

4. Existing conditions

4.1 Cumulative overshadowing modelling analysis method

The following steps were taken to assess the cumulative impact of overshadowing in the study area.

Step 1: Assessment of cumulative shadow modelling for 9am to 4pm.

A desktop assessment of every park within the study area to consider extent of overshadowing from 9am-4pm for the summer solstice, the equinox and the winter solstice was undertaken. This identified the following levels of sunlight access.

Summer solstice

Sunlight access at the summer solstice is generally high with most parks receiving sunlight across the majority of the park for the full 7 hour period. Partial overshadowing occurs in parks immediately adjacent to high-rise areas (see Map 5).

April 22 / Spring Equinox

The modelling demonstrates that sunlight access to parks is generally high at the April 22 / Spring equinox for parks within the low-rise areas. Within mid-high rise areas partial overshadowing occurs across a number of parks (see Map 6).

Winter solstice

Sunlight access to parks in winter varies. Between the hours of 9am and 4pm the cumulative impact seems significant. The greatest shadowing impact, however, occurs between the hours of 9am-10am and 3pm-4pm as the angle of the sun drop significantly outside of the 10-3pm period (see Map 7).

This identified the need to re-run the cumulative overshadowing assessment for a reduced time period.

Step 2: Assessment of cumulative shadow modelling for 10am to 3pm

The modelling was re-run by the City of Melbourne to demonstrate the cumulative overshadowing impact between 10am and 3pm (reduced from the 9am to 4pm testing). The method for developing the mapping was altered and this time considers both direct and diffused light (see Map 8).

Winter solstice

A second desktop assessment was undertaken to determine which parks are affected by winter overshadowing within this reduced timeframe.

There were 24 parks identified through the policy context review adjacent to areas with an existing height control of 4 storeys or greater.

The modelling analysis is demonstrated on the following pages.

4.2 Cumulative overshadowing modelling analysis findings

What is the extent of overshadowing now (9am - 4pm)?

