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.
To find out how you can participate in the decision-making process for City of Melbourne’s current and future initiatives, visit [melbourne.vic.gov.au/participate](http://melbourne.vic.gov.au/participate)

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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 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.

melbourne.vic.gov.au/bicycleplan
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.

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

2 City of Melbourne 2012
Vision

Make Melbourne a cycling city

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 2030
• 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
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 educations 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)

<table>
<thead>
<tr>
<th>ST KILDA ROAD</th>
<th>ROYAL PARADE</th>
<th>RATHDOWNE STREET</th>
<th>FOOTSCRAY ROAD</th>
<th>YARRA TRAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>35%</td>
<td>31%</td>
<td>16%</td>
<td>Off-road</td>
</tr>
<tr>
<td>512 bikes an hour</td>
<td>891 bikes an hour</td>
<td>715 bikes an hour</td>
<td>534 bikes an hour</td>
<td>1,147 bikes an hour</td>
</tr>
</tbody>
</table>
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. RiderLog\(^7\) 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.

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\(^1\) Based on SGS modelling and analysis
\(^6\) CDM Research, 2015
\(^7\) RiderLog app, Bicycle Network Victoria
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 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

- **City North**
  - +5,820 residents (+46%)
  - +11,930 jobs (+67%)

- **Hoddle Grid**
  - +25,020 residents (+109%)
  - +108,200 jobs (+49%)

- **Southbank**
  - +15,160 residents (+118%)
  - +15,820 jobs (+37%)

- **Docklands**
  - +8,890 residents (+121%)
  - +11,690 jobs (+31%)

- **E-Gate**
  - +6,820 residents

- **Arden-Macaulay**
  - +9,860 residents (+370%)
  - +14,750 jobs (+280%)

- **Lorimer precinct**
  - (Part of Fishermans Bend)

- **Fishermans Bend Employment Precinct**
  - (Part of Fishermans Bend)

- **Central city**

- **Urban renewal area**

- **Potential urban renewal area**

- **Hoddle Grid**

- **Stable residential area**

- **Commercial and industrial buffer**

- **Freeway**

- **Rail station**

- **Rail network**

- **Metro Rail Station (proposed)**

- **Metro Rail alignment (proposed)**
**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](image)

**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

SmartRoads® 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

Studies 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 study 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

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8 VicRoads 2011
9 SGS Economics and Planning 2015
10 SGS Economics and Planning 2015
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
- sharrow (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 Melbourne\(^1\) 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

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>LEVEL OF SERVICE ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital City Trail – between Punt Road and Boathouse Drive</td>
<td>B+</td>
</tr>
<tr>
<td>La Trobe Street, Melbourne - physically separated bike lane</td>
<td>B-</td>
</tr>
<tr>
<td>Clarendon Street, East Melbourne - double chevron bike lane</td>
<td>C+</td>
</tr>
<tr>
<td>St Kilda Road – standard bike lane adjacent to parking</td>
<td>D</td>
</tr>
</tbody>
</table>

\(^1\) Victorian Government, 2014
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 4: Planning and tasks to be completed for cycling corridor along the Yarra River Corridor

<table>
<thead>
<tr>
<th>CYCLING CORRIDOR RIVER CORRIDOR ORANGE</th>
<th>DESCRIPTION</th>
<th>TIMING</th>
<th>AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SHORT &lt;2 YEARS</td>
<td>MEDIUM 2-5 YEARS</td>
</tr>
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</table>
| Lorimer Street                         | • 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) | • Existing  
• Short  
• Medium  
• Long | VicRoads  
VicTrack |
| River Esplanade                        | • Investigate making wooden deck more bike-friendly  
• Provide a wider shared path adjacent to Point Park | • Medium  
• Medium | Docklands Coordination Committee  
City of Melbourne |
| Yarra River Corridor                  | • 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 | • Short  
• Medium  
• Long | Multiple land managers |
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.

