

Attachment A22

**Urban Design Report – April 2020 –
187 Thomas Street, Haymarket - pt4**

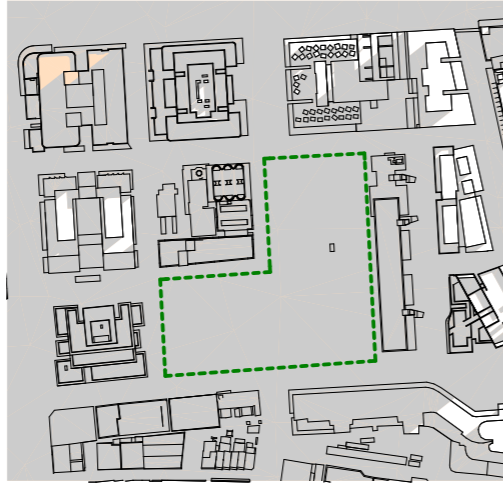
Appendix J PUBLIC SPACE OVERSHADOWING ANALYSIS

Chippendale Green Overshadowing Analysis

This analysis studies potential overshadowing impact on Chippendale Green from the indicative massing on the worst case day of June 21, before 10am when any potential impact would occur.

The following shadow diagrams indicate existing (grey) and additional (orange) shadows on June 21 at 15 minute intervals from 8am to 10am, indicating no additional shadow impact during this time. The shadow cast from the indicative scheme falls within the existing shadow cast by the central park main tower to the north east of the site.

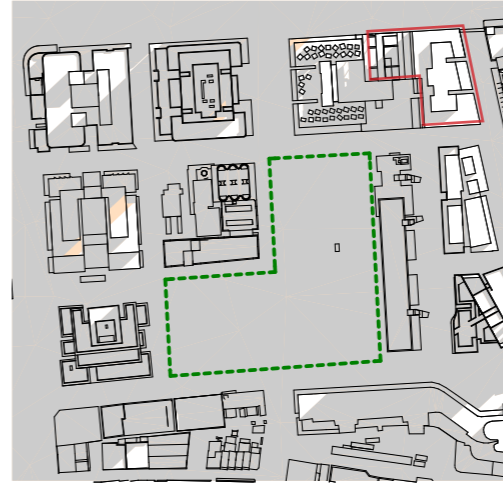




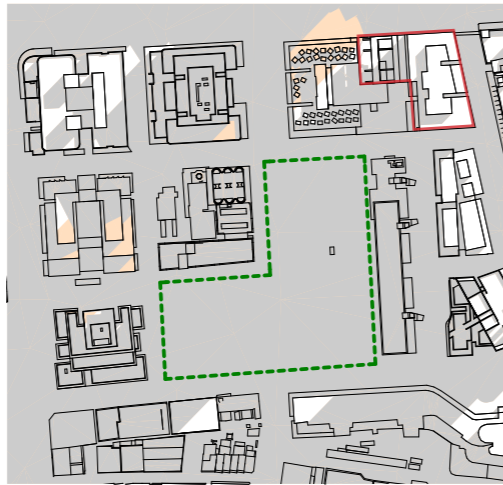
21 June - 8am



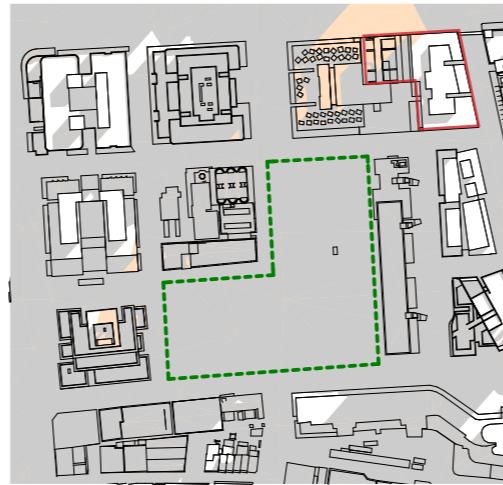
21 June - 8.15am



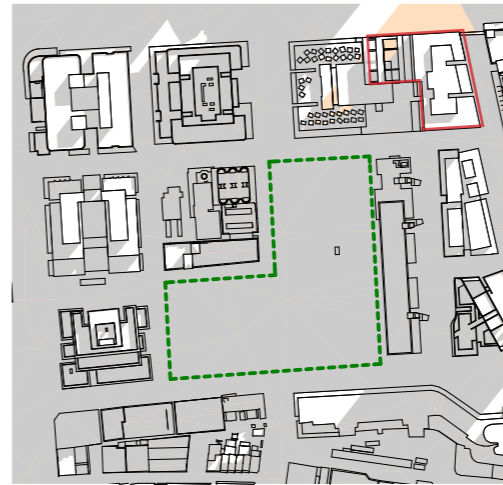
21 June - 8.30am



21 June - 8.45am



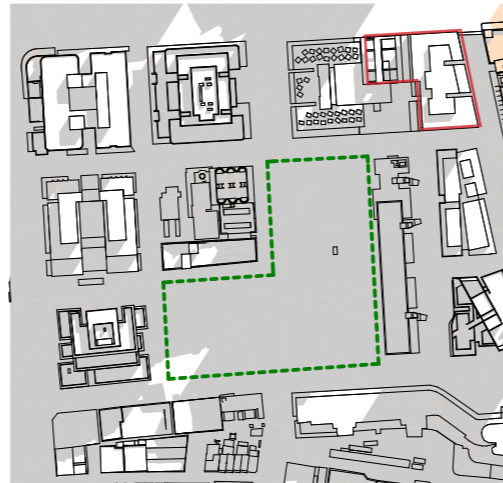
21 June - 9am



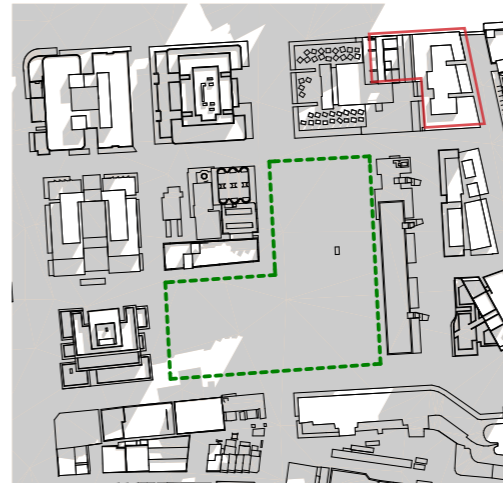
21 June - 9.15am



21 June - 9.30am



21 June - 9.45am

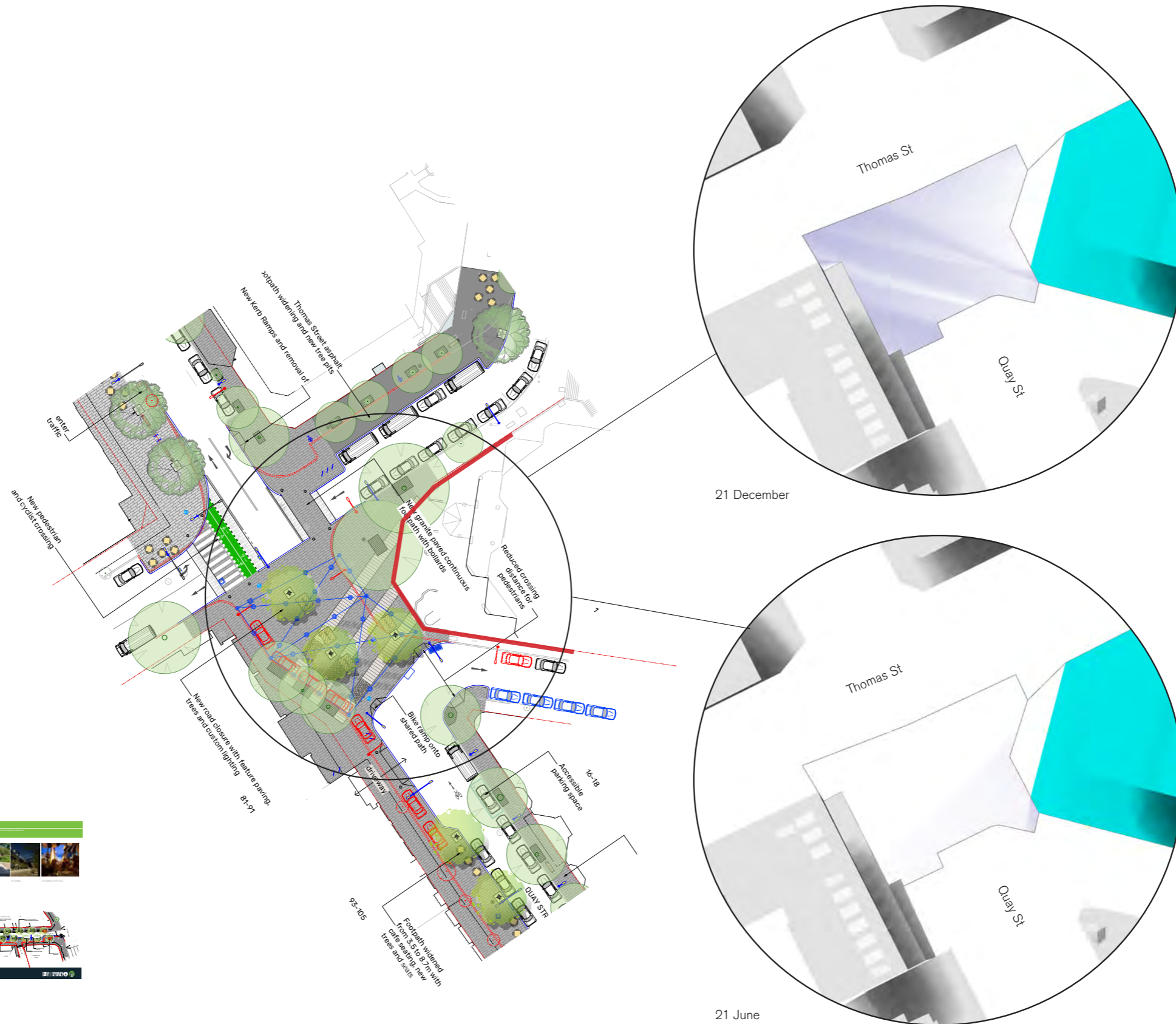


21 June - 10am

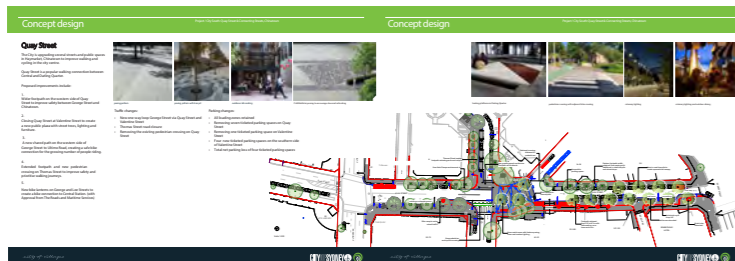
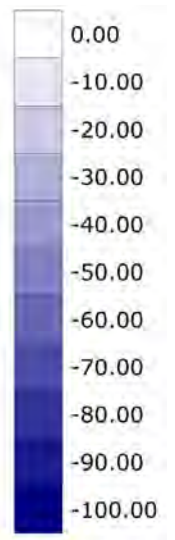
Thomas And Quay St Upgrade Overshadowing Analysis

The City of Sydney had identified a series of priority projects upgrading the public domain along Thomas and Quay Streets. These works include footpath widening and the potential creation of a new square at the intersection of Thomas and Quay Streets.

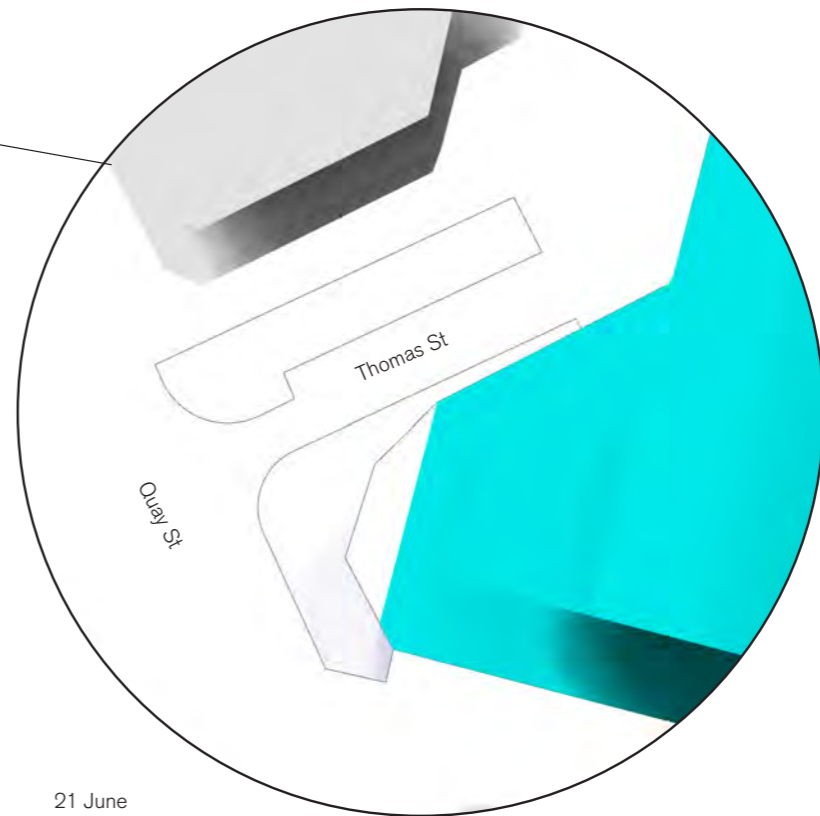
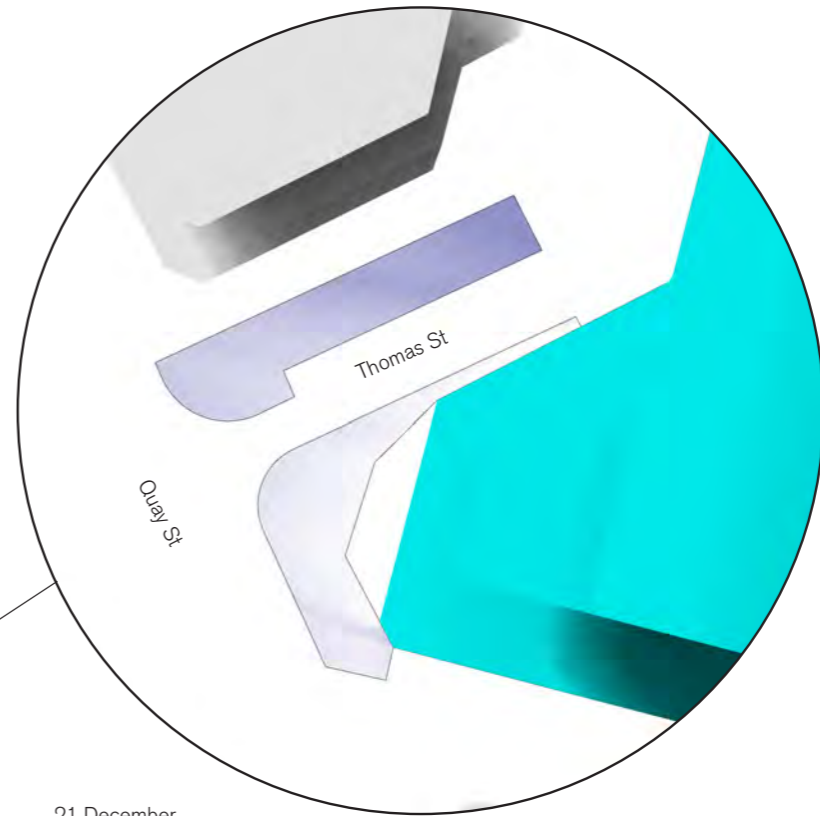
Overshadowing analysis for mid-winter and mid-summer has been undertaken to determine the extent of impact of the proposed massing on the proposed square and the footpaths on Thomas Street.