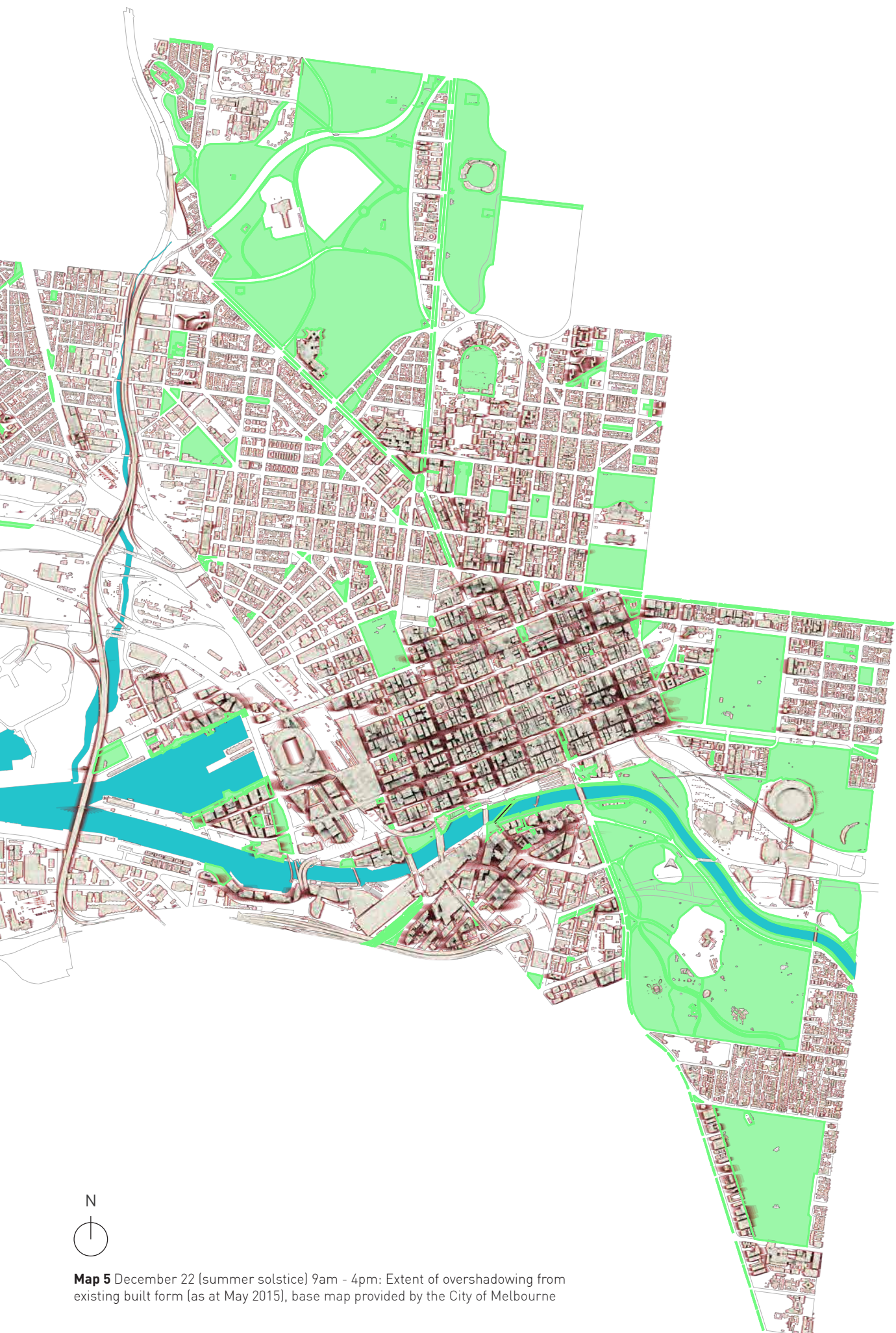
Summer solstice

Current sunlight access to most parks in the study area in summer is high.

Partial overshadowing of parks occurs in a small number of parks immediately adjacent to high-rise areas. This is caused predominantly by the afternoon sun. This is evident in:

- Docklands Park
- Point Park
- Treasury Gardens
- Gordon Reserve
- Fawkner Park
- Flagstaff Gardens (morning sun)





Map 5 December 22 (summer solstice) 9am - 4pm: Extent of overshadowing from existing built form (as at May 2015), base map provided by the City of Melbourne

What is the extent of overshadowing now (9am - 4pm)?

April 22

Current sunlight access to parks in the study area within low-rise areas is high.

Overshadowing is evident across a high number of parks in high growth areas. The extent varies from partial to significant when taking into account the 9am-4pm period.

Overshadowing is evident in the following parks:

- Clayton Reserve
- Macaulay and Canning Reserve
- Flagstaff Gardens
- Bedford Street Reserve
- Courtney Street Reserve
- University Square
- Lincoln Square
- Argyle Square
- Carlton Gardens
- Neill Street Reserve
- Fitzroy Gardens
- Parliament Gardens
- Fawcner Park
- Docklands Park
- New Quay
- Victoria Garden
- Buluk Garden





Map 6 April 22 9am - 4pm: Extent of overshadowing from existing built form (as at May 2015), base map provided by the City of Melbourne

What is the extent of overshadowing now (9am - 4pm)?

Winter solstice

When considering sunlight access from 9am-4pm the overshadowing of all parks is significant with every park in the study area subject to overshadowing to some extent.

For many parks the severity of shadow is due to the impact of shadows cast between 9am-10am and 3am-4pm.





