

## Connections (Internal)

The main entry points into the Study Area are at signalised intersections providing both vehicle and pedestrian access. The other entry points are from mid-block locations, pedestrian access points or entry off the Light Rail next to South Melbourne Market.

The regular street grid allows for high permeability and numerous options for both active and motorised transport. This distributes vehicle movements within the Study Area and allows traffic to enter the precinct at locations close to a destination.

Most of the Study Area is within 200m of a public transport stop with only a few small areas beyond that distance.

The Study Area is bound by roads with 60kmh speed limits and reduced speed limits within providing a quieter and safer environment for pedestrians and residents in the retail core of Clarendon Street. In contrast, the cross-town traffic function and connections to other areas creates an edge effect with more traffic lanes, faster speeds and traffic noise at the periphery.

The one way streets and the slow traffic speeds make the inner core of the Study Area highly walkable and the entire precinct perimeter can be accessed on foot in no more than 20 minutes from any given location. The 'walk score' tool assessed the Study Area within a 10 minute walkable catchment with a rating of 100 out of 100. For cycling, it was rated with a transit score of 90 out of 100. This highlights the compact structure, high levels of public transport connections and close proximity to the CBD, social and community infrastructure and housing.

### 10min Walkable catchment

source: www.walkscore.com

**257 Clarendon Street**  
 South Melbourne, Melbourne, 3205  
 Commute to **Downtown Melbourne**  
 5 min 17 min 9 min 32 min View Routes  
 Favorite Map Nearby Apartments

**Walk Score 100**  
 Walker's Paradise  
 Daily errands do not require a car.

**Transit Score 90**  
 Rider's Paradise  
 World-class public transportation.



## Transport Partnerships, Plans & Projects

The Study Area is well serviced by public and active transport options. Weekend services are less frequent reducing access to South Melbourne Market and other retail areas. The South Melbourne Market is open four days a week (Wed, Fri, Sat, Sun) and results in a significant increase in pedestrian traffic and a decrease in vehicle speeds around the site. People who visit the Market more than once a week use active transport (walking, cycling and public transport) while people that attend the market once a week mostly use a car.

There are numerous transport projects underway that have implications for the Study Area. The Victorian Government and transport authorities are working with Council to deliver new infrastructure with the aim to improve services and connections to bus, tram, train, cycling and pedestrian routes including:

1. Parking Rates Options Paper
2. Dorcas Street bike corridor investigations
3. Domain precinct and Park Street tram and bike corridor
4. Clarendon Street tram stop review
5. Fishermans Bend investigations
6. New bike links in City of Melbourne linking the precinct to the CBD
7. Shrine to Sea project
8. Proposal with City of Melbourne for temporary bike lanes on St Kilda Road
9. Council Proposed Public Transport Network Map
10. South Melbourne Market and potential activation using road space

Further assistance is also required to grow and improve the transport network, including:

- improved tram capacity and a schedule for constructing accessible tram stops
- a comprehensive review of bus services and a plan to improve capacity, operating hours, links to other transport options and frequency
- upgraded bicycle facilities on arterial roads and at key intersections
- pedestrian improvements, particularly in busy areas of activity
- construction of Melbourne Metro 2 train connection to Fishermans Bend.



## Tram Services

The Route 96 corridor is grade separated along its route with low clearances at both City Road and York Street underpass that is subject to flooding (see images below). Access to the 96 Tram stop at South Melbourne Market is via a pedestrian overpass that is not accessible for people with mobility devices, trolleys or prams.

Commuters going to and from Melbourne's CBD and surrounding areas are able to pass through South Melbourne adding to its attraction and vitality.

Most of the Study Area is within a 5 minute walk from a tram stop. High levels of convenience and connectivity via public transport provides transport choices for many who live or work within the Study Area.

DOT and Council are investigating options to upgrade and explore possible new accessible locations for the Clarendon Street and Park Street tram stops in line with Council's 2018 Move, Connect, Live - Integrated Transport Strategy.



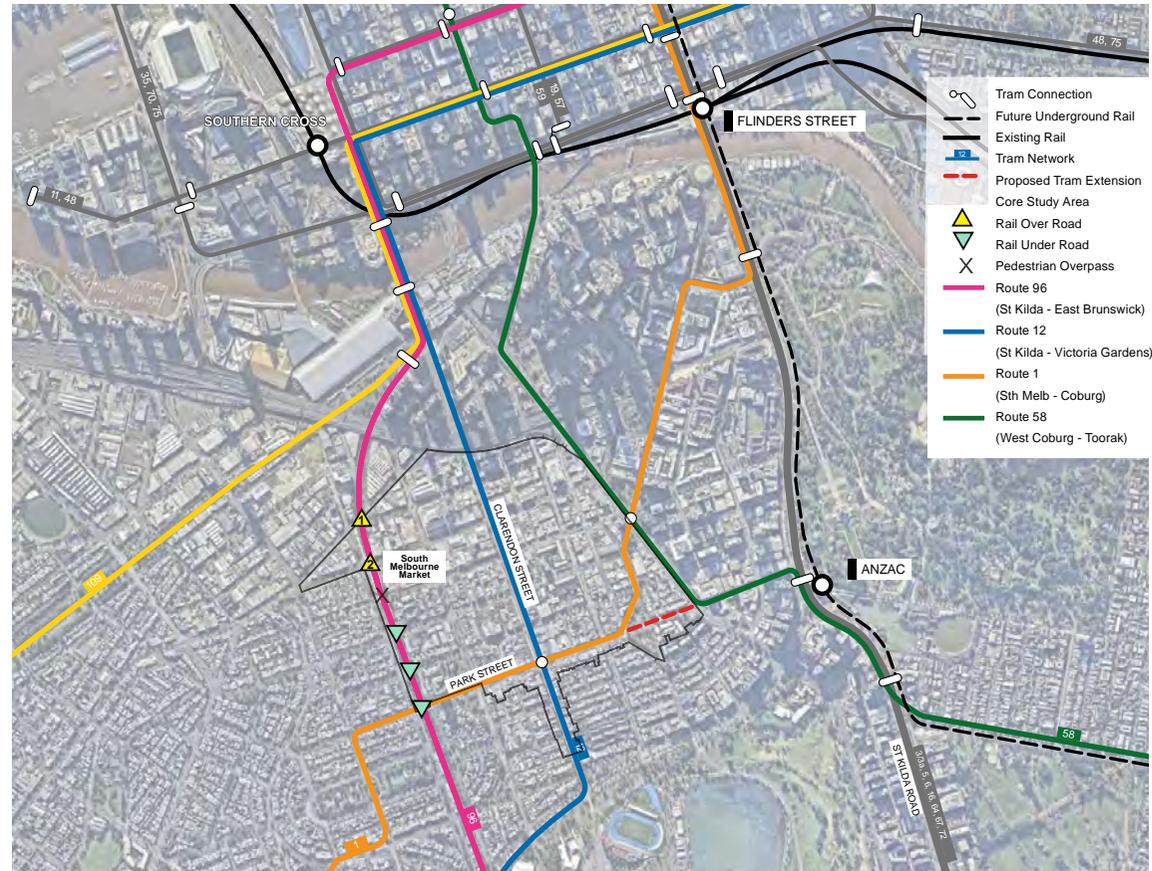
City Road low clearance (3.8m)



York Street low clearance (2.8m)

South Melbourne has four tram routes service the study area including:

- Route 1 (Park Street)
- Route 12 (Clarendon Street)
- Route 58 (Kings Way)
- Route 96 (Ferrars Street - Light Rail Corridor)



## Bus Services

There are currently three bus services, a Community Bus and two DoT routes servicing the Study Area. DoT is also investigating a new bus link between Alfred Hospital and Fishermans Bend via ANZAC Station that may also service the Study Area .

DoT buses service the area west of Clarendon Street and City Road while the Community Bus extends east and along Moray Street. The bus services generally run on the wide streets without trams except for the western extent of Park Street that facilitates the Community Bus route as well.

Route 234 and 236 service route extend from Queen Victoria Market to Garden City

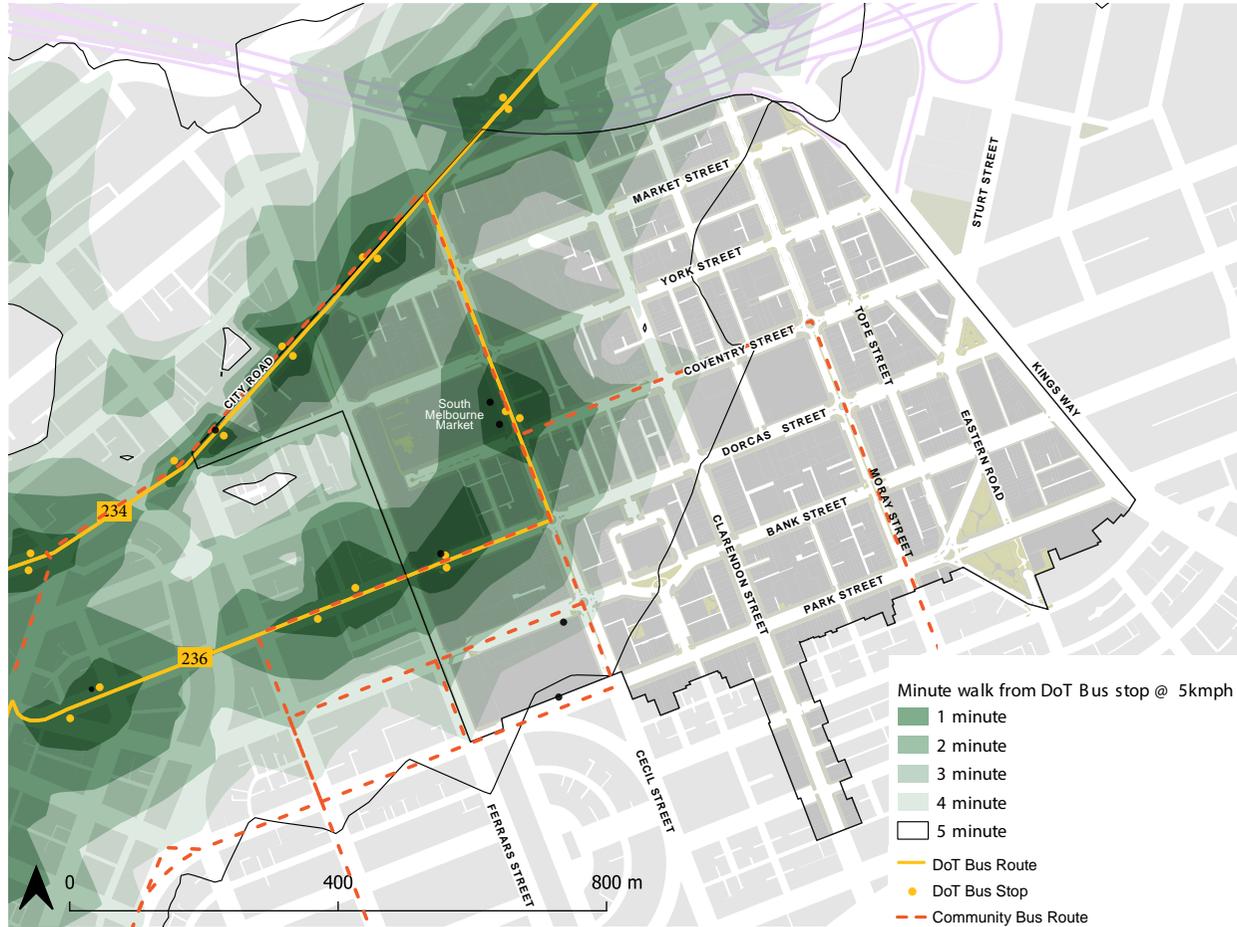
Bus Route 234 runs along City Road as part of the PPTN and services the northern extent of the Study Area while Route 236 is under review by the DoT.