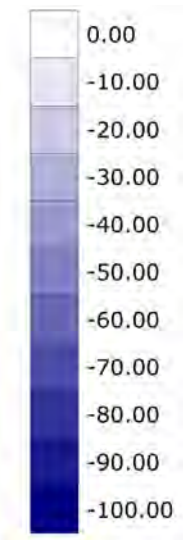
Impact on available hours of sun access (%)
Proposed massing compared to existing.



Thomas Street overshadowing analysis to footpaths on Thomas Street



Impact on available hours of sun access (%)
Proposed massing compared to existing.



Concept design

Quay Street

Appendix K RESIDENTIAL OVERSHADOWING ANALYSIS

Residential Overshadowing Analysis

An initial residential sun access impact study has been undertaken for the southern downstream Neighbouring residential buildings based on the requirement of series of controls.

Neighbouring Residential buildings

The Analysed Neighbouring residential buildings and Overshadowing Study Zone are indicated as site plan below.

Control

DCP 2012 Clause 4.2.3.1 (3) :

New development must not create any additional overshadowing onto a neighbouring dwelling where that dwelling currently receives less than 2 hours direct sunlight to habitable rooms and 50% of the private open space between 9am and 3pm on 21 June.

Planning Proposal Central Sydney 2020

Clause 5.1.2 :

Central Sydney's dynamic and dense development environment certainty for the protection of private amenities such as sunlight and views cannot be guaranteed. The maintenance of sunlight access and private views to existing development should not unduly restrict the economic performance and economic growth of Central Sydney, where proposed development has demonstrated compliance with Sydney LEP 2012, in relation to height and FSR, and Sydney DCP 2012 Section 5.1.1 Built Form Controls. This is especially the case for proposed employment related developments that impact on existing residential and serviced apartment developments.

Planning Proposal Central Sydney 2020

Clause 5.1.2 :(6)

(6) When considering the likely impacts of a development on surrounding developments any adverse impacts on existing private views, visual privacy, solar and daylight access are considered reasonable where compliance with Section 5.1.1 and 5.1.2(1), (2) and (3) has been achieved.



Methodology

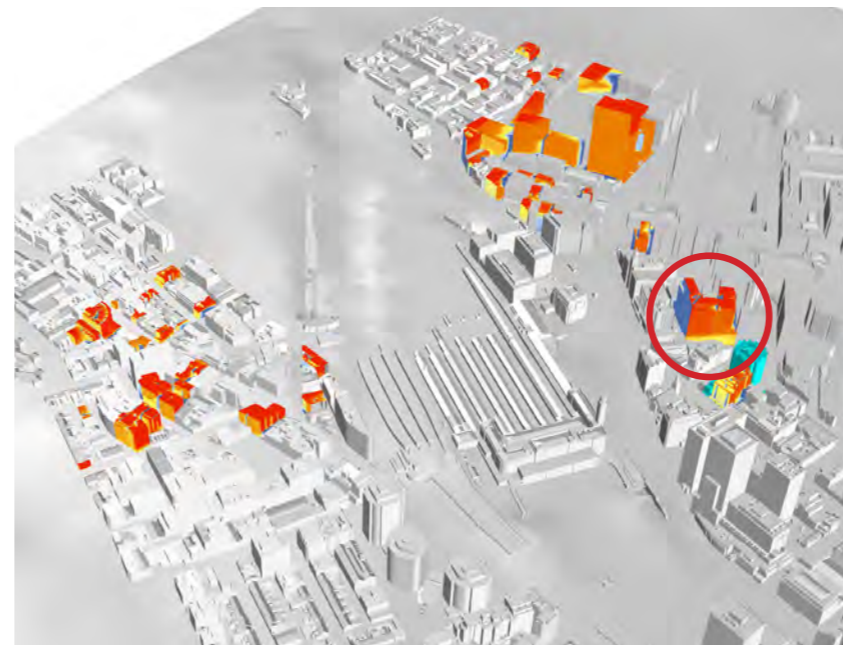
The standard for residential sun access compliance is the Apartment Design Guide minimum of 2 hours to living spaces between 9:00am and 3:00pm on 21 June (mid-winter)

The methodology is as follows:

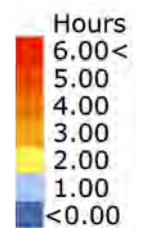
1. Residential buildings potentially affected were identified by determining the extent of any shadow of an RL 300m tower at the winter equinox.
2. Existing sun access on the facades of the potentially affected buildings was calculated.
3. Sun access on the potentially affected buildings with the proposed massing was then calculated.



 Overshadowing Study Zone
 Residential Buildings within Study Zone



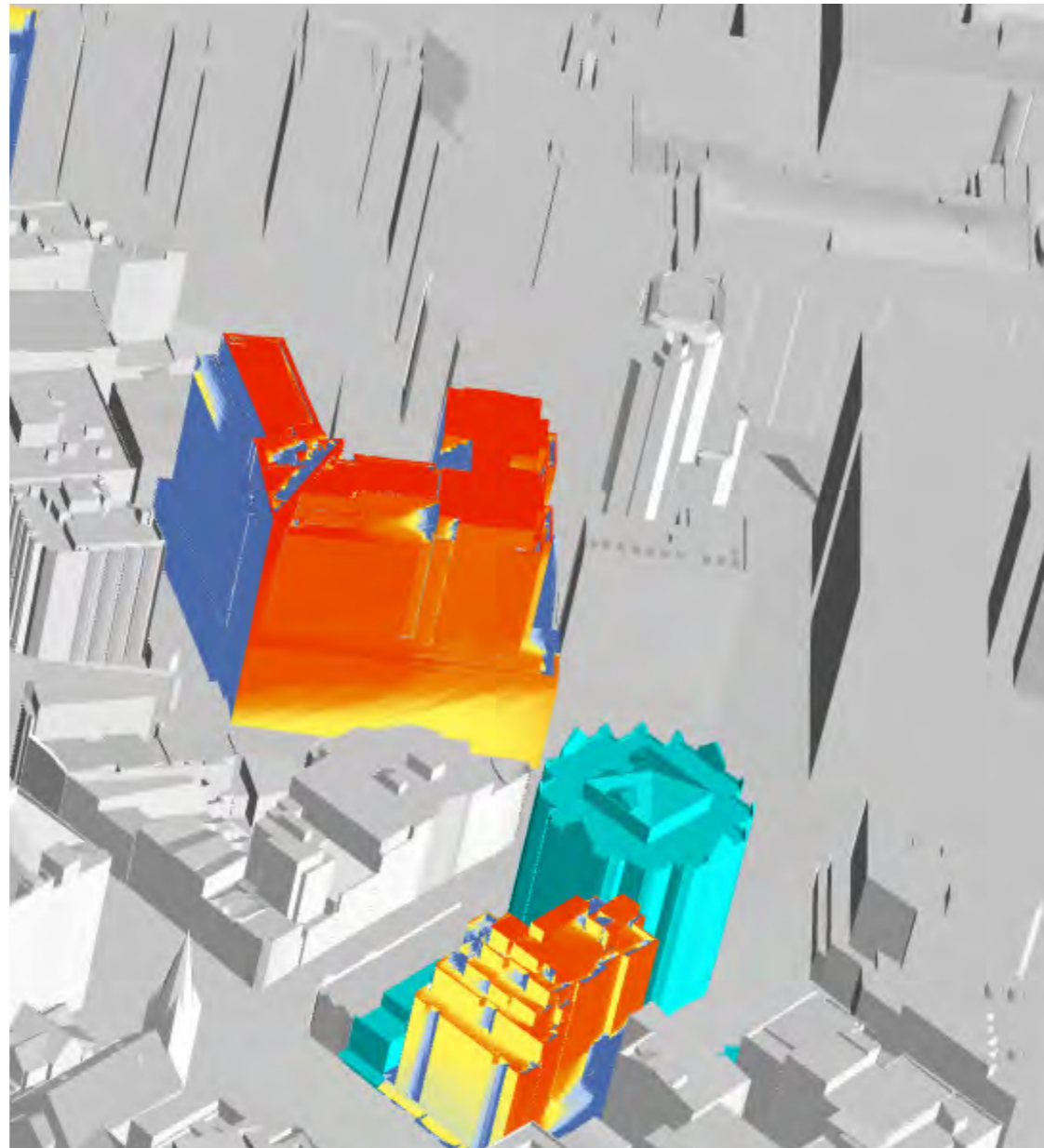
Proposed Sun Access
9am - 3pm mid winter.



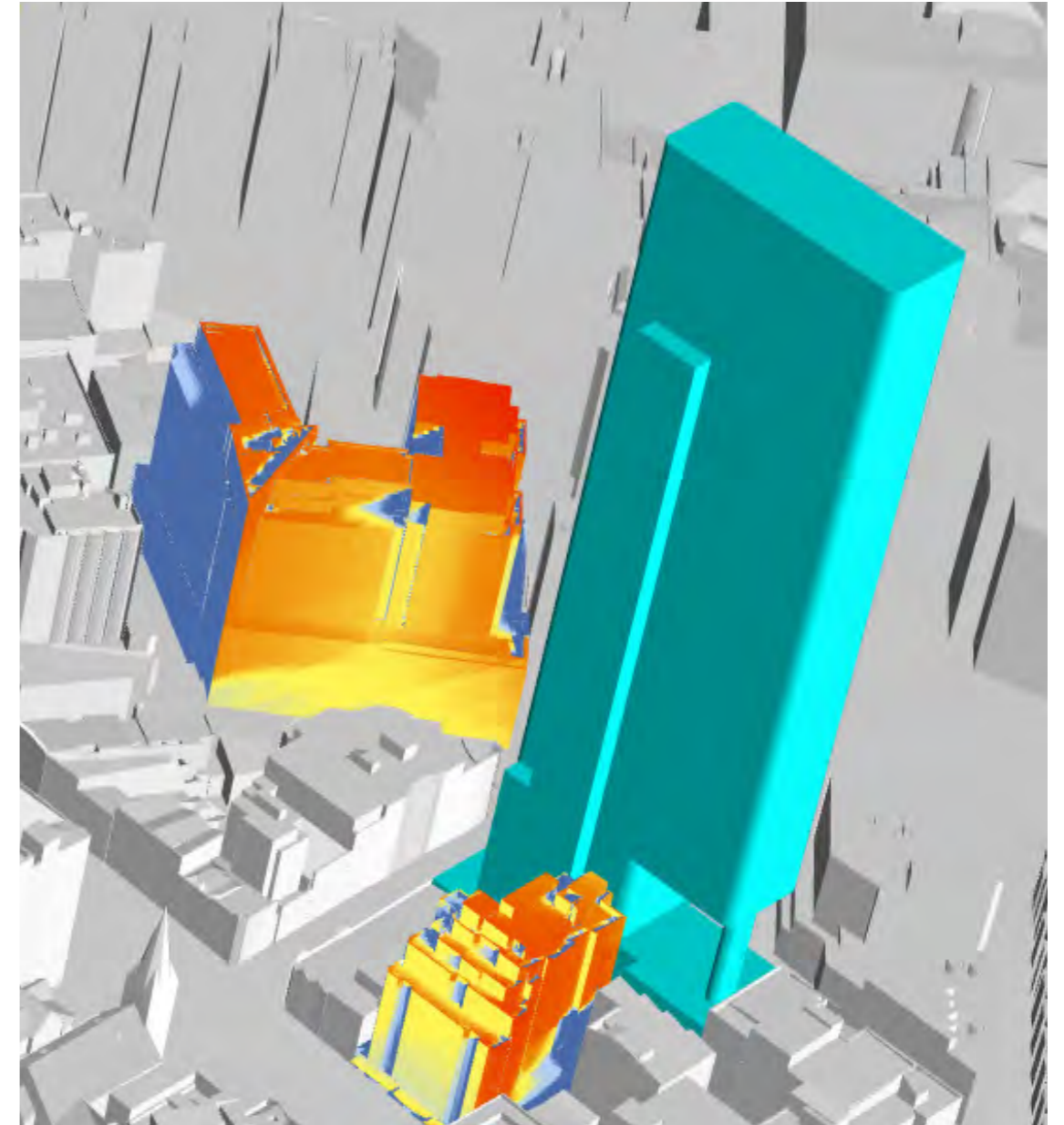
Conclusion

- a. The most overshadowing impact as a result of the proposed massing occurs closest to the development.
- b. Some reduction of sun access is noticeable on 1 Central Park, however 3 hours of sun access is maintained in the affected areas
- c. 2 hours sun access is maintained to the facades of potentially affected residential buildings
- d. A more detailed study of the nearby buildings on Quay street would be required as part of a Stage 2 Development Application submission to assess any impact on ADG requirements.
- e. Under the Planning Proposal Central Sydney 2020, the protection of private amenities such as sunlight and views cannot be guaranteed within the Central Sydney's dynamic and dense development environment.

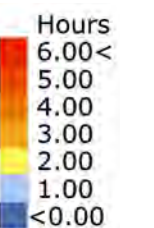
Regardless of the ability for commercial developments to impact private residential amenity under the draft DCP, the proposed development envelope does not reduce existing sun access to living spaces of surrounding residential developments below the ADG minimum of 2 hours in mid-winter.



Existing Sun Access
9am - 3pm mid winter.



Proposed Sun Access
9am - 3pm mid winter.



Sun Eye View Study

An initial residential sun eye view study has been undertaken for the adjacent Neighbouring residential buildings based on the requirement of series of controls.

Control

DCP 2012 Clause 4.2.3.1 (3) :

New development must not create any additional overshadowing onto a neighbouring dwelling where that dwelling currently receives less than 2 hours direct sunlight to habitable rooms and 50% of the private open space between 9am and 3pm on 21 June.

Planning Proposal Central Sydney 2020

Clause 5.1.2 :

Central Sydney's dynamic and dense development environment certainly for the protection of private amenities such as sunlight and views cannot be guaranteed. The maintenance of sunlight access and private views to existing development should not unduly restrict the economic performance and economic growth of Central Sydney, where proposed development has demonstrated compliance with Sydney LEP 2012, in relation to height and FSR, and Sydney DCP 2012 Section 5.1.1 Built Form Controls. This is especially the case for proposed employment related developments that impact on existing residential and serviced apartment developments.

