie, 2004).

In Vancouver Canada there is a mandatory 30km/h speed limit on all roads with bicycle lanes. Barcelona has over 200 kilometres of 30km/h speed zones. 20mph (32 km/h) speed zones in London have resulted in a 42% decrease in road casualties (BMJ 2009). It is estimated that New York City is re-engineering 60 miles of street per year to 20mph speed zones.

40 km/h speed limits currently exist in a number of areas surrounding the CJAA. Notable areas include between Camberwell Road and the Alamein rail corridor, Inglesby and Reserve Road, and an area between Burke Road, Stanhope Grove, Camberwell Road and Cookson Street. A 40 km/h speed limit also applies along Burke Road.

A blanket residential speed limit of 40 km/h within walking distance of CJAA would reduce confusion and improve safety for all modes of travel. The visitor intercept survey undertaken in association with this study highlighted the importance of pedestrians to the economic vitality of the Camberwell Activity Area with pedestrians visiting more often and annually spending more than any other mode. Encouraging more walking will also reduce traffic impacts surrounding the area, reduce parking pressures and encourage greater levels of physical activity.

6.21 Item 21: Undertake Road Safety Reviews

Undertake road safety reviews of key intersections with a high number of intersection casualty crashes.

Recommendation 21.1: Undertake a road safety review at the Rathmines Road/Canterbury Road/Burke Road intersection.

Recommendation 21.2: Undertake a road safety review at the Riversdale Road/Trafalgar Road intersection.

Recommendation 21.3: Undertake a road safety review at the Seymour Grove/Burke Road intersection.

Recommendation 21.4: Undertake a road safety review at the Tooronga Road/Riversdale Road intersection.

Recommendation 21.5: Undertake a road safety review at the Auburn Road/Riversdale Road intersection.

Recommendation 21.6: Undertake a road safety review at the Harold Street/Prospect Hill Road/Burke Road intersection.

Discussion: Undertaking road safety audits at crash locations is supported by Council's Road Safety Strategy and is good practice.

These intersections have an observed high incidence of casualty crashes within the last five years. A review of these intersections has revealed no obvious pattern between these crashes and further investigation of these crash hot spots is recommended. It is proposed that a road safety review of each intersection is undertaken to identify crash patterns and contributing factors. Subsequently, Council should work with VicRoads to prepare Safer Roads Infrastructure Program (SRIP) funding applications as appropriate.

Reduction of crashes is a clear safety requirement for the centre: a high incidence of casualty crashes over the previous five years suggests that these locations are clear candidates for review and potential safety upgrades.

6.22 Item 22: Investigate Stanhope Grove/Broadway Intersection

There are notable pressures at the Stanhope Grove/Broadway Intersection that create a challenging environment for pedestrians, bicycles and vehicles.

Recommendation 22.1: Retain the Stanhope Grove/Broadway roundabout configuration and advocate for treatments that better consider pedestrian, bicycle and traffic amenity and safety at the intersection.

Discussion: The Boroondara Road Safety Strategy includes an action to identify locations where improved or additional crossings are required to support pedestrians crossing arterial roads in partnership with VicRoads.

The existing intersection is a roundabout with single lane approaches and splitter islands that include a pedestrian refuge.

The Stanhope Grove and Broadway intersection is a priority for bicycles as part of the Priority Bicycle Route, and for traffic as a Preferred Traffic Route (VicRoads - Road Use Hierarchy). Modelling also indicates that this intersection is of a high importance for pedestrians.

In terms of traffic, traffic movement is significant and primarily flows north/south through the intersection. Stanhope Grove carries over 21,000 vehicles per weekday and 1900 vehicles two-way during the PM peak hour. 3 crash incidents occurred over a 5 year period (2007-2011) involving two rear end casualty crashes and a bicycle crash.

Video surveys reveal frequent incidents of queuing from adjacent intersections and right turn difficulties particularly from Broadway (west approach). North/south vehicles movements are also frequently observed failing to giveaway to circulating traffic.

Bicycle movements are particularly high along Broadway during the summer months and cyclists were not observed to experience any great delays or difficulties.

On a typical weekday, the intersection attracts over 350 pedestrian movements during a 12 hour period. However, pedestrian modelling indicates that pedestrian movements should be significantly higher and questionnaire surveys highlight that a high proportion of respondents drive relatively short distances.

Video surveys highlight the difficulties faced by pedestrians crossing the road with a very high proportion of pedestrians running in order to cross between cars. Cars are also frequently observed slowing down to enable pedestrians to complete their crossing. The intersection in its current form does not provide a suitable amenity to support elderly or young residents.

6.23 Item 23: Signalise Intersection of Camberwell Road/Monteath Avenue/Redfern Road

A signalised intersection would improve and support pedestrian, bicycle and traffic access to the CJAA.

Recommendation 23.1: Advocate that signals are introduced at the intersection of Camberwell Road/Monteath Avenue/Redfern Road.

Discussion: The Boroondara Road Safety Strategy includes actions to identify locations to support pedestrians crossing arterial roads and improving bicycle safety. The Camberwell Structure Plan supports traffic signals at this location to accommodate vehicle access with the CJAA.

PPN modelling indicates that this corridor is important to pedestrians and signals would help to provide ease and comfort for pedestrians crossing Camberwell Road in particular.

Traffic signals at the intersection can serve to provide safer bicycle links that avoid using arterial corridors for local residents, particular when combined with a bicycle link along Urquhart Street and through Fritch Holzer Park.

In terms of traffic access, a signalised intersection would assist to help vehicles safely access and egress employment areas from Camberwell Road.

Installation of a signalised intersection on Camberwell Road would require consultation and funding approval from VicRoads. The intersection does not meet the criteria for funding for safety reasons under the Safer Roads Infrastructure Program (SRIP).

6.24 Item 24: Car Share

Car share amenity has proven to reduce car ownership and increase the use of more sustainable and healthier modes of travel.

Recommendation 24.1: Introduce car share to CJAA. Investigate locations including the area adjacent to the council offices, Camberwell Railway Station, adjacent to The Well and Station Street.

Discussion: Council's Integrated Transport Strategy highlights a position to reduce car reliance. Car share provides car access without car ownership and reduces the level of car ownership and car use. Car share has also proven to increase the use of more sustainable modes of travel which is further supported by Council's Integrated Transport Strategy and Council's Our Boroondara.

Car share within Camberwell has the ability to provide a community car resource that reduces reliance on private vehicles. The City of Boroondara is currently trialling a car share scheme in the Glenferrie Activity Area. The trial is revealing some interesting results with over 100 car share members resident in Boroondara; many have reduced their car ownership or avoided buying an additional car.

Car share in strategic locations enables short trips to be undertaken by residents and visitors, and reduces the need for private vehicle ownership. Trader surveys suggest 52% of the local business community is in favour of car sharing in some form.

Car share benefits include increased mobility for those who do not own a car, households reducing their level of car ownership, increased levels of walking, cycling and public transport use amongst car share users, and reduced parking pressures. The City of Melbourne estimates that a single car share removes 7.8 private vehicles from circulation; in the City of Sydney this is marginally higher.

6.25 Item 25: Car Wayfinding

Improved road wayfinding can help direct drivers to available parking and maximise opportunities to support business through attracting people to key places/destinations.

Recommendation 25.1: Audit existing traffic signs that assist wayfinding and access to the CJAA by car.

Recommendation 25.2: Design and deliver car wayfinding improvements including access to car parks and key destinations.

Discussion: The Boroondara Integrated Transport Strategy supports managing private car travel more effectively. Clarity regarding destinations and parking opportunities can help reduce congestion and adverse impacts on all reansport modes.

Signage is confusing and at times limited. Improved signage can better direct vehicles to destinations and or available parking. Good signage can help maximise opportunities to attract people to key places and support business. Signage improvements can be integrated with dynamic car parking recommendations outlined under the Parking Study.

6.26 Post Community Consultation Recommendations

The following recommendations have been developed following the completion of Council's community consultation for the Access Plan. The recommendations were developed to assist address consistent themes raised by members of the community.

A summary of the outcomes of the community consultation undertaken by Council is attached to this report at Appendix B.

6.26.1 Missing Footpath Loch Street

Recommendation 26.1: Investigate the completion of a missing footpath link along the west side of Loch Street.

6.26.2 Seating at Tram and Bus Stops

Recommendation 27.1: Audit and provide seating at bus and tram stops along transport corridors that service the Camberwell Junction Activity Area within Boroondara. Advocate for the provision of shelters at important central bus/tram stop locations.

6.26.3 Cookson Street and Holly Street Roundabout

Recommendation 28.1: Investigate a mini roundabout on Cookson Street at Holly Street to assist the kiss and ride activity at the Camberwell Railway Station.

6.26.4 Traffic Signal Operation

Recommendation 29.1: Investigate traffic signal intersection improvements considering the following concerns raised and advocate accordingly with VicRoads. Considerations raised include:

- Long delays are experienced at Riversdale Road/Redfern Road/Haverlock Road intersection for both pedestrians and motorists.
- The replacement of the pedestrian crossing at Evans Place with traffic signals.
- Cameras to enforce no right hand turns at Camberwell Junction.
- Improvements to the intersection of Prospect Hill Road and Burke Road including improving alignment, better road markings and a single lane into Prospect Hill Road.
- Right turn arrows at traffic lights including Stanhope Grove/Prospect Hill Road.

6.26.5 Speed, Safety and Traffic Volumes

Recommendation 30.1: Investigate speed, safety and traffic volume concerns at the following locations:

- Avenue Road and Butler Street;
- Broadway;
- Hastings Road;
- Inkerman Road;
- Laneway, between Redfern Road and Russell Street;
- Loch Street;
- Nicholson Street;
- Russell Street; and
- Wills Street.

Recommendation 31.1: Upgrade the roundabout at Monteath Avenue and Harold Street.

6.26.6 Parking and Traffic Flow

Recommendation 32.1: Investigate safety and traffic improvements associated with restricting parking at the following locations:

- Prospect Hill Road, east of Stanhope Grove;
- on approach to the Broadway and Stanhope Grove roundabout;
- Burke Road, between Barkers Road and Mont Albert Road;
- Along the west side of Trafalgar Road (opposite the child care centre) associated with right turning vehicles and the obstruction of traffic flow; and
- Montrose Place.

7 Implementation Plan

7.1 Prioritisation

The Access Plan recommendations have varied scope to improve health and transport choice within the CJAA. Further, some proposals combine to provide a greater benefit across a corridor while others are more isolated and stand-alone. Accordingly, it is considered that some proposals offer a more immediate benefit to visitors and the community and will also provide ‘quicker’ wins for Council.

Table 7 identifies the considered priorities, possible timeframes for implementation and high level cost for consideration. The following bands adopted as part of this assessment are outlined below.

It should be noted that recommendations will require approval, funding and delivery by State and Local Governments together with public transport operators.

Timeframe

- Short: 1-3 years;
- Medium: 3-7 years; and
- Long: 7+ years

Cost to Council and/or State Stakeholders

- Low: Up to \$50,000
- Medium: Between \$50,000 and \$100,000;
- Intermediate: Between \$100,000 and \$500,000; and
- Expensive: Above \$500,000

Table 7: Prioritisation Plan

Item 1: Burke Road	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 1.1: Investigate the relocation of tram stops on Burke Road to better connect with Camberwell Railway Station and for tram stops to be DDA compliant in line with legislative requirements.	High	Medium	Expensive	DTPLI VicRoads Yarra Trams Council
Recommendation 1.2: Advocate for an improved pedestrian crossing on Burke Road in line with Cookson Street, relocated tram stops and the Camberwell Railway Station.	High	Medium	Intermediate	DTPLI VicRoads Yarra Trams Council
Recommendation 1.3: Install raised threshold treatments at key intersections to increase the presence and comfort of pedestrians at Cookson Street, Burwood Avenue, Auburn Parade, Mayston Street, Burke Avenue, Reserve Road and Inglesby Road.	Medium	Short	Intermediate	Council
Recommendation 1.4: Investigate DDA compliant tram stops that best complement Burke Road and provide improved amenity and place. Investigate a DDA compliant tram stop near the entrance to the Well.	Medium	Long	Expensive	DTPLI VicRoads Yarra Trams Council
Recommendation 1.5: Advocate that VicRoads review signalised pedestrian crossing timings to minimise delay and encourage increased compliance and use.	High	Short	Low	VicRoads Council
Recommendation 1.6: Introduce buildouts that accommodate pedestrian amenity and opportunities for the regular spacing of deciduous trees along Burke Road.	Medium	Medium	Intermediate	VicRoads Council Traders
Recommendation 1.7: Relocate street furniture to buildouts to improve the comfort of pedestrian movements.	Medium	Medium	Medium	VicRoads Council Traders
Recommendation 1.8: Advocate in partnership with VicRoads for the provision of on-street bike lanes along Burke Road.	Medium	Medium	Intermediate	VicRoads Council Traders
Recommendation 1.9: Investigate shade and shelter provision at Camberwell Junction to the southern corner between Burke Road and Camberwell Road..	Medium	Medium	Medium	VicRoads Council Traders

