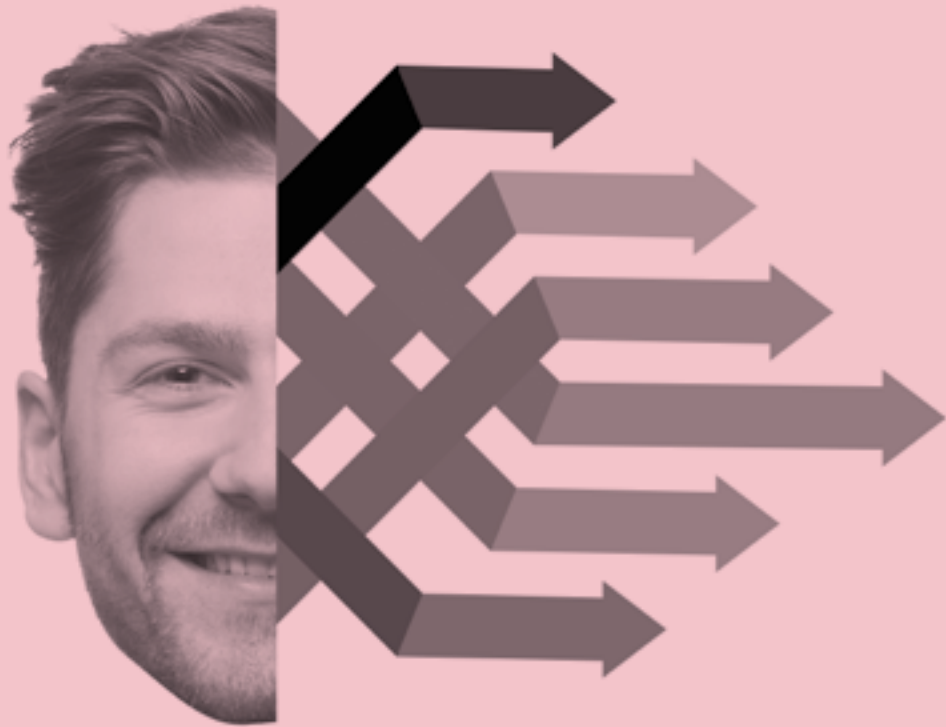


BICYCLE PLAN

2016-2020



CITY OF MELBOURNE



A CONNECTED CITY

We manage movement in and around our growing city to help people trade, meet, participate and move about safely and easily, enabling our community to access all the services and opportunities the municipality offers.

CONTENTS

Foreword	1	2. A connected bicycle network	13
Executive summary	2	SmartRoads and setting priorities	13
A cycling city	3	Rider choices	13
Introduction	3	Gaps in the network	13
A connected city	4	Planning and designing for people to ride bikes	14
Vision	5	Streets for cycling (level of service)	15
Goals	5	Cycling corridors	15
Targets	5	Arterial roads	21
Total trips to, within & from the City of Melbourne	6	Other major projects	21
Summary of achievements	6	Routes in local areas	21
Why and where people cycle	7	Local roads	26
The cycling community	8	Off-road routes	27
Benefits of cycling	9	Gardens and parks	28
1. Planning for people to ride bikes	10	Shared zones and spaces	28
Cycling networks	10	Actions	29
Growth areas and projected growth	10	3. Facilities for bicycles	30
Structure plans for local areas	12	On-street bicycle facilities	30
The Planning Scheme	12	Bicycle hubs	31
Actions	12	End-of-trip facilities	32
		Bicycle security	32
		Signage, signals and other support for cyclists	32
		Melbourne Bike Share	35
		Actions	35

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4. A safer environment to ride bikes	36	6. Measuring our success	50
Crash statistics	36	Bicycle Account	50
Intersections	39	Counts and monitoring	50
Mid-block crashes – car-dooring, side-swiping, driveways	40	Data management	51
Speed limits	40	Actions	51
Perception of safety	41	Technical notes and Appendices	52
Safety programs and safer behaviour	41	Appendix 1	54
Actions	41	Community feedback	54
5. Encouraging more people to ride	42	Appendix 2	56
Counting people riding bicycles	42	Local bicycle network and bicycle routes (existing)	56
Participation by residents and bicycle ownership	43	Appendix 3	57
Participation by gender and age	44	Bicycle routes (existing) and proposed new and upgraded routes 2016–2020	57
Cycling for transport and recreation	44	Appendix 4	58
Perception indicators	46	Summary of actions	58
Bicycle counters	46	Appendix 5	60
Community and school programs	48	Summary of projects	60
Active Melbourne	48	Bibliography	65
Events	48	Acknowledgements	66
Navigation, maps and apps	49		
Workplace and business support and programs	49		
Actions	49		

Disclaimer

This report is provided for information and it does not purport to be complete. While care has been taken to ensure the content in the report is accurate, we cannot guarantee it is without flaw of any kind. There may be errors and omissions or it may not be wholly appropriate for your particular purposes. In addition, the publication is a snapshot in time based on historic information which is liable to change. The City of Melbourne accepts no responsibility and disclaims all liability for any error, loss or other consequence which may arise from you relying on any information contained in this report.

FOREWORD

Message from the Lord Mayor of Melbourne Robert Doyle and Councillor Cathy Oke

The City of Melbourne is committed to making the most liveable city in the world one of the great cycling cities of the world.

We have invested millions of dollars in infrastructure and consulted widely with the cycling community, the Victorian Government, neighbouring municipalities and various transport advocacy groups. We're now ready to implement our plan to make Melbourne a safer, more connected city for all bike riders.

Over the last three years, we have invested more than \$10 million to increase connectivity and safety across the bike network in Melbourne.

We now have more than 136 kilometres of bike lanes throughout our city and cyclists make up 17 per cent of all vehicles coming into the city, which is almost double what it was when we were both first elected to Council in 2008.

The City of Melbourne has added 16km of new bike lanes since 2012 and has upgraded many existing bike lanes.

Our Bicycle Plan 2016-2020 establishes even more ambitious targets for our cycling network, including increasing cycling journeys to make up 20,000 trips, or one in four vehicles movements, into the CBD during the morning peak.

We have set a new target to eradicate serious injury crashes and cycling fatalities in the CBD and increase the number of bike parking hoops from 800 to 2,000.

We have established the arteries and now it's time to construct the veins of our city's cycling network. Routes we have identified for improvement include Exhibition Street, between Bourke and Little Bourke Streets; the Haymarket Roundabout; parts of Albert, Clarendon and Queensbridge streets and Victoria Street, south of Carlton Gardens.

The Plan has a strong focus on upgrading neighbourhood routes as well which will encourage residents to use pedal power for short, local trips to school, work, the shops or friends' houses.

We want to make sure cyclists, of all ages and abilities, can move safely and easily through our city.

As outlined in the plan, we will introduce new signage to connect people to the central cycling network. The signage will inform bike riders of the safest bike-friendly routes to use when moving through the city.

The Bicycle Plan 2016-2020 is an important step in building a safer, more connected cycling city.



A handwritten signature in black ink that reads "Robert Doyle".

Robert Doyle
Lord Mayor

A handwritten signature in black ink that reads "Cathy Oke".

Cathy Oke
Councillor

EXECUTIVE SUMMARY

Cycling is an increasingly important choice of transport. It takes pressure off the public transport system, reduces congestion and noise and is non-polluting. Over 50 per cent of residents in the City of Melbourne own a bike, and for a relatively low investment in infrastructure and programs, all levels of government can encourage people to invest in their own mode of transport for a relatively low cost.

About 146,000¹ trips are taken by bike on a weekday within the municipality and we want to increase the mode share by bike to about 200,000 or seven per cent of total trips in the City of Melbourne by 2020 to meet our targets of 10 per cent cycling mode share by 2030.

This plan highlights the contribution that people riding bikes make to the municipality, while laying out a practical action plan to further interconnect the city's bicycle network and encourage even more people to ride a bike. The plan establishes principles for planning bicycle infrastructure in the city including safety, access for all abilities, planning for future growth, creating bicycle-friendly environments, and comfort and convenience for people to take up riding, or ride more frequently.

Any costs associated with the implementation of the Bicycle Plan 2016–2020 will be subject to the annual budget approval process. An indicative cost of implementing the Bicycle Plan 2016–2020 is \$9,880,000 over four years with an estimated \$1,795,000 cost in the 2016–17 financial year.

This plan supports our ongoing collaboration with the Victorian Government as a means of achieving our goals and targets. In particular, the Plan supports the development of strategic cycling corridors, routes in local suburbs, reducing speed limits and improving the separation from traffic and car doors to enhance safety outcomes for people riding bikes.

The Bicycle Plan 2016–2020 actions focus on:

Planning for people to ride bikes

- working with government to incorporate cycling into future growth and transport projects
- advocating for amendments to the Melbourne Planning Scheme to make the municipality more bike-friendly

A connected bicycle network and facilities

- supporting the Victorian Government to develop cycling corridors
- making it easier for people to ride in their local communities
- an increasing level of service for each bicycle project

A safe and encouraging environment

- increasing separation, lowering speed limits and building safer intersections
- safety and education programs for children, parents, and new residents

Measuring outcomes

- sharing evidence with the community to continuously improve the cycling environment.

1 City of Melbourne 2012

A CYCLING CITY



Figure 1: People on bikes crossing Princes Bridge at night (Photo by William Watt)

Introduction

More people in Melbourne are cycling than ever before. Building on the achievements of the previous bicycle plan, Bicycle Plan 2016–2020 aims to encourage more people to ride and to create a safe environment for them to do so. The Bicycle Plan 2016–2020 incorporates a comprehensive program of actions on many of Melbourne’s busy bike routes and also provides a renewed focus on local bike routes to cater for neighbourhood-scale trips, such as those to schools and shops – making it possible for cycling to become a logical and easy choice for the community. More people on bikes means a more active and healthier population who are able to enjoy a cleaner and less congested city.

It is widely recognised that cycling has many benefits – ranging from social and economic to health and environmental. This plan is the next step in helping more people to enjoy those benefits. It sets out a series of actions that will help to deliver the targets for increased participation in cycling set out in Melbourne’s Transport Strategy². The actions in this plan also include a commitment to work with and support the Victorian Government to develop strategic cycling corridors linking central Melbourne.

We will continue to build and upgrade bicycle routes that complete the network. Priority will be given to addressing gaps that will provide an improved service for the greatest number of existing and potential riders. In collaboration with VicRoads, we will continue to develop innovative solutions to existing problem areas.

The key driver of this plan is to meet demand from existing cyclists and at the same time recognise that there is also latent demand. That is, more people would cycle more often if they were supported by high quality, safe infrastructure, improved facilities and route connectivity.

² City of Melbourne 2012

A connected city

The City of Melbourne is committed to creating a cycling city. A cycling city is one that embodies the principles and design philosophy espoused by this document and by the Council Plan. Any costs associated with the implementation of the Bicycle Plan 2016–2020 will be subject to the annual budget approval process.

The Council Plan 2013–2017 goal for a connected city states that:

We manage movement in and around our growing city to help people trade, meet, participate and move about safely and easily, enabling our community to access all the services and opportunities the municipality offers³.

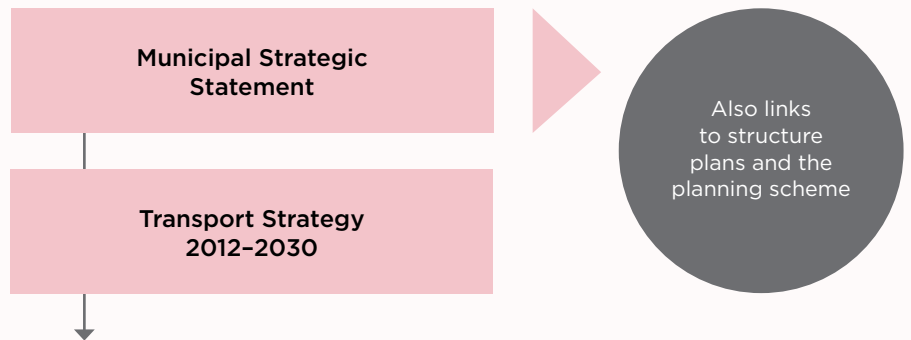
Bicycle Plan 2016–2020 is an Action Plan for the implementation of the City's strategic vision and goals for a connected city.

STRATEGIC FRAMEWORK

VISION

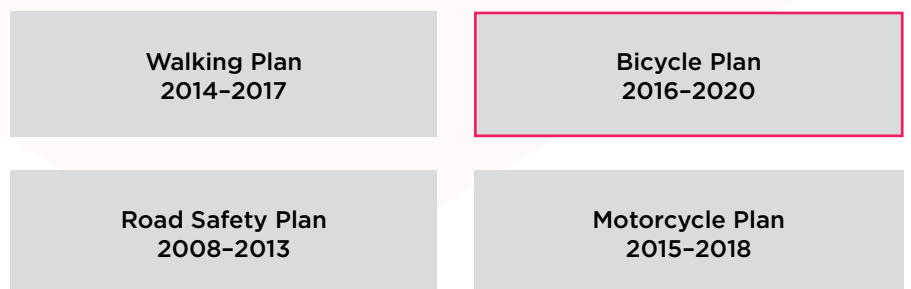


STRATEGY



IMPLEMENTATION

ACTION PLANS



³ Council Plan 2013–2017, Goal 6, A Connected City

Vision

Make Melbourne a cycling city⁴

Goals

The goals of the plan are to:

- plan for future growth that includes high quality bicycle infrastructure, security and parking
- deliver an interconnected network for people of all ages and ability to ride bikes
- increase bicycle-friendly facilities, support stations, and parking to make it easy to travel by bike and park
- deliver a safer and well-lit environment for people to ride bikes
- reduce the risk of riding a bicycle in the city and to promote motorist's awareness of cyclists on the road
- encourage more people to take up riding or ride more frequently
- evaluate changes, manage data and continuously improve our performance.

Targets

By 2020:

- transport infrastructure projects will include facilities or viable alternatives for people riding bikes
- Major bicycle routes north/south and east west will connect the community to schools, shops and community facilities by 2020
- On-street bicycle parking will be increased by 2000, concentrating on busy public areas. Planning for large scale, safe parking facilities at transport hubs will be progressed
- bicycle maintenance stations will be available at entrances to the city
- zero fatalities and serious injury crashes
- one in four vehicles entering the central city in the morning peak will be bicycles
- seven per cent of total trips to, within and from the City of Melbourne will be made by bike to meet our targets of 10 percent cycling mode share by 2030⁵
- provide transparent data and complete a Bicycle Account in 2017 and 2019.

4 Key direction of City of Melbourne Transport Strategy 2012

5 Key direction of City of Melbourne Transport Strategy 2012

Total trips to, within & from the City of Melbourne

Weekday current, forecast growth and target mode share

Forecast growth & target share 3,339,225

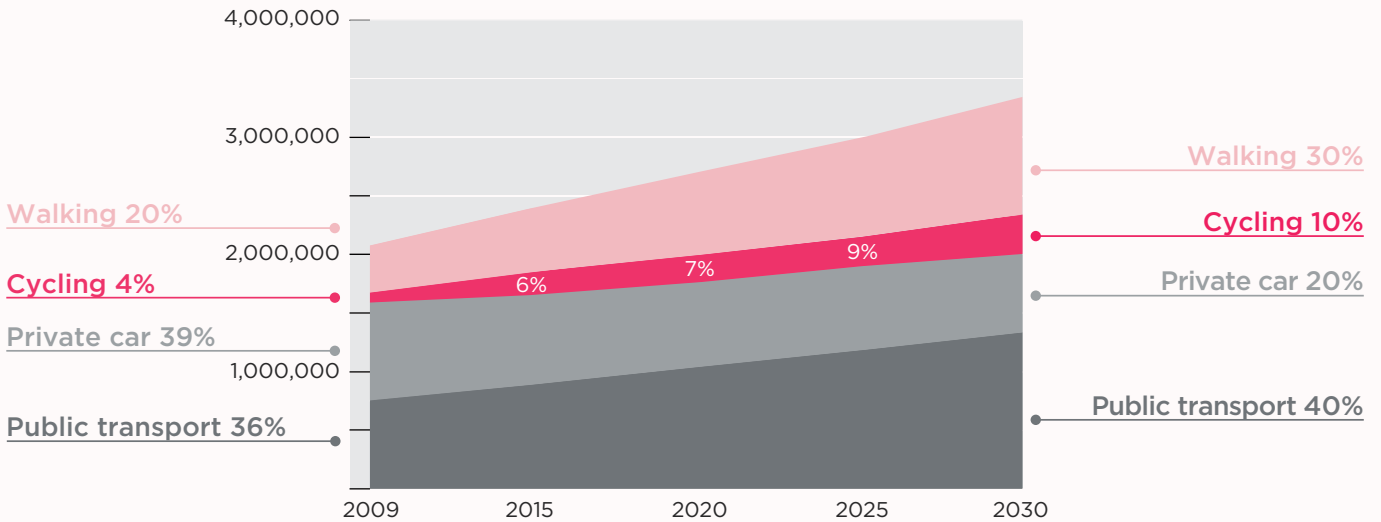


Figure 2: Mode share targets from City of Melbourne Transport Strategy

Summary of achievements

The Bicycle Plan 2012–2016 proposed connecting missing links in the bicycle network through the central city with a particular focus on increasing the separation on key bicycle routes to encourage people of all ages and abilities to ride.

Since the previous plan was endorsed in 2012, Council has strengthened links and provided safer on-road environments on La Trobe Street, Princes Bridge, St Kilda

Road, Elizabeth, Exhibition, William and Clarendon streets. Council has worked with its partners to improve Melbourne’s key off-road route, the Capital City Trail at Morell Bridge, Jim Stynes Bridge and through improved way-finding and lighting. Bicycle parking has been increased in busy locations throughout the city with groups of bicycles hoops being strategically placed close to retail, public entertainment, community and education centres.

There has been a decrease in crashes per 10,000 cyclists by 20 percent and an increase in the total number of people riding bicycles. Over the life of the last plan, bicycles as a percentage of vehicles coming into the central city in the morning peak has grown from 11 per cent in March 2012 to 17 per cent in 2015. On key routes the percentages were even higher.

Table 1: Bicycles as a percentage of vehicles travelling to the central city in the morning peak (March 2015)

ST KILDA ROAD	ROYAL PARADE	RATHDOWNE STREET	FOOTSCRAY ROAD	YARRA TRAIL
30%	35%	31%	16%	Off-road
512 bikes an hour	891 bikes an hour	715 bikes an hour	534 bikes an hour	1,147 bikes an hour

Why and where people cycle

City of Melbourne residents cite transport to a destination as being the primary reason for their cycling trips (68 per cent)⁶. Cycling is a preferred way to get to work and make quick and convenient trips around the city for many. RiderLog⁷ data shows the routes for people traveling through the City of Melbourne for the purpose of transport. Popular routes include Royal Parade, Canning Street, Rathdowne Street, La Trobe Street Macarthur Street, Swanston Street, and St Kilda Road. Large numbers of people use off-road routes to access the city including Footscray Road and the Main Yarra Trail.

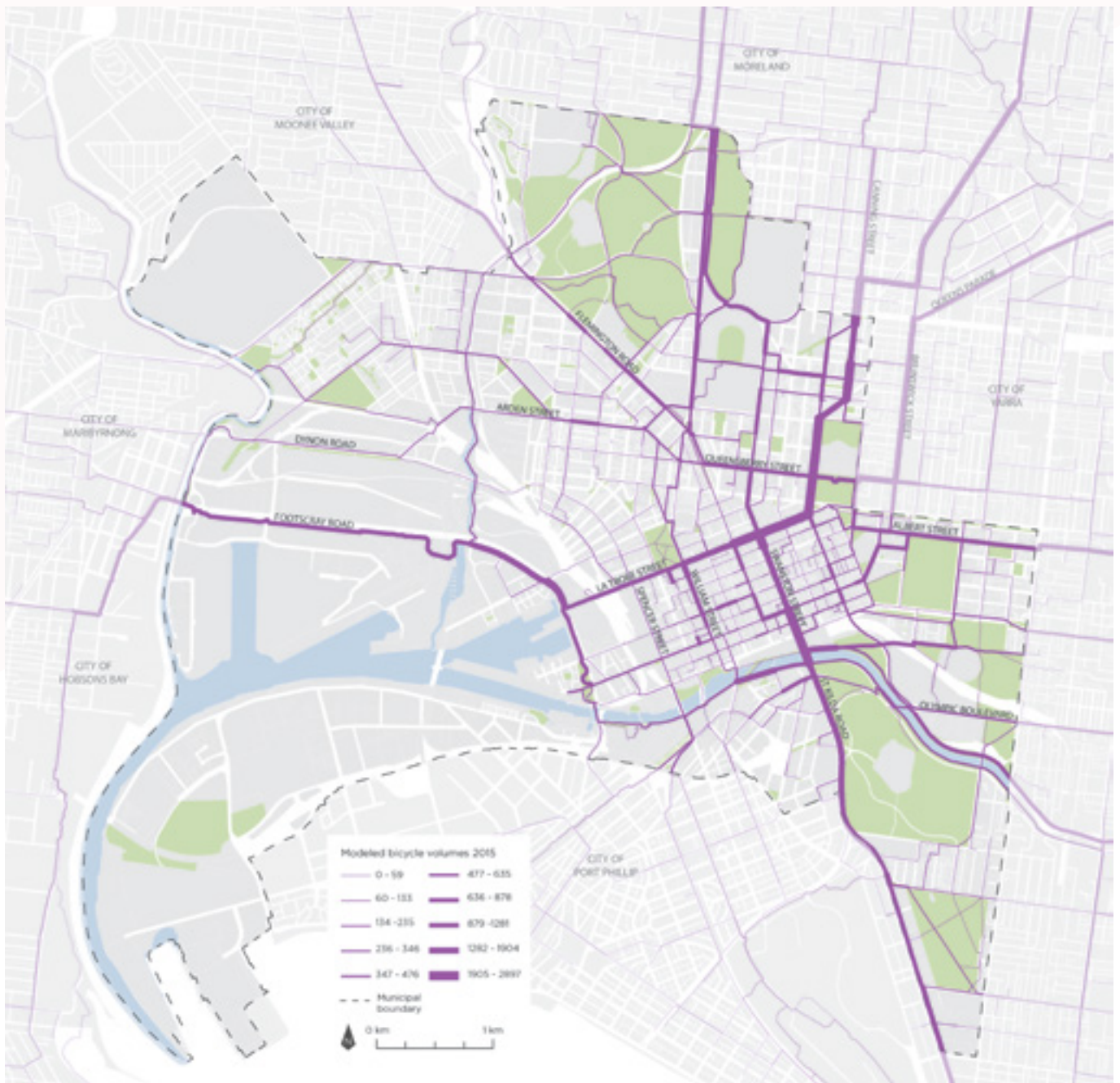


Figure 3: Modeled trips by bicycle for journeys to work in the City of Melbourne 2015¹