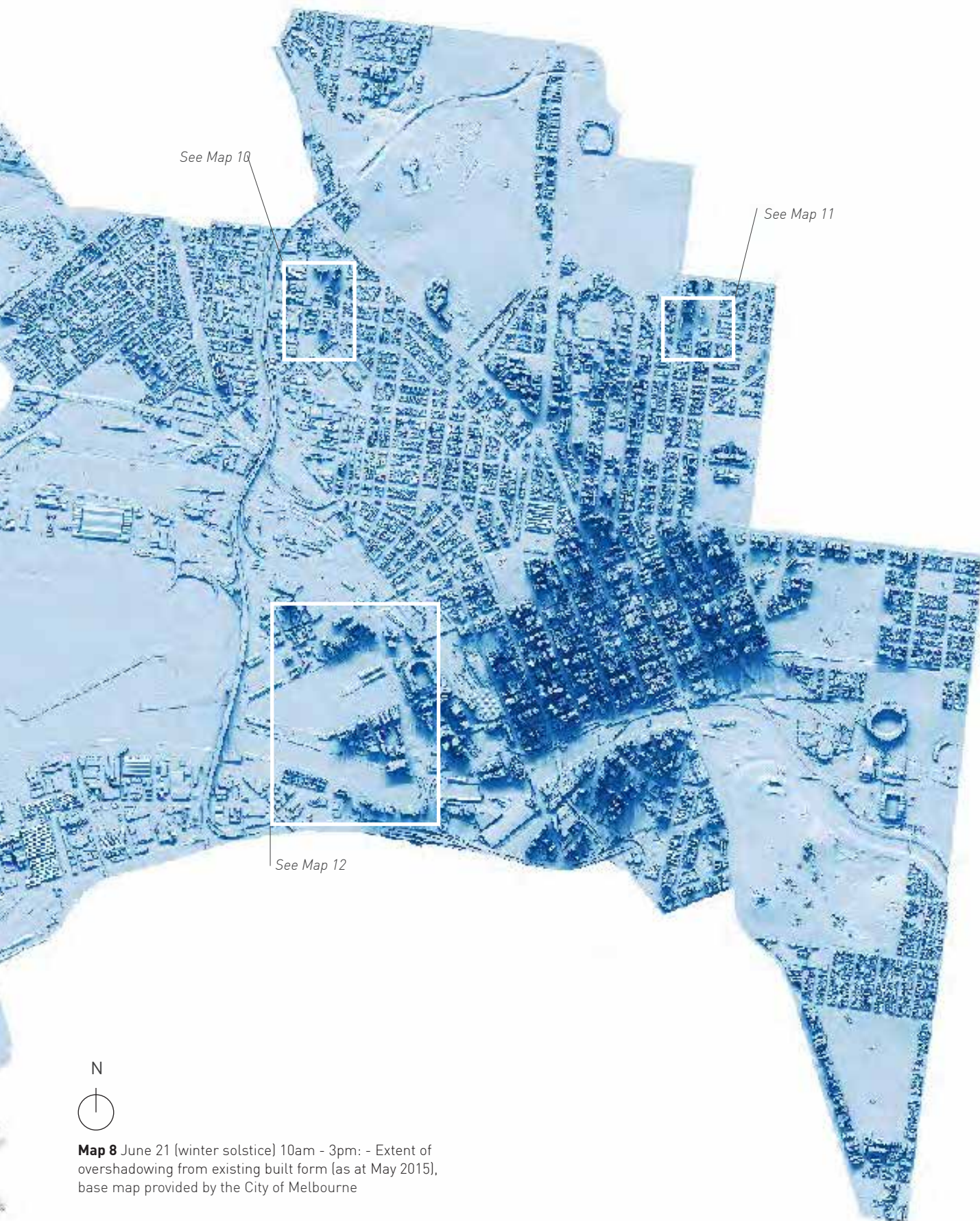
Map 7 June 22 (Winter solstice) 9am - 4pm: Extent of overshadowing from existing built form (as at May 2015), base map provided by the City of Melbourne

What is the extent of overshadowing now (10am - 3pm)?

Winter solstice

The cumulative overshadowing modelling was re-run to assess the impact of overshadowing between 10am and 3pm (removing the overshadowing impact between 9-10am and 3-4pm when a significant increase in shadow length is observed).





Map 8 June 21 (winter solstice) 10am - 3pm: - Extent of overshadowing from existing built form (as at May 2015), base map provided by the City of Melbourne

Generally winter sunlight access to parks is high outside of the Hoddle Grid and Southbank areas. Detailed plans of parks with significantly compromised sunlight access are illustrated in maps 9-11 (locations noted above)

What are the findings from the cumulative overshadowing modelling?

There were 24 parks identified through the policy context analysis as adjacent to areas with height limits above 4 storeys.

'Lost' parks already significantly overshadowed

Of these the modelling demonstrates that five parks have significant overshadowing from existing buildings that means access to winter sunlight has been lost. These are all in the Docklands:

- Quay Park
- New Quay promenade
- Victoria Park
- Collins Landing/Australia Wharf
- Buluk Park

The modelling identified an additional park, Neil St Reserve in Carlton, which is subject to significant overshadowing by the existing housing towers. If these were to be redeveloped, the opportunity to reinstate winter sunlight access may be possible. The situation in the Docklands is different, where relatively recent private developments (typically strata-titled apartment buildings) are unlikely to be redeveloped.

