SUBURBAN RAIL LOOP EAST

SRL East Draft Structure Plan

Urban Design Report

Attachment C - Assessment of Solar Access to the Public Realm

More Homes For Victorians

VICTORIA State Government

SRL East Draft Structure Plan

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Attachment C: Assessment of Solar Access to the Public Realm

Technical Report R.9

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SUBURBAN RAIL LOOP

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Solar access in the public realm

Sunshine is an important component of people's attraction to and enjoyment of public space[1] [2], as well as their health and wellbeing[3]. It is essential for plants, enabling sunny open spaces to contribute to cooling, greening and biodiversity to support Strategy PR9 - Public Realm Landscaping[4] as outlined in the SRL East Draft Stucture Plan (Structure Plan) Urban Design (SPUD) Report. Sunshine is also said to boost local business by attracting more foot traffic[5].

An increase in urban density reduces people's access to sun in their private spaces. Therefore, it is important to ensure a reasonable level of solar access to key public open spaces and footpaths in higher density areas to support Strategy PR14 - Open Space Interfaces and Strategy PR3 - Activity Streets.

Maintaining existing levels of sunlight in the public realm imposes a limit on the potential for denser buildings to provide for growth in the Structure Plan area where access to jobs and services is greatest to support Strategy UF1: Substantial change. Therefore, a balance needs to be struck, partly by targeting solar access protection to places and times where it is most important.

A set of solar access standards have been developed which seek to balance the provision of solar access and growth for each type of street and open space and, in some cases, individual open spaces and streets. These are informed by recently introduced solar access planning provisions in Victoria, related studies and Planning Panel reports, and site-specific testing.

The proposed recommendations for solar access standards to the public realm are outlined following. This is supported by solar testing of public spaces to demonstrate the effect of the proposed standards on surrounding development potential.

1. Urban Studies Journal (2015): "The Impact of Sunlight on Social Interaction in Public Spaces: A Case Study of Urban Squares."

2. Journal of Urban Design (2016): "Sunlight and Place-making: Enhancing the Aesthetic Appeal of Urban Squares."

3. Journal of Environmental Psychology (2013): "The Role of Urban Green Spaces in Enhancing Human Health and Well-being: Effects of Sunlight Exposure on Vitamin D Levels."

4. Landscape and Urban Planning Journal (2015): "Sunlight and Urban Green Spaces: Enhancing Biodiversity and Ecological Sustainability."

5. International Journal of Retail & Distribution Management (2018): "The Economic Benefits of Sunlit Public Spaces: A Study of Foot Traffic and Retail Sales."

Sir William Fry Reserve

Primary public open spaces in the Central Core

This category of spaces includes those centrally located spaces within each Draft Structure Planning area that will provide primary gathering spaces for community activities, events and informal recreation in the Central Core. This includes:

- Box Hill: Whitehorse Road Linear Reserve
- Burwood: SRL Station new public space and Gardiners Creek parklands widening, Sinnott Street Reserve
- Glen Waverley: SRL Station new public space, Glen Waverley Central Car Park public space at 281 Springvale Road
- Monash: SRL Station new central public space, SRL station new linear open space
- Clayton: Remembrance Gardens, new public space at SRL Station and community space below viaduct
- Cheltenham: Sir William Fry Reserve.

Year-round sunshine is important to ensure that the primary open spaces in the Central Core attract people to support events and informal public activity. This is reflected in a recent trend towards winter sunlight controls in planning scheme amendments for key spaces in higher density and urban renewal precincts, providing an indication of contemporary planning expectations. For example:

- Melbourne DDO2, DDO10 & Melbourne DDO33: Yarra River Corridor, Federation Square, City Square, State Library Forecourt
- Fishermans Bend DDO32 & DDO33 (Port Phillip): Type A – District Open Space
- Fishermans Bend DDO67 (Melbourne): Type B – Neighbourhood (central)
- Arden DDO80 & DDO81: Arden Central Innovation & Mixed Use Neighbourhood Park
- Darebin ACZ1: Preston City Oval and open space to its north
- Greater Geelong ACZ1: Austin Park, Johnston Park, Customs Park, Transvall Square, Steampacket Gardens, Proposed open space, Proposed Station Forecourt.

However, the Central Cores are also where the densest development is envisaged.

In general, testing of the primary open spaces in the Central Cores demonstrates that solar access can be achieved to 50% of these spaces for 3 hours per day in mid-winter without unreasonable impact to the provision for growth. Adopting this standard would result in sunlight to at least 75% of the spaces at the spring equinox. This is considered to be an appropriate outcome which balances aspirations for attractive public spaces and growth.

However, this standard of solar access is not possible in the proposed Whitehorse Road Linear Reserve without significant impact on development potential, due to the high level of growth sought on its northern side. On the other hand, as this is a large space, a smaller percentage of the open space still represents a relatively large area, and a lower percentage of sunlit space is offset by the availability of a sunny park only a short distance to the north in Box Hill Gardens. Therefore, a spring equinox standard is proposed for this space, rather than a mid-winter standard. This would still ensure that part of the space receives sunlight for at least 3 hours at mid-winter.

Sinnott Street Reserve and the linear open space through the Monash Central Core also present challenging conditions due to their relatively small size or narrow width respectively, and the scale of development envisaged around them. However, both are complemented by other primary public open spaces nearby that will have greater access to sunlight. Therefore, it is proposed that the solar access standard for these spaces be limited to 30 per cent of their area at mid-winter and the September equinox respectively. Testing indicates that this can be achieved without unreasonable impact to the provision for growth.

It is also aknowledged that in Clayton the existing community space below the rail viaduct, although overshadowed, is a valued community public space asset which is planned to be extended with the new public space to the south of the SRL station. These spaces are challenging due to their orientation and location, and although overshadowed, will continue to supplement the Remembrance Gardens in the Central Core.

Recommended solar access standards:

- General: 50% of the open space for a minimum of 3 hours at mid-winter*
- Whitehorse Road linear reserve: 50% of the open space for a minimum of 3 hours at the spring equinox
- Sinnott Street Reserve: 30% of the open space for a minimum of 3 hours at mid-winter
- Monash Core linear reserve: 30% of the open space for a minimum of 3 hours at the spring equinox.

Activity Streets

Activity Streets are identified in the SPUD technical reports. These streets are where the highest level of public life is sought, and generally lie within the Central Core.

Sunshine is important in the pedestrian areas in Activity Streets for the reasons outlined above. However, given their width, protecting mid-winter solar access or sunlight to all of the footpath would unreasonably constrain development in the Central Core.

Testing shows that adopting a standard of half the southern, eastern and western footpaths of Activity Streets for 3 hours at the September equinox maintains reasonable provision for growth in most cases. This standard is consistent with shadow controls for key streets in high order activity centres such as Central Geelong.

Exceptions to this include narrow Activity Streets with an east-west orientation, such as Main Street in Box Hill and the northern Activity Street in the Burwood Central Core. In the case of Main Street, existing and approved built form already creates significant overshadowing. However, it lies very close to other Activity Streets or open spaces more easily able to provide sunny public realm, in Market Street, Whitehorse Road and Carrington Street. Therefore, it is not recommended that a solar access standard be applied to Main Street and some narrow Activity Streets with and east-west orientation.

Montclair Avenue in Glen Waverley presents a similar challenge. However, achieving this standard in the eastern half of the street is possible without significant constraint on development, and would provide solar access where it is most valuable closer to Kingsway, Glen Waverley's most active pedestrian area.

Recommended solar access standards:

- General: 50% of southern, eastern or western footpaths for a minimum of 3 hours at the spring equinox
- Main Street, Box Hill, the western half of Montclair Avenue, Glen Waverley and some narrow Activity Streets with an east-west orientation: No standard recommended given the availability of sunny streets and/or public spaces nearby.

Main Street footpaths

Main Street footpaths are the primary streets within Main Street place types. These include:

- Burwood: The western end of Burwood Highway
- Glen Waverley: Kings Way
- Clayton: Clayton Road between the railway line and Centre Road
- Cheltenham: Highett Road.

These streets are intensively used by pedestrians walking to shops and services, window-shopping and outdoor dining.

The building scale and massing recommended to respect the existing low-rise character will also maintain sunlight on 100% of the footpath for at least 3 hours at the September equinox. This standard is considered to strike an appropriate balance between solar access and providing for growth. It is consistent with that which is commonly adopted for similar streets in street-based activity centres within Melbourne.

Recommended solar access standard:

- 100% of the southern, western and eastern footpath for a minimum of 3 hours at the spring equinox.

Other footpaths

The building scale and massing recommended to ensure good amenity in the public realm and to complement the existing character will also generally maintain sunlight on 100% of southern, eastern or western footpaths in typical streets at the September equinox. This is considered to strike an appropriate balance between solar access and providing for growth.

* Providing flexibility in relation to the particular period during which 3 hours of sunlight is maintained allows a site-specific period to be determined that optimises the balance to be struck between solar access and growth in response to the orientation of the space and surrounding development. This approach has been adopted in Fishermans Bend and proposed Amendment C278 to the Melbourne Planning Scheme.

Medium-large parks

Medium-large parks are those greater than 1ha. These have a District or Community catchment classification. They include:

- Box Hill: Box Hill City Oval, Box Hill Gardens, Kingsley Gardens, Surrey Park, Whitehorse Reserve (Howard Wilson Oval)
- Burwood: Bennettswood Reserve, Gardiners Creek Reserve
- Glen Waverley: Bogong Reserve
- Clayton: Fregon Reserve, Meade Reserve
- Cheltenham: Sir William Fry Reserve.

Sunlight is important in these spaces as they provide an important year-round recreation function, including for sports activities.

Testing demonstrates that the scale of development recommended at the edges of medium-large parks will maintain sunlight on these spaces throughout the year. Sir William Fry Reserve is the only space in this category where taller buildings are envisaged, at the western part of its northern edge (on the former Highett Gasworks site). The proposed maximum building height along the remainder of this northern interface would maintain sunlight to 70% of the park at mid-winter and a higher percentage of the park at the spring equinox. This is considered to be an appropriate benchmark for solar access.

Recommended solar access standard:

- General: No standard required given the size of the spaces and the scale of development surrounding them
- Sir William Fry Reserve: 70% of the open space for a minimum of 3 hours at mid-winter.

Small open spaces in Central Flanks

These spaces are the secondary open spaces within the central areas of each precinct. They include:

- Box Hill: Box Hill Town Hall forecourt, the proposed Ellingworth Parade open space, Linsley Park, Pioneer Park
- Clayton: new proposed open space around Cooke Street or Burton Avenue (Cooke Street car park open space).

These spaces provide an important, year-round recreation role for workers (at lunchtime) and residents (particularly on weekends).

A number of recently gazetted controls in Melbourne adopt September equinox shadow controls for secondary open spaces. These include ‘other’ spaces in central Melbourne and secondary spaces in Fishermans Bend and Arden.

Testing demonstrates that seeking mid-winter solar access in Pioneer Park and Linsley Park would unreasonably constrain the provision for growth, particularly given opportunities for sun in new Ellingworth Parade open space and the Whitehorse Road Linear Reserve nearby. Testing of the new Ellingworth Parade open space indicates that the proposed building envelope provisions will maintain sunlight to the majority of the space at the spring equinox and more than 50% of the space for at least a 2-hour period at midwinter. This, along with the Whitehorse Road Linear Reserve, is considered to provide an appropriate level of access to sunny open space within this part of Box Hill.

Testing of potential configurations for the Cooke St car park open space indicate that it, too, can achieve solar access to the majority of the space at the spring equinox without unreasonably fettering development potential to its north and east.

Recommended solar access standard:

- New Ellingworth Parade open space and new proposed open space around Cooke Street or Burton Avenue (Cooke Street car park open space) : 75% of the open space for a minimum of 3 hours at the spring equinox.

Small and narrow parks outside the Central Core and Flanks

This category includes a large number of open spaces smaller than 1ha, mainly in residential neighbourhoods that have a Pocket or Neighbourhood catchment classification. These open spaces service an immediate local catchment or small urban area, and provide an important year-round recreation role for residents (particularly smaller children and their parents/ carers).

Given the small size of these spaces, and their function, it is considered appropriate to maintain solar access to at least 50% of their area in mid-winter. This would result in solar access to at least 75% of the space at the spring equinox.

This is generally consistent with Melbourne Amendment C278, which proposes to introduce a mandatory winter sunlight provision to all its parks at 10am-3pm through a new DDO provision. This was supported by the planning panel which reviewed the Amendment. Testing indicates that the proposed building envelopes in these place types will achieve this standard in the majority of these spaces.