Route 234 provides a more regular service than 236, which has reduced services on Saturday and none on Sunday.

The Community Bus service provides free, limited access throughout the City of Port Phillip. Buses are wheelchair-accessible, allowing many people who cannot access existing public transport services to be able to move around the municipality. The service operates Monday to Friday (except public holidays) from 9 am until 4.30 pm.

A total of four community bus routes stop at the market. They are:

1. **Port Melbourne Market Bus** (oneservice on Wednesday and Friday, arriving at 8:55am
2. **Middle Park Market Bus** (one service on Wednesday and Friday, arriving at 8:55am
3. **Route 1** – St Kilda, Middle Park and The Alfred Hospital (two weekday northbound services, and three weekday southbound services)
4. **Route 2** – Port Melbourne loop and St Kilda (five weekday loop services, four weekday southbound services and four weekday northbound services.



## Cycling Infrastructure

North-south bike routes are located on Moray Street, Cecil Street and Ferrars Street. Some sections are configured as high quality protected bike lanes with buffers from parked cars and traffic. Ferrars and Cecil streets create the Montague, Southbank and Fishermans Bend cycling links and Moray Street provides the first separated bike lanes through roundabouts in Victoria.

The Strava heat-map (right) illustrates cycling patronage aligning with the three north-south links. However, Clarendon Street, Eastern Road and Park Street appear to also have high volumes of cycling traffic despite the conflict with trams and eight of the 11 cycling accidents recorded since 2014.

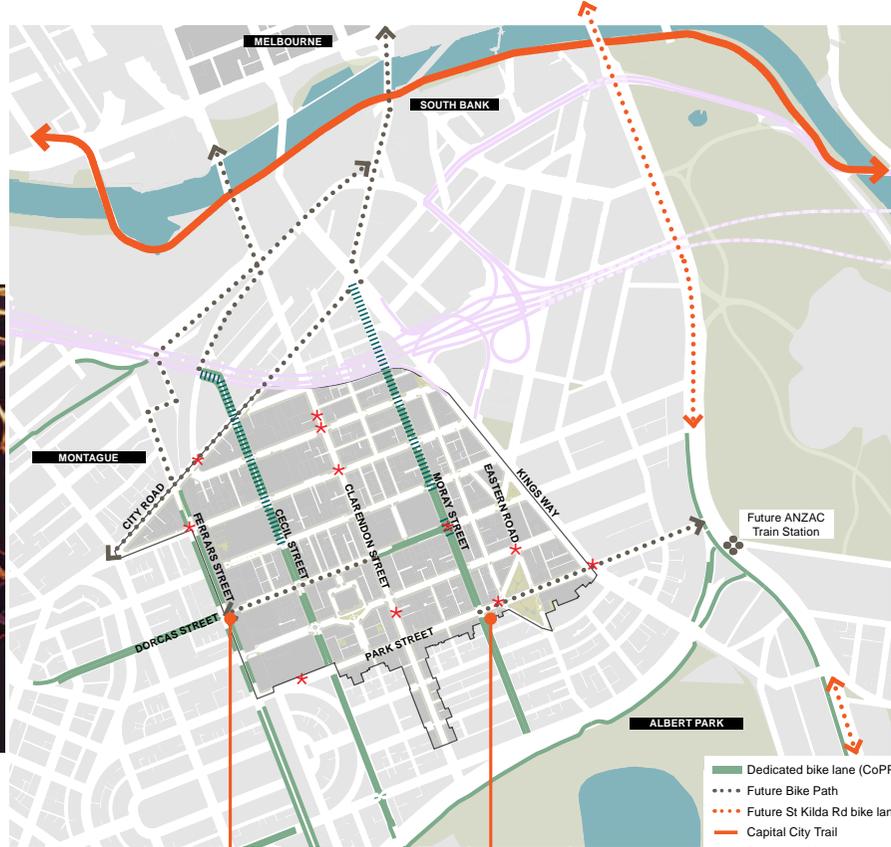


Although there are identified future routes for east-west cycling connections between future ANZAC Station to Moray Street and along Dorcas Street towards Port Melbourne, no complete cycling link currently exists. Park Street and Eastern Road are the only logical cycling linkages east of the Study Area as Dorcas Street does not cross Kings Way.

The existing linkages between the Study Area and the City of Melbourne are identified as future connections meaning the Capital City Trail and future bike paths on Clarendon Street are yet to be established. The lack of safe cycling infrastructure through Southbank creates a barrier for cyclists riding between the Study Area and the central city.

No cycling fatalities have occurred in the Study Area. However, there have been 11 serious injuries since 2014 with serious injuries in decline since 2014. Seven of the 11 serious injuries were on VicRoads (Road Zone One) managed roads and four on local streets. Three of the four accidents on local streets were on Tram Route 1.

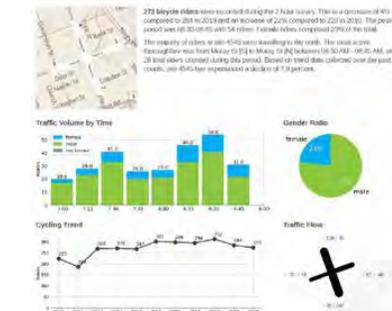
The 2020 Bicycle Network 'Super Tuesday' cycling audit (Super Tuesday) shows a slight decrease in cyclists from the previous year. However, COVID-19 may be attributed to the reduction while over a 10 year period both locations show increases in cyclist numbers. More than two thirds of cyclists were male and most were heading north-south. The traffic flow also shows Park Street east of Moray Street had higher patronage than the west indicating cyclists were accessing the Moray Street bike lane from the direction of the future ANZAC Station.



Site 4344  
Dorcas St (S), Ferrars St (S), Dorcas St (W), Ferrars St (N)



Site 4345  
Park St (S), Moray St (S), Park St (W), Moray St (N)



## Access & Movement

# Cycling Infrastructure

**Dedicated bike lane**



**Dedicated bike lanes** provide an avenue for cyclists separate from the general flow of vehicle traffic. Dedicated bike lanes are not as safe as protected bike lanes however they do build cyclists confidence and driver awareness.

There are dedicated bike lanes on Dorcas Street, Ferrars Street, Cecil Street and Moray Street

**Protected bike lane**



**Protected bike lanes** have been recently constructed on Moray Street creating a high quality buffer to protect cyclists from parking cars, 'car-dooring' and vehicles in motion. DoT have more planned for St Kilda Road as they have proven popular with cyclists.

There are protected bike lanes on parts of Cecil Street and Moray Street.



Bike racks allow people to securely park their bicycle encouraging alternative transport to motor vehicles.

There are approx. 300 bike racks in the Study Area with most located within the Commercial 1 zone, the civic hub near the Town Hall and close to street trading permit locations.

Despite recent upgrades to cycling infrastructure, Moray Street has very few fixed bike racks and the employment and residential areas have significantly less than the retail and Clarendon Street precincts.



**Before Upgrade**



**After Upgrade**

## Post project evaluation of the Moray Street active transport upgrades

With protected bike lanes on Moray Street introduced, users were interviewed about their perceptions of safety.

Consistent responses identified a safer environment by pedestrians, cyclists, and both women and men.



## Pedestrian Infrastructure

The Study Area has more than 10Ha of footpath area taking up around one third of the road reserve area. Footpaths are broad compared with other parts of Melbourne which contribute to the urban heat island effect..

The primary pedestrian route map (illustrated far right from 'Move-Connect-Live Strategy, CoPP') has only one connection with Albert Park along Clarendon Street and no secondary connections identified. The Strava heat map (right) illustrates strong pedestrian connections along Eastern Road, Cecil Street and Moray Street.

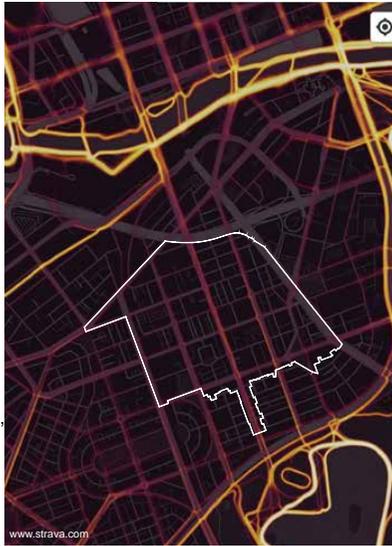
Cecil Street provides pedestrian priority infrastructure including signaled crossings, zebra crossings and a median strip that offers pedestrian refuge. Dorcas Street provides the strongest pedestrian link west of the Study Area although the primary pedestrian route extends east over Kings Way. However, without a dedicated pedestrian crossing this linkage is only aspirational. The two connections east of the Study Area occur at the two signalised intersections of Park Street and Eastern Rd/ Sturt Street crossing.

There are 13 signalised pedestrian crossings at the entry points and 7 signalised intersections within. There are also eight pedestrian crossings within the Study Area, which are mostly outside the Commercial 1 (retail) precinct. The yellow-top crossings on Clarendon Street do not cover all pedestrian directions and are not raised (wombat crossings).

From 2014 there have been nine vehicle accidents resulting in serious pedestrian injury. There have been no fatalities in this time. All but two accidents were within VicRoads managed (Road Zone 1) roads.

Other planned projects:

- Cecil Street/Napier Street water sensitive urban design (WSUD) and Transport Safety Works – to be constructed by 30 December 2021. This project comprises of kerb extensions and a raised yellow top crossing across Cecil Street.
- Cecil Street/James Service Place Transport Safety Works – to be constructed 30 June 2022. These works comprise of a raised zebra crossing across Cecil Street and a raised yellow top crossing across James Service Place.
- Traffic management around the market is under review with the aim of improving pedestrian safety and traffic flows in and around the site.