Planning Proposal Central Sydney 2020

Clause 5.1.2 :(6)

(6) When considering the likely impacts of a development on surrounding developments any adverse impacts on existing private views, visual privacy, solar and daylight access are considered reasonable where compliance with Section 5.1.1 and 5.1.2(1), (2) and (3) has been achieved.

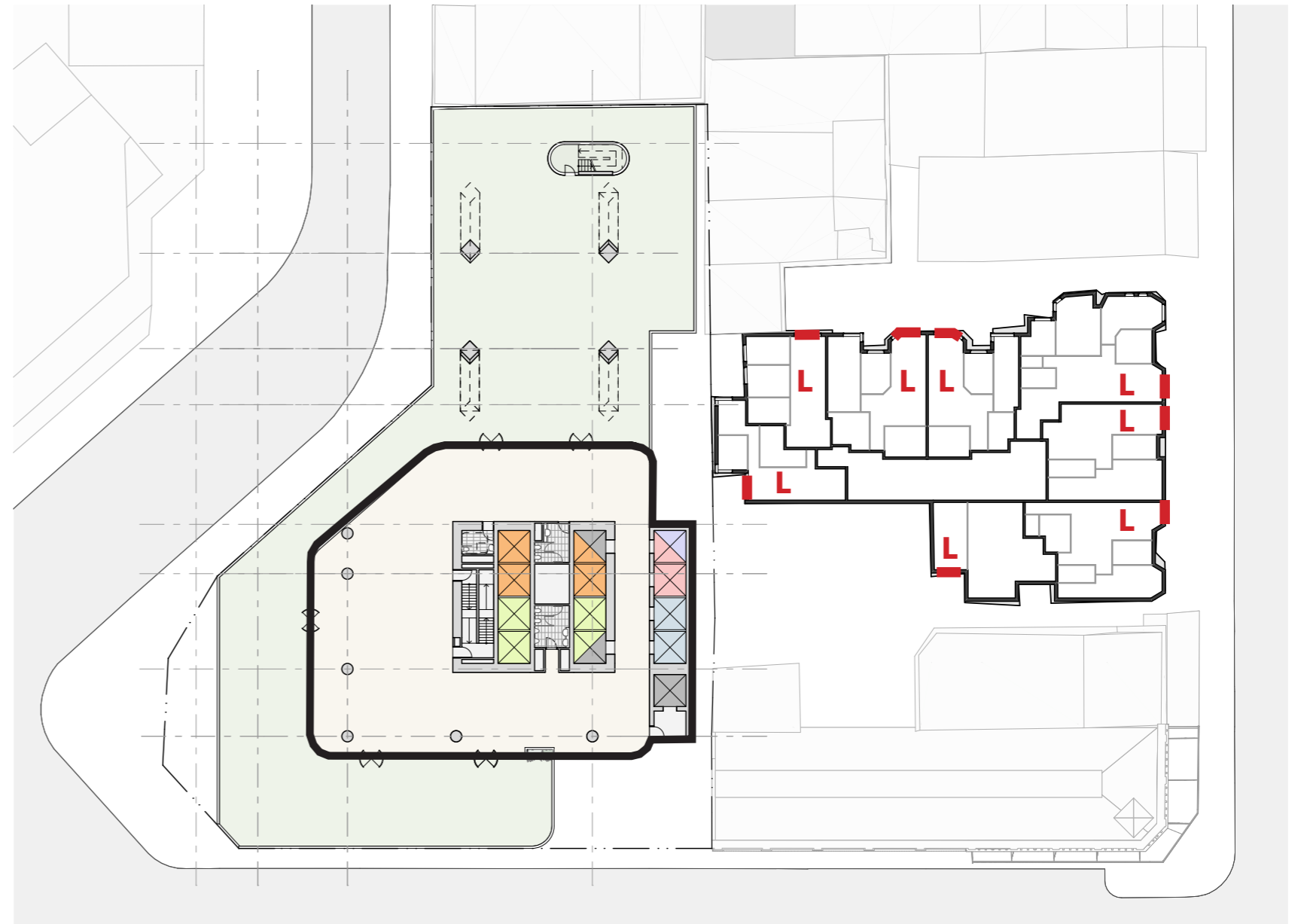
Methodology

743-755 George Street

9:00am - 3:00pm AEST

21st June (Mid Winter)