However, there are approximately 12 small open spaces outside the Central Core and Flanks that would require reduced heights and/or increased setbacks on their north, east and/or west sides to achieve the proposed standard. In a small number of these spaces, the proposed solar access standard cannot be achieved without unreasonably reducing provision for growth, by virtue of their configuration and relationship with surrounding development. However, in each case, another open space within a short walking distance can more easily provide sunny open space year-round. Therefore, it is considered acceptable to allow these few open spaces to be more overshadowed at mid-winter and be excluded from the proposed standard.

Victoria-Glenmore Chain Reserve and Lundgren Chain Reserve include relatively narrow linear open spaces linking wider open spaces. As these have a primarily transitory function, a spring equinox solar access standard is considered more appropriate.

Monash Business Park Reserve is a small space with considerable density proposed to its north, east and west. There are also no open spaces within a short walking distance which can provide an alternative sunny open space. Therefore, a spring equinox solar standard is required.

Recommended solar access standard for open spaces outside the Central Core and Flanks:

- General: 50% of the open space for a minimum of 3 hours at mid-winter
- Glenmore Street Reserve, Ashted Road Reserve, Barlyn Road Reserve, Cambro Road Reserve, Arnott Street Reserve, Akuna Avenue Linear Reserve, Jean Street Children’s Playground: No standard proposed given their challenging configuration and the availability of sunny open spaces nearby
- Linear open spaces and Monash Business Park Reserve: 50% of the open space for a minimum of 3 hours at the spring equinox.

Planning scheme references:

- Yarra River Corridor, Batman Park, Birrarung Marr, Grant St Res, ACCA forecourt, Flagstaff Gdns (Melbourne DDO2, DDO10, DDO33)
- Fishermans Bend (Melbourne DDO67 and Port Phillip DDO32, DDO33)
- Arden Central Innovation Neighbourhood Park (DDO80) and Arden Central Mixed Use Neighbourhood Park (DDO81)
- East Village Central Park and Town Square (CDP)
- Preston City Oval and Primary Preston Market open space (Darebin ACZ1)
- Central Geelong – Primary and secondary streets and laneways (Geelong ACZ1)
- Johnston Street, Bridge Road, Victoria Street, Swan Street, Smith Street (Yarra DDO15, 21, 22, 26,30)
- Sydney Road, Brunswick (Moreland DDO18).

Recommendations for built form to ensure solar access on public realm

The following outlines the solar access approach which informed the built form recommendations by public realm category, their rationale and testing methods used to inform them.


Sir WIlliam Fry Reserve


Whitehorse Road Linear Reserve


Linsley Park


Roslyn Street Reserve


Highett Road


Carrington Road

Type of Space	Medium - large parks	Neighbourhood and pocket parks			Footpaths	
		In Central Core areas	In Central Flanks areas	Outside Central Core and Flanks areas	Main Streets	Activity Streets
No. of open spaces in category	17	16 (mostly planned / proposed open spaces)	6 (including proposed Ellingsworth Parade and Monash Linear Reserve)	35 (numbers vary from OS tech report due to partitioning of several open spaces)	4	N/A
Definition and rationale	Includes parks categorised as having a District and Community catchment classification. These include all parks that have a Sports Park primary use. Testing demonstrates that the scale of development recommended at the edges of medium-large parks within the Structure Plan areas will maintain sunlight on the vast majority of these spaces throughout the year.	Neighbourhood and pocket open spaces within the Central Core areas. This includes all station forecourts, and other spaces where public life will be focused within the core area. Year-round sunshine is important to ensure that the primary open spaces in the Central Core attract people to support events and informal public activity. However, the Central Core is also where the densest development is envisaged.	Neighbourhood and pocket open spaces within Central Flanks areas. The majority of these spaces have Community Park as a primary use - accommodating a range of casual and informal activities to service local catchments. These spaces provide an important, year-round recreation role for workers (at lunchtime) and residents (particularly on weekends).	Neighbourhood and pocket open spaces. The majority of these spaces have Community Park as a primary function - accommodating a range of casual and informal activities. These spaces provide an important year-round recreation role for residents (particularly smaller children and their parents/ carers).	The building scale and massing recommended to respect the existing low-rise character will also maintain sunlight on 100% of the footpath at the September equinox. This is considered to strike an appropriate balance between solar access and providing for growth.	Sunshine is important in the pedestrian areas in Activity Streets. However, given their width, protecting mid-winter solar access or sunlight to all of the footpath would unreasonably constrain development in the Central Core. Half the footpath for 3 hours at the September equinox is considered to strike an appropriate balance between these competing aspirations.
Size	Larger than 1ha	Smaller than 1ha			N/A	N/A
Built form recommendations	N/A - built form proposed generally achieves high levels of solar access (greater than 70% at the winter solstice)	Specific built form recommendations are provided in the following pages. These only include parks where the general built form guidance to surrounding lots does not achieve the solar access standard; where no other nearby park provides suitable solar access; and where testing demonstrates that the resulting built form is reasonable.			N/A - the low built form and upper level setbacks ensure solar access to either footpath on Kingsway and Clayton Road (south) and the southern footpaths of Burwood Highway and Highett Road main streets.	Specific built form recommendations are provided in the following pages. These include built form north of east-west streets, except where testing has demonstrated that the proposed street wall alone precludes meeting the solar access standard.
Solar access standard	• **General: 70%** of the open space for a minimum of 3 hours at **mid-winter.**	• **General**: **50%** of the open space for a minimum of 3 hours at **mid-winter** • **Whitehorse Road Linear Reserve**: **50%** of the open space for a minimum of 3 hours at the **spring equinox** • **Sinnott Street Reserve**: **30%** of the open space for a minimum of 3 hours at **mid-winter** • SRL Monash Station station new linear open space: **30%** of the open space for a minimum of 3 hours at the **spring equinox.**	• **New Ellingworth Parade open space and new open space on Cooke Street car park: 75%** of the open space for a minimum of 3 hours at the **spring equinox.**	• **General: 50%** of the open space for a minimum of 3 hours at **mid-winter** • **Glenmore Street Reserve, Ashted Road Reserve, Barlyn Road Reserve, Cambro Road Reserve, Arnott Street Reserve, Akuna Avenue Linear Reserve, Jean Street Children's Playground:** No standard proposed given their challenging configuration and the availability of sunny open spaces nearby • Linear open spaces: **50%** of the open space for a minimum of 3 hours at the **spring equinox.**	• 100% of the southern, western and eastern footpath for a minimum of 3 hours at the spring equinox.	• **General**: **50%** of southern, eastern or western footpaths for a minimum of 3 hours at the **spring equinox** • **Main Street and Market Street, Box Hill, the western half of Montclair Avenue, Glen Waverley and some narrow Activity Streets with an east-west orientation:** No standard recommended given the availability of sunny streets and/ or public spaces nearby.
Testing method	Two typical large open spaces were tested, representing the broader category.	A review of all open space was undertaken. Detailed built form testing was undertaken for parks as per the above to establish built form recommendations where needed			Tested for Highett Road (east-west) and Kingsway (north-south)	Testing was undertaken for a sample of typical widths and orientations.

Public realm spaces overview

The following is a list of the public spaces considered as part of this analysis, a summary of solar access standards and built form recommendations and a summary of the rationale that underpins them. This is complemented by the testing presented in the following pages.

Name	Size (Ha)	Category	Recommendation	Rationale
Box Hill				
Box Hill Gardens	6.7	Medium-large open space	No variation to preferred built form or general solar access standard	Preferred built form comfortably achieves the general solar access standard and thus no shadow guidelines are required.
Kingsley Gardens	2.4	Medium-large open space	No variation to preferred built form or general solar access standard	Impact of preferred built form is inferred to be acceptable as size and surrounding built form similar to other medium-large open spaces assessed.
Surrey Park	16	Medium-large open space	No variation to preferred built form or general solar access standard	Impact of preferred built form is inferred to be minimal as largest park within the SRL East Structure Plan area and surrounding built form similar to other Medium-large open spaces.
Box Hill City Oval	3.7	Medium-large open space	No variation to preferred built form or general solar access standard	Impact is inferred to be minimal as Built form that may overshadow the open space is outside the Structure Plan Area boundary.
Whitehorse Reserve (Howard Wilson Oval)	2.3	Medium-large open space	No variation to preferred built form or general solar access standard	Impact of preferred built form is inferred to be acceptable as size and surrounding built form similar to other medium-large open spaces assessed.
Whitehorse Road Linear Reserve	N/A	Primary open space in Central Core	A solar access standard of 50% of the open space for a minimum of 3 hours at the spring equinox.	Preferred built form would cast significant shadow on this key open space in the core area. However, this is offset by the availability of a sunny park only a short distance to the north in Box Hill Gardens. Therefore, a varied, spring equinox standard is recommended. This standard can be achieved through various design options, for example, by limiting buildings a height of 84 metres or adopting slimmer, well-spaced towers.
New Ellingworth Parade open space	N/A	Small open space in Central Flanks	No variation to preferred built form. Solar access standard of 75% of the open space for a minimum of 3 hours at the spring equinox	Preferred built form achieves a reasonable solar access outcome.
Linsley Park	0.17	Small open space in Central Flanks	No solar access standard	Orientation and size of this park makes built form changes needed to achieve solar access standard significant. New Ellingworth Parade open space is in close proximity and can provide solar access to local residents.

Name	Size (Ha)	Category	Recommendation	Rationale
Box Hill (continued)				
Pioneer Park	0.12	Small open space in Central Flanks	No solar access standard	Orientation and size of this park makes built form changes needed to achieve solar access standard significant. New Ellingworth Parade open space is in close proximity and can provide solar access to local residents.
Box Hill Town Hall Forecourt	N/A	Small open space in Central Flanks	No variation to preferred built form or general solar access standard	Located south of Whitehorse Road Linear Reserve, preferred development north of Whitehorse Road in this area is lower than the Central Core. As a result, it is inferred that this open space would achieve solar access throughout the year, so no shadow guidelines are required.
Graham Bend Park	0.11	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form almost achieves the solar access standard (above 42% in mid-winter for 3 hours). (If required, achieving a solar access standard of 50% for a 3 hour period in mid-winter will require minor modifications to built form to the north.)
Surrey Drive Reserve	0.2	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Surrey Drive Reserve together with the adjacent Brougham Street Playground achieves the general solar access standard, so no shadow guidelines are required. Additionally, Surrey Park is located within a short walking distance (approximately 300m).
Victoria Rose Reserve	0.68	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard, so no shadow guidelines are required.
Glenmore Street Reserve	0.13	Small open space outside Central Core and Flanks	No solar access standard	Similar to Cambro Road Reserve in width and orientation and is an extension of Victoria Rose Reserve. It is inferred that the size and orientation of park means that achieving solar access would significantly limit adjacent development to achieving solar access objective. Adjacent Victoria Rose Reserve which achieves solar access standard.
Ashted Road Reserve	0.07	Small open space outside Central Core and Flanks	No solar access standard	Similar to Cambro Road, it is inferred that the size and orientation of open space means that achieving solar access would significantly limit adjacent development. New Ellingworth Parade open space within 200m distance.

Name	Size (Ha)	Category	Recommendation	Rationale
Box Hill (continued)				
Brougham Street Playground	0.15	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Brougham Street Playground together with the adjacent Surrey Drive Reserve achieves the general solar access standard. Additionally, Surrey Park is located within a short walking distance (approximately 300m)
Carrington Road	N/A	Activity Streets	No variation to preferred built form or general solar access standard	The general solar access standard can be achieved while still allowing a developable envelope on Box Hill Central site to the north
Main Street	N/A	Activity Streets	No solar access standard	Existing and approved development already compromise solar access
Market Street	N/A	Activity Streets	No solar access standard	Solar access conditions dictated by existing buildings
Burwood				
Gardiners Creek Reserve (south of Burwood Highway)	3.8	Medium-large open space	No variation to preferred built form or general solar access standard	Western residential areas - preferred built form achieves general solar access standard in the afternoon.
Bennettswood Reserve	4.8	Medium-large open space	No variation to preferred built form or general solar access standard	Built form on land adjacent to the open space is not anticipated to be subject to overshadowing controls as part of this Structure Plan.
Gardiners Reserve	7.5	Medium-large open space	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
SRL Station new public space	N/A	Primary open space in Central Core	No variation to preferred built form or general solar access standard	As this space borders with Burwood Highway and Bennettswood Reserve to the north, it is inferred to have minimal shadow.
Sinnott Street Reserve	N/A	Primary open space in Central Core	30% of the open space for a minimum of 3 hours at mid-winter.	Preferred built form achieves a 30% solar access standard without significant changes to built form in this core area. This is considered acceptable given the proximity of other sunny open space.
Apex Park Playground	0.26	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Roslyn Street Reserve	0.22	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Borders with edge of Structure Plan Area boundary to the north. Preferred built form achieves the general solar access standard
Lundgren Reserve	Multiple sections	Small open space outside Central Core and Flanks	No solar access standard between 15 Collier Court and Cumming Street. Between Station Street and 15 Collier Court 50% for a minimum of 3 hours at the spring equinox	Application of a solar access standard to its narrow western part would unreasonably constrain the provision for growth given it has a primarily transitory function. The preferred built form achieves the linear open space solar access standard in its eastern wider portion towards Station Street.