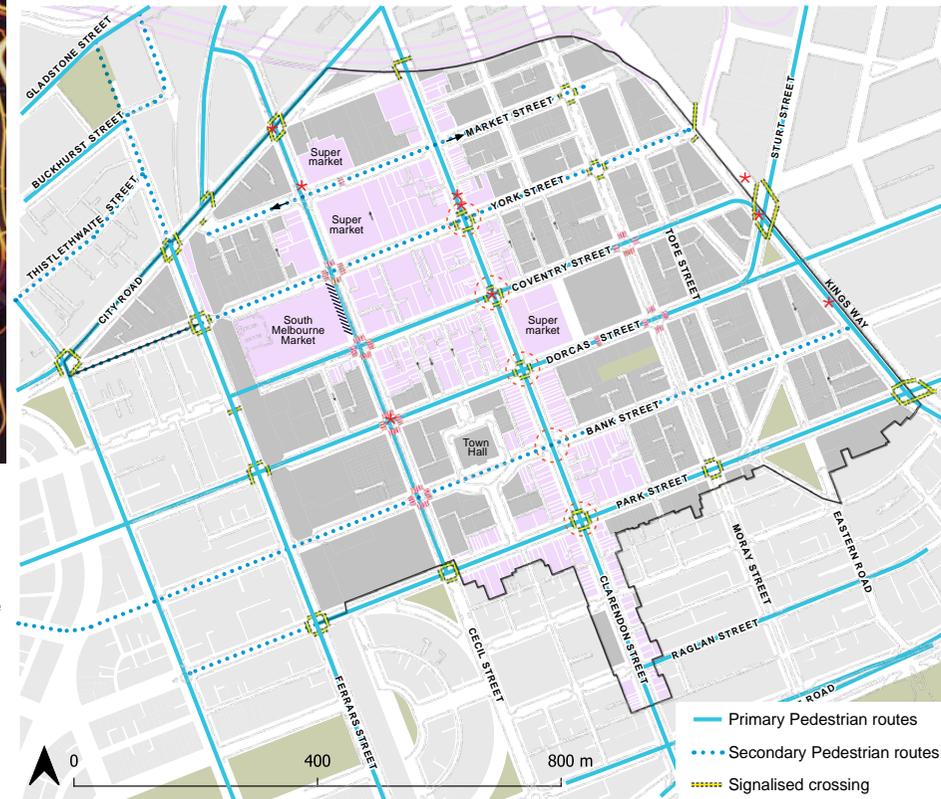
Yellow-top Crossing



Zebra Crossing



Signalised Crossing



# Public Spaces

## Overview

Public open space is essential for residents and workers while new spaces are needed to ensure future growth is sustainable and balanced. Analysis of existing conditions in the Study Area has identified insufficient tree canopy, a lack of local and neighbourhood open spaces and urban heat island effects that diminish the amenity of the future Precinct as it grows.

The Study Area is close to numerous parks, sports facilities and gardens including the Royal Botanic Gardens, 'The Tan' running track and Albert Park Sporting Precinct. However, within the Study Area itself, there are few local and neighbourhood public open spaces. Apart from Eastern Reserve on Park Street, the few pockets of public open space that exist are either privately managed (Skinner's Adventure Playground) or located in areas of high traffic and noise (Dorcas Street Reserve fronting Kings Way). These local parks are fenced and do not meet all the amenity needs of residents and workers or provide places to relax or engage with other people or nature.

Recently, the area between Southbank and Dorcas Street has seen consistent population growth and several large developments bringing employment opportunities and greater vitality to the area. This trend is expected to continue at an annual rate higher than 2% bringing more people to live, work and shop in the area. While this is a positive prediction, new and improved open spaces are needed to meet the needs of the area's growing population.

South Melbourne features very wide streets with broad pedestrian areas. With most buildings lacking front setbacks and open areas, the streetscape environment plays an important role in delivering the pedestrian amenity, tree canopy and day to day social environment that public open space generally provides.

In the retail areas around South Melbourne Market and Clarendon Street, the streetscape has an abundance of places for people to meet and relax in a safe, well-serviced space. However, as South Melbourne's employment areas grow, the streetscape will need to evolve in a way that meets public open space needs. This could possibly be in consolidated locations, within the road reserve or in amenity pockets scattered throughout the Study Area north of Dorcas Street.



# Public Open Space

The shortfall in public open space is identified in the City of Port Phillip's Draft Public Open Space Strategy which identifies areas where avenue style planting is encouraged.

Commercial precincts north of Dorcas Street lack public open space. As future mixed use opportunities are realised, growing population will increase demand for quality open space.

Although surrounded by significant state and regional parks and public open spaces, South Melbourne's provisions are all small, local and neighbourhood scale. The total area of local, small local and neighbourhood open spaces is a little over 1Ha with only 1300m<sup>2</sup> north of Dorcas Street fronting Kings Way and the M1 Freeway.

Within higher density housing and employment clusters, small parks and gardens play a key role in the health and wellbeing of the population. Some of these spaces are fenced and could be enhanced with new facilities, more ecological planting, WSUD systems and appropriate landscaping.

The amenity of small local parks fronting Dorcas Street and Kings Way is compromised by their locations on busy roads. The trees display signs of stress and limited amenity. A consolidated park area designed to meet the diverse needs of people living and working in the area would benefit an increasing density built environment.



Eastern Reserve - the only local park within the Study Area

Open Space	Area (m2)
1	565
2	685
3	2480
4	2580
5	3040
6	1060
7	120
8	480
9	540
Total	11,550

The small local parks facing Kings Way showing trees under stress



From City of Port Phillip's Draft Public Open Space Strategy



The small local park (Edyth McCallum Reserve) showing trees performing well.

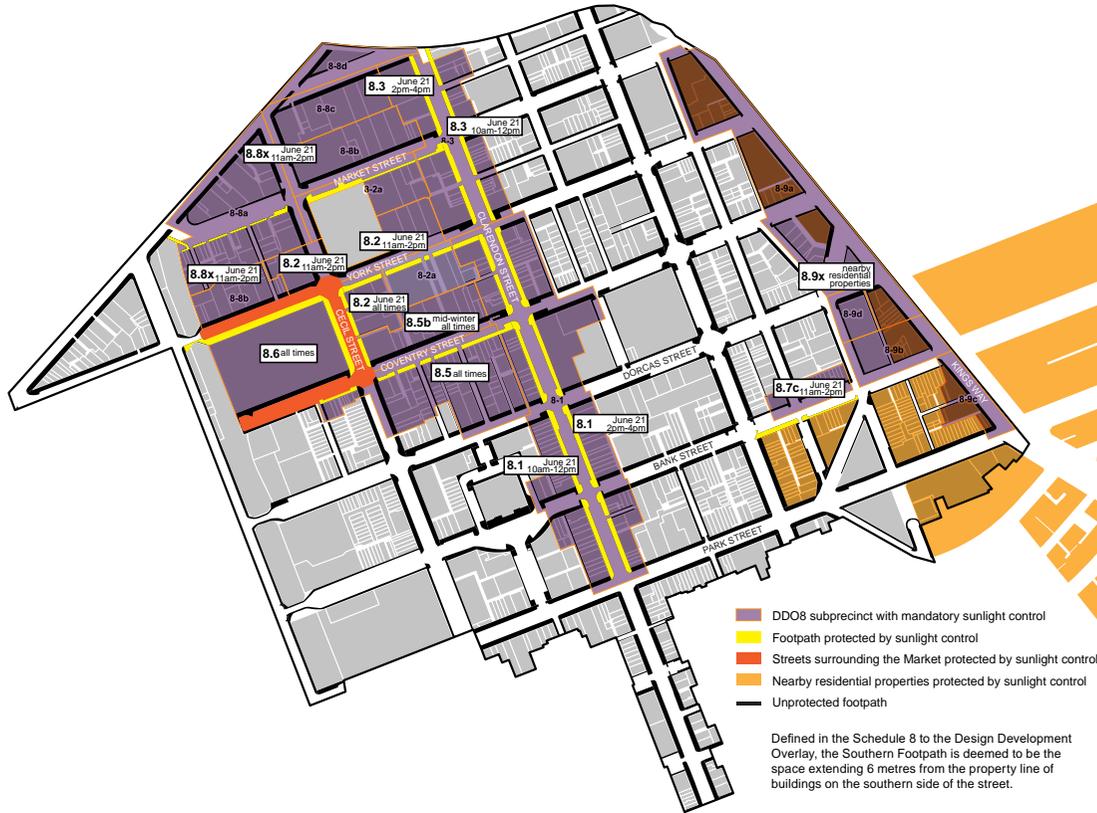
## Sunlight access in public spaces

DDO8 has a range of mandatory sunlight controls outlined in the sub-precinct extracts (below). The controls are primarily to limit overshadowing in the established and emerging activity areas. Other places include protections of residential areas where large scale building may have off-site amenity impacts.

Some areas protected by the controls contain awning canopies while others are overshadowed in part by high rise developments in the City of Melbourne.

The controls vary for different precincts and refer to different times of the day. They generally reference the winter solstice as the date to which sun studies should be mapped however, 8.5 and 8.2 have no referenced date.