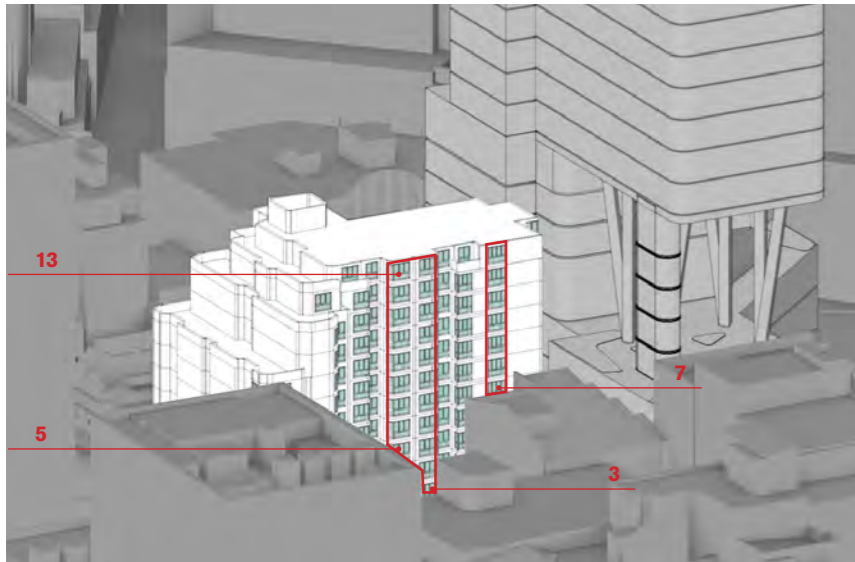
30 minutes intervals



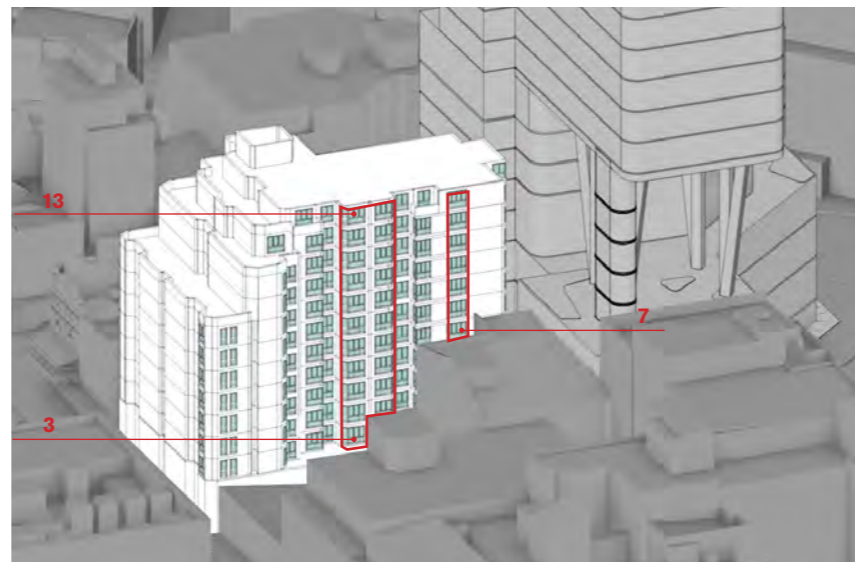
Living Room Windows



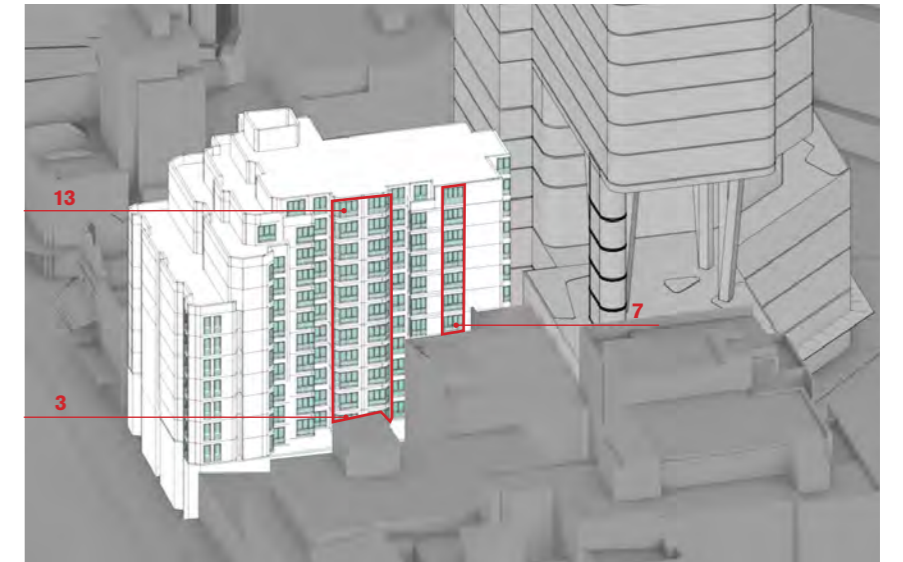
Sun Eye View Study



21st June 09:00am



21st June 09:30am



21st June 10:00am




21st June 10:30am

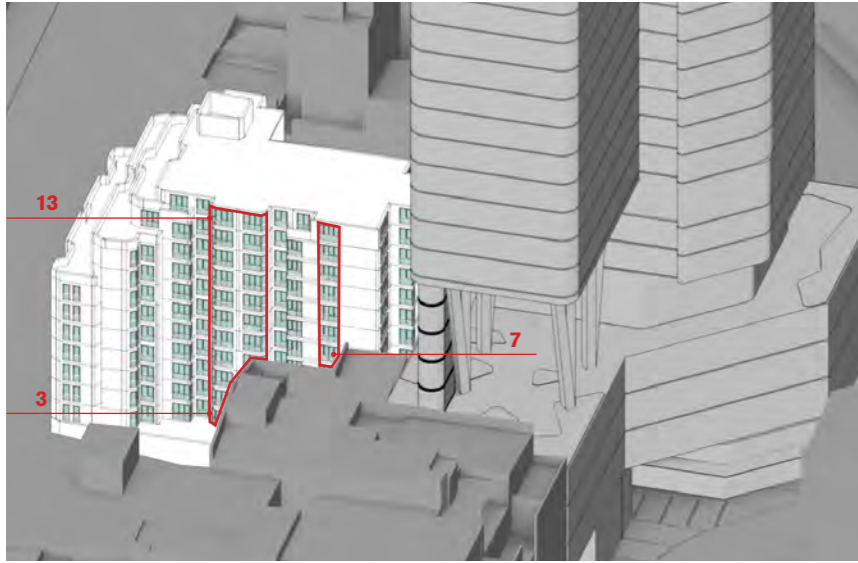


21st June 11:00am

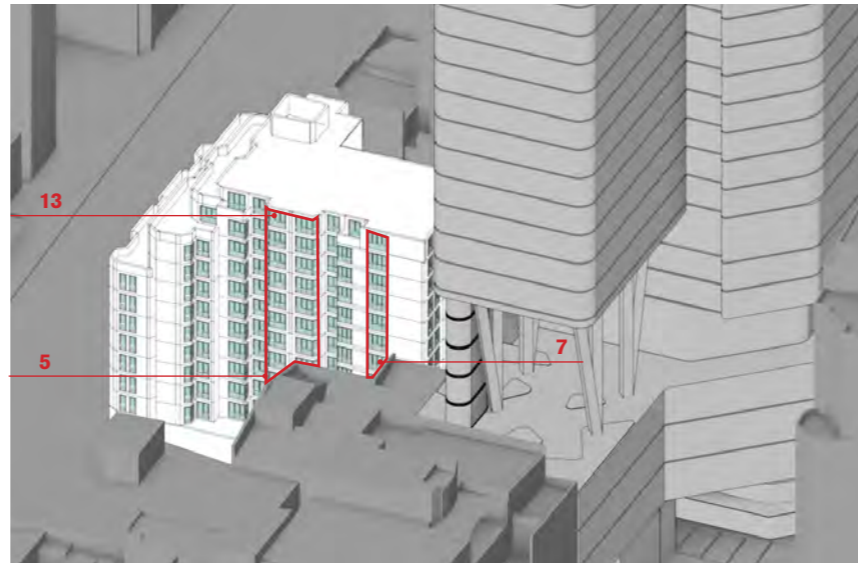


21st June 11:30am

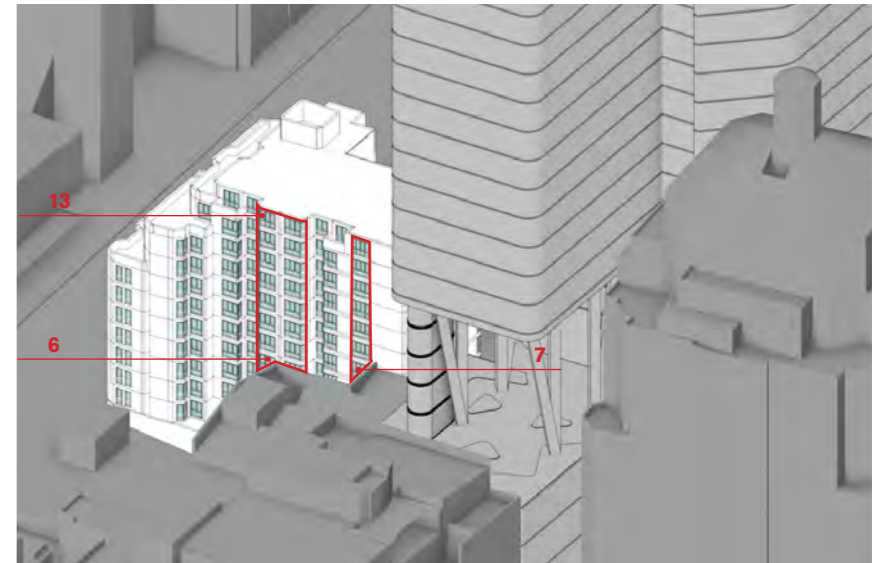
 Living Room Windows



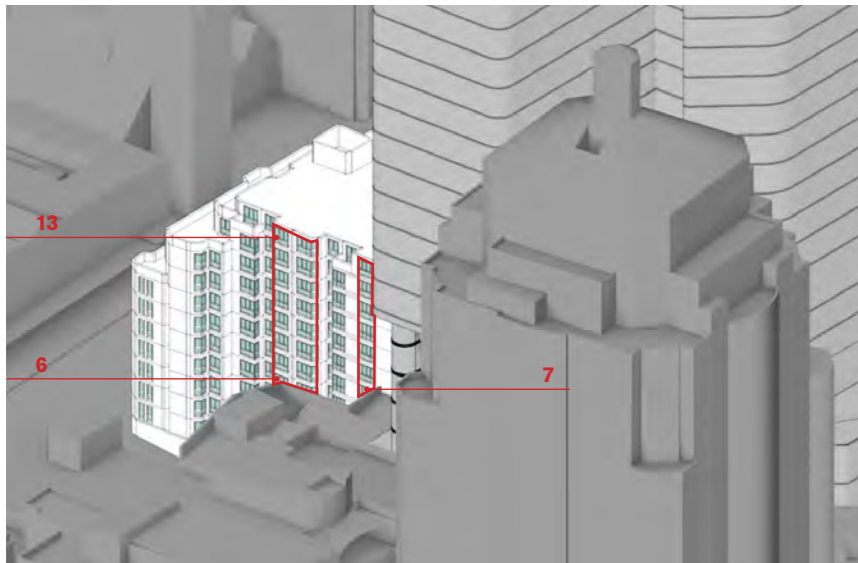
21st June 12:00pm



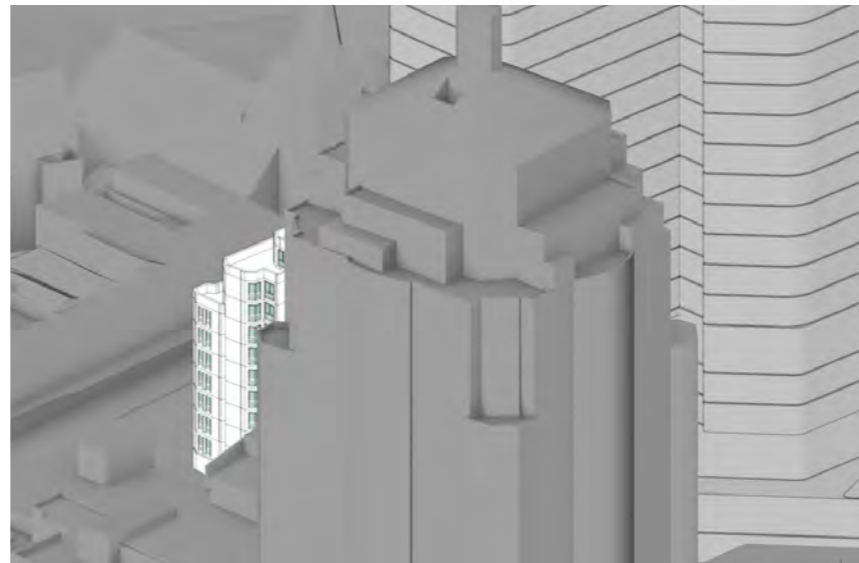
21st June 12:30pm



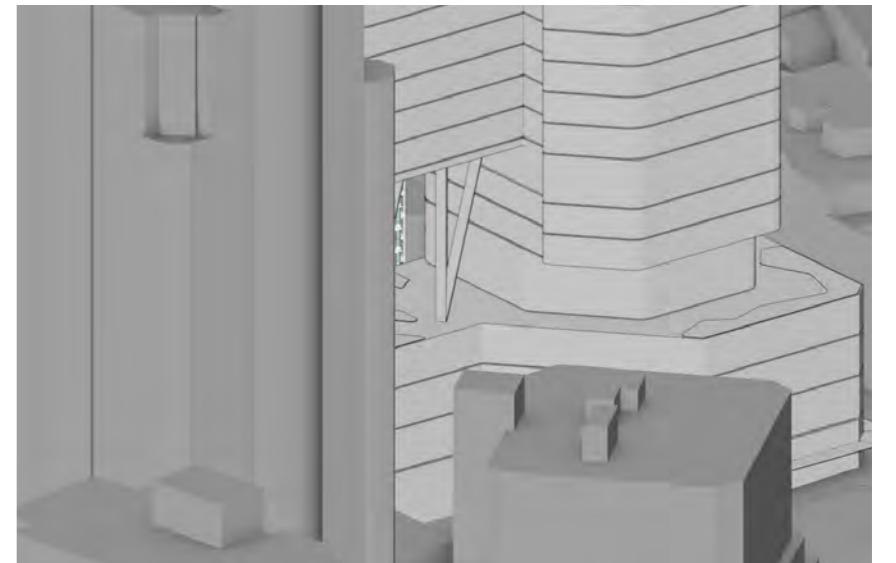
21st June 01:00pm




21st June 01:30pm

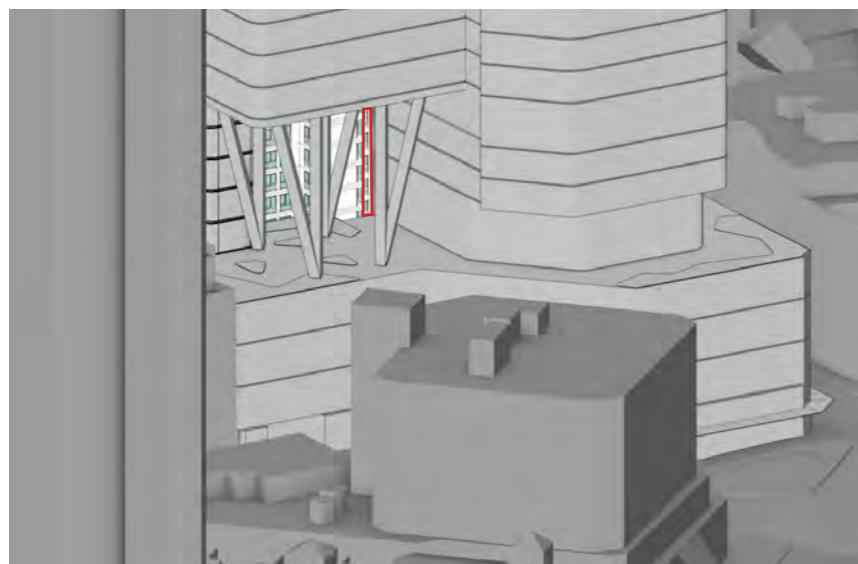


21st June 02:00pm



21st June 02:30pm

 Living Room Windows



21st June 03:00pm

Conclusion

The extent of solar access to apartments of 743-755 George Street has been measured in 30 minutes intervals.

The Proposed Dcp Envelope does not impact on 2 hours solar access of any apartments of 743-755 George Street between 9am and 3pm on 21st June.

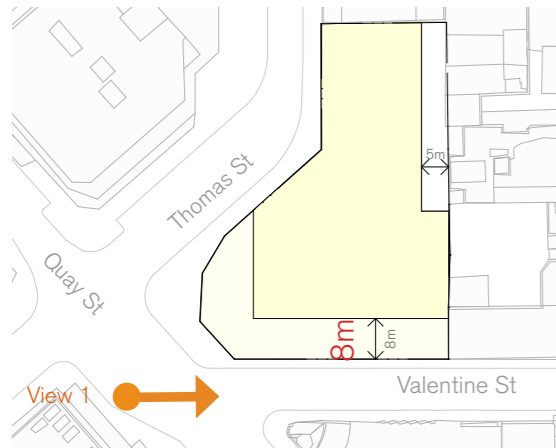
Further detailed analysis will be undertaken as part of a future Stage 2 detailed development application.

Under the Planning Proposal Central Sydney 2020, the protection of private amenities such as sunlight and views cannot be guaranteed within the Central Sydney's dynamic and dense development environment.

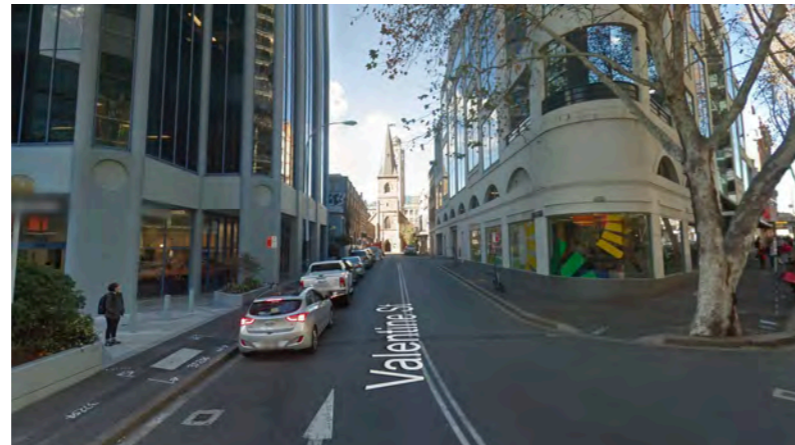
Regardless of the ability for commercial developments to impact private residential amenity under the draft DCP, the proposed development envelope does not reduce existing sun access to living spaces at 743-755 George Street below the ADG minimum of 2 hours in mid-winter.

