

3. CAPITAL WORKS

3.1 Addressing pedestrian crowding

Develop a tool to assess and identify current and future crowding and develop measures to address these locations through a range of interventions.

Objective

To reduce pedestrian crowding through targeted actions at intersections, pedestrian crossings and footpaths.

To develop and adopt appropriate crowding standards for Melbourne to ensure footpaths are not subject to overcrowding now or in the future, including those under investigation for a pedestrian street hierarchy.

Issues

No guidance is available on what level of crowding is optimal in different environments.

In general higher crowding levels can be tolerated in the approach to busy public transport interchanges during peaks, however there is a limit to this tolerable level of crowding. Lower levels of crowding are appropriate in shopping areas and locations where people want to stand, be stationary or wander.

As pedestrian numbers have grown, pedestrians have been increasingly affected by a range of footpath obstructions, including infrastructure, construction, street furniture and both motorcycle and bicycle parking. Both motorcycle and bicycle use is growing in the City of Melbourne and allocating space for parking for these modes must be addressed with consideration of the needs of pedestrians.

Crowding standards and guidelines

The City of Melbourne can specify maximum numbers of people ideal for specific locations using various types of spaces to ensure that whether walking or waiting, people are comfortable and safe. Crowding standards and guidelines vary depending on locations; there are different crowding standards for places where people move along footpaths and where they wait at intersections.

Crowding standards are useful in maintaining pedestrian comfort when designing infrastructure (such as footpaths), managing street operations (such as signal timing) or placing street furniture.

London has a maximum pedestrian comfort level of 11 people per minute per metre of footpath width in mid-block locations (Atkins for TfL, 2010, p. 13). As an interim measure, the City of Melbourne will adopt Transport for London standards (which differ based on land use context and are shown in Appendix 6).

Further research will assess whether these are appropriate standards for Melbourne, develop crowding standards and pedestrian comfort levels for crossings and provide guidance on how to achieve these.

Crowding standards and guidelines can be used by City of Melbourne when designing infrastructure such as street upgrades as well as when reviewing proposals by developers that will have an impact on the pedestrian network in the public realm.

Implementation

- Develop a council tool to assess crowding in high pedestrian activity areas and develop measures to address overcrowding through a range of interventions.
- Identify current and future overcrowded areas and develop plans to address overcrowding in these locations.
- Plan future capital works in consideration of a crowding standard, taking into account likely future growth in pedestrian numbers.
- Identify current and future locations where footpath obstructions reduce the pedestrian comfort level below acceptable levels and take action to address this including relocation, education, regulation or enforcement.

Crowding at intersections



Figure 25: Estimated existing crowding on footpaths at intersections at peak times

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3.2 Pedestrian crossings at intersections

Progressively widen, de-clutter, extend and protect pedestrian crossings through engineering, enforcement and design interventions.

Objective

Reduce crowding on and around pedestrian crossings.

Issues

Intersections can be crowded places where movement intensifies as people come together at safe crossing points. Crowding on corners makes it difficult for pedestrians heading for one crossing to get through the crowd waiting for the perpendicular crossing.

Given central city growth projections, more space and other improvements to the pedestrian network will be needed to avoid overcrowding.

In the Hoddle Grid, most older crosswalks in the central area are about three metres wide.

Wider crosswalks can reduce the problem of pedestrian crowding at intersections. They also minimise conflict between opposing pedestrians as they cross the road.

At some places where new tram stops have been constructed, crosswalks have been widened to cater for increased tram passenger volumes. The new pedestrian crossing at Elizabeth Street is more than eight metres wide. At other places the crosswalks are still quite narrow.

Generally, crosswalks should be made four metres wide across the central city and eight metres wide at busy tram stops or where pedestrian crowding is a problem. To provide for future increases in pedestrian numbers, it is worthwhile implementing wider crosswalks whenever opportunities arise with the installation of new tram stops or when road works are carried out.

Building out kerbs at intersections can shorten crossing distances and increase walk times. This can lead to improved traffic signal timings. Additional footpath space is more comfortable for waiting pedestrians and will help to reduce crowding at busy intersections.

Where pedestrian crowding is a problem now or in the future, the area near the crosswalk should be as clear as possible. This is important so that pedestrians with a visual disability do not walk into furniture. It also provides more space to avoid crowding. The clear area should be the full extension of the crosswalk lines, not just the area adjacent to the kerb ramp.

Implementation

- Progressively widen crosswalks within the Hoddle Grid that are less than four metres wide.
- Relocate footpath furniture and other infrastructure away from corners at busy intersections.
- Build kerb outstands at Hoddle Grid intersections where there is space to do so.

Blocked crossings and intersections

Vehicles blocking crossings and intersections because of queuing along a road add to pedestrian crowding and frustration while also causing operational delays to the tram network in certain locations. This is more significant for eastbound traffic in the pm peak.

Signs placed warning drivers to 'Keep Intersection Clear' are not effective and merely add to sign clutter. The road rules are quite clear that drivers must not block intersections or crossings.

Certain things can be done in terms of traffic engineering, signal timings and other techniques to minimise drivers blocking intersections or crossings, depending on the location. Enforcement, media coverage and traffic signal adjustments can deliver improvements to pedestrian and public transport movement in the most affected locations.

Implementation

- Work with Victoria Police to direct and inform enforcement activities in the City of Melbourne to achieve the transport and safety objectives of the City of Melbourne Transport Strategy 2012, Road Safety Plan 2013-17 and the Walking Plan.
- Work with Victoria Police, VicRoads and PTV to prevent vehicles from blocking intersections and crossings. This will include investigation of potential use of vehicle detector loops connected to traffic signals at certain intersections to prevent vehicles from blocking intersections.
- Assess the feasibility of trialling departure side detector loops at Elizabeth and Flinders streets to prevent queuing of southbound traffic on Flinders Street from blocking the intersection.