The streets surrounding the South Melbourne Market are also protected under sub precinct 8.6 controls. Cecil Street development on the east side of Cecil Street cannot impact the adjacent footpath although impacts on both these sub-precincts could be the result of development contained within 8.2 on the north side of York Street



### Mandatory Sunlight Controls under DDO8

#### DDO8.1

*New built form must not diminish sunlight access to the western footpaths (up to the property line) between 10am and 12pm 21 June and to the eastern footpaths (up to the property line) between 2pm and 4pm 21 June.*

#### DDO8.2

*New built form on the northern side of York Street must not diminish sunlight access to the southern footpath (up to 6 metres from the property frontage) between 11am and 2pm 21 June. New built form on the east side of Cecil Street must not diminish sunlight access to the east and west footpaths of Cecil Street adjacent to the South Melbourne Market.*

#### DDO8.3

*New built form must not diminish sunlight access of footpaths up to the property line:  
On the western side, between 10am and 12pm 21 June.  
On the eastern side, between 2pm and 4pm 21 June.*

#### DDO8.5

*To ensure that new built form does not diminish sunlight access to the footpaths of Coventry Street.*

#### DDO8.5b

*New buildings on the northern side of Coventry Street must maintain the midwinter sunlight access to the footpaths on the southern side of the street. The entire width of these footpaths must have sunlight access, up to the property frontages, between 11am and 2pm 21 June.*

#### DDO8.6

*Sunlight access to the streets surrounding the Market must be maintained.*

#### DDO8.7c

*New buildings on the northern side of Bank Street must maintain the midwinter sunlight access to the footpaths on the southern side of the street. The entire width of these footpaths must have sunlight access, up to the property frontages, between 11am and 2pm 21 June.*

#### DDO8.8

*New buildings on the northern side of Market and York streets must not diminish the midwinter sunlight. New buildings must not diminish sunlight access to nearby residential properties. Access to the footpaths of on the southern side of these streets. The entire width of these footpaths should have sunlight access, up to the property frontages, between 11am and 2pm on 21 June.*

#### DDO8.9

*New buildings must not diminish sunlight access to nearby residential properties.*

## Street Sections



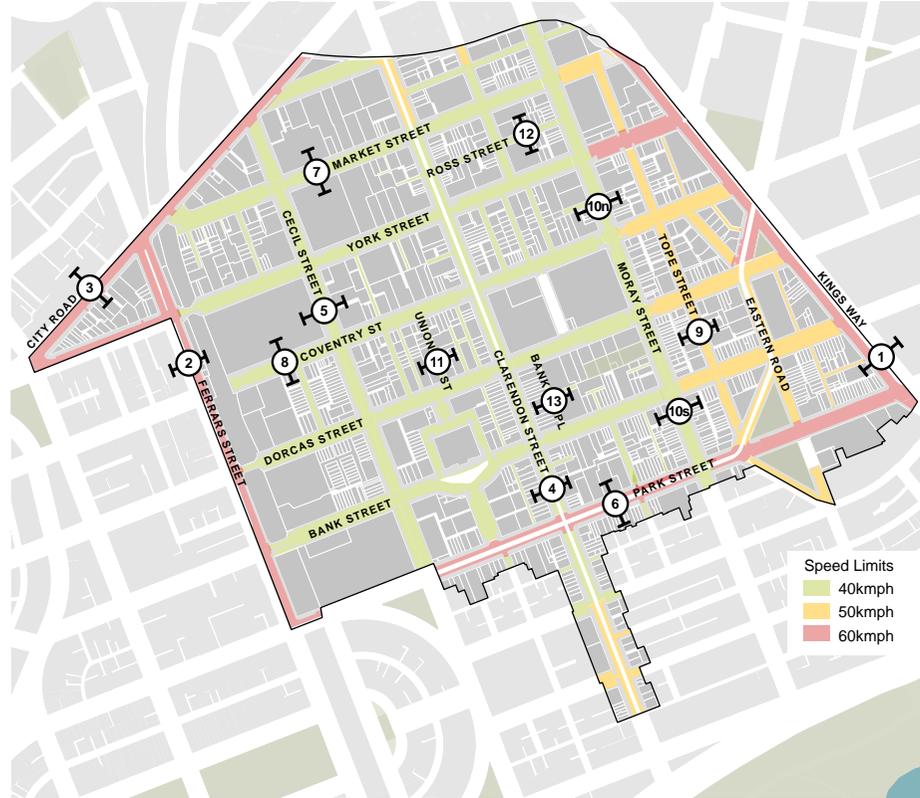
	Street Section	Street Wall Ratio	Street Width	Speed Limit	Traffic (VpD)	Lanes (total+VpL)	Active Transport
①	Kings Way	1:4	44m	60 kmph	100,000	8 (12,500)	44%
②	Ferrars Street	1:6  1:3	30m	60 kmph	30,000	4 (7250)	34%
③	City Road	1:5	30m	60 kmph	25,000	4 (6250)	39%
④	Clarendon Street	1:3	30m	40 kmph	20,000	4 (5000)	41%
⑤	Cecil Street	1:3	28m	40 kmph	7000	2 (3500)	58%
⑥	Park Street	1:3	30m	60 kmph	6500	2 (3250)	41%
⑦	Market Street	1:3	30m	40 kmph	2000	2 (1000)	38%
⑧	Coventry Street	1:5	30m	40 kmph	1600	2 (800)	44%
⑨	Tope Street	1:2	20m	50 kmph	1300	2 (650)	39%
⑩	Moray Street	1:5  1:10	30m	40 kmph	1100	2 (550)	53%
⑪	Union Street	2:1  1:1	9.5m	40 kmph	1000	1 (1000) one way	30%
⑫	Ross Street	2:3	12m	40 kmph	500	2 (250)	43%
⑬	Bank Place	3:1  2:1	6m	40 kmph	300	1 (300) two way	17%

Street sections analysis indicates relatively broad streets with slower traffic and higher pedestrian amenity increasing towards the retail core. The building to street-wall ratio shows relatively low rise development (most streets 1:3 ratio). South Melbourne's wide streets and low-medium scale buildings ensure plentiful sunlight and daylight access to the streetscape.

The street sections illustrated on the following pages provide a variety of street widths, functions, adjacent land uses and structure. Each section outlines the immediate environment or street segment but not the entire street. Each section describes the indicative conditions as well as some notable variations to consider.

The descriptions outline the **structure, purpose, amenity and development** with the aim of understanding the issues, opportunities and constraints in different streets, roads and lanes.

The sections are numbered from the highest volume of traffic to the lowest and draw approximate street wall dimensions and ratio at the point of the section representative of the building scale framing the street. More detailed built form assessments of the street wall and building heights are provided in the 'development' chapter.



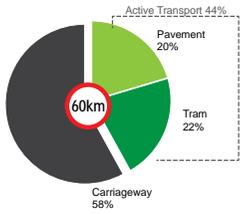
### 1. Kings Way (State Route 60)

**Structure:** Framing the eastern edge of the Study Area is Kings Way. With eight lane capacity, it hosts over 100,000 vehicles per day.

**Purpose:** Zoned as RDZ1, Kings Way funnels traffic on and off the M1 freeway providing freight connections to all parts of Victoria and vehicle traffic to Melbourne's CBD. Connections with commercial employment areas within the Study Area are strengthened by the State route connections as well as the tram Route 58 running along the median that interchanges with Route 1 at Eastern Road.

**Amenity:** Pedestrian amenity on Kings Way is compromised by high volumes of motorised traffic, noise and emissions. With only a few small trees at the southern extent, thermal comfort is reduced compounding the minimal attraction for street trading, cyclists and pedestrians to traverse or engage in the space.

**Development:** Kings Way land use within the Study Area is mostly mixed use allowing large scale developments, however only a few sites have been developed to their potential. The eastern interface has larger blocks and larger parcel sizes that have attracted more showroom style development utilising the high levels of exposure to traffic.



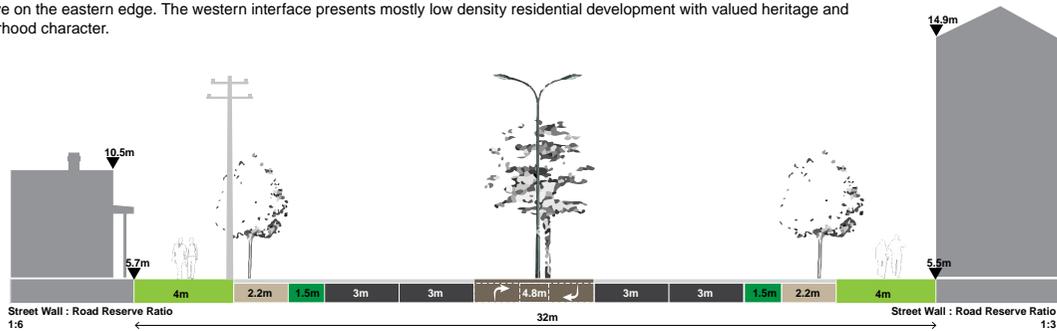
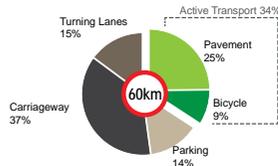
### 2. Ferrars Street

**Structure:** Ferrars Street sits on the western edge of the Study Area. It hosts four lanes of traffic and around 30,000 vehicles per day.

**Purpose:** Zoned as RDZ1, Ferrars Street funnels traffic from the coastal areas within the City of Port Phillip to Southbank. Running in parallel is the adjacent light rail service that links St Kilda, Middle Park, Albert Park and South Melbourne commercial area with South Bank and Central Melbourne.

**Amenity:** Pedestrian amenity on Ferrars Street is diminished by traffic, noise and emissions, however a good tree canopy, median planting and shrubs in kerb outstand areas softens the streetscape and improves the amenity.

**Development:** Recent mixed use developments have been approved along the narrow strip of land between the road reserve and rail reserve on the eastern edge. The western interface presents mostly low density residential development with valued heritage and neighbourhood character.



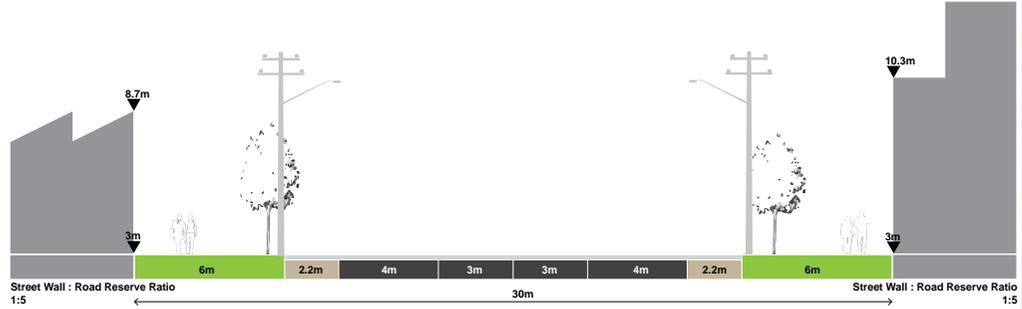
### 3. City Road

**Structure:** City Road is on the north west edge of the Study Area. It hosts four lanes of traffic and around 25,000 vehicles per day.

**Purpose:** Zoned as RDZ1, City Road provides connections to Melbourne's CBD from Port Melbourne, Garden City and coastal areas.

**Amenity:** Pedestrian amenity on City Road is diminished by traffic, noise and emissions. The overhead power lines on both sides of the street constrain street tree development and thermal comfort.

**Development:** City Road has a transitional gateway character that steps up from the low density housing areas to the south west of the Study Area, through a light industrial and employment precinct, and connects with Clarendon Street under the M1 freeway where the high density threshold of Southbank emerges as the gateway to the central city and South Melbourne.