1 Based on SGS modelling and analysis

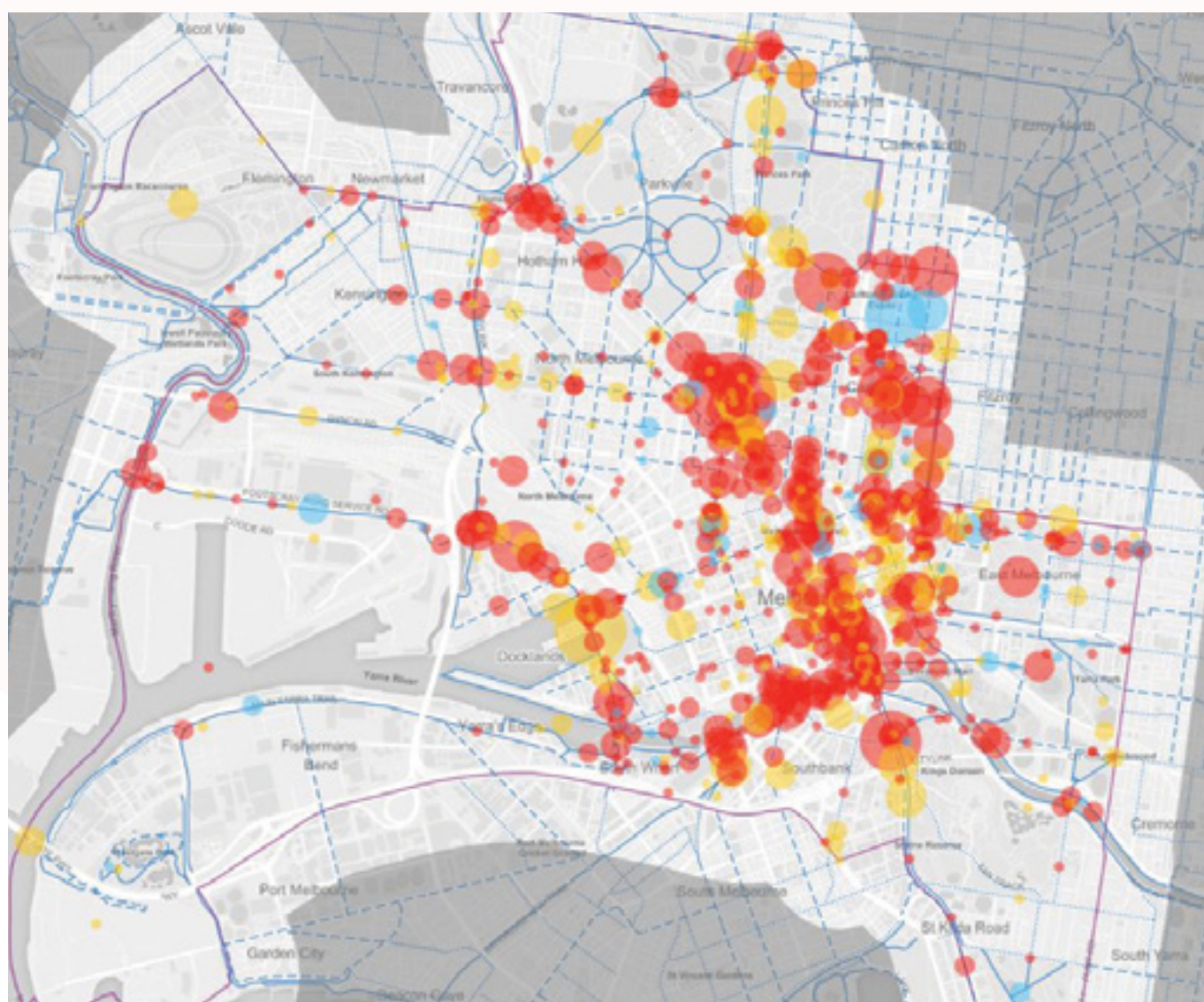
6 CDM Research, 2015

7 RiderLog app, Bicycle Network Victoria

The cycling community

The City of Melbourne engages with the cycling community through twice yearly bicycle forums. Our constituent focused approach means that the community can always provide feedback about bicycle related projects and programs. Key community stakeholders Bicycle Network Victoria and the Melbourne Bicycle Users Group (MBUG) are active in discussing improvements in the municipality for their members.

Community input was sought to shape this Bicycle Plan 2016–2020. Over 7,000 contributions were received that provided information on what people liked about riding a bike in Melbourne and issues and ideas that could be incorporated as actions into this plan. The circle size shows the amount of activity (spots, comments and supports) by spot type in Figure 4. The 20 locations that received the most comments and the top 10 locations people liked are listed in Appendix 1.



Circle size indicates level of activity

- ISSUE SPOTS
- IDEA SPOTS
- LIKE SPOTS

- Off-road Shared Path
- - - On-road Bike lane
- Informal Bike Route
- Council Boundary

Source: City of Melbourne prepared by Crowdspot

Figure 4: Heat map of bike related issues, ideas and likes

Benefits of cycling

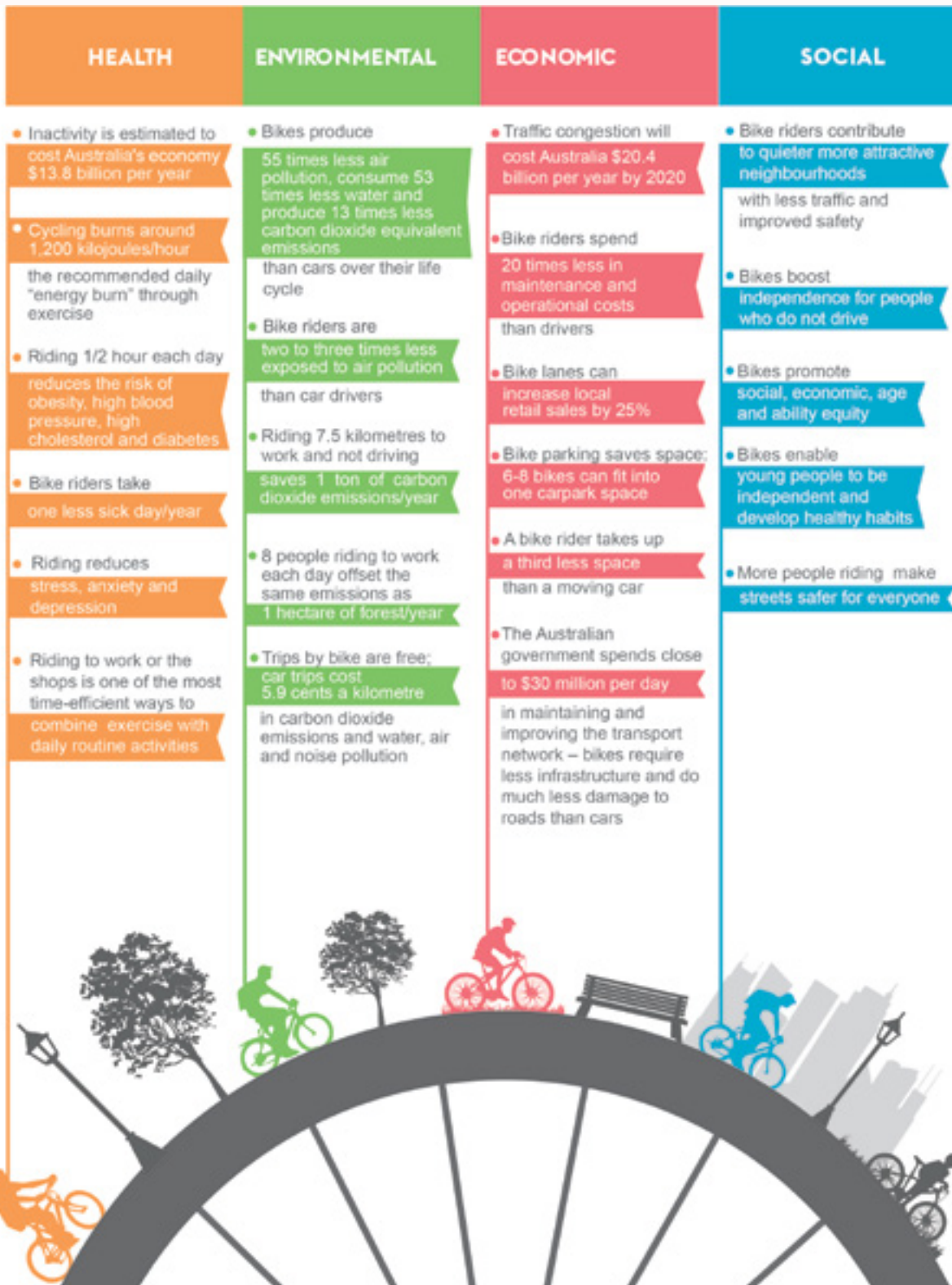


Figure 5: Health, environmental, economic and social benefits of cycling

1. PLANNING FOR PEOPLE TO RIDE BIKES

Goal: Planning for future growth includes high quality bicycle infrastructure

Target: Transport infrastructure projects include facilities or viable alternatives for people riding bikes

Cycling networks

The PBN is a network of existing and proposed cycle routes identified to help people ride to major destinations around metropolitan Melbourne. Complementing the PBN, the Victorian Government is finalising draft strategic cycling corridors in metropolitan Melbourne. The City of Melbourne strongly supports the development of cycling corridors.

The Inner Melbourne Action Plan (IMAP) is a collaborative partnership between the cities of Melbourne, Port Phillip, Stonnington, Yarra and Maribyrnong. The Action Plan guides a consistent approach to the future growth, development and enhancement of inner Melbourne including linking and improving transport routes. Together the councils have developed strategic directions covering cycling initiatives and a network for bicycles. The local area network is largely consistent with the PBN but includes more detail about local roads managed by Councils. We will continue to build and upgrade routes in line with this local area bicycle network as well as support the Victorian Government to complete the strategic cycling corridors. We will work with VicRoads to review and align the PBN and local area bicycle network.

Growth areas and projected growth

The City of Melbourne, through the Municipal Strategic Statement (MSS) has set out the vision, objectives and strategies for managing land use change and development in the City of Melbourne. The MSS provides the basis for the application of local policies, zones, overlays and other provisions in the Melbourne Planning Scheme.

A priority for the city is maximising the use of sustainable modes of transport, in particular public transport, and supporting improved cycling and walking connections. Private motor vehicles will continue to be an important part of the mix of modes available but their use will become increasingly complementary to the other transport modes.

The MSS identifies cycling as one of the most effective means of mobility in the municipality and recognises the growth of cycling as a proportion of all commuter trips to the city, as well as of off-road cycling for leisure and recreation. It further highlights the significant opportunities to increase cycling take-up in the municipality.

More specifically, the MSS identifies an overarching objective for cycling: *to develop a comprehensive, safe and convenient cycling network throughout the Municipality*. In support of this objective, the MSS identifies seven strategies, as follows:

- Encourage improved connectivity of the city's bicycle network and support the extension of the existing system of dedicated cycle routes (including shared paths) to link all major parks and gardens in Melbourne.
- Support the extension of principal cycling routes into and through the city from surrounding municipalities.
- Ensure that new development provides bicycle access and high quality, safe and secure end of trip cycle facilities.
- Ensure a safer cycling environment by encouraging passive surveillance of the bike network and safe and secure end of trip facilities.
- Support the extension of the existing system of dedicated cycle routes (including shared paths) across the entire street network.
- Support the provision of public bike hire stations convenient to pedestrians and public transport.
- Minimise the impact of development, including vehicular crossings, on principal cycling routes.

In delivering the overarching objective, Council is ensuring that the cycling strategies are incorporated where relevant into all planning documents across the five types of areas identified in the MSS:

- the original city centre (the Hoddle Grid)
- existing urban renewal areas
- proposed urban renewal areas
- potential urban renewal areas
- stable residential areas.
- The Growth Area map shown in Figure 6 identifies these areas.

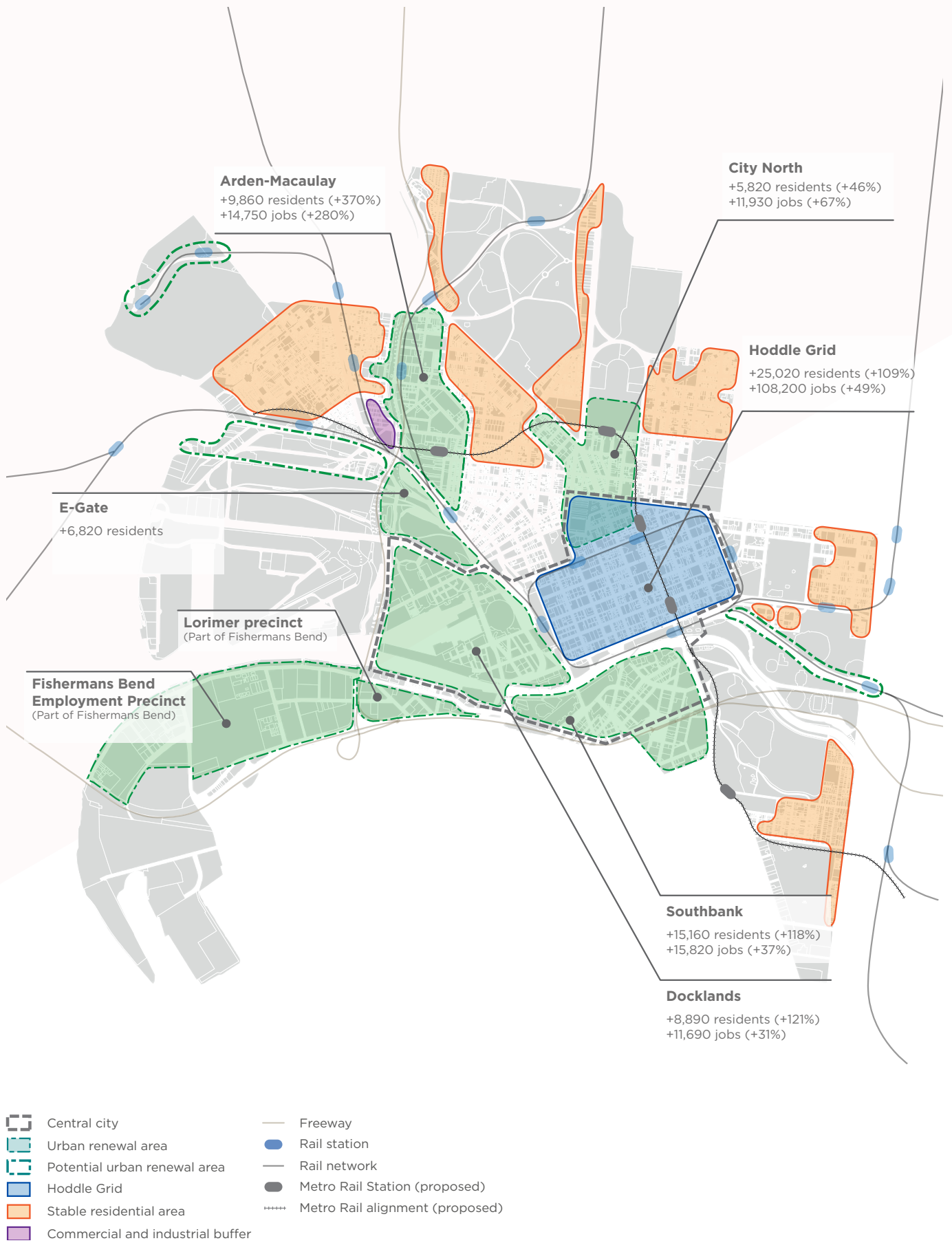


Figure 6: Growth areas in the City of Melbourne 2012-2031

Structure plans for local areas

Structure plans developed by the City of Melbourne run over a 10 to 20 year horizon. An important component of these plans is planning for bicycle and other sustainable transport routes. The City of Melbourne recently completed structure plans for Southbank, Arden-Macaulay and City North and is working on a West Melbourne structure plan and precinct plans for the Lorimer Precinct and the Employment Precinct in Fishermans Bend. In the longer term, development funds will go towards funding local level improvements to streets, including quality bicycle lanes. An example of long term planning for city streets is shown for Queensberry Street below.

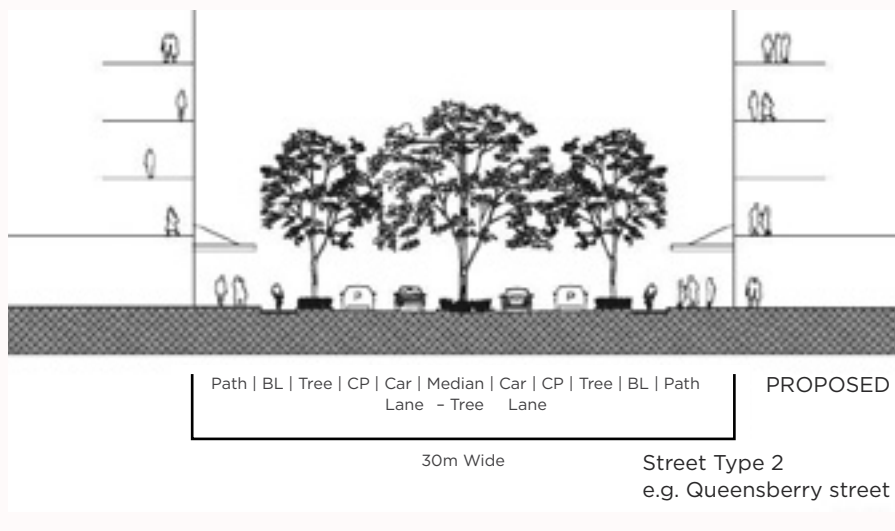


Figure 7: An example of local street design proposed by City North Structure Plan, including bicycle lanes

The Planning Scheme

With more people riding bicycles in Melbourne, it's important to make sure there are enough off-street bike parking spaces in both residential and commercial buildings. A study is underway to determine if the amount of parking currently available meets the needs of current and future building users. This information will help to determine how many, and what kind of parking spaces will be required in new and updated buildings. Based on the recommendations of this study, the City of Melbourne will advocate for changes to the Melbourne Planning Scheme..

Actions

The City of Melbourne will work to:

- align cycling networks and priorities at all levels of government
- ensure planning for growth areas include connections and facilities for people riding bikes
- implement local area structure plans and include bicycle infrastructure through development funds
- ensure Melbourne Planning Scheme matches requirements for bicycle parking in new and existing buildings.

2. A CONNECTED BICYCLE NETWORK

Goal: Deliver a connected network for people of all ages and abilities to ride bikes

Targets: Planning and short and medium term actions for cycling corridors

The community is connected to schools, shops and community facilities by local neighbourhood routes

SmartRoads and setting priorities

SmartRoads⁸ is an approach that manages competing interests for limited road space by giving priority use of the road to different transport modes at particular times of the day. VicRoads through SmartRoads recognises the increasing importance of public transport, walking and cycling. Under SmartRoads, all road users continue to have access to all roads, but over time, changes are being made to how roads operate to encourage more bicycles through further development of the bicycle network. VicRoads provide maps that detail which transport modes have priority on roads. These are used as a guide only.

Roads may have several priority transport modes, may change at different times of the day and can even show priority at individual intersections. Consistent with most cities around the world the City of Melbourne is aiming to encourage private traffic to use routes circumnavigating the central city. The central city is prioritised for pedestrians, with the traffic routes being directed around the Hoddle Grid via Wurundjeri Way, Lansdowne Street and Yarra Bank Highway. Bus priority streets include Dudley Street, Queen Street, Lonsdale Street and Victoria Parade. Trams are prioritised on all the streets where they operate in the city. According to the current network operating plan, bicycles are prioritised on La Trobe Street, Collins Street, Flinders Street and off-road routes along the Yarra River. On north-south streets bicycles receive a level of priority on Spencer Street, William Street, Elizabeth Street, Swanston Street, Exhibition Street, Spring Street and St Kilda Road.

The City of Melbourne is encouraged by the increasing volumes of people walking and cycling. Initiatives in this Plan are designed to facilitate further growth in numbers by responding to an expressed community need for safe cycling routes. We will work with VicRoads to review priorities on streets where for example, tram and bus routes have limited the amount of space for people to ride bikes. Streets to review include Collins Street, Flinders Street and Spencer Street.

Rider choices

Studies⁹ completed for this plan have established 65 per cent of riders choose a route 15 per cent longer than the shortest route possible to access dedicated bicycle infrastructure. This suggests that riders plan their route to align to the existing infrastructure, looking for comfort or safety. The provision of bicycle infrastructure can have a significant influence on bike flows around the city. Recent bicycle infrastructure has changed rider patterns and analysis shows riders quickly shift their routes to access improved infrastructure.

Figure 9 summarises the difference between the shortest routes and the actual routes. It shows that 40 per cent of riders included 70 per cent

or more of their ride on a dedicated lane, whereas if they had chosen the shortest route, only 33 per cent of their ride would have been on a dedicated lane. This confirms that riders choose routes with access to longer sections of dedicated bike lanes than the shortest route option.

Gaps in the network

Rider data can be used to model rider behaviour and inform decisions. ABS Census Journey to Work data was combined with rider behaviours to model commuter rider flows. This is the first time rider behaviour has been modelled to this level of detail in the Melbourne context. This data can provide evidence to prioritise network gaps and it can model the impact of improvements (or removal) of key connections in the network.

The study¹⁰ identified and ranked priority gaps in the network. It provides a platform to prioritise future investments and to model the impact of them. It will also be used to model the impact of competing infrastructure projects such as the changing distribution of bike riders on Swanston Street during the development of the Melbourne Metro.

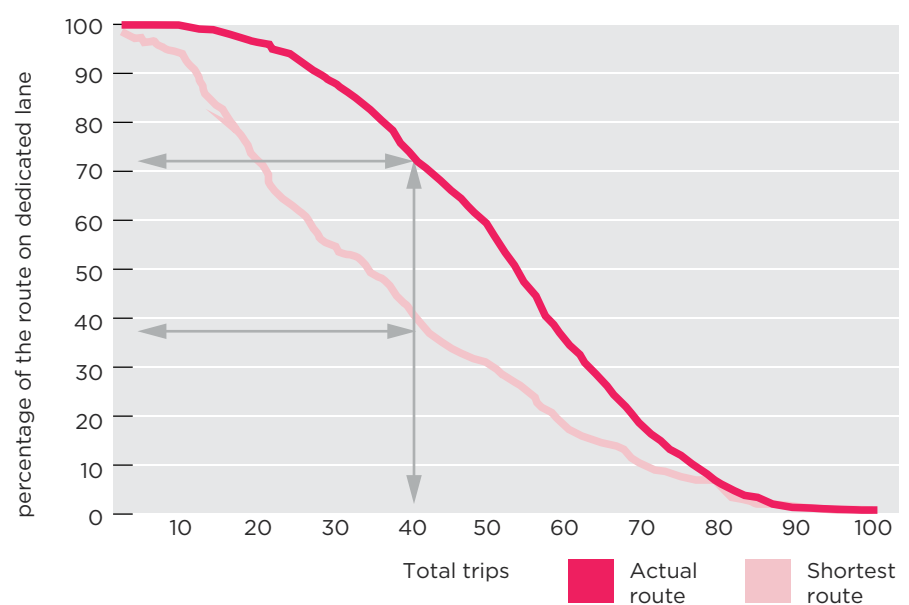


Figure 8: Proportion of route on dedicated lanes, actual vs shortest

The bicycle network modelling has shown locations in the network where there are high current and future volumes of people riding bikes, but a gap in the network. The locations have been ordered by the scale of the project compared to the potential benefits for the greatest number of riders.