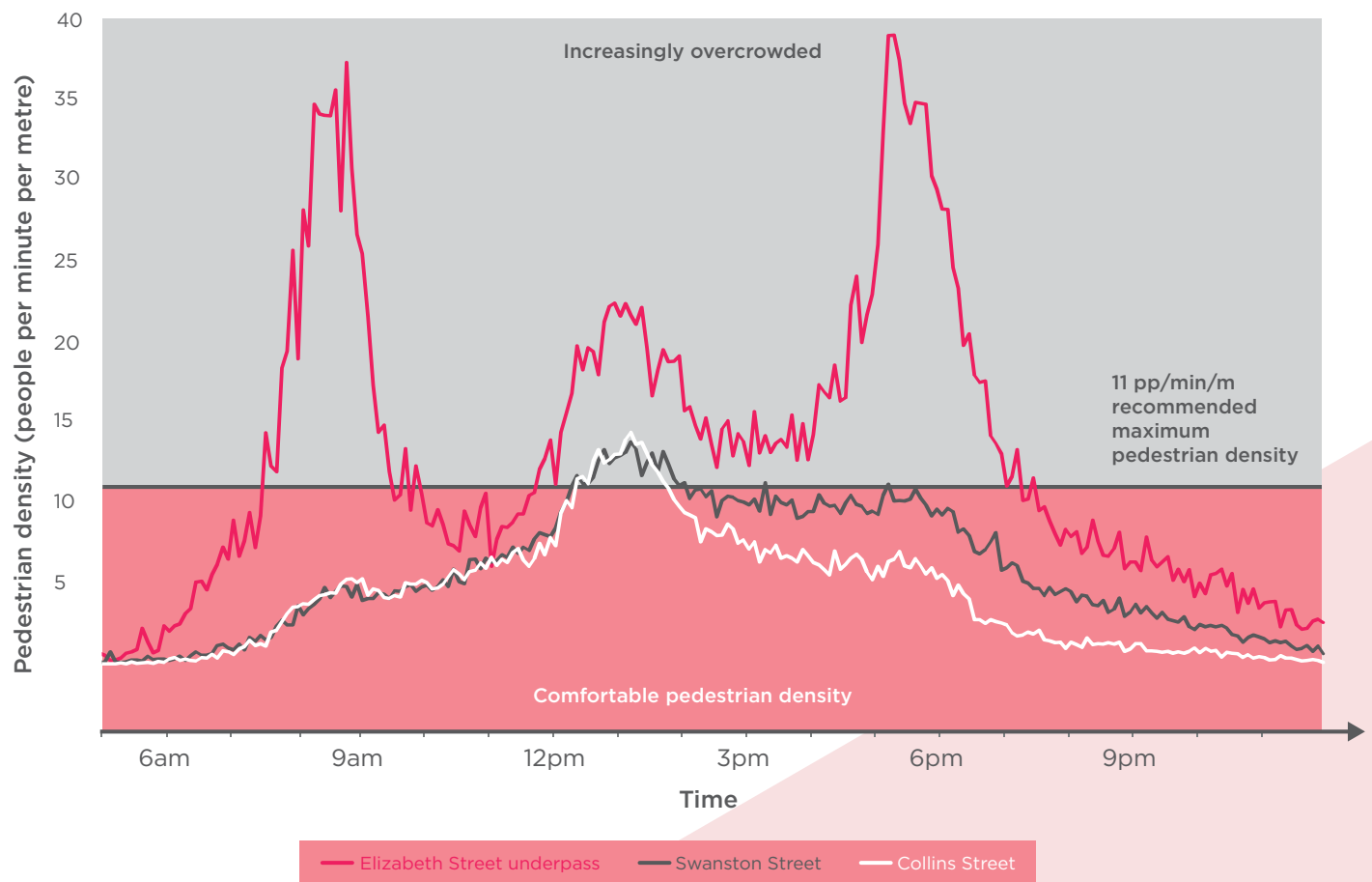


Figure 26: Counted pedestrian volumes on central city footpaths on an average Tuesday, September 2012

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3.3 Master plans

Ensure master plans and precinct plans deliver an enhanced pedestrian network consistent with the principles of the Walking Plan.

Objective

To focus master planning and precinct planning efforts in the City of Melbourne on areas which will experience significant future growth in walking to ensure designs cater for that growth.

Issues

Rapidly increasing numbers of pedestrians are putting stress on existing infrastructure.

Rationale

Master planning and precinct planning are the appropriate tools to ensure that the city is well-adapted to changing demands such as significant growth in pedestrian numbers, major new public transport infrastructure and significant

land use development particularly in growth and urban renewal areas.

The construction of Melbourne Metro, delivery of changes to the tram network (including changes required by construction of Melbourne Metro) and planning for future patronage of these services provides the impetus for new master plans. Other reasons include the need to change the operation of streets, such as City Road in Southbank, which were previously bypass routes but now run through busy, central city areas. (Figure 29 identifies future master plan projects, and more detail about the context of these projects is included in Appendix 2).

Pedestrian Street Hierarchy

The Walking Plan establishes a Pedestrian Street Hierarchy to provide direction for the design and operation of streets. The hierarchy will be used to identify streets for short term investigation but will also be used in future development of Master Plans to ensure an enhanced pedestrian network consistent with the principles of the Walking Plan.

These plans will direct advanced streetscape designs and will lead to capital works delivery in accordance with the Streetscape Framework (2011).

Implementation

- Ensure master plans and precinct plans deliver an enhanced pedestrian network consistent with the principles of the Walking Plan.