Appendix L PUBLIC VIEW ANALYSIS

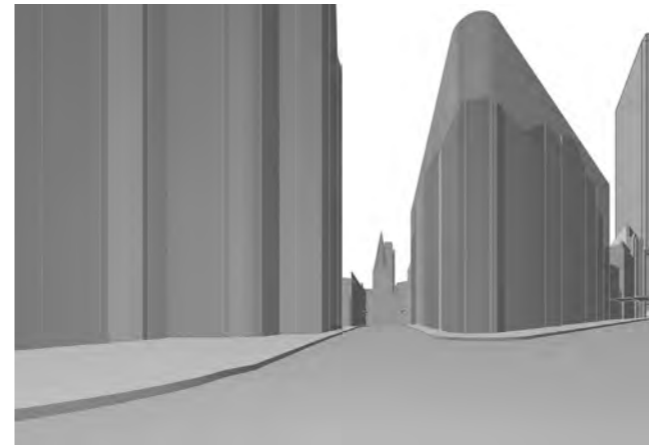
Valentine St View 1



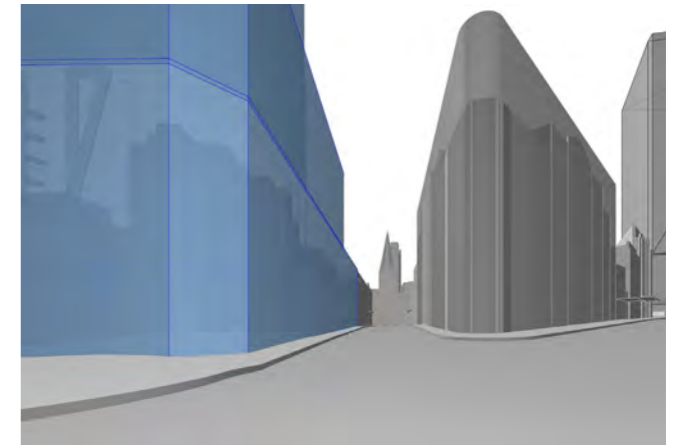
Plan - View 1



View 1 - Google Street View

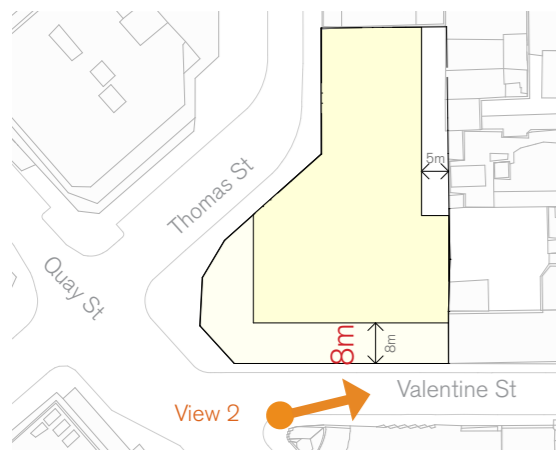


View 1 - Existing

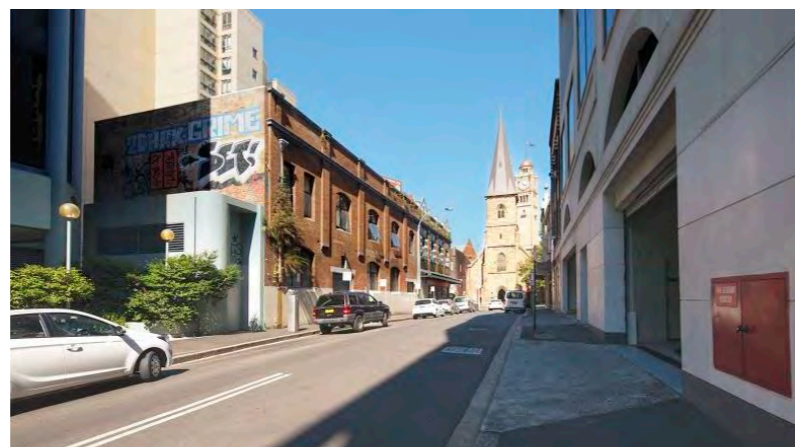


View 1 - Proposed Envelope

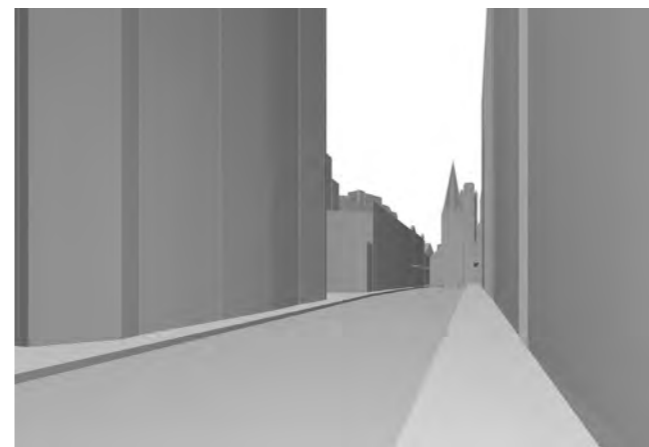
Valentine St View 2



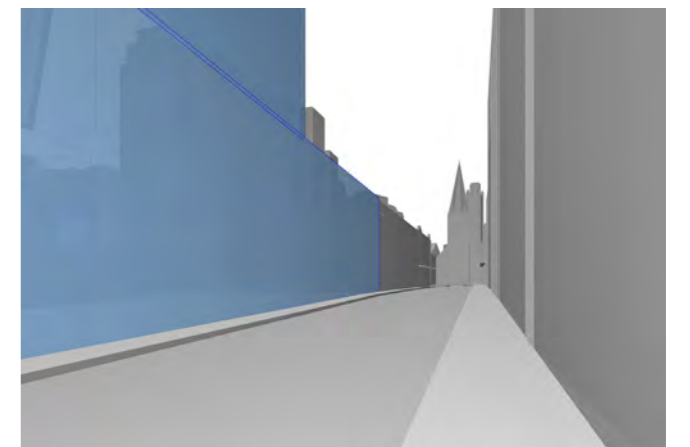
Plan - View 2



View 2 - Google Street View



View 2 - Existing



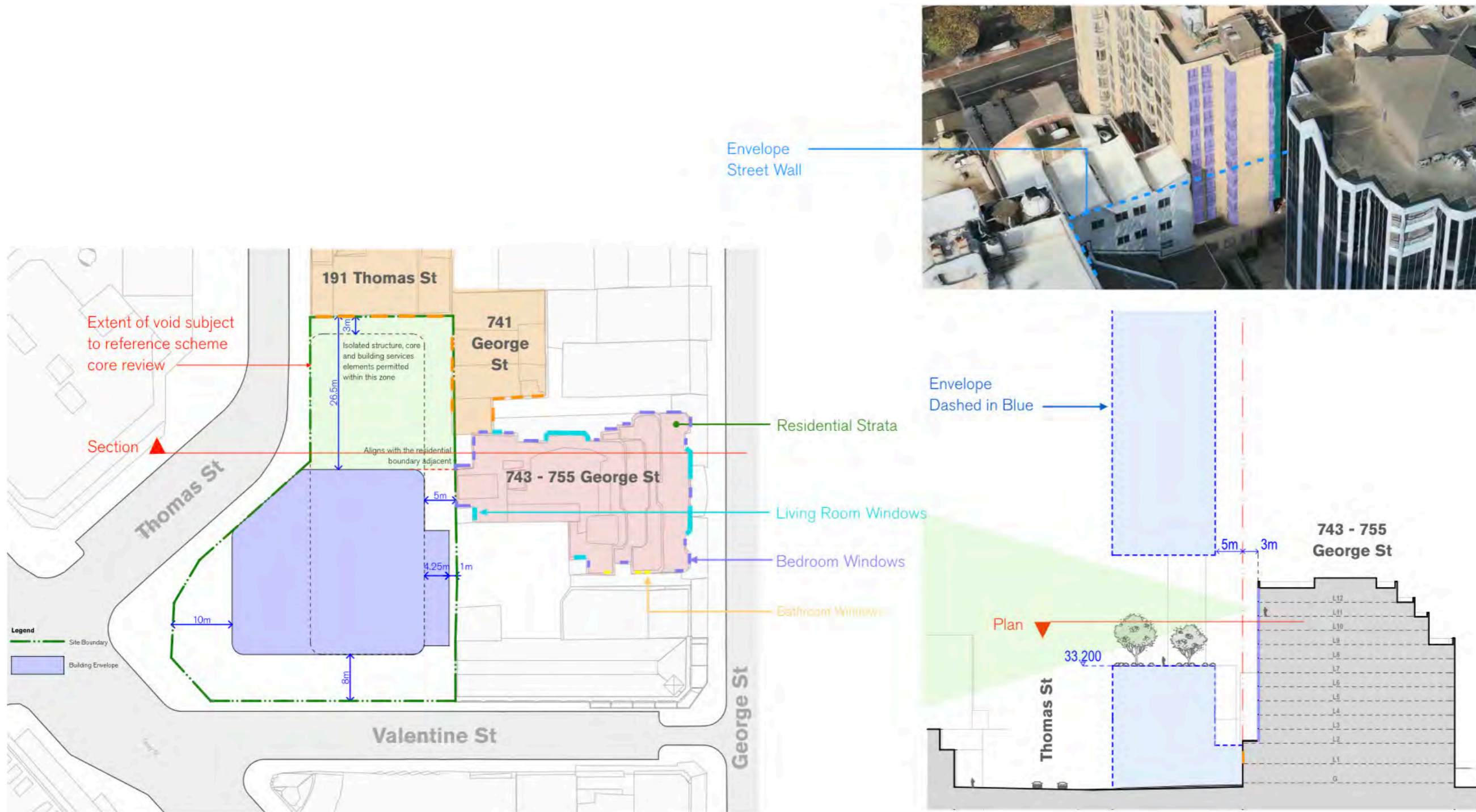
View 2 - Proposed Envelope

Appendix M PRIVATE VIEW ANALYSIS

Side Setbacks Adjacent Residential

743 - 755 George St West Facing

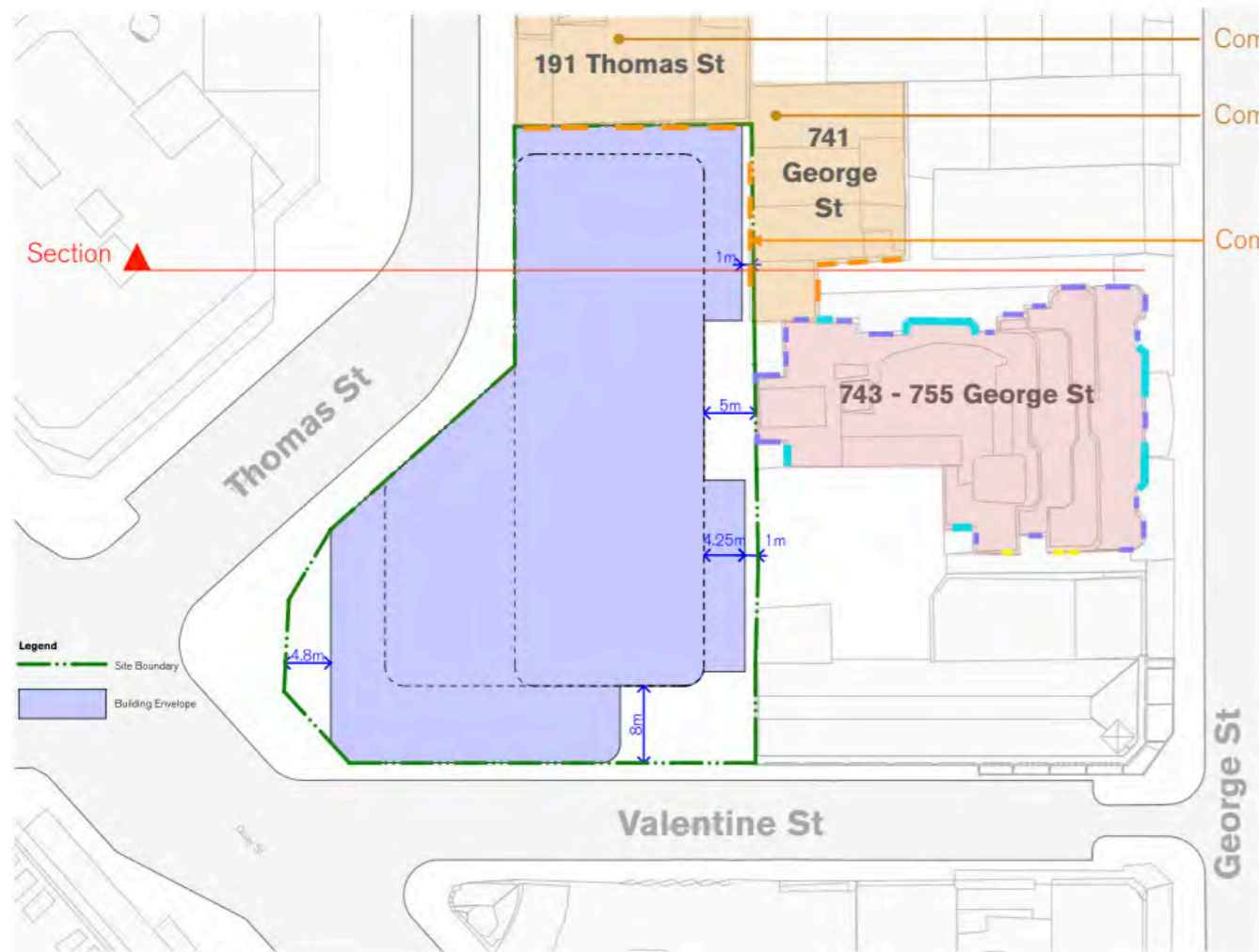
918



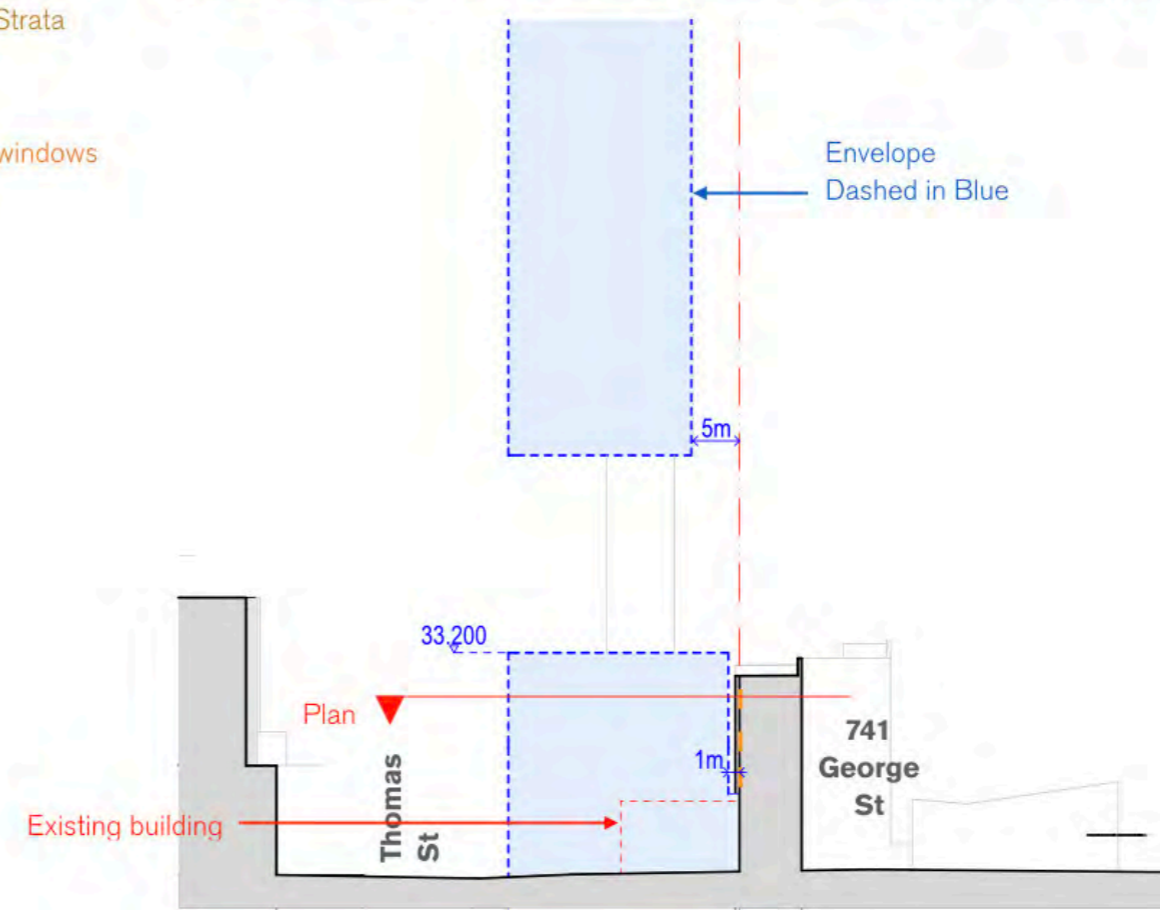
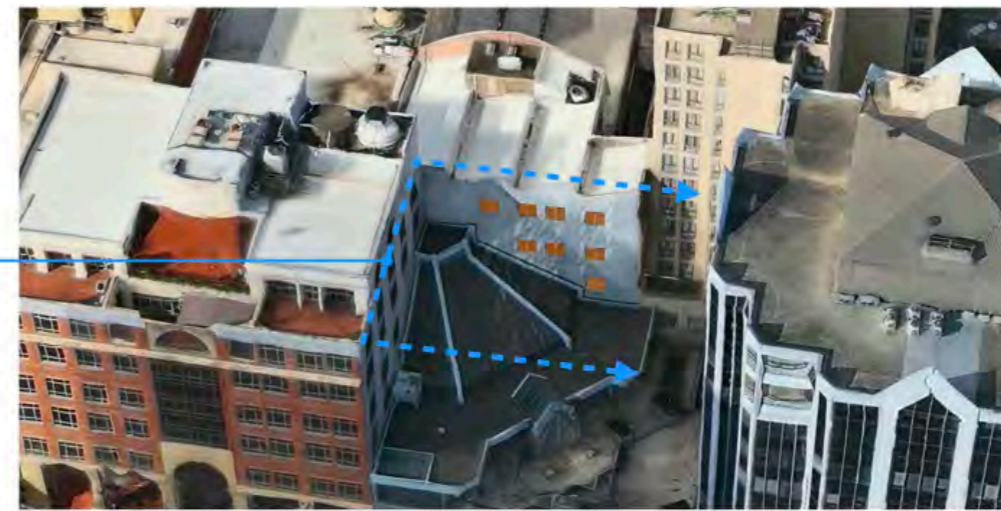
Side Setbacks Adjacent Commercial

