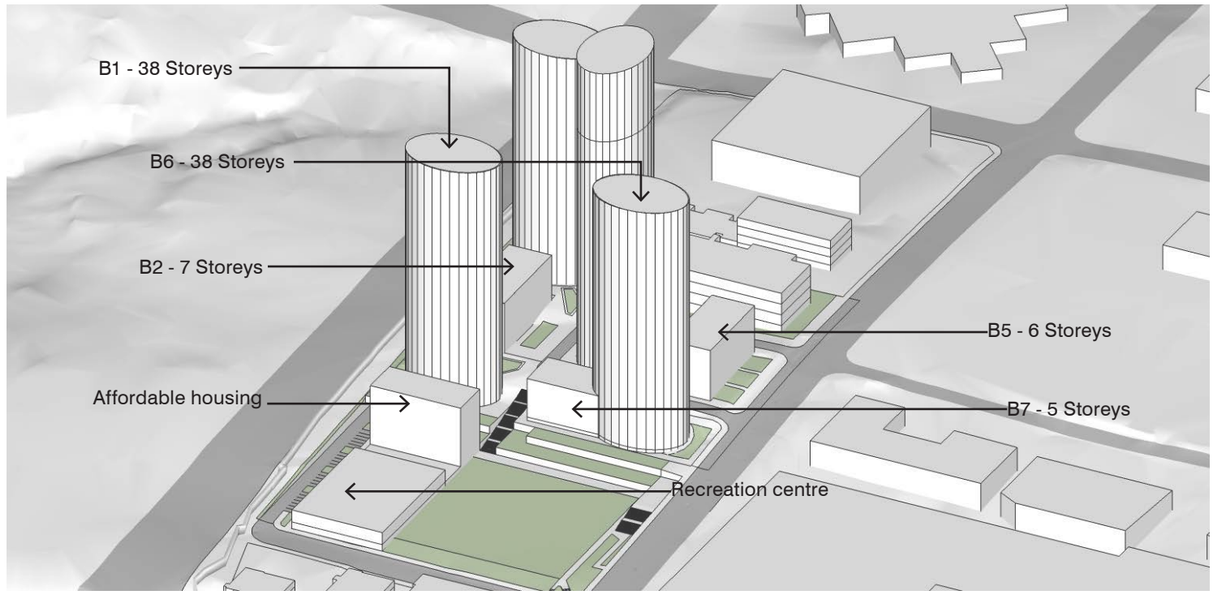
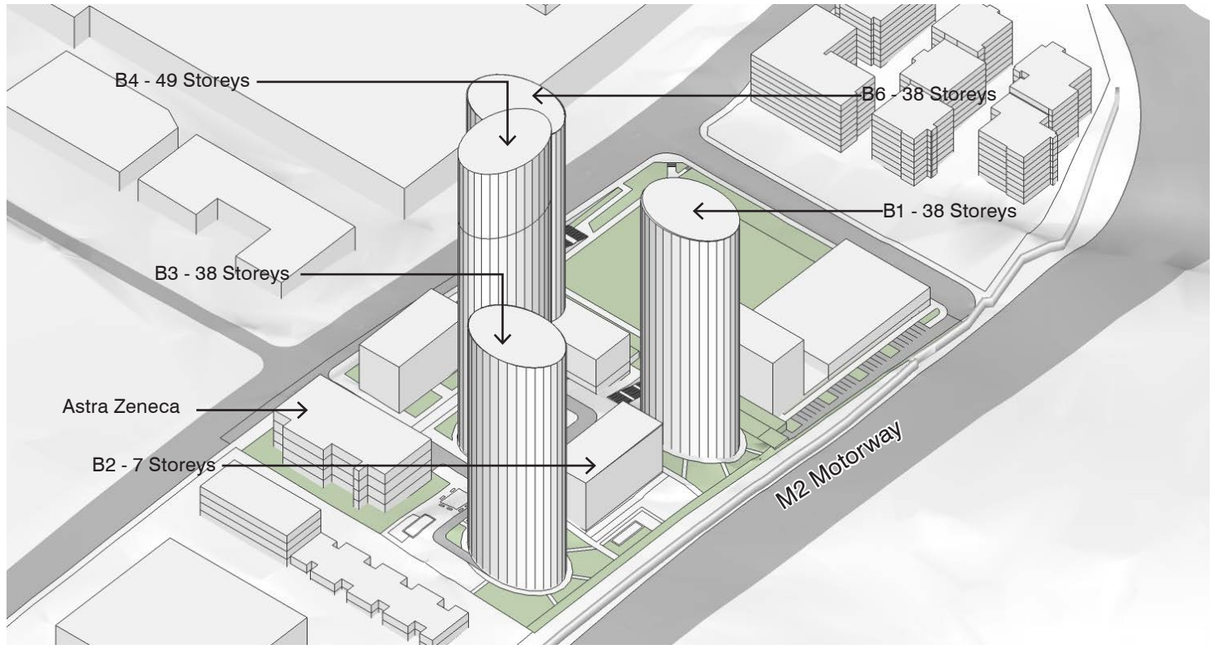

B1 - 38 Storeys
B6 - 38 Storeys
B2 - 7 Storeys
B5 - 6 Storeys
Affordable housing
B7 - 5 Storeys
Recreation centre


B4 - 49 Storeys
B6 - 38 Storeys
B1 - 38 Storeys
B3 - 38 Storeys
Astra Zeneca
B2 - 7 Storeys
M2 Motorway

2.3 The public domain

2.3.1 New public park

The proposed open space, totalling **6,100sqm**, comprises the following elements:

– A single, level, open multi use green space (turf or synthetic surface) of approximately **6,100m2** (subject to detailed design), including an event stage and support area to be dedicated to Council;

– Four linked terrace spaces of approximately **3,000 m2** in total, overlooking the central green space, with each terrace offering a range of uses such as public seating under trees, play, outdoor café seating, boules courts etc. It is intended that these open spaces be protected for public use through right-of-way easement.

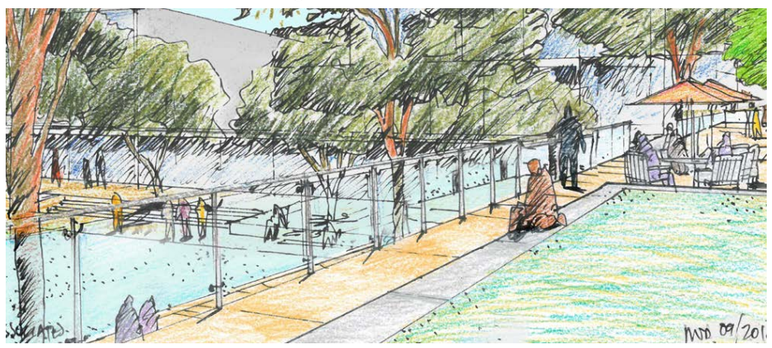
– Off-street pedestrian access from Talavera Road, linked to lift access on the building perimeters to ensure universal access to all areas of the public open space

– Tree and shrub planting on streets and terraces, offering amenity and shade

– Amenity night lighting and special event lighting and service infrastructure (three phase power, water etc.)

A public car park will be provided below the new park, servicing the needs of the indoor recreation centre and the wider community.

Note the image right shows the open space of 1ha as originally proposed. This has been reduced in discussion with Council to provide affordable housing and an indoor recreation centre.



Illustrative view of new public park and indoor recreation centre from terrace area;

Illustrative view of proposed new public park
Note: the community recreational centre & affordable housing are not shown as these were later additions requested by Council

2.3.2 Open space design

Architectus' master planning for the site provided for a minimum 6,100sqm open space. Clouston were involved in the location and dimensions of the open space, with a view to create the best, most flexible space for Macquarie Park. Clouston were then requested by Holdmark Property Group to prepare a preliminary design concept for the 1ha space.

The design principles for the open space are:

– Provide a large, level open space;

– Ensure that the park has a good relationship with the public domain by minimising level changes and providing level access with the public footpath where possible.

– Provide some at-grade parking to service the park;

– Provide commercial and community space at the edge of the park.

– Focus planting around the edge of the park to allow for active uses in the park.

The level change over the site is a challenge for the design of open space. In early options, the open space extended to the base of buildings B1, B6 and B7, but this was not considered to be an appropriately scaled interface for the open space.

The solution was to introduce terrace buildings, to provide for a transitioned level change with terraced public open space above. The terraces provide for more passive recreation and places to sit and watch the activity in the main area of the park. The lower level of these buildings could be used for community, childcare and retail uses, which would activate the park. The upper level of buildings B8 and B9 is earmarked for residential use, and a small proportion of the terraced area at this level will be designed as private courtyards. The terrace which lies atop the upper, residential level will be entirely for public use.