'Vulnerable' parks partially overshadowed

There are 12 parks which have partial overshadowing including 8 where partial overshadowing occurs within some part of the park across all five hours and 4 where partial overshadowing occurs for 1-3 hours within the park (see table 2).

An additional 2 parks are vulnerable to partial overshadowing within the existing height controls.

'Naturally protected' parks with high levels of sunlight access

There are 4 parks where the modelling illustrates that the orientation of the street grid means that they are protected from winter overshadowing.

Two of these parks are protected for the full time period between 10am and 3pm:

- Victoria Harbour Promenade (10am-3pm)
- Point Park (10am-3pm)

Two of these parks are protected for the full time period between 10am and 2pm:

- The Domain/the Botanical Gardens (10am-2pm)
- Fawkner Park (10am-2pm)

This is illustrated in Map 9.

Map 9 Parks that are potentially subject to winter overshadowing due to current proximity to building height controls above 4 storeys

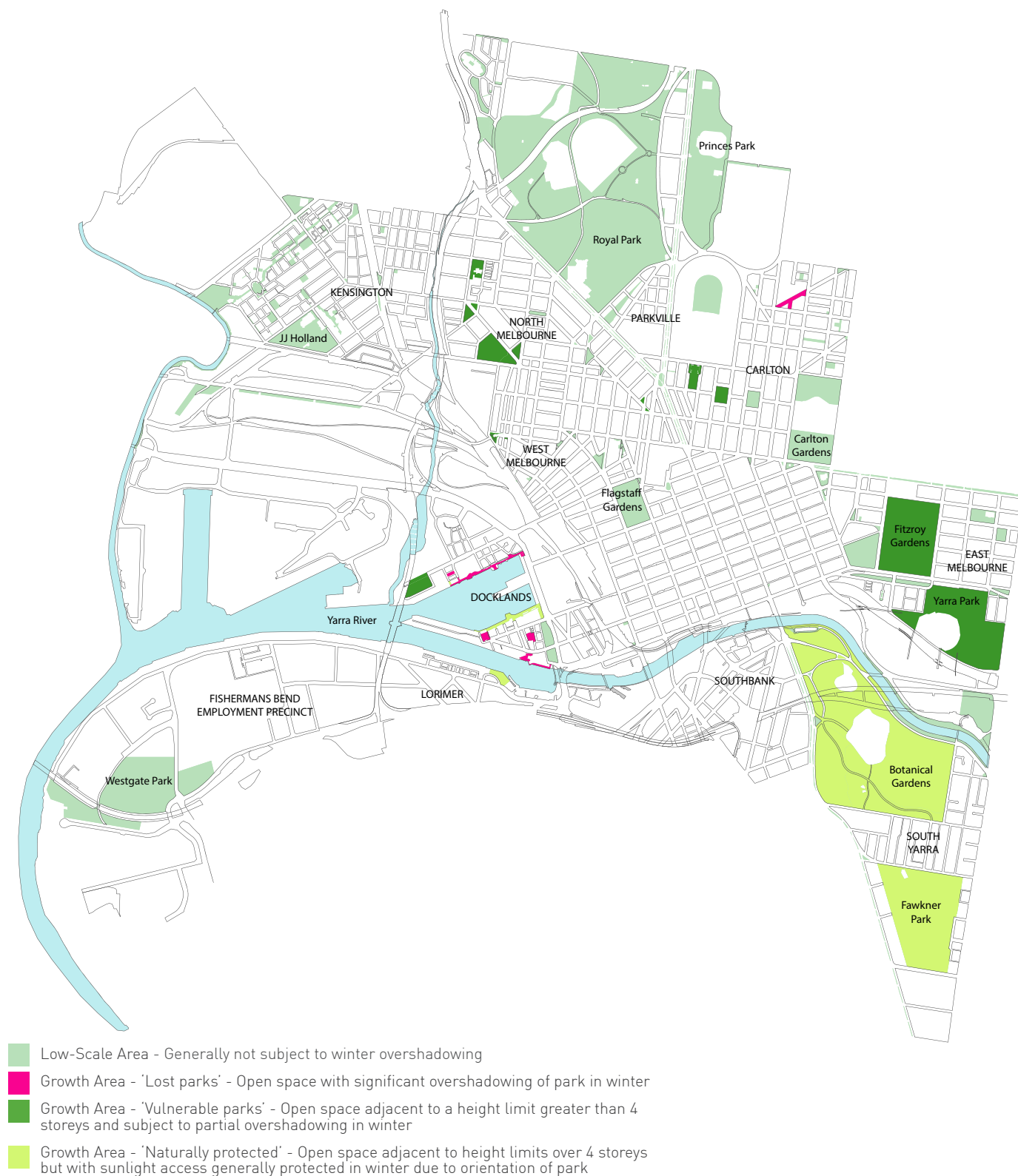






























Table 2: Review of 14 parks identified as vulnerable to overshadowing at the winter solstice

List of 14 parks currently identified as 'at risk' from partial winter overshadowing	What type of growth area is the park in?	Is any part of the park overshadowed by existing buildings between 10am and 3pm on 22nd of June?		Is this park vulnerable to overshadowing in winter between 10am and 3pm on the 22nd of June within the current discretionary height controls (assuming they are applied as maximum height controls)?	
				*Height limits proposed in West Melbourne Structure Plan	
				** C190 amendment - Part 2	