Name	Size (Ha)	Category	Recommendation	Rationale
Burwood (continued)				
Barlyn Road Reserve	0.06	Small open space outside Central Core and Flanks	No solar access standard	The size and orientation of park would severely limit adjacent development to achieve solar access objective.
Ashwood Drive Reserve	0.2	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Octavia Court Playground	0.2	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	As this open space is immediately south of Gardiners Reserve, it is inferred to have good solar access.
Burwood Highway (within local activity centre)	N/A	Main Street	No variation to preferred built form or general solar access standard	Lower preferred built form in the area provides solar access to southern footpath
Glen Waverley				
Bogong Reserve	4.3	Medium-large open space	No variation to preferred built form or general solar access standard	Impact of preferred built form is inferred to be acceptable as size and surrounding built form similar to other medium-large open spaces assessed.
SRL Station new public space	N/A	Primary open space in Central Core	No variation to preferred built form or general solar access standard	As this open space borders the rail line to the north, it is inferred that the preferred built form achieves the general solar access standard
Glen Waverley Central Car Park public space at 281 Springvale Road	N/A	Primary open space in Central Core	Solar access standard 30% for a minimum of 3 hours in mid-winter	Overshadowing is caused by existing tall buildings in the morning and preferred built form on strategic sites in the core area. A solar access standard of 30% in mid-winter is achieved without changes to the preferred built form. This is considered acceptable as it will be supplemented during winter with the adjacent SRL Station new public space.
Lakeview Court Reserve	0.47	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Built form on land adjacent to the open space is outside the Structure Plan Area boundary or not anticipated to be subject to overshadowing controls as part of this Structure Plan.
Jordan Grove Reserve	0.2	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Mount Street Neighbourhood House Reserve	0.2	Small open space outside Central Core and Flanks	Solar access standard 30% for a minimum of 3 hours at mid-winter	Adjacent development to the north would need to be lowered to achieve general solar access standard. Preferred built form achieves solar access to 30% of the open space in mid winter. This is considered acceptable given Hinkler Reserve, a large park outside the Structure Plan Area boundary, is approx. 500m to the east.
Yanigin Drive Reserve	0.7	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Comparatively larger open space surrounded by lower preferred built form (up to 4 storeys), so preferred built form is inferred to have limited impact.

Name	Size (Ha)	Category	Recommendation	Rationale
Glen Waverley (continued)				
Kingsway	N/A	Main Street	No variation to preferred built form or general solar access standard	Lower preferred built form in the area provides solar access to southern footpath
Montclair Avenue	N/A	Activity Streets	No solar access standard to the western half of Montclair Avenue	The preferred height and lot sizes of development north of Montclair Avenue, together with its existing narrow width, create a challenge to achieve the general solar access standard. However, achieving this standard in the eastern half of the street is possible without significant constraint on development, and would provide solar access where it is most valuable closer to Kingsway, Glen Waverley's most active pedestrian area.
Monash				
Carlson Avenue Reserve	3.3	Medium-large open space	No variation to preferred built form or general solar access standard	Built form that may overshadow the open space is outside the Structure Plan Area boundary so it is inferred to have minimal impact.
SRL Station new central public space	N/A	Primary open space in Central Core	Solar access standard of 50% for a minimum 3 hours at mid-winter	Lower built form north of this open space will be required to achieve the recommended solar access standard. This is considered appropriate despite being an area of denser built form, because it is a key open space with the closest similar open space located more than 500m walking distance.
SRL Station new linear open space	N/A	Primary open space in Central Core	Solar access standard of 30% of the open space for a minimum of 3 hours at the spring equinox	Challenging conditions due to narrow width and the scale of development envisaged around it. Its north-south orientation makes a spring equinox standard achievable. Furthermore, the nearby SRL Station new central public space can supplement this space.
Monash Business Park Reserve	0.34	Small open space outside Central Core and Flanks	Solar access standard of 50% of the open space for a minimum of 3 hours at the spring equinox	Preferred built form to the north would create overshadowing for most of this irregularly shaped park throughout winter. It does however achieve a minimum of 50% access standard without significant changes to built form in this area. Additionally, Carlson Avenue Reserve is approximately 500m away and can provide solar access throughout the year.
Samada Street Reserve	0.34	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard

Name	Size (Ha)	Category	Recommendation	Rationale
Monash (continued)				
Berrydale Court Reserve	0.07	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Cambro Road Reserve	0.07	Small open space outside Central Core and Flanks	No solar access standard	Size and orientation of park would severely limit adjacent development to achieve general solar access standard. Within 500m of Dennis Street Reserve which achieves the solar access standard.
Dennis Street Playground	0.19	Small open space outside Central Core and Flanks	Apply general solar access standard as a guideline	Built form north of open space will need to be lowered to achieve the standard. However, it is the only public open space within a 500m radius that can provide solar access throughout the year to the majority of the park with limited change to preferred built form.
Arnott Street Reserve	0.07	Small open space outside Central Core and Flanks	No solar access standard	Similar to Cambro Road, it is inferred that the size and orientation of open space would significantly limit adjacent development. Furthermore, within short distance of Dennis Street Reserve which is proposed to achieve the solar access standard.
Akuna Avenue Linear Reserve	0.43	Small open space outside Central Core and Flanks	No solar access standard	A narrow open space would severely limit adjacent development to achieve solar access standard. Several other open spaces that do achieve the general solar access standard are within walking distance.
Finch Street Playground	0.36	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Westerfield Drive Reserve	0.03	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Close to achieve general solar access standard with slight modifications to development immediately to the north needed to achieve 50% in mid-winter. However, this space is located within walking distance of several open spaces that achieve the general solar access standard.
Clayton				
Fregon Reserve	3.5	Medium-large open space	No variation to preferred built form or general solar access standard	Impact of preferred built form is inferred to be acceptable as size and surrounding built form similar to other medium-large open spaces assessed.
Meade Reserve	2.5	Medium-large open space	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard

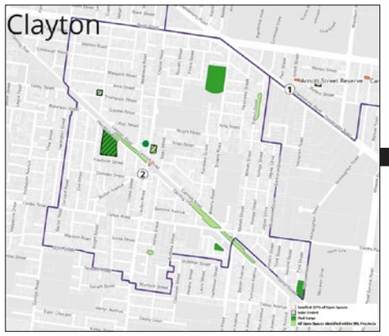
Name	Size (Ha)	Category	Recommendation	Rationale
Clayton (continued)				
New public space at SRL Station and community space below viaduct	N/A	Key open space in Central Core	No solar access standard	Impacted due to their orientation and existing overshadowing from rail viaduct.
Remembrance Gardens	N/A	Small open space in Central Flanks	50% for a minimum of 3 hours at mid-winter	A key open space in the core area of Clayton. Adjacent open spaces are overshadowed by the existing rail viaduct and denser development to the north, warranting protection of solar access in this open space. Lowering height of built form to the north can achieve this standard.
Clayton Urban Park	1.4	Medium-large open space	No solar access standard	Impacted due to their orientation and existing overshadowing from rail viaduct.
First Street Reserve	0.84	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Impact of preferred built form is inferred to be minimal as this is a large open space for this category surrounded by lower preferred built form.
Jackson Green Playground	0.3	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	This is a recently developed area of lower built form to the west, impact is inferred to be acceptable.
Meppel Drive Playground	0.16	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Evelyn Street Reserve	0.7	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Flora Road Playground	0.2	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form almost achieves the solar access standard (above 40% in mid-winter for 3 hours). (Achieving a solar access standard of 50% for a 3 hour period in mid-winter would require minor modifications to built form to the north.)
Clayton Road - between Carinish Road and Centre Road	N/A	Main Street	No variation to preferred built form or general solar access standard	Lower preferred built form in the area provides solar access to eastern and western footpaths
Clayton Road - between Wright Street and Carinish Road	N/A	Activity Streets	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Cheltenham				
Sir William Fry Reserve	8.5	Medium-large open space	70% of the open space for a minimum of 3 hours at mid-winter.	Impact of preferred built form is inferred to be acceptable as size is larger than most other medium-large open spaces assessed. The only space in this category where taller buildings are envisaged. However, only at the western part of its northern edge.

Name	Size (Ha)	Category	Recommendation	Rationale
Cheltenham (continued)				
Lyle Anderson Reserve	1.01	Medium-large open space	No variation to preferred built form or general solar access standard	Impact of preferred built form is inferred to be acceptable as size and surrounding built form similar to other medium-large open spaces assessed.
Wangara Reserve	N/A	Medium-large open space	No variation to preferred built form or general solar access standard	Impact of preferred built form is inferred to be acceptable as size and surrounding built form similar to other medium-large open spaces assessed.
Jean Street Children's Playground	0.25	Small open space outside Central Core and Flanks	No solar access standard	Narrow open space with east-west orientation. Existing overshadowing from Southland development to the north. Within short distance of Sir William Fry Reserve.
Eddie Reserve	0.55	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	On the edge of the Structure Plan Area boundary. Preferred built form achieves the general solar access standard.
Pennydale Park	0.63	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Tulip Grove Playground	0.06	Small open space outside Central Core and Flanks	Solar access standard 30% for a minimum of 3 hours in mid-winter	Preferred built form can achieve a reduced level of solar access in this open space. Within short distance to Sir William Fry Reserve and Pennydale Reserve - both providing solar access in mid-winter.
Train Street Playground	0.06	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard
Amberley Park	0.18	Small open space outside Central Core and Flanks	No variation to preferred built form or general solar access standard	Recently developed area of lower built form to the west, it is inferred that the preferred built form achieves the general solar access standard.
Highett Road	N/A	Main Street	No variation to preferred built form or general solar access standard	Preferred built form achieves the general solar access standard

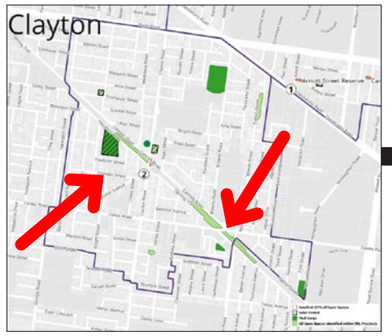
General approach to public realm solar access testing

The following provides an overview of the methodology used to test recommendations on solar access to the public realm. This was an iterative process through which solar access standards and built form recommendations were tested and refined.

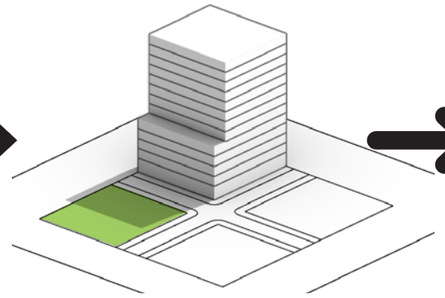
The testing provided in the following pages represents typical spaces for each category outlined in the table on page 8. A comprehensive list of open spaces that have been tested is included in pages 9-12.