The proposed terraces allow are spatially appropriate because they improve the quality and operation of the open space whilst successfully negotiating the topography.

Clouston have also assisted with a design concept for the common open space areas. The focus for these areas was to create spaces for gathering and interaction. The terraced design ensures that open spaces are private and usable, without the need to provide high fences.

Section west to east through new public park and terraces looking north-east towards the M2

2.3.3 Communal open spaces and streets

The layout and design of open spaces associated with the buildings and streets on the eastern part of the site recognises the need for a mix of community and more private spaces including:

– Shared use streets designed for low vehicle speeds;

– Defined and easily recognised entry landscapes for each building;

– Community space adjoining each building;

– A ground level local play space;

– Swimming pools for use of residents; and

– Street trees and seating along all access roads.

It is expected that the definition between public open space and the community spaces for residential users will be clearly defined by planting and/or permeable fencing, which establishes the principal uses whilst optimising casual surveillance.

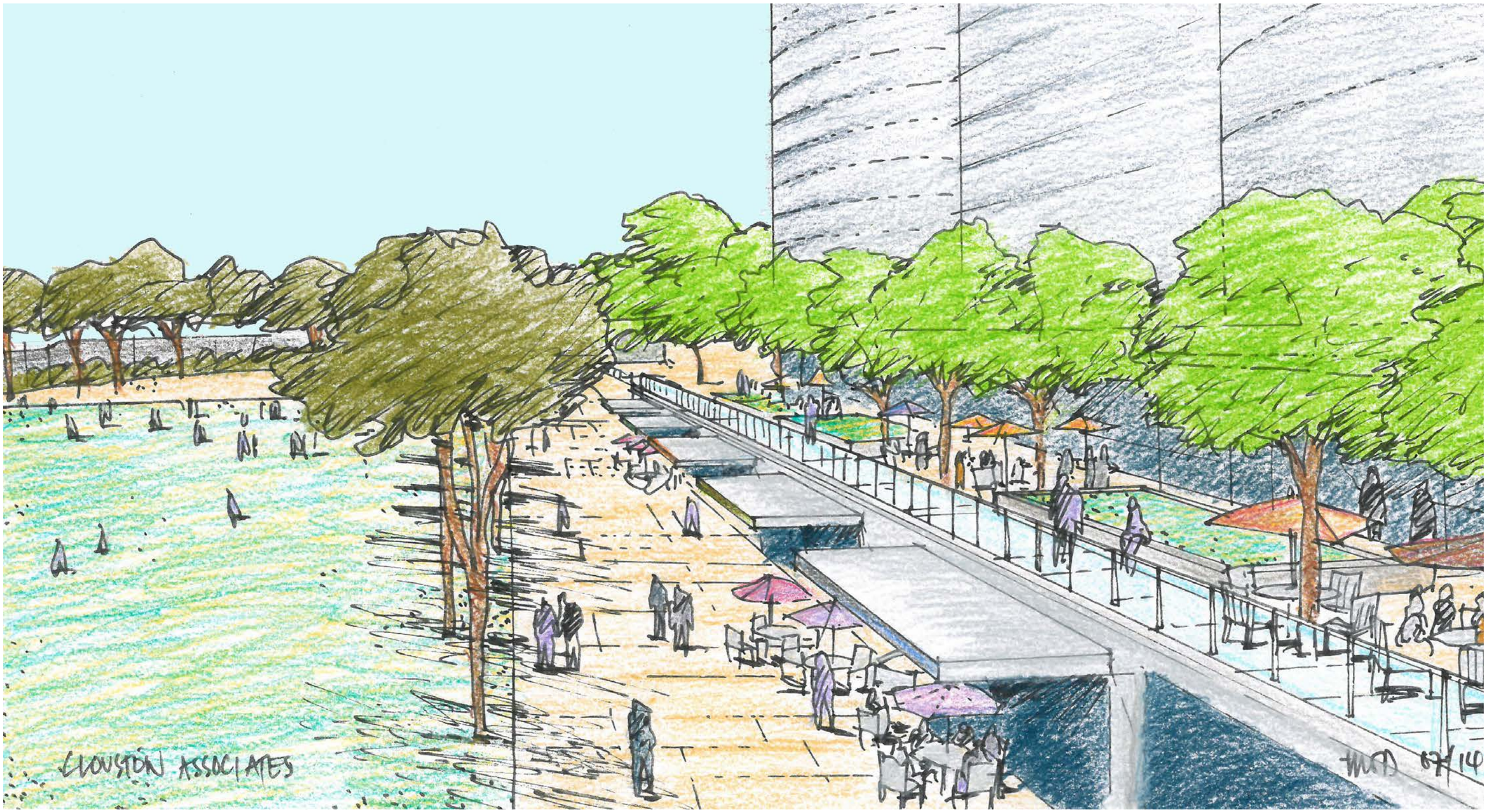
It is proposed to have all-movements vehicle access at the easternmost entry to the built-up area of the site, with a signalised intersection on Talavera Road at this point. The location of this access point will align with the future Council road connecting Talavera Road and Waterloo Road.

The second vehicle entry-point to the site off Talavera Road to the west, and the Alma Road intersection are proposed as left-in/ left-out access.

A one-way link between the two internal circulation roads is proposed to improve opportunities for vehicles to circulate and avoid using the external road network. This link would be a share-zone to safely accommodate pedestrians.

Green internal and external streets: Park Lane, Central Park, Sydney

Communal grow gardens: Elephant Park, Central London



Illustrative view of active frontages and landscaped terraces opening onto new dedicated public park; View looking north-east towards M2

3.0 Assessment

3.1 SEPP65 and Apartment Design Guide compliance

3.1.1 Master Plan Option

Sunlight/ daylight access to buildings

Daylight access to the indicative built form of the master plan proposal has been assessed for mid-winter (21 June) between the hours of between 9 am and 3 pm. With an FSR of 3.7, it is recommended that the proposed development be considered a dense urban area. The proposed master plan achieves SEPP 65 direct sunlight access (2 hrs) to approximately 70% of apartments.

Solar-access promoting features of the proposed development include;

– Elliptical tower form optimises the number of apartments receiving daylight access to habitable rooms and principal windows

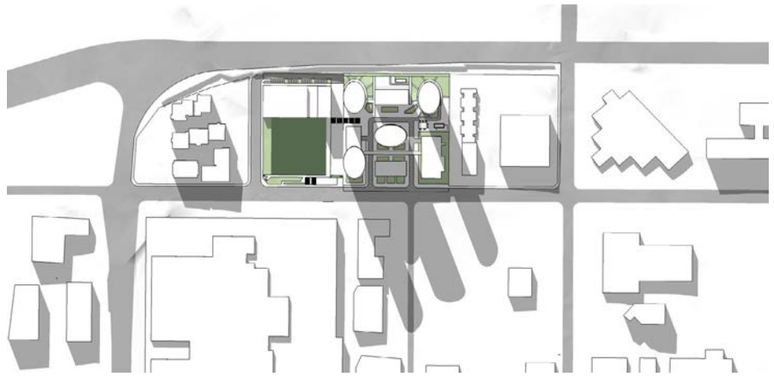
– Provision of high ceilings and window-heads to allow deep sunlight penetration

– Provision of external horizontal shading to north-facing windows, and vertical shading to east and west- facing windows

Overshadowing

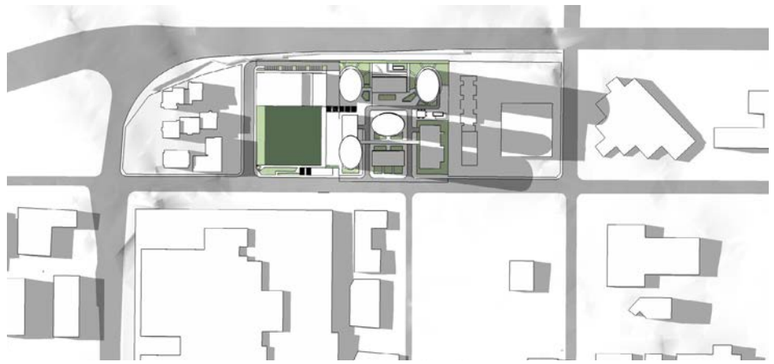
Potential overshadowing impacts of the indicative built form of the master plan proposal have been assessed for mid-winter (21 June) The 21st June is the shortest day of the year day, and has the longest shadows. For each of these days, an overshadowing study is provided for 9:00am, 12:00pm midday, and 2:00pm.