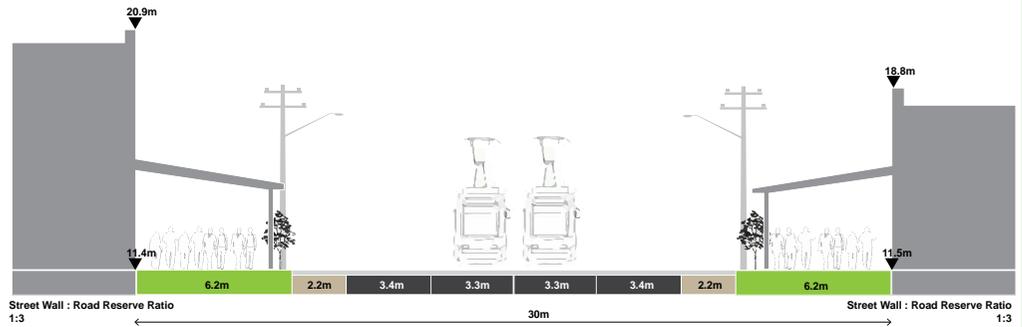
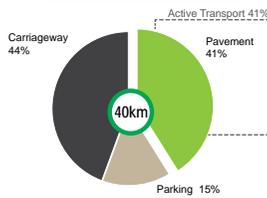
### 4. Clarendon Street

**Structure:** Clarendon Street is both physically and metaphorically at the heart of South Melbourne. It hosts four lanes of traffic and around 20,000 vehicle movements per day as well as the Route 12 Tram.

**Purpose:** Zoned as RDZ1, Clarendon Street provides connections to Melbourne's CBD and Albert Park with a direct transition to Spencer Street and Southern Cross Station.

**Amenity:** Clarendon Street hosts heritage awnings over broad pavements with high levels of transparency and retail activation. The street trees are constrained by the awning and abundance of overhead power lines.

**Development:** Clarendon Street presents a largely in-tact colonial street wall with an abundance of two storey shop-top housing and larger developments set back from the street edge. Distinctly smaller in scale and density from Southbank, it provides a dispersed and open feel to the south as it approaches Albert Road and Albert Park Lake.



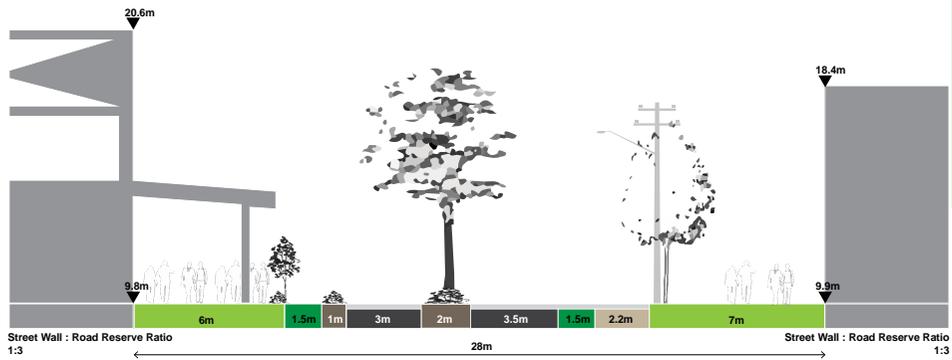
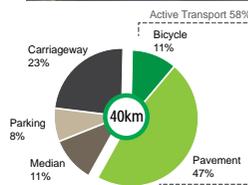
### 5. Cecil Street

**Structure:** Cecil Street hosts two lanes of traffic and around 7,000 vehicle movements per day. It also hosts Bus Route 236 and the City of Port Phillip Community Bus service.

**Purpose:** Cecil Street provides good north-south pedestrian and cycling connections between the South Melbourne Market, commercial precinct and residential areas to the south. It features the most active transport allocation of the Study Area at 58%.

**Amenity:** The median strip along Cecil Street provides an abundance of high quality street trees and high levels of thermal comfort. With a combination of low rise and heritage buildings, dappled light through an extensive tree canopy and relatively low volumes of motorised traffic, Cecil Street's pedestrian comfort and healthy design is highly desirable.

**Development:** South of Dorcas Street, Cecil Street provides numerous housing and tenure types with a variety of town houses and social housing forms. To the north of Dorcas Street are commercial type buildings and the South Melbourne Market. North of York Street are larger scale developments up to eight storeys high.



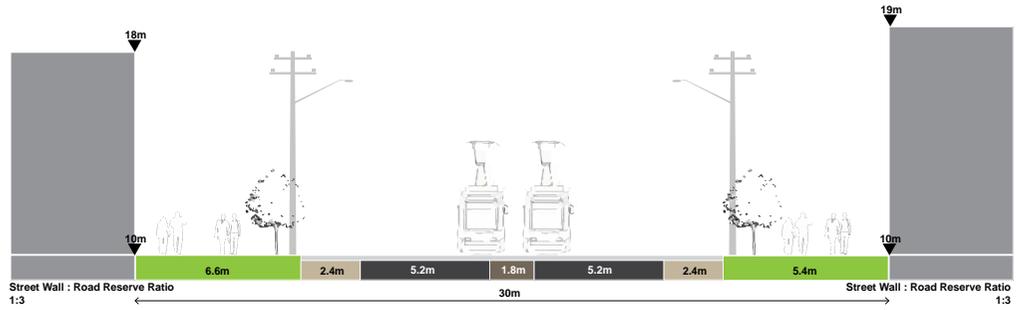
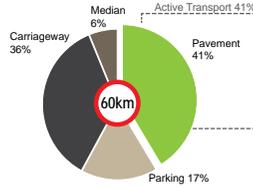
### 6. Park Street

**Structure:** Park Street is 30m wide and transects the Study Area east-west. It is the most southern main street in the Study Area and hosts two lanes of traffic and around 6,500 vehicles per day and the tram Route 1.

**Purpose:** Park Street provides mixed use, residential and commercial areas and a local park. The tram Route 1 connects to South Melbourne Beach and a planned extension will join Kings Way with Clarendon Street.

**Amenity:** Broad pedestrian areas create sense of space and low traffic volumes make Park Street an attractive and diverse thoroughfare. The street trees and canopy cover is somewhat constrained by power lines on both sides and tram lines in the median. Inconsistent retail functions lack the awnings and transparency of a high amenity area.

**Development:** The commercial developments in the mixed use areas present a three storey street wall in between more modest developments and residential frontages. More recent planning applications are emerging on the larger parcels on the south side, west of Clarendon Street.



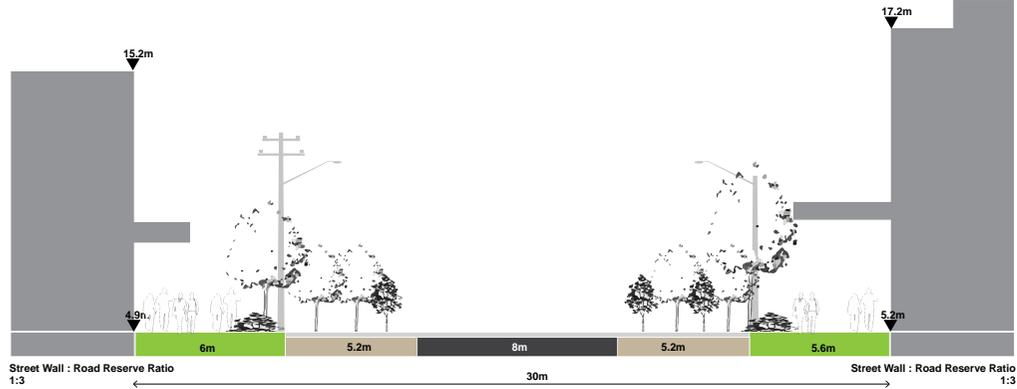
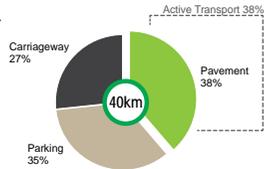
### 7. Market Street

**Structure:** Market Street is the northern most main street running east-west from Kings Way to City Road. It features two lanes and only 2,000 vehicles per day however in the eastern section it runs one lane only.

**Purpose:** Market Street has a diversity of Commercial 1 and 2 zoned land with a mix of residential, office and retail uses as well as some light industrial uses at either end.

**Amenity:** Pedestrian amenity is varied with good amenity in the retail areas due to the broad pavement and tree planting although, there are pedestrian vehicle conflicts due to vehicle crossovers creating excessive cross-fall and focus away from the active edge. The two lanes of angled parking create a hazard for cyclists, however numerous kerb outstands have been built to improve pedestrian safety and planting.

**Development:** Beyond the street wall sits some large scale developments up to eight storeys high east of Clarendon Street. The streetwall is generally between two and three storeys and more recent developments present a terraced form described as zigzag form in response to planning controls to protect sunlight on the street.



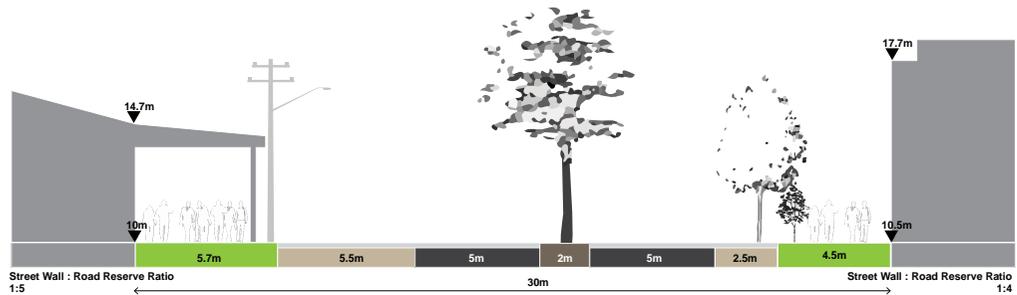
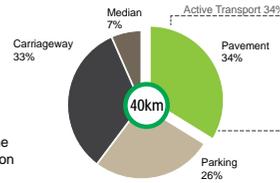
### 8. Coventry Street

**Structure:** Coventry Street features two lanes for 1,600 vehicle movements per day including the access point to the upper level parking at the market. The median allows for two rows of street trees as the northern pavement is primarily used for trading.

**Purpose:** Provides a direct connection to the light rail and South Melbourne Market at its western extent and boutique retail west of Clarendon Street. It also creates a pedestrian linkage between tram stops on Kings Way and the employment precinct.

**Amenity:** Pedestrian amenity is generally high with low traffic volumes, good access to public transport and retail transparency although the overhead power lines on the north side of the street limit street tree development and thermal comfort.

**Development:** Coventry Street shows a consistent two storey colonial street wall in the western end with only modest developments above. A few larger developments emerge in the eastern employment area punctuated by the Mercedes tower on the corner with Kings Way.