Item 2: Station Street	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 2.1: Provide an informal crossing comprising of buildouts and a central refuge at Prospect Hill Road between Railway Parade and Station Street.	High	Short	Medium	VicRoads Council
Recommendation 2.2: Provide a footpath to the western side of Station Street utilising the hatched median space.	High	Medium	Medium	Council
Recommendation 2.3: Widen footpaths along Station Street to accommodate increased pedestrian movements particularly at constrained bus stop locations.	Medium	Medium	Medium	Council
Recommendation 2.4: Provide raised threshold treatments at car park entrances, particularly at locations where pram ramp gradients are significant.	Medium	Medium	Medium	Council Traders
Recommendation 2.5: Consult on the removal of the taxi zone on Station Street given very limited use and consider the allocation of additional space to improve the comfort of pedestrians.	Medium	Medium	Medium	Council Bus Operators Taxi Operators
Recommendation 2.6: Consolidate bus lay-bys into a single location on the east side of Station Street and introduce a kerbside pickup area near the Camberwell Market.	Medium	Medium	Medium	Council Bus Operators
Recommendation 2.7: Create a public plaza that integrates the Camberwell Market environment between Market Place and Riversdale Road.	Medium	Short	Intermediate	Camberwell Market Council Bus Operators
Recommendation 2.8: Investigate the integration of a future DDA compliant tram stop with a potential Station Street public plaza that best meets the needs of the community.	Medium	Medium	Expensive	DTPLI VicRoads Yarra Trams Council

Item 3: Cookson Street	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 3.1: Install kerb outstands at Cookson Street/Burke Road, narrowing the Cookson Street entry and provide a raised threshold treatment.	Medium	Medium	Medium	Council
Recommendation 3.2: Investigate widening the northern footpath of Cookson Street adjacent to business/retail frontages, inclusive of street trees.	Medium	Medium	Medium	Council

Item 4: Principal Pedestrian Network	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 4.1: Audit Principal Pedestrian Network (PPN) links that serve the Camberwell Junction and identify pedestrian amenity improvements.	High	Short	Low	Council VicRoads
Recommendation 4.2: Advocate for the recognition of the Principal Pedestrian Network by VicRoads and advocate improvements along arterial roads.	High	Short	Low - Expensive	Council VicRoads
Recommendation 4.3: Investigate infrastructure improvements to the Principal Pedestrian Network as outlined in Appendix A. Cookson Street, Fritz Holzer Park and Camberwell Road PPN are considered priority corridors for improvement.	High	Short	Intermediate	Council VicRoads DSE
Recommendation 4.4: Investigate improved pedestrian crossing provision across Broadway from Russell Street.	Medium	Medium	Low	Council
Recommendation 4.5: Develop a detailed shade strategy along pedestrian footpaths and other pedestrian corridors including parking areas.	Medium	Medium	Low	Council
Recommendation 4.6: Audit and improve footpath conditions along Riversdale Road between Hastings Road and Camberwell Junction.	High	Short	Low	Council

Item 4: Principal Pedestrian Network	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 4.7: Review pedestrian signal/crossing facilities to understand traffic signal configurations and timings together with pedestrian volumes and frustrations and to advocate to VicRoads for reduced waiting times where necessary. Locations highlighted during the consultation include Mayston Street/Camberwell Road, Fairholm Grove/Riversdale Road, Redfern Road/Riverdale Road/Havelock Road and Inglesby Road/Camberwell Road.	High	Short	Low	Council VicRoads
Recommendation 4.8: Investigate improvements to safety for pedestrians crossing Fairholm Grove and Station Street on the south side of Prospect Hill Road.	High	Short	Low	Council VicRoads
Recommendation 4.9: Audit seat locations along key pedestrian corridors with the aim of providing regular points of rest that support access to the shopping centre.	High	Short	Low	Council
Recommendation 4.10: Undertake street lighting audits along Albert Street, Fairholm Grove and Butler Street. These streets also serve pedestrian access to railway stations.	High	Short	Low	Council

Item 5: SmartRoads Pedestrian Priority Area	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 5.1: Advocate that Riversdale Road east of Burke Road to Butler Street becomes a Pedestrian Priority Area.	Medium	Short	Low	VicRoads
Recommendation 5.2: Advocate that Riversdale Road west of Burke Road to Wills Street becomes a Pedestrian Priority Area.	Medium	Short	Low	VicRoads
Recommendation 5.3: Advocate that Camberwell Road south of Riversdale Road to Inglesby Road becomes a Pedestrian Priority Area.	Medium	Short	Low	VicRoads

Item 6: Butler Street/Fairholm Grove Pedestrian Desire Line	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 6.1: Improve the Butler Street car park layout to better accommodate the pedestrian desire line that passes along Fairholm Grove to Camberwell Road.	Medium	Short	Intermediate	Council

Item 7: Commerce Lane Pedestrian Improvements	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 7.1: Investigate street art to walls or carriageway surface and include trees at select locations along Commerce Lane in recognition of the high pedestrian movements and the need to provide an improved public realm.	Medium	Short	Medium	Council
Recommendation 7.2: Review street lighting and upgrade as required.	Medium	Short	Low	Council

Item 8: Pedestrian Wayfinding	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 8.1: Deliver a Wayfinding Strategy.	Medium	Short	Medium	Council

Item 9: Second Generation Bicycle Lanes	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 9.1: Advocate for 'second generation' bicycle lanes along Burke Road, Camberwell Road and Riversdale Road east of Camberwell Junction.	Medium	Medium	Intermediate	VicRoads Council

Item 10: Provision of Bicycle 'Shimmy' Routes	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 10.1: Investigate a 'shimmy' link between the Anniversary Trail and west of Camberwell Road via Cookson Street, Auburn Parade, and Gillman Street.	High	Short	Medium	Council VicRoads
Recommendation 10.2: Investigate a 'shimmy' link between Pleasant Road and the Gardiners Creek Trail via Miami Street, Scott Street, Robinson Road and Reserve Road.	High	Short	Medium	Council VicRoads

Item 11: Connect Mont Albert Road with Anniversary Trail	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 11.1: Provide a pedestrian and bicycle connection between Mont Albert Road and the Anniversary Trail to improve bicycle access within the CJAA including its rail stations.	Medium	Medium	Intermediate	Council Dept Sustainability and Environment

Item 12: Advocate for lower speeds along Priority Bicycle Routes	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 12.1: Investigate and advocate for reduced speeds where bicycle segregation cannot be achieved along 60 km/h roads that are designated as Priority Bicycle Routes.	Medium	Long	Medium	Council VicRoads

Item 13: Bike and Ride East Camberwell Railway Station	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 13.1: Develop a Bike and Ride initiative that integrates with the East Camberwell Railway Station using the Anniversary Trail.	Medium	Short	Medium	Dept of Transport Council Metro

Item 14: Rail Services Stopping at Camberwell Railway Station	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 14.1: Advocate for more Belgrave and Lilydale train services stopping at the Camberwell Railway Station in the peak periods.	High	Medium	Medium	Dept of Transport Metro

Item 15: Advocate for Increased Bus 285 Services	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 15.1: Advocate for improved Bus 285 operations that provide increased transport choice for accessing both to the Balwyn Activity Area and the CJAA.	High	Medium	Medium	Dept of Transport

Item 16: Extend Tram Route 72	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 16.1: Advocate for a feasibility study for extending Tram Route 72 to the north to connect with Tram 48 and potentially the Hurstbridge Line and to the south to connect with Tram Routes 3, 5, 6 and the Caulfield Railway Station.	High	Medium	Low	Dept of Transport Yarra Trams Council

Item 17: DDA Compliant Tram Stops	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 17.1: Investigate DDA compliant tram stops that best complement the CJAA.	High	Short to Long	High	Yarra Trams VicRoads Dept of Transport Traders Council

Item 18: Burke Avenue Car Park Redesign	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 18.1: Deliver an improved Burke Avenue car park inclusive of public space, pedestrian connections, bicycle parking and improved car parking arrangement.	High	Medium	Expensive	Council Traders

Item 19: Camberwell Grove and Harold Street Car Park	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 19.1: Improve pedestrian connections and urban environment to the western and northern side of The Well.	Medium	Medium	Medium	Council Traders

Item 20: Implement 40 km/h Residential Speed Limit	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 20.1: Improve road safety through reducing residential speed limits to 40 km/h surrounding the CJAA.	High	Short	Low	Council VicRoads

Item 21: Undertake Road Safety Reviews	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 21.1: Undertake a road safety review at the Rathmines Road/Canterbury Road/Burke Road intersection.	Medium	Short	Low	Council VicRoads
Recommendation 21.2: Undertake a road safety review at the Riversdale Road/Trafalgar Road intersection.	Medium	Short	Low	Council VicRoads
Recommendation 21.3: Undertake a road safety review at the Seymour Grove/Burke Road intersection.	Medium	Short	Low	Council VicRoads
Recommendation 21.4: Undertake a road safety review at the Tooronga Road/Riversdale Road intersection.	Medium	Short	Low	Council VicRoads
Recommendation 21.5: Undertake a road safety review at the Auburn Road/Riversdale Road intersection.	Medium	Short	Low	Council VicRoads
Recommendation 21.6: Undertake a road safety review at the Harold Street/Prospect Hill Road/Burke Road intersection.	Medium	Short	Low	Council VicRoads

Item 22: Investigate Stanhope Grove/Broadway Intersection	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 22.1: Retain the Stanhope Grove/Broadway roundabout configuration and advocate for treatments that better consider pedestrian, bicycle and traffic amenity and safety at the intersection.	Medium	Short	Intermediate to Expensive	VicRoads Council

Item 23: Signalise Intersection of Camberwell Road/Monteath Avenue/Redfern Road	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 23.1: Advocate that signals are introduced at the intersection of Camberwell Road/Monteath Avenue/Redfern Road.	Medium	Long	Expensive	VicRoads Council

Item 24: Car Share	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 24.1: Introduce car share to CJAA. Investigate locations including the area adjacent to the council offices, Camberwell Railway Station, adjacent to The Well and Station Street.	Medium	Short	Inexpensive	Council

Item 25: Car Wayfinding	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 25.1: Audit existing traffic signs that assist wayfinding and access to the CJAA by car.	Medium	Short	Low	Council VicRoads
Recommendation 25.2: Design and deliver car wayfinding improvements including access to car parks and key destinations.	Medium	Medium	Medium - Intermediate	Council VicRoads

Post Community Consultation Recommendations	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 26.1: Investigate the completion of a missing footpath link along the west side of Loch Street.	Medium	Medium	Low	Council
Recommendation 27.1: Audit and provide seating at bus and tram stops along transport corridors that service the Camberwell Junction Activity Area within Boroondara. Advocate for the provision of shelters at important central bus/tram stop locations.	High	Medium	Low	Council PTV Developers
Recommendation 28.1: Investigate a mini roundabout on Cookson Street at Holly Street to assist the kiss and ride activity at the Camberwell Railway Station.	Low	Medium	Low	Council

Post Community Consultation Recommendations	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 29.1: Investigate traffic signal intersection improvements considering the following concerns raised and advocate accordingly with VicRoads. Considerations raised include: <ul style="list-style-type: none"> • Long delays are experienced at Riversdale Road/Redfern Road/Haverlock Road intersection for both pedestrians and motorists. • The replacement of the pedestrian crossing at Evans Place with traffic signals. • Cameras to enforce no right hand turns at Camberwell Junction. • Improvements to the intersection of Prospect Hill Road and Burke Road including improving alignment, better road markings and a single lane into Prospect Hill Road. • Right turn arrows at traffic lights including Stanhope Grove/Prospect Hill Road. 	High	Short	Low	Council VicRoads
Recommendation 30.1: Investigate speed, safety and traffic volume concerns at the following locations: <ul style="list-style-type: none"> • Avenue Rd and Butler St; • Broadway; • Hastings Rd; • Inkerman Rd; • Laneway, between Redfern Rd and Russell St; • Loch St; • Nicholson St; • Russell St; and • Wills St. 	High	Medium	Low	Council VicRoads
Recommendation 31.1: Upgrade the roundabout at Monteath Avenue and Harold Street.	Medium	Medium	Medium	Council VicRoads

Post Community Consultation Recommendations	Priority	Timeframe	Cost	Key Stakeholders
Recommendation 32.1: Investigate safety and traffic improvements associated with restricting parking on Prospect Hill Road east of Stanhope Grove, on approach to the Broadway and Stanhope Grove roundabout, on Burke Road between Barkers Road and Mont Albert Road, to the west side of Trafalgar Road opposite the child care centre in relation to right turning vehicles and obstruction of traffic flow, and at Montrose Place.	High	Medium	Low	Council

8 Next Steps

The recommendations proposed have been designed to meet the outlined study objectives. Each element is vital if these objectives and wider goals of the study are to be achieved. The framework must therefore be regarded as an integrated set of recommendations rather than as a set of distinct schemes.

It is noted that specific proposals such as tram stop relocations, modifications to arterial roads, and provision of additional signalised intersections will require further detailed investigation or consultation with relevant stakeholders. These proposals should also be considered in the development of any future landscape/streetscape master plans or concept designs within the CJAA.

In summary, the Access Plan will make a major contribution towards meeting local and regional transport objectives. It consists of cost-effective, safe and environmentally acceptable recommendations to improve access and movement to and within the CJAA. The Plan provides real alternatives to car use and places particular emphasis on enhancing the pedestrian, cyclist and public transport networks.

Appendix A

Boroondara Council PPN Modelling Process

A1 Principal Pedestrian Network Modelling

The following Appendix details Council's approach to Principal Pedestrian Network (PPN) modelling. Please note that at time of issue this document is in a draft state and updated network modelling is expected in December 2012.

Principal Pedestrian Network (PPN) Camberwell Junction

The aim of defining a PPN for Camberwell Junction is to provide a strategic framework that helps deliver pedestrian improvements and protect the pedestrian domain.