The proposal concentrates the tallest buildings away from the 1ha park to minimise overshadowing and maximise amenity to this public space. There is no overshadowing impact on adjacent residential areas, with shadows falling on commercial buildings where they have the least impact.

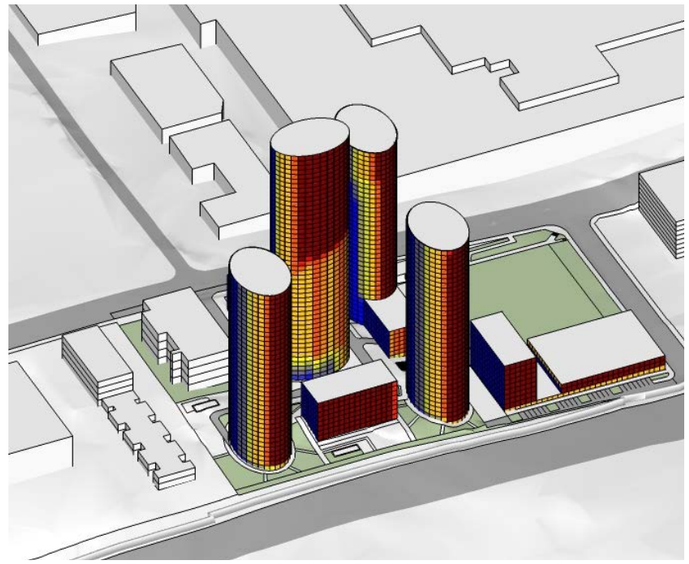


Overshadowing at 10am on 21st June

Overshadowing at 12pm on 21st June

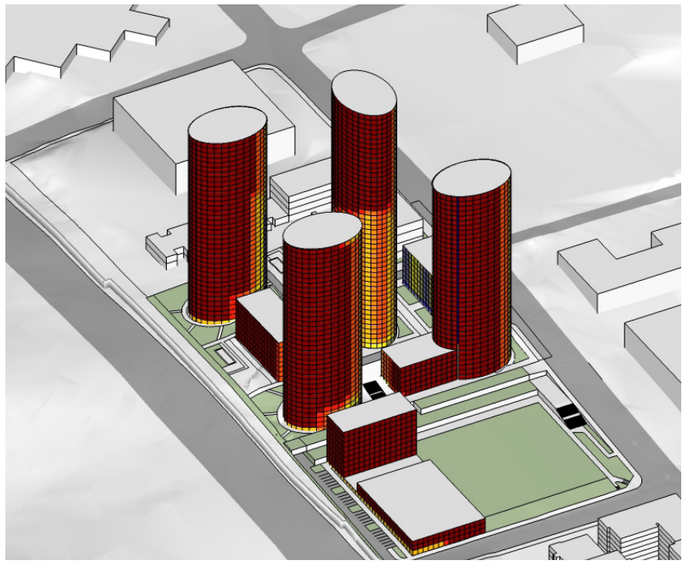


Overshadowing at 2pm on 21st June

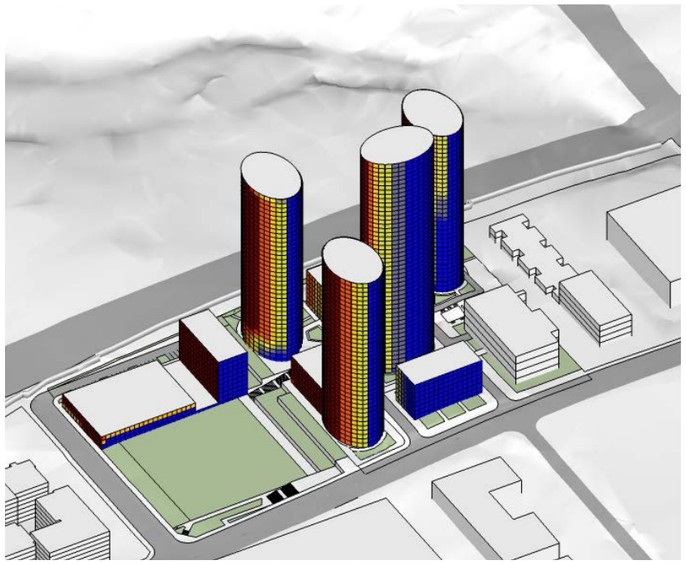


East Aerial View - Sunlight/ Daylight access, to buildings 21st June

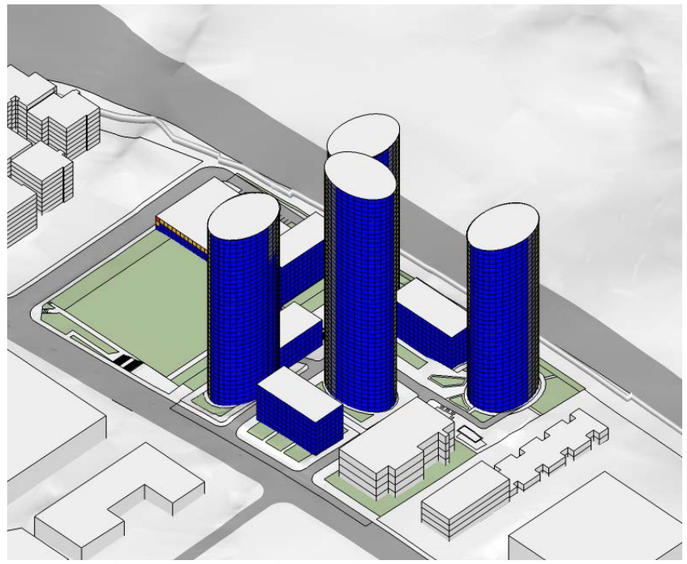
East Aerial View - Sunlight/ Daylight access, to park 21st June



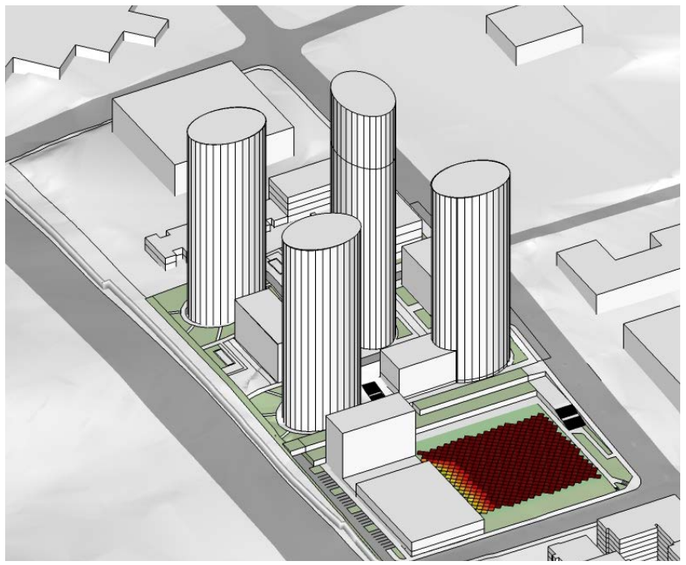
North Aerial View - Sunlight/ Daylight access, to buildings 21st June



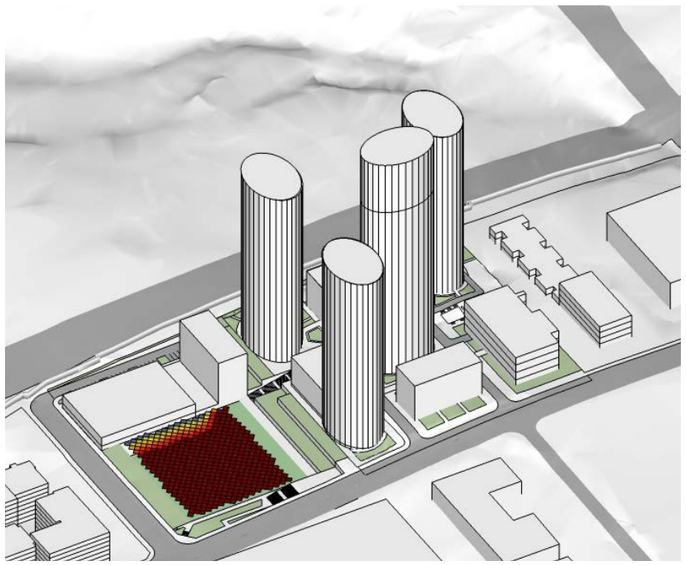
West Aerial View - Sunlight/ Daylight access, to buildings 21st June