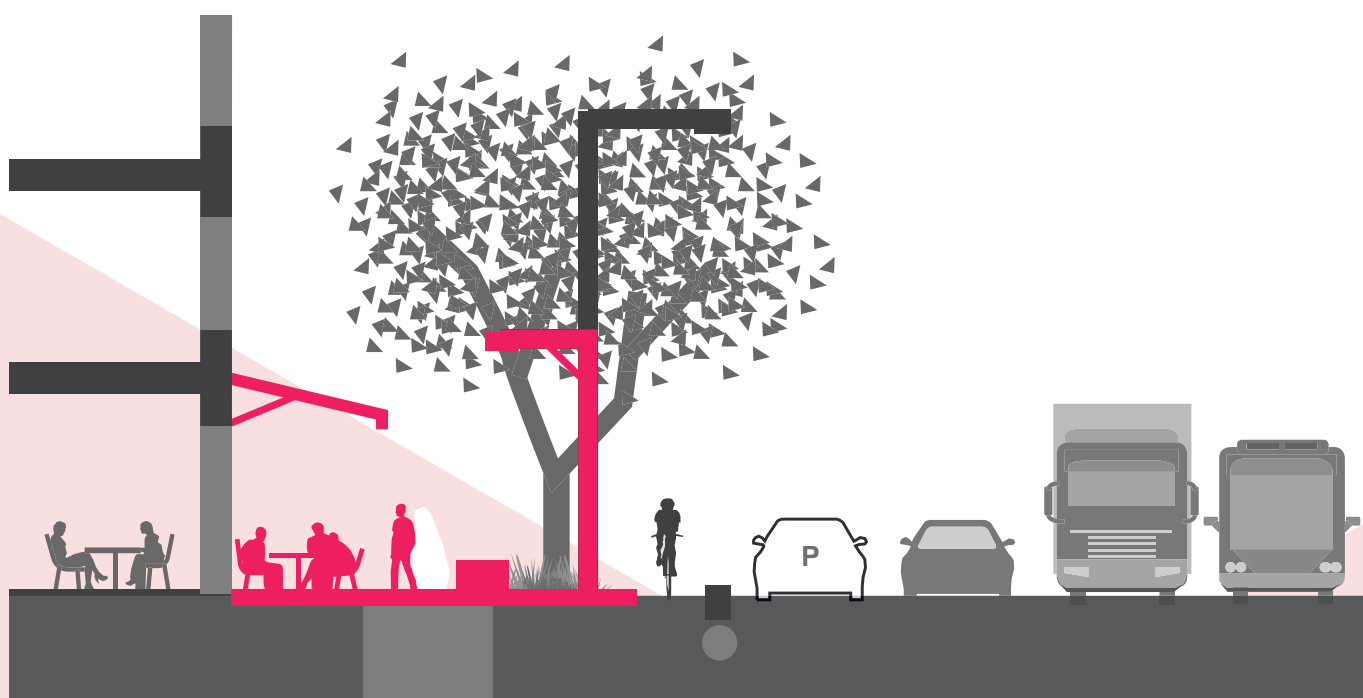


Figure 27: Road section produced as part of the development of the City Road Master Plan.

The pedestrian experience on City Road could be enhanced by providing a high level of accessibility, supporting on-street activities and requiring wider footpaths.

Walking network issues and opportunities in urban renewal areas

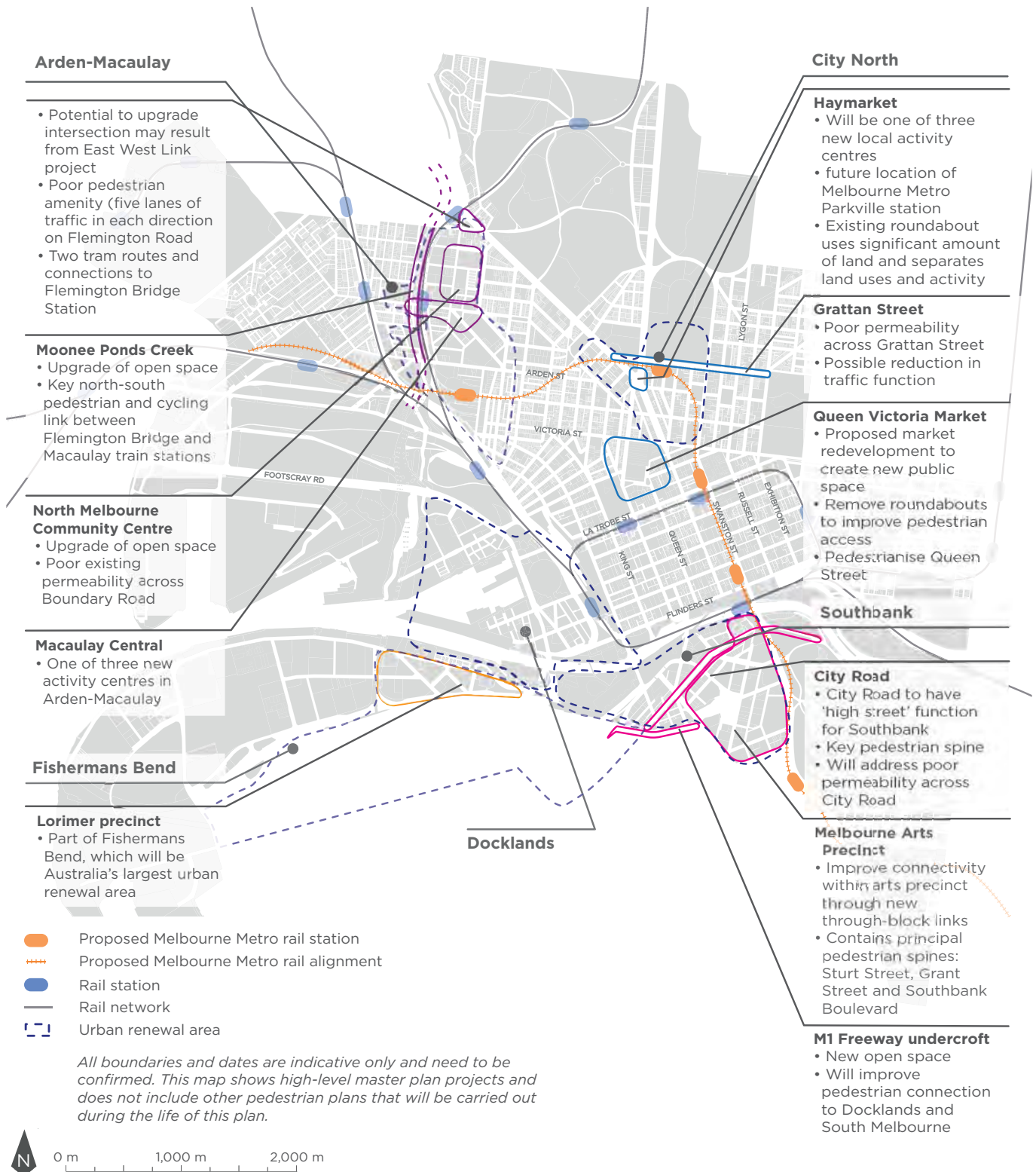


Figure 28: Walking network issues and opportunities in urban renewal areas

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Walking network issues and opportunities in future master plan areas