741 George St West Facing

919

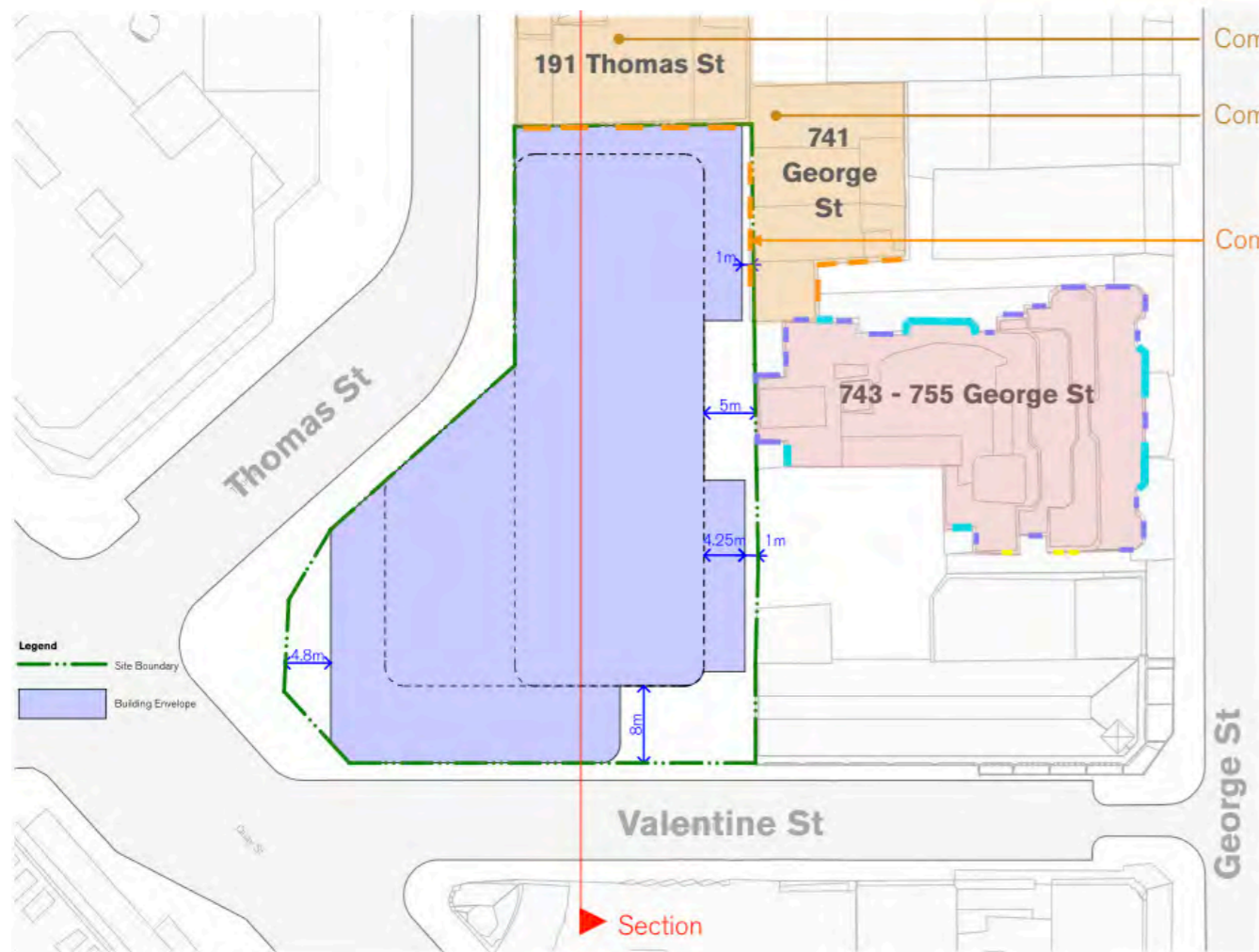


- Envelope Street Wall
- Commercial
- Commercial Strata
- Commercial windows

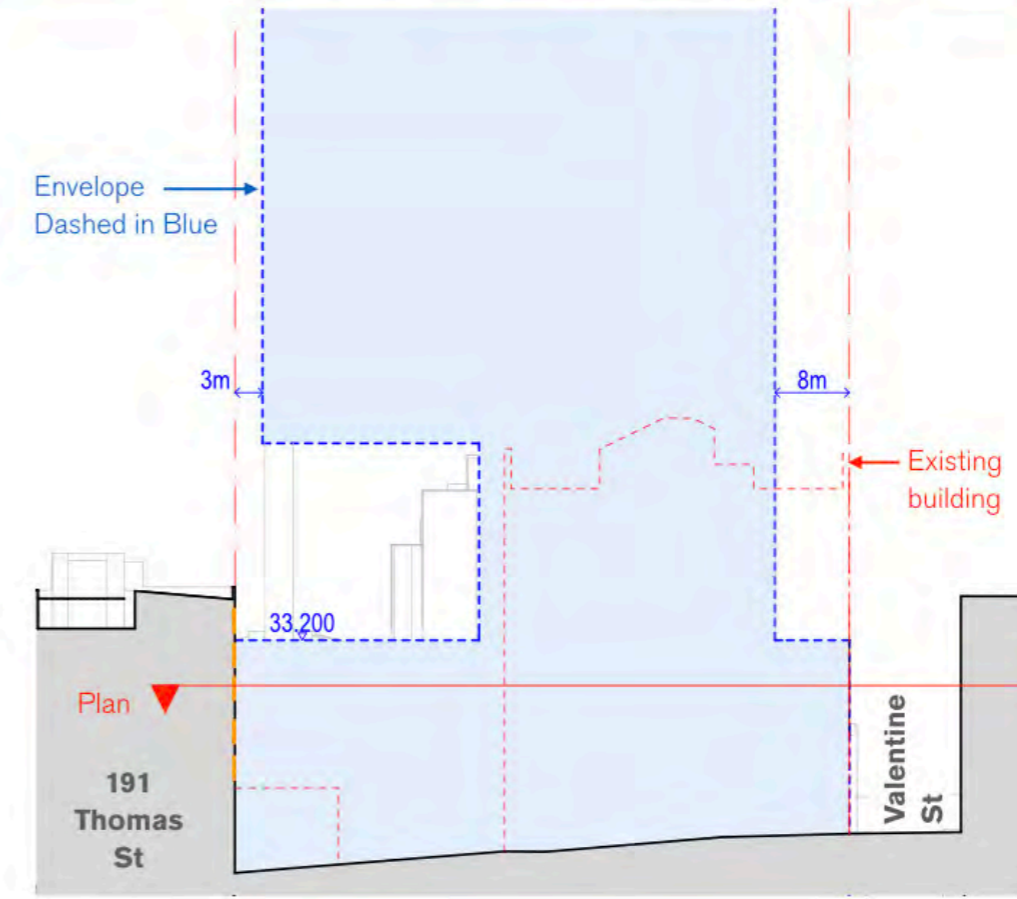
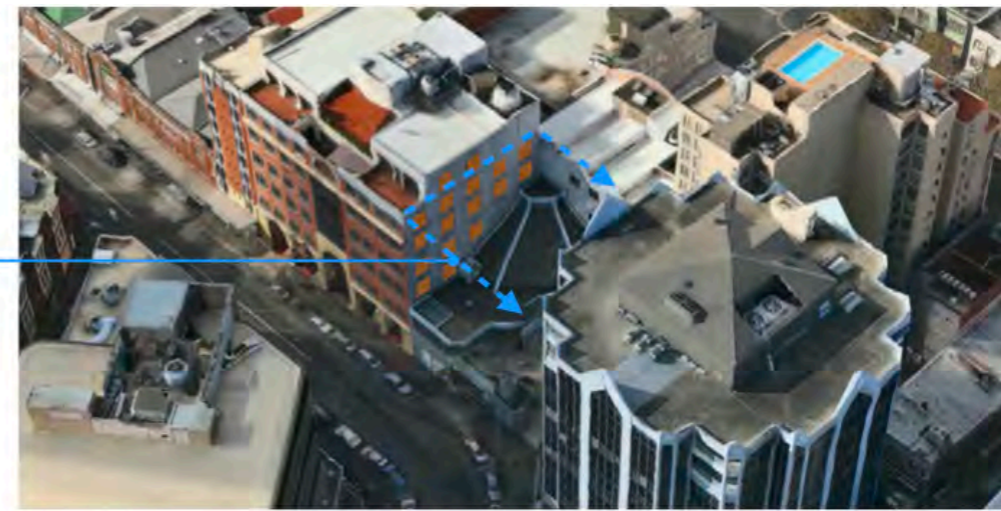