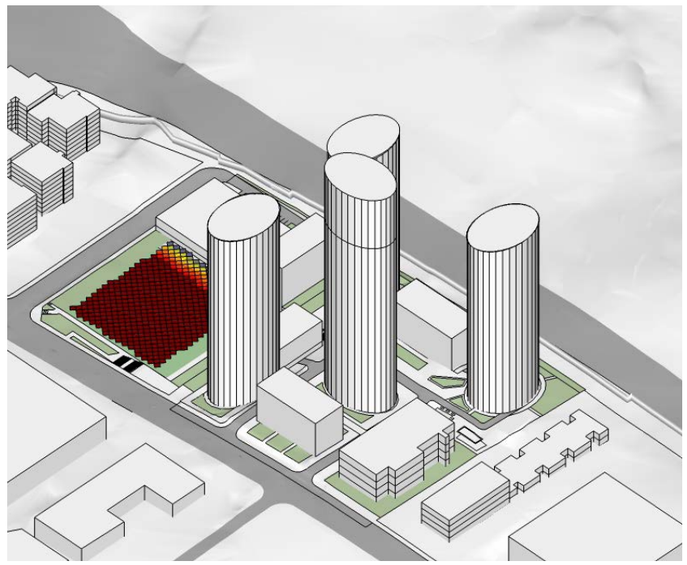
South Aerial View - Sunlight/ Daylight access, to buildings 21st June



North Aerial - Sunlight/ Daylight access, to park 21st June



West Aerial View - Sunlight/ Daylight access, to park 21st June



South Aerial View - Sunlight/ Daylight access, to park 21st June

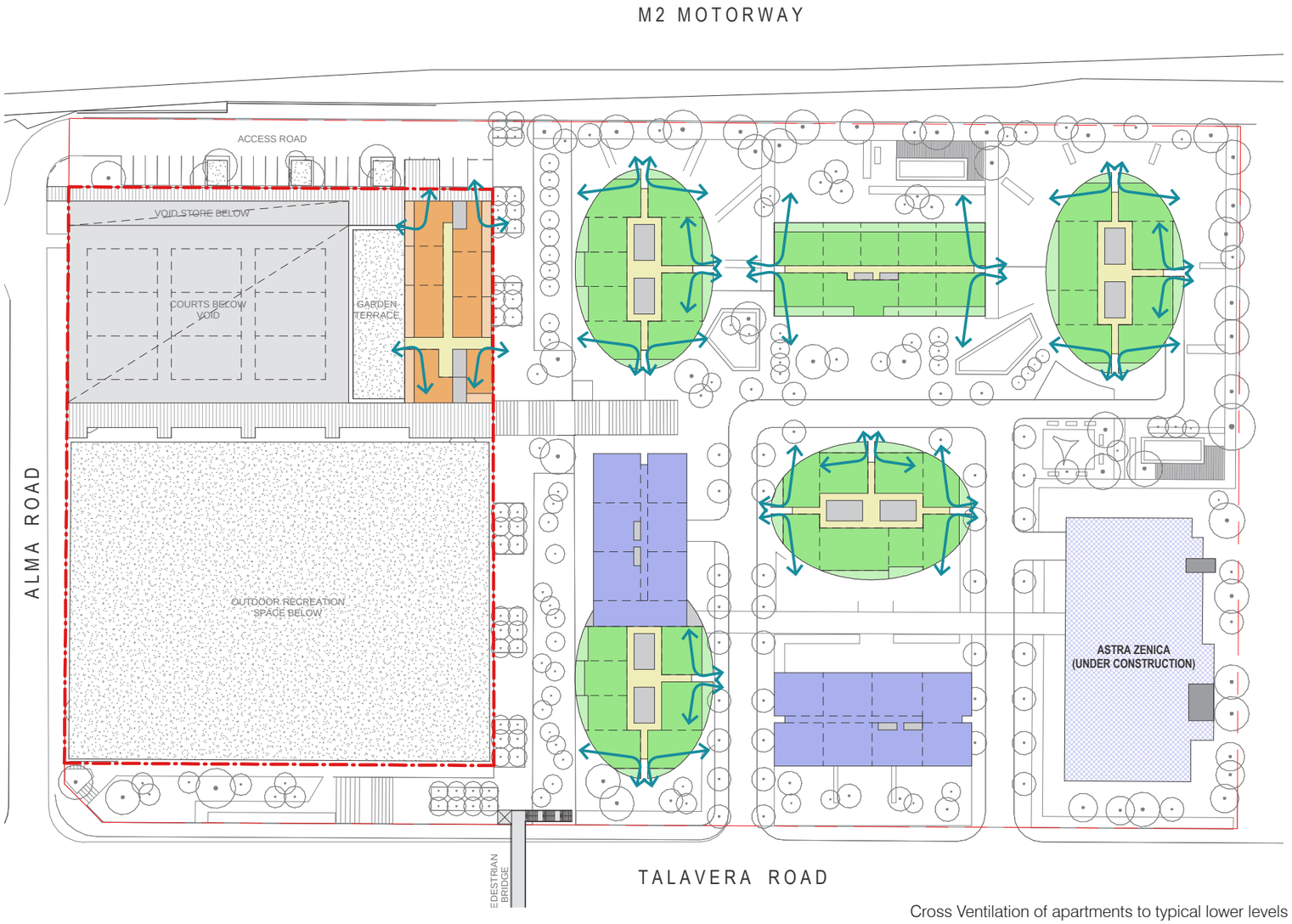
3.1.2 Cross Ventilation

Cross Ventilation to buildings

Testing of the built form has demonstrated that the envelopes of capable of achieving the 60% natural ventilation requirement of SEPP 65 in line with the Apartment Design Guide. It is considered that with further detailed design development other natural ventilation methods may be introduced to improve performance.

It should be noted that detailed compliance with cross ventilation will be demonstrated as part of subsequent detailed design Development Applications.

It is intended that apartments above 9 storeys will have balconies that are not fully enclosed. Louvres or other such architectural devices could be used to manage airflow at these heights.



Cross Ventilation of apartments to typical lower levels

3.1.3 Master Plan Option Including Key Worker Housing

Location

The location of the key worker housing is subject to negotiation between Holdmark and Council. Holdmark proposes two options:

a) the key worker housing is located to the north west of the open space;

b) the key worker housing is located within the mixed use towers as increased density.

It is Architectus's recommendation that the approximately 40 apartment dwellings be located within the mixed use towers as additional density to the proposal.

Our recommendation is based on a consideration of the best function of the open space and the relationship between housing and the M2, which may result in the isolation of the key worker housing.

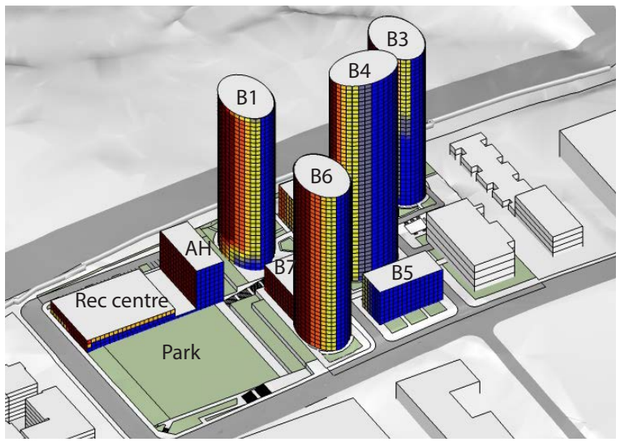
In addition, the integration of key worker housing into the mixed use towers is likely to achieve better social outcomes by ensuring that it is not as easily distinguishable from private housing, reducing the perception and likelihood of social exclusion.

Solar Access

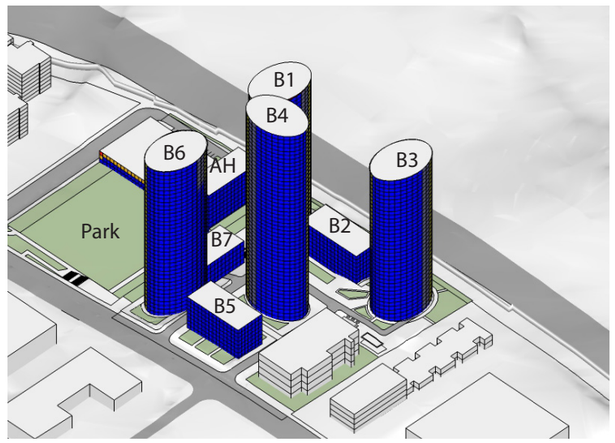
Solar access testing has been undertaken for the key worker housing located to the north west of the open space, being option a. The testing demonstrates that good solar access is achievable to the key worker housing and the public open space in this option.