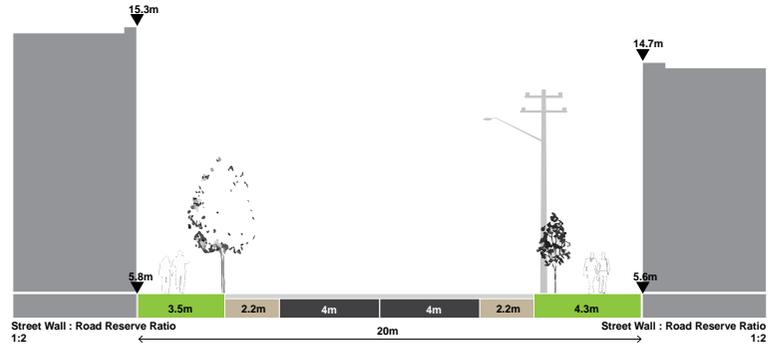
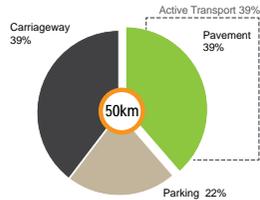
### 9. Tope Street

**Structure:** Tope Street is one of the few 20m wide streets running north-south through the Commercial 2 employment precinct. It features two lanes and provides for 1,300 vehicle movements per day.

**Purpose:** Tope Street has a mix of offices, workshops, store rooms and logistics that are located close to Kings Way and connections to Greater Melbourne.

**Amenity:** With a few small trees, relatively narrow paving, a few contributory heritage buildings, no awnings or canopy cover, amenity is notably reduced (compared to other parts of South Melbourne).

**Development:** The commercial buildings present a mix of one, two and three storeys on larger parcels. The industrial character is pronounced with very few sites realising their development potential.



### 10. Moray Street

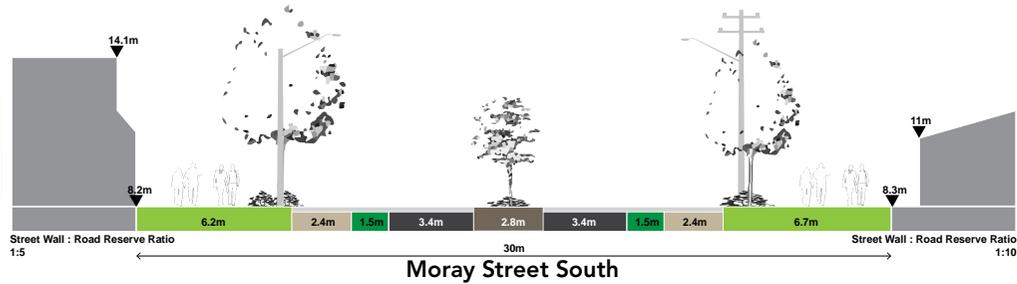
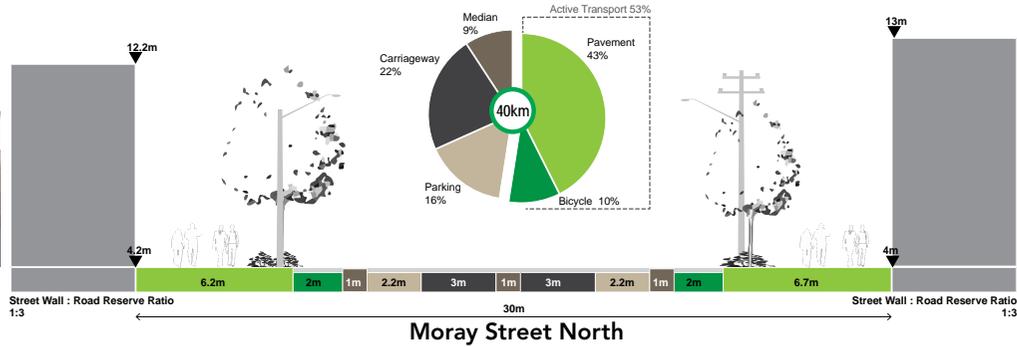
The north and south sections outline the change in Moray Street where the bike lane is protected in the northern section.

**Structure:** Moray Street is 30m wide running north-south through the Commercial 2 employment precinct all the way to Albert Road. It features two lanes at 40kmph and provides for 1,100 vehicle movements per day. It also features separated bicycle lanes including two roundabouts at Dorcas and Coventry streets.

**Purpose:** Identified as a preferred north-south bicycle route linking the planned ANZAC Station and Albert Park reserve, Moray Street creates a logical connection to Melbourne's central city. Cyclists can use Moray Street to avoid conflict with trams, parked cars and heavy traffic. This makes it a safer, more comfortable experience and encourages healthy and affordable lifestyles with 53% of the street allocated to active uses in the south and 56% in the northern area.

**Amenity:** With newly planted median trees alongside more established trees in the southern extent, Moray Street presents as a high amenity healthy street similar to Cecil Street in design and function. In the northern extent, the bike lanes are separated from parking and traffic although the median planting is not continued through to the employment area.

**Development:** Within the Study Area, Moray Street has commercial/ employment buildings in the north with larger developments of up to eight storeys already planned and approved. To the southern end of Moray Street are low density town and terrace houses that continue at that scale to the southern extent at Albert Road.



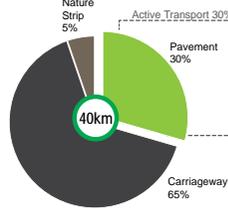
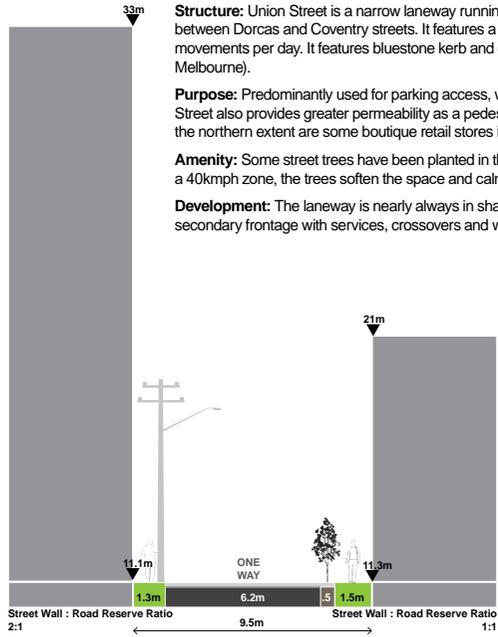
### 11. Union Street

**Structure:** Union Street is a narrow laneway running north-south connecting the civic and retail precincts between Dorcas and Coventry streets. It features a single one-way lane and provides for around 1,000 vehicle movements per day. It features bluestone kerb and channel and very narrow footpaths (relative to South Melbourne).

**Purpose:** Predominantly used for parking access, waste management and a few loading parking bays, Union Street also provides greater permeability as a pedestrian link due to its lack of traffic and sense of enclosure. At the northern extent are some boutique retail stores in small tenancies that contribute to the precinct's diversity.

**Amenity:** Some street trees have been planted in the carriageway without protection from vehicles. Although it is a 40kmph zone, the trees soften the space and calm the traffic.

**Development:** The laneway is nearly always in shadow from the tall adjacent buildings. Most present a secondary frontage with services, crossovers and waste storage lining the street.



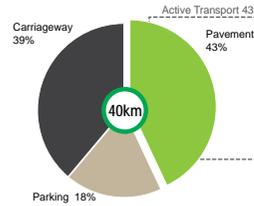
### 12. Ross Street

**Structure:** Ross Street is a two-way, two lane, east-west street and provides for around 500 vehicle movements per day and one line of parallel parking. It is 12m wide.

**Purpose:** To the east, commercial and employment uses front the street with an irregular (one, two and three storey) streetwall and crossovers along both sides. Closer to the western extent at Clarendon Street, are some retail tenancies and offices.

**Amenity:** A consistent line of European Hornbeam trees line both sides of the street. The footpath has cross-fall issues due to the high volume of vehicle crossovers but still holds capacity for waste management, some garden beds and pedestrian movements.

**Development:** Planning provisions allow for large scale development, however the parcels are relatively small. The street is generally ill-defined with a diversity of streetwall heights, materials, scale, age, uses and building types.



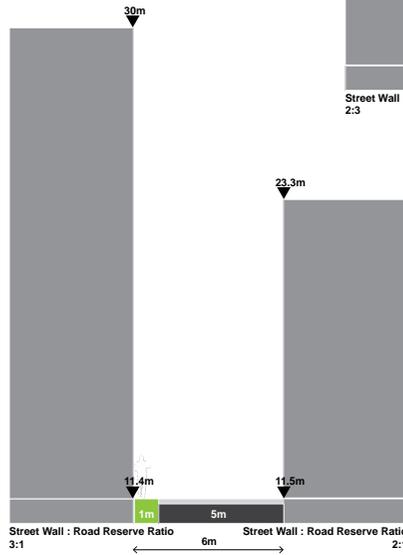
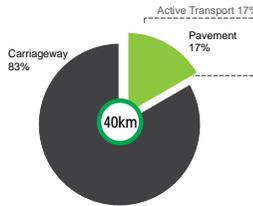
### 13. Bank Place

**Structure:** Bank Place is a narrow laneway running 100m north-south connecting Dorcas and Bank streets. It is the shortest street of the street section set but demonstrates the tallest street edge. It features a two-way lane but there is limited capacity for one vehicle to pass another. The lane provides for around 300 vehicle movements per day. It features bluestone surface and central channel. The narrow footpath is generally blocked with bins.

**Purpose:** Predominantly a 'back-of-house' service corridor for retail fronting Clarendon Street, it provides waste management and Right of Way for businesses fronting Bank Street. Recent developments have included rear access and fire doors fronting the laneway.

**Amenity:** Other than the historic bluestone features, there is no amenity provisions in Bank Place and accessibility is limited.

**Development:** The laneway has the largest street wall ratio of the Study Area with 3:1 ratio in part with plans currently being considered at a similar scale. Large developments to the rear of Clarendon Street parcels have minimal off-site amenity impacts and help protect the streetscape character along the primary frontage.



# Quality Assessment

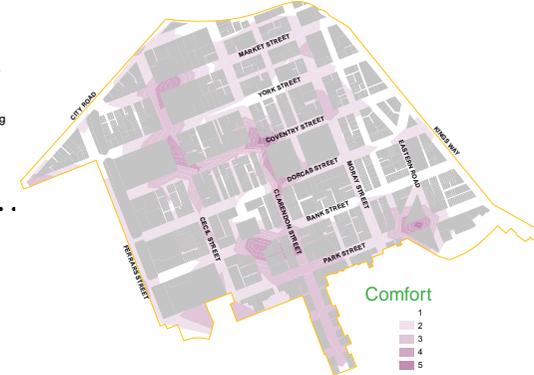
Assessment of the quality of the Study Area's public spaces has identified perceptions of how different places feel. With COVID-19 restrictions in force, this assessment was conducted through empirical surveys from Google Street View.

Each location was surveyed by multiple Council officers from various departments and averaged out to reduce bias or single perceptions.