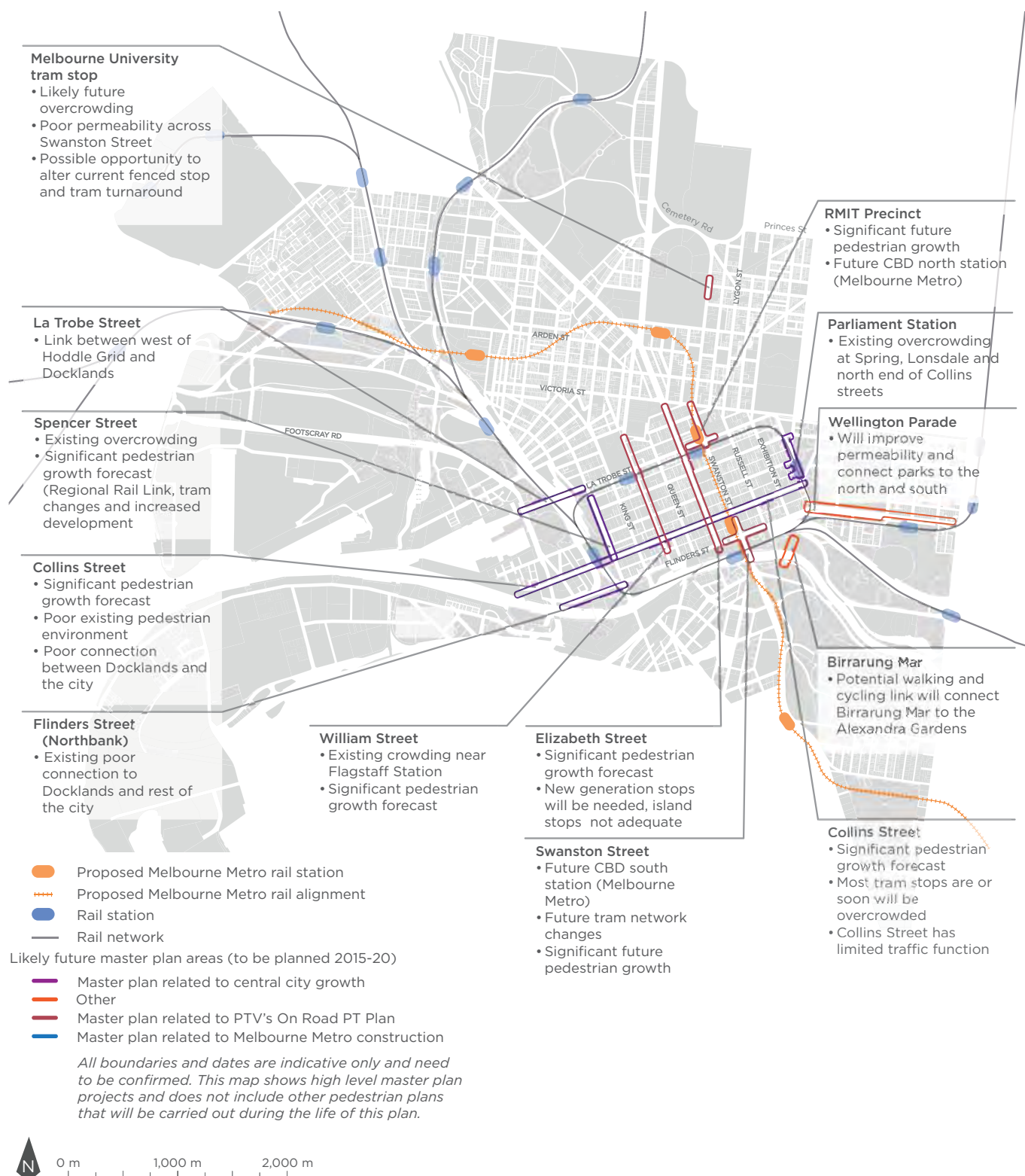


Figure 29: Walking network issues and opportunities in future master plan areas



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3.4 Access around stations

Prepare pedestrian accessibility plans for train stations in the Hoddle Grid and in urban renewal areas.

Objective

To increase pedestrian safety and service around Melbourne's public transport nodes by redesigning them to provide more links and improve amenity.

Issues

Footpaths around stations are frequently overcrowded and the problem is getting worse.

Rationale

Melbourne's major stations are experiencing significant patronage growth which is expected to continue.

Public Transport Victoria and Metro Trains are continuing to adjust services to provide more capacity into and out of the city. Adjustments include rerouting and changing timetables to make the system more efficient. Major projects, such as Regional Rail Link and Melbourne Metro, are also expected to have a significant impact.

Footpaths outside city loop train stations are currently experiencing significant crowding. Issues include people spilling onto the road because footpaths are not large enough for the number of people waiting, significant delays to pedestrians and crowded footpaths at midblock and crowded crossings. These problems are likely to get worse given projected increases in patronage and nearby development which will attract more travellers.

Actions to address crowding around stations must allow for pedestrian permeability and not create barriers.

Implementation

- Work with the Department of Economic Development, Jobs, Transport and Resources (DEDJTR), Public Transport Victoria and VicRoads to prepare pedestrian accessibility plans for the precincts around train stations in the Hoddle Grid.
- Prepare pedestrian accessibility plans for Spring Street and Collins Street at Parliament Station.
- Prepare pedestrian accessibility plans for Little Collins Street and King Street at Southern Cross Station.
- Work with the DEDJTR, Public Transport Victoria and VicRoads to ensure high levels of pedestrian priority in planning for new Melbourne Metro stations.