SEPP 65 Compliance

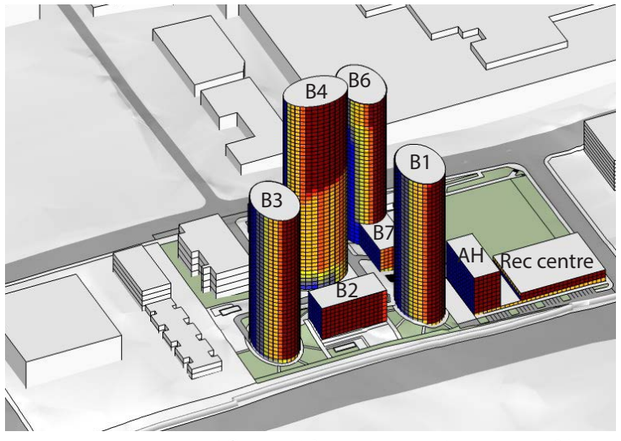
The key worker housing envelopes are considered likely to be able to achieve SEPP 65 compliance through detailed design, based on the envelope width and solar access testing.



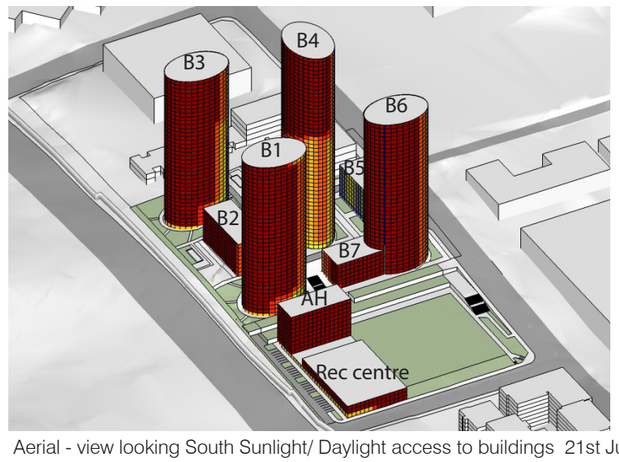
Aerial - view looking East Sunlight/ Daylight access to buildings 21st June



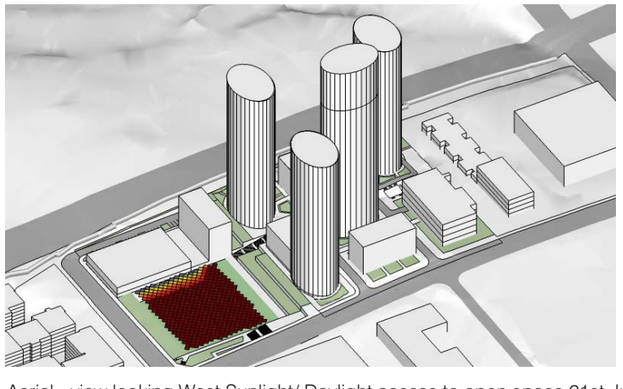
Aerial - view looking North Sunlight/ Daylight access to buildings 21st June



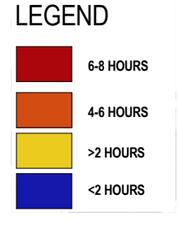
Aerial - view looking West Sunlight/ Daylight access to buildings 21st June



Aerial - view looking South Sunlight/ Daylight access to buildings 21st June



Aerial - view looking West Sunlight/ Daylight access to open space 21st June

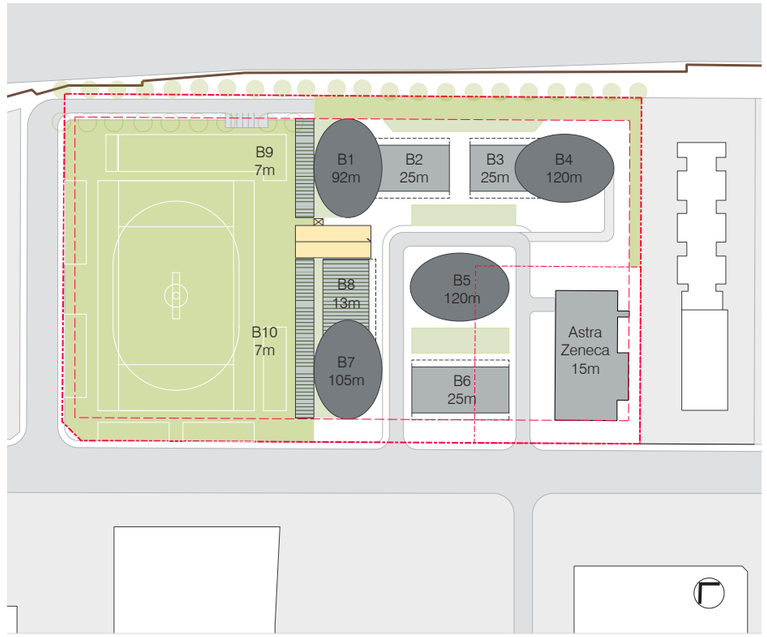


3.2 Options tested

Prior to arriving at the proposed master plan, Architectus tested a number of alternative master plan options.

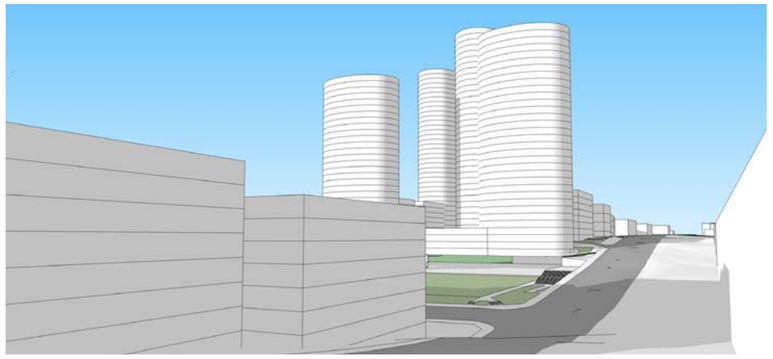
3.2.1 Option 01 Variable heights

Strengths	Weaknesses	Conclusions
– Complies with SEPP 65 separation, solar access, cross ventilation, building depths – Park location is excellent – good visibility, public character and can be generally flat. – Varied heights provide interest and break up building bulk. – All buildings have good street address. – Good interface between buildings and the open space. – Maximises views for towers – Oval-shaped towers minimise visual bulk and ensure towers achieve 24m separation.	– Less separation between towers when standing in the park than Option 2 and 4. – Exceeds 120m maximum building height.	– Varied tower heights provide an excellent built form outcome, but requires building height in excess of 120m (the maximum height identified in the Herring Road Priority Precinct)

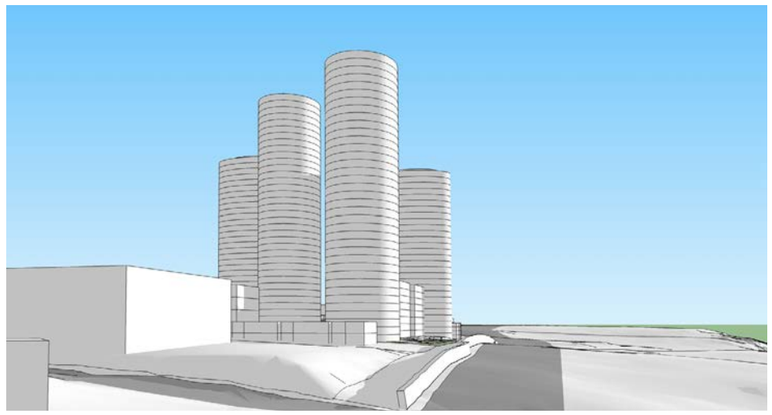


Option 01 Variable heights: Master plan

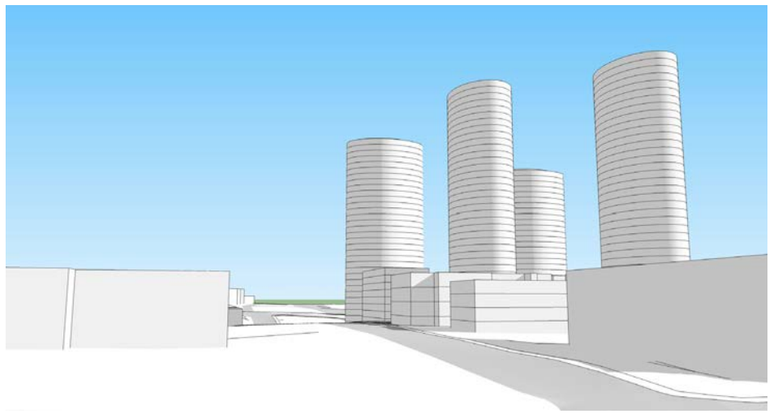
Option 01 Variable heights: View from new park (Alma Street)