Benefits of increasing walking are significant and include greater passing trade, incidental physical activity, less parking pressures, reduced noise and air pollution, improved community interaction.

The following note presents a summary of the survey, modelling and assessment work undertaken to define a PPN together with a summary of key corridors for investigation and improvement.

Principal Pedestrian Network

The Department of Transport has defined a methodology that models walking to key destinations with aim to identify strategic walking routes (PPN) for improvement. The primary objective of developing a Principal Pedestrian Network (PPN) is to encourage walking as a viable transport option for regular and essential daily trips including trips to and from work and shops.

A technique for determining a PPN has been developed by the Department of Transport. Details of the process are outlined within the Principal Pedestrian Network Methodology (PPNM) (15/12/10) document. The aim of this process is to identify the PPN by determining the pedestrian corridors that are of the greatest strategic significance through understanding their importance in terms of connecting the community.

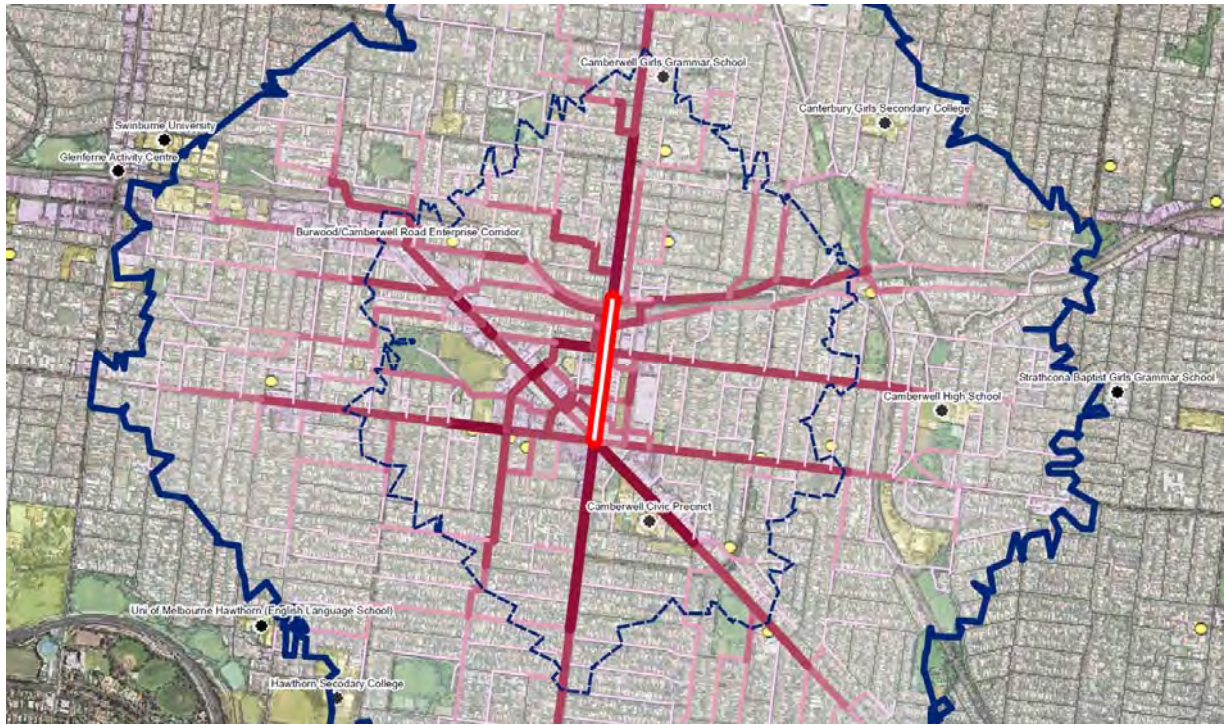
Camberwell Junction and Walking

Walking is a notable mode of access for the Camberwell Junction Activity Area with approximately 20% of respondents surveyed having walked (November 2011). The questionnaire survey highlighted that pedestrians visit more often and annually spend more than any other mode. 20% of those who had arrived by car and 21% by tram indicated that they could have walked that day indicating the potential to encourage an increase in walking. 57% of those who accessed Camberwell Railway Station walked (Department of Transport - Camberwell Junction Fact Sheet).

Catchment Modelling

The GIS models represent the shortest path to a destination along a pedestrian network. The modelling illustrates the aggregate path of residents accessing destinations with the darkest paths attracting the greatest potential movement of residents.

Direct paths with Burke Road



Direct paths with Camberwell Railway Station



Fritsch Holzer Park

An additional model was run testing a potential connection through Fritsch Holzer Park. The potential park link proved to be an attractive connection with Burke Road. Given the proximity of Auburn Station, it is thought this link would generally not be used as a connection with Camberwell Railway Station.

Pedestrian Counts

Pedestrian video surveys were undertaken at 20 sites outside key parking areas to help ensure that walk only trips were captured around the Camberwell Junction Activity Area. Pedestrian counts were captured on a typical Thursday and Saturday (November 2011).

Pedestrian counts are indicated in the Access Links table in a following section.

Calibration and Latent Demand



In line with the Principal Pedestrian Network Methodology developed by the Department of Transport, GIS models were developed testing two markets, Camberwell Railway Station being the principal public transport node for Camberwell, and Burke Road being the strip retail heart of the centre. The GIS model simply aggregates the most direct catchment paths for the community to reach the markets tested. Compared against observations, knowledge of the area and many of the counts, the models are considered a reasonable fit for a GIS model.

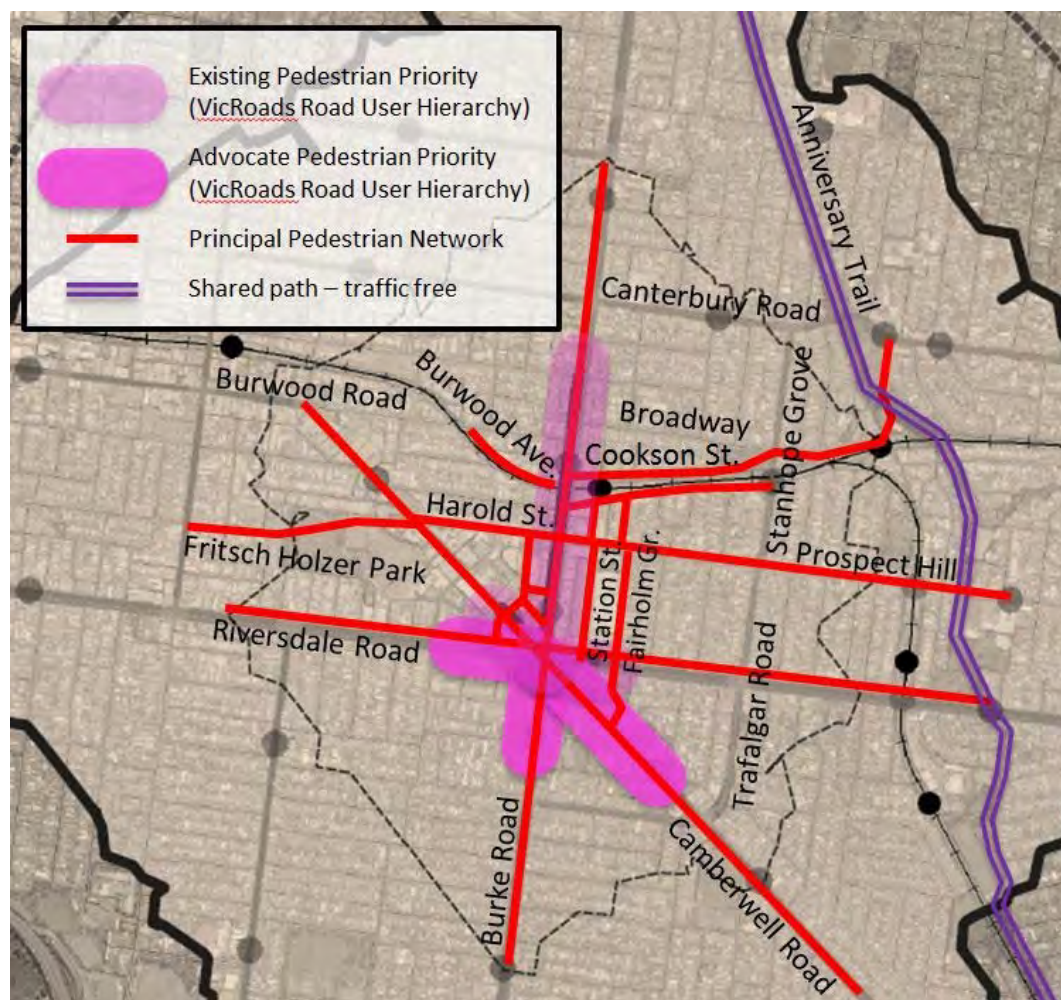
The model was checked against counts for a weekday (left) and a Saturday (right). Whilst this provides an indication of how representative the model may predict the best routes, this can also be viewed in terms of where latent pedestrian demand may exist. The higher the factor illustrated in the diagrams, the greater the difference between modelled pedestrian catchment and counts. The results correlate with the origin and transport mode information gathered from the questionnaire surveys.

On Site Observations

Prior to defining the PPN, each corridor was walked to better understand the corridors predicted by the modelling and the counts captured by the survey. The objective of walking the corridor was twofold, to qualify the background modelling and counts prior to drafting the PPN, and to identify the potential for improvement.

Principal Pedestrian Network

The following Principal Pedestrian Network is proposed. The links comprise of both connections with the community and connections within the Camberwell Junction Activity Area.



Research Insight

DoT (Victoria) commissioned a literature review of international research, reviews and evaluation of walking and cycling programs. The 500 articles examined highlighted that "*small scale infrastructure interventions have a small or negligible effect*".... "*except where gaps in the existing system are remedied*" (Krizek, Forsyth and Baum (2009)).

Principal Pedestrian Network - Access Links

The following table provides a summary of each link of the Principal Pedestrian Network that provides a pedestrian access function to the Camberwell Junction Activity Area and Camberwell Railway Station. The objective of improving these PPN links is to achieve mode change and support walking as a mode choice.

Link	Name	Ped. Count Thurs (Sat)	Model (to Station)	Model (to Burke Road)	Question Survey	Comments	Opportunities	Opportunity to improve (increase walking)
1	North - Burke Road	2040 (744)	2500	3000-5000	Low walk in catchment. High drive in catchment.	High pedestrian movement. Tram choice competes with walking.	Raised side road crossings, seating and tram stops upgrades.	Low-Medium (Medium)
2	North East - Cookson Street/ Read Gardens/ Broadway	808 (244)	3400	2000-3000		Large disparity in walking counts and population catchment, high car use, poor transport choice, lower residential density area. Connects with Anniversary Trail	Missing/poor footpaths on south side of Cookson Street. Improve Stanhope Grove/Broadway Roundabout intersection. Lighting on Cookson Street and near East Camberwell Station. Improve pedestrian connection with East Camberwell Station.	High (High)
3	East - Rail path	No survey	600	300		Connects Burke Road, Railway Parade and Fairholm Grove; notable station links.	Improve lighting and maintenance. Very expensive to widen.	Medium (Low)

4	East - Prospect Hill	776 (268)	2000-4000	1000-1700	Largest origin area. Highest walk in catchment. Highest tram catchment. Many	Less transport choice. Station catchment competes with Riversdale Station. Topography issue. Heavy traffic.	Side road crossings, zebra crossings to roundabout at Fairholm Grove, safety improvements at Station Street.	High (Medium)
5	East - Riversdale Road	2832 (1872)	Not direct desire line	1000-2200		Tram choice competes with walking. High pedestrian counts.	Side road crossings. Gaps in tree canopy.	Low-medium (Low)
6	South/East - Camberwell Road	1102 (188)	1000	1400-3500	Largest origin area. Highest walk in catchment. Highest tram catchment. Many continue to drive.	Largest origin, schools, council offices, library, some residential growth, flat topography, high weekday counts, large disparity in walking counts and catchment on the weekend. Tram choice competes with walking.	Seating, side road crossings, laneway safety, seating, shade/shelter at Camberwell Junction, improve Trafalgar Road/Camberwell Road signals.	Medium (High)

7	Fairholm Grove/Butler Street	1000	1500	Not on model desire line		Provides an important desire line with Camberwell Railway Station through car park at Butler Street. Services notable access to employment areas.	Protection of desire line through car park. Two stage crossing Butler St. Treatment of Roundabout at Prospect Hill.	High (Medium)
8	South - Burke Road	3504 (1664)	2500	2500-5000	High walk and tram in catchment.	Tram choice competes with walking. High walking counts week and weekend.	Regular seating.	Medium (Low)
9	West - Riversdale Road	1040 (516)	2000 (3000 link via Redfern Road)	2300-5800	Lower walk in catchment many drive.	Tram choice competes with walking. A number of aged care facilities. Heavy traffic and clearways.	Side road crossings.	Low (Medium)
10	West - Harold Street and Fritsch Holzer Park	516 (288)	1000	300-750		Higher density, less transport choice, high car use, modelling indicates that park would provide shortest path.	Sealed path through park. Improved signals at Harold Street/Camberwell Road.	High (Medium)
11	North/West Burwood Avenue	No Count	2300	131		Modelled desire line to station and Burke Road. Competes with other Activity Area.	Widen footpath and narrow road although tree line would be mid footpath.	Medium (Medium)

Principal Pedestrian Network - Place

The streets at the heart of the Camberwell Junction Activity Area are destinations in their own right and street design solutions are required that provide comfort and a sense of place as a destination.