Side Setbacks Adjacent Commercial
191 Thomas St South Facing

920

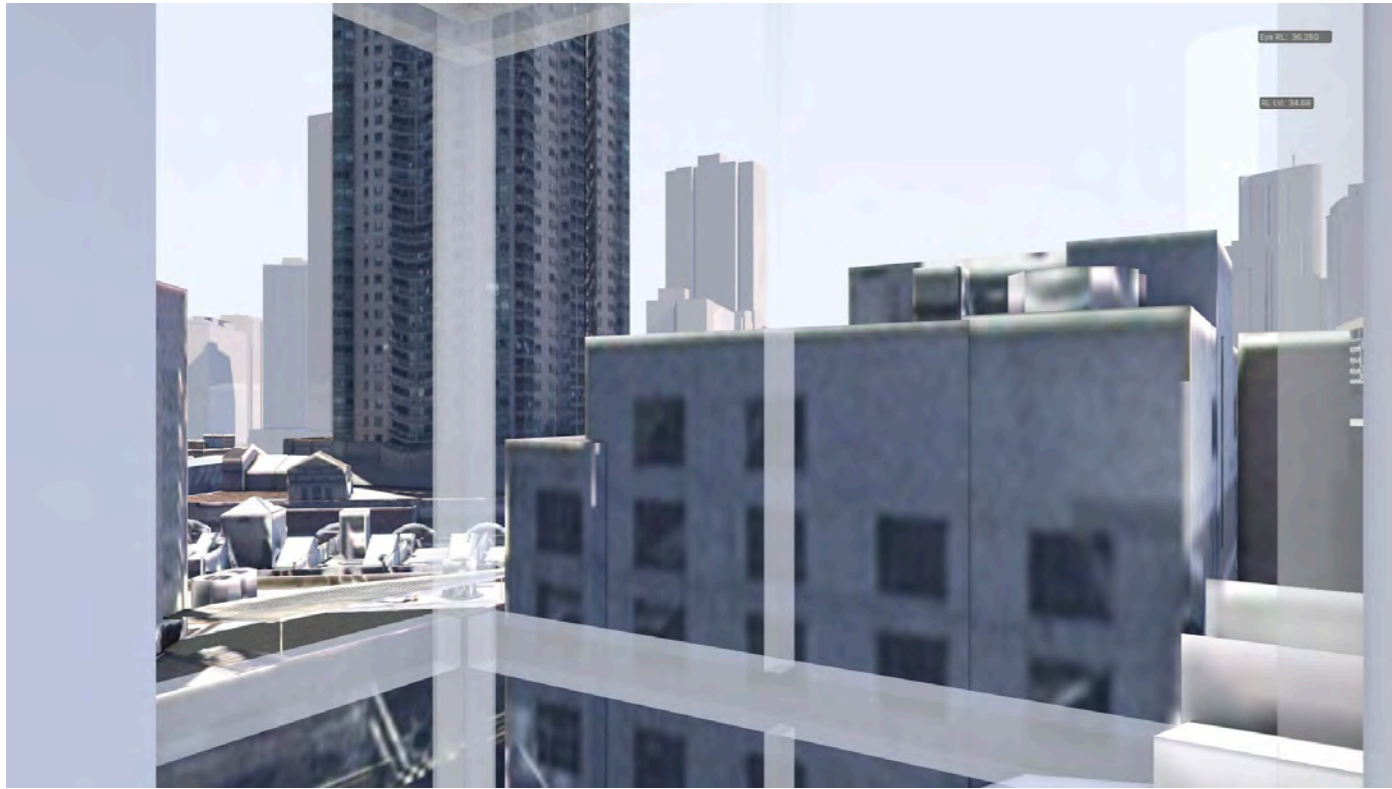


- Envelope Street Wall
- Commercial
- Commercial Strata
- Commercial windows

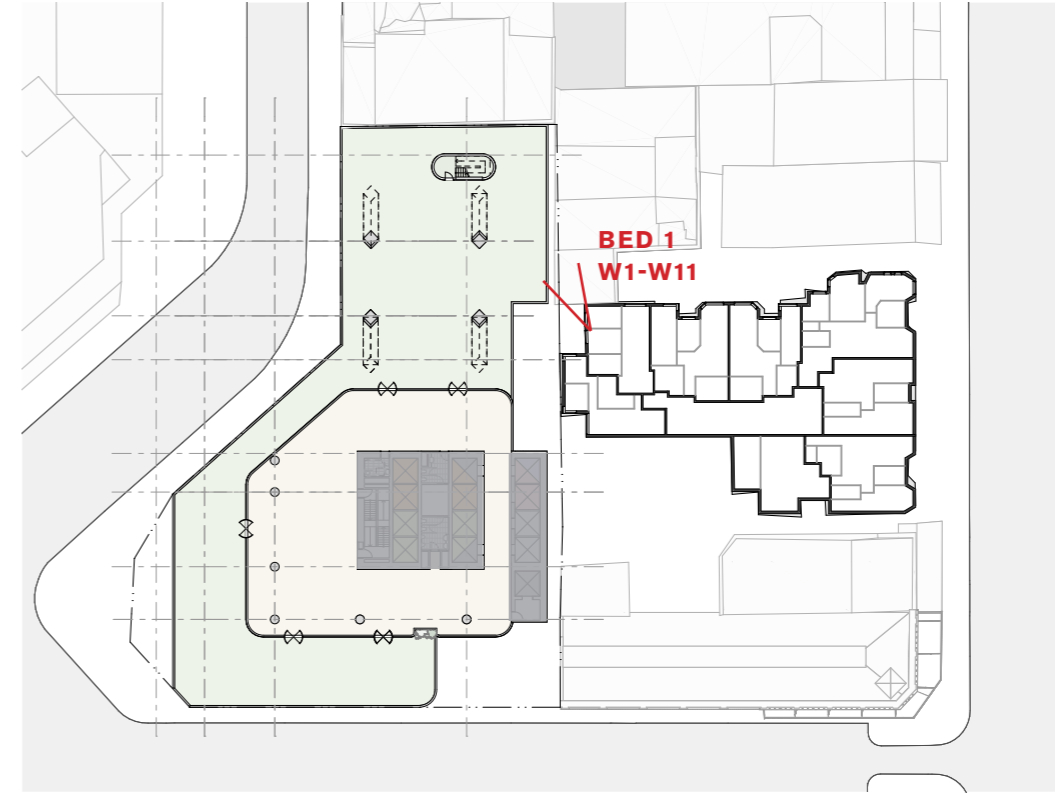


Neighboring View Study
743 - 755 George St

Existing View



Bedroom 1 W7



Site Plan

921

Proposed View

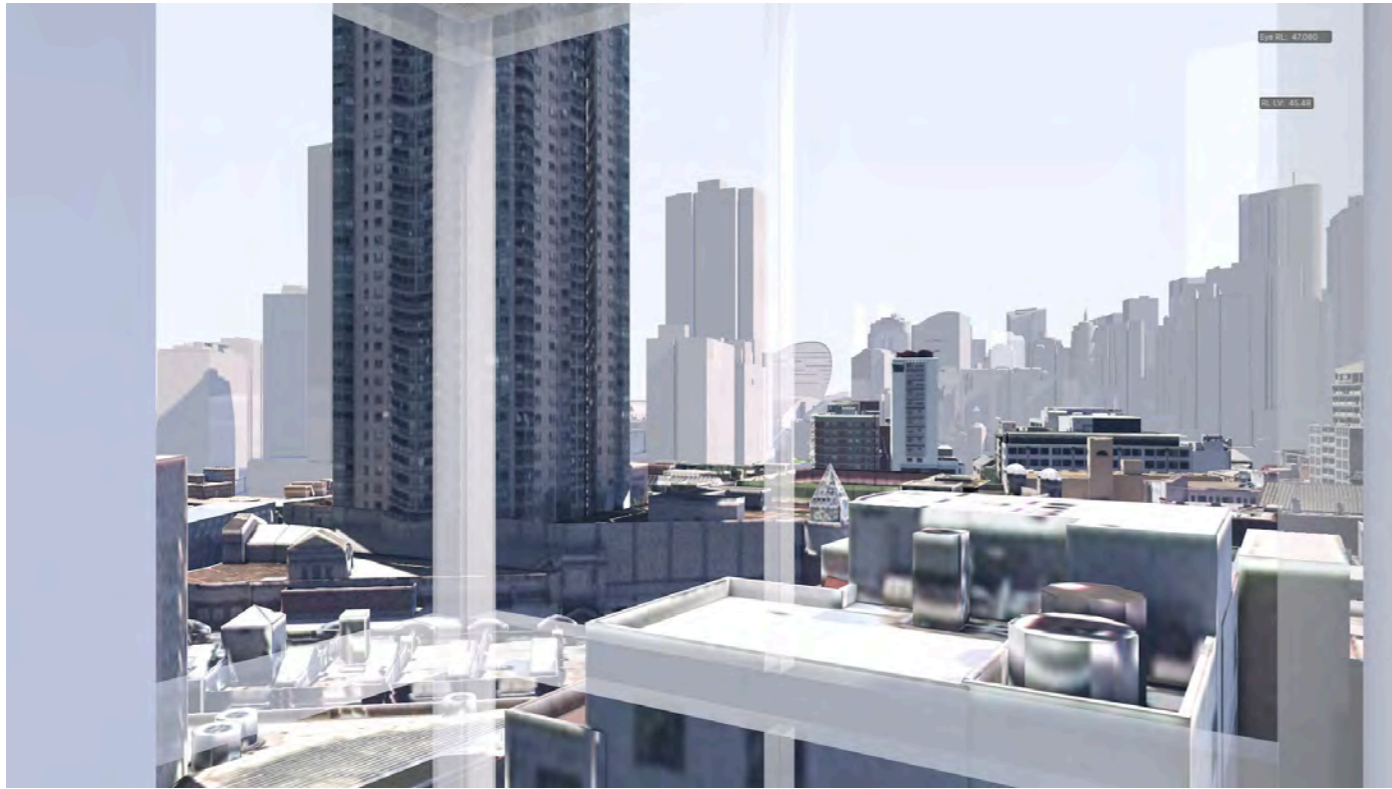


Bedroom 1 W7

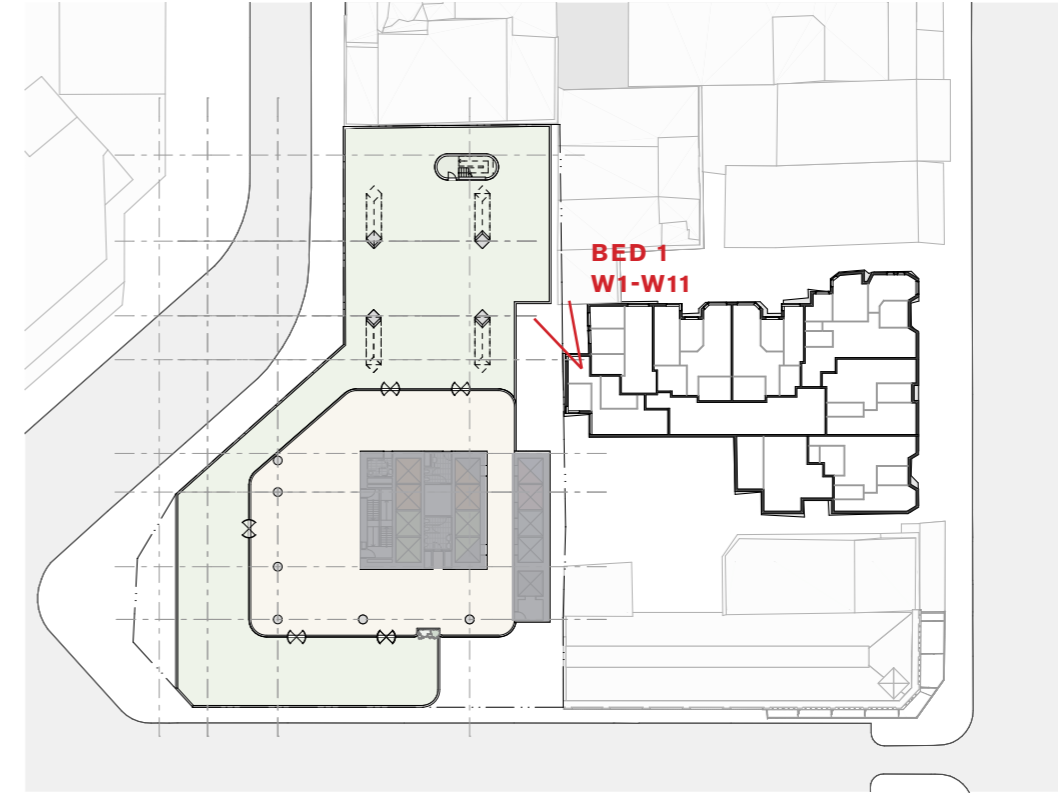


Key Elevation

Existing View



Bedroom 1 W11



Site Plan

922

Proposed View

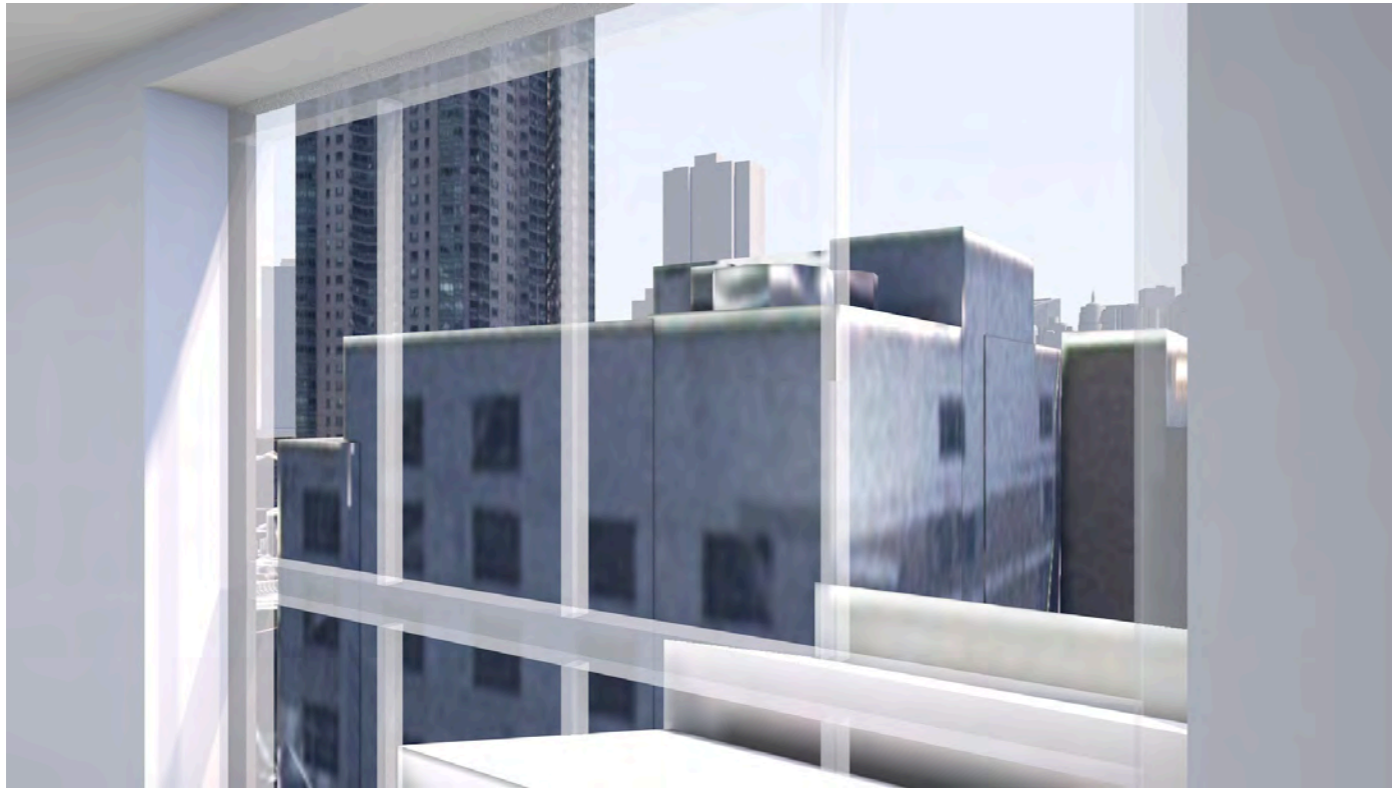


Bedroom 1 W11

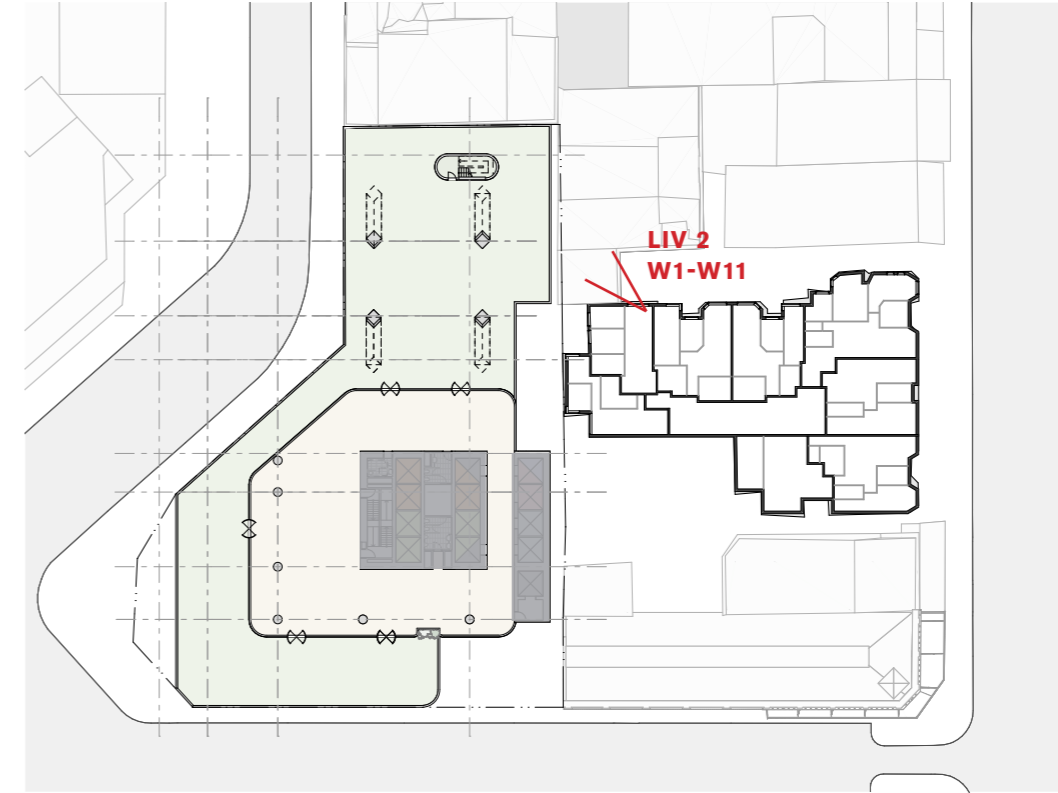


Key Elevation

Existing View



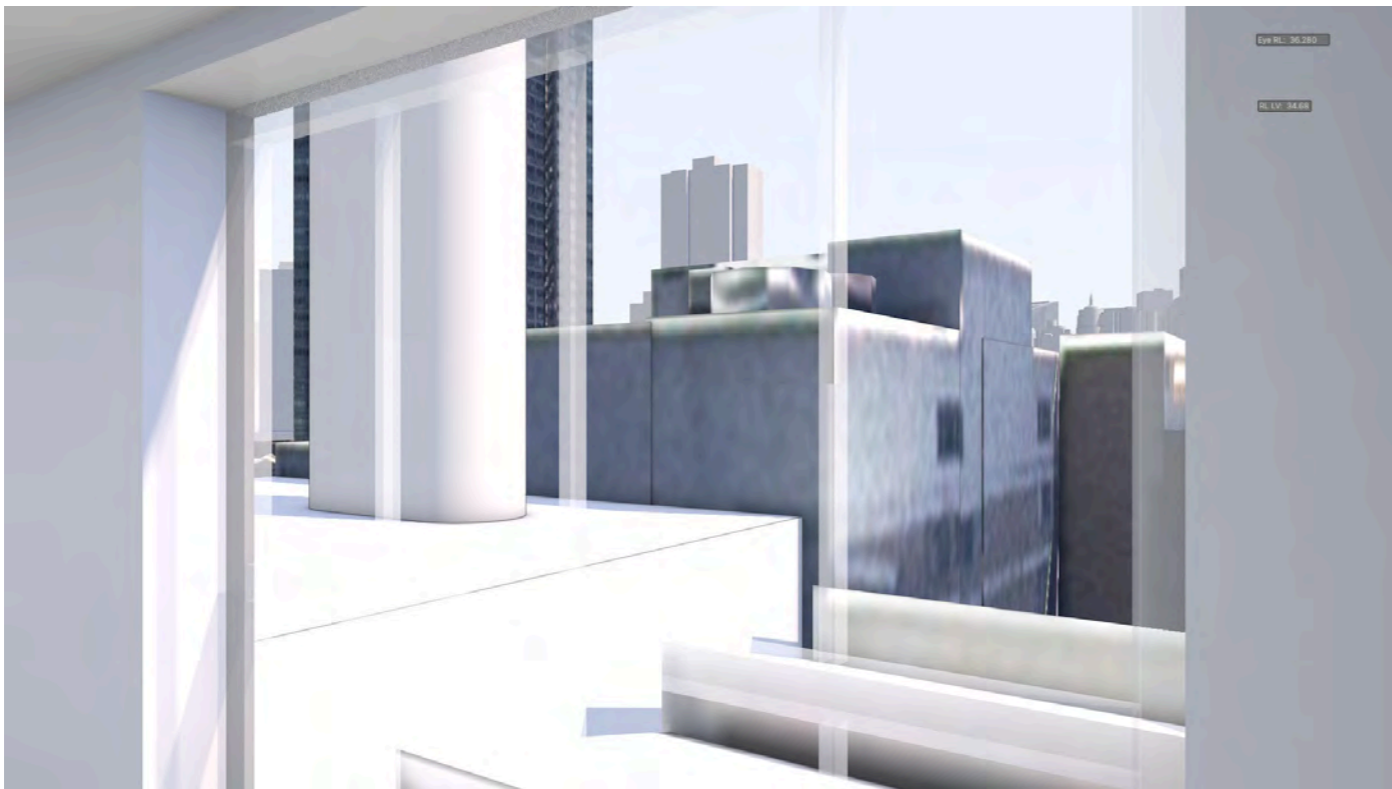
Living Room 2 W7



Site Plan

923

Proposed View



Living room 2 w7

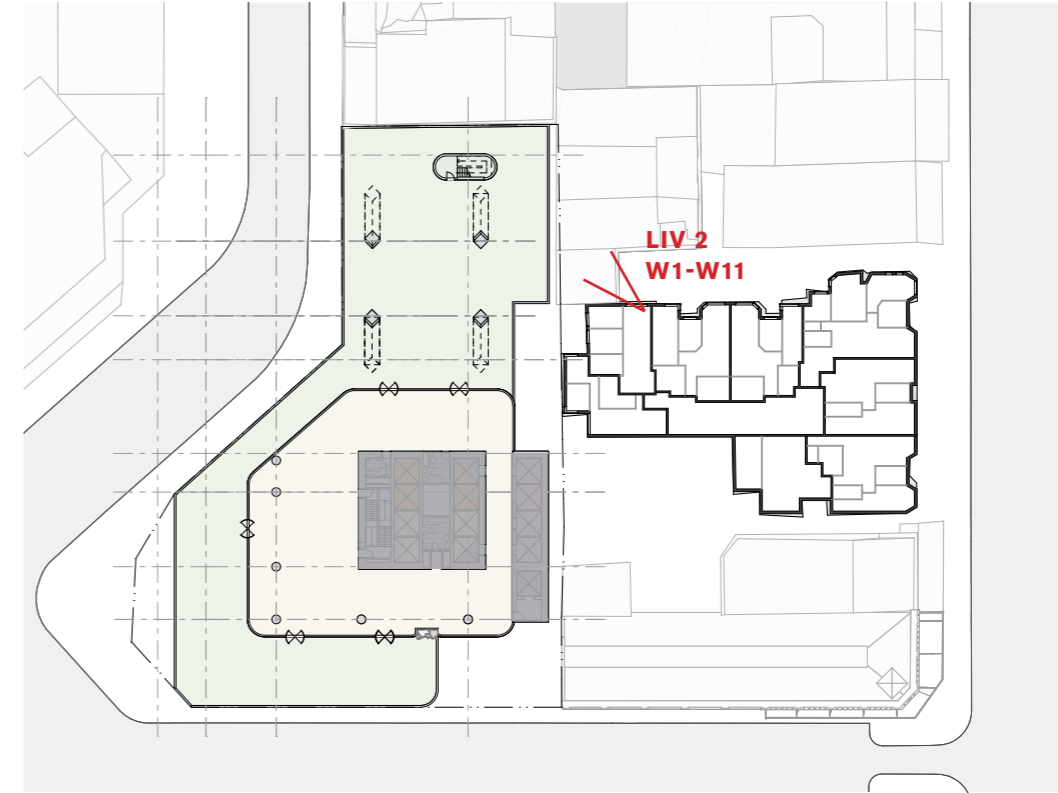


Key Elevation

Existing View



Living Room 2 W11



Site Plan

924

Proposed View



Living Room 2 W11



Key Elevation

Appendix N FUTURE POTENTIAL DEVELOPMENT ON ADJACENT BLOCKS

Setback and Future Potential Development on Adjacent Blocks

Any tower development for the site need to consider separation from other buildings.

The Draft CSPPS identifies sites with future potential and also identifies minimum setback for these sites.

From this an indication of building separation from future towers can be determined.

The separation from future tower envelopes across Thomas, Quay and Valentine Streets are all greater than 24m.

925



Built Form Capacity Study - Draft CSPPS Appendix B



CSPPS Identified Neighbouring Sites And Potential Future Envelopes

Future Potential Development on Block 153 North

The following is a high level study of the remaining capacity of 'Draft CSPA Appendix B Built form Capacity Study. Identified Site 153,' once 187 Thomas St site has been removed.

A massing has been developed under the following assumed constraints:

- Single site amalgamation for the remainder of Block 153 to the north of 187 Thomas St
- The podium and street wall heights vary to align with heritage buildings on George St, Ultimo Rd and Thomas St
- 8m street setbacks to Thomas St and Ultimo Rd, with an increased 20m setback to George St as proposed by this 187 Thomas St proposal
- No additional built form over the existing heritage buildings as per Draft CSPA controls, resulting in two tower zones
- The southern zone is assumed to be an unfeasible tower location due to constraints including irregular geometry, small floor plate size after setbacks, and ADG considerations to the north facing living spaces of Capitol Terrace.
- A tower is located in the northern zone conforming with setbacks, height constraints and tapering controls

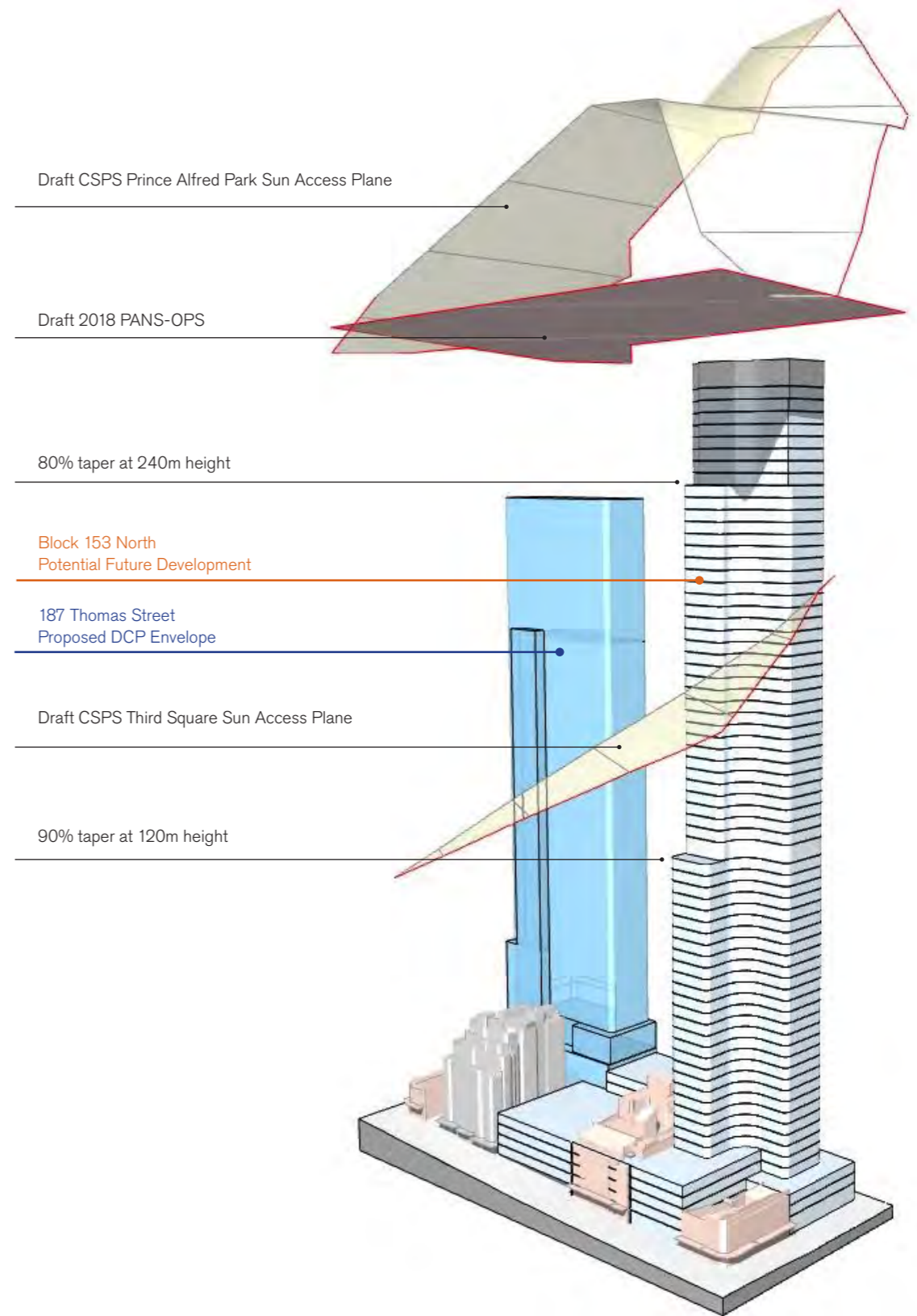
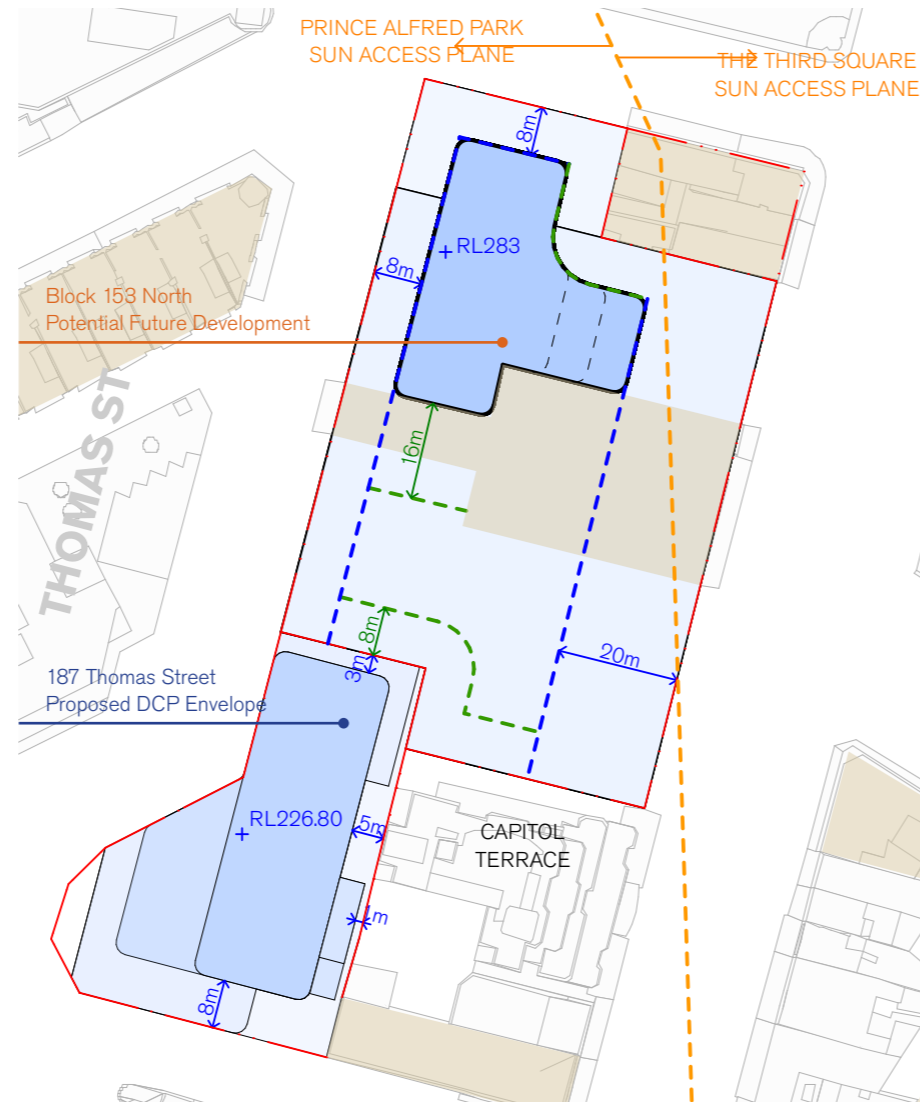
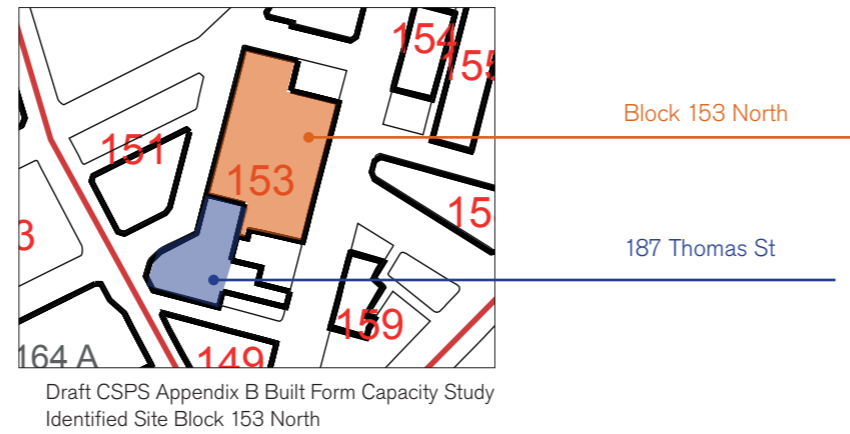
The resulting massing yield estimate is as follows. These figures may vary based on further investigation into site constraints, potential variations of controls and use mix.

BLOCK 153 NORTH POTENTIAL FUTURE DEVELOPMENT

Site Area: 6,150m²

GFA: approx 80,000m²

FSR: 13:1

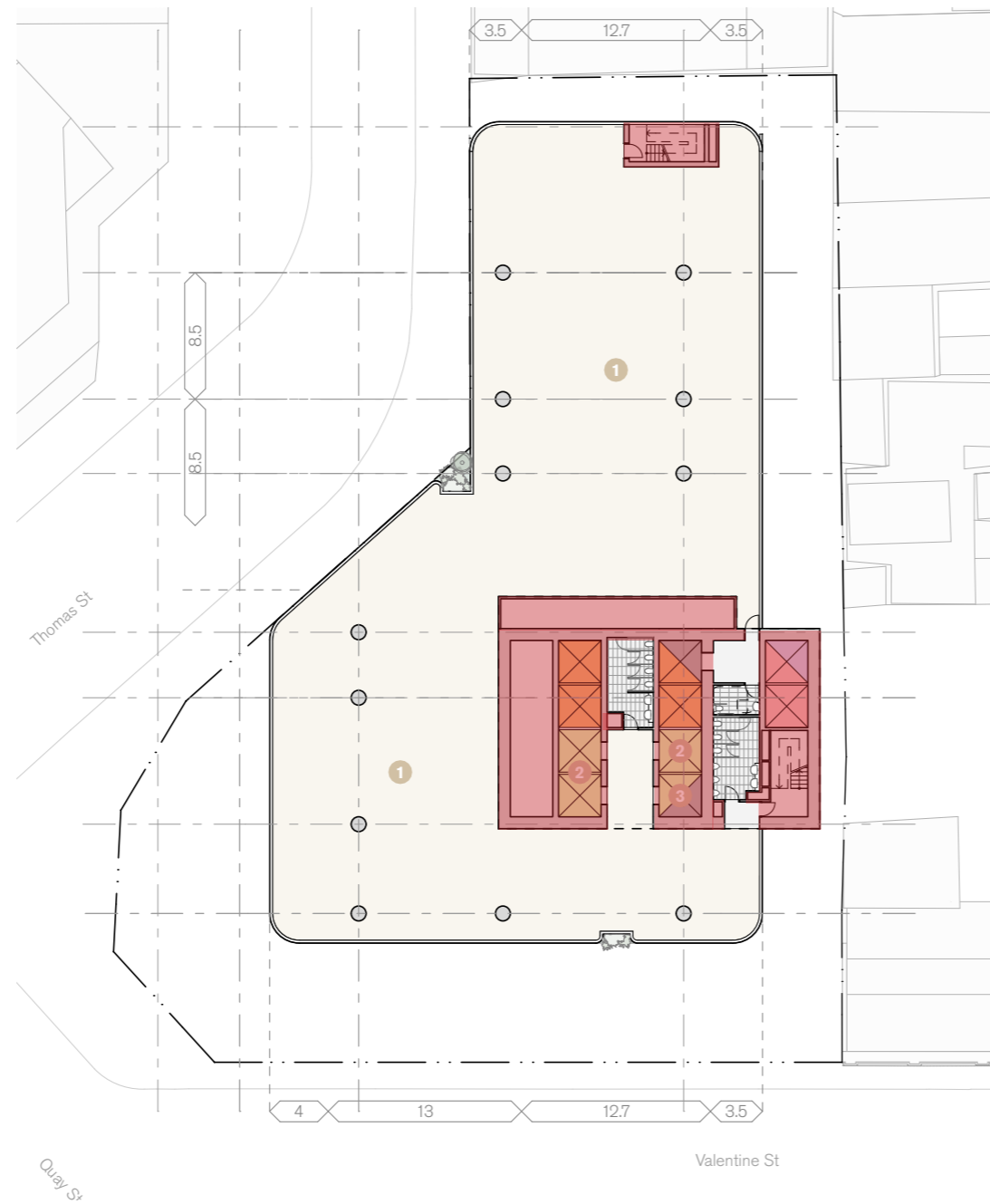


Appendix O FLOOR SPACE EFFICIENCY STUDY

Double-Deck Lifting Study