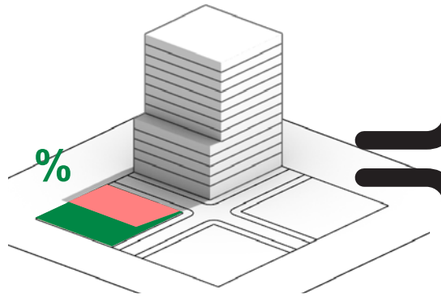
Establishing public realm solar access standard for each category (refer to previous page)



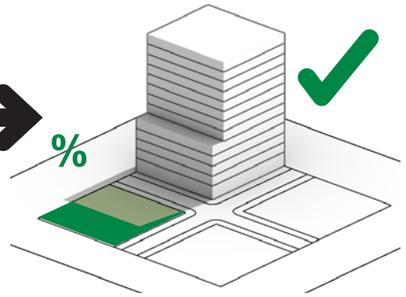
Selection of case studies to be tested (refer to previous page)



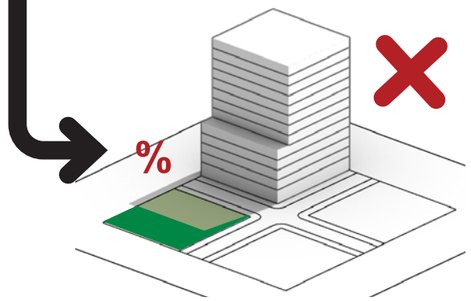
Applying maximum built form envelopes proposed by the Structure Plan Urban Design Technical Report



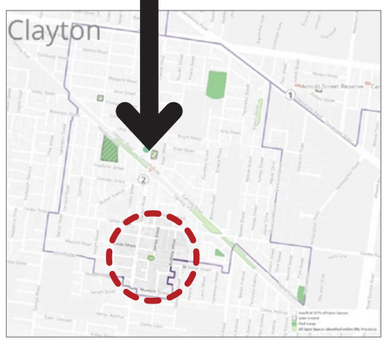
Measuring resulting solar access on public realm as compared to the proposed standard



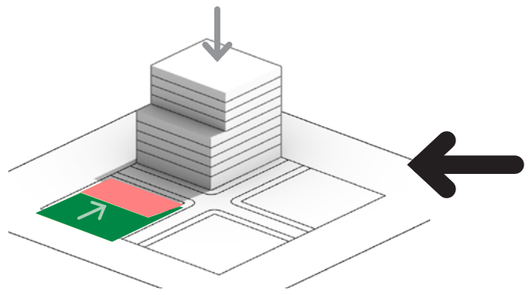
Proposed built form envelope achieves standard



Proposed built form envelope does not achieve standard



Reviewing the immediate context for other open spaces that provide the solar access standard for the local community



If none exist, adjusting surrounding built form recommendations to achieve solar access standard

AJM
Joint Venture

Activity Streets

Carrington Road (BOX)

Context	Built form recommendation	Solar access outcome
key public realm street in core area with significant activation on southern footpath.	Recommend avoiding overshadowing above the preferred street wall height. This will allow significant development on the Box Hill Central site while allowing solar access to the southern footpath to support activation.	50% of the opposite footpath for a 3-hour period between 10am and 3pm* at the **Spring equinox**

Typical maximum building envelope

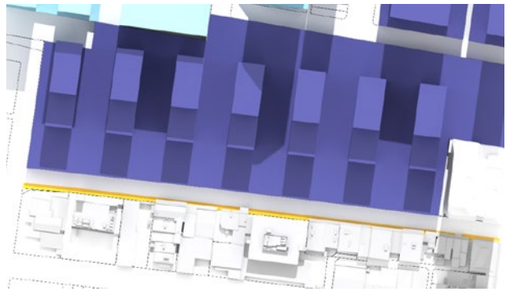
Recommended built form

Recommend avoiding overshadowing above the preferred street wall height. This will allow significant development on the Box Hill Central site while allowing solar access to the southern footpath to support activation.

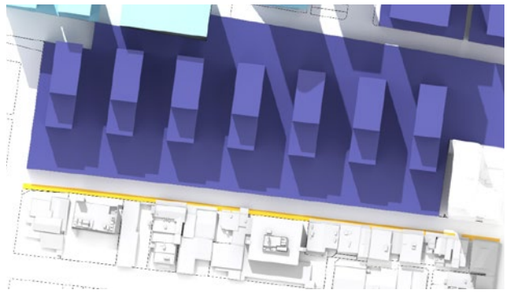
Recommended building envelope

Spring Equinox

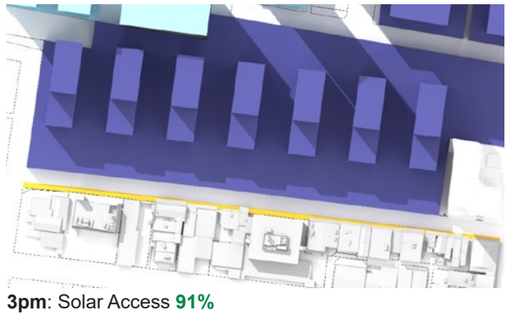
12pm: Solar Access **48%**



1pm: Solar Access **61%**



2pm: Solar Access **75%**



3pm: Solar Access **91%**

Medium - large parks

Meade Reserve (CLA) - spring equinox

Context	Built form recommendation	Solar access outcome
Large open space near Clayton core area. surrounded by 6-storey development to the north, east and west. Accommodates sporting facilities. To the north, developments are separated by Carinish Road and Haughton Road.	High levels of solar access throughout the day No change to built form required given large size of park and separation from from buildings on north side.	• **70%** of the open space for a minimum of 3 hours at **mid-winter.**

9am: **94%** Solar Access

10am: **98%** Solar Access

11am: **99%** Solar Access

12pm: **100%** Solar Access

1pm: **100%** Solar Access

2pm: **99%** Solar Access

3pm: **94%** Solar Access

Legend

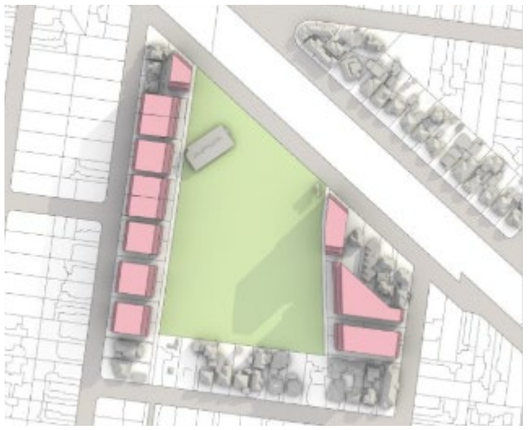
- Urban Neighbourhoods
- Public Open Space

Medium - large parks

Meade Reserve (CLA) - winter solstice

Context	Built form recommendation	Solar access outcome
Large open space near Clayton core area. surrounded by 6-storey development to the north, east and west. Accommodates sporting facilities. To the north, developments are separated by Carinish Road and Haughton Road.	High levels of solar access throughout the day No change to built form required given large size of park and separation from from buildings on north side.	• **70%** of the open space for a minimum of 3 hours at **mid-winter.**

9am: **87%** Solar Access



10am: **94%** Solar Access

11am: **98%** Solar Access

12pm: **100%** Solar Access

1pm: **99%** Solar Access

2pm: **94%** Solar Access

3pm: **85%** Solar Access

Legend

Urban Neighbourhoods

Public Open Space

Medium - large parks

Box Hill Gardens (BOX) - spring equinox

Context	Built form recommendation	Solar access outcome
Large open space north of Box Hill core area and the focus for community activity with a variety of faciltiies. Most overshadowing is caused by higher development to the east, across Station Street.	High levels of solar access throughout the day No change to built form required given large size of park and separation from from buildings on north side.	• **70%** of the open space for a minimum of 3 hours at **mid-winter.**

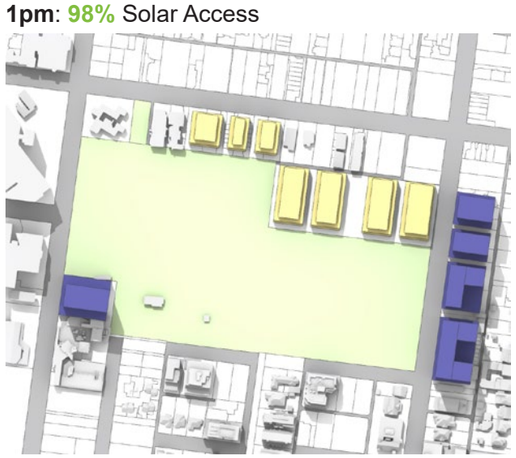
9am: **83%** Solar Access

10am: **92%** Solar Access

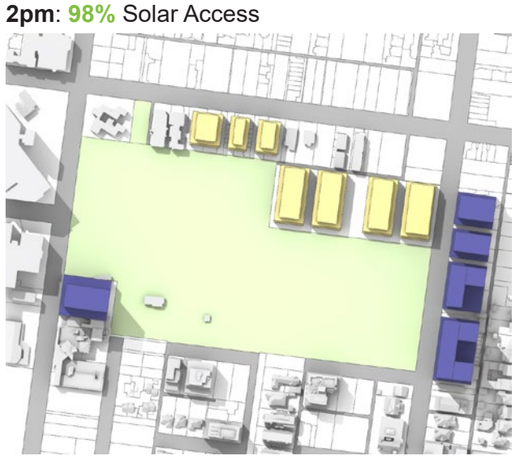
11am: **97%** Solar Access

12pm: **98%** Solar Access

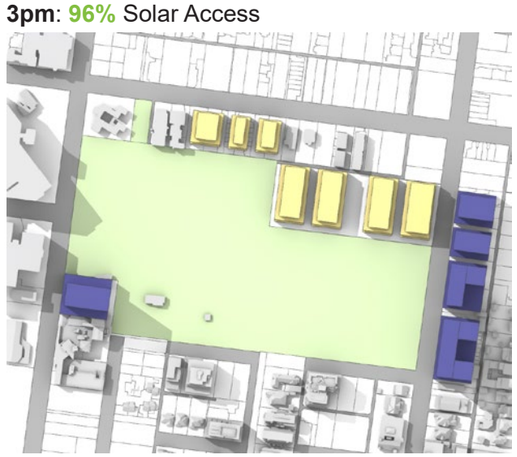
1pm: **98%** Solar Access



2pm: **98%** Solar Access



3pm: **96%** Solar Access



Legend

- Central Flanks
- Residential Neighbourhood
- Public Open Space

Medium - large parks

Box Hill Gardens (BOX) - winter solstice

Context	Built form recommendation	Solar access outcome
Large open space north of Box Hill core area and the focus for community activity with a variety of faciltiies. Most overshadowing is caused by higher development to the east, across Station Street.	High levels of solar access throughout the day No change to built form required given large size of park and separation from from buildings on north side.	• **70%** of the open space for a minimum of 3 hours at **mid-winter.**