These streets support significant pedestrian movements following arrival by all transport modes:

- Burke Road,
- Burke Avenue,
- Commerce Lane,
- Camberwell Road,
- Riversdale Road,
- Station Street, and
- Evans Place.

Space in this environment is highly contested given the pressures of all transport modes and in particular car parking, and space for commerce. Public space and green space is generally limited and requires an improved balance.

Appendix B

Council Consultation Response Analysis - January 2014



Camberwell Junction Access Plan and Parking Study

Consultation response analysis - January 2014

The Access Plan (AP) and Parking Study (PS) build upon the Camberwell Junction Structure Plan by outlining strategic access initiatives that support increased access and improved transport choice.

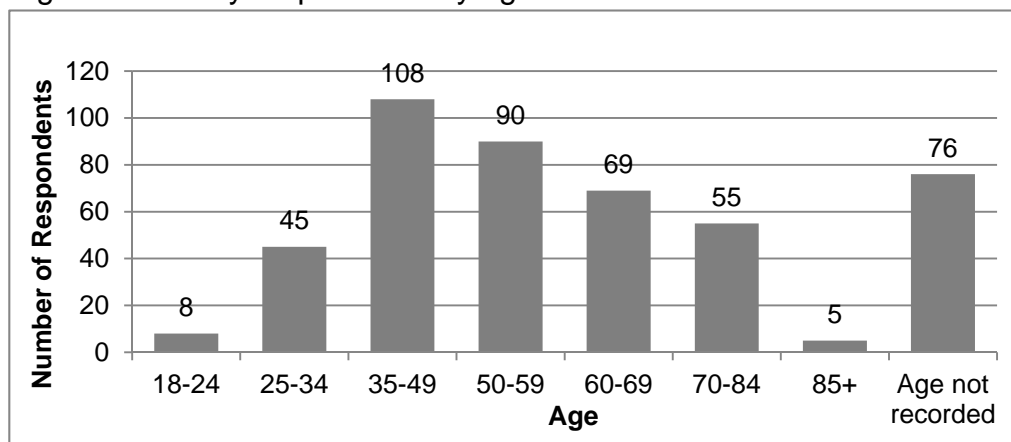
The Structure Plan outlines the need to develop "a centre-wide car parking strategy to address parking issues in more detail". In keeping with the Transport Integration Act 2010, the AP and PS consider all modes of transport to and from the CJAA, car parking and car movement being one element of a larger transport network. The AP considers the catchment dynamics of each respective mode and how modes integrate with the broader transport network in providing access to the CJAA.

Local residents were provided with access to relevant materials and invited to provide feedback regarding the AP and PS by 27 November 2013. Overall 456 questionnaire responses were received, and the feedback has been analysed and presented within this report. Additional feedback received by e-mail and by phone is considered as part of the response analysis.

Respondent characteristics

Of the 456 respondents, information regarding age and location was gathered. The majority of respondents (59 percent) were aged between 35-69 years. In total 17 percent did not record their age. There was less survey participation by teens, younger adults and the elderly. Only 1 percent of respondents were aged above 85 years, 2 percent were aged 18-24, 10 percent were aged 25-34 and 12 percent were aged 70-84.

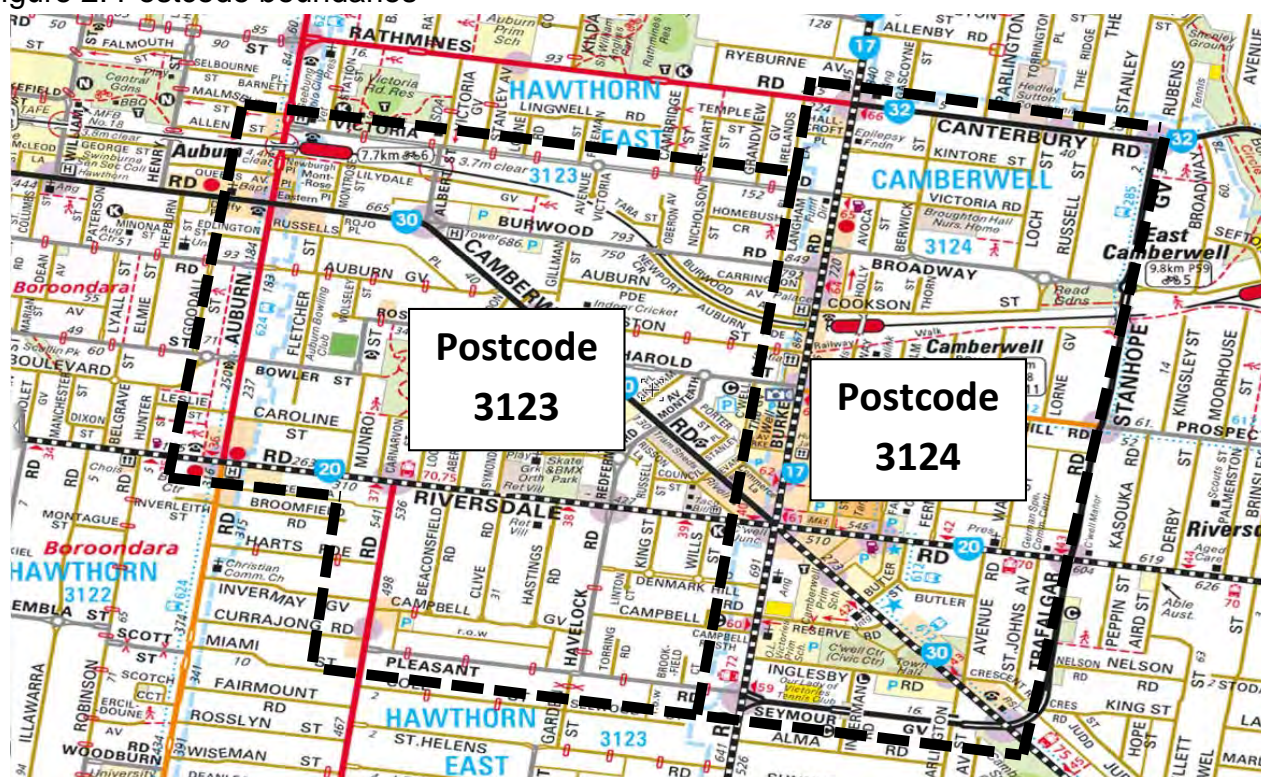
Figure 1: Survey respondents by age



Whilst 51% of respondents provided their names, 49% chose to provide feedback anonymously. Respondents were given the option of providing their contact details to be kept informed about the plans and 237 (52%) provided either an email address or a full residential address.

In regards to the location of respondents, respondents were divided by postcode. Questionnaires were delivered to areas within the Hawthorn East post code area (3123) and the Camberwell post code area (3124), as per Figure 2. Just under half of the respondents (236 or 49%) disclosed their post code location, with 129 from Hawthorn East and 97 from Camberwell. A further six responses were from other Boroondara post codes; whilst four other responses were received from outside Boroondara.

Figure 2: Postcode boundaries





Access Plan - response overview

The following table provides an overview of the response to the Access Plan.

Table 1: Response overview to the Access Plan

	Access Plan Recommendations	Not Important	Low Importance	Neutral	Some Importance	Very Important	Responses
Pedestrian	A1 Burke Road improvements including buildouts with deciduous trees, raised side road crossings, investigate accessible tram stops and wayfinding signs.	68	47	60	116	109	400
	A2 Station Street improvements including improved crossings, wider footpaths, raised side road crossings, a public plaza and investigate accessible tram stop adjacent to Riversdale Road.	48	38	82	123	98	389
	A3 Widening the northern footpath along Cookson Street adjacent Burke Road and include a raised side road crossing.	66	57	112	97	57	389
	A4, A5, A6 & A7 Improve pedestrian connections and priority within the shopping centre.	28	35	53	142	128	386
	A8 Deliver a pedestrian wayfinding strategy for Camberwell Junction.	51	49	93	116	74	383
Bicycle	A10 Improved bicycle connections along residential streets.	64	48	73	92	112	389
	A9 & A12 Bicycle improvements along arterial roads including increased segregation or reduced speeds.	72	45	73	78	126	394
	A11 & A13 Connect Mont Albert Road with the Anniversary Trail and provide bike and ride facilities at East Camberwell Station.	36	37	84	126	112	395
Public Transport	A14 & A15 Advocate for bus and rail service improvements.	23	20	50	116	178	387
	A16 Advocate for the improved regional connectivity of Tram 72 connecting the Hurstbridge line and Caulfield Station.	40	37	113	102	91	383
	A17 Investigate accessible tram stops in line with the Disability Discrimination Act.	45	33	88	117	108	391
Safety and Car Infrastructure	A18 & A19 Deliver improvements to the Burke Avenue and Harold Street car parks.	17	32	79	132	142	402
	A20 Reduce residential road speeds to 40 km/h surrounding Camberwell Junction.	77	54	77	76	133	417
	A21 Undertake road safety reviews at a number of intersections with a high number of casualty crashes.	11	22	41	135	200	409
	A22 Investigate changes to Stanhope Grove/Broadway	50	44	133	106	70	403




		Not Important	Low Importance	Neutral	Some Importance	Very Important	Responses
	Access Plan Recommendations						
	intersection.						
	A23 Signalise the intersection of Camberwell Road/Monteath Avenue/Redfern Road.	48	47	136	84	84	399
	A24 Introduce car share to the Camberwell area.	96	58	102	73	68	397
	A25 Audit and improve car wayfinding and directional signage to car parks and key destinations.	44	44	95	143	78	404

Parking Study - response overview

The following table provides an overview of the responses to the Parking Study recommendations.

Table 2: Response overview to the Parking Study

		Not Important	Low Importance	Neutral	Some Importance	Very Important	Responses
	Recommendations						
Parking Study	P1 and P2 Bring weekend parking restrictions in line with weekday parking restrictions to help ensure fair and balanced use.	119	47	87	80	57	390
	P3 Increase the provision of accessible parking bays (to better support the disabled and elderly).	36	42	100	123	86	387
	P4, P5, P6, P7, P8, P15, P16, P17 & P18 Support the parking needs of all modes on-street and within new developments (bicycle, accessible, car, taxi, motorbike, car share, loading and public transport)	32	28	98	128	83	369
	P9 Exempt Cookson Street residents from metered parking and introduce metered parking to north side.	71	31	135	74	66	377
	P10 Ban parking along one side where street is less than 7.2 metres wide (Carrington Ave and Montrose St).	44	35	73	117	109	378
	P11 Improved signage to car parks with dynamic parking that illustrates parking availability.	38	36	75	136	96	381
	P12 Enforce parking restrictions in residential streets with high levels of overstaying without permits.	48	31	56	98	154	387
	P13 Reconfigure off-street parking layouts to improve parking capacity.	21	14	60	144	140	379



	Recommendations	Not Important	Low Importance	Neutral	Some Importance	Very Important	Responses
	P14 Street by Street changes						
	P19 Car parking rates for new developments to reflect the characteristics of similar development in Camberwell.	39	23	108	96	98	364
	P20, P21 & P22 Determine an appropriate payment mechanism from developers to increase shared parking facilities (car, motorbike and bicycle) at the Junction West multi level car park and car park at the Riversdale Road/Fairholm Grove corner.	34	25	97	98	120	374

Comments received - response overview

The consultation also gathered comments with regard to the outlined recommendations together with additional comments regarding a wide range of other observations or concerns. There are several broad transport and access themes being analysed. Below is a table that provides a summary of the questionnaire survey comments received by transport and access theme. Note that the comments received were of a varying nature including positive, supportive, negative, critical and neutral.

Table 3: Count of community comments received by theme

Parking	Development	Car Access and Traffic	Walking	Cycling	Car Share	Tram	Bus	Train	Safety/ Health	Equity	Green Space
67	7	146	59	52	34	50	19	25	77	33	15

Each recommendation is discussed further in the following pages within the five topics of Pedestrian, Bicycle, Public Transport, Safety/Car Infrastructure and Parking, including additional considerations and/or recommendations as a result of the comments received.



Camberwell Centre Association - response overview

The Camberwell Centre Association represents over 650 businesses in the Camberwell Junction precinct. Whilst individual businesses were encouraged to respond to the consultation exercise, the association submitted a written response to the draft documents.

Concern was raised that the plan relies on a shift in people's reliance on car use to other modes of transport. In response to this, questionnaire surveys indicate that the centre is already heavily reliant on other modes of access with approximately half indicating the use of alternatives to the car. The plan seeks to better support these modes whilst better managing parking demands, although balancing the needs of employees, commuters, customers and residents is a formidable challenge.

The association does not agree with uniform parking restrictions and indicates the need for 15 minute and 3-4 hour parking. The PS includes a Parking Management Strategy which adopts a Shopping Strip hierarchy at the heart of the centre that prioritises short-term uses and retail customers over residential owners/visitors, commuters and local employees. In nearby residential streets the Parking Management Strategy provides a focus on residential and visitor parking over local employees and commuters. Moving away from the core area into peripheral streets towards the boundaries of the study area, consideration is given to providing a balance of parking for residents and their visitors as well as providing limited unrestricted parking for use by traders, employees, and commuters. Whilst the PS has a broad Parking Management Strategy, the parking recommendations have been tailored to provide a significant increase in metered long term parking, increased 3 hour parking and maintaining very short and 1 hour parking at the core of the precinct in recognition of the broad range of community and customer requirements.