Each officer was required to assess each location with [12 Quality Criteria outlined by the Gehl Institute tool](#) for researching how public spaces are experienced by their users.

The criteria were structured around three main themes: Protection, Comfort, and Enjoyment (as outlined in the table, right). The officers rated each location from 1-5 and the results averaged, normalised and mapped to show the quality of different areas within the Study Area.

<b>Protection</b>	<p><b>Protection against traffic and accidents.</b> Do groups across age and ability experience traffic safety in the public space? Can one safely bike and walk without fear of being hit by a driver?</p>	<p><b>Protection against harm by others.</b> Is the public space perceived to be safe both day and night? Are there people and activities at all hours of the day because the area has, for example, both residents and offices? Does the lighting provide safety at night as well as a good atmosphere?</p>	<p><b>Protection against unpleasant sensory experience.</b> Are there noises, dust, smells, or other pollution? Does the public space function well when it's windy? Is there shelter from strong sun, rain, or minor flooding?</p>
<b>Comfort</b>	<p><b>Options for mobility.</b> Is this space accessible? Are there physical elements that might limit or enhance personal mobility in the forms of walking, using of a wheelchair, or pushing a stroller? Is it evident how to move through the space without having to take an illogical detour?</p>	<p><b>Options to stand and linger.</b> Does the place have features you can stay and lean on, like a façade that invites one to spend time next to it, a bus stop, a bench, a tree, or a small ledge or niche?</p>	<p><b>Options for sitting.</b> Are there good primary seating options such as benches or chairs? Or is there only secondary seating such as a stair, seat wall, or the edge of a fountain? Are there adequate non-commercial seating options so that sitting does not require spending money?</p>
<b>Enjoyment</b>	<p><b>Scale.</b> Is the public space and the building that surrounds it at a human scale? If people are at the edges of the space, can we still relate to them as people or are they lost in their surroundings?</p>	<p><b>Opportunities to enjoy the positive aspects of climate.</b> Are local climatic aspects such as wind and sun taken into account? Are there varied conditions for spending time in public spaces at different times of year? With this in mind, where are the seating options placed? Are they located entirely in the shadows or the sun? And how are they oriented/ placed in relation to wind? Are they protected?</p>	<p><b>Experience of aesthetic qualities and positive sensory experiences.</b> Is the public space beautiful? Is it evident that there is good design both in terms of how things are shaped, as well as their durability?</p>



## Quality Assessment

The quality assessment results from each theme were combined and weighted evenly to produce the quality map (right). This shows the grading of quality areas based on all the criteria combined rated from 1-5 with 1 being poor performance and 5 being best performance.

The higher rated street segments include Cecil Street between Coventry and York streets outside the South Melbourne Market.



This location has low traffic speeds, median strip with pedestrian refuges, separated bike lanes, large native canopy trees, consolidated power lines, weather protection, fine grain retail mix, human scale architecture.

A second highly rated location is on Coventry Street near Clarendon Street.

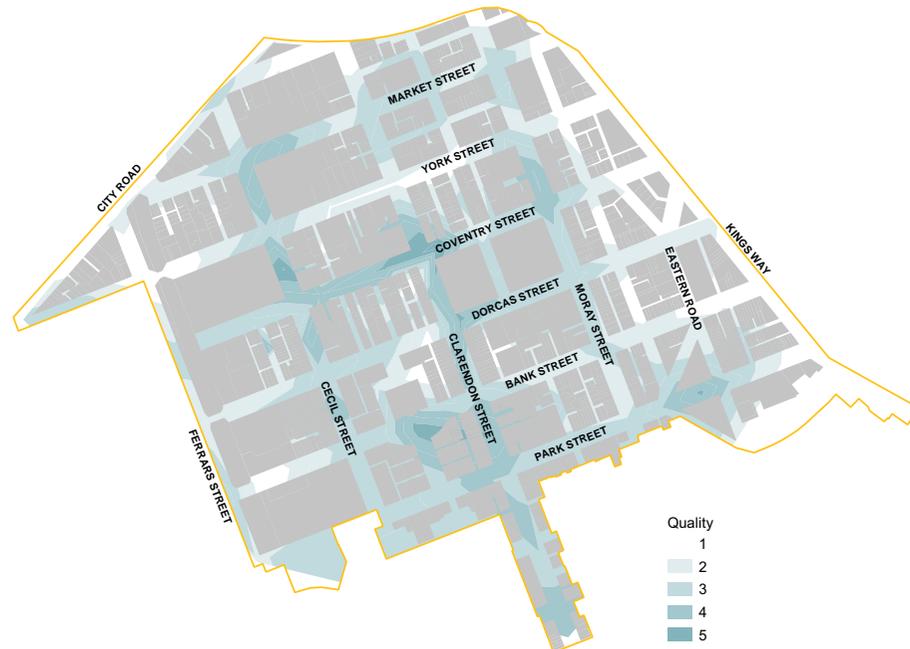


This location has low traffic speeds, garden beds, good mix of canopy trees, consolidated power lines, weather protection, heritage and human scale architecture, fine grain retail mix and good pedestrian amenities and seating.

The third highly rated location is on Bank Street in the Civic core.



This location has low traffic speeds, garden beds, good mix of canopy trees, consolidated power lines, civic buildings including the Town Hall, Police Station and Library. Nearby is fine grain retail mix with good pedestrian amenities and seating.



The lowest rated areas include Kings Way, City Road and the top of Clarendon Street at the M1 overpass.



On Kings Way, there are eight lanes of traffic, poor access and pavement, no protection from traffic, no shelter or weather protection, high levels of noise and wind and framed by large-scale office, showrooms and highway retail. Even with a public park and recreation reserve, this area performs poorly for protection, comfort and enjoyment.

## Pedestrian Amenity



Pedestrian amenity factors include safety, attractiveness, convenience, comfort, information and accessibility which are important to how people enjoy streets. South Melbourne has varied levels of pedestrian amenity with most located in the Commercial 1 zone.

People's perceptions of pedestrian amenity can be considered subjective. However, it can be measured by looking at elements such as street trees, lighting, seating, public transport facilities, traffic noise and speed, infrastructure, awnings, street trading activity, pavement, ornamentation, security and wayfinding. The map at right depicts some of these elements to identify areas of high amenity and areas that could be improved.

Within the Study Area, most buildings have zero setbacks. In the retail core, awnings provide weather protection and opportunities to facilitate street trading. These are low traffic speed areas located around key landmarks such as South Melbourne Market and public transport stops enhancing activation and vitality.

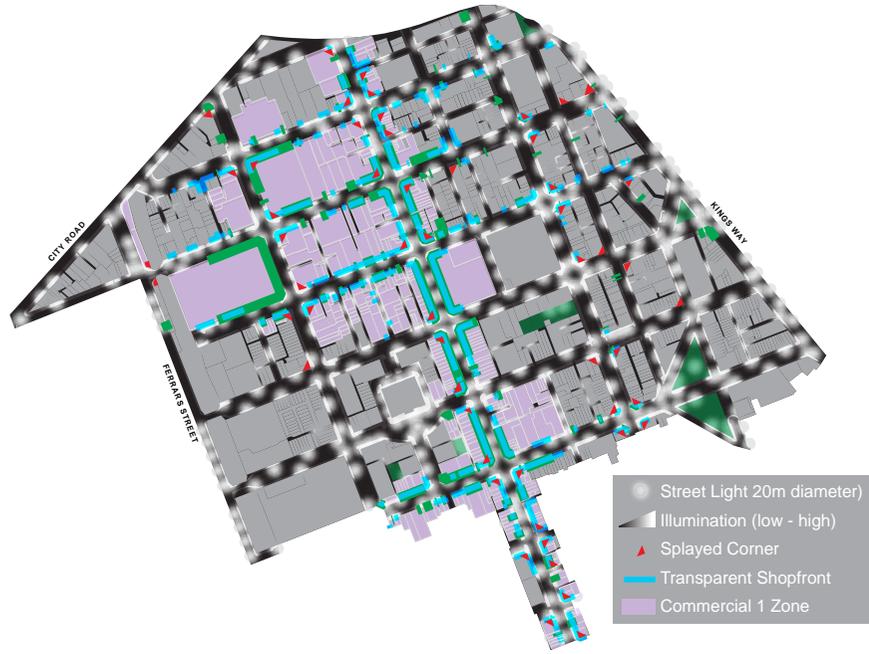
Fine grain frontages are concentrated in key retail areas contributing to high levels of pedestrian amenity. South Melbourne's exceptionally high walkability and 10 minute walkable Study Area provides numerous and diverse employment opportunities that add to the feeling of vitality and safety as well as visual interest for pedestrians.



The Commercial 1 Zone contains drinking fountains, promenade benches, rubbish bins, bike racks, signage, street trees and garden beds creating a buffer between pedestrians and traffic near intersections.

These elements contribute to the experience of place but these devices do not necessarily make a place feel safe. Crime Prevention Through Environmental Design (CPTED) can improve a pedestrian experience by reducing concealments, providing good pedestrian lighting, high levels of transparency through to shop windows and internal lighting and activation illuminating the street at night.

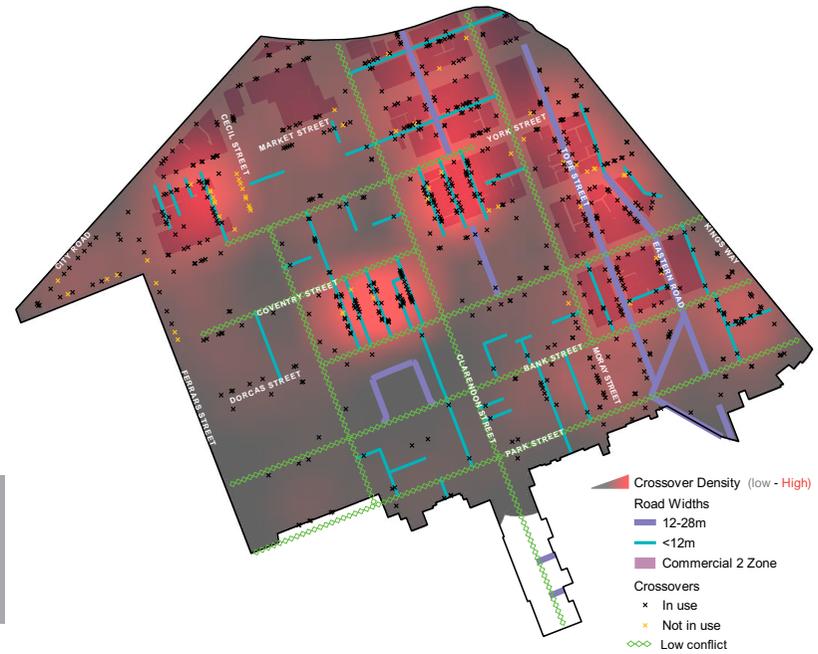
## Pedestrian Safety



### Crime Prevention Through Environmental Design (CPTED)

Commercial 1 Zone areas contain high levels of street furniture and convenience infrastructure. It features well defined awnings, transparent shopfronts, good street lighting coverage and splayed corners contributing to the high level of CPTED conditions and perceptions of safety. Splayed corners are common throughout South Melbourne main street intersections and improve sightlines, safety, wind impacts and accessibility.