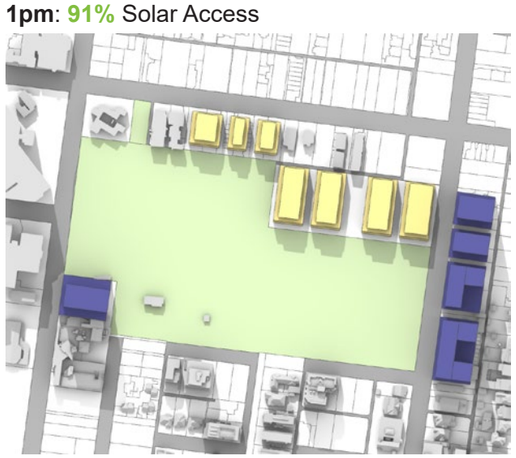
9am: **54%** Solar Access

10am: **75%** Solar Access

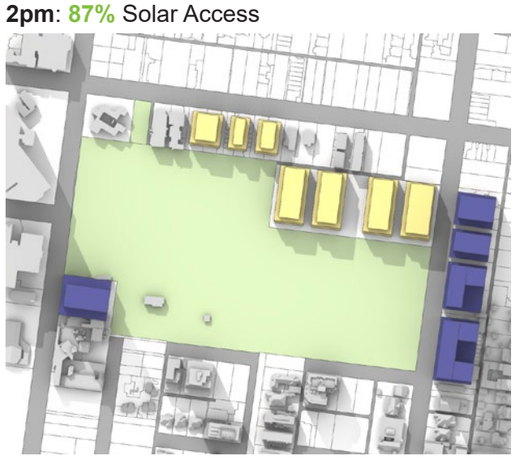
11am: **88%** Solar Access

12pm: **91%** Solar Access

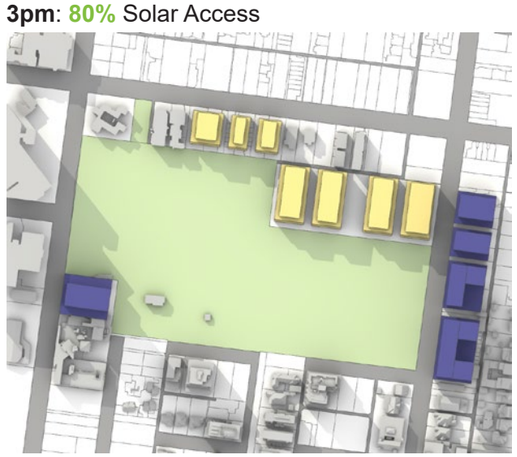
1pm: **91%** Solar Access



2pm: **87%** Solar Access



3pm: **80%** Solar Access



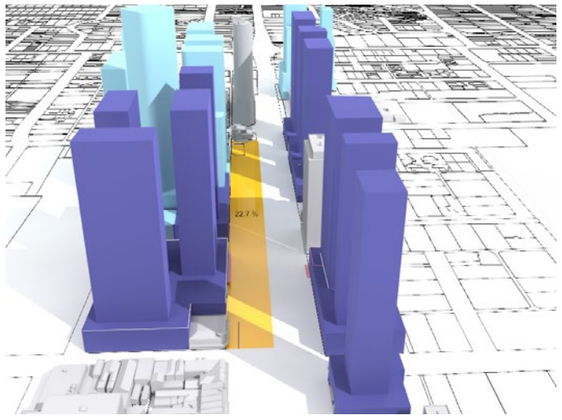
Legend

- Central Flanks
- Residential Neighbourhood
- Public Open Space

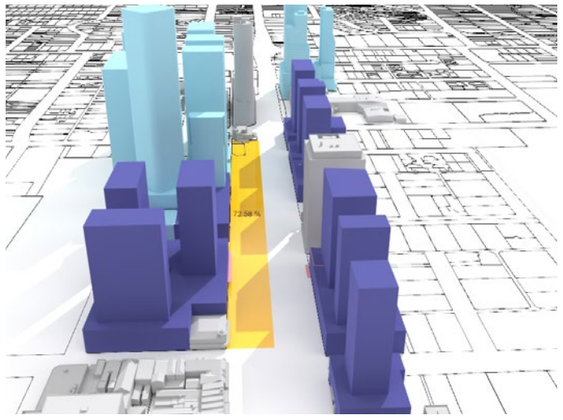
Neighbourhood and pocket parks In Central Core areas

Whitehorse Road Linear Reserve (BOX)

Context	Built form recommendation	Solar access outcome
An enhanced and extended open space in the core of Box Hill. The open space is planned to stretch through both Central Core area and Central Flanks. Testing was undertaken for the Central Core are as higher development would create more overshadowing.	A key open space in the core area, a smaller percentage of the open space still represents a relatively large area, and a lower percentage of sunlit space is offset by the availability of a sunny park only a short distance to the north in Box Hill Gardens. As the solar access outcome of 50% cannot be achieved, other design options could be considered to achieve the standard. This could include buildings up to 84 metres (as illustrated below as a potential built form example) or other massing configurations such as slim tower forms, in order to achieve this standard.	• **50%** of the open space for a minimum of 3 hours at the **spring equinox**.



Typical maximum building envelope



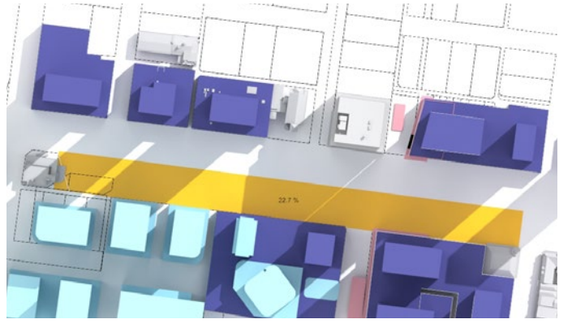
Potential built form example

This example shows how the height of future development immediately adjacent to the north of Whitehorse Road may be reduced to 84 metres to achieve the solar access outcome. However other design options may also achieve the same result.

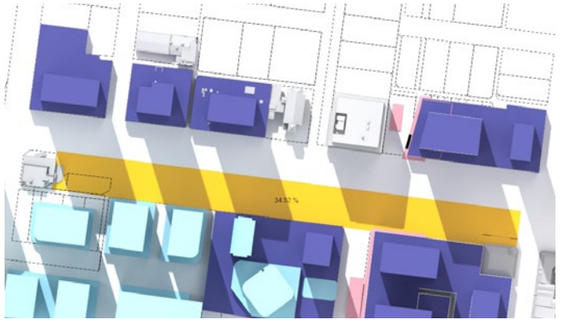
Typical maximum building envelope

Spring Equinox

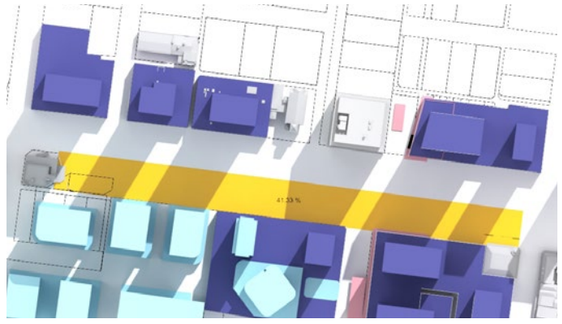
10am: Solar Access **23%**



1pm: Solar Access **35%**



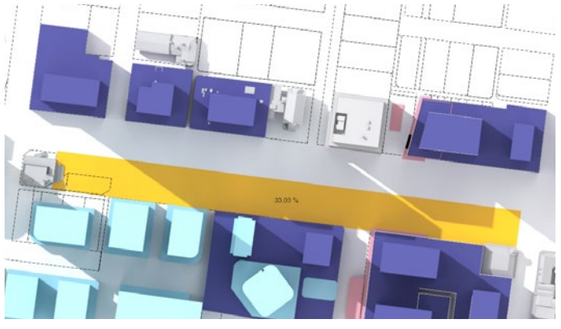
11am: Solar Access **41%**



2pm: Solar Access **33%**

12pm: Solar Access **47%**

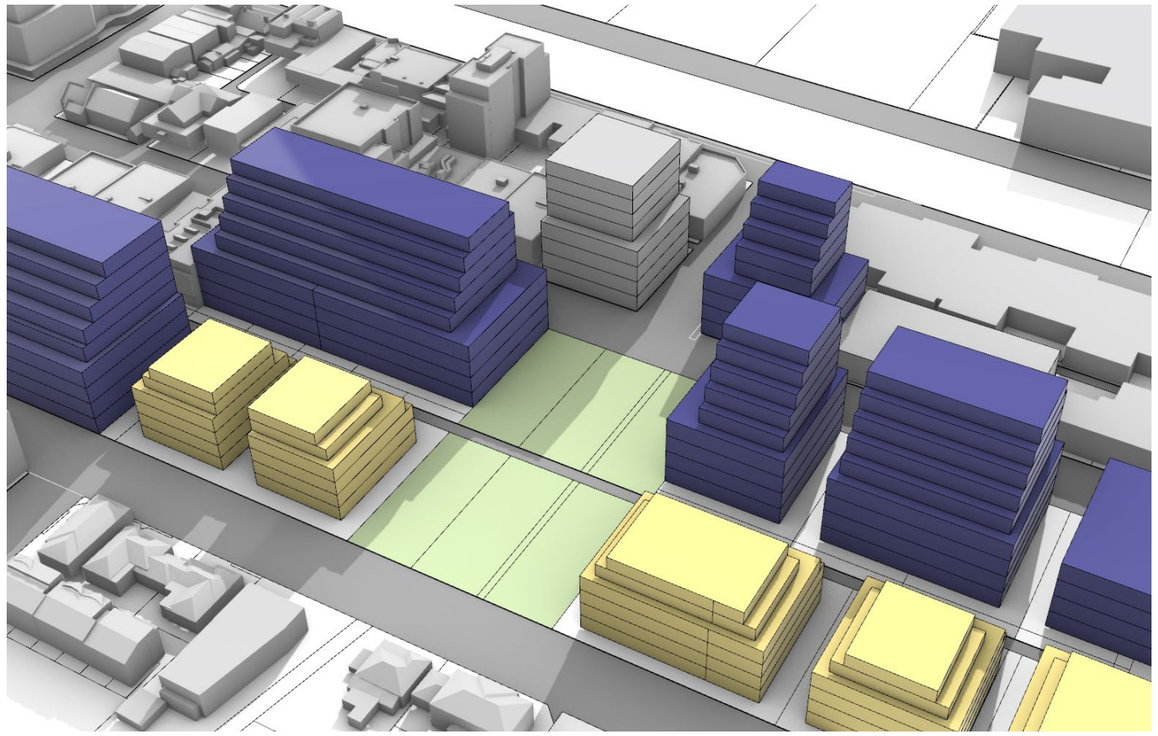
3pm: Solar Access **33%**



Neighbourhood and pocket parks In Central Flanks areas

Ellingworth Parade open space (BOX)

Context	Built form recommendation	Solar access outcome
Planned open space on an existing at-grade parking area. Surrounded to the north by Central Flanks built form.	The proposed built form recommendations in the technical report achieve the solar access outcome for this park.	**75%** of the open space for a minimum of 3 hours at the **spring equinox**.



Typical maximum building envelope

Legend

- Central Flanks
- Residential Neighbourhood
- Public Open Space

Typical maximum building envelope

Winter solstice

10.30am: Solar Access **40%**

11.30am: Solar Access **68%**

12.30pm: Solar Access **67%**

1.30pm: Solar Access **38%**

Spring Equinox

10.30am: Solar Access **85%**

11.30am: Solar Access **95%**

12.30pm: Solar Access **94%**

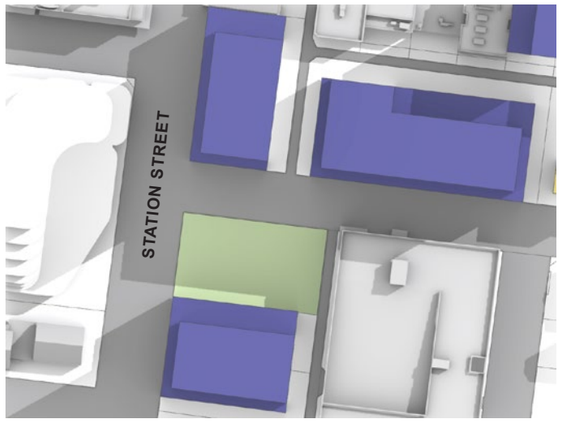
1.30pm: Solar Access **83%**

Neighbourhood and pocket parks In Central Flanks areas

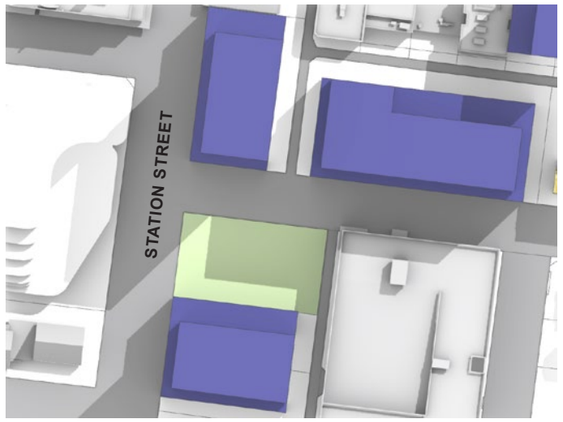
Pioneer Park (BOX) - spring equinox

Context	Built form recommendation	Solar access outcome
Open space in the south of the Box Hill Central Core area along Station Street within short walking distance of Whitehorse Road Linear Reserve and new Ellingworth Parade open space.	Orientation and size of this park makes built form changes to achieve solar access objective significant in an area envisioned for denser built form. New Ellingworth Parade open space is in close proximity and can provide solar access to local residents.	• No solar access standard.

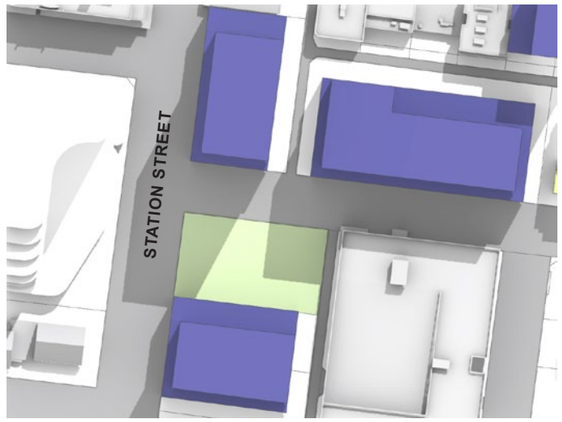
9am: Solar Access **8%**



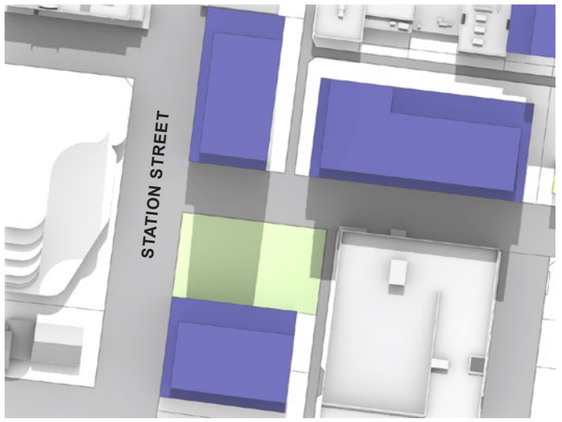
10am: Solar Access **33%**



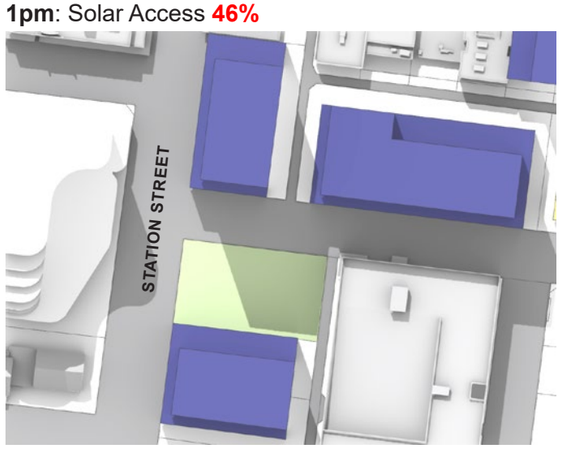
11am: Solar Access **47%**



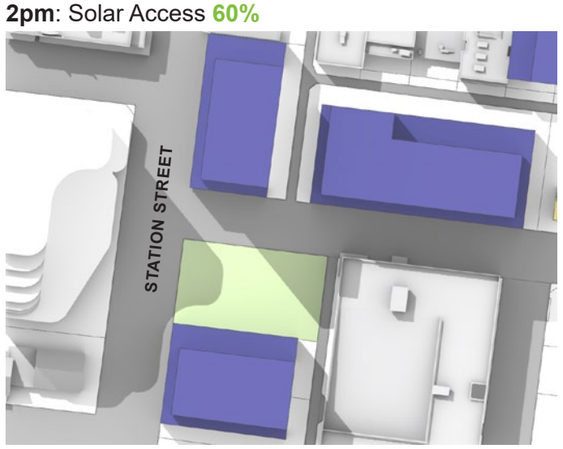
12pm: Solar Access **47%**



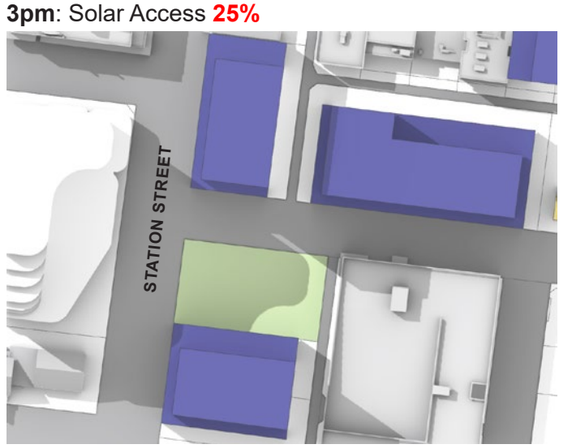
1pm: Solar Access **46%**



2pm: Solar Access **60%**



3pm: Solar Access **25%**



Legend

Central Flanks

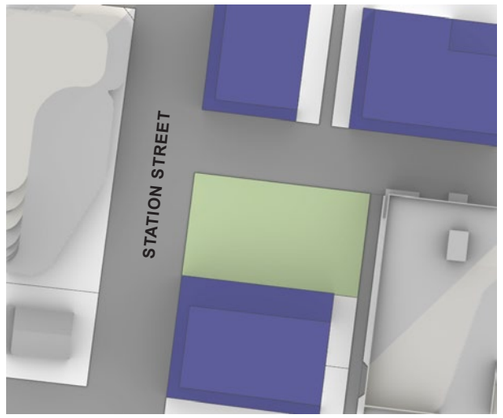
Public Open Space

Neighbourhood and pocket parks In Central Flanks areas

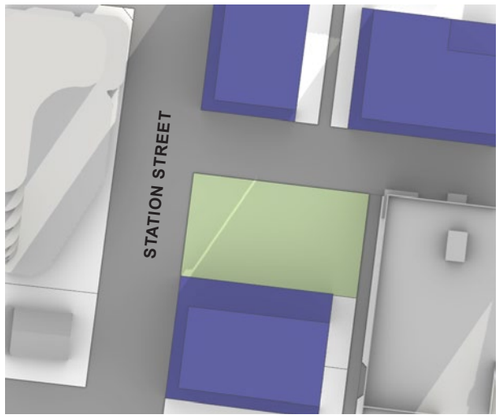
Pioneer Park (BOX) - winter solstice

Context	Built form recommendation	Solar access outcome
Open space in the south of the Box Hill Central Core area along Station Street within short walking distance of Whitehorse Road Linear Reserve and new Ellingworth Parade open space.	Orientation and size of this park makes built form changes to achieve solar access objective significant in an area envisioned for denser built form. New Ellingworth Parade open space is in close proximity and can provide solar access to local residents.	• No solar access standard.

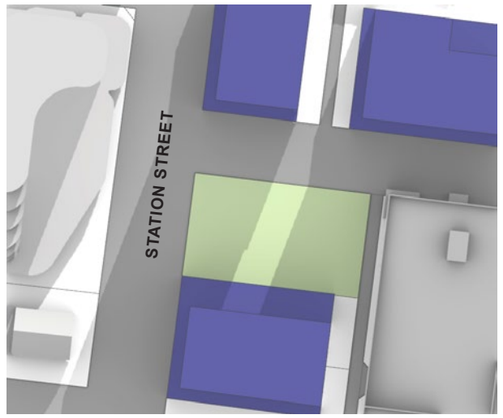
9am: Solar Access **0%**



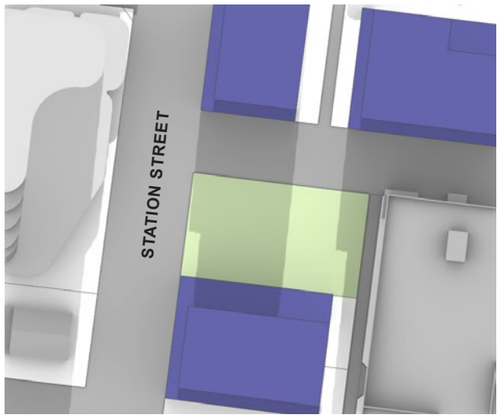
10am: Solar Access **1%**



11am: Solar Access **12%**



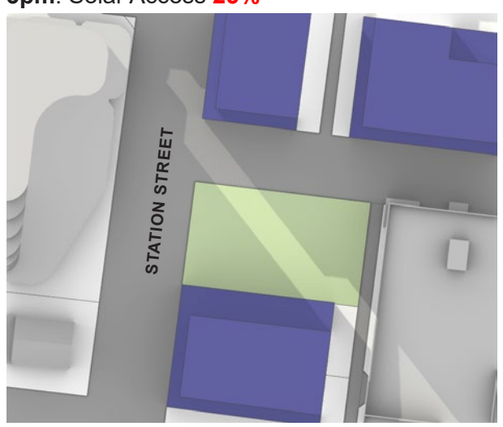
12pm: Solar Access **35%**



1pm: Solar Access **26%**

2pm: Solar Access **37%**

3pm: Solar Access **25%**



Legend
Central Flanks
Public Open Space

Neighbourhood and pocket parks In Central Flanks areas

Linsley Park (BOX) - spring equinox

Context	Built form recommendation	Solar access outcome
Open space in the south east area of the Box Hill Central Core. Immediately adjacent to Box Hill Library and north of the rail line. Whitehorse Road Linear Reserve is a short distance to the north as is a new Ellingworth Parade open space to the south with an at-grade crossing of the rail line providing access.	Orientation and size of this park makes built form changes to achieve solar access objective significant in an area envisioned for denser built form. New Ellingworth Parade open space is in close proximity and can provide solar access to local residents.	• No solar access standard.

9am: Solar Access **61%**

10am: Solar Access **64%**

11am: Solar Access **35%**

12pm: Solar Access **40%**

1pm: Solar Access **26%**

2pm: Solar Access **3%**

3pm: Solar Access **0%**

Legend

- Central Flanks
- Key Movement Corridor
- Urban Neighbourhood
- Public Open Space

Neighbourhood and pocket parks In Central Flanks areas

Linsley Park (BOX) - winter solstice

Context	Built form recommendation	Solar access outcome
Open space in the south east area of the Box Hill Central Core. Immediately adjacent to Box Hill Library and north of the rail line. Whitehorse Road Linear Reserve is a short distance to the north as is a new Ellingworth Parade open space to the south with an at-grade crossing of the rail line providing access.	Orientation and size of this park makes built form changes to achieve solar access objective significant in an area envisioned for denser built form. New Ellingworth Parade open space is in close proximity and can provide solar access to local residents.	• No solar access standard.

9am: Solar Access **0%**

10am: Solar Access **16%**

11am: Solar Access **24%**

12pm: Solar Access **22%**

1pm: Solar Access **0%**

2pm: Solar Access **0%**

3pm: Solar Access **0%**

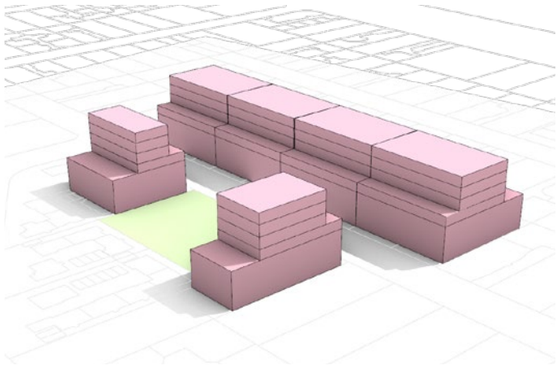
Legend

- Central Flanks
- Key Movement Corridor
- Urban Neighbourhood
- Public Open Space

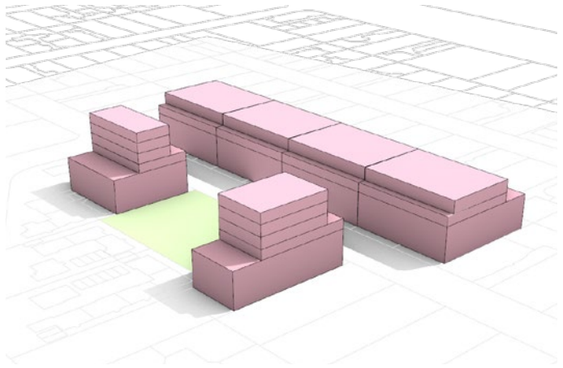
Neighbourhood and pocket parks Outside Central Core and Flanks areas

Dennis Street Reserve (MSH)

Context	Built form recommendation	Solar access outcome
The only public open space within a 500m radius that can provide solar access throughout the year to the majority of the park. Other nearby public open spaces are too small to provide solar access during winter.	For properties north of Dennis Street Reserve, defining a plane of 18m.	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).



Typical maximum building envelope



Recommended upper level setback

For properties north of Dennis Street Reserve, defining a plane of 18m.

Legend

- Urban Neighbourhood
- Public Open Space

Recommended built form envelope

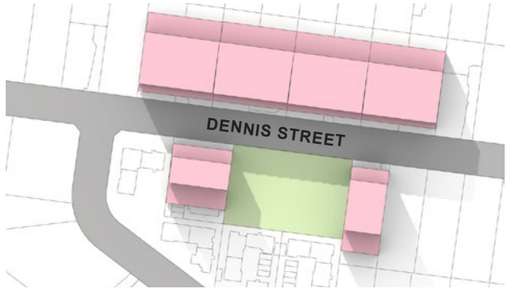
Winter solstice

11am: Solar Access **52%**

12pm: Solar Access **66%**

1pm: Solar Access **61%**

2pm: Solar Access **51%**



Recommended built form envelope

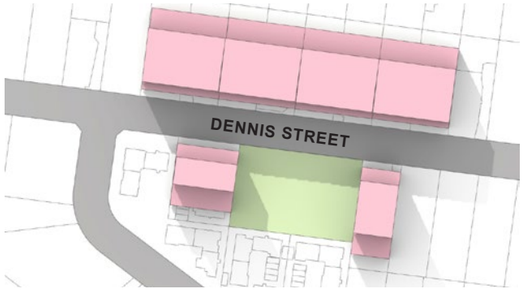
Spring equinox

11am: Solar Access **92%**

12pm: Solar Access **99%**

1pm: Solar Access **90%**

2pm: Solar Access **79%**



Neighbourhood and pocket parks Outside Central Core and Flanks areas

Cambro Road Reserve (MSH)

Context	Built form recommendation
Small and narrow neighborhood park with east-west orientation within reasonable distance to an open space that does achieve solar access throughout the year - Dennis Street Reserve.	None. A low potential built form to the north would create overshadowing for most of this park. Nearby Dennis Street Reserve can provide solar access throughout the year.

Legend

- Residential Neighbourhood
- Public Open Space

Winter solstice

10am: Solar Access **21%**

11am: Solar Access **22%**

12pm: Solar Access **18%**

1pm: Solar Access **22%**

Berrydale Court Reserve (MSH)

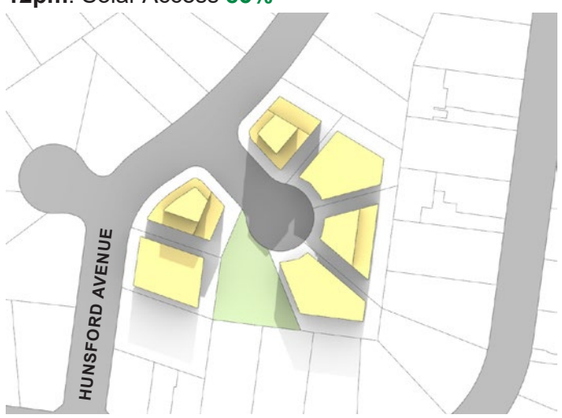
Context	Built form recommendation	Solar access outcome
Small, irregularly shaped pocket park within Notting Hill neighborhood surrounded by Residential Neighborhood Place Type development.	None. Maximum built form envelope in SPUD technical report achieve solar access outcome.	**50%** of the open space for a minimum of 3 hours at **mid-winter.**

Winter solstice

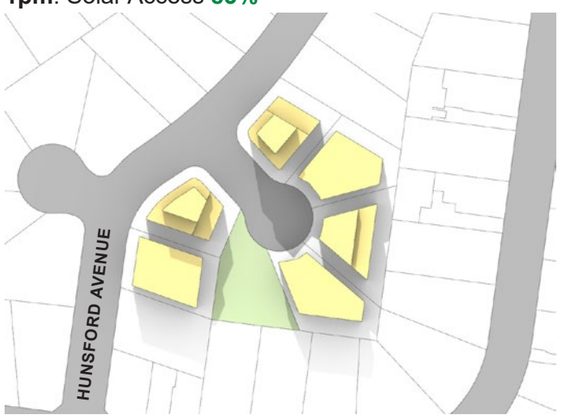
10am: Solar Access **59%**

11am: Solar Access **63%**

12pm: Solar Access **85%**



1pm: Solar Access **83%**



Neighbourhood and pocket parks Outside Central Core and Flanks areas

Flora Road Playground (CLA) - spring equinox

Context	Built form recommendation	Solar access outcome
Open space in Clayton's north-west residential area.	Preferred built form almost achieves the solar access standard (above 40% in mid-winter for 3 hour). Achieving a solar access standard of 50% for a 3 hour period in mid-winter will require minor modifications to built form to the north.	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).

9am: **91%** Solar Access

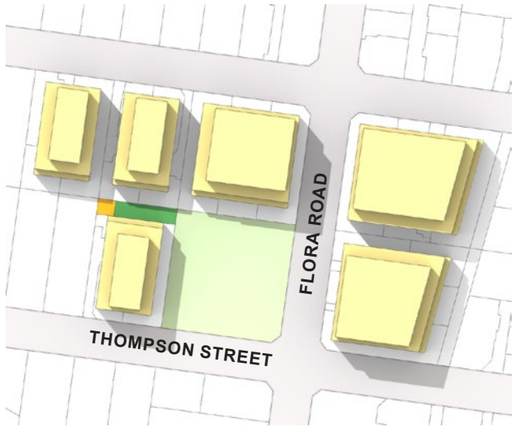
10am: **95%** Solar Access

11am: **95%** Solar Access

12pm: **96%** Solar Access

1pm: **97%** Solar Access

2pm: **95%** Solar Access



3pm: **88%** Solar Access

Legend

- Residential Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Flora Road Playground (CLA) - winter solstice

Context	Built form recommendation	Solar access outcome
Open space in Clayton's north-west residential area.	Preferred built form almost achieves the solar access standard (above 40% in mid-winter for 3 hour). Achieving a solar access standard of 50% for a 3 hour period in mid-winter will require minor modifications to built form to the north.	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).

10am: **43%** Solar Access

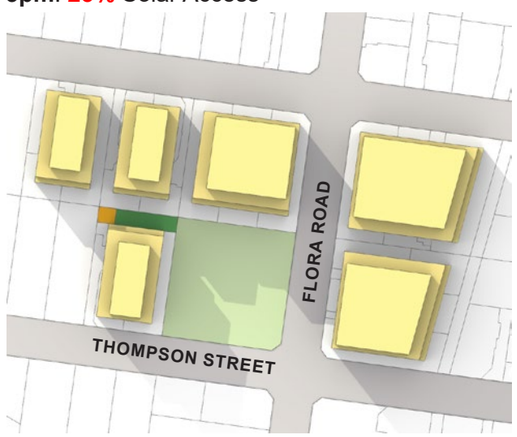
11am: **49%** Solar Access

12pm: **57%** Solar Access

1pm: **52%** Solar Access

2pm: **41%** Solar Access

3pm: **23%** Solar Access



Legend

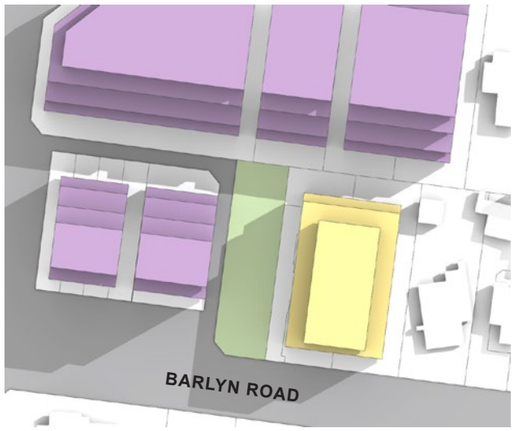
- Residential Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

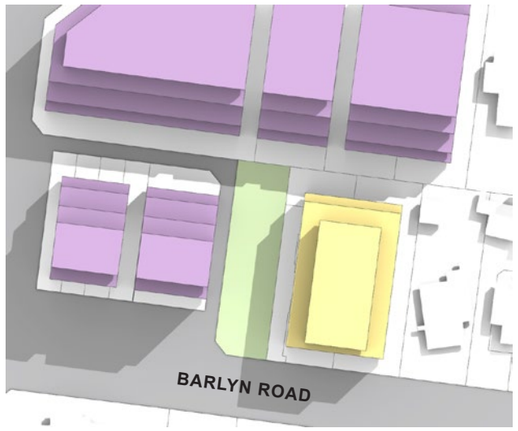
Barlyn Road Reserve (BUR) - spring equinox

Context	Built form recommendation	Solar access outcome
Small open space in Burwood's south, near the intersection of Highbury Road and Huntingdale Road. To the north and west Key Movement Corridor place type built form and Residential Neighbourhood to the east.	The size and orientation of park would severely limit adjacent development to achieve solar access objective.	• No solar access standard.

9am: **11%** Solar Access



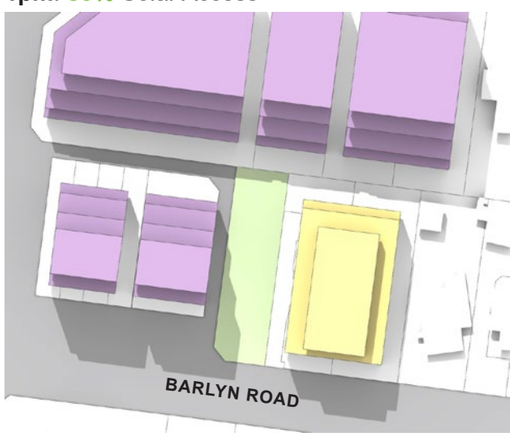
10am: **57%** Solar Access



11am: **89%** Solar Access

12pm: **95%** Solar Access

1pm: **80%** Solar Access



2pm: **45%** Solar Access

3pm: **31%** Solar Access

Legend

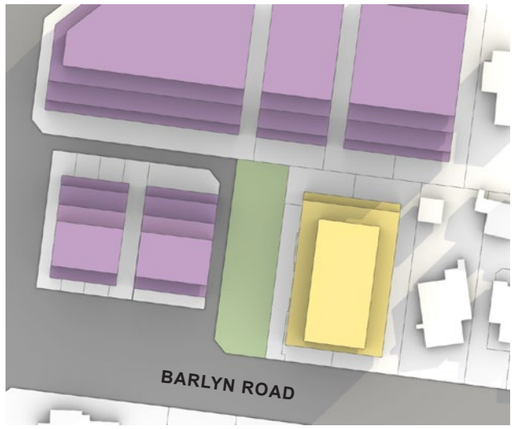
- Key Movement Corridor
- Residential Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Barlyn Road Reserve (BUR) - winter solstice

Context	Built form recommendation	Solar access outcome
Small open space in Burwood's south, near the intersection of Highbury Road and Huntingdale Road. To the north and west Key Movement Corridor place type built form and Residential Neighbourhood to the east.	The size and orientation of park would severely limit adjacent development to achieve solar access objective.	• No solar access standard.

9am: **0%** Solar Access

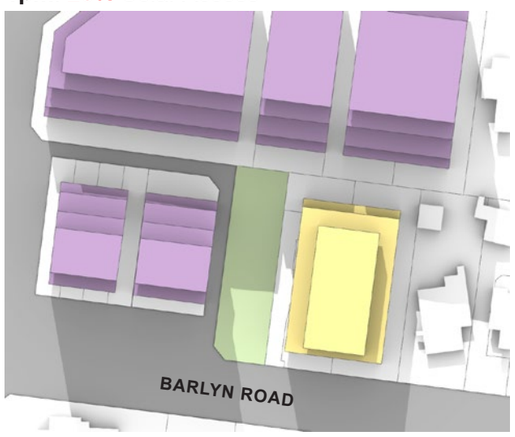


10am: **0%** Solar Access

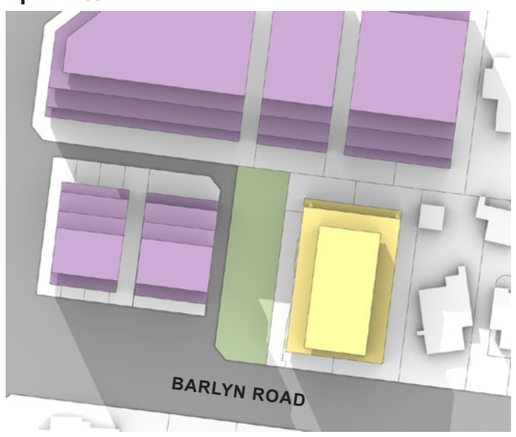
11am: **24%** Solar Access

12pm: **56%** Solar Access

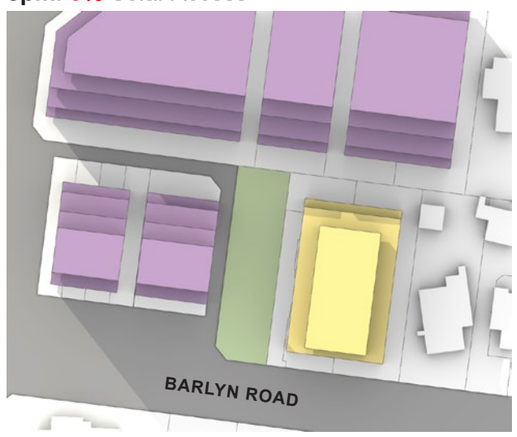
1pm: **26%** Solar Access



2pm: **2%** Solar Access



3pm: **0%** Solar Access



Legend

- Key Movement Corridor
- Residential Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Roslyn Street Playground (BUR) - spring equinox

Context	Built form recommendation	Solar access outcome
Small open space in Burwood's west. Borders Burwood Highway to the south. The park located on the edge of the Structure Plan area with lots immediately to the north outside the area.	Preferred built form achieves the general solar access standard	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).