Priority locations include:

- Exhibition Street between Little Bourke and Bourke streets
- Haymarket roundabout
- Albert Street between Nicholson Street and Gisborne Street
- Clarendon Street at the Melbourne Convention Centre
- Queens Bridge Street between the Yarra River and Flinders Street
- Victoria Street on southern edge of Carlton Gardens
- Peel Street at the Queen Victoria Market
- College Crescent, north of the University of Melbourne.

Work on these gaps in the cycling network will improve access and the riding experience for large numbers of people at a relatively low cost.

Two additional gaps that will not be addressed as part of this plan are:

- Grattan Street, from Flemington Road to Royal Parade. This is due to proposed work on the Melbourne Metro at this location.
- the connection between Brunswick Street and Albert Street via Morrison Street. This will require further consultation with the hospitals and emergency services before progress can be made.

Appendix 2 sets out the existing local bicycle network and Appendix 3 overlays the proposed new and upgraded routes for the years 2016–2020. Although cyclists may choose to ride in any local street, the map at Appendix 3 illustrates that there are safe alternatives to streets that carry particularly large numbers of vehicles. The City of Melbourne actively supports road safety. The use of installed bicycle infrastructure is highly recommended.

Planning and designing for people to ride bikes

The City of Melbourne plans and designs projects based upon Council Plan goals of a city for people and a connected city.

Plan

Principles will be applied by the City of Melbourne to plan for new and upgraded bicycle routes. The principles will take account of:

- a primary need for safety for all roads users
- the importance of a connected network of routes for ease of access. This includes the connected access for bike riders to high demand areas such as public facilities, retail and entertainment precincts
- the need to prioritise route development for the highest current and predicted volumes of cyclists
- requirements for service provision for new riders and riders from urban growth areas
- the need for the provision of a spread of high quality routes, wayfinding signage, surfaces and landscaping
- the need for compatibility with VicRoads SmartRoads principles and Network Operating Plans that give road priority to other transport uses (for example Lonsdale Street is a priority bus street)
- Well-lit, safe and accessible routes for people of all abilities.

Design

Designs for building or upgrading routes as part of the connected bicycle network will use the following hierarchy:

High quality

- physically-separated bicycle lane
- double chevron line marking.

Medium quality

- single chevron line marking
- painted lanes
- peak period bike lane
- sharrows (pending inclusion in Austroad design guidelines)
- contra-flow lanes.

Minor improvements

- low-speed environments (<40km/h) with no specific lanes, but may have other bike-friendly features.

Other bike-friendly measures

Opportunities will be taken to apply measures such as:

- green pavement and profiled-edge line at conflict points such as for turning movements, less than standard width lanes, and transitions from separated to non-separated facilities
- controlled right turns
- removal of slip lanes
- reduction of vehicle speeds at roundabouts and facilities for bikes where possible
- prioritising the signal phase time at intersections relative to mode share of pedestrians, bicycles, motor vehicles, trams etc.
- early start signals and bike boxes
- connections, to and through, intersections
- crossing points at intersecting streets, laneways and drive-ways
- high quality road surfaces
- adequate lighting for safety
- way-finding and consistency in signage and line marking
- adequate sight-lines and distances.

Streets for cycling (level of service)

In future a quantifiable level of service measure is proposed to support people to assess the safety and attractiveness of streets for cycling. All projects in this bicycle plan will be assessed against the proposed level of service.

This assessment would:

- enable evaluation of potential bike projects by quantifying potential improvements in the route (a detailed before and after assessment)
- determine gaps in the cycling network where the level of service is low
- enable a map to be produced that illustrates the quality and safety of bike routes to assist cyclists choose bicycle friendly routes.

Currently, the VicRoads Network Fit Assessment process and Austroads have developed level of service techniques to attempt to quantify the quality of a bike route. Neither of these evaluation tools captures all of the factors which impact the quality and safety of a bike route, such as:

- width of the bike lane
- bike lane adjacent to on-street parking
- separation of the bike lane from parked vehicles (with painted chevron separators or physical separation islands used in kerbside bike lanes)

- separation of the bike lane from the moving traffic lane
- speed limit/speed environment
- volume of traffic using the street
- number of uncontrolled cross-traffic conflict points, such as laneways, driveways and side-streets
- presence of green pavement treatment at conflict points or approaches to intersections
- use of profile edge line treatment to increase motorists' awareness of the bike lane
- continuation of the bike lane entering and exiting intersections
- volume of left turning motorists at intersections - that conflict with cyclists traveling through
- controls and priorities at intersections
- delays experienced at signalised intersections.

The Technical Notes section contains a worked example of a bike route assessment that considers each of these factors. Table 2 gives examples of the level of service for existing bike lanes.

Cycling corridors

Strategic cycling corridors have been identified in Plan Melbourne¹¹ to support walking and cycling in central Melbourne. Cycling corridors form critical links between and within:

- the central city and other activity centres including urban renewal areas
- major employment, education, health and recreation precincts
- major sport and entertainment precincts
- major public transport interchanges.

The Victorian Government is currently finalising the draft strategic cycling corridors as part of the update to Victoria's Cycling Strategy. The City of Melbourne will continue to work with the Victorian government to develop strategic cycling corridors through the municipality. As its first priority the City of Melbourne is working with VicRoads to investigate an improved bicycle lane on St Kilda Road.

The City of Melbourne strongly supports the development of cycling corridors, particularly:

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

Table 2: Examples of assessments of the quality of existing bike lanes

LOCATION	LEVEL OF SERVICE ASSESSMENT
Capital City Trail - between Punt Road and Boathouse Drive	B+
La Trobe Street, Melbourne - physically separated bike lane	B-
Clarendon Street, East Melbourne - double chevron bike lane	C+
St Kilda Road - standard bike lane adjacent to parking	D

¹¹ Victorian Government, 2014



Figure 9: Priority cycling corridors within the City of Melbourne

Short, medium and longer term planning and funding will be required to complete these priority cycling corridors. Significant coordination and cooperation will be required between multiple agencies as outlined in Tables 3 to 6. All projects undertaken by the City of Melbourne will be subject to further community engagement and feedback. This proposal is subject to further engagement with VicRoads and other agencies.

Table 3: Planning and tasks to be completed for cycling corridor from Sunshine to Box Hill

CYCLING CORRIDOR SUNSHINE TO BOX HILL BLUE	DESCRIPTION	TIMING SHORT <2 YEARS MEDIUM 2-5 YEARS LONG >5 YEARS	AGENCY
Footscray Road	<ul style="list-style-type: none"> Off-road bicycle routes Improve continuity and reduce conflict points along the shared path on the south side of Footscray Road, between Shepherd Bridge and Citylink overpass Improve connection to Moonee Ponds Creek Trail Investigate feasibility of a dedicated bicycle lane underpass crossing Footscray Road 	<ul style="list-style-type: none"> Existing Short Medium Long 	VicRoads
Harbour Esplanade	<ul style="list-style-type: none"> Off-road bicycle route Improve connections from La Trobe Street to shared path on the west side of Harbour Esplanade including traffic signal adjustments 	<ul style="list-style-type: none"> Existing Short 	City of Melbourne
La Trobe Street	<ul style="list-style-type: none"> Kerb-side physically separated route from Spencer Street to Victoria Street Extend the outbound bike lane in La Trobe Street to the intersection of Harbour Esplanade Investigate separation from Spencer Street to Harbour Esplanade Improve intersection design to protected intersections 	<ul style="list-style-type: none"> Existing Short Medium Various 	City of Melbourne
Exhibition, Little Lonsdale, Spring, Victoria streets	<ul style="list-style-type: none"> Investigate full time bicycle lanes and improved intersection designs 	<ul style="list-style-type: none"> Medium 	City of Melbourne
Albert Street	<ul style="list-style-type: none"> Chevron kerb-side separated bicycle lanes Install full-time bicycle lanes from Powlett Street to Hoddle Street Investigate green wave traffic signals for bikes to reduce delays and encourage slower speeds Install full-time bicycle lanes from Spring Street to Gisborne Street Upgrade existing chevron to permanent physically-separated bike lanes on complete length of street 	<ul style="list-style-type: none"> Existing Short Short Medium Medium 	City of Melbourne

Table 4: Planning and tasks to be completed for cycling corridor along the Yarra River Corridor

CYCLING CORRIDOR RIVER CORRIDOR ORANGE	DESCRIPTION	TIMING	AGENCY
		SHORT <2 YEARS MEDIUM 2-5 YEARS LONG >5 YEARS	
Lorimer Street	<ul style="list-style-type: none"> Mix of on- and off-road bicycle lanes Connect Lorimer Street to a future extended promenade under Bolte Bridge Investigate redevelopment of the redundant rail reserve to include off-road path Investigate separated on-road bike lane along Lorimer Street as an alternative to large cycling volumes along the waterfront (include - off-road path from Bolte Bridge to Westgate Freeway/ connects to Westgate Punt) 	<ul style="list-style-type: none"> Existing Short Medium Long 	<p>VicRoads</p> <p>VicTrack</p>
River Esplanade	<ul style="list-style-type: none"> Investigate making wooden deck more bike-friendly Provide a wider shared path adjacent to Point Park 	<ul style="list-style-type: none"> Medium Medium 	<p>Docklands Coordination Committee</p> <p>City of Melbourne</p>
Yarra River Corridor	<ul style="list-style-type: none"> Install improved lighting to assist way-finding at night Upgrade Southbank Boulevard, Kavanagh Street, Balston Street, and investigate connections on City Road and Clarendon Street Investigate floating bike path on the south side of the river from Spencer Street to Princes Bridge 	<ul style="list-style-type: none"> Short Medium Long 	<p>Multiple land managers</p>

Table 5: Planning and tasks to be completed for cycling corridor from Batman to Elsternwick

CYCLING CORRIDOR BATMAN TO ELSTERNWICK RED	DESCRIPTION	TIMING SHORT <2 YEARS MEDIUM 2-5 YEARS LONG >5 YEARS	AGENCY
Royal Parade	<ul style="list-style-type: none"> On-road bicycle lane Investigate reduced speed limit to 40km/h Install physically-separated kerbside bike lanes or viable alternatives off-road or via Bowen Crescent, Garton Street and Princes Park Drive 	<ul style="list-style-type: none"> Existing Medium Long 	VicRoads
Cemetery Road and College Crescent	<ul style="list-style-type: none"> Investigate on- or off-road improvements to connect cyclists on Swanston Street to Royal Parade and Princes Park Drive 	<ul style="list-style-type: none"> Medium 	VicRoads
Swanston Street	<ul style="list-style-type: none"> Improve connection to College Crescent roundabout Reduce speed limit to 40km/h for northern section Install bike lane from Mason Road to Tin Alley for people riding north Redesign area of joint use between Flinders Street and Flinders Lane Upgrade southbound lane on Princes Bridge 	<ul style="list-style-type: none"> Medium Medium Medium Medium Medium 	City of Melbourne
St Kilda Road	<ul style="list-style-type: none"> Physically-separated bike lane from Princes Bridge to Linlithgow Avenue southbound On-road bicycle lanes Improve safety to cross Southbank Boulevard for people riding north Investigate physically-separated kerbside bike lanes along the full length of St Kilda Road Install bike lanes on St Kilda Road 	<ul style="list-style-type: none"> Existing Existing Short Short Medium 	VicRoads

Table 6: Planning and tasks to be completed for cycling corridor from Coburg to St Kilda East

PRIORITY CORRIDOR	DESCRIPTION	TIMING		AGENCY
		SHORT <2 YEARS		
		MEDIUM 2-5 YEARS		
		LONG >5 YEARS		
COBURG TO ST KILDA EAST				
PURPLE				
Royal Parade	<ul style="list-style-type: none"> On-road bicycle lanes Install traffic calming at College Crescent intersection Investigate reduced speed limit to 40km/h Upgrade intersection at Cemetery Road West to remove one vehicle lane Investigate physically-separated kerbside bike lanes from Park Street to Flemington Road 	<ul style="list-style-type: none"> Existing Short Medium Medium Long 	VicRoads	
Haymarket roundabout	<ul style="list-style-type: none"> Investigate and install head-start traffic signal phasing, bike boxes and way-finding Investigate redesign of intersection in conjunction with Melbourne Metro construction 	<ul style="list-style-type: none"> Short Long 	VicRoads	
Peel Street	<ul style="list-style-type: none"> Install full time bike lanes from Victoria Street to Franklin Street Investigate physically-separated kerbside bike lanes 	<ul style="list-style-type: none"> Short Long 	VicRoads	
William Street	<ul style="list-style-type: none"> Investigate narrowing space between tram tracks to allow for upgrade of bicycle lanes Maintain integrity of bike lanes when tram stops are upgraded 	<ul style="list-style-type: none"> Medium Medium 	City of Melbourne/ PTV	
Collins Street	<ul style="list-style-type: none"> Investigate options for route via Collins Street to Market Street. 	<ul style="list-style-type: none"> Medium 	City of Melbourne	
Queens Bridge Street	<ul style="list-style-type: none"> Investigate options for route Via Main Yarra Trail and Clarendon Street, Normanby Street, Whiteman Street Via City Road Via Whiteman Street 	<ul style="list-style-type: none"> Long 	City of Melbourne	
Cecil Street	<ul style="list-style-type: none"> Separated bicycle route 	<ul style="list-style-type: none"> Existing 	City of Port Phillip	

Arterial roads

Arterial roads are managed by VicRoads on behalf of the Victorian Government. They carry the majority of traffic and link activity centres providing a safe, efficient and integrated road transport system for the economic and social benefit of the community.

In addition to work on the four cycling corridors we will collaborate with VicRoads to complete the following projects on, or adjacent to, arterial roads.

Other major projects

Further projects that have been suggested by stakeholders and the community that would require the funding support of the Australian or Victorian Governments to implement include:

- Arden Street Rail Bridge over Upfield railway line
- Upgrade of Dynon Road bridge width or alternative routes as part of Victorian Government Western Distributor project
- Collins Street, Docklands to Yarra's Edge bridge connecting to Fishermans Bend
- Southbank floating pontoon as an alternative to Southbank Promenade
- Flinders Street Station re-development. Bridge at elevation from Flinders Street Station to Southbank
- Bicycle facilities on pedestrian bridge from Birrarung Marr to Alexandra Gardens
- Bridges over Upfield Rail Line in Royal Park
- Connect off-road paths in and around Westgate Park.

All of these projects are subject to further investigation, funding applications and community engagement and feedback.

Table 7: Projects on arterial roads

PROJECT	LOCATION	DESCRIPTION
1.	Commercial Road	Investigate a bicycle-friendly link between Punt Road and St Kilda Road for people to ride to Fawkner Park and Albert Park
2.	Elizabeth Street north	Install bicycle lane from Queensberry Street to Victoria Street
3.	Main Yarra Trail (northbank)	Work to widen under Swan Street Bridge to ease congestion and investigate potential flooding under the west end of the bridge.
4.	Smithfield Road	Upgrade to Smithfield Road between Epsom and Racecourse roads

Routes in local areas

The City of Melbourne will create more local bike routes to cater for neighbourhood-scale trips, such as those to schools, shops and community facilities. Local routes will make it possible for cycling to become an easy choice for people as an alternative to car travel, particularly for journeys of fewer than five kilometres.

The neighbourhood routes are planned on low speed, low volume streets. The objective will be to improve the level of service for bicycles on these streets so over time they provide safe and convenient routes for people of all ages and abilities. We will also support local schools to promote active travel and improve the connectivity for children under 12 to walk or cycle to school on local footpaths where road space does not allow for physically-separated bicycle lanes.

The routes will provide opportunities to leverage the benefits of cycling to improve health and wellbeing, environmental sustainability, provide economic benefits to local shops and businesses and assist with social connectedness and safety at a neighbourhood level.

Local routes have been adopted to enable travel to and from existing City of Melbourne community facilities and neighbourhood development programs. We are currently working with the Kensington Community Centre, North Melbourne Community Centre, Carlton Family Resource Centre and Boyd Community Hub, public housing estates and schools to support active cycling as a sustainable, healthy and affordable way of travelling.

Given the small number of issues highlighted in the crowd spotting data for South Yarra, improvement items will be considered on a case by case basis in this area. In the longer term this model is likely to be applied to other locations.



Figure 10: Good Wheel Program in North Melbourne, helping local people to ride bikes

Kensington

Existing bike lanes connect to JJ Holland Park and community facilities and assist commuters travelling to the city and home again along Racecourse, Epsom, and Macaulay Roads and Arden Street. Many local streets are traffic calmed with speed humps and the City of Melbourne is in the process of applying to VicRoads for an area-wide 40km/h speed limit.

The main local need is for family households (54 per cent of the suburbs' population¹²) to access local schools and shops by bike. The proposed improvements include:

- connections to Kensington Primary School and between Macaulay Road and shops in Racecourse Road along Market Street and McCracken Street
- connecting existing routes on Kensington Road and Arden Street through Derby Street
- connecting Derby Street to the Macaulay Road shops with linkages to Holy Rosary Primary School on Hampden Street
- connecting Eastwood Street to new lanes on Chelmsford Street and then Elizabeth Street to the existing bicycle route on Arden Street.



Figure 11: Map of existing and proposed local routes in Kensington

12 City of Melbourne 2013

North Melbourne

Existing bike lanes operate on Macaulay Road, Arden Street and Flemington Road with a high quality route on Queensberry Street connecting to the city. Sixty per cent of the suburbs' population live in apartments. The high proportion of people living in apartments makes owning a bike and cycling an ideal mode of transport. North of Arden Street the bicycle network is less well developed. There are three schools, strip shopping centres and public housing. The local routes would be established to encourage active travel between these locations. The local routes would

also assist less confident cyclists to take a series of local streets in a lower speed, lower volume environments, as an alternative to the high speed, high volume environment on Flemington Road. The routes may also assist workers to access the major hospitals and universities in Parkville from transport hubs in North Melbourne.

The proposed improvements include:

- providing local routes on Melrose, Shiel, Dryburgh, O'Shannassy, Courtney and Howard streets as an alternative to riding on Flemington Road with clear way-finding signage
- connecting residential areas to Melrose Street and the shops
- providing improved connections to St Aloysius Girls School and St Michael's Primary School on Brougham Street
- connecting residential areas to Haines Street shops and North Melbourne Primary School on Haines, Courtney and O'Shannassy streets.

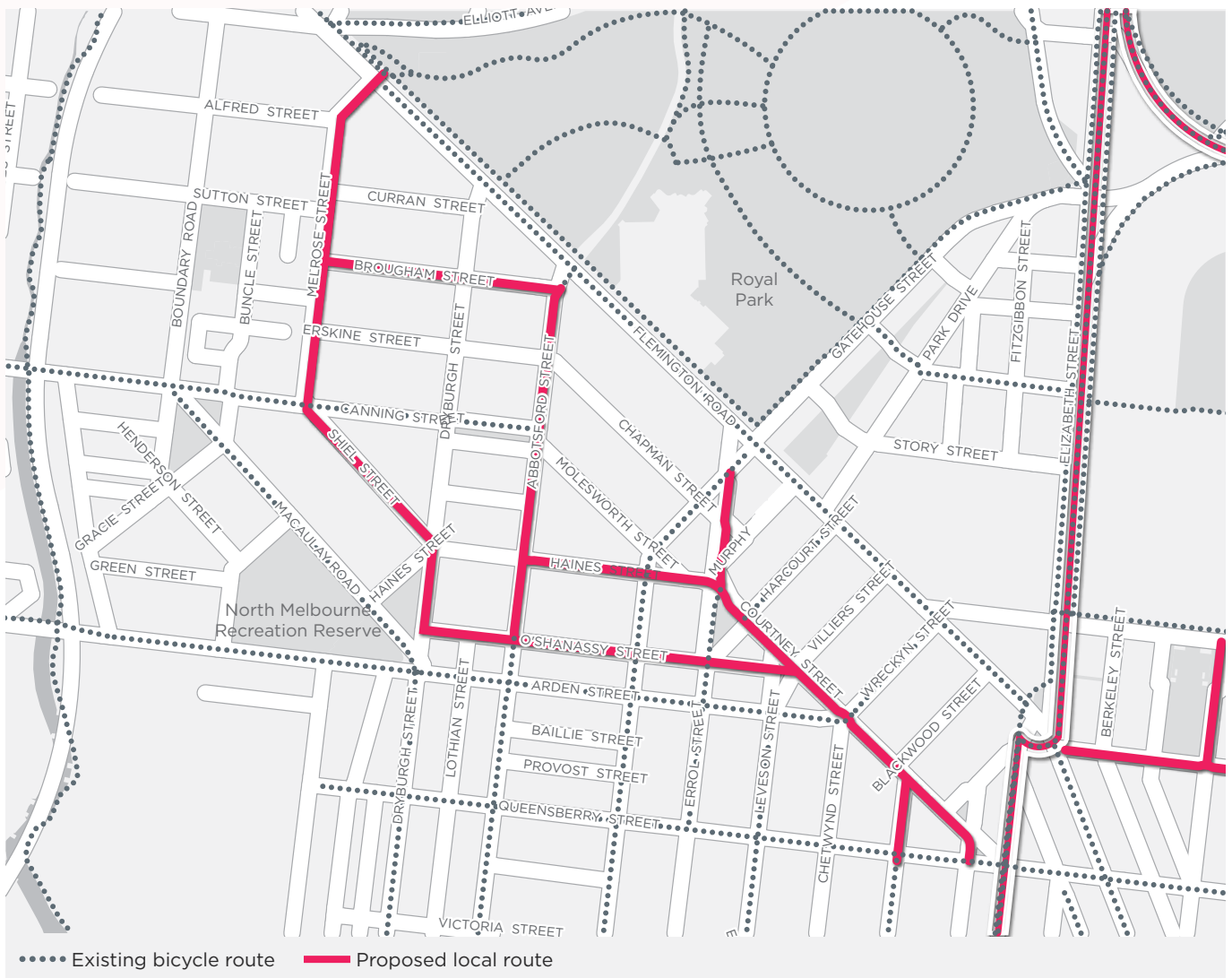


Figure 12: Map of existing and proposed local routes in North Melbourne

Carlton

Carlton's population of 14,109 is made up of people with a median age of 25, and 56 per cent of people are born overseas, largely from Asia. Most people live in apartments (61 per cent) and a majority are single person households (43 per cent). Six per cent of workers coming into the area travel by bike compared to 45 per cent driving a car. Carlton is well serviced by existing bike routes but routes for families travelling between home and school could be strengthened. We are currently working with Carlton Gardens Primary School and Bicycle Network to establish active travel routes to the school. Proposed improvements include:

- connecting residential areas to Carlton Primary School
- connecting residential areas to local shops, dining and entertainment via Drummond Street as an alternative to Lygon Street
- providing bicycle facilities from Lygon Street shared path to Cardigan Street and Swanston Street
- connecting residential areas with Carlton Gardens Primary School on Grattan and Pelham streets
- connecting the University of Melbourne with the Swanston Street bike route on Leicester, Pelham and Bouverie streets and Lincoln Square South.