Street lighting is generally focused on the carriageway with only a few 'watchman' lights focused in pedestrian spaces near hotels and taxi ranks. Many of the secondary frontages and narrow streets have minimal lighting with poor coverage. The Commercial 1 Zone has good transparency that provides some illumination and sense of safety however, areas outside the Commercial One area generally have poor street lighting and transparency. Many of the lights used in the Study Area are inefficient HP sodium, Mercury Vapor, Fluorescent and Metal Halide lamps. More efficient lamps are currently planned for replacement.



### Pedestrian Vehicle Conflict

Vehicle crossovers are generally located on the narrow streets and Right of Way. This reduces pedestrian/vehicle conflicts and excessive cross-falls on key pedestrian routes. Redundant crossovers (not in use) remain in some areas and should be removed to improve accessibility and parking options.

Most of the Study Area's primary frontage faces Main Streets. Most have multiple frontages allowing options for vehicle access, substations and boosters to be located in secondary streets. Many of the Main Streets have low pedestrian/vehicle conflict with scope for improvement in the northern part of the Study Area and Commercial 2 employment areas.

## Thermal Comfort

Public Realm and built form both impact thermal comfort. Streets are consistently the hottest places in South Melbourne, with high surface temperatures from wide, low-shaded streets.

As the population, ambient temperature and the frequency of extreme heat events increases, the challenge of urban overheating grows. While this is a global challenge, many of the impacts of urban overheating are experienced at a local level.

**Table 1:** Number of extreme heat days and hot nights projected for Greater Melbourne under a high greenhouse gas emissions scenario (Clarke JM et al., 2019)

Extreme Heat Days (Days/Year with a Maximum Temperature >35°C)	
1981-2010	2040-2059
8.3 days	13.1 to 20.4 days

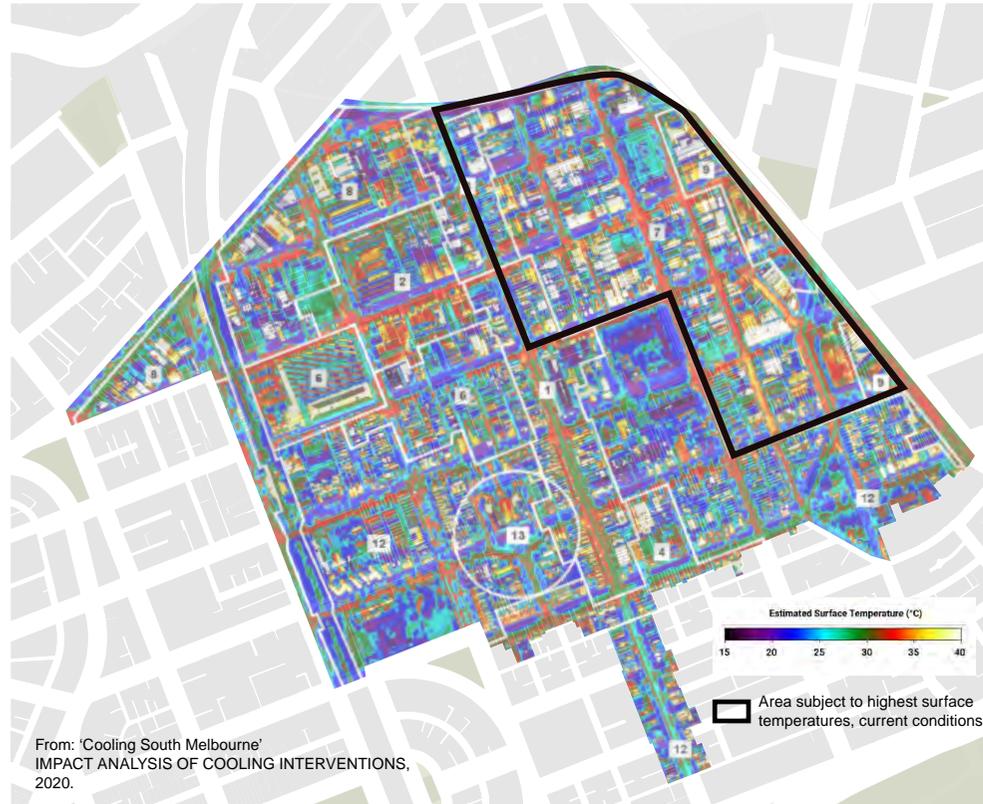
Hot Nights (Days/Year with a Minimum Temperature >20°C)	
1981-2010	2040-2059
5.8 days	13.3 to 19.4 days

Variations in surface temperature are influenced by built form, scale, density and materials. A significant number of dwellings have higher roof surface temperatures which can be attributed to materials from darker or lower performing heritage buildings. Areas of high surface temperatures are in the north-eastern area of business, retail and industrial areas. The lower surface temperature are predominantly seen in heritage residential areas to the south and social housing sites with higher street canopy cover.

To help understand the existing urban overheating challenges facing South Melbourne, the thermal map shows the surface temperature distribution across the study area in April 2020. The significant variations in surface temperature are influenced by differences in the physical urban environment (built form, scale, density, materials, etc.) and land cover (paved, vegetated, water, etc.).

Areas of lower surface temperatures (shown in purple, blue and green) are predominantly seen in the heritage residential areas to the south and the social housing areas where there is a higher street canopy coverage. Within these residential areas, a significant number of dwellings have higher roof surface temperatures which can often be attributed to darker or lower performing materials of heritage buildings.

Areas of higher overall surface temperatures (shown in red, yellow and white) are predominantly the business, retail and industrial areas of the Study Area. Factors that contribute to these higher surface temperatures are the wide unshaded streets, the compact urban context and the large exposed roof surfaces. Importantly, the areas of higher overall surface temperatures are the key redevelopment areas within the South Melbourne Study Area. Therefore, it is crucial that new development effectively mitigates the impacts of urban overheating to protect pedestrian amenity and thermal comfort.



# Canopy Cover

Canopy cover is seen in two forms of retail frontages with awnings and street trees. Both provide weather protection and make the areas more attractive. They provide amenity and have a role in the streetscape character and heritage context. The Study Area has 115 shopfront awnings providing more than 2.5km of weather protection. The awnings retain more heat than trees and, combined with overhead power lines, constrain tree canopy growth. Some of the heritage awnings have been repaired and are noted for their convex shape, iron lace work and striped appearance.

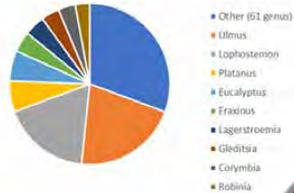
## Street Trees

Within the Study Area there are over 2,500 trees located within the road reserve and Council-owned land. Street trees in the study area provide 17% canopy coverage. While most streets have some canopy coverage, tree plantings are lacking along Park Street, City Road, Kings Way and Clarendon Street between Coventry and Park streets. Public parks and public housing estates provide significant green spaces with canopy coverage above 18%. Street trees provide significant benefits including weather protection, thermal comfort, attractiveness, ecological habitat and uptake of surface water. However, South Melbourne tree canopy cover targets are under performing compared to other areas in the municipality. In part, this is affected by most buildings being built to the property boundary and an abundance of overhead power lines in the road reserves. The age of the tree canopy is mixed, with some mature trees and many younger, smaller specimens. About 68% of trees are in good health.

While there are over 150 tree species planted in the Study Area, 50% of trees come from only five genera: Ulmus (Elm), Lophostemon (Brush box), Platanus (Plane), and Eucalyptus/Corymbia (Gum). The lack of species diversity can diminish the resilience of the urban forest. Around 32% of trees are shown to be in poor health possibly due to difficult growing conditions such as constrained soil volumes, lack of permeable surfaces and space above and below ground for growth.

These areas present the greatest opportunity for increasing canopy cover and understorey planting to convert hardscapes to more sustainable environments. There was a modest 0.6% increase in tree canopy cover across the City of Port Phillip from 2014 to 2018. In that time, South Melbourne parks and gardens experienced a reduced canopy cover of -2.22%. The Greening Port Phillip Strategy will be reviewed in 2022 and recommendations for planting configuration and species will be used to inform future expansion of ecological planting and canopy cover.

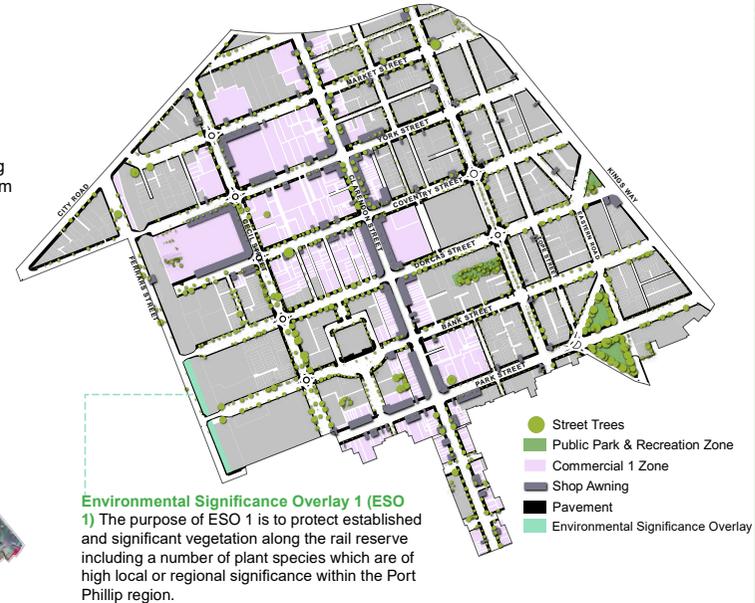
Tree genera in South Melbourne



## Normalised Difference Vegetation Index (NDVI)

NDVI measures the ratio of the reflective difference in the red and near-infrared portions of the spectrum to the sum of red and near-infrared reflectance.

Green, healthy vegetation reflects light in the near-infrared portion of the spectrum and absorbs red light. NDVI ranges from values of 1.0 to -1.0 where larger, positive values indicate green vegetation.



View of the ESO 1 from the Bank Street Bridge



South Melbourne, Emerald Hill [cartographic material], (1850), [Melbourne: SLV s.n. 18501850/1859]