Potential collaborative parking at the Le Pine and The Palace car parks was investigated, however, both these private car parks are often fully utilised by Le Pine and The Palace customers.

Certain residential streets have seen significant increases in parking which can be attributed to long term parking overspill by traders/employees and commuters. Increased levels of car ownership by residents can also lead to increased parking levels in streets. Parking surveys mostly reflect the concerns raised by residents and Council has a long standing priority to protect the amenity of residents in accordance with its Parking Management Policy. The provision of long term parking is challenging and costly given that single vehicles occupy valuable and limited real estate for much of the day. The PS includes provision for increased long term metered parking at a number of locations in the core and to the periphery of the study area.

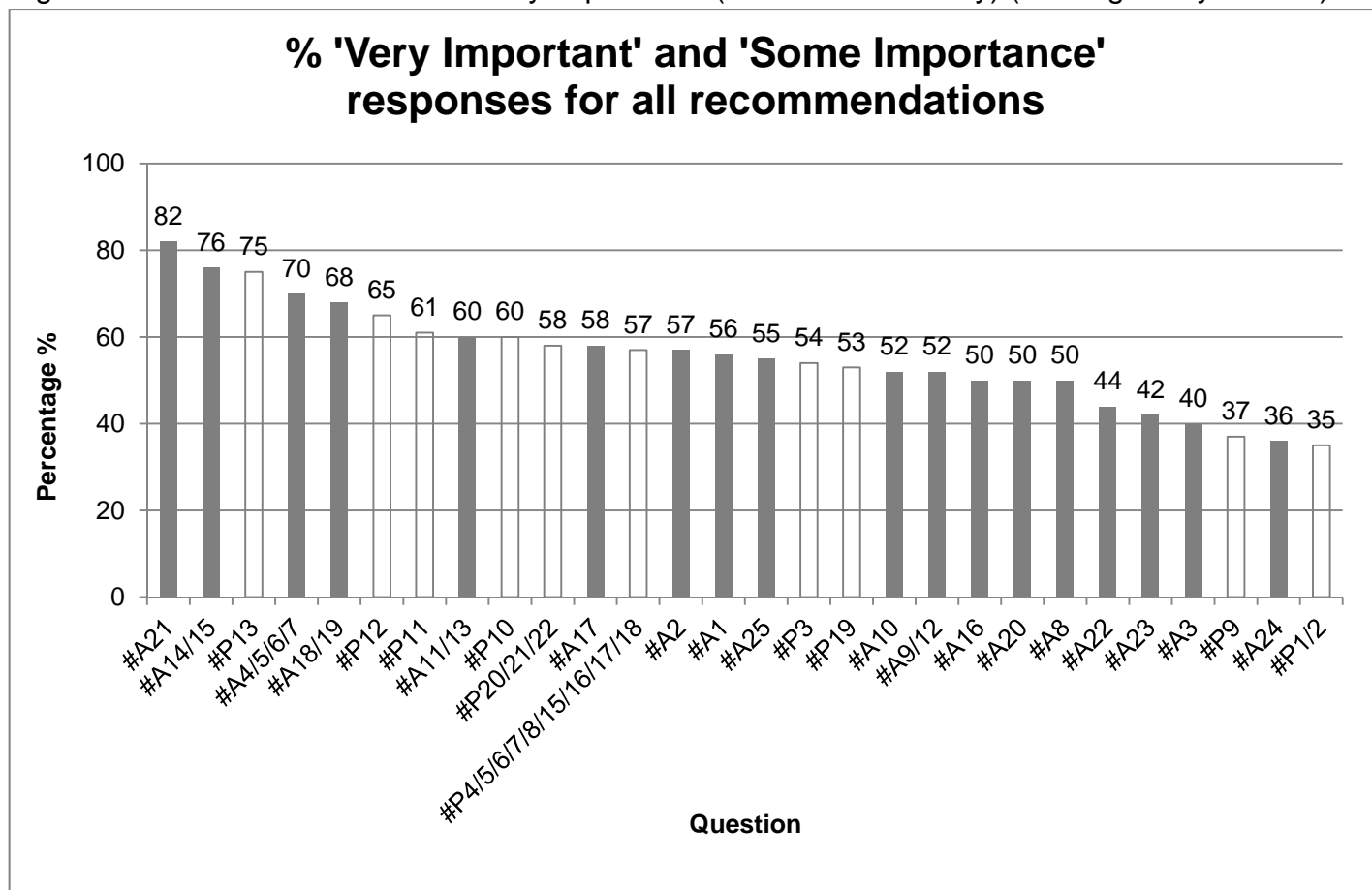
The delivery of many adopted recommendations within the plans will require further investigation, concept designs and detailed designs. Dialogue with the Camberwell Centre Association and the community will be of continued importance in the process. Concerns not discussed are noted and/or mentioned in the following analysis.



Analysis of recommendations

Respondents were asked to rate a range of access and parking initiatives. The responses to these questions ranged from 364 to 417 in total. Figure 3 illustrates the relative importance of various transport initiatives.

Figure 3: Recommendations ranked by importance (Access Plan - Grey) (Parking Study - White)



*Refer to Tables 1 and 2 for recommendation details.

Overall, respondents felt it was most important to undertake road safety reviews at intersections with high casualty crash numbers (A21) and to advocate for better bus and rail service improvements (A14/15), and that it was least important to bring weekend parking restrictions in line with weekday parking restrictions (P1/P2).

Table 4 examines the highest ranking recommendations and considers variability between post code areas. The two highest ranked recommendations were identical for both postcode area 3123 and 3124. Residents responding from post code area 3123 (Hawthorn East) rank improvements to the Burke Avenue and Harold Street car parks notably higher.

Table 4: Highest ranked 'Very Important' or 'Important' recommendations per respondent postcode

Area	Rank 1	Rank 2	Rank 3
3123 (Hawthorn East)	Recommendation A21 (Road Safety Audits) (98 votes; 84%)	Recommendation P13 (reconfigure off street parking) (91 votes; 82%)	Recommendation A18/A19 (Burke Ave and Harold St car park improvements) (85 votes; 75%)
3124 (Camberwell)	Recommendation A21 (Road Safety Audits) (69 votes; 85%)	Recommendation P13 (reconfigure off street parking) (64 votes; 84%)	Recommendation A14/A15 (bus and rail service improvements) (59 votes; 80%)
Other post codes	Recommendation A18/A19 (Burke Ave and Harold St car park improvements) and A25 (Signs to car parks) (8 votes; 80%)		Recommendation A4/A5/A6/A7 (pedestrian connections) and P11 (dynamic parking signs) (6 votes; 75%)

Table 5: Analysis of responses to pedestrian recommendations

	Pedestrian Recommendations	Not or Low Importance Combined	Neutral	Some and Very Important Combined	Responses
Pedestrian	A1 Burke Road improvements including buildouts with deciduous trees, raised side road crossings, investigate accessible tram stops and wayfinding signs.	115	60	225 (56%)	400
	A2 Station Street improvements including improved crossings, wider footpaths, raised side road crossings, a public plaza and investigate accessible tram stop adjacent to Riversdale Road.	86	82	221 (57%)	389
	A3 Widening the northern footpath along Cookson Street adjacent Burke Road and include a raised side road crossing.	123	112	154 (40%)	389
	A4, A5, A6 & A7 Improve pedestrian connections and priority within the shopping centre.	63	53	270 (70%)	386
	A8 Deliver a pedestrian wayfinding strategy for Camberwell Junction.	100	93	190 (50%)	383

Only Recommendations A4, A5, A6 and A7 received a proportion of very important or important responses that reached 70%. Comments for Recommendation A1 which involves street improvements to Burke Road were extremely mixed. The need to improve the street for pedestrians including the provision of deciduous trees was often sighted together with concerns regarding making congestion worse along Burke Road resulting in the diversion of traffic through residential streets. The response to Recommendation A3 involving changes to Cookson Street near Burke Road varied between postcode areas, with 38% in Hawthorn East and 49% in Camberwell raising it as either some importance or very important. Comments with regard to Recommendation A3 were mixed and included the need for further information. Cookson Street adjacent the station permits kiss and ride

and there is evidence of double parking activity. This location may become constrained if the carriageway width is reduced given this drop off activity.

A wide range of additional comments on improving the pedestrian and urban realm were also received. Considering the comments received through the community consultation, the following additional recommendations are proposed:

- Recommendation A4 - Investigate improved pedestrian crossing provision across Broadway from Russell Street.
- Recommendation A4 - Develop a detailed shade strategy along pedestrian footpaths and other pedestrian corridors including parking areas.
- Recommendation A4 - Audit and improve footpath conditions along Riversdale Road between Hastings Road and Camberwell Junction.
- Recommendation A4 - Review pedestrian signal/crossing facilities to understand traffic signal configurations and timings together with pedestrian volumes and frustrations and to advocate to VicRoads for reduced waiting times where necessary. Locations highlighted during the consultation include Mayston Street/Camberwell Road, Fairholm Grove/Riversdale Road, Redfern Road/Riverdale Road/Havelock Road and Inglesby Road/Camberwell Road.
- Recommendation A4 - Investigate improvements to safety for pedestrians crossing Fairholm Grove and Station Street on the south side of Prospect Hill Road.
- Recommendation A4 - Audit seat locations along key pedestrian corridors with the aim of providing regular points of rest that support access to the shopping centre.
- Recommendation A4 - Undertake street lighting audits along Albert Street, Fairholm Grove and Butler Street. These streets also serve pedestrian access to railway stations.
- New Recommendation - Investigate the completion of a missing footpath link along the west side of Loch Street.

Table 6: Analysis of responses to bicycle recommendations

	Bicycle Recommendations	Not or Low Importance Combined	Neutral	Some and Very Important Combined	Responses
Bicycle	A10 Improved bicycle connections along residential streets.	112	73	204 (52%)	389
	A9 & A12 Bicycle improvements along arterial roads including increased segregation or reduced speeds.	117	73	204 (52%)	394
	A11 & A13 Connect Mont Albert Road with the Anniversary Trail and provide bike and ride facilities at East Camberwell Station.	73	84	238 (60%)	395

Recommendation 11 was the highest supported recommendation. Whilst the response for Recommendations A9, A10 and A12 indicated support, a number of comments were received and are summarised as follows:

- Some indicated that roads are too dangerous for cycling whilst others considered them not to be a problem.
- Significant support for the segregation of bicycle users and vehicles, however not at the expense of traffic flow.
- Both support and opposition in terms of reducing traffic speeds.
- Bicycle lanes and parking bays should not be marked as a shared lane, but should be dedicated parking or bicycle lanes.

No additional recommendations resulted from the consultation exercise.

Table 7: Analysis of responses to public transport recommendations

	Public Transport Recommendations	Not or Low Importance Combined	Neutral	Some and Very Important Combined	Responses
Public Transport	A14 & A15 Advocate for bus and rail service improvements.	43	50	294 (76%)	387
	A16 Advocate for the improved regional connectivity of Tram 72 connecting the Hurstbridge line and Caulfield Station.	77	113	193 (50%)	383
	A17 Investigate accessible tram stops in line with the Disability Discrimination Act.	78	88	225 (58%)	391

The majority of respondents, both overall and in all postcode categories, considered recommendation A14 and A15 as important or very important.

Recommendation 16 received the least number of very important and important responses however comments were largely supportive, although somewhat pessimistic that the Victorian Government would consider extending the Tram 72 corridor.

Recommendation A17 was generally supported with only 78 indicating not or low importance whilst 225 indicated some or high importance. Comments received however, were not supportive of DDA tram stops due to the potential impact on traffic flow.

Considering the comments received through the community consultation, the following additional recommendations are proposed:



- New Recommendation - Audit and provide seating at bus and tram stops along transport corridors that service the Camberwell Junction Activity Area within Boroondara. Advocate for the provision of shelters at important central bus/tram stop locations.
- New Recommendation - Investigate a mini roundabout on Cookson Street at Holly Street to assist the kiss and ride activity at the Camberwell Railway Station.

Based on comments received but beyond the scope of this study, the following should be considered further and may become future points of advocacy with transport authorities:

- More trains to stop at Auburn Station.
- Extension of Tram 8 along Toorak Road to Camberwell Road (already included in the Boroondara Integrated Transport Strategy).
- Direct trains to Flinders Street Station.

Table 8: Analysis of responses to safety and car infrastructure recommendations

Safety and Car Infrastructure Recommendations		Not or Low Importance Combined	Neutral	Some and Very Important Combined	Responses
Safety and Car Infrastructure	A18 & A19 Deliver improvements to the Burke Avenue and Harold Street car parks.	49	79	274 (68%)	402
	A20 Reduce residential road speeds to 40 km/h surrounding Camberwell Junction.	131	77	209 (50%)	417
	A21 Undertake road safety reviews at a number of intersections with a high number of casualty crashes.	33	41	335 (82%)	409
	A22 Investigate changes to Stanhope Grove/Broadway intersection.	94	133	176 (44%)	403
	A23 Signalise the intersection of Camberwell Road/Monteath Avenue/Redfern Road.	95	136	168 (42%)	399
	A24 Introduce car share to the Camberwell area.	154	102	141 (36%)	397
	A25 Audit and improve car wayfinding and directional signage to car parks and key destinations.	88	95	221 (55%)	404

There is significant support for Recommendations A18 and A19 that involve a range of improvements to the Burke Avenue and Harold Street car parks and most comments recognised that existing arrangements were extremely poor.