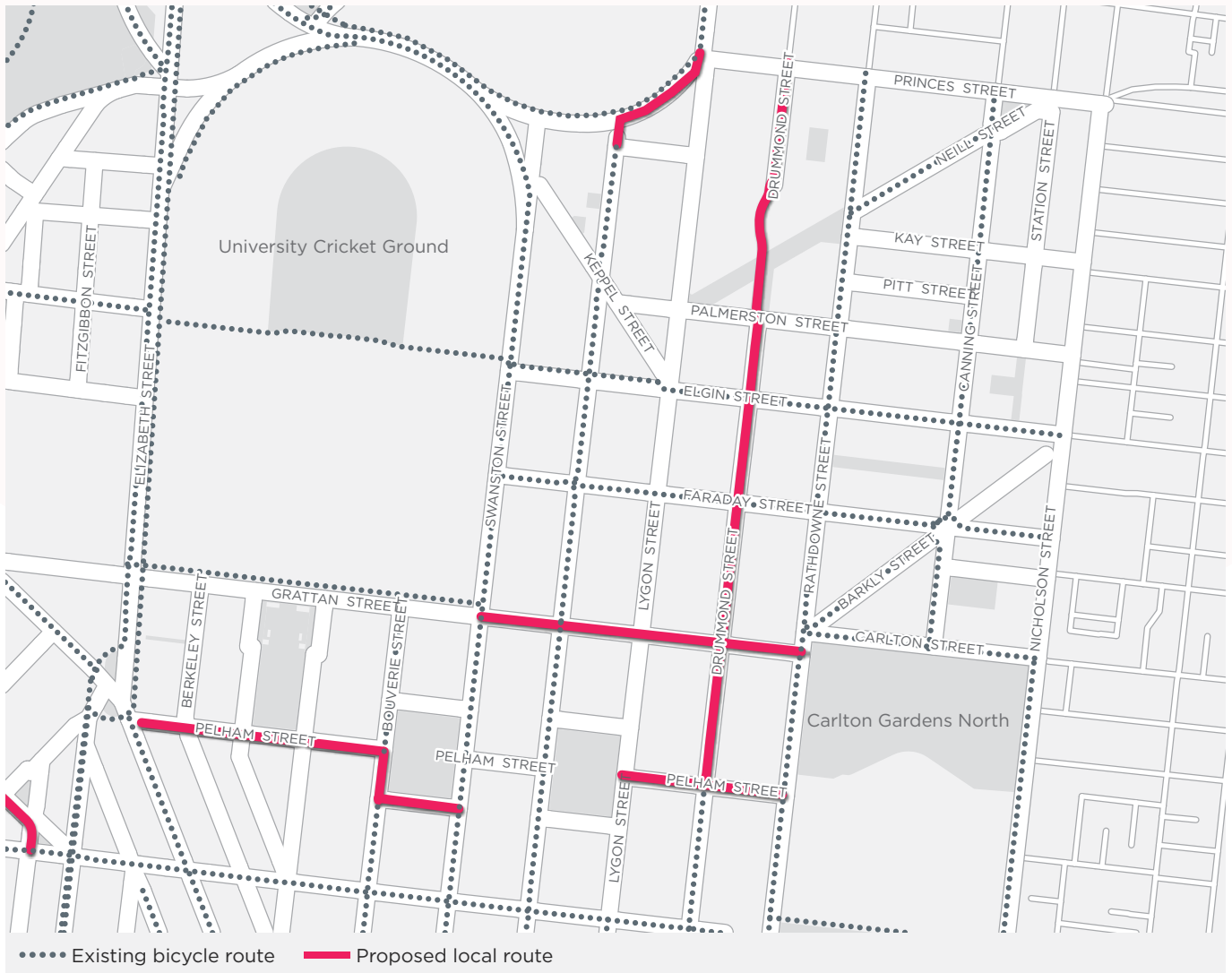


Figure 13: Map of existing and proposed local routes in Carlton

Southbank

There are few existing bicycle routes through Southbank as an alternative to the busy shared space on Southbank Promenade. The City Road Masterplan highlights a need for strengthening links from areas of high density living in Southbank into the central city and to local community facilities. Proposed improvements include:

- connecting the Capital City Trail and off-road bicycle routes to University of Melbourne campus on Southbank Boulevard
- connecting residents to Boyd Community Centre on Kavanagh and Balston streets
- connecting bicycle route on Dodds Street to link Coventry Street to University of Melbourne Southbank Campus.

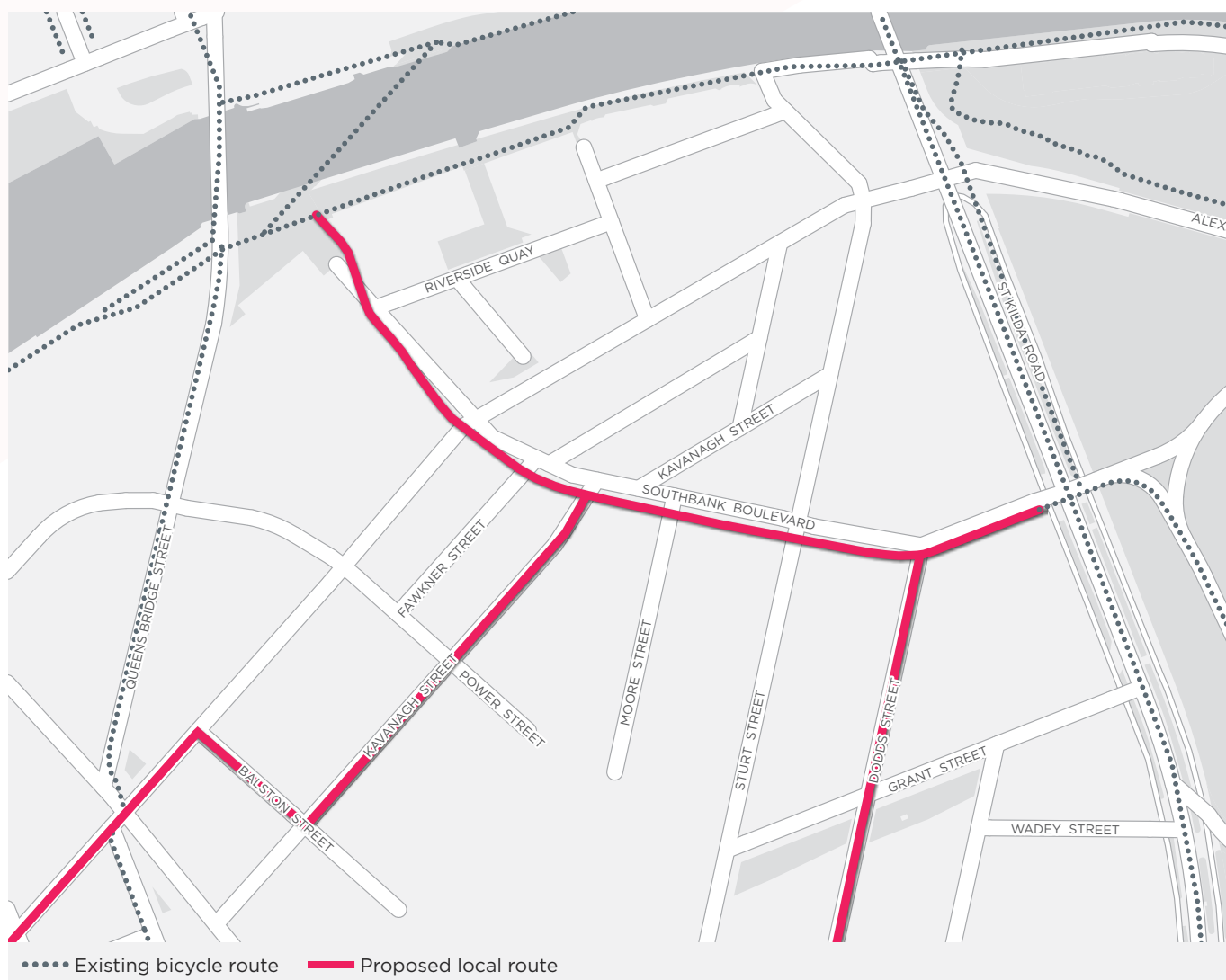


Figure 14: Map of existing and proposed local routes in Southbank

Local roads

In addition to the routes in local areas the following projects have been suggested by stakeholders and community members.

Table 8: Projects on local roads

PROJECT	LOCATION	DESCRIPTION
1.	Anderson Street	Install bicycle lane as link to Morrel Street Bridge
2.	Arden Street	Upgrade Macaulay Road to Howard Street
3.	Barkly Street	Improve connections from Rathdowne Street and Barkly Street to assist riders travelling to and from Canning Street
4.	Cardigan Street	Upgrade bicycle lane, particularly access to bike hub near Victoria Street
5.	Clarendon Street, East Melbourne	Improve link from Clarendon Street to encourage riders to use Jolimont Terrace to access Yarra Park and Melbourne Park
6.	Dorcas Street	Work with City of Port Phillip to complete Dorcas Street connection from St Kilda Road to Kings Way. Investigate hook-turn from St Kilda Road once route is complete
7.	Elizabeth Street	Investigate upgraded bicycle route from Victoria Street to La Trobe Street as part of Queen Victoria Market Precinct Renewal Master Plan development
8.	Elizabeth Street	Investigate bicycle-friendly environment between La Trobe Street and Flinders Street
9.	Exhibition Street	Investigate options for full-time bicycle lanes by completing traffic modeling studies
10.	Franklin Street and New Franklin Street	Prioritise bicycle-friendly route as part of Queen Victoria Market Precinct Renewal Master Plan development
11.	Grattan Street	Investigate potential to improve bicycle route from Flemington Road to Swanston Street in conjunction with Melbourne Metro project and potential changes to bus route
12.	Nicholson Street	Investigate transition from Gertrude Street to Museum Road with other partners
13.	Queensberry Street	Complete link to Rathdowne Street intersection on north side

Off-road routes

The City of Melbourne's off-road network consists of various types of cycling environments. They include:

- shared zones (walkers, riders and other vehicles in a low speed environment)
- shared paths (stencils and signs for walkers and riders to share)
- segregated paths (line marking for separate areas for walkers and riders)
- unsigned public spaces.

The following off-road routes have been suggested by stakeholders and community members.

Table 9: Projects in off-road locations

PROJECT	LOCATION	DESCRIPTION
1.	Carlton Gardens	Investigate improvements to the shared path including lighting and other safety measures. Improve connections between Spring Street and Canning, including crossings at Gertrude and Carlton streets
2.	Chapman Street Reserve	Upgrade connections for people riding bikes from Harker Street to Courtney Street as part of any greening opportunities in this area
3.	Fawkner Park	Construct a cross-over on Commercial Road and improve entry to park
4.	Harbour Esplanade	Investigate alternate options for slowing bicycles at pedestrian crossing points. Review existing speed humps
5.	Northbank	Investigate options for bicycle-friendly infrastructure in Banana Alley section and improve wayfinding, crossings, shared path signage, linemarking and lighting between Jim Stynes Bridge and Birrarung Marr
6.	Railway Place and Miller Street Reserve	Complete underpass and park upgrade which will enhance cyclist safety between Laurens Street and Railway Place
7.	Ron Barassi Senior Park	Provide connections for people riding bikes to Docklands Drive and existing bike paths
8.	Royal Park	Upgrade links through Royal Park to provide access from West Brunswick to Capital City Trail
9.	Royal Park	Construct new path on west side of tram track to provide access to Abbotsford Street
10.	Royal Park	Work with the Victorian Government over the longer term to construct new bridges over Upfield Railway Line near Ryder Oval and State Netball and Hockey Centre

Gardens and parks

Gardens focus on the presentation and enjoyment of horticultural features and passive recreation activities. Gardens in the City of Melbourne such as Fitzroy Gardens, Carlton Gardens and Flagstaff Gardens are visited by thousands of international tourists, who are not familiar with the environment, and are not alert to cyclists. For these reasons, cycling is usually restricted within gardens. Families with children under 12 are permitted to cycle in gardens, acknowledging that children need somewhere safe to practice riding that is not on a street. It is a resolution of Council that riding is not permitted in gardens, but is generally allowed in parks.

Parks are used for a broader range of recreational activities, including organised sport. Although there are restrictions on cycling in some parks, cycling is consistent with the broader active use objectives of Melbourne's parks. Cycling is permitted in Royal Park, some paths in Fawkner Park, and in Yarra Park. Masterplans for these parks detail where cycling facilities are provided for example the jogging track around Princes Park and the Tan Track in Kings Domain are not a shared path in order the help manage conflict with the thousands of walkers and joggers who use the track. At Princes Park bicycle facilities include an asphalt shared path along Royal Parade to the west of Princes Park and on-road bike lanes on Princes Park Drive to the east of Princes Park.

In many areas of the off-road environment, such as in Fawkner Park and Royal Park the space is shared, and walkers and cyclists are required to be mindful of each other. People riding bikes are often traveling at high speed and do not warn walkers of their approach. Walkers often do not take the most direct route and can be distracted by others or mobile or music devices. City of Melbourne programs to Share Our Streets seeks to remind people of the etiquette of sharing. This program will also be applied to shared spaces in parks in the municipality.

Shared zones and spaces

Many shared zones and spaces exist across the municipality. These are integral to the bicycle network and provide connectivity and safe travel alternatives for people to ride bikes.

Shared zones and spaces are categorised into four main types:

- **formal shared zones** – pedestrians, cyclists and vehicles share the roadway. The typical speed limit in Melbourne's shared zones is 10 km/h. The beginning and end of shared zones is defined by signs and motorists and cyclists must give way to pedestrians at all times throughout the zone. Most shared zones are found in the laneways and smaller streets of the central city. Examples of shared zones include Hardware Lane and Degraeves Street. We are progressively expanding the shared zone network to meet council goals of a city for people and a connected city.
- **formal shared paths** – are public spaces designated for use by both walkers and bike riders. They are identified by the image of a pedestrian and a bike on pavement stencils and signs. People riding bikes must give way to walkers on shared paths and must keep to the left unless it is impractical to do so. An example of a shared path is the eastern footpath of Royal Parade, adjacent to Princes Park.
- **segregated paths** – have separate spaces for people walking and riding. They are normally found in areas where sufficiently wide footpaths or promenades exist. The separation of people walking and riding bikes helps to optimise safety in busy environments. Examples of these facilities include the western promenade in Harbour Esplanade at Docklands and the eastern footpath of Princes Bridge.

- **unsigned spaces** – the main example of this is the Southbank Promenade space on the south side of the Yarra River. This area is popular with cyclists, both as a commuter and recreational route. It is also a very busy pedestrian area and major tourist attraction. The space is occasionally used by motorised vehicles for servicing and deliveries. Advisory signs of 10 km/h have been installed to promote the safe sharing of the space by all users.

The City of Melbourne continues to manage these areas to minimise potential conflict between cyclists, vehicles and walkers. The City of Melbourne has received considerable community comment on the discomfort and perceived danger of walkers sharing with people riding bikes. People with disabilities, the young and the elderly are particularly vulnerable, and some report avoiding these areas.

On busy shared spaces it is desirable to separate facilities wherever possible. This is a preference of both walkers and people riding bikes. Where feasible, alternatives for commuter cyclists will be investigated. Alternatives that are being developed for commuter cyclists on Southbank Promenade are Southbank Boulevard, Kavanagh Street, Balston Street and City Road. In the longer term a floating pontoon path will be investigated for the narrow sections of the Yarra Corridor. This is a design that has been successful applied upstream at Burnley. In other areas lowering speed limits on adjacent roads to encourage faster cyclists to move away from walkers will be considered.

We will also implement physical infrastructure measures such as advisory signage, linemarking, colour/texture, speed humps and design meandering, rather than straight paths, so people can intuitively assess the appropriate speed based on the environment. This is a similar principle to the way roads are now being designed.



Figure 15: Share our Streets program at Southbank

The City of Melbourne will continue its Share Our Streets safety program to establish a stronger culture of sharing between walkers and people riding bikes. The engagement is consistent with Victoria Walks¹³ recommendations for shared paths. Cyclists should be encouraged to ride at slow speeds, notify walkers of passing by calling out or ringing a bell and giving way to people walking. For walkers emphasis should be to keep to the left, be alert to surroundings and being aware when changing direction.

Together with the Victorian Government, the City of Melbourne will continue to provide shared zones and spaces as safe routes for people to ride bikes in an off-road environment. These environments are particularly suitable for visitors not familiar with Australian roads, families and cautious cyclists, but care should be taken to also support vulnerable walkers.

Actions

The City of Melbourne will:

- work with VicRoads to update and align the network operating plan for 2016–2020
- implement guidelines and level of service in the planning and design of the bicycle network
- apply a level of service assessment to determine streets in the central city that most are most preferred by cyclists
- work with VicRoads to have new level of service criteria used in Network Fit Assessments to provide a more accurate representation of the benefits of bike lane improvements
- work with VicRoads to plan and implement cycling corridors and upgrades to arterial roads, as listed
- seek external funding for major bicycle projects, as listed
- plan and implement local neighbourhood routes and upgrades on local roads, as listed
- plan and implement off-road paths, as listed
- continue to develop alternatives to busy shared zones and spaces and implement physical and behavioural measures to increase safety
- continue to raise awareness of the rules of shared spaces and the etiquette of bicycling amongst others.

3. FACILITIES FOR BICYCLES

Goal: Bicycle-friendly facilities to make it easy to travel by bike and park

Targets: Increase bicycle parking by 2,000 in key public locations and planning for large scale, safe parking facilities at transport hubs will be progressed

Construct bicycle maintenance stations at entrances to the city

A recent study¹⁴ provides strong evidence that access to appropriate bicycle parking and end-of-trip facilities, such as change rooms, showers and lockers, play an important role in whether people decide to ride. More than half of respondents said the availability of end-of-trip facilities affected their decision to ride to work in difficult or unpredictable weather conditions. Visible, secure, well-located and easy to access bicycle parking can remind and inspire people of the convenience to ride to many destinations.

On-street bicycle facilities

Bicycle parking complements the investment in the on-road and off-road cycle network. Visible and convenient parking highlights the choice to ride a bike as a cheap and sustainable transport option and a viable alternative to private car travel.

The City of Melbourne has continued to respond to the high demand for bicycle parking space in popular destinations, such as public places, entertainment and retail precincts, by installing approximately 200 on-street bicycle hoops each year. Over 3,000 on-street bicycle hoops in the municipality cater primarily to cyclists engaging in short trips to shopping and entertainment destinations, many of these double as protection for trees. Higher numbers of available hoops has seen a slight reduction in people locking their bikes to posts and street furniture.



Figure 16: Bicycle parking hoops in the municipality

Large scale bicycle parking facilities close to public facilities and tertiary education precincts attract a high number of bikes. Secure locks and natural or security camera surveillance are crucial for on-street locations.

Opportunities exist to increase bicycle parking throughout the municipality in selected high usage locations. Evidence from a site near Lygon Court in Carlton and international studies, suggests that replacing on-street car parking with bicycle facilities has had a positive impact on local businesses. While cyclists tend to spend less per shopping trip than drivers, they also make more trips, increasing expenditure in the local economy over time. The larger number of cyclists accommodated by the space previously allocated to a single car parking space results in higher overall spending. The City of Melbourne will undertake an economic study to evaluate the success of any new on-street parking initiatives. Repair facilities and stations should be included at regular intervals in networks (within 1km of each point) to provide support for cyclists using the networks. The following locations for on-street bicycle parking have been suggested by stakeholders and community members.

In determining the location for additional bicycle parking hoops, the City of Melbourne will undertake an annual review of requests for more bicycle hoops via the City of Melbourne's Pathway system and will ensure that new hoops are located close to public facilities and retail and entertainment centres, as well as popular destinations that provide stronger natural surveillance.

There are opportunities to install more bicycle hoops adjacent to parks and gardens. Placing bicycle parking facilities on streets or the edge of parks makes them visible to people who want to cycle and identifies a consistent approach to the entrances to parks and gardens. Increasing their visibility makes them easy to locate, reduces the opportunity for theft and makes them easily accessible. It also helps to reinforce the pedestrian priority use of gardens as spaces. In parks the provision of bicycle hoops near pavilions and clubs encourages people to ride bikes to these destinations. Suggested locations include Royal Park, Princes Park and Fawcner Park. These actions will be included in park Masterplans wherever possible.

14 Ahmed et. al. 2012



Bicycle hubs

The City of Melbourne has supported the installation of bike hubs at City Square Car Park and RMIT. Hubs feature secure parking, showers and change facilities. Private hubs are also located in Building 80 at RMIT and have previously operated along the Yarra River. We will continue to support building managers and commercial car park operators to provide secure parking facilities for people riding bikes.

Provision of more bicycle parking at railway stations will facilitate riding to or from train stations. We will work actively with the Department of Economic Development, Jobs, Transport and Resources (DEDJTR), and Public Transport Victoria (PTV) to improve bicycle facilities at stations, including planning for secure, undercover parking and connecting lanes at new Melbourne Metro stations.

Figure 17: Bicycle parking in Pelham Street, Carlton to service University of Melbourne buildings

Table 10: Potential new locations for on-street bike parking

PROJECT	LOCATION	DESCRIPTION
1.	A'Beckett Street	Bike corral near RMIT Building 80 to support student population
2.	Bourke Street	Hoops at end of tram stop near Royal Lane to encourage people to dismount and near Spring Street
3.	Domain Road	Bike corral in front of cafes to support retail and entertainment
4.	Federation Square	Work with property manager to increase hoops to support public events, retail and entertainment
5.	Flinders Street	Bike corral near public toilet to support Degraes Street and station
6.	Therry Street	Bike corrals at Queen Victoria Market
7.	University of Melbourne	At entrances and in South Carlton precinct to support active travel
8.	Little streets in the city	Bike corrals in association with streetscaping and kerb extensions
9.	Exhibition Street	Bike corrals to support park and walk outside times of bike lane operation

End-of-trip facilities

End-of-trip facilities such as change rooms, showers and lockers are primarily the responsibility of businesses, workplaces and other major organisations. A recent survey of 280 tenants by commercial real estate company Colliers International found that tenants considered bicycle parking and end-of-trip facilities to be more important in retaining staff than car parking – in contrast, in 2008 tenants considered car parking to be the more important factor.