Figure 30: Pedestrian crossing outside Southern Cross Station

Parliament Station

Long term:

- Investigate installing pedestrian underpass and new entrance to reduce crowding at Lonsdale Street

Lonsdale Street entrances experience the greatest pedestrian congestion

Long term:

- Install escalators
- Provide weather protection

Long term:

- Investigate installation of zebra crossing over Nicholson Street

Short term:

- Investigate reducing to one lane to allow footpath widening and slow traffic
- Investigate full-time closure of Spring Street in front of Princes Theatre

Short term:

- Encourage use of Bourke Street entrance through signage and installation of an escalator

Medium term:

- Install escalator between concourse and ground levels
- Realign signalised pedestrian crossing to align with Little Collins Street

Short term:

- Investigate narrowing traffic lane to increase footpath space

Short term:

- Investigate relocating parking bays, east side of Spring Street or Ulster Lane

Medium term:

- Relocate traffic signal boxes to Gordon Reserve to increase footpath space

Severe pedestrian crowding at corner of Spring and Collins streets; footpath narrows north of Collins Street



Figure 31: Possible improvements to pedestrian access to Parliament Station

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Flagstaff Station



Figure 32: Possible improvements to pedestrian access at Flagstaff Station

Southern Cross Station



Figure 33: Possible improvements to pedestrian access at Southern Cross Station

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Melbourne Central Station

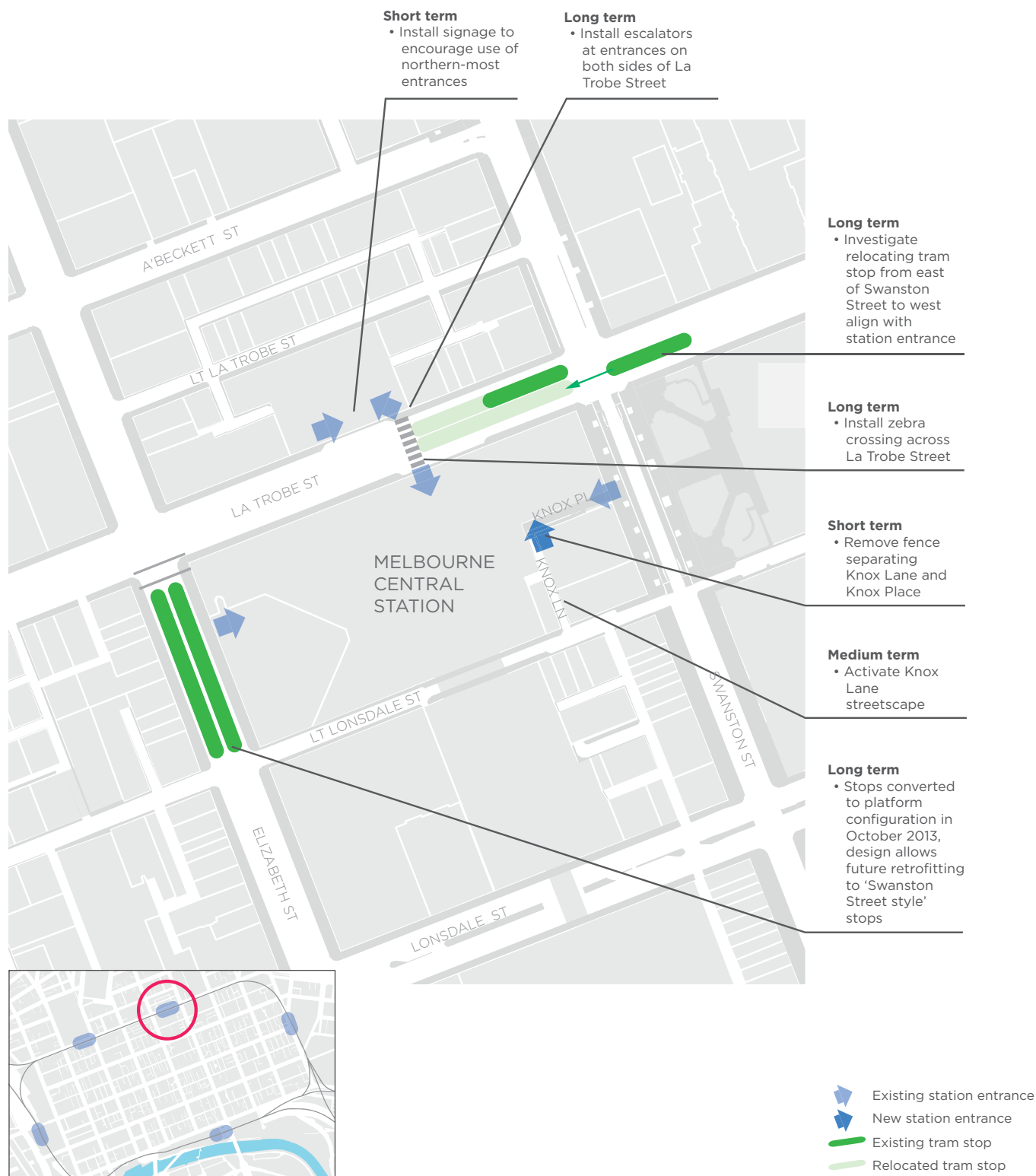


Figure 34: Possible improvements to pedestrian access at Melbourne Central Station