The response with regard to Recommendation A20 varies notably between postcodes 3123 and 3124. 58% of post code area 3124 (Camberwell) indicated that this initiative had some importance or was very important, although most of these indicated very important. Comments are mixed in terms



of both the need to reduce speed and that 40 km/h is too slow. The need for greater enforcement and traffic treatments were also highlighted.

Recommendation A21 received the highest ranking of all AP items with 82% overall indicating this was very important or important.

Recommendation A22 varied notably between post code areas with responses from post code 3124 (Camberwell) indicating 55% support. Comments indicated that the community did not want to change the form of the intersection and that the intersection performs an important role in providing a safer option for Stanhope Grove residents to left turn from driveways and u-turn rather than take a right turn in heavy traffic conditions. Improvements raised by the community included reducing the speed limit along Stanhope Grove and placing rumble strips on the approach to the roundabout.

It is not realistic to see a very high percentage of support for car share given that car share is relatively new to Boroondara and that car share will not suit individual or family transport requirements for many households. However with 36% of respondents seeing car share as having some importance or being very important, car share is likely to become a significant amenity for a significant proportion of the community who don't require daily access to a vehicle.

Considering the comments received through the community consultation, the following considerations and additional recommendations are proposed:

- Recommendation A20 - No change to the recommendation, however it is noted that support is notably higher in the Camberwell postcode area (3124).
- Recommendation A22 - Retain the Stanhope Grove/Broadway roundabout configuration and advocate for treatments that better consider pedestrian, bicycle and traffic amenity and safety at the intersection.
- New Recommendation - Investigate traffic signal intersection improvements considering the following concerns raised and advocate accordingly with VicRoads. Considerations raised include: long delays are experienced at Riversdale Road/Redfern Road/Haverlock Road intersection for both pedestrians and motorists; the replacement of the pedestrian crossing at Evans Place with traffic signals; cameras to enforce no right hand turns at Camberwell Junction; improvements to the intersection of Prospect Hill Road and Burke Road including improving alignment, better road markings and a single lane into Prospect Hill Road; right turn arrows at traffic lights including Stanhope Grove/Prospect Hill Road.
- New Recommendation - Investigate speed, safety and traffic volume concerns at Hastings Road, Wills Street, laneway between Redfern Road and Russell Street, Avenue Road and Butler Street, Russell Street, Broadway, Loch Street, Inkerman Road and Nicholson Street.
- New Recommendation - Upgrade the roundabout at Monteath Avenue and Harold Street.
- New Recommendation - Investigate safety and traffic improvements associated with restricting parking on Prospect Hill Road east of Stanhope Grove, on approach to the Broadway and



Stanhope Grove roundabout, on Burke Road between Barkers Road and Mont Albert Road, to the west side of Trafalgar Road opposite the child care centre in relation to right turning vehicles and obstruction of traffic flow, and at Montrose Place.


Table 9: Analysis of responses to Parking Study recommendations

	Parking Study Recommendations	Not or Low Importance Combined	Neutral	Some and Very Important Combined	Responses
Parking Study	P1 and P2 Bring weekend parking restrictions in line with weekday parking restrictions to help ensure fair and balanced use.	166	87	137 (35%)	390
	P3 Increase the provision of accessible parking bays (to better support the disabled and elderly).	78	100	209 (54%)	387
	P4, P5, P6, P7, P8, P15, P16, P17 & P18 Support the parking needs of all modes on-street and within new developments (bicycle, accessible, car, taxi, motorbike, car share, loading and public transport)	60	98	211 (57%)	369
	P9 Exempt Cookson Street residents from metered parking and introduce metered parking to north side.	102	135	140 (37%)	377
	P10 Ban parking along one side where street is less than 7.2 metres wide (Carrington Ave and Montrose St).	79	73	226 (60%)	378
	P11 Improved signage to car parks with dynamic parking that illustrates parking availability.	74	75	232 (61%)	381
	P12 Enforce parking restrictions in residential streets with high levels of overstaying without permits.	79	56	252 (65%)	387
	P13 Reconfigure off-street parking layouts to improve parking capacity.	35	60	284 (75%)	379
	P14 Street by Street changes				
	P19 Car parking rates for new developments to reflect the characteristics of similar development in Camberwell.	62	108	194 (53%)	364
	P20, P21 & P22 Determine an appropriate payment mechanism from developers to increase shared parking facilities (car, motorbike and bicycle) at the Junction West Multi Level Car Park and car park at the Riversdale Road/Fairholm Grove corner.	59	97	218 (58%)	374

The highest ranking response with regard to the parking recommendations was to reconfigure off-street car parking layouts. Increased enforcement was considered the second most important parking issue, whilst aligning weekend with weekday parking restrictions received the lowest number of 'very important'/'important' responses (35%).

Considering feedback from the community consultation it is proposed that:

- Recommendation P1 and P2 - To be limited in its implementation to parking areas that demonstrate high Saturday occupancy. This would include off street car parks at Market Place



(west side of Station Street), Burke Avenue, Junction West At Grade Car Park (north of the Well adjacent Harold Street). This would also include on street ticketed areas with restrictions of 1P or less such as along Burke Road and Camberwell Road.

- Recommendation P9 - The recommendation to install parking meters along the northern side of Cookson Street is not to be implemented.
- Recommendation P13 - The second Harold Street access is required to accommodate deliveries and the recommendation to remove this access is not to be implemented. The Camberwell Junction Structure Plan indicates the Butler Street site as a site for development and therefore the improvement of this site should be limited and the recommendation not implemented.

Comments with regard to the need for 3 hour parking bays were received to support corresponding activities such as a hairdressing appointment or a visit to the cinema for example. The PS includes changes to the Junction West Multi-Level Car Park to permit longer stays.

Unrestricted parking at the Council offices car park is to be better signed and promoted during the weekend. Changes are also proposed at the Butler Street car park to permit unrestricted metered parking and allow 4 hour parking on the weekend.

Family parking bays were considered to accommodate parents and children. However these are usually located at premium and highly accessible parking locations. It was considered that the inclusion of family parking bays would limit premium parking space utilisation.

Long term parking typically for employees and rail commuters is a notable challenge given the expense and limitation of a parking space designated to a single vehicle for the day. This is complicated by the increasing level of car ownership by residents that can also add to parking levels within residential streets. The public consultation received comments with regard to the need for increased long term parking for both employees and commuters. The PS includes provision for an increase in long term parking although this is expensive to improve and provide. Increased long term metered parking has been proposed at the Rose Street Car Park, at the Junction West Multi-Level Car Park and at the Butler Street Car Park. In addition longer term parking is a consideration in terms of an additional parking deck at the Junction West Multi-Level Car Park and a basement parking deck that is to be investigated at 557 Riversdale Road.



Analysis of responses to street by street parking recommendations

A detailed street-by-street parking review has been undertaken to identify any localised issues and/or opportunities. For areas near the core Shopping Strips of Burke Roads, Camberwell Road, and Riversdale Road, the strategy adopts a Shopping Strip hierarchy, prioritising short term uses and retail customers over residential owners/visitors, commuters and local employees. The strategy allows for long term off-street parking in the core, however this is limited and at a premium. Moving away from the core area into nearby residential streets, the proposed strategy provides a focus on residential and visitor parking over local employees and commuters. In peripheral streets towards the boundaries of the study area, consideration is given to providing a balance of parking for residents and their visitors as well as providing limited unrestricted parking for use by traders, employees, and commuters.

Respondents were asked to indicate a response with regard to street by street parking recommendations. Respondents were referred to the full report online given the extent of detail and directed towards the page within which each recommendation was outlined.

Table 10: Analysis of response to street by street parking recommendations

Street Name	Page in PS	Community Response		Street Response			Officer Comments	Recommendation
		Support	Rejected	Support	No response	Rejected		
Avenue Rd	98	64%	36%				Enforcement only.	Implement
Albert St	106	57%	43%	1			Limited response from Albert Street residents.	Issue tailored letter to residents seeking feedback.
Auburn Gv	106	54%	46%	2	3	9	Auburn Grove residents overwhelmingly do not support.	Recommendation not to be implemented
Auburn Rd	106	67%	33%	2	1	0	Low response from Auburn Road respondents although limited impact of recommendation.	Implement
Beaconsfield Rd	109	65%	35%			1	Enforcement only.	Implement
Berwick St	98	67%	33%				Implemented following letters from residents prior to consultation. Long term parking limited for non-residents.	Implemented (Sept 2013)
Bowler St	109	63%	37%	1	1		Limited response from Bowler Street residents.	Issue tailored letter to residents seeking feedback.





Street Name	Page in PS	Community Response		Street Response			Officer Comments	Recommendation
		Support	Rejected	Support	No response	Rejected		
Broadway	108	68%	32%	2			2P parking protects resident parking. Concern raised regarding parking impeding traffic flow.	Implement
Burke Rd	98	69%	31%	3	5	1	Recommendation 14.5 does not adhere to road rules.	Implement with the exception of 14.5.
Burwood Ave	106	59%	41%	1			Mixed response, only one response from Burwood Avenue.	Issue tailored letter to residents seeking feedback.
Burwood Rd	107	64%	36%	2	1	2	Call for further 2P parking or resident only to north side, currently mostly 2P.	Implement
Butler Street	99	65%	35%	2	1		2P restriction will improve parking for residents and provide consistency.	Implement
Camberwell Rd	100	61%	39%	0	3	9	Supported by community, not supported by street respondents. Primarily metered parking changes. Modify recommendation between Mayston Street and Harold Street to 2P and between Harold Street and Stanley Place to 2P metered.	Implement
Campbell Rd	100	68%	32%	2		1	Increased enforcement required and notable comments received.	Implement
Canterbury Rd	108	62%	38%		2	1	Supported by the broad community however limited known response from Canterbury Road residents and concern raised regarding service vehicle requirements. 1P parking could be a consideration.	Issue tailored letter to residents seeking feedback.
Caroline St	109	57%	43%	1			Minor parking adjustment.	Implement
Carrington Ave	101	63%	37%				Narrow street, see also Recommendation R10. No known response from Carrington Ave residents.	Issue tailored letter to residents seeking feedback.
Cookson St	101	69%	31%	1	6	2	Recommendation P9 (parking meters) not supported. As a result	Recommendation 14.21 not to be





Street Name	Page in PS	Community Response		Street Response			Officer Comments	Recommendation
		Support	Rejected	Support	No response	Rejected		
							remove recommendation 14.21. Minor changes proposed as part of recommendation 14.20, consult with immediate businesses.	implemented. Further consult on recommendation 14.20.
Council St	102	66%	34%				Minor change to a single parking space.	Implement
Crescent Rd	102	67%	33%		1		Limited known response from Crescent Road residents.	Issue tailored letter to residents seeking feedback.
Denmark Hill Rd	102	55%	45%	1			A mixed response with only a single known response from residents at Denmark Hill Road.	Issue tailored letter to residents seeking feedback.
Fairholm Gv	102	61%	39%	3	1	1	Supported by responses received from Fairholm Grove.	Implement
Fermanagh Rd	109	69%	31%	3		2	Enforcement only.	Implement
Gillman St	107	64%	36%				Recommendation requires investigation.	Implement investigation.
Gordon St	107	51%	49%				Inconclusive response and limited feedback.	Issue tailored letter to residents seeking feedback.
Hastings Rd	110	64%	36%	4	1		Support by responses received from Hastings Road residents.	Implement
Inglesby Rd	103	68%	32%	1			A request for more short 20 min parking.	Implement and investigate short term parking.
King St	103	63%	37%				No responses received from King Street residents.	Issue tailored letter to residents seeking feedback.
Linton Ct	103	62%	38%				Minor change and one space gap between restrictions.	Implement
Loch St	109	59%	41%	8		2	Supported by Loch Street residents. Comments indicate parking difficulties. A request that unrestricted parking be retained.	Implement
Mayston St	104	62%	38%	5			Supported by Mayston Street responses. A request that restrictions should be lighter on	Implement



Street Name	Page in PS	Community Response		Street Response			Officer Comments	Recommendation
		Support	Rejected	Support	No response	Rejected		
							weekends.	
Montrose St	107	67%	33%				Narrow street, parking to be banned on one side. See also Recommendation P10.	Issue tailored letter to residents seeking feedback.
Nicholson St	104	66%	34%			1	Very limited response from residents. Request for increased enforcement. Concern regarding traffic speed if restriction changed.	Issue tailored letter to residents seeking feedback.
Pleasant Rd	110	72%	28%	7			Supported by Pleasant Road residents.	Implement
Railway Par	104	63%	37%				Recommendation supports station kiss and ride.	Implement
Riversdale Rd	104	68%	32%	9	8		Supported by Riversdale Road respondents.	Implement
Rose St	104	64%	36%		1		Recommendation includes further consultation with Church.	Implement
Seymour Gv	105	65%	35%	1	2	1	Tennis club no longer in operation.	Implement
St John's Ave	105	63%	37%	8			Comments indicate resident parking issues and complete support from residents.	Implement
Stanhope Gv	108	67%	33%	3	5	2	Minor recommendation. A request to restrict parking along Stanhope Grove to 2P and provide hockey sticks at driveways.	Implement and investigate hockey sticks.
Station St	105	69%	31%				To be considered in line with Recommendation A2.	Future Station Street design consideration.
Symonds St	109	58%	42%		1		No known response from Symonds Street residents.	Issue tailored letter to residents seeking feedback.
Thorn St	105	60%	40%			1	Consistency of parking restriction that protect residential amenity.	Implement
Tooronga Rd	110	65%	35%	1	1	1	Limited known response from immediate properties. Adjacent Campbell Grove indicated as problematic for residents.	Issue tailored letter to residents seeking feedback.