Studies by government agencies around the world have found significant benefits for employers, schools, universities and other organisations who provide best-practice end-of-trip facilities, including: a healthier, happier workforce or student body; higher productivity and better attitudes towards work; reductions in absenteeism; reduced car parking demands and associated costs; reduced work/study time lost from traffic congestion; and an improved environmental and healthy image for the organisation.

We will continue to work with business associations and companies to provide their workers with end-of-trip facilities within their buildings.

Bicycle security

Bicycle theft in Victoria is at a five-year high¹⁵ representing a significant cost to the community. Over the last five years 3,442 bikes have been reported stolen within the City of Melbourne¹⁶, up 70 per cent from the previous period, with many more cases unreported. Victoria Police suggest many thefts would be preventable through basic knowledge of security. An audit of city streets identified that a large percentage of bikes locked up within the central city were secured using ineffective locks. Particularly vulnerable is the international student community accounting for one in every five residents of the City of Melbourne. International students' lack of local knowledge and perceptions of community safety can increase their vulnerability and exposure to theft and educational institutions are a major



Figure 18: Wayfinding signage design

target for thieves. The 20–29 year old age group report more instances of bike theft than any other¹⁷.

Joint programs with the City of Melbourne, Victoria Police and Bicycle Network have directly engaged with international students and tertiary institutions to raise awareness of bike theft and subsequently influence behaviour. Tags were placed on these bikes with a message about securing bikes and directing people to secure parking such as those provided by RMIT Building 80 secure bike room with key card entry.

Issues of bicycle theft have also been identified by City of Melbourne in public housing estates¹⁸, and progress is being made through the Public Space Improvement Project (PSIP) to advocate for secure bike storage facilities on public housing estates and around community facilities. Secure parking, combined with community activities such as the Wheelie Good Day at Melrose Street, assist to raise awareness of bike security, maintenance and personal safety in these locations.

Signage, signals and other support for cyclists

The installation of way-finding signage, signal priority treatments, maintenance stations and other support measures for cyclists is aimed at creating a holistic support system for people to ride bikes. It will help bike riders find their way around Melbourne safely, efficiently and intuitively and direct and support them on main routes. The City of Melbourne's objective is to deliver a comprehensive system that enables cyclists to confidently navigate without the need to read a map or use mobile devices on a bike, which can be difficult, distracting and hazardous.

15 Butt and Dow 2014

16 Crime Statistics Agency Victoria 2015

17 Crime Statistics Agency Victoria 2015

18 Capire 2015

Way-finding

The City of Melbourne has directional signage on most main bicycle routes. These comprise mainly of fingerpost-style directional signs. Recently VicRoads has developed consistent statewide standards. The City of Melbourne is installing and replacing signs according to this standard.

On off-road routes such as the Capital City Trail, a review of way-finding was undertaken and directional signage with distances to major destinations have been installed. These are complemented by pavement decals that are in an easier sightline for moving cyclists.

More way-finding options can be put in place to assist new and existing cyclists to feel more confident to ride a bike. Consideration will be given to strategies to guide people to popular destinations, update them on their progress and give an indication of the level of service or quality of the route. Way-finding will also be used to assist new cyclists to find bicycle friendly roads and streets (should it be their preference).

We will work with adjoining municipalities and tourism, business and retail associations to include way-finding for bicycles as part of a city-wide way-finding strategy. This will include links to the bike share. The following way-finding projects have been suggested by stakeholders and community members.

Signals

Bicycle traffic signal lanterns are provided on key bicycle routes such as Swanston Street and Canning Street. All traffic signals are managed by VicRoads. Lanterns showing a bicycle symbol, combined with bike boxes at intersections, allow people riding bikes to start early at traffic lights. This arrangement assists to make people on bikes more visible to motor traffic, reduce the potential for conflict with vehicles and allows safer progress through busy intersections.

So as to complement priorities for pedestrians and public transport, there is potential to install more early start bicycle lanterns at signalised intersections on priority bicycle routes.

The following signal projects have been suggested by stakeholders and community members.

Table 11: Priority way-finding projects

PROJECT	LOCATION	DESCRIPTION
1.	Between bike share stations	Sign key routes between stations and destinations (also noted previously under 'wayfaring')
2.	Birrarung Marr	Signage to navigate from Swanston Street to Exhibition Street as an alternative to Flinders Street
3.	Capital City Trail	Continue to work with adjoining municipalities and land managers in Southbank, Northbank and Docklands on consistent way-finding and advisory signs
4.	Cycling corridors	Signage and decals consistent with way-finding strategy
5.	La Trobe Street – Albert Street connection	Signage and decals to navigate between quality routes on La Trobe Street and Albert Street and avoid Lonsdale Street bus route
6.	North Melbourne shimmy	Install way-finding for route through local streets of North Melbourne to the city as an alternative to Flemington Road
7.	Northbank	Develop improved way-finding from Jim Stynes Bridge to Birrarung Marr
8.	William Street	Signage to navigate to William Street as an alternative to King and Spencer streets

Table 12: Priority early start signal projects to be developed in collaboration with VicRoads

PROJECT	LOCATION	DESCRIPTION
1.	Albert Street	<ul style="list-style-type: none"> Establish green wave signal timing coordination reduce travel times for cyclists riding at approx. 15–20km/h to moderate cyclist speeds on downhill sections
2.	Collins Street	<ul style="list-style-type: none"> Early starts for people walking and riding bikes at all intersections
3.	Collins Street and Macarthur Street	<ul style="list-style-type: none"> Early start westbound for bikes to enter narrow Collins Street carriageway ahead of other vehicles
4.	Haymarket roundabout	<ul style="list-style-type: none"> Investigate early starts for bikes to establish themselves in existing lanes in front of motor vehicles, particularly for northbound cyclist travelling between Elizabeth Street and Royal Parade
5.	Haynes Street and Curzon Street	<ul style="list-style-type: none"> Install early start to assist people riding on North Melbourne local route and for children to get to school
6.	Southbank Boulevard	<ul style="list-style-type: none"> Investigate green wave signal timing coordination for cyclists as part of redevelopment
7.	Swanston Street north	<ul style="list-style-type: none"> Investigate changes to sequences to give walkers, cyclists and trams priority

Bicycle pumps and maintenance stations

The City of Melbourne's Share Our Streets road safety program offered bicycle checks to promote bicycle safety to people riding bikes. Mobile mechanics operated during the morning peak to engage with cyclists and ensure their bike was in good working order. Mandatory fittings such as bike bells and lights were given away.

To promote bicycle safety, encourage people to ride and provide a relaxed stopping point, it is proposed several pumps and maintenance stations are installed at key entrances to the city and on highly utilised routes.

Subject to further investigations relating to services and surveillance, public bike pumps are proposed at:

- Queensbridge Square near public bikes
- Yarra's Edge near Webb Bridge
- Harbour Esplanade near La Trobe Street
- Birrarung Marr, Art Play near public toilets
- Swanston Street, RMIT near public bikes
- Rathdowne Street, Melbourne Museum near public bikes
- Bike maintenance stations at:
 - Harbour Esplanade
 - Birrarung Marr
 - Queensbridge Square.

Sites in the vicinity of Moonee Ponds Creek will also be examined for possible bike pump placement. Where possible the stations will be combined with drinking fountains to create a hub where people can stop, chat, relax and "refuel" before progressing at a slower speed. At times bicycle mechanics could be present to engage with cyclists and give them tips on maintenance and tips on slowing down and sharing public spaces. A maintenance schedule will be established for the bike pump stations.

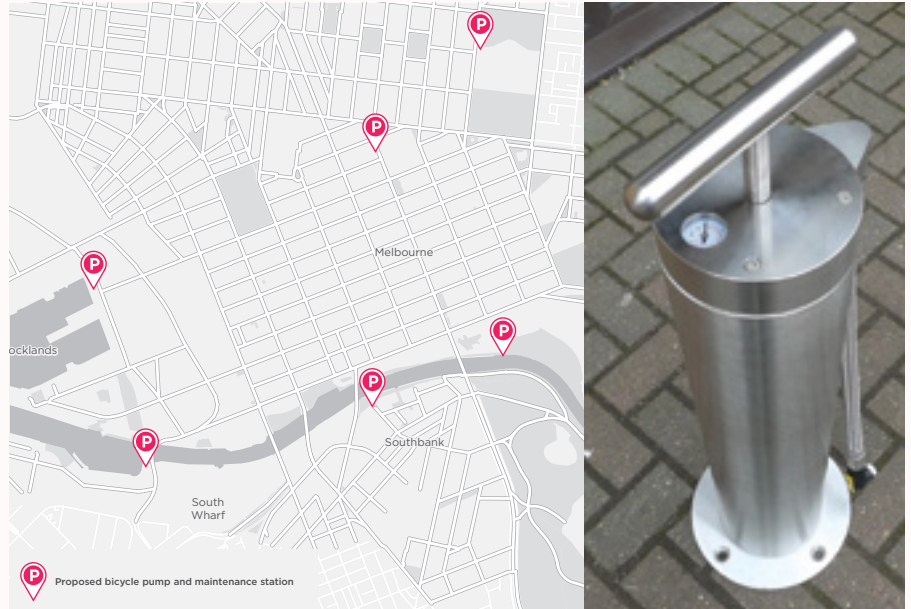


Figure 19: Proposed locations for bicycle pumps and maintenance stations

Other support

The City of Melbourne has installed green pavement, bicycle boxes and vibra-line rumble strips on quality bicycle routes. Green pavement with white bicycle stencils has been installed at conflict points where driveways, laneways or streets intersect with a bicycle lane or on the approach to intersections and where motorists may be changing lanes or preparing to turn left.

Pavement stencils could also be used as effective complementary aids to the new way-finding signage, particularly to encourage cyclists to choose bicycle friendly routes.



Figure 20: Example of pavement stencil designs

Melbourne Bike Share

The Melbourne Bike Share scheme, an initiative of the Victorian Government commenced in May 2010. The City of Melbourne works in collaboration with the contractor Royal Automobile Club of Victoria (RACV) and the Victorian Governments' agent Public Transport Victoria (PTV) to manage existing sites and identify future sites for bike share stations within municipality.

There are 51 bicycle stations with over 600 bicycles operating in the inner city. The stations are mostly located within the City of Melbourne with some in adjoining municipalities.

The City of Melbourne will continue its strong support for the Bike Share scheme working with PTV and other stakeholders to facilitate and encourage further expansion of multi-modal transport opportunities including greater use of Bike Share for commuting within the central city.

Actions

The City of Melbourne will:

- increase on-street bicycle parking by 2000 hoops in key locations
- provide bicycle parking facilities at the entrances and key destinations in parks including at park entrances and pavilions and clubs
- work with the Victorian Government to provide end of trip facilities at major transport hubs especially planned Melbourne Metro stations
- encourage businesses to provide secure bike parking and end-of-trip facilities in buildings
- locate on-street bicycle parking in areas with active or passive surveillance
- remove abandoned bicycles as a deterrent to theft
- advocate for secure bike storage facilities on public housing estates and, in and around, community facilities
- work with Victoria Police to raise awareness of safe parking facilities and practices for locking bikes
- support targeted awareness and educational programs to raise awareness of bike theft and security particularly around tertiary institutions
- develop a way-finding strategy in consultation with business and tourism stakeholders
- provide green wave, early starts and bike boxes for bike riders on cycling corridors
- install maintenance stations and bicycle pumps at key entrances to the city
- support Melbourne Bike Share.

4. A SAFER ENVIRONMENT TO RIDE BIKES

Goal: A safer environment for people to ride bikes

Target: Zero fatalities or serious injuries.

The Australian and Victorian Government Safe Systems approach states that no death or serious injury is acceptable on our roads. The City of Melbourne continues to work in partnership with all levels of government and key stakeholders to make this statement a reality. Our Road Safety Plan 2013–17 outlines actions to welcome and support vulnerable roads users including people riding bikes, through world leading road safety practices. We use evidence from research and statistical information such as VicRoads CrashStats to identify physical and behavioural issues and partner with VicRoads and the Traffic Accident Commission (TAC) to develop road safety programs to support people to ride bikes.

Crash statistics

The total number of reported crashes involving people riding bikes in the municipality has been fairly consistent since 2009 (Table 13). Over the same period, the population and number of people visiting the city has grown to a point where almost a million people come into the central city each week day. The number of people cycling in the city has almost doubled since the beginning of this period.

Bike crashes per cyclist have reduced consistently and significantly by almost 50 per cent since 2009. This reduction has been significant since 2012 when bicycle-friendly projects such as the Swanston Street redevelopment and La Trobe Street, St Kilda Road, and Princes Bridge separated bicycle lanes were completed.

Table 13: Crashes involving injury to cyclists in the City of Melbourne by year (Source: VicRoads CrashStats)

YEAR	FATAL	SERIOUS INJURY	OTHER INJURY	TOTAL
2009	0	68	153	221
2010	1	58	181	240
2011	1	72	206	279
2012	0	57	161	218
2013	1	69	175	245
2014	0	68	164	232

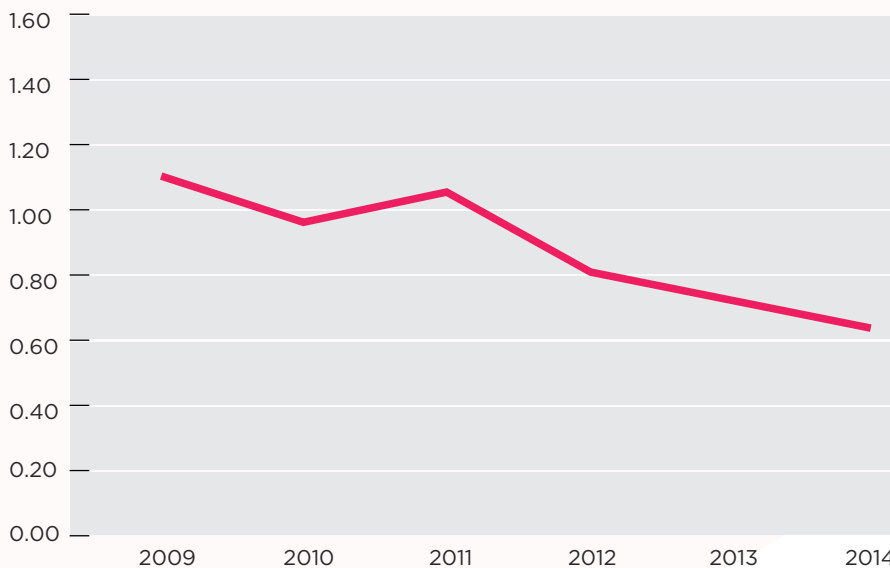


Figure 21: Bicycle crashes per cyclist (indexed per 10,000 cyclists recorded in the morning peak)

Note: Cyclist volumes are based on City of Melbourne surveys conducted at 19 locations in March during the morning peak (7–10am), crash numbers are per calendar year from VicRoads CrashStats database. As the cyclist volumes only include a sample of cyclists riding in the municipality, the graph provides only a comparison of improvement in regards to crashes per cyclist. The graph does not indicate the actual percentage likelihood of a cyclist actually being involved in a crash.

Table 14 shows the most frequent type of crash involving people riding bikes in the municipality is when a cyclist collides with an open door of a vehicle, commonly known as car-dooring. The proportion of car-dooring crashes is lower for 2012-14 (20%) than it was for the previous bike plan period 2007-11 (23%). Despite bike numbers increasing significantly, the total number of car-dooring crashes per year is lower for 2012-14 (46 per year) than it was for 2007-11 (52 per year). Bike lane projects which have increased separation between cyclists and parked vehicles and complementary education programs are likely to have contributed to the drop. They include kerbside separated bike lanes, such as La Trobe Street, Albert Street, Elizabeth Street North and St Kilda Road southbound and also chevron separated bike lanes such as Clarendon Street, William Street, Victoria Street, Swanston Street North and Princes Bridge.

Table 14: Type of bicycle crashes in the City of Melbourne

DESCRIPTION (CRASHSTATS IDENTIFICATION NUMBER)	2007-2011 NUMBER PER YEAR	2007-2011 PER CENT	2012-2014 NUMBER PER YEAR	2012-2014 PER CENT
Collision with an open door of a vehicle (163)	52	23%	46	20%
Right-through (121)	23	10%	33	14%
Left-turn sideswipe at intersection (137)	22	10%	26	11%
Lane side swipe in parallel lanes (133)	14	6%	11	5%
Cross traffic and far and near at intersections (110,111,112,113,116)	25	11%	26	11%
Out of control on carriageway (174)	15	7%	15	6%
Vehicles off footpath strikes vehicle on carriageway (148)	9	4%	11	5%
Vehicle emerging from driveway (147)	4	2%	3	1%
Other	59	26%	59	26%
Total	224	100%	229	100%

Crashes at intersections, including right-through and left-turn sideswipe crashes, have increased over time as shown in Table 15. Mid-block crashes involving car-dooring and side-swiping have decreased over the same period.

Table 15: Intersection and mid-block crashes per year

DESCRIPTION (CRASHSTATS IDENTIFICATION NUMBER)	2007-2011 CRASHES PER YEAR	2012-2014 CRASHES PER YEAR
Intersection crashes (per year) (110, 111, 112, 113, 116, 121, 137)	70	85
Mid-block crashes (per year) (133, 163)	65	57

Figure 22 shows the most common crash locations for bicycles in the City of Melbourne during the period of the last bicycle plan.

Crashes remain high in the street section of Swanston Street between Princes Bridge and the vicinity of Flinders Street Station. The number of car dooring crashes involving people riding into the city on Princes Bridge has decreased significantly since the separated bike lane was installed on the bridge in June 2013. There were eight crashes involving opening car doors before the lane and one car dooring since June 2013. Bike volumes have increased significantly in this location in recent years.

Nine crashes have been recorded on La Trobe Street between Queen and Swanston streets since 2012. This section of La Trobe Street is steep and the majority of bike crashes involved cyclists travelling downhill towards Elizabeth Street. The crashes are likely to be attributable to motorists misjudging the high speeds of people riding bikes in these sections of La Trobe Street (30–35km/h for the 85th percentile).

High crash locations will be regularly audited to identify road safety improvements.



Figure 22: Location of bicycle crashes in the City of Melbourne 2012-14 (Source: VicRoads CrashStats)

Intersections

Evidence showing an increasing number of crashes at intersections is consistent with community feedback about people's perception of safety around intersections, particularly where bike lanes narrow or disappear on the approach to intersections. Constantly improving intersection design and safety is one way actual and perceived safety for people riding bikes can be improved.

The City of Melbourne will work with VicRoads to provide a better level of service for bicycles at intersections particularly on cycling corridors. Controlled turns (traffic signal arrows), advanced head-start bike lanterns and protected intersection designs, such as those illustrated in Figure 23, will be investigated and trialled subject to VicRoads approval. The protected intersection design aims to reduce motorists' turning speeds to less than 20km/h and improve turning motorists' vision of cyclists and pedestrians by 'squaring up' left turning vehicles at the point of potential conflicts with motorists. All movements are intended to be signalised.

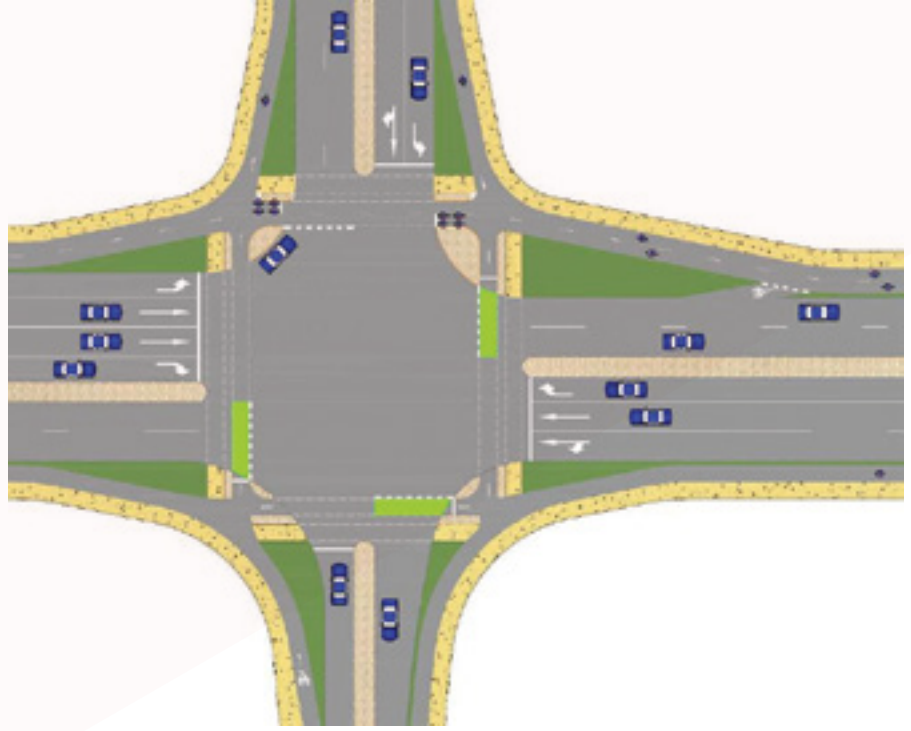


Figure 23: Protected intersection design

Mid-block crashes – car-dooring, side-swiping, driveways

The reduction of mid-block and car-dooring crashes shown in Table 15 can be partially attributed to the physically-separated bike lanes which were installed between 2007 and 2014 in:

- Albert Street;
- La Trobe Street;
- St Kilda Road – southbound; and
- Elizabeth Street.

Other bike lane improvements that have assisted to reduce car dooring include:

- Princes Bridge – northbound (chevron line marking, to address car-dooring where passengers were alighting from vehicles when stopped in traffic)
- Clarendon Street, East Melbourne (double chevron)
- Swanston Street north (double chevron)
- William Street, Melbourne (mixture of single and double chevron)
- Victoria Street, West Melbourne (double chevron).

Studies¹⁹ have proven that the double chevron bike lane designs which include painted chevrons adjacent to parked cars assist people to ride outside the car-dooring zone more often.

The City of Melbourne has worked on both physical and behavioural initiatives to reduce car-dooring. The Share our Streets road safety program has quantified driver awareness of car-dooring and provided tips to avoid opening a door into the path of a person riding a bike, such as encouraging people driving cars to open the door with their left hand to assist them to look out for people riding bikes motorists look for approaching cyclists. Work is continuing, particularly with frequent drivers such as taxi drivers and couriers, to end car-dooring.

Awareness of drivers to keep a safe distance when driving past bike riders has been raised through the Amy Gillett Foundation's, a metre matters campaign. This awareness may have contributed to the reduction in side-swipe mid-block crashes. Queensland's two-year trial requiring motorists to leave a metre when overtaking bike riders at speeds of up to 60km/h and similar measures in the Australian Capital Territory and South Australia assist to raise awareness of side-swiping.