Option 01 Variable heights: View from Talavera Road west, looking uphill to the east



Option 01 Variable heights: View from M2 Motorway



Option 01 Variable heights: View from Talavera Road east, looking downhill to the west

3.2.2 Option 02 East-west park

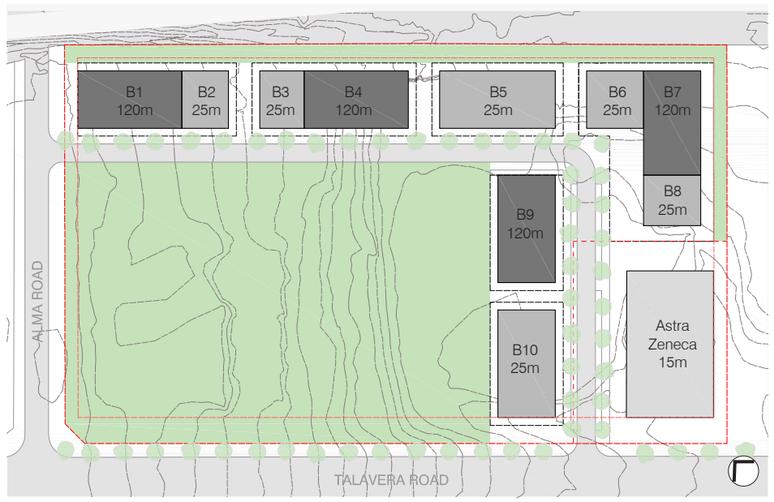
Strengths	Weaknesses	Conclusions
– Excellent tower separation – Complies with SEPP 65 separation, solar access, cross ventilation, building depths – Open space effectively relates to drainage channel west of Alma Road	– Open space must be terraced because of level change and does not allow for a large, flexible open space for active play – Towers too close to motorway jeopardising resident amenity	– Does not achieve objectives for district open space

3.2.3 Option 03 Western park

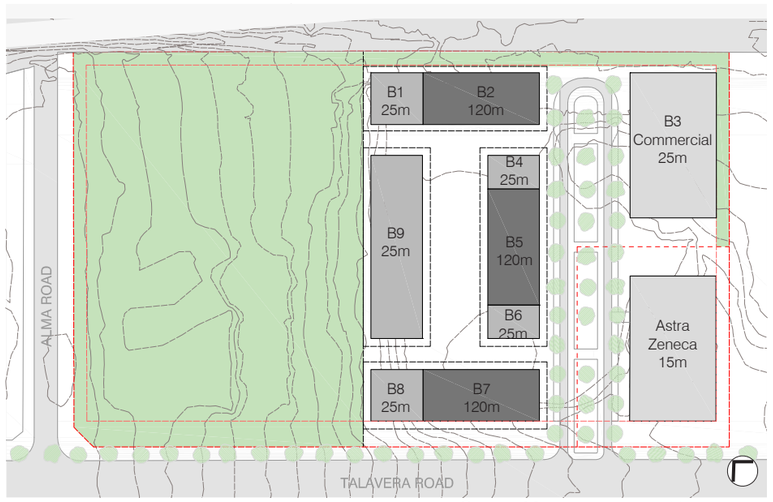
Strengths	Weaknesses	Conclusions
– Complies with SEPP 65 solar access and ventilation. – Park location is excellent – good visibility, public character and can be generally flat. – Open space effectively relates to drainage channel west of Alma Road	– Does not achieve SEPP 65 tower separation distances – Towers are too bulky when viewed from the open space. – Poor street address – Buildings are too long	– Built form needs further consideration in this configuration

3.2.4 Option 04 Centralised open space

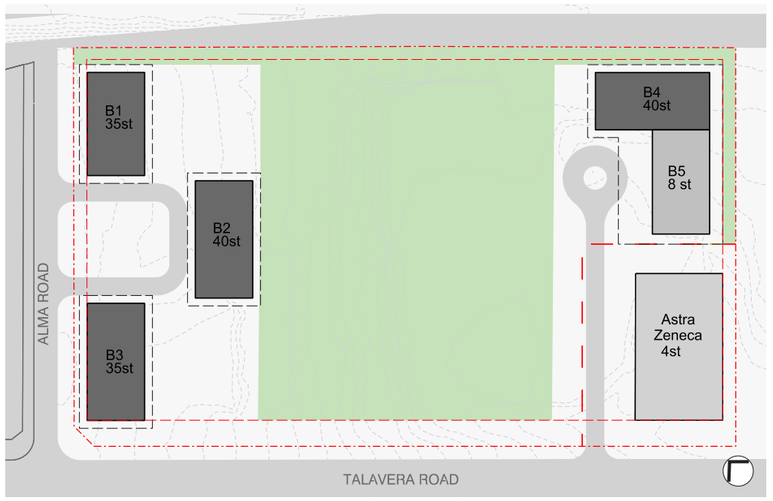
Strengths	Weaknesses	Conclusions
– Complies with SEPP 65 separation, solar access, cross ventilation, building depths – Internal park provides access from both sides of development	– Open space feels internalised and private. – Poor interface between buildings and the open space – Park centred on steepest slope of site which would cause significant earthworks to be required – Reduced views from towers – Park overshadowed by western towers	– Open space has only one street edge and provides less public amenity than preferred option



Option 02 East-west park: Master plan



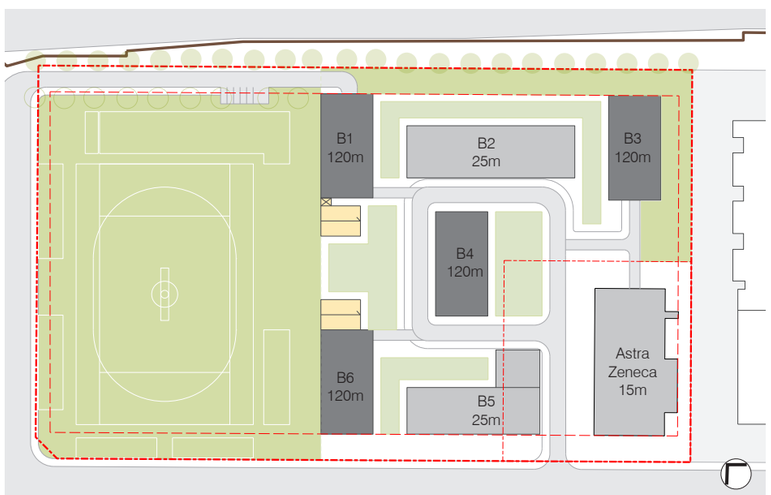
Option 03 Western park: Master plan



Option 04 Centralised open space: Master plan

3.2.5 Option 05 Looped internal road

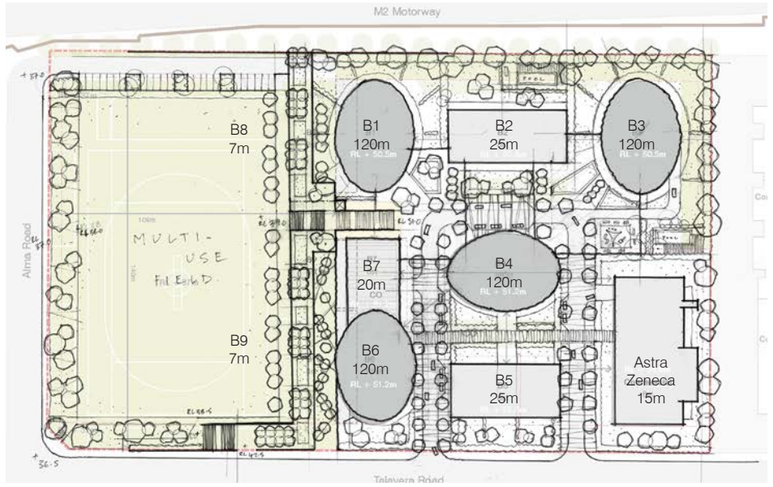
Strengths	Weaknesses	Conclusions
– Park location is excellent – good visibility, public character and can be generally flat. – New internal road adjoining the M2 provides good access to the park and the common basement – Open space effectively relates to drainage channel west of Alma Road	– Road pattern is inefficient and does not provide good address for individual buildings. – Low-rise slab building adjoining the M2 is too long.	– Need to further resolve road pattern and built form