1. University Square	Urban Renewal Area		Yes, across all 5 hours		Yes, across all 5 hours
2. Lincoln Square	Urban Renewal Area		Yes, across all 5 hours		Yes, within a 3 hour period
3. Ron Barassi Senior Park	Urban Renewal Area		No, 0 hours (excluding freeway overshadowing)		Yes, across all 5 hours
4. North Melbourne Community Centre/ Buncl Street Park	Urban Renewal Area		Yes, across all 5 hours		Yes, across all 5 hours
5. Canning Street and Macaulay Road Reserve	Urban Renewal Area		Yes, within a 2 hour period		Yes, across all 5 hours
6. Clayton Reserve	Proposed Urban Renewal Area		Yes, within a 1 hour period		Yes, across all 5 hours
7. Gardiner Reserve	Proposed Urban Renewal Area		Yes, within a 2 hour period		Yes, within a 3 hour period
8. North Melbourne Football ground / North Melbourne Recreation Pool	Proposed Urban Renewal Area		No, 0 hours		Yes within a 2 hour period**
9. Railway Place/ Miller Street Reserve	Proposed Urban Renewal Area		Yes, across all 5 hours		Yes, across all 5 hours*
10. Stawell Street Park	Proposed Urban Renewal Area		Yes, across all 5 hours		Yes, across all 5 hours*
11. Fitzroy Gardens	Other Area of Incremental Growth		Yes, across all 5 hours		Yes, within a 1 hour period
12. Yarra Park	Other Area of Incremental Growth		Yes, across all 5 hours		Yes, across all 5 hours
13. Belford Street Reserve	Other Area of Incremental Growth		Yes, within a 3 hour period		Yes, within a 4 hour period
14. Courtney Street Reserve	Other Area of Incremental Growth		Up to 5 hours		Yes, across all 5 hours

 within a 1 to 2 hour period  within a 3 hour period  within a 5 hour period

The following maps illustrate the parks which have been identified as significantly overshadowed.