Mid-block crashes remain high where there are driveways with a high volume of people crossing bike lanes. This issue seems to occur where there are car parks and people on bikes travelling downhill on the improved physically-separated bike lanes where they have a perceived feeling of safety. La Trobe Street and Albert Street have a high number of recorded mid-block crashes on downhill stretches and conditions could be improved through video detection with a warning or no right turn or controlled right turns at exits. These aids are in the process of being installed in other locations such as the Melbourne Museum car park in Rathdowne Street, Carlton.

There are a high number of mid-block crashes where vehicles are parked close to tram tracks in Swanston Street between Flinders Street and Flinders Lane. This location should be investigated further and recommendations implemented.

Speed limits

Research²⁰ indicates that lower speeds, especially those below 30km/h, drastically lessen the risk of fatalities. The fatality risk for people involved in crashes with vehicles traveling at 50km/h is more than twice as high as the risk at 40km/h and more than five times higher than the risk at 30km/h. Recent speed limit reductions for streets and suburbs in the municipality are shown in Table 16.

We will work to reduce speed limits to reduce speed differentials where people riding bikes and other vulnerable road users mix with motorised vehicle traffic. Speed reductions are being investigated for Melbourne's boulevards including Royal Parade and Elizabeth Street. We will continue to investigate these and other opportunities recommend speed reductions to VicRoads across the municipality to improve safety for people riding bikes and other road users.

Table 16: Streets and areas with recent speed reductions

LOCATION	PREVIOUS LIMIT	NEW LIMIT
Hoddle grid, Melbourne central business district	50km/h	40km/h
Rathdowne Street, Carlton	60km/h	40km/h
Kensington, all local streets	50km/h	40km/h
Parkville South, all local streets	50km/h	40km/h
Errol and Queensberry streets, North Melbourne (part)	60km/h	40km/h
Elgin and Faraday streets, Carlton (part)	60km/h and 50km/h	40km/h

Perception of safety

Analysis of CrashStats provides information about the actual safety of people riding bikes, but peoples' perception of how safe it feels to cycle has an impact on their willingness and frequency to cycle. Community feedback suggests that people can be put off cycling by the perception of danger. One in four respondents from our survey in May 2015 said safety was the main concern for them to take up cycling or cycle more frequently. Councils' Perception of Risk survey (2013)²¹ in relation to risk of accidental injury cites the highest proportion of respondent's perceived they were at most risk of accidental injury when using bike lanes (18 per cent never or rarely feel safe). People felt that the main issues were drivers endangering cyclists, there being too much traffic and drivers not giving way. Peoples' gender and age can also affect their perception of safety. To meet our objectives of improving health and mobility of our residents and visitors both actual and perceived safety issues must be addressed.

Studies²² have found that even people happy to ride on busy roads themselves are generally not keen to ride there with their children. Education is required in support of the introduction of minimum passing distances when motorists are overtaking cyclists. The City of Melbourne will also investigate possible support for legislation in this area. A network of routes that are both safe and perceived to be safe, will maximise the number of riders, and should be our aim. Measures that increase actual and perceived safety are:

- substantial separation from motor traffic
- separation from parked vehicles
- off-road routes
- streets closed to through motor traffic
- minimum distances for motorists overtaking bike riders.

Safety programs and safer behaviour

The Share our Streets program, an initiative of the Road Safety Plan 2013-17 worked to change the behaviour of drivers to look out for people riding bikes and avoid car-dooring crashes. The program also worked to raise awareness of safety issues in shared spaces where our Perceptions of Risk report highlights people, especially the elderly, feel unsafe when walking in areas with a high number of people riding bikes. Areas where issues have been raised are adjacent to Federation Square, Birrarung Marr, Southbank, Harbour Esplanade and Fawkner Park.

We will continue to deliver programs that encourage all people to show courtesy and respect to make their journey around the city safer and more enjoyable. The programs will be run to address issues specific locations on roads and streets, in shared spaces and parks.

Actions

The City of Melbourne will:

- deliver best practice bicycle infrastructure using planning and design hierarchy and guidelines (Chapter 3) with an aim to maximise separation from vehicles especially on high volume routes
- work with Victorian Government agencies such as VicRoads and the Traffic Accident Commission to research and analyse crash data and make this information available to the community
- undertake road safety investigations of all roads with five or more bicycle crashes in the last three years
- trial protected intersection designs on intersecting bicycle routes such as the intersection of Swanston and Queensberry Streets or the intersection of Canning and Elgin Streets
- work with car park operators to improve visibility and awareness of people riding bikes
- investigate measures to reduce high cyclist speeds on downhill street sections, particularly along physically-separated bike lanes such as traffic calming devices or traffic signal timing
- work with the community and the Victorian Government to review speed limits in the municipality. Investigate possible reductions as part of a review of boulevards and Elizabeth Street
- continue to complete actions of the Road Safety Plan 2013-17 relating to safety for people riding bikes including continuing the Share Our Streets program focusing on etiquette and speeds in shared spaces, car-dooring, and awareness of new street environments.

21 City of Melbourne 2015

22 Aldred 2015

5. ENCOURAGING MORE PEOPLE TO RIDE

Goal: Encourage more people of all abilities, genders, ages and or from diverse cultural backgrounds to take up riding or ride more frequently

Targets: One in four vehicles entering the central city in the morning peak will be bicycles

Seven per cent of total trips to, within and from the City of Melbourne will be made by bike

Counting people riding bicycles

The City of Melbourne takes part in the National Cycling Participation Survey (NCPS) to provide data on cycling to feed into the Melbourne Bicycle Account (Chapter 7). It is a telephone-based survey of residents in the City of Melbourne including mobile-only households. It also tries to capture cycling participation among children. Participation is defined as the number of individuals who have cycled for any journey or purpose and in any location.

The Victorian Government has invested in 24-hour continuous loop counters at key locations in Melbourne. There are 12 counters located in the municipality. Data is currently available on open data platforms²³.

The Victorian Integrated Survey of Travel and Activity (VISTA) surveys were conducted in the 2007–08 and 2009–10 financial years. The surveys capture detailed data on the number and route of every trip of the sampled participants that help governments make better transport and land-use planning decisions. Information is collected infrequently due to the time and expense of logging individual trips. The current VISTA survey started in July 2012 and will end in July 2016.

City of Melbourne has conducted seasonal counts of bicycles relative to other vehicles entering the central city in the morning peak since 2007. The counts are completed in March and September at 19 on and off-road locations entering the Hoddle Grid.



Super Tuesday, Super Sunday are annual counts conducted by Bicycle Network volunteers to monitor trends in cycling. Super Tuesday is conducted in March during the morning peak period to monitor people travelling to work. Super Sunday gives a snapshot of recreational riders. RiderLog is the Bicycle Network smartphone app that logs users bike rides. Recently, gender data has been recorded. The organisations RiderLog app records details of riders' trips all of the travel logs are then aggregated to show when, where and why people are riding. RiderLog records spatial data on actual routes that can then be used for before and after evaluation and to model future scenarios.

The City of Melbourne utilise all these data sources to understand the numbers, demographics and routes of people who ride a bike and to plan and design bicycle routes and programs to encourage more people to cycle.

²³ VicRoads counters

Participation by residents and bicycle ownership

In the City of Melbourne about 17 per cent of City of Melbourne residents ride a bicycle in a typical week. Around one third (34 per cent) had done so in the past year (Figure 24). There have been statistically significant decreases in cycling participation between 2013 and 2015 possibly due to a growth of population in the central city where walking is the predominant mode of transport. These participation rates translate to approximately 21,100 residents riding in a typical week and 41,400 residents riding at least once in a typical year.

Just over half of households (51 per cent) have access to at least one working bicycle. About one in five households have access to three or more bicycles. Bicycle ownership is lower than the Melbourne average and may relate to walking and public transport being the dominant modes of transport and a smaller number of households with children.

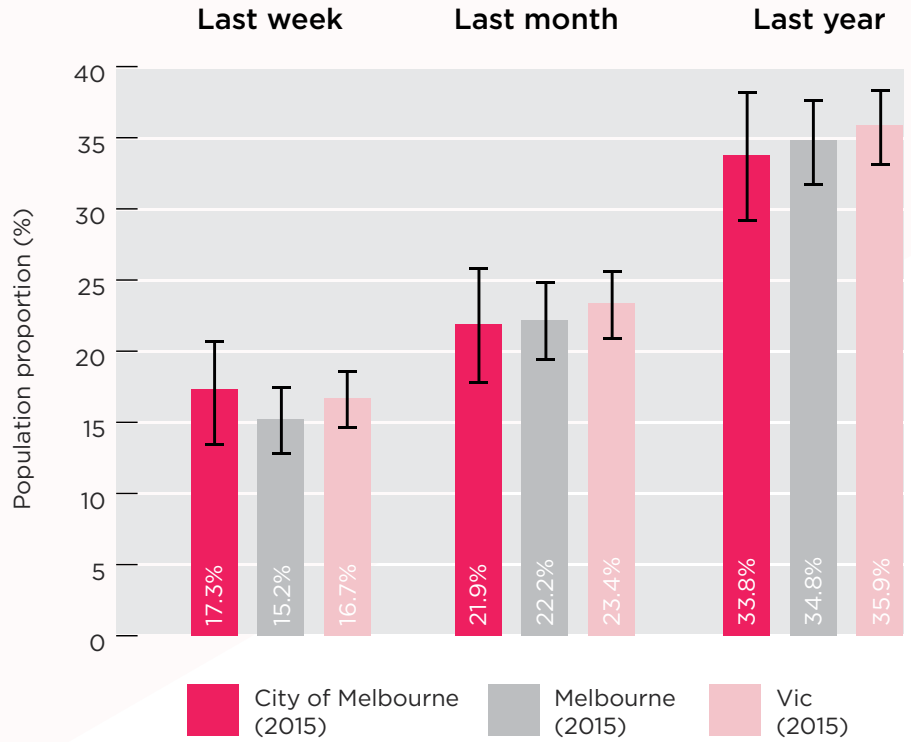


Figure 24: Cycling participation

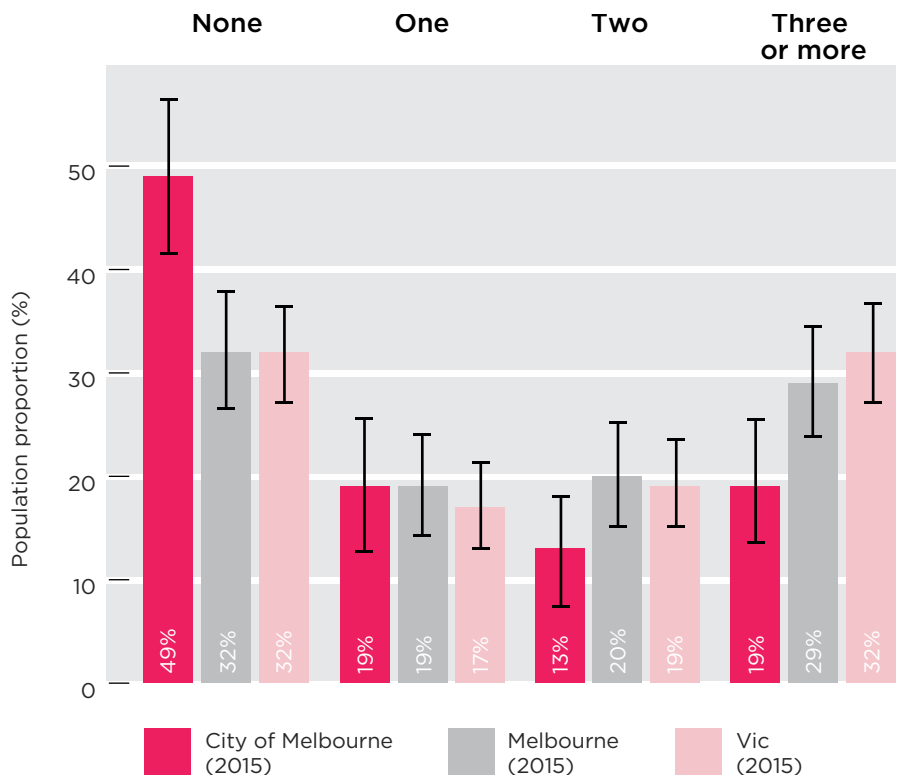


Figure 25: Bicycle ownership by household

Participation by gender and age

In the City of Melbourne 20 per cent of males and 15 per cent of females ride in a typical week. The proportion of males is lower than the pattern across Victoria whereas the participation by females is significantly higher than for greater Melbourne and Victoria.

Gender trends can be observed depending on the actual and perceived safety of bicycle routes. Observational studies undertaken by Bicycle Network indicate there is a higher proportion of females travelling south on Swanston Street in the morning peak. The higher proportion of females riding from the north correlates to greater continuity of separated bike lanes in La Trobe Street and Swanston Street (north) and the Swanston Street redevelopment between Franklin and Flinders streets.

Women and children riding bikes are interlinked. The data shows much lower participation rates for women, but where safer facilities can help to support those to ride, proportions increase substantially. A study²⁴ of the impact of infrastructure and adults' attitudes towards child cycling supported substantial separation from motor traffic. Separation by kerb or by car parking was desirable, as were park routes and streets closed to through motor traffic such as the Canning Street design, at Princes Street. As part of the complete cycling network we have suggested local routes that will assist people of all ages and abilities to be active in riding bike around their suburb, to schools, shops and community facilities.

Cycling for transport and recreation

Of the people who cycled in the City of Melbourne in the last month, 58 per cent cycled for recreation and 68 per cent used a bicycle for transport (Figure 29). The proportion of people who ride for recreation is lower than the Melbourne average, and the proportion riding for transport is much higher than the Melbourne average.

The City of Melbourne has a key role to play in supporting people to get to and from work by bike and take pressure off the road and public transport network. We will support Ride to Work Day and other community initiatives that encourage people to ride to work as a viable mode of transport.

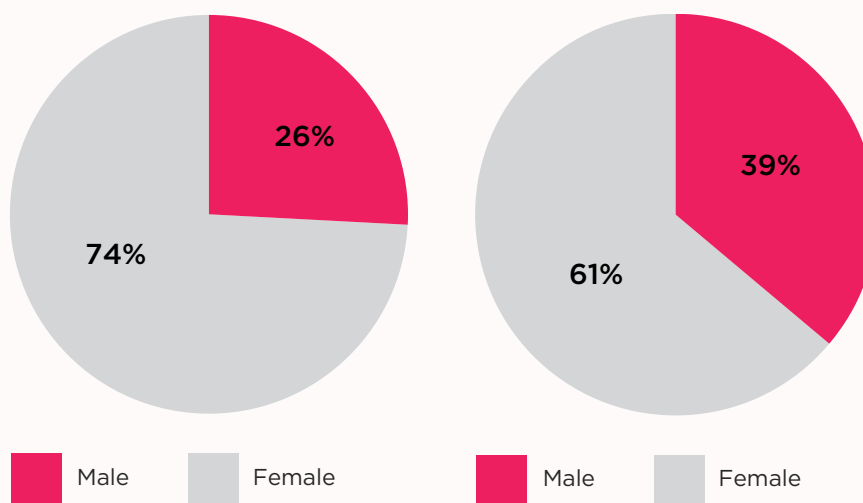


Figure 28: Participation by gender on Swanston Street

24 Aldred 2015

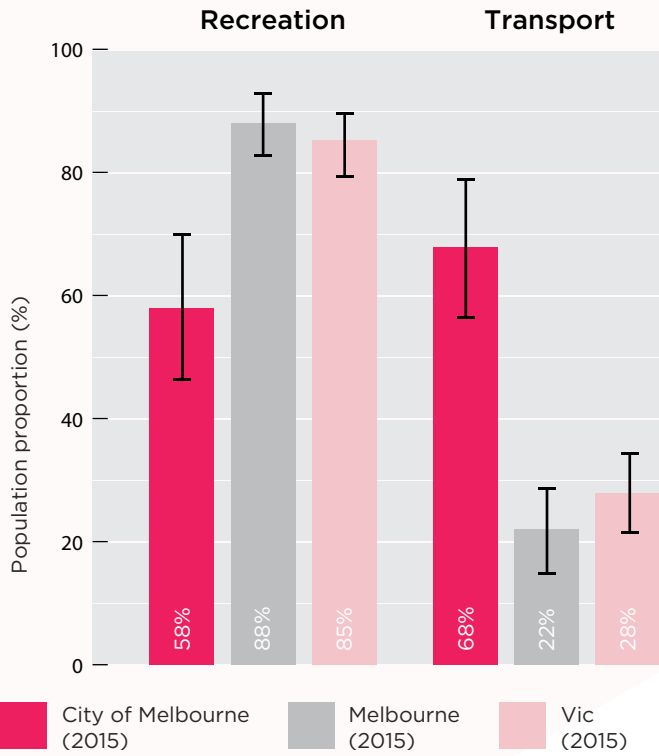


Figure 29: Cycling for transport and recreation

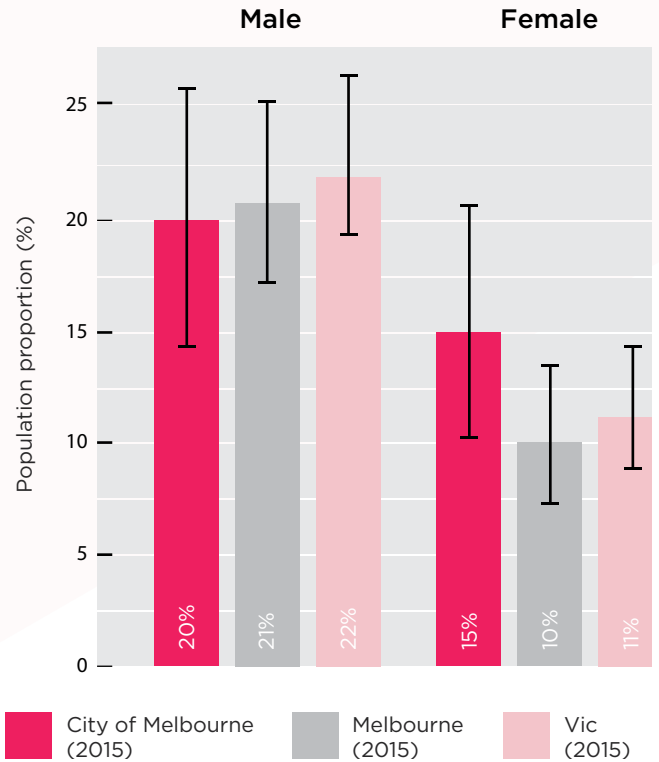


Figure 26: Participation by gender in a typical week

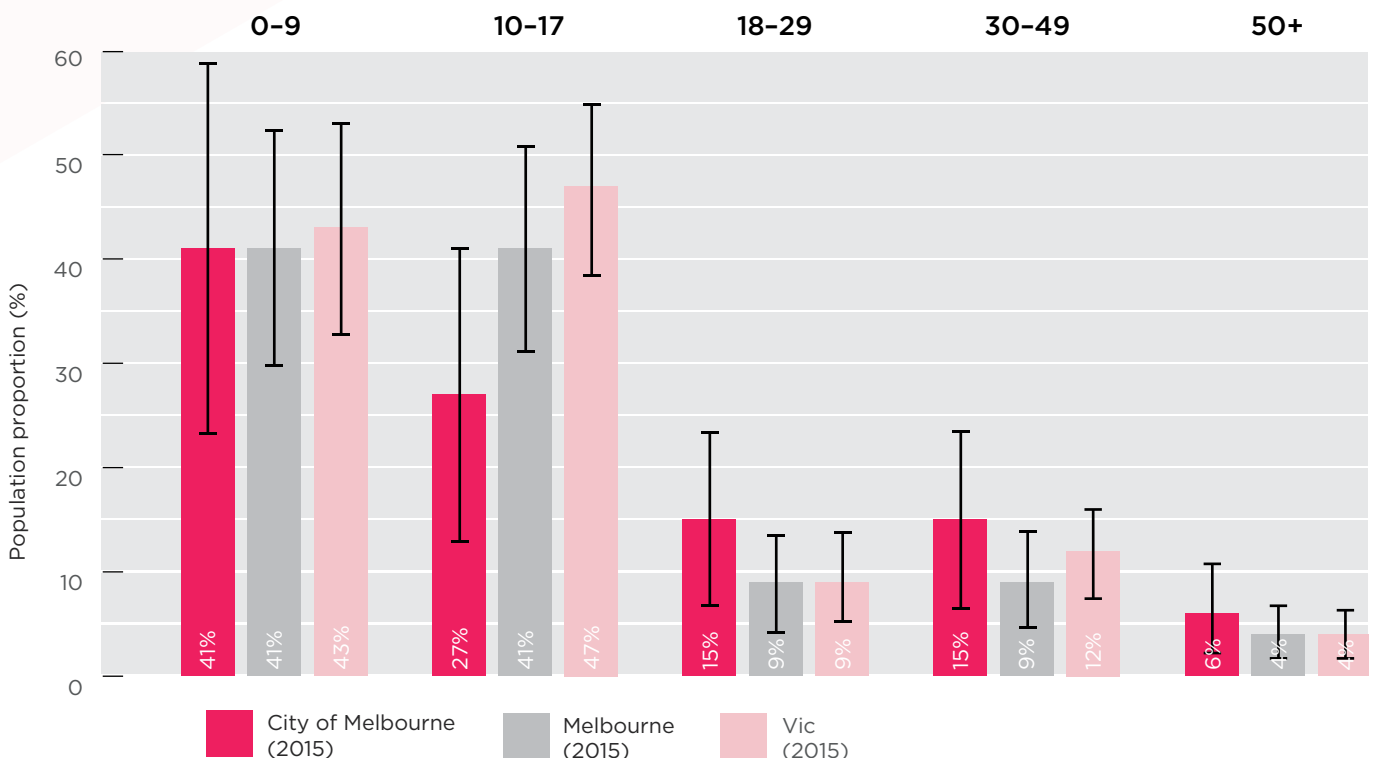


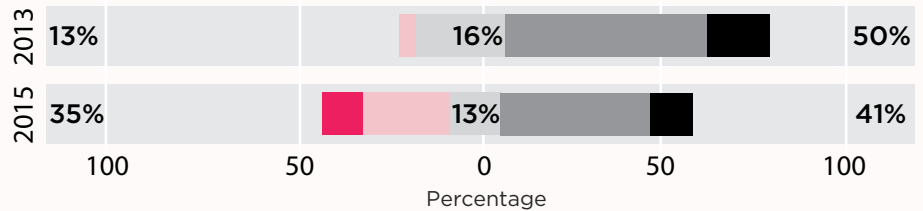
Figure 27: Participation by age in a typical week

Perception indicators

Rider perceptions are monitored in the Copenhagen Bicycle Account and the Melbourne Bicycle Account. Both accounts have seen a decline in rider perceptions of comfort and conditions over time. When asked how comfortable people feel riding in their area the percentage feeling comfortable and very comfortable has decreased significantly since 2013 despite the investment in new and improved bicycle routes in the City of Melbourne. The hypothesis is that as conditions improve, expectations are raised. For example as physically-separated bicycle routes are built, people expect to use this type of facility on all their journeys. If people are riding on routes that are not separated from traffic they report that they feel uncomfortable or very uncomfortable. The long responses of residents surveyed indicate they often feel uncomfortable if bike lanes or separated lanes end where there is not enough room. An increase in the number of other road users particularly people walking is reported as making people feel more uncomfortable riding a bike.