Street Name	Page in PS	Community Response		Street Response			Officer Comments	Recommendation
		Support	Rejected	Support	No response	Rejected		
							Potential to implement 2P to support both shops and residents.	
Trafalgar Rd	105	69%	31%		4	2	Supported by the broad community but not by immediate residents. Concern raised regarding parking and right turns into child care centre.	Further investigate and issue tailored letter to residents seeking feedback.
Victoria Rd	108	68%	32%	2	4	2	Recommendation involves enforcement and the need to comply with road rules. 2P introduced to south side east of Burke Road in response to residents (September 2013).	Implement
Waterloo St	109	60%	40%	1			Recommendation includes discussion with adjacent church.	Implement
Wolseley St	108	52%	48%				No responses received from King Street residents.	Issue tailored letter to residents seeking feedback.





Analysis of additional street recommendations

All streets within the study area were reviewed although this may not have resulted in a recommendation. The consultation exercise identified other concerns in additional streets that require investigation as indicated in the following table.

Table 11: Potential additional parking recommendations

Street Name	Community Feedback	Officer Comments	Recommendation
Avoca St	Street too narrow, introduce 'No Parking'/'No Stopping' on one side of street.	Street width is 7 metres in width. Residents park against kerb line and 3 metre carriageway maintained.	No change
Campbell Gr	Street is all 2P, residents indicate overstaying by non-residents.	Enforcement may be required.	New item - enforcement required
Carnarvon St	Install line marking to define parking spaces.	Street is 7 metres in width and parking is to both sides. 3 metre carriageway is maintained although should vehicles park too close to vehicular cross overs this could be problematic.	Introduce hockey stick markings at locations requested.
Holly St	Cookson St adjacent has been addressed, but not Holly St.	Short Street with limited 2P parking for residents. Overstaying by non-residents. Street is 7.4 metres wide and could provide a resident permit opportunity to east side of street.	Propose resident permit parking to east side of street. Consultation with residents required.
Homebush Cr	Additional 'No Parking'/'No Stopping' signs required	Vehicles park within cul-de-sac turning area.	Extend 'no parking' to turning area.
Kintore St	Restrictions have already been applied.	2P restrictions introduced to north side of street in response to letters from residents.	New item implemented (Sept 2013)
Lorne Gr	Only street near Camberwell station with unrestricted parking.	High utilisation of unrestricted parking in the week, low on weekends. Very few vehicles observed in 2P parking.	No change.
Russell St	Comments indicate increase in parking pressure.	2P introduced in Russell Street to both sides. Site observations indicate availability in the daytime.	Increase enforcement and monitor.





Analysis of off-street parking responses

The following table highlights support for all off street parking initiatives.

Table 12: Analysis of response to off-street parking recommendations

	Off-Street Parking Locations	Page in PS	Support	Reject	Officer Comments	Recommendation
Junction West (The Well Area)	The Well (off-street parking)	111	74%	26%	Requires discussion with The Well to implement.	Implement
	Junction West Multi-Level Car Park	112	73%	27%	Legibility issue with split restriction (3P and 'P Ticket' metered) on ground floor, change entire floor to metered long term to allow for medium to longer term parking.	Implement with change to ground floor level.
	Junction West At Grade Car Park (North of the Well)	112	74%	26%	Concern received with regard to closing one of the Harold Street access points due to the need for delivery access.	Implement. Review Harold Street access.
	The Well At Grade Car Park (West of the Well)	112	71%	29%	Request by Camberwell Centre Association that parking remains the same at this location.	Reject
	Burke Avenue Car Park (South of the Well)	112	76%	24%		Implement
Junction East	557 Riversdale Road (Adjacent Fairholm Gr)	113	71%	29%	Provide basement level parking to address visual impacts of an extra deck.	Implement
	Market Place Car Park (west of Station Street)	116	76%	24%	Requires consultation with Woolworths/Target.	Consult with a view to implement.
	Target and Woolworths Car Park (east of Station Street)	116	77%	23%		Implement
Other Locations	Camberwell Railway Station Car Park	113	78%	22%		Implement
	Tower Hotel Car Park	113	71%	29%		Implement
	Butler Street Car Park	114	75%	25%	Comments regarding very poor condition of permit car park. Change 8P to P Ticket metered parking to provide for long term parking.	Implement
	Council Offices Car Park	114	74%	26%	Recent changes, investigate the need for further changes.	Review and implement.
	Rose Street Car Park	115	72%	28%		Implement



Summary

In summary, 456 questionnaire responses were received. Additional feedback received by e-mail and by phone was considered as part of the response analysis. Respondents had the opportunity to indicate a response to the outlined recommendations and to provide commentary highlighting concern, insight or potential new initiatives.

The majority of the recommendations are supported by those who responded to the community consultation. Overall, respondents felt it was most important to undertake road safety reviews at intersections with high casualty crash numbers (A21) and to advocate for better bus and rail service improvements (A14/15), and that it was least important to bring weekend parking restrictions in line with weekday parking restrictions (P1/P2). It is recommended that recommendations concerning weekend parking restrictions (P1 and P2) be changed and tailored to parking areas that have high occupancy levels only in response to community feedback. It is recommended that the recommendation concerning parking meters to the northern side of Cookson Street (P9) be dropped in response to the feedback from the community.

Respondents were particularly supportive of initiatives to improve and support pedestrian access although care should be taken to limit the impact that this would have on traffic. Significant concern was raised with regard to traffic volumes and traffic speeds on residential streets and this has given rise to the need for further investigations supported by new recommendations. Improving bus and rail services also ranked particularly high. 225 respondents indicated some importance/very important with regard to accessible tram stops in comparison with 78 respondents that indicated not/low importance. Whilst accessible tram stops are indicated as important by the majority of respondents, significant concern was raised in terms of the potential impact that these stops may have on traffic.

Street by street parking recommendations fell into four categories, to be removed, to be implemented, further consultation required and new proposals to be investigated. Approximately two thirds of the original on-street parking recommendations are to be implemented in response to the consultation. It is recommended that initiatives along Cookson Street and Auburn Grove be removed.

Long term parking typically for employees and rail commuters is a notable challenge. The PS includes provision for increased long term metered parking at a number of locations in the core and to the periphery of the study area, however care needs to be taken to implement long term parking initiatives in balance with removing unrestricted residential street parking.





Camberwell Junction Activity Area

Access Plan: Recommendations Summary

This paper summarises the recommendations of the Access Plan (AP) report. The paper identifies issues, provides a supportive discussion and outlines recommendations to help maximise access to the Camberwell Junction Activity Area (CJAA). The plan builds upon the Camberwell Junction Structure Plan by providing strategic access recommendations that aim to support improved transport choice to access the CJAA for work, business and recreation. In line with the *Transport Integration Act 2010*, the AP was developed in parallel with a Parking Precinct Plan (PPP) to ensure that no transport mode is considered in isolation.

State and local policy provide an important foundation to the study. These indicate a consistent position to improve and promote walking, cycling and public transport, and to reduce car reliance. This study has utilised Council adopted strategies such as Our Boroondara: Our City Our Future, the Boroondara Integrated Transport Strategy, the Boroondara Health and Wellbeing Plan and the Camberwell Junction Structure Plan as guiding documents, particularly for the development of the Access Plan.

The study examines each respective mode identifying issues and opportunities to enhance connectivity with the activity area. All modes are considered in terms of amenity, parking and their respective catchment dynamics. The recommendations also identify spatial and include operational solutions that enable implementation of objectives set out in the Structure Plan.

Recommendations consider the Context Paper which outlines some of the key global, national, state and local research. Parking recommendations are presented in the PPP: Recommendations Summary paper. The PPP includes a recommendation to investigate an appropriate mechanism to receive developer contributions towards both access and parking initiatives.

The AP includes an implementation plan outlining priorities, timeframes, stakeholders and costs. Recommendations will require approval, funding and delivery by Local and State Governments.

Item 1: Burke Road

Burke Road is one of the major transport corridors within the CJAA. It contains a tram route, the largest volume of pedestrian traffic within the study area and significant traffic volumes. To assist and improve the operation of Burke Road for all modes of transport, a series of recommendations have been developed.

Pedestrian amenity and public transport connectivity improvements at Burke Road are to include:

Recommendation 1.1: Investigate the relocation of tram stops on Burke Road to better connect with Camberwell Railway Station and for tram stops to be DDA compliant in line with legislative requirements.

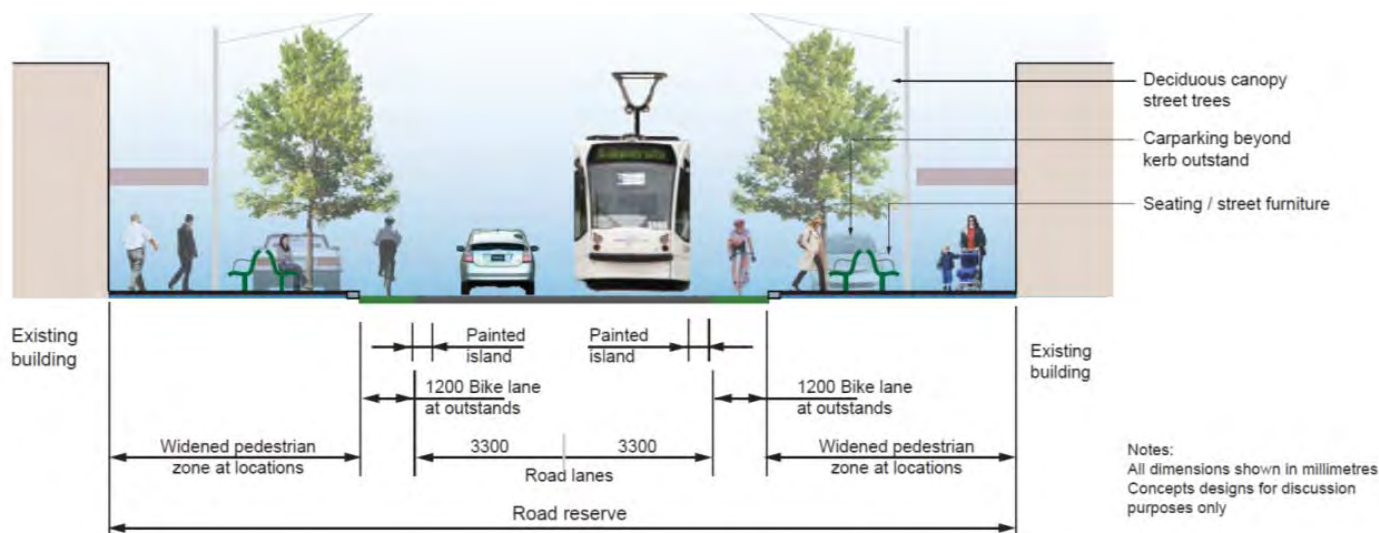
Recommendation 1.2: Advocate for an improved pedestrian crossing on Burke Road in line with Cookson Street, relocated tram stops and the Camberwell Railway Station.

Recommendation 1.3: Install raised threshold treatments at key intersections to increase the presence and comfort of pedestrians at Cookson Street, Burwood Avenue, Auburn Parade, Mayston Street, Burke Avenue, Reserve Road and Inglesby Road.

Recommendation 1.4: Investigate DDA compliant tram stops that best complement Burke Road and provide improved amenity and place. Investigate a DDA compliant tram stop near the entrance to the Well.

Recommendation 1.5: Advocate that VicRoads review signalised pedestrian crossing timings to minimise delay and encourage increased compliance and use.

Recommendation 1.6: Introduce buildouts that accommodate pedestrian amenity and opportunities for the regular spacing of deciduous trees along Burke Road.



Recommendation 1.7: Relocate street furniture to buildouts to improve the comfort of pedestrian movements.

Recommendation 1.8: Advocate in partnership with VicRoads for the provision of on-street bike lanes along Burke Road.

Recommendation 1.9: Investigate shade and shelter provision at Camberwell Junction to the southern corner between Burke Road and Camberwell Road.





Item 2: Station Street

Station Street accommodates high pedestrian volumes and has the potential to link multiple modes of access within the CJAA. It contains close links to Camberwell Railway Station, bus stops along Station Street and links to Tram Route 70 on Riversdale Road.

Upgrading the north-south pedestrian link between Riversdale Road and Camberwell Railway Station will require the integration of many components. Considerations should include:

Recommendation 2.1: Provide an informal crossing comprising of buildouts and a central refuge at Prospect Hill Road between Railway Parade and Station Street.

Recommendation 2.2: Provide a footpath to the western side of Station Street utilising the hatched median space.

Recommendation 2.3: Widen footpaths along Station Street to accommodate increased pedestrian movements particularly at constrained bus stop locations.

Recommendation 2.4: Provide raised threshold treatments at car park entrances, particularly at locations where pram ramp gradients are significant.

Recommendation 2.5: Consult on the removal of the taxi zone on Station Street given very limited use and consider the allocation of additional space to improve the comfort of pedestrians.



Recommendation 2.6: Consolidate bus lay-bys into a single location on the east side of Station Street and introduce a kerbside pickup area near the Camberwell Market.

Recommendation 2.7: Create a public plaza that integrates the Camberwell Market environment between Market Place and Riversdale Road.