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

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>
<thead>
<tr>
<th>PROJECT</th>
<th>LOCATION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Albert Street</td>
<td>• Establish green wave signal timing coordination reduce travel times for cyclists riding at approx. 15–20km/h to moderate cyclist speeds on downhill sections</td>
</tr>
<tr>
<td>2.</td>
<td>Collins Street</td>
<td>• Early starts for people walking and riding bikes at all intersections</td>
</tr>
<tr>
<td>3.</td>
<td>Collins Street and Macarthur Street</td>
<td>• Early start westbound for bikes to enter narrow Collins Street carriageway ahead of other vehicles</td>
</tr>
<tr>
<td>4.</td>
<td>Haymarket roundabout</td>
<td>• Investigate early starts for bikes to establish themselves in existing lanes in front of motor vehicles, particularly for northbound cyclists travelling between Elizabeth Street and Royal Parade</td>
</tr>
<tr>
<td>5.</td>
<td>Haynes Street and Curzon Street</td>
<td>• Install early start to assist people riding on North Melbourne local route and for children to get to school</td>
</tr>
<tr>
<td>6.</td>
<td>Southbank Boulevard</td>
<td>• Investigate green wave signal timing coordination for cyclists as part of redevelopment</td>
</tr>
<tr>
<td>7.</td>
<td>Swanston Street north</td>
<td>• Investigate changes to sequences to give walkers, cyclists and trams priority</td>
</tr>
</tbody>
</table>
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)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FATAL</th>
<th>SERIOUS INJURY</th>
<th>OTHER INJURY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>0</td>
<td>68</td>
<td>153</td>
<td>221</td>
</tr>
<tr>
<td>2010</td>
<td>1</td>
<td>58</td>
<td>181</td>
<td>240</td>
</tr>
<tr>
<td>2011</td>
<td>1</td>
<td>72</td>
<td>206</td>
<td>279</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>57</td>
<td>161</td>
<td>218</td>
</tr>
<tr>
<td>2013</td>
<td>1</td>
<td>69</td>
<td>175</td>
<td>245</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>68</td>
<td>164</td>
<td>232</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision with an open door of a vehicle (163)</td>
<td>52</td>
<td>23%</td>
<td>46</td>
<td>20%</td>
</tr>
<tr>
<td>Right-through (121)</td>
<td>23</td>
<td>10%</td>
<td>33</td>
<td>14%</td>
</tr>
<tr>
<td>Left-turn sideswipe at intersection (137)</td>
<td>22</td>
<td>10%</td>
<td>26</td>
<td>11%</td>
</tr>
<tr>
<td>Lane side swipe in parallel lanes (133)</td>
<td>14</td>
<td>6%</td>
<td>11</td>
<td>5%</td>
</tr>
<tr>
<td>Cross traffic and far and near at intersections (110,111,112,113,116)</td>
<td>25</td>
<td>11%</td>
<td>26</td>
<td>11%</td>
</tr>
<tr>
<td>Out of control on carriageway (174)</td>
<td>15</td>
<td>7%</td>
<td>15</td>
<td>6%</td>
</tr>
<tr>
<td>Vehicles off footpath strikes vehicle on carriageway (148)</td>
<td>9</td>
<td>4%</td>
<td>11</td>
<td>5%</td>
</tr>
<tr>
<td>Vehicle emerging from driveway (147)</td>
<td>4</td>
<td>2%</td>
<td>3</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>59</td>
<td>26%</td>
<td>59</td>
<td>26%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>224</strong></td>
<td><strong>100%</strong></td>
<td><strong>229</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>DESCRIPTION (CRASHSTATS IDENTIFICATION NUMBER)</th>
<th>2007-2011 CRASHES PER YEAR</th>
<th>2012-2014 CRASHES PER YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection crashes (per year) (110, 111, 112, 113, 116, 121, 137)</td>
<td>70</td>
<td>85</td>
</tr>
<tr>
<td>Mid-block crashes (per year) (133, 163)</td>
<td>65</td>
<td>57</td>
</tr>
</tbody>
</table>
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).

Studies 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.

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

Research 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>
<thead>
<tr>
<th>LOCATION</th>
<th>PREVIOUS LIMIT</th>
<th>NEW LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoddle grid, Melbourne central business district</td>
<td>50km/h</td>
<td>40km/h</td>
</tr>
<tr>
<td>Rathdowne Street, Carlton</td>
<td>60km/h</td>
<td>40km/h</td>
</tr>
<tr>
<td>Kensington, all local streets</td>
<td>50km/h</td>
<td>40km/h</td>
</tr>
<tr>
<td>Parkville South, all local streets</td>
<td>50km/h</td>
<td>40km/h</td>
</tr>
<tr>
<td>Errol and Queensberry streets, North Melbourne (part)</td>
<td>60km/h</td>
<td>40km/h</td>
</tr>
<tr>
<td>Elgin and Faraday streets, Carlton (part)</td>
<td>60km/h and 50km/h</td>
<td>40km/h</td>
</tr>
</tbody>
</table>
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) 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 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