Bicycle counters

VicRoads collects information from 14 bicycle counters located in the municipality. The bicycle counters are located in a closed box and the counts are not visible to the public although data can be accessed online²⁵.

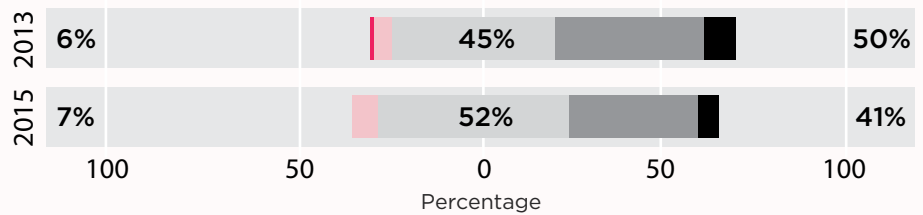


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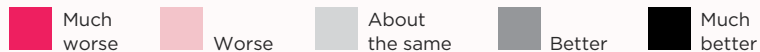


Sample: Persons aged 15+ who had ridden in the past year.

Figure 30: Perception of comfort of people have ridden in the past year



Response:



Sample: Persons aged 15+ who had ridden in the past year.

Figure 31: Perception of conditions for riding of people that have ridden in the past year

25 VicRoads counters

Table 17: Location of VicRoads continuous loop counters in City of Melbourne

1.	Main Yarra Trail	South Yarra Under Punt Road Bridge
2.	Canning Street	Carlton South side of Princes Street
3.	Upfield Bike Path	Parkville 10m south of Park Street
4.	Capital City Trail	Princes Hill 25m west of Bowen Crescent
5.	Capital City Trail	West Melbourne 250m south east of Citylink exit ramp
6.	Flemington Road	North Melbourne 25m north west of Abbotsford Street
7.	Flemington Road	North Melbourne 10m south east of Dryburgh Street
8.	Royal Parade	Parkville South bound 20m south of Gatehouse Street
9.	Royal Parade	Parkville North bound 10m north of Gatehouse Street
10.	St. Kilda Road	Southbank South bound 30m south of Anzac Avenue
11.	St. Kilda Road	Southbank North bound 25m north of Coventry Street
12.	North Bank	75m west of Morell Bridge
13.	Albert Street	Melbourne 50m east of Morrison Place
14.	Albert Street	Melbourne 50m west of Lansdowne Street

The City of Melbourne has a comprehensive network of pedestrian counters and opportunities exist to install a similar system of bicycle counters at key entrances to the city to continuously monitor the number of people riding bikes and supplement current vehicle counts that are conducted twice a year by the City of Melbourne and Bicycle Network’s Super Tuesday and Super Sunday counts.

Barometer style counters displaying the number of people riding bikes daily and over a year can assist to encourage more trips by bike and if they are placed close to roadways, promote to people in cars the opportunity to join large numbers of people riding bikes. The counters would provide an evidence base for future investment in bicycle infrastructure.

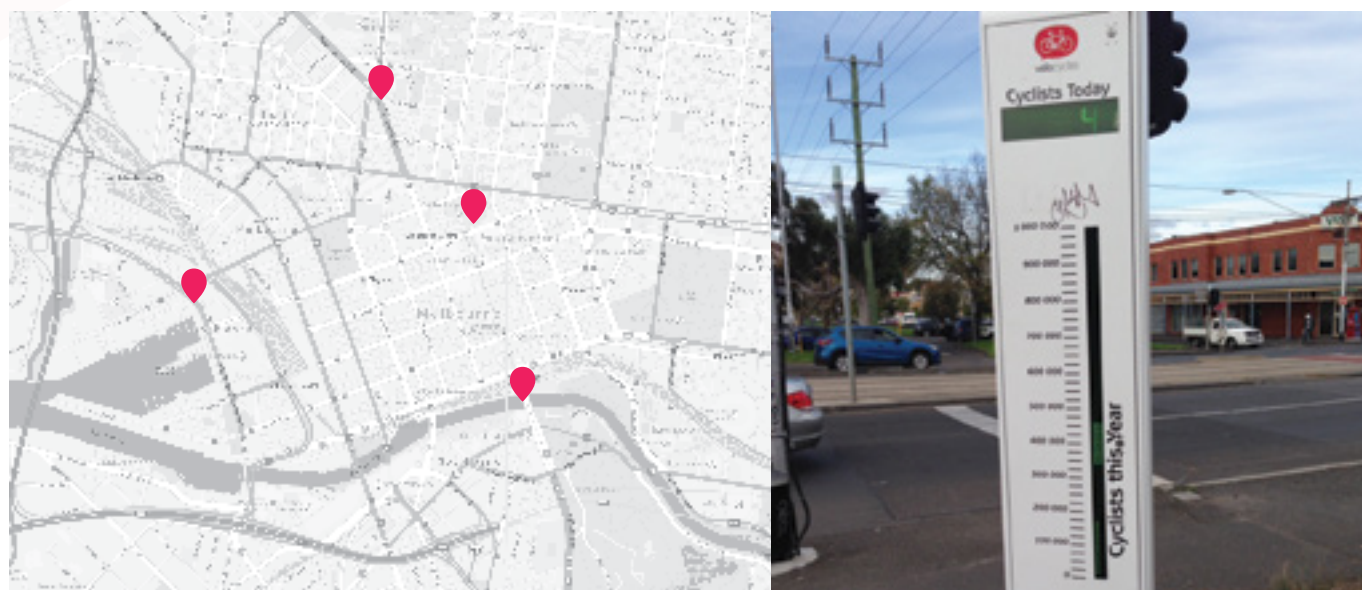


Figure 32: Proposed location for bicycle counters

Community and school programs

The City of Melbourne works with community groups and schools to support their active travel and cycling programs. We work with groups that are location and interest based, such as cycling groups for women. The Good Wheels program works with a number of partners to source unwanted bikes and work with unemployed people to refurbish them. The bikes are then used as part of program to help people from culturally diverse backgrounds to access cycling as a safe means of getting around the city. The training includes learning to ride, maintenance, road safety and navigation and importantly gives participants a set of wheels.

Programs have been run with local schools to support parent and carers to gain confidence in riding so they can in turn support their children to ride, choose safe routes, adopt safe riding behaviour and maintain their bikes.

We will continue to work with groups and provide them support to apply for funding and become more active in supporting locally based bicycle education and safety programs. We will also partner with Bicycle Network to plan active travel options in the municipality and participate in Ride to School Day and support the bike bus concept of children travelling to school.

The City of Melbourne has provided safety and navigational information to international students in booklets and at the student welcome desk at Melbourne Airport. Opportunities have been provided for students to participate in bicycle tours that educate them about basic road rules and safety. The tours help students to navigate to key student services and city landmarks and provide a practical demonstration of Melbourne Bike Share. We will continue to support international students to ride a bike by providing safety information and orientation tours.

Active Melbourne

The City of Melbourne's Active Melbourne Strategy aims to provide opportunities for all members of the community to participate in physical activities that contribute positively to their health and wellbeing.

The City of Melbourne has been working in partnership with the Victorian Department of Health and VicHealth to conduct a range of health, fitness and well-being programs for residents, city workers and visitors. The Active Melbourne Strategy encourages people to take part in physical activity and enjoy the benefits that exercise provides regardless of age, gender, culture or ability.

Under Active Melbourne council also manages recreational facilities including Carlton Baths, Kensington Community Centre, North Melbourne Recreation Centre and Melbourne City Baths, coordinates the management of 70 community sporting clubs and provides information on bike polo, bicycle hire, shops and tours that can help people to keep active by riding a bike. The 100 Ways to Move it Melbourne program, incorporated biking activities, taking city residents and visitors on bike tours of Melbourne during their lunchbreak.

As well as being proactive in providing facilities and information, opportunities also exist to further develop bike riding programs at recreational and community centres throughout the municipality to encourage people to start riding and navigate safely around the city.

Events

The City of Melbourne runs premier events, issues events permits and sponsors events under the Event Partnership Program. The aim is to encourage people attending events to use sustainable transport modes to meet eco-city goals. Many events such as the Sustainable Living Festival, Moomba, Spring Fashion Week and Run Melbourne and encourage people to come by bike and provide bicycle parking and end of trip facilities.

Other events such as the Look, Stop, Shop and the Melbourne Design Festival have offered bike tours to explore the city. Bike tours were also run as part of the Lord Mayors welcome to international students to assist students to navigate around the city using cheap and sustainable transport and become aware of their new environment and conventions such as road rules and etiquette.

Permits are given to organisations to promote cycling and include MS Melbourne Cycle, Herald Sun Tour, Around the Bay and Tweed Ride. Community activation events such as a Wheelie Good Day in Melrose Street, North Melbourne encouraged local residents to start riding by offering a closed road environment to learn to ride, bike tours, bicycle maintenance sessions and bike related information.

As part of activities and events run by City of Melbourne we will continue to be proactive in encouraging sustainable travel and provide bicycle parking and end of trip facilities where possible. Community riding events and tours will be encouraged and we will support other organisations to promote bike riding and tours by bike.

Navigation, maps and apps

TravelSmart maps are supplied to Visitor Information Centres and bicycle shops by the City of Melbourne to support active travel. The maps provide information on routes and road safety. Third party providers offer a range of options for navigating around the city by bike. Hard copy maps are produced by some organisations but commonly information on getting around is provided through an app on a smartphone.

We will support app developers such as Ride the City to update accurate spatial information and provide information on direct and safe or safe routes to assist people to navigate around the municipality on a bike.

As with all apps, it is only as good as the information it is based on. City of Melbourne will work to provide open data with accurate spatial information about the most bicycle friendly routes. It could assist people plan their trip to use safer routes and avoid high volume car and bus routes.

Workplace and business support and programs

The City of Melbourne operates a fleet of electric bicycles to help transport staff to meetings and conduct their work in places remote from the office such as parks and gardens and maternal and child health centres. Staff have access to discounted Bicycle Network membership and participate in Ride to Work Day. Showers, change facilities, parking and a maintenance cupboard are provided to assist staff to commute to and from work. Bicycle mechanics from a local social enterprise visit regularly to assist staff to keep their bicycles well maintained and safe.

Some private enterprises in Melbourne offer bicycle lease programs similar to traditional car lease arrangement for executives, safe cycling courses, bicycle maintenance and route planning services. City of Melbourne will work with organisations and workplaces on programs that encourage workers to ride such as incentive programs, bike buddy, safety or maintenance initiatives.

An increasing number of logistics companies are using cargo bikes to assist with deliveries for clients. Other businesses own delivery bikes to transport goods to their customers. We will also support businesses to receive deliveries and services by bike as part of our Last Kilometre of Freight Plan. The plan supports efficient urban freight through increased innovative and low-impact freight. Cargo bikes are a low impact way to deliver goods. They emit no pollution. They are quieter, smaller and more transparent than trucks and so pose less of a safety threat, do not block city views and require less space in which to park. Cargo bike riders can have a strong connection to other city users because they are travelling at eye level and not inside an enclosed vehicle. Cargo bikes can be electrically assisted so they can move heavier loads. There is an emerging cargo bike delivery sector in Melbourne and cargo bike use is growing around the world, especially in the busiest parts of cities. Because of their flexibility and relatively quick delivery times in crowded places, cargo bikes have also helped stimulate and facilitate new ways of doing business. Consistent with the Last Kilometre of Freight Plan, we will support initiatives that increase the use of cargo bikes for business in the municipality.

Actions

The City of Melbourne will:

- continue to support people to ride to work and take pressure off the road and public transport systems through Ride to Work Day and community activities throughout the year
- install counters with visible displays to encourage people in cars to start riding a bike or for existing riders to achieve target numbers
- actively work with schools to educate and encourage children to ride to school and in their local community. Conduct sessions with both children and their parents and carers
- support people to ride bikes using the bike bus concept of encouraging people to join a group cycle to work or school
- provide active travel advice as part of City of Melbourne activities and events. Provide bicycle parking and end of trip facilities at all major events
- encourage community riding by holding events in local communities
- support organisations to conduct events encouraging people to ride bikes such as MS Melbourne Cycle, Herald Sun Tour, Around the Bay and Tweed Ride
- provide programs at recreational and community centres to encourage people to start riding that promote safe cycling and get the message across that cycling is fun
- support international students to ride a bike by providing safety information and orientation tours
- work with businesses to offer incentives for workers to ride bikes as an alternative to executive car packages
- provide open data with accurate spatial information about bike routes and their safety
- support staff to ride a bike to, from and for work by providing motivation and convenient end-of-trip facilities
- support initiatives that increase the use of cargo bikes for goods movement in the central city.

6. MEASURING OUTCOMES

Goal: Evaluate changes, manage data and continuously improve our performance

Target: Provide open data and complete a Bicycle Account in 2017 and 2019

Bicycle Account

The Melbourne Bicycle Account provides snapshot of cycling activity and trends in the municipality every two years. Participation and perception data collected by the Australian Bicycle Council feeds into the account. By subscribing to a standardised national system, changes are able to be monitored regularly and consistently and national comparisons can be made.

The data set comes from a randomly selected group of residents within the local government area. It provides valuable data on bike ownership, participation by age and gender, and perceptions of comfort and conditions, from people who are often not captured in counts or intercept surveys.

The account highlights what we do well and what needs to be worked on in future. It includes a summary of city cycling and documents the City of Melbourne actions in improving cycling infrastructure and safety and reflects the targets of the Bicycle Plan.

The Bicycle Account is collated and made available to the community and stakeholders online every two years. The data representing the cycling census for 2015 is documented in this plan. The next account will be completed in 2017.

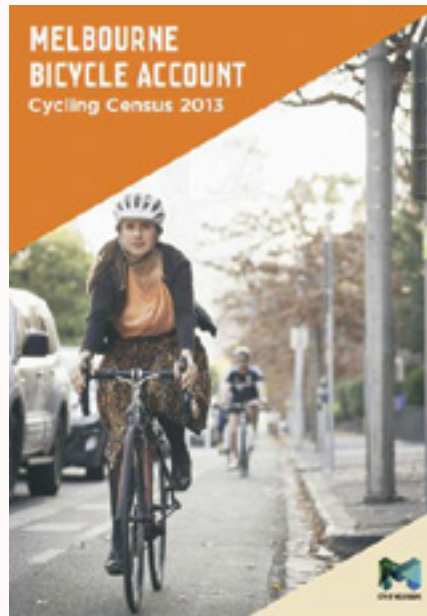


Figure 33: Melbourne Bicycle Account

Counts and monitoring

The City of Melbourne has been conducting counts of bicycles relative to other vehicles on key routes entering the central city since March 2007. The cordon counts are conducted in March and September during the morning peak from 7am to 10am. The length and consistency the counts provide reliable trend data.

There are currently fourteen loop counters (nine on-road sites and five off-road sites) recording cycling flows in the municipality. These 24 hour counters are located on the Principal Bicycle Network and are managed by VicRoads. The data shows average daily and monthly bicycle volumes and the spread across the day. Short-term counts can be corrected against this continuous data.

Super Tuesday counts by Bicycle Network provide an annual snapshot in March each year of commuter cycling patterns. Super Sunday counts relate to recreational riders, active on weekends particularly on off-road routes. Observations have also been made of the gender profile on key routes such as Swanston Street.

Bicycle Networks' RiderLog phone app provides a log of actual routes people have chosen. Information can be gathered on distance, speed and ride purpose (transport or recreation) The RiderLog dataset is useful for planning and prioritisation, road safety (exposure), before – and after evaluation, and demand forecasting and route choice modeling. Other apps such as Strava can also be crowd sourced to give information on routes and speed.

City of Melbourne regularly conducts before and after counts and observations for key projects. For example monitoring the movement people walking, riding, driving and using public transport, and travel times before, during and after the Princes Bridge bicycle lane trial provided valuable information. This information was shared with Council and the community in order to evaluate the trial.

Data management

Counts and monitoring are generally available online. The Victorian Government and City of Melbourne provide open data platforms where data can be downloaded.

Spatial records are available but quickly become outdated as new routes are developed and upgraded. A robust method of keeping bicycle routes up to date is to record all new and upgraded routes as assets in councils AssetMaster system. This information would then be available and accurate on open data platforms and can be used by the community or third parties such as Google Maps.

Actions

The City of Melbourne will:

- complete a Bicycle Account every two years using Australian Bicycle Council participation and perceptions surveys and local data to demonstrate changes and achievements
- share data online from bi-annual bicycle and vehicle counts
- investigate additional locations based on bicycle network modeling for continuous loop counters and continuous monitoring to accurately record changes to cycling corridors and high volume routes and plan for the future
- continue to collect before and after counts and observations for key projects
- keep updated spatial records of all bicycle routes and attributes.

TECHNICAL NOTES AND APPENDICES

Technical notes 1: Example Level of service assessment for La Trobe Street

			SCORE
SUMMARY:	MidBlock Bike Route Quality	B+	14
	Approach to Intersections Bike Route Quality	C	9.9
	AVERAGE	B-	12.0

MIDBLOCK LEVEL OF SERVICE						BIKE QUALITY SCORING	
On Road	Midblock				Comment	Value	LOS
		No formally marked bike lane	0				
		Wide kerbside lane (marked)	1			0	F-
		0.6m painted (refuge lane)	1			1	F
		1.0m paint	3			2	F+
		1.2m paint	5			3	E-
		1.5m paint	8			4	E
		1.8m paint	9.5			5	E+
		2.0m paint	11	11		6	D-
		Separated by profiled edge line (rumblestrip)	0.5			7	D
		Green treatment for full length of bike lane	1			8	D+
		Chevron painted separation from parking lane: 0.4m, 0.5m, 0.6m, 0.7m, 0.8m	1.0, 1.2, 1.4, 1.6, 1.8			9	C-
		Chevron painted separation from bike lane: 0.4m, 0.5m, 0.6m, 0.7m, 0.8m	1.0, 1.2, 1.4, 1.6, 1.8			10	C
		LEFT OF PARKING: Physical separated by parking (physical island): 0.6m, 0.8m, 1.0m, 1.2m, 1.4m	3, 4, 5, 5.2, 5.4	5		11	C+
		LEFT OF PARKING: Painted separation from parking (chevron): 0.6m, 0.8m, 1.0m, 1.2m, 1.4m	2, 3, 4, 4.2, 4.5			12	B-
		Bike Lane shared with Bus Lane: <10, <20, 20+ buses/hr	-2, -3, -4			13	B
		Speed: 60kph, 50kph, 40kph, 30kph	0, 1, 3, 4	3		14	B+
		Speed: 70kph, 80kph, 90+kph	-3, -10, -15			15	A-
		Traffic Volume (per weekday): One Direction of Flow: None, <500, 500-2000, 2000-5000, 5000-10000, >10000	+1.0, +0.7, +0.4, 0, -0.3, -0.5	0		16	A
		No green pavement at conflict points (driveways, laneways, side-streets)	-2				
		On-Street Parking	-3	-3			
		No Conflict Points (driveways, laneways, side-streets):	2				
		Some Conflict Points (driveways, laneways, side-streets): Per 200m block: <3, 3-8, >8	0, -1, -2: standard bike lanes (-1, -2, -3 for kerbside)	-2			
		Cyclists required to give way at Tram Platforms: Frequency: 20min, 10min, 5min, 2min, 1min	-1, -2, -3, -4, -5				
		Uneven surface	-3				
Total				14	B+		

APPROACH TO INTERSECTION - LEVEL OF SERVICE

On Road	Intersection	2 lane roundabout approach	-3		
		1 lane roundabout approach			
		Width of bike lane on approach to intersection: 0.5m, 0.8m, 1.0m, 1.2m, 1.5m, 1.8m, 2.0m	1, 2, 3, 4, 5, 6, 7	3.5	
		Width of Adjacent Traffic Lane (if no separation from bike lane): 2.5m, 2.8m, 3.0m, 3.3m, 3.6m, 4.0m+	-2, -1, 0, 0.5, 1.0, 1.5	0	
		Bike Lane provided between left turn lane and through lane (bike lane straight on approach to intersection)	2		
		Bike Lane adjacent to kerb - as a continuation from kerbside bike lane (no deviation)	1.5	1.5	
		Bike Lane provided adjacent to kerb on approach to intersection (deviated on approach to intersection)	0		
		Bike Lane area available through intersection	2	2	
		Bike Lane provided on immediate departure side of intersection	2	2	
		Storage box (in front of through or left traffic lanes)	1	1	
		Early start signal phase	3		
		Separated Mid-Block treatment provided all the way to intersection	3		
		Green treatment on bike lane on approach to intersection	1.5	1.5	
		Length of non-mid-block treatment: 20m, 20-40m, 40-60m, 60-100m, >100m	0, -1, -2, -3, -4	-2	
		Speed: 60kph, 50kph, 40kph, 30kph	0, 1, 3, 4	3	
		Speed: 70kph, 80kph, 90+kph	-3, -10, -15		
		Left turn volume (<20 per hour, 20-50 per hour, 50-100 per hour, 100-200 per hour, >200 per hour)	1, 0, -1, -2, -3	0	
		Motorists merge from two traffic lanes to one traffic lane on departure of intersection (may interfere with bike lane)		0	
		Bike Lane to Left of Double left turn for motorists	-3		
		Bike Lane transitions to right of double left turn for motorists	-1.5		
		Delay at Intersection Signals	Fill in Info to right	-2.6	
Total				9.9	C

Cycle Time	90
Phase %	50%
Amber/Red	5
Average Delay	14.167
Max Delay	50
Delay Aggregate	32.083
Weighting	-2.567

APPENDIX 1

Community feedback

The first phase of community engagement about the draft Bicycle Plan 2016–2020 was completed in May 2015. A high number of responses including comments with photos were attached to the interactive Crowdsport map. Over 7,000 contributions including, 1,000 individual spots, 1,460 comments, 4,700 supports were received from everyday Melburnians. The top 20 priority spots are summarised below.