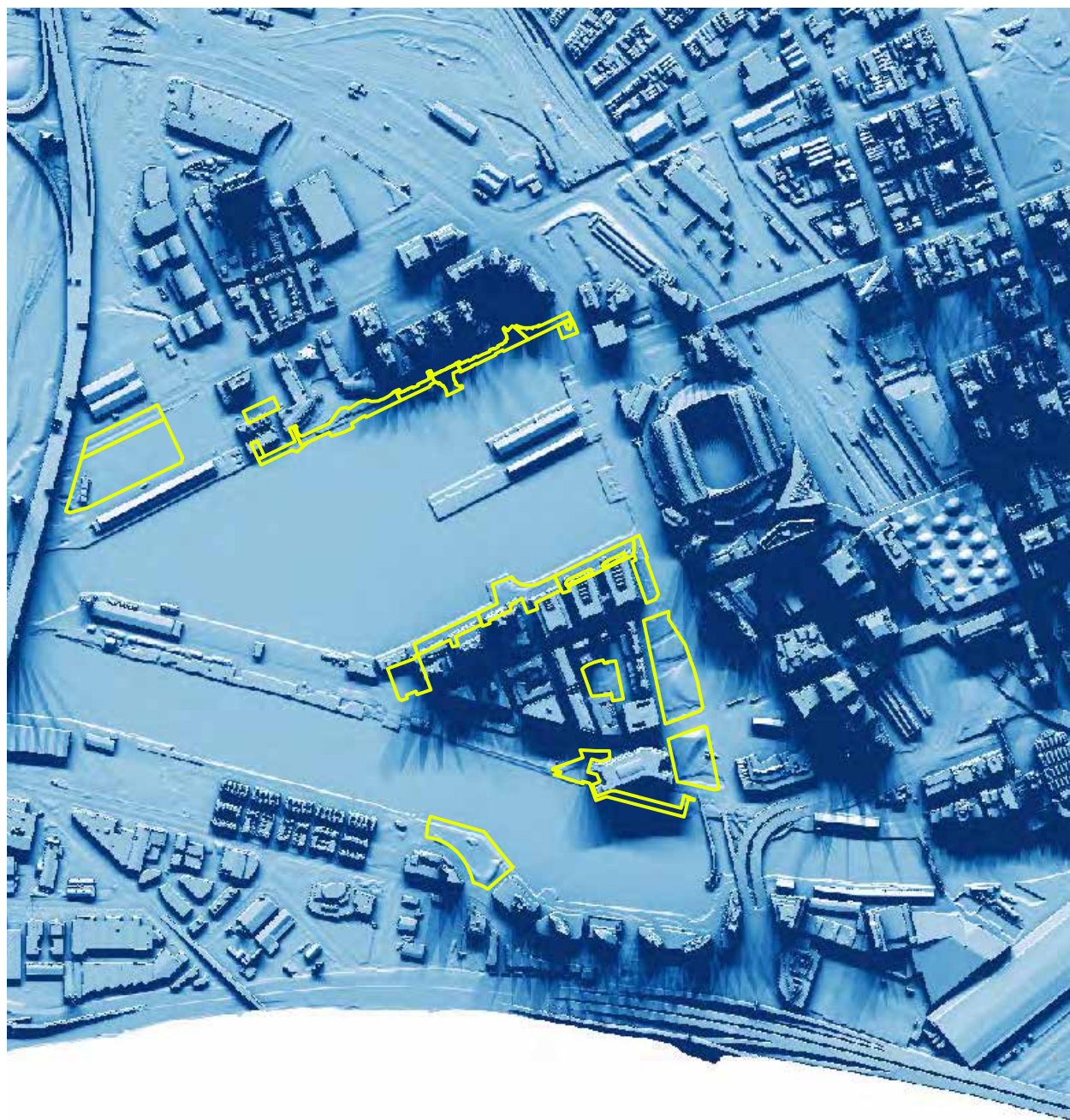
Map 10 North Melbourne - June 21 (winter solstice) 10am - 3pm - Extent of overshadowing from existing built form on parks (as at May 2015)

Partial overshadowing of the Buncle Street reserve and Canning Street and Macaulay Road reserve occurs from the existing high-rise towers



Map 11 Carlton - Neill Street reserve - June 21 (winter solstice) 10am - 3pm - Extent of overshadowing from existing built form (as at May 2015)

Existing overshadowing of Neil Street Reserve which illustrates that across the park most areas are in shadow at some point in time within this 5 hour window. The shadows of the towers, however, move quickly across the park area.



Map 12 Docklands - June 21 (winter solstice) 10am - 3pm - Extent of overshadowing from existing built form (as at May 2015)

Existing overshadowing of open space in the Docklands varies considerably. New Quay waterfront, Victoria Green and Collins Landing are all significantly overshadowed. In particular, New Quay is significantly overshadowed. Victoria Harbour Promenade, Yarra's Edge promenade and Point Park and Docklands Park all generally have good winter sunlight access.