Recommendation 2.8: Investigate the integration of a future DDA compliant tram stop with a potential Station Street public plaza that best meets the needs of the community.

Item 3: Cookson Street and Camberwell Railway Station

Cookson Street is an important street given its proximity to the Camberwell Railway Station and Tram Route 72 on Burke Road. Upgrades on Cookson Street would help to improve the station precinct environment and better integrate pedestrian and street activity with tram and train services.

The aim is to enhance Cookson Street to the northern side of the Camberwell Railway Station and better integrate transport opportunities and the urban and business realm as follows:

Recommendation 3.1: Install kerb outstands at Cookson Street/Burke Road, narrowing the Cookson Street entry and provide a raised threshold treatment.

Recommendation 3.2: Investigate widening the northern footpath of Cookson Street adjacent to business/retail frontages, inclusive of street trees.

Item 4: Principal Pedestrian Network (PPN)

With approximately 15,000 pedestrians entering and exiting the CJAA daily, improving pedestrian connections will support community access, healthier transport choice, access to business and retail and assist in reducing traffic and parking pressures.

The aim is to improve pedestrian access and encourage walking as a mode of access to CJAA through improving safety and amenity that better supports pedestrian activity.

Recommendation 4.1: Audit Principal Pedestrian Network (PPN) links that serve the Camberwell Junction and identify pedestrian amenity improvements.

Recommendation 4.2: Advocate for the recognition of the Principal Pedestrian Network by VicRoads and advocate improvements along arterial roads.

Recommendation 4.3: Investigate infrastructure improvements to the Principal Pedestrian Network as outlined in Appendix A. Cookson Street, Fritz Holzer Park and Camberwell Road PPN are considered priority corridors for improvement.

The following recommendations are proposed following the community consultation:

New Recommendation 4.4: Investigate improved pedestrian crossing provision across Broadway from Russell Street.

New Recommendation 4.5: Develop a detailed shade strategy along pedestrian footpaths and other pedestrian corridors including parking areas.

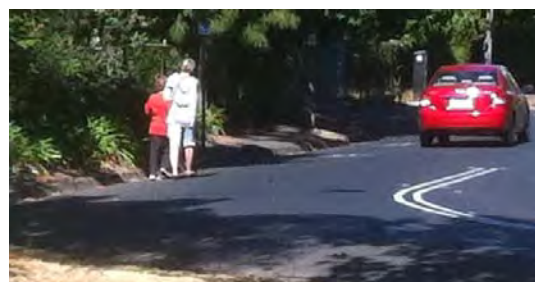
New Recommendation 4.6: Audit and improve footpath conditions along Riversdale Road between Hastings Road and Camberwell Junction.

New Recommendation 4.7: Review pedestrian signal/crossing facilities to understand traffic signal configurations and timings together with pedestrian volumes and frustrations and to advocate to VicRoads for reduced waiting times where necessary. Locations highlighted during the consultation include Mayston Street/Camberwell Road, Fairholm Grove/Riversdale Road, Redfern Road/Riversdale Road/Havelock Road and Inglesby Road/Camberwell Road.

New Recommendation 4.8: Investigate improvements to safety for pedestrians crossing Fairholm Grove and Station Street on the south side of Prospect Hill Road.

New Recommendation 4.9: Audit seat locations along key pedestrian corridors with the aim of providing regular points of rest that support access to the shopping centre.

New Recommendation 4.10: Undertake street lighting audits along Albert Street, Fairholm Grove and Butler Street. These streets also serve pedestrian access to railway stations.





Item 5: SmartRoads Pedestrian Priority Area

SmartRoads provides a VicRoads framework for assessing infrastructure initiatives with regard to each respective travel mode. The aim is to increase the priority of pedestrians as follows:

Recommendation 5.1: Advocate that Riversdale Road east of Burke Road to Butler Street becomes a Pedestrian Priority Area.

Recommendation 5.2: Advocate that Riversdale Road west of Burke Road to Wills Street becomes a Pedestrian Priority Area.

Recommendation 5.3: Advocate that Camberwell Road south of Riversdale Road to Inglesby Road becomes a Pedestrian Priority Area.

Item 6: Butler Street/Fairholm Grove pedestrian desire line

The Butler Street car park forms an important pedestrian link. The aim is to recognise and better support this pedestrian desire line as follows:

Recommendation 6.1: Improve the Butler Street car park layout to better accommodate the pedestrian desire line that passes along Fairholm Grove to Camberwell Road.

Item 7: Commerce Lane pedestrian improvements

Commerce Lane accommodates high pedestrian flows. The aim is to support a better pedestrian laneway environment as follows:

Recommendation 7.1: Investigate street art to walls or carriageway surface and include trees at select locations along Commerce Lane in recognition of the high pedestrian movements and the need to provide an improved public realm.

Recommendation 7.2: Review street lighting and upgrade as required.

Item 8: Pedestrian wayfinding

The aim is to improve pedestrian signage and wayfinding to become an intuitive Camberwell experience.

Recommendation 8.1: Deliver a Wayfinding Strategy.

Item 9: Second generation bicycle lanes

Providing safer and more equitable bicycle on-road provision is a challenge. The aim of this recommendation is to explore and deliver on-road bicycle improvements as follows:

Recommendation 9.1: Advocate for 'second generation' bicycle lanes along Burke Road, Camberwell Road and Riversdale Road east of the Camberwell Junction (subject to the outcome of a trial along Glenferrie Road).





Item 10: Provision of bicycle 'shimmy' routes

'Shimmy' routes are informal bicycle routes characterised by signage and pavement markings.

The aim is to investigate bicycle links along residential streets as follows:

Recommendation 10.1: Investigate a 'shimmy' link between the Anniversary Trail and west of Camberwell Road via Cookson Street, Auburn Parade, and Gillman Street. This could then link to suburbs west of the study area via Gordon Street, Roseberry Street, Munro Street, Bowler Street and Urquhart Street.

Recommendation 10.2: Investigate a 'shimmy' link between Pleasant Road and the Gardiners Creek Trail via Miami Street, Scott Street, Robinson Road and Reserve Road.

Item 11: Connect Mont Albert Road with the Anniversary Trail

The aim of this recommendation is to integrate bicycle corridors and create an improved network as follows:

Recommendation 11.1: Provide a pedestrian and bicycle connection between Mont Albert Road and the Anniversary Trail to improve bicycle access within the CJAA including its rail stations.

Item 12: Advocate for lower speeds along Priority Bicycle Routes

Many of Boroondara's Principal Bicycle Routes are along arterial roads where bicycle crashes are notably high. The aim is to improve safety as follows:

Recommendation 12.1: Investigate and advocate for reduced speeds where bicycle segregation cannot be achieved along 60 km/h roads that are designated as Priority Bicycle Routes.

Item 13: Bike and Ride East Camberwell Railway Station

There is an opportunity to better integrate bicycle access to stations as follows:

Recommendation 13.1: Develop a Bike and Ride initiative that integrates with the East Camberwell Railway Station using the Anniversary Trail. The initiative would include secure bicycle parking, improved connectivity and promotion.

Item 14: Rail services stopping at Camberwell Railway Station

The 2011 changes to rail services have resulted in many trains not stopping at Camberwell Railway Station despite its evident employment and retail activity.

Recommendation 14.1: Advocate for more Belgrave and Lilydale train services stopping at the Camberwell Railway Station in the peak periods.

Item 15: Advocate for increased Bus 285 services

Bus 285 offers a limited service to areas of Boroondara that exhibit limited transport choice.

Recommendation 15.1: Advocate for improved Bus 285 operations that provide increased transport choice for accessing both to the Balwyn Activity Area and the CJAA.

Item 16: Extend Tram Route 72

Regional connectivity of Tram 72 can provide a network that provides increased transport choice as follows:

Recommendation 16.1: Advocate for a feasibility study for extending Tram Route 72 to the north to connect with Tram 48, and potentially the Hurstbridge Line and extend Tram 72 south to integrate with Tram Routes 3, 5, 6 and the Caulfield Railway Station.



Item 17: DDA Compliant Tram Stops

It is a legislative requirement for all tram stops to become DDA compliant by 2032. This has implications within the streetscape in which tram services operate.

Recommendation 17.1: Investigate DDA compliant tram stops that best complement the CJAA.

Item 18: Burke Avenue car park redesign

There are notable opportunities to improve the Burke Avenue car park environment with no or very limited loss in parking.

Recommendation 18.1: Deliver an improved Burke Avenue car park inclusive of public space, pedestrian connections, bicycle parking and improved car parking arrangement.



Item 19: Camberwell Grove and Harold Street car park

East-west connectivity between parking areas and the unnamed laneway is notably poor and ramped access to The Well results in safety concerns.

Recommendation 19.1: Improve pedestrian connections and urban environment to the western and northern side of The Well.



Item 20: Implement 40 km/h residential speed limit

Slower traffic speeds are conducive to safer pedestrian and cycling environments and improved liveability.

Recommendation 20.1: Improve road safety through reducing residential speed limits to 40 km/h surrounding the CJAA.

Item 21: Undertake road safety reviews

Undertake road safety reviews of key intersections with a high number of casualty crashes.

Recommendation 21.1: Undertake a road safety review at the Rathmines Road/Canterbury Road/Burke Road intersection.

Recommendation 21.2: Undertake a road safety review at the Riversdale Road/Trafalgar Road intersection.

Recommendation 21.3: Undertake a road safety review at the Seymour Grove/Burke Road intersection.

Recommendation 21.4: Undertake a road safety review at the Tooronga Road/Riversdale Road intersection.

Recommendation 21.5: Undertake a road safety review at the Auburn Road/Riversdale Road intersection.

Recommendation 21.6: Undertake a road safety review at the Harold Street/Prospect Hill Road/Burke Road intersection.

Item 22: Investigate Stanhope Grove/Broadway intersection

There are notable pressures at the Stanhope Grove/Broadway Intersection that create a challenging environment for pedestrians, bicycles and vehicles.

Recommendation 22.1: Retain the Stanhope Grove/Broadway roundabout configuration and advocate for treatments that better consider pedestrian, bicycle and traffic amenity and safety at the intersection.



Item 23: Signalise intersection of Camberwell Road/Monteath Avenue/Redfern Road

A signalised intersection would improve and support pedestrian, bicycle and traffic access to the CJAA.

Recommendation 23.1: Advocate that signals are introduced at the intersection of Camberwell Road/Monteath Avenue/Redfern Road.

Item 24: Car share

Car share amenity has proven to reduce car ownership and increase the use of more sustainable and healthier modes of travel.

Recommendation 24.1: Introduce car share to CJAA. Investigate locations including the area adjacent to the council offices, Camberwell Railway Station, adjacent to The Well and Station Street.



Item 25: Car wayfinding

Improved road wayfinding can help direct drivers to available parking and maximise opportunities to support business through attracting people to key places/destinations.

Recommendation 25.1: Audit existing traffic signs that assist wayfinding and access to the CJAA by car.

Recommendation 25.2: Design and deliver car wayfinding improvements including access to car parks and key destinations.

Post Community Consultation - New Recommendations

The following recommendations were proposed following the community consultation:



Recommendations 4.4 to 4.10: See Item 4

Recommendation 20.1: No change to the recommendation, however it is noted that support is notably higher in the Camberwell postcode area 3124.

Recommendation 22.1: Modified recommendation to retain the roundabout at Stanhope Grove/Broadway and investigate and advocate improvements with VicRoads. See Item 22.

Item 26: Missing footpath Loch Street

Recommendation 26.1: Investigate the completion of a missing footpath link along the west side of Loch Street.

Item 27: Seating at tram and bus stops

Recommendation 27.1: Audit and provide seating at bus and tram stops along transport corridors that service the Camberwell Junction Activity Area within Boroondara. Advocate for the provision of shelters at important central bus/tram stop locations.

Item 28: Cookson Street and Holly Street Roundabout

New Recommendation 28.1: Investigate a mini roundabout on Cookson Street at Holly Street to assist the kiss and ride activity at the Camberwell Railway Station.

Item 29: Traffic Signal Operations

New Recommendation 29.1: Investigate traffic signal intersection improvements considering the following concerns raised and advocate accordingly with VicRoads. Considerations raised include:

- Long delays are experienced at Riversdale Road/Redfern Road/Haverlock Road intersection for both pedestrians and motorists.
- The replacement of the pedestrian crossing at Evans Place with traffic signals.
- Cameras to enforce no right hand turns at Camberwell Junction.
- Improvements to the intersection of Prospect Hill Road and Burke Road including improving alignment, better road markings and a single lane into Prospect Hill Road.
- Right turn arrows at traffic lights including Stanhope Grove/Prospect Hill Road.





Item 30: Speed, safety and traffic volumes

New Recommendation 30.1: Investigate speed, safety and traffic volume concerns at Hastings Road, Wills Street, laneway between Redfern Road and Russell Street, Avenue Road and Butler Street, Russell Street, Broadway, Loch Street, Inkerman Road and Nicholson Street.

Item 31: Monteath and Harold Roundabout

New Recommendation 31.1: Upgrade the roundabout at Monteath Avenue and Harold Street.

Item 32: Parking and traffic flow

New Recommendation 32.1: Investigate safety and traffic improvements associated with restricting parking on Prospect Hill Road east of Stanhope Grove, on approach to the Broadway and Stanhope Grove roundabout, on Burke Road between Barkers Road and Mont Albert Road, to the west side of Trafalgar Road opposite the child care centre in relation to right turning vehicles and obstruction of traffic flow, and at Montrose Place.