COMMUNITY PRIORITY	LOCATION	SPOT	SUMMARY OF COMMENT
1.	Intersection of Royal Parade, Flemington Road and Elizabeth Street (Haymarket roundabout)	Issue	Unsafe bicycle lanes. Better guidance for people to travel from Elizabeth Street to Royal Parade.
2.	Exhibition Street	Issue	Unsafe due to temporary bicycle lanes and number of taxis. Need permanent protected bicycle lanes.
3.	Carlton Gardens	Issue	Riding in the gardens banned for cyclists over 12 years old. There are few walkers and high numbers of people riding bikes. Establish north – south routes to support cyclists at peak hours.
4.	Flemington Road Between Royal Parade and Elliot Avenue	Issue	High risk of car-dooring from parked cars and lots of traffic. The parking should be removed, or cars separated from the bike lane on this major bike route.
5.	Southbank Promenade	Issue	Highly congested. Improve priority for people to cross roads.
6.	Rathdowne Street to Barkly Street	Issue	Unsafe bicycle lanes. It is very difficult and illegal to cycle from Rathdowne to Barkly Street. Improve connection.
7.	St Kilda Road	Idea	Better cycle lanes. St Kilda Rd needs wide separated cycle lanes on this busy route.
8.	Harbour Esplanade from Docklands Drive to Bourke Street	Idea	Remove rumble strips and keep the zebra crossings and signage.
9.	Collins Street	Issue	Unsafe bicycle environment. Given the large number of cyclists it is a dangerous environment with taxis and loading vehicles. Improve facilities.
10.	Elizabeth Street	Issue	High risk of car-dooring. It is extremely dangerous with no space for bicycles especially at junctions. Improve facilities.
11.	Bike Polo Court, Neill Street Reserve, Carlton	Like	Opportunities to play bike polo on the multi-purpose court as part of the redevelopment.
12.	Swanston Street	Issue	Blockage for bike riders with police cars are parked too far from the curb putting cyclists at risk of passing trams or getting stuck in tram lines. Also blocked by horse drawn carriages. Police should be encouraged to park close to the curb or on side street and that carriages are prohibited from stopping.
13.	Swanston Street and College Crescent roundabout	Issue	Bicycle lanes end unexpectedly and there is no clear connection or path from Swanston Street to the bike path on the north side of Cemetery Road. Improve connections.

COMMUNITY PRIORITY	LOCATION	SPOT	SUMMARY OF COMMENT
14.	St Kilda Road at Southbank Boulevard	Issue	On approach to Southbank Boulevard bike riders are expected to merge into the right lane to travel to the city. Bike riders need to move across cars trying to turning left into Southbank Boulevard. Safer intersection design.
15.	La Trobe Street	Like	The separated bike lanes are fantastic for cycling and particularly for parents cycling with children.
16.	Royal Parade	Idea	Royal Parade needs wide, separated cycle lanes.
17.	Queens Bridge Street crossing	Issue	Pedestrians congregate on the bike crossing because it is in their desire line. Move bike crossing further south.
18.	Nicholson Street and Gertrude Street intersection	Issue	This intersection is very popular but has no cycle facilities to get to Gertrude Street. Cyclists need a place to wait similar to Queensberry Street hook-turn refuge.
19.	Grattan Street	Idea	This is a key road providing east-west access to the University of Melbourne and the hospital precinct. The current shared-path next to the university is inadequate for cyclists and pedestrians. The Street needs separated cycle lanes.
20.	Footscray Road and Waterfront Way intersection	Issue	The traffic light sequence needs adjusting to make it more bicycle-friendly.

The community reported that the top 10 locations they liked to ride a bike were:

1.	Bike Polo Court at Neill Street reserve, Carlton
2.	La Trobe Street separated bike lane
3.	Swanston Street bike lights at Flinders Street
4.	Rathdowne Street bike hook turn at Queensberry Street
5.	Canning Street bike lane
6.	Princes Bridge bike lane
7.	Albert Street separated bike lane
8.	Elizabeth Street separated bike lane
9.	Footscray Road bike path
10.	Royal Parade bike lane

APPENDIX 2

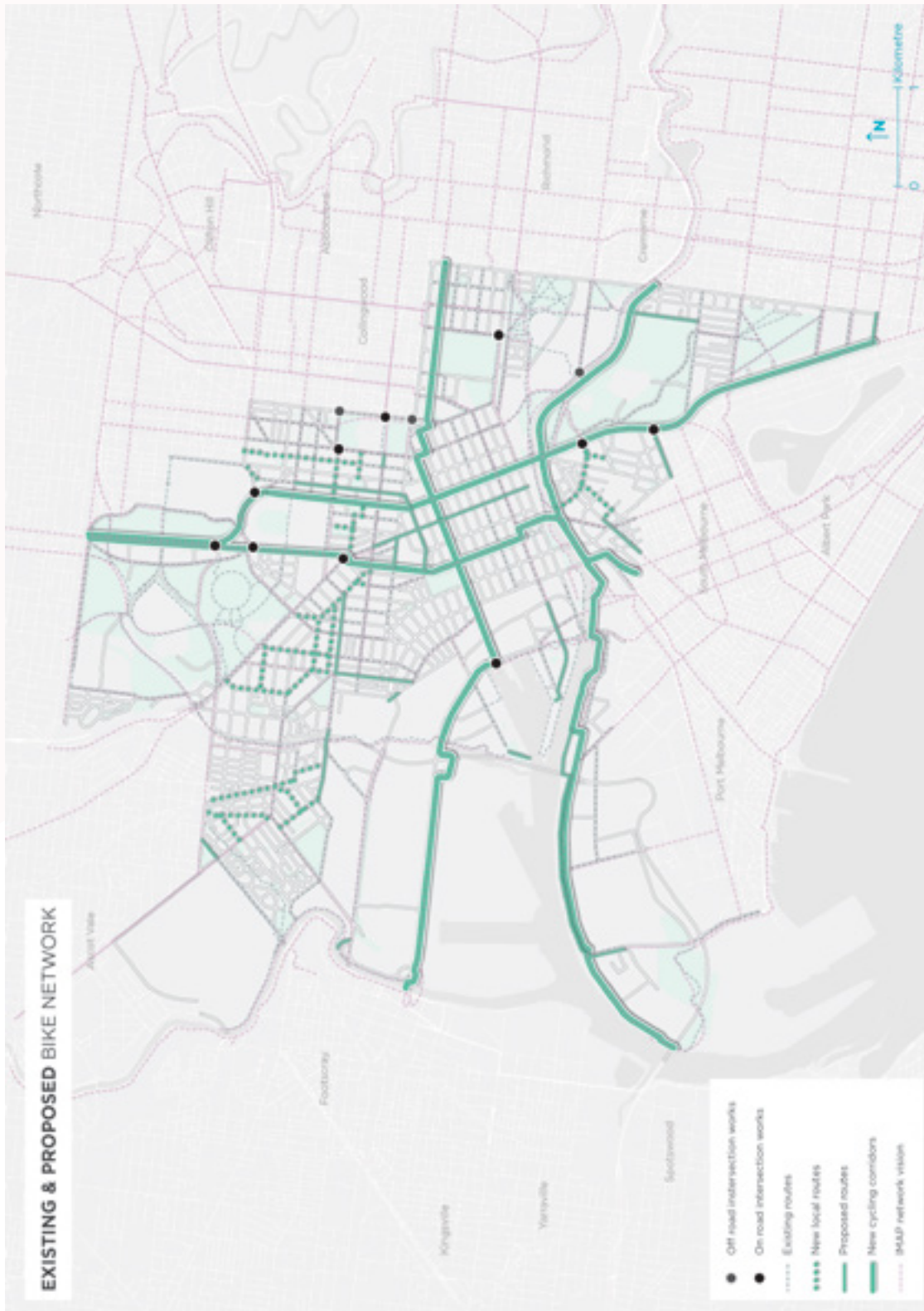
Local bicycle network and bicycle routes (existing)



Note: Quality on-road bicycle routes include: (a) Physically-separated kerbside bike lanes, (b) Double-chevron separated bike lanes, and (c) Low car volume bike-friendly streets (eg. Swanston Street)

APPENDIX 3

Bicycle routes (existing) and proposed new and upgraded routes 2016–2020



Note: New cycling corridor upgrades to be completed in collaboration with Victorian Government.

APPENDIX 4

Summary of actions

Actions –

Planning for people to ride

- align cycling networks and priorities at all levels of government
- ensure planning for growth areas include connections and facilities for people riding bikes
- implement local area structure plans and include bicycle infrastructure through development funds
- ensure Melbourne Planning Scheme matches requirements for bicycle parking in new and existing buildings.

Actions –

A connected bicycle network

- work with VicRoads to update and align the network operating plan for 2016–2020
- implement guidelines and level of service in the planning and design of the bicycle network
- apply a level of service assessment to determine streets in the central city that most preferred for cycling
- work with VicRoads to have new level of service criteria used in Network Fit Assessments to provide a more accurate representation of the benefits of bike lane improvements
- work with VicRoads to plan and implement cycling corridors and upgrades to arterial roads, as listed
- seek external funding for major bicycle projects, as listed
- plan and implement local neighbourhood routes and upgrades on local roads, as listed
- plan and implement off-road paths, as listed
- continue to develop alternatives to busy shared zones and spaces and implement physical and behavioural measures to increase safety
- continue to raise awareness of the rules of shared spaces and the etiquette of bicycling amongst others.

Actions –

Facilities for bicycles

- increase bicycle parking by 2000 hoops in key locations
- The City of Melbourne will undertake an economic study to evaluate the success of any new on-street parking initiatives
- provide bicycle parking facilities at the entrances and key destinations in parks including at park entrances and pavilions and clubs
- work with the Victorian Government to provide end of trip facilities at major transport hubs especially planned Melbourne Metro stations
- encourage businesses to provide secure bike parking facilities in buildings
- locate on-street bicycle parking in areas with active or passive surveillance
- remove abandoned bicycles as a deterrent to theft
- advocate for secure bike storage facilities on public housing estates and, in and around, community facilities
- work with Victoria Police to raise awareness of safe parking facilities and practices for locking bikes
- support targeted awareness and educational programs to raise awareness of bike theft and security particularly around tertiary institutions
- develop a way-finding strategy in consultation business and tourism stakeholders
- provide green wave, early starts and bike boxes for bike riders on cycling corridors
- install maintenance stations and bicycle pumps at key entrances to the city
- support Melbourne Bike Share.

Actions –

A safer cycling environment

- deliver best practice bicycle infrastructure using planning and design hierarchy and guidelines (Chapter 3) with an aim to maximise separation from vehicles especially on high volume routes
- work with Victorian Government agencies such as VicRoads and the Traffic Accident Commission to research and analyse crash data and make this information available to the community
- undertake road safety investigations of all roads with five or more bicycle crashes in the last three years
- trial protected intersection designs on intersecting bicycle routes such as the intersection of Swanston and Queensberry Streets or the intersection of Canning and Elgin Streets
- work with car park operators to improve visibility and awareness of people riding bikes
- investigate measures to reduce high cyclist speeds on downhill street sections, particularly along physically-separated bike lanes such as traffic calming devices or traffic signal timing
- work with the community and the Victorian Government to review speed limits in the municipality. Investigate possible reductions as part of a review of boulevards and Elizabeth Street
- continue to complete actions of the Road Safety Plan 2013–17 relating to safety for people riding bikes including continuing the Share Our Streets program focusing on etiquette and speeds in shared spaces, car-dooring, and awareness of new street environments.

Actions – Encouraging more people to ride

- continue to support people to ride to work and take pressure off the road and public transport systems through Ride to Work Day and community activities throughout the year
- install counters with visible displays to encourage people in cars to start riding a bike or for existing riders to achieve target numbers
- actively work with schools to educate and encourage children to ride to school and in their local community. Conduct sessions with both children and their parents and carers
- support people to ride bike using the bike bus concept of encouraging people to join a group cycle to work or school
- provide sustainable travel advice as part of City of Melbourne activities and events. Provide bicycle parking and end of trip facilities at events
- encourage community riding by holding events in local communities
- support organisations to conduct events encouraging people to ride bikes such as MS Melbourne Cycle, Herald Sun Tour, Around the Bay and Tweed Ride
- provide programs at recreational and community centres to encourage people to start riding
- support international students to ride a bike by providing safety information and orientation tours
- work with businesses to offer incentives for workers to ride bikes as an alternative to executive car packages
- provide open data with accurate spatial information about bike routes and their safety
- support staff to ride a bike to, from and for work by providing motivation and convenient end-of-trip facilities
- support initiatives that increase the use of cargo bikes for goods movement in the central city.

Actions – Measuring our success

- complete a Bicycle Account every two years using Australian Bicycle Council participation and perceptions surveys and local data to demonstrate changes and achievements
- share data online from bi-annual bicycle and vehicle counts
- investigate additional locations based on bicycle network modeling for continuous loop counters and continuous monitoring to accurately record changes to cycling corridors and high volume routes and plan for the future
- continue to collect before and after counts and observations for key projects
- keep updated spatial records of all bicycle routes and attributes.

APPENDIX 5

Summary of projects

PROJECTS ON ARTERIAL ROADS	LOCATION	DESCRIPTION
1.	Cemetery Road and College Crescent (Cycling corridor)	Investigate on-road or off-road improvements to connect cyclists on Swanston Street to Royal Parade and Princes Park Drive
2.	Commercial Road	Investigate a bicycle-friendly link between Punt Road and St Kilda Road for people to ride to Fawkner Park and Albert Park
3.	Elizabeth Street north	Install bicycle lane from Queensberry Street to Victoria Street
4.	Footscray Road (Cycling corridor)	Improve continuity and reduce conflict points along the shared path on the south side of Footscray Road, between Shepherd Bridge and Citylink overpass
5.	Footscray Road (Cycling corridor)	Improve connection to Moonee Ponds Creek Trail at Pearl River Road
6.	Haymarket roundabout (Cycling corridor)	Investigate early start traffic signal phasing, way-finding and bicycle boxes particularly for easy navigation between Elizabeth Street and Royal Parade northbound
7.	Lorimer Street (Cycling corridor)	Connect Lorimer Street to a future extended promenade under Bolte Bridge
8.	Lorimer Street (Cycling corridor)	Investigate redevelopment of the redundant rail reserve to include off-road path
9.	Main Yarra Trail (northbank)	Work to widen under Swan Street Bridge to ease congestion
10.	Peel Street (Cycling corridor)	Install full-time bike lanes from Victoria Street to Franklin Street
11.	Royal Parade (Cycling corridor)	Investigate reduced speed limit to 40km/h
12.	Royal Parade (Cycling corridor)	Upgrade intersection at Cemetery Road West to remove one vehicle lane
13.	Royal Parade (Cycling corridor)	Install traffic calming at College Crescent intersection
14.	Smithfield Road	Upgrade to Smithfield Road between Epsom and Racecourse roads
15.	St Kilda Road (Cycling corridor)	Improve safety to cross Southbank Boulevard for people riding north

PROJECTS ON LOCAL ROADS	LOCATION	DESCRIPTION
16.	Anderson Street	Install bicycle lane as link to Morrel Street Bridge
17.	Albert Street (Cycling corridor)	Install full-time bicycle lanes from Powlett Street to Hoddle Street
18.	Albert Street (Cycling corridor)	Investigate green wave traffic signals for bikes to reduce delays and encourage slower speeds
19.	Albert Street (Cycling corridor)	Install full-time bicycle lanes from Gisborne to Spring streets
20.	Albert Street (Cycling corridor)	Upgrade existing chevron to permanent physically-separated bike lanes on complete length of street
21.	Arden Street	Upgrade Macaulay Road to Howard Street
22.	Barkly Street	Improve connection from Rathdowne Street (northbound) to Barkly Street and Canning Street
23.	Cardigan Street	Upgrade bicycle lane, particularly access to bike hub near Victoria Street
24.	Brougham Street (Local route North Melbourne)	Investigate connections to St Aloysius Girls School and St Michael's Primary School
25.	Clarendon Street, East Melbourne	Improve connection from Clarendon Street to encourage riders to use Jolimont Terrace to access Yarra Park and Melbourne Park
26.	Collins Street (Cycling corridor)	Investigate options for route via Collins Street to Market Street
27.	Derby Street (Local route Kensington)	Investigate improving connections to Holy Rosary Primary School and Macaulay Road shops
28.	Dodds Street (Local route Southbank)	Investigate local route on Dodds Street to connect Coventry Street to University of Melbourne Southbank Campus
29.	Dorcas Street	Work with City of Port Phillip to complete Dorcas Street connection from St Kilda Road to Kings Way. Investigate hook turn from St Kilda Road once route is complete
30.	Drummond Street (Local route Carlton)	Provide a local route to link residential areas to local shops, dining and entertainment as an alternative to Lygon Street
31.	Eastwood Street and Elizabeth Street (Local route Kensington)	Investigate linkages to Racecourse Road and Macaulay Road shops through to existing bicycle route on Arden Street
32.	Elizabeth Street	Investigate upgraded bicycle route from Victoria Street to La Trobe Street as part of Queen Victoria Market Master Plan
33.	Elizabeth Street	Investigate bicycle-friendly environment between La Trobe Street and Flinders Street
34.	Exhibition Street	Investigate options for full time bicycle lanes by completing traffic modeling studies
35.	Exhibition, Little Lonsdale, Spring, Victoria streets (Cycling corridor)	Investigate full time bicycle lanes and improved intersection designs

PROJECTS ON LOCAL ROADS	LOCATION	DESCRIPTION
36.	Southern end of the central city	Investigate options for an alternate E-W route to Collins Street
37.	Franklin Street and New Franklin Street	Prioritise bicycle-friendly route as part of Queen Victoria Market Precinct Renewal Master Plan development
38.	Grattan Street (Local route Carlton)	Investigate bicycle route from Swanston Street to Rathdowne Street to connect residential areas to Carlton Primary School
39.	Grattan Street	Investigate potential to improve bicycle route from Flemington Road to Swanston Street in conjunction with Melbourne Metro project and potential changes to bus route
40.	Haines Street (Local route North Melbourne)	Investigate improvements to link residential areas to Haines Street shops and North Melbourne Primary School (including Chapman Street Reserve area)
41.	Hampden Street (Local route Kensington)	Investigate linkages to Holy Rosary Primary School Macaulay Road shops
42.	Harbour Esplanade (Cycling corridor)	Improve connections from La Trobe Street to shared path on the west side of Harbour Esplanade including traffic signal adjustment
43.	Kavanagh and Balston streets (Local route Southbank)	Investigate local connection to Boyd Community Centre
44.	La Trobe Street (Cycling corridor)	Extend the outbound bike lane in La Trobe Street to the intersection of Harbour Esplanade
45.	La Trobe Street (Cycling corridor)	Investigate separation from Spencer Street to Harbour Esplanade
46.	Leicester, Pelham and Bouverie streets and Lincoln Square South	Investigate linkages from the University of Melbourne (south) with the Swanston Street bike route consistent with the City North Structure Plan
47.	Market Street (Local route Kensington)	Local connections to Kensington Primary School and between Macaulay Road and shops in Racecourse Road
48.	McCracken Street (Local route Kensington)	Local connections to Kensington Primary School and between Macaulay Road and shops in Racecourse Road
49.	Melrose Street (Local route North Melbourne)	Investigate connections from residential areas to the shops and through to the central city
50.	Nicholson Street	Investigate transition from Gertrude Street to Museum Road with other partners
51.	Northbank	Investigate options for bicycle-friendly infrastructure in Banana Alley section
52.	Pelham Street (Local route Carlton)	Investigate local route to connect residential areas to Carlton Primary School
53.	Queensberry Street	Complete link to Rathdowne Street intersection on north side
54.	Shiel, O'Shannesy, Courtney and Howard streets	Create shimmy route from Flemington Road to Queensberry Street as a low speed, low volume alternative
55.	Sims Street	Upgrade existing off-road path and crossings from Maribyrnong River Trail to Dynon Road

PROJECTS ON LOCAL ROADS	LOCATION	DESCRIPTION
56.	Southbank Boulevard (Local route Southbank)	Upgrade as part of City Road Master Plan route from Capital City Trail to Southbank Promenade
57.	Swanston Street (Cycling corridor)	Improve connection to College Crescent roundabout
58.	Swanston Street (Cycling corridor)	Reduce speed limit to 40km/h for northern section
59.	Swanston Street (Cycling corridor)	Install bike lane from Mason Road to Tin Alley for people riding north
60.	Swanston Street (Cycling corridor)	Redesign area of joint use between Flinders Street and Flinders Lane
61.	Swanston Street (Cycling corridor)	Upgrade southbound lane on Princes Bridge
62.	William Street (Cycling corridor)	Investigate narrowing space between tram tracks to allow for redesign of street for physically separated kerbside bicycle lanes
63.	William Street (Cycling corridor)	Work with PTV to maintain integrity of bike lanes when tram stops are upgraded
64.	Yarra River Corridor (Cycling corridor)	Install improved lighting to assist way-finding at night

PROJECTS OFF-ROAD	LOCATION	DESCRIPTION
65.	Carlton Gardens	Investigate improvements to the shared path including lighting and other safety measures. Improve connections between Spring Street and Canning Street, including crossings at Gertrude and Carlton streets
66.	Chapman Street Reserve (Local route North Melbourne)	Upgrade connections for people riding bikes from Harker Street to Courtney Street
67.	Fawkner Park	Improve crossing on Commercial Road
68.	Harbour Esplanade	Investigate alternate options for slowing bicycles at pedestrian crossing points. Review existing speed humps
69.	Northbank	Investigate options for bicycle-friendly infrastructure in Banana Alley section and improve wayfinding, crossings, shared path signage, linemarking and lighting between Jim Stynes Bridge and Birrarung Marr
70.	Railway Place and Miller Street Reserve	Complete underpass upgrade
71.	River Esplanade (Cycling corridor)	Investigate making wooden deck more bike-friendly
72.	River Esplanade (Cycling corridor)	Provide a wider shared path adjacent to Point Park
73.	Ron Barassi Senior Park	Provide connections for people riding bike to Docklands Drive and existing bike paths
74.	Royal Park	Upgrade links through Royal Park to provide access from West Brunswick to Capital City Trail
75.	Royal Park	Construct new path on west side of tram track to provide access to Abbotsford Street
76.	Royal Park	Work with the Victorian Government over the longer term to construct new bridges over Upfield Railway Line near Ryder Oval and State Netball and Hockey Centre
77.	Royal Park	Upgrade way-finding for people riding bikes and signage of shared paths

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ACKNOWLEDGEMENTS

Interviews were conducted with stakeholders who provided feedback on implementation of the previous plan and input to this plan.

Thanks to the following organisations:

Bikes for Business, Bicycle Network Victoria, City of Moonee Valley, City of Moreland, City of Port Phillip, City of Yarra, City of Darebin, Department of Economic Development, Jobs, Transport and Resources, Good Cycles, ICLEI Australia, Melbourne Bicycle Users Group, Melbourne by Bike, RACV, Retail Association, TAC, The Squeaky Wheel, VECCI, VicRoads, Victoria Police, Victoria Walks, Wheel Women.

Thanks also to the Melbourne community for over 7000 contributions including, 1000 individual spots, 1460 comments, 4700 supports on the Participate Melbourne platform in May 2015. Key themes, topics and suggestions have been incorporated into this plan.

Thank-you also to Fleur Maidment.



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