Option 06 Looped internal road: Master plan

3.2.6 Preferred scheme

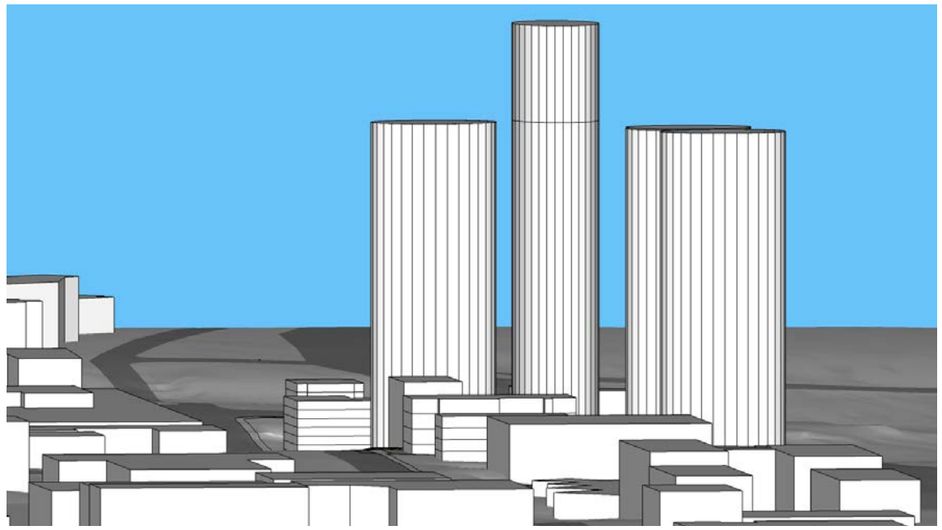
Strengths	Weaknesses	Conclusions
– Complies with SEPP 65 separation, solar access, cross ventilation, building depths – Park location is excellent – good visibility, public character and can be generally flat. – All buildings have good street address. – Good interface between buildings and the open space. – Maximises views for towers – Oval-shaped towers minimise visual bulk and ensure towers achieve 24m separation. – Open space effectively relates to drainage channel west of Alma Road	– Less separation between towers when standing in the park than Option 2 and 4.	– Recommend as basis for the master plan as this scheme provides more public and private amenity than any other option This option has since been further progressed with Council to deliver affordable housing and an Indoor Recreation Facility.



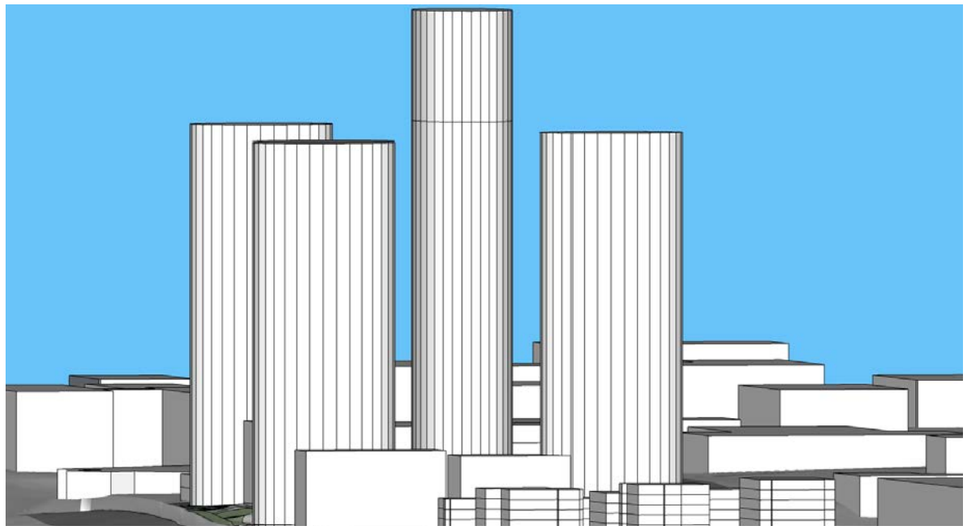
Preferred scheme: Draft master plan

Preferred Scheme: View from new park (Alma Street)

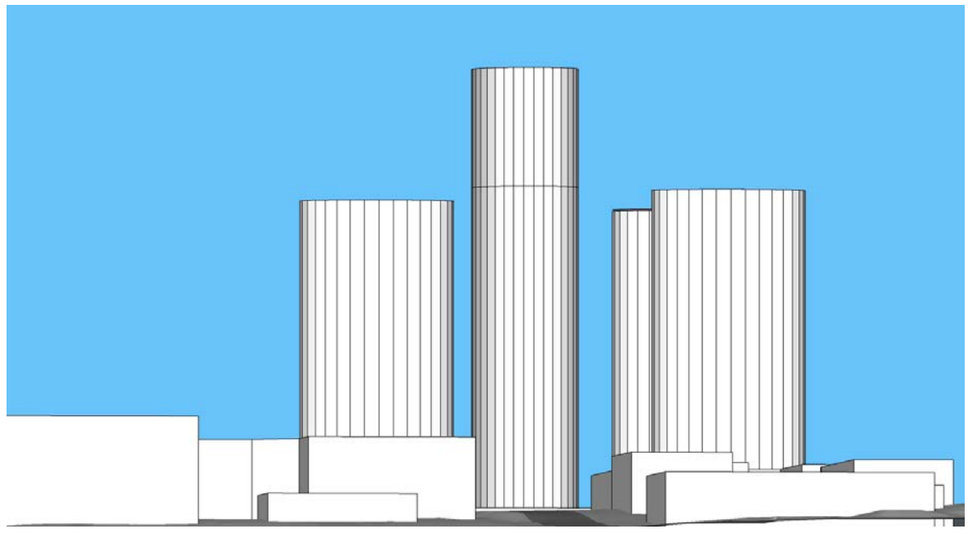
3.2.7 Street Views



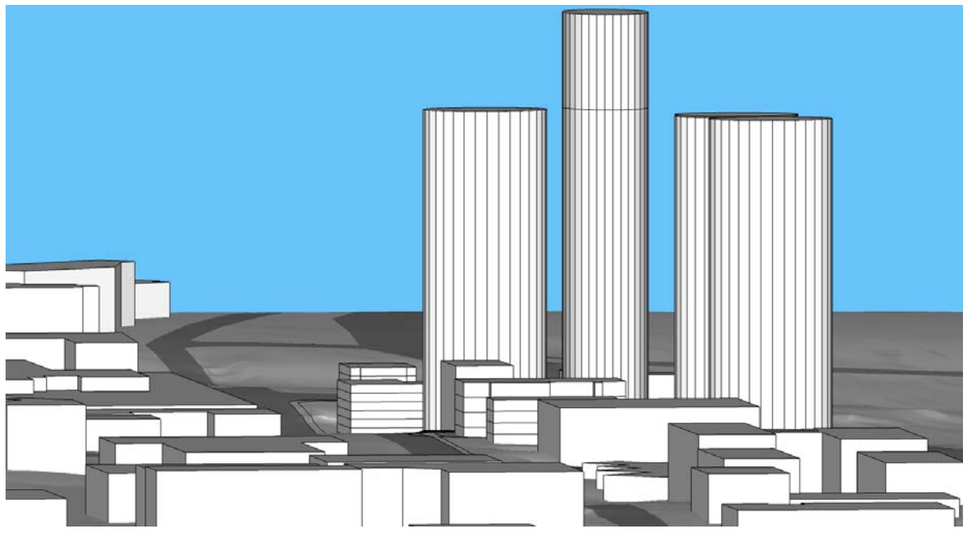
Perspective view: Corner of Talavera Road and Lane Cove Road



Perspective view: Corner of Talavera Road and Herring Road



Perspective view: Corner of Talavera Road and Khatoum Road



Perspective view : Corner of Talavera Road and Lane Cove Road

4.0 Recommendations and Conclusions

4.1 Proposed Local Environmental Plan controls

4.1.1 Land use zoning

It is recommended that the subject site be zoned **B4 Mixed Uses,** as per all other non-recreational land subject to the Priority Precinct This will allow for the development of the new commercial building on Talavera Road, the new public open space and the residential uses proposed in the preferred master plan. Importantly, this zone will also facilitate actives uses at ground levels, which will be important for the success of the park.

This allows for the delivery of key worker housing to Council in a location to be agreed.

4.1.2 Building heights

It is recommended that the site have a maximum building height of **120m, with a singular tower of 154m.** The FSR control and DCP provisions would restrict development on the site to a maximum of four towers.

From an urban design perspective, it is appropriate to have the maximum building height on the periphery of the Herring Road Priority Precinct because the site will be a gateway for the precinct, marking the entrance to Macquarie Park from the M2 motorway, and also visually locating the new park. In practical terms, the additional height on the subject site is required commercially to allow for 1ha of the site to be dedicated to Council for public open space and public facilities at no cost to Council.