9am: **82%** Solar Access

10am: **98%** Solar Access

11am: **98%** Solar Access

12pm: **97%** Solar Access

1pm: **90%** Solar Access

2pm: **80%** Solar Access

3pm: **69%** Solar Access

Legend

- Key Movement Corridor
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Roslyn Street Playground (BUR) - winter solstice

Context	Built form recommendation	Solar access outcome
Small open space in Burwood's west. Borders Burwood Highway to the south. The park located on the edge of the Structure Plan area with lots immediately to the north outside the area.	Preferred built form achieves the general solar access standard	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).

9am: **66%** Solar Access

10am: **89%** Solar Access

11am: **94%** Solar Access

12pm: **94%** Solar Access

1pm: **85%** Solar Access

2pm: **75%** Solar Access

3pm: **61%** Solar Access

Legend

- Key Movement Corridor
- Public Open Space

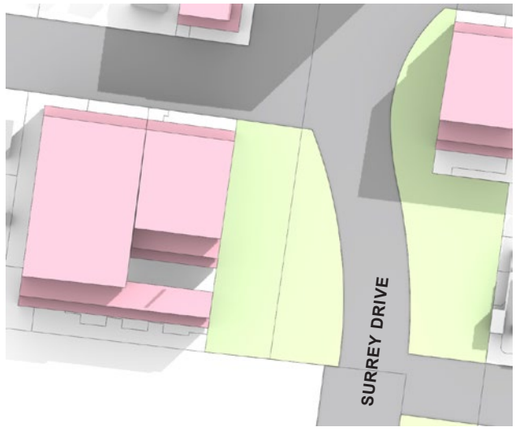
Neighbourhood and pocket parks Outside Central Core and Flanks areas

Surrey Drive Reserve and Broughman Street Playground (BOX) - spring equinox

Context	Built form recommendation	Solar access outcome
Located on either side of Surrey Drive, both small open spaces were tested together. Surrey Park, a large open space to the south, is a short walking distance away.	The preferred built form achieves the general solar access standard.	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).

9am: **95%** Solar Access

10am: **100%** Solar Access



11am: **100%** Solar Access

12pm: **97%** Solar Access

1pm: **78%** Solar Access

2pm: **58%** Solar Access

3pm: **32%** Solar Access

Legend

- Urban Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Surrey Drive Reserve and Broughman Street Playground (BOX) - winter solstice

Context	Built form recommendation	Solar access outcome
Small open space in Burwood's west. Borders Burwood Highway to the south. The park located on the edge of the Structure Plan area with lots immediately to the north outside the area.	Preferred built form achieves the general solar access standard	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).

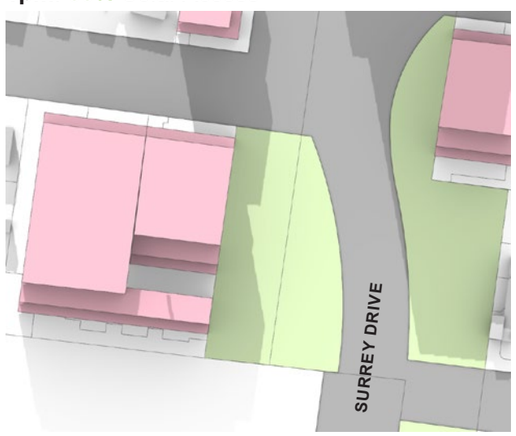
9am: **20%** Solar Access

10am: **63%** Solar Access

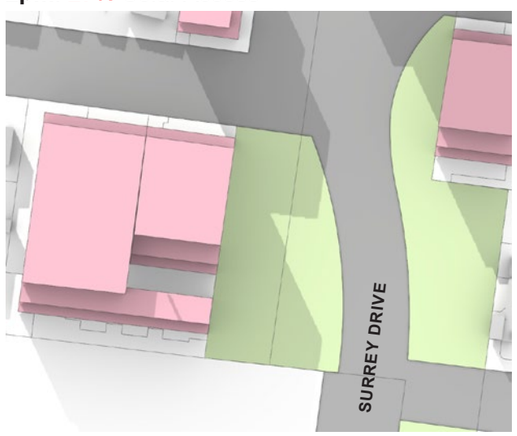
11am: **18%** Solar Access

12pm: **75%** Solar Access

1pm: **65%** Solar Access



2pm: **27%** Solar Access



3pm: **14%** Solar Access

Legend

- Urban Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Victoria-Glenmore Chain Reserve (BOX) - spring equinox

Context	Built form recommendation	Solar access outcome
A linear open space in Box Hill's south east residential areas.	The preferred built form achieves the general solar access standard.	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).

9am: Solar Access **82%**

10am: Solar Access **84%**

11am: Solar Access **85%**

12pm: Solar Access **87%**

1pm: Solar Access **88%**

2pm: Solar Access **89%**

3pm: Solar Access **90%**

Legend

- Residential Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Victoria-Glenmore Chain Reserve (BOX) - winter solstice

Context	Built form recommendation	Solar access outcome
A linear open space in Box Hill's south east residential areas.	The preferred built form achieves the general solar access standard.	**50%** of the open space for a minimum of 3 hours at **mid-winter** (also achieving **75%** at **spring equinox**).

9am: Solar Access **38%**

10am: Solar Access **52%**

11am: Solar Access **57%**

12pm: Solar Access **61%**

1pm: Solar Access **60%**

2pm: Solar Access **59%**

3pm: Solar Access **50%**

Legend

- Residential Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Lundgren Chain Reserve (BUW) - spring equinox

Context	Built form recommendation	Solar access outcome
A linear reserve spanning from the core area towards Lundgren Reserve in the east and beyond the Structure Plan area. This testing is for the narrowest segment of Lundgren Chain Reserve, between Cummings Street and 15 Collier Court.	Achieving solar access standard In this narrow segment, which has a primarily transitory function, would unreasonably constrain the provision for growth. The wider parts of the reserve immediately to the east do achieve the solar access standard.	No solar access standard between 15 Collier Court and Cumming Street. Between Station Street and 15 Collier Court **50%** for a minimum of 3 hours at the **spring equinox.**

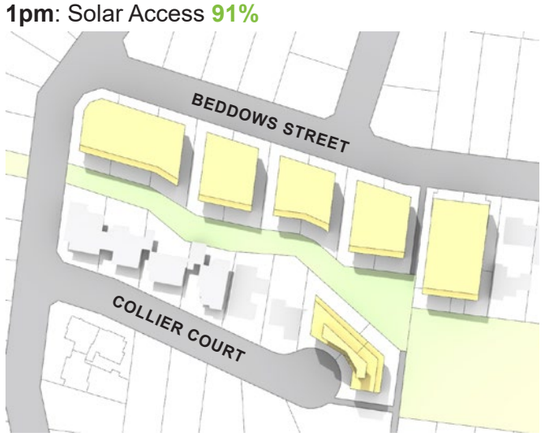
9am: Solar Access **35%**

10am: Solar Access **59%**

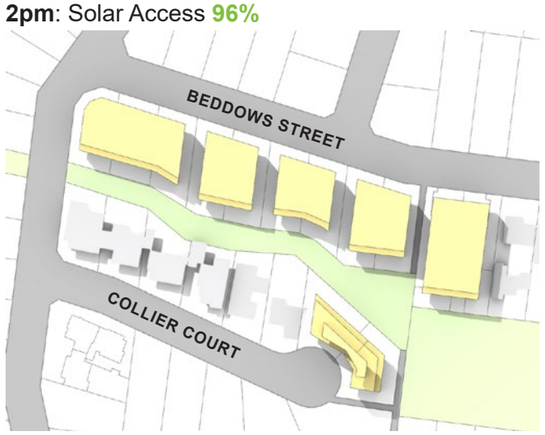
11am: Solar Access **75%**

12pm: Solar Access **85%**

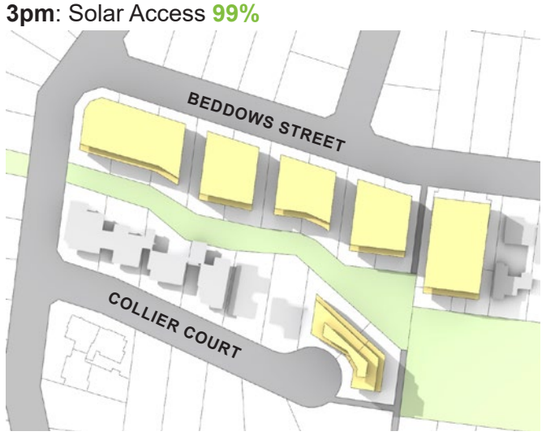
1pm: Solar Access **91%**



2pm: Solar Access **96%**



3pm: Solar Access **99%**



Legend

- Residential Neighbourhood
- Public Open Space

Neighbourhood and pocket parks Outside Central Core and Flanks areas

Lundgren Chain Reserve (BUW) - winter solstice

Context	Built form recommendation	Solar access outcome
A linear reserve spanning from the core area towards Lundgren Reserve in the east and beyond the Structure Plan area. This testing is for the narrowest segment of Lundgren Chain Reserve, between Cummings Street and 15 Collier Court.	Achieving solar access standard In this narrow segment, which has a primarily transitory function, would unreasonably constrain the provision for growth. The wider parts of the reserve immediately to the east do achieve the solar access standard.	No solar access standard between 15 Collier Court and Cumming Street. Between Station Street and 15 Collier Court **50%** for a minimum of 3 hours at the **spring equinox.**

9am: Solar Access **0%**

10am: Solar Access **2%**

11am: Solar Access **20%**

12pm: Solar Access **33%**

1pm: Solar Access **25%**

2pm: Solar Access **24%**

3pm: Solar Access **25%**

Legend
Residential Neighbourhood
Public Open Space

Medium - large parks

Gardiners Creek Reserve south of Highbury Road (BUW) - spring equinox

Context	Built form recommendation	Solar access outcome
Testing the overshadowing impact of Residential Neighbourhoods place type on Gardiners Reserve south of Highbury Road.	The preferred built form achieves the general solar access standard.	• **70%** of the open space for a minimum of 3 hours at **mid-winter.**

9am: Solar Access **93%**

10am: Solar Access **99%**

11am: Solar Access **100%**

12pm: Solar Access **100%**

1pm: Solar Access **100%**

2pm: Solar Access **100%**

3pm: Solar Access **100%**

Note: Solar access calculation based on developments only on the East side of the creek.

Legend

Residential Neighbourhood

Public Open Space

Medium - large parks

Gardiners Creek Reserve west of Residential Neighbourhood (BUW) - winter solstice

Context	Built form recommendation	Solar access outcome
Testing the overshadowing impact of Residential Neighbourhoods place type on Gardiners Reserve south of Highbury Road.	The preferred built form achieves the general solar access standard.	• **70%** of the open space for a minimum of 3 hours at **mid-winter.**

9am: Solar Access **77%**

10am: Solar Access **96%**

11am: Solar Access **100%**

12pm: Solar Access **100%**

1pm: Solar Access **100%**

2pm: Solar Access **100%**

3pm: Solar Access **100%**

Note: Solar access calculation based on developments only on the East side of the creek.

Legend

Residential Neighbourhood

Public Open Space

Medium - large parks

Gardiners Creek Reserve north of Highbury Road (BUW) - spring equinox

Context	Built form recommendation	Solar access outcome
Testing the overshadowing impact of Urban Neighborhood place type on Gardiners Reserve north of Highbury Road. This is the western edge of the reserve, across from the core area.	This testing demonstrated that overshadowing in the afternoon from built form to the west will have limited overshadowing impact, considering the large size of the reserve. The calculations are indicative only for this part of Gardiners Reserve and do not include built form to the east in the core area. Core area built form might create overshadowing for the reserve in the morning. However, from noon, the reserve should receive significant solar access.	• **70%** of the open space for a minimum of 3 hours at **mid-winter.**

9am: Solar Access **100%**

10am: Solar Access **100%**

11am: Solar Access **100%**

12pm: Solar Access **99%**

1pm: Solar Access **97%**

2pm: Solar Access **92%**

3pm: Solar Access **85%**

Note: Solar access calculation based on developments only on the West side of the creek.

Legend

Urban Neighbourhood

Public Open Space

AJM
Joint Venture

80 Collins Street

Melbourne VIC 3000

PO Box 23061 Docklands

VIC 8012 Australia

contact@srla.vic.gov.au | 1800 105 105 (call anytime)
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