Flinders Street Station

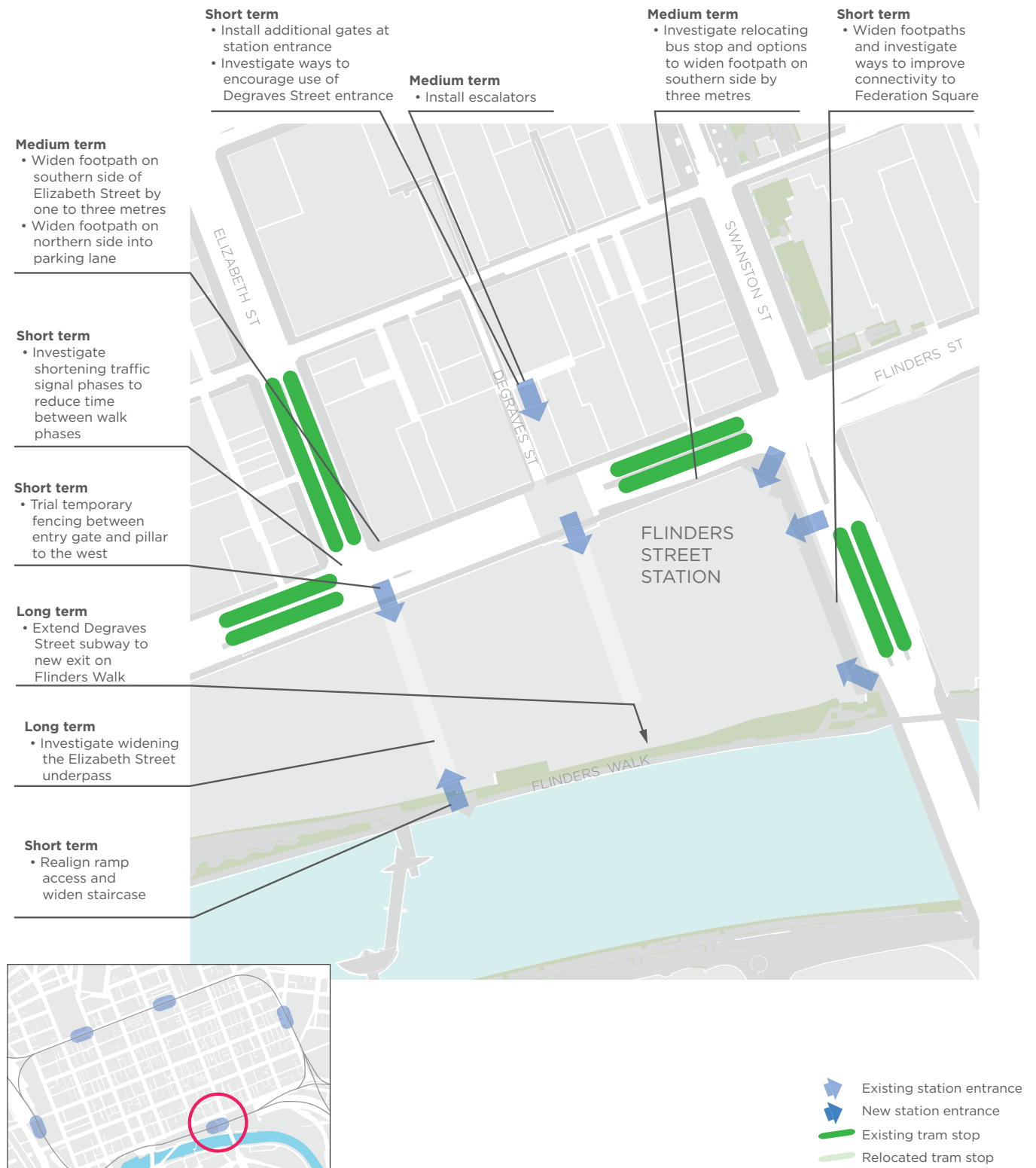


Figure 35: Possible improvements to pedestrian access at Flinders Street Station

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3.5 Tram and bus stops

Work with the DEDJTR, PTV and Yarra Trams to review current loadings, forecasts and location changes for tram and bus stops to improve their design, account for better streetscape integration and future pedestrian volumes.

Objective

To develop designs for tram and bus stops which create a high level of amenity while reducing crowding and delays to passengers to integrate stops well with the walking network.

Issues

Some key tram stops are overcrowded and the problem is worsening as tram use rises. Access to some island tram stops is restricted by their width and small number of access points.

Rationale

Tram stops are key access points to the public transport network in Melbourne. The city has many tram stops that are busier than most suburban train stations. Around 47,360 people get on and off trams at the Federation Square tram stop on an average weekday (PTV, 2011b). At the stop on Collins Street just west of Swanston Street, more than 25,740 people get on and off trams on an average weekday (PTV, 2011b). Patronage on the tram network grew by 4.5 per cent in the year ending 30 June 2012 (DoT, 2012, p. 167). Overall growth across the public transport network is forecast to be 4.4 per cent per year to 2021, and 3.2 per cent between 2021 and 2031 (PTV, 2013; p. 4). If these growth rates apply to these individual stops, around 96,900 people will use the Federation Square tram stop, and 53,630 will use the Collins Street stop each day by 2031.

Many stops are already uncomfortably crowded during parts of the day; this is expected to worsen. Crowding at tram stops is a critical safety issue.

The stops provide level access (no step up) to the tram network and, in many cases, are island stops separated from the footpath by a traffic lane. Most of the platform stops are fewer than 10 years old but some have already reached capacity.

There are currently no crowding standards for the stops.

Tram stops in urban renewal areas need to be designed to cater for future growth.

Significant changes are expected for central Melbourne's tram network. They include reducing overloading and tram congestion on Swanston Street by moving some routes to the west, as well as increasing the number of trams and passengers on most routes including Elizabeth Street and the construction of Melbourne Metro, which may mean the re-routing of all trams from Swanston Street for a period of time.

- Work with the Department of Economic Development, Jobs, Transport and Resources (DEDJTR), Public Transport Victoria and Yarra Trams to review the current loadings, forecasts and proposed location changes for tram and bus stops in consideration of the walking network around stops, prioritising tram stops that are currently over-crowded or forecasted to experience excessive crowding.
- Work with the DEDJTR, Public Transport Victoria and Yarra Trams to adopt appropriate crowding and permeability standards for stops.
- Ensure master planning for Elizabeth Street takes into account significant future tram patronage growth and provides for highly accessible tram stops which are well-integrated with the footpath network.
- Improve the design of tram stops to account for better streetscape integration and higher pedestrian volumes in locations that already are or will be busy over the long term.

Tram stops likely to be overcrowded by 2030

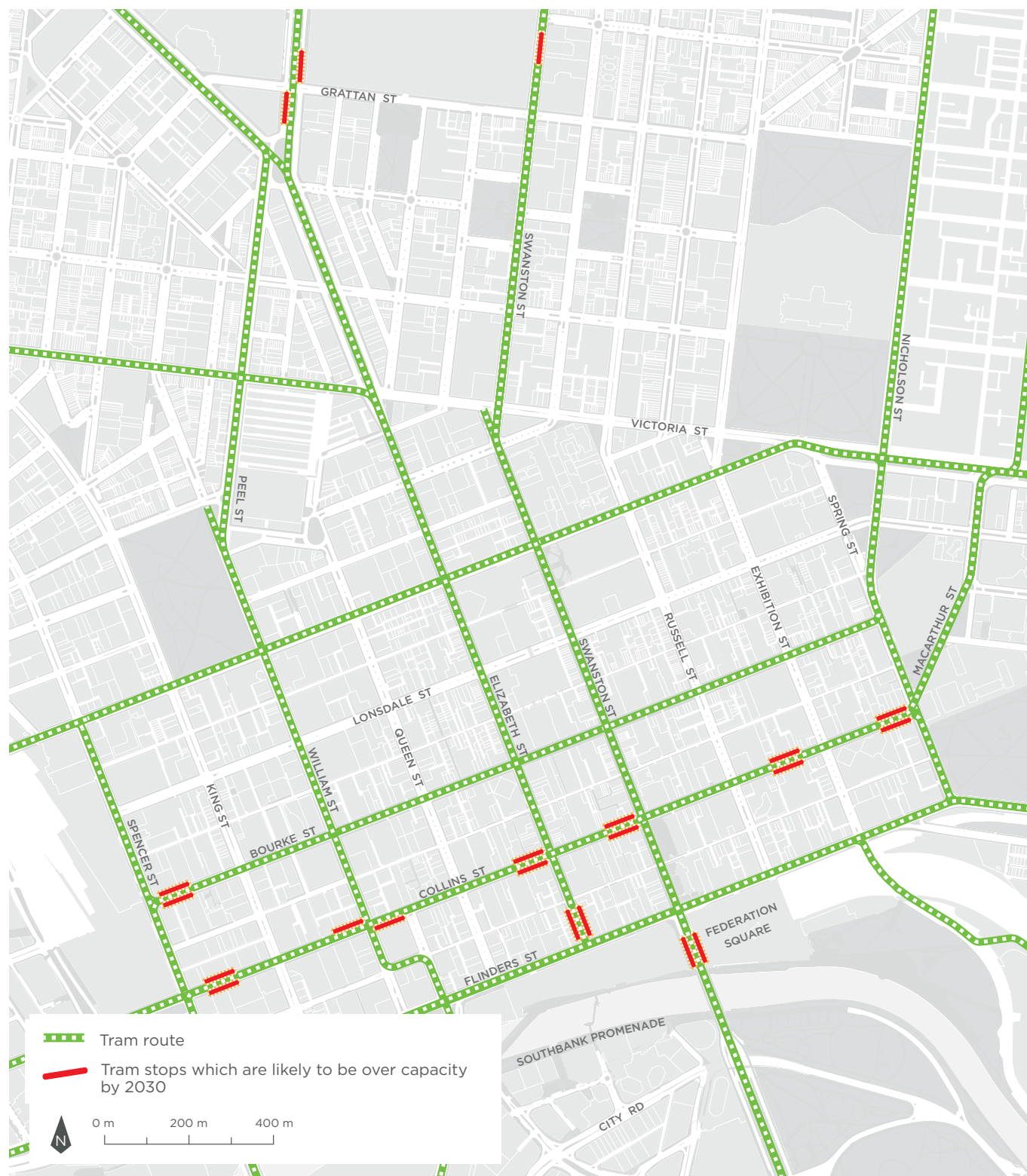


Figure 36: Tram stops likely to be at capacity by 2030

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3.6 Increasing the number of formal crossings

Develop a prioritised list of locations for new or improved pedestrian crossings where demand is high, crossing is difficult, including at roundabouts, and where distances between crossings are long.

Objective

Provide new pedestrian crossings to enable safe and easy pedestrian access.

Issues

A lack of pedestrian crossings or connections can make walking journeys unnecessarily long or create road safety hazards.

Rationale

Pedestrian crossings provide a safe way for people to walk from one side of the road to the other. They provide vital links in the walking network and reduce walking distances. There are locations in the City of Melbourne where new crossings are needed. Some are needed to deal with significant flows from stations (such as on Lonsdale Street at Crombie Street). Others are needed to connect developing areas to centres of activity (such as across City Road in Southbank) or to improve connections to key attractions such as the west side of the intersection of Flinders and Russell streets near Federation Square.

Walking north or south in the Hoddle Grid, formal pedestrian crossings are provided at a maximum spacing of every 100 metres. Walking east-west, formal pedestrian crossings are only every 200 metres. If a mid-block crossing is present this reduces to around 100 metres, assuming the crossing is in the middle of the block.

In some parts of the city, the distance between crossing points is extremely long. For example, the distance between crossing points on Alexandra Avenue between the Alexandra Gardens

and the Queen Victoria Gardens is more than 630 metres (from the intersection at Linlithgow Avenue west to the pedestrian signals at Fanning Street on City Road). As the city grows, larger numbers of people walking will mean a need for more crossings.

Connections across the Yarra and other rivers must also be frequent enough to prevent the river being a barrier to pedestrian movement, especially in busy areas.

The City of Melbourne has been progressively installing mid-block signalised crossings on east-west streets in the Hoddle Grid similar to the well-used crossing on Collins Street between Swanston and Elizabeth streets.

Zebra crossings, which can be used on single-lane roads (in each direction) and work well in areas with lower vehicle speeds, are significantly cheaper to install than signalised crossings. They give a higher level of priority to pedestrians, who can cross them without having to wait for a signal.

Implementation

- Develop a prioritised list of locations for new pedestrian crossings and work with VicRoads to install them.
- Design and reconstruct the pedestrian bridge at the existing railway overpass at Arden Street.
- Construct a pedestrian refuge at Queensberry and Bouverie streets.
- Consider improved pedestrian connections across the Yarra River as part of the proposed Collins Street tram extension from Docklands to Fishermans Bend.
- Continue to install crossing points and meet VicRoads guidelines, prioritising locations where demand is high, crossing is difficult and distances between crossings are long.
- Review existing roundabouts on local streets and investigate the possibility of installing zebra crossings on pedestrian desire lines at these intersections.



Figure 37: City Road, Southbank, is an example of a street with long distances between formal pedestrian crossings – 259 metres on average

Proposed central city mid-block pedestrian crossings



Figure 38: Proposed pedestrian mid-block crossings



Figure 39: Kerb extensions, like this example on Little Bourke Street, reduce the crossing distance for pedestrians

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3.7 Making streets easier to cross

Investigate techniques to assist pedestrians to cross streets legally and safely at 'non-crossing' locations.

Objective

Make streets easier to cross safely, particularly mid-block.

Issues

A lack of crossings can make walking journeys unnecessarily long or create road safety hazards.

In addition to the installation of formalised crossings, there may be an opportunity to develop a program of low-cost painted medians and other infrastructure to help pedestrians cross the street safely and reach their destination more quickly.

Rationale

Pedestrian crossings create safe crossing points, mostly at intersections, by giving priority to people crossing the street. As previously described, zebra crossings require motorists to stop whenever a pedestrian wishes to cross. Signalised crossings require motorists to stop when signals turn red.

There are also many other places that pedestrians may wish to cross the street where formal crossings are not provided. It would be too expensive and inefficient for the operation of the street to provide crossings in all these locations. Under the road rules, pedestrians wishing to cross the road may do so anywhere except within 20 metres of a pedestrian crossing. Painted median islands have been used to assist people to cross in places where no crossing is provided. Allowing people to cross the street safely where they want to often reduces delay and walking distances. It can also promote business in shopping streets by allowing easier access between shops on different sides of the road.

Implementation

- Investigate techniques such as, medians, pedestrian refuges and raised thresholds to assist pedestrians to cross streets legally and safely at 'non-crossing' locations.

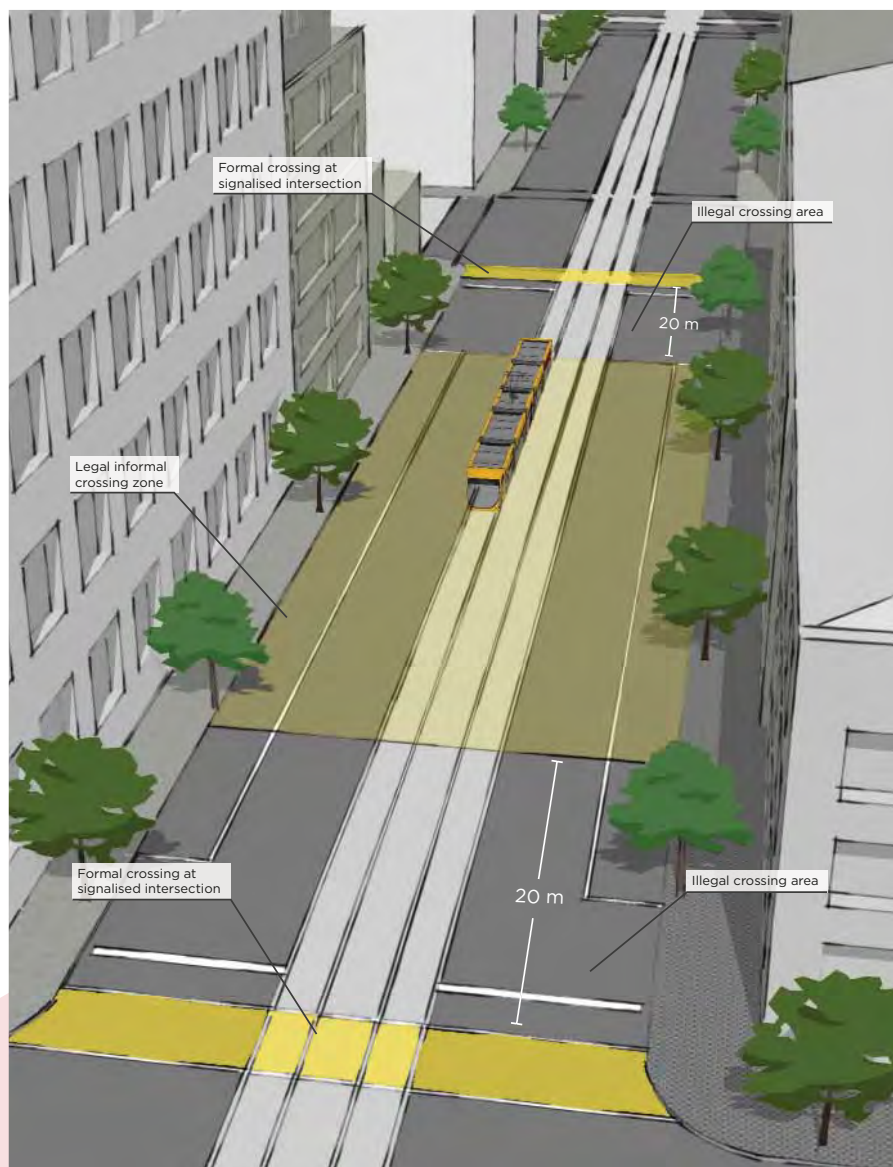


Figure 40: Example of legal informal crossing zone

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3.8 Technical notes

Review Technical notes to ensure alignment with the Walking Plan.

Objective

To ensure that design and construction standards as well as standard drawings at City of Melbourne outline specifications which are aligned with Council's Walking Plan.

Issues

City of Melbourne Technical Notes and Design and Construction Standards must continue to adapt in order to provide designs that cater for growing numbers of pedestrians and new types of walking infrastructure.

Rationale

Technical Notes and Design and Construction standards are provided by the City of Melbourne to developers

and contractors to ensure that works in the public realm are of an appropriate standard. Much of the content of the standard drawings is aimed at creating a high-quality pedestrian environment. Compliance with the Docklands Design and Construction Standards is a requirement under the City of Melbourne's Activities Local Law 2009.

The City of Melbourne is planning to extend the current Docklands Design and Construction Standards to cover the entire municipality. This provides the opportunity to ensure specifications provide for pedestrian 'future-proofing', for example setting footpath widths that are appropriate for the growing numbers of people walking in the city.

Implementation

- Review Technical notes to ensure alignment with the walking plan.



Figure 41: A review of technical notes could address tripping hazards and barriers to wheelchair accessibility across the city, such as this bull-nose ledge.