4.1.3 Floor space ratio

The preferred master plan for the site results in an **FSR of 3.7:1**. This is within the range of FSR controls for the Herring Road Priority Precinct.

4.2 Development Control Plan and VPA

4.2.1 DCP controls

To support the development of the site in accordance with the preferred master plan, a draft Site specific amendment to the Ryde Development Control Plan 2014 has been proposed. This draft Development Control Plan addresses the following:

– Vehicle entry / exit points

– Location of the Recreation Centre / Open Space

– Development Parcels

– Maximum Tower footprint

– Commitments under the proposed VPA

– Setbacks;

– Development to achieve compliance with the ADGs; and

– Commuter car parking to be delivered as part of the development as identified in the VPA.

4.2.2 Voluntary Planning Agreement

The proposal is also supported by a Voluntary Planning Agreement offer which has been accepted by a resolution of City of Ryde Council on 2 August 2016 and which seeks to deliver significant public benefit, including:

– 5,296m2 Gross Floor Area (GFA) of Affordable Housing;

– A community indoor recreation facility of 3,500m2 GFA;

– 6,100m2 of public open space (dedicated as a stratum lot over a public car park);

– Public parking;

– Pedestrian bridge over Talavera Road;

– $5 million contribution to Roadworks and Traffic Management;

– 4.5m wide footpath along Talavera Road frontage; and

– Payment of full Section 94 Contributions on the site, with the exception of the Section 94 applicable for the affordable housing component and community indoor recreation facility and ancillary commercial floor space.

4.3 Conclusion and recommendations

The rezoning for B4 Mixed Uses and increased maximum FSR and height would result in the provision of 6,100sqm open space and Indoor Recreation Centre and 56 affordable housing units, at no cost to the public purse – a significant and important opportunity for Macquarie Park and City of Ryde.

This report provides an indicative building envelope plan for the redevelopment of the remainder of the site for residential uses. In summary, the master plan prioritises the location and design of the open space. In the proposed northern location the park will be visible, have excellent solar access and can be designed to be level (which has been a challenge on this site which has a fall of over 18m from the south to the north of the site). The preliminary design concept for the park, prepared by Clouston, ensures that it will have active edges, passive surveillance opportunities and a significant grassed area for a wide variety of active and passive recreation uses.

Key worker housing would achieve the same level of amenity and compliance with SEPP 65 as the proposed private residential dwellings. The proposed dwellings could also achieve compliance with the definition of affordable housing under the NSW Affordable Housing Guidelines. The location and management of these dwellings would be negotiated between Council and Holdmark to ensure a positive social outcome and a benefit to the Business Park.

The built form provided in this report shows indicative envelopes that would be refined through detailed design, consultation and testing. The plan has demonstrated ability to comply with SEPP65.

On the basis of the public benefit to be delivered, Architectus recommend that the planning proposal is supported.

Appendix A
Tower slenderness study

Tower slenderness study

Architectus has researched methods to achieve tower slenderness to provide good urban design, internal amenity and address impacts of tower bulk on surroundings. The aim of this research is to develop 'rules of thumb' for appropriate tower proportions.

Benefits of slender towers

As urban densities increase the slenderness of tall towers are becoming an important consideration – especially for residential towers and their separation.

Benefits of slender towers include:

– Overcomes the sense of tower bulkiness and overwhelming of the public domain.

– Opportunities for views of sky between buildings and a feeling of openness.

– Minimising overshadowing, particularly extended periods of overshadowing in comparison to long elevations of lower scale development.

– Enables a good sunlight and daylight to the public domain.

– Creating better separation between buildings and better views - improves the amenity, privacy and outlook of apartments

– Increased residential amenity, as the floor-plates are more likely to achieve good solar access and ventilation requirements.

– Limits the number of apartments per level and the length of corridors.

– Ensures that apartments are not too deep and rooms don't rely on 'borrowed' light and air.

Local examples of floorplate controls

New South Wales

SEPP 65 and the Apartment Design Guide (ADG) provide design controls for all residential flat buildings in NSW. The ADG has controls for building depth and separation and amenity. Together with fire regulations, the proper application of the ADG should have the effect of limiting floorplates in residential buildings.

However, in the early master planning stages of a project, it is difficult to test all of these detailed design provisions. As a result, master plans, and planning controls can result in envelopes for large floor-plates that are acceptable from a design and amenity perspective.

There are no state-wide floor-plate controls for tall buildings in NSW.

Green Square, City of Sydney Council

In the South Dowling St Precinct within Victoria Park, Zetland (part of Green Square) detailed consideration has been given to the slenderness of towers. The resulting controls allow for 22-storey towers (approximately 70m in height) to a maximum of 750sqm of floor area including balconies (referred to here as 750sqm Gross Building Area floor-plate).

A significant separation distance between towers (60m) is also provided as this precinct is an inner city area but is not within a designated urban centre.

Central Sydney

In Central Sydney, a 1,000sqm Gross Floor Area maximum is applied to residential tower buildings. This would equate to 1,333sqm GBA. A maximum horizontal dimension of the building facade of 40m is also applied. Towers in Central Sydney have maximum building heights ranging from 60m to 235m.

International examples of floorplate controls

Calgary, Canada

The maximum floorplate size is 650 square metres of net residential floor area (i.e. not including elevator cores, balconies etc.). This would equate to 953sqm GBA.

Chicago, USA

There is no limit to floorplate size, but upper storeys are required to be smaller to give the towers a sculptural appearance.

New York, USA

Floorplate size is regulated using a site coverage control. Towers must cover 40% or less of a site area, with special exceptions up to 50% for smaller sites.

San Francisco, USA

The floorplate of towers in San Francisco must incrementally decrease as height increases. Lower parts of a tower must not exceed 1,600sqm GBA and the upper tower floorplates must not exceed 1,100sqm GBA.

Vancouver, Canada

The maximum floorplate size is 604sqm of net residential floor area (this equates to 886sqm GBA) and the maximum horizontal dimension of a tower is 27.5m.

Open balconies may extend beyond this provided they are less than 1/3 the overall façade length.

Design examples

Victoria Square North: 20 Gadigal Avenue, Zetland, NSW, Australia

– Floorplate: 700sqm including balcony

– Floorplate dimensions: 46m x 15.2m = 700sqm.

– Building Height: 85m and 26 storeys

– Slenderness ratio: 1:6 (using the narrow side of the building)

One Madison Park: East 23rd Street, New York, NY

– Slenderness ratio: 1:12 (Depth:Height)

– 50 Floors plus cellar/ 621 ft (189.28m)

Findings

There are a variety of different floorplate controls in other cities around the world. Ultimately, the controls are a function of different priorities for a city – whether the aspirations are access to sunlight, views, or densification and consolidation. Generally, it seems that larger cities have more relaxed floorplate controls, while smaller cities seek slimmer towers and more separation between towers.

A floorplate control that is simply a percentage of the site area can produce very bulky buildings on large sites or amalgamated sites.

Reducing the size of upper floorplates is a solution to reducing visual bulk for very tall buildings (say, over 50 storeys). In Sydney's climate, it is usually preferable to have a podium/tower form of development where the podium relates to the alignment and scale of the street and the tower relates to a wider context of towers. It is usually preferable to not have "wedding cake"or stepped built forms in favour of simplicity of built form.

It is now commonly acknowledged that the Green Square provisions (700sqm floorplate, 22-25 storeys) produce a tower with slender proportions.

Taller buildings can accommodate larger footprints, and still achieve good internal amenity, as more floor space is dedicated to lift cores/ services.

Architectus' recommendations

In order to achieve slender tower the following rules-of-thumb are recommended:

– Floor-plate sizes should be related to height as follows:

  – Up to 25 storeys – 800sqm GBA maximum

  – 26-35 storeys - 950sqm GBA maximum

  – Above 35 storeys – 1,100sqm GBA maximum

– The length (horizontal dimension) of a residential tower should not exceed 40m.

– A tower slenderness ratio (depth:height) should be at least 1:4.

The above recommendation is subject to detailed testing for each site, and in consideration of the site's context and constraints. Towers might not be able to achieve the above maximum floorplates if they cannot meet SEPP 65 standards for internal amenity.

Sources:

Extract from a study for the City of Toronto: www1.toronto.ca/city_of_toronto/city.../Tall-buildings-Final-pt5.pdf

Program for the 'Slenderness: New York\ Hong Kong' exhibition, Skyscraper Museum, New York: http://www.skyscraper.org/PROGRAMS/slender_program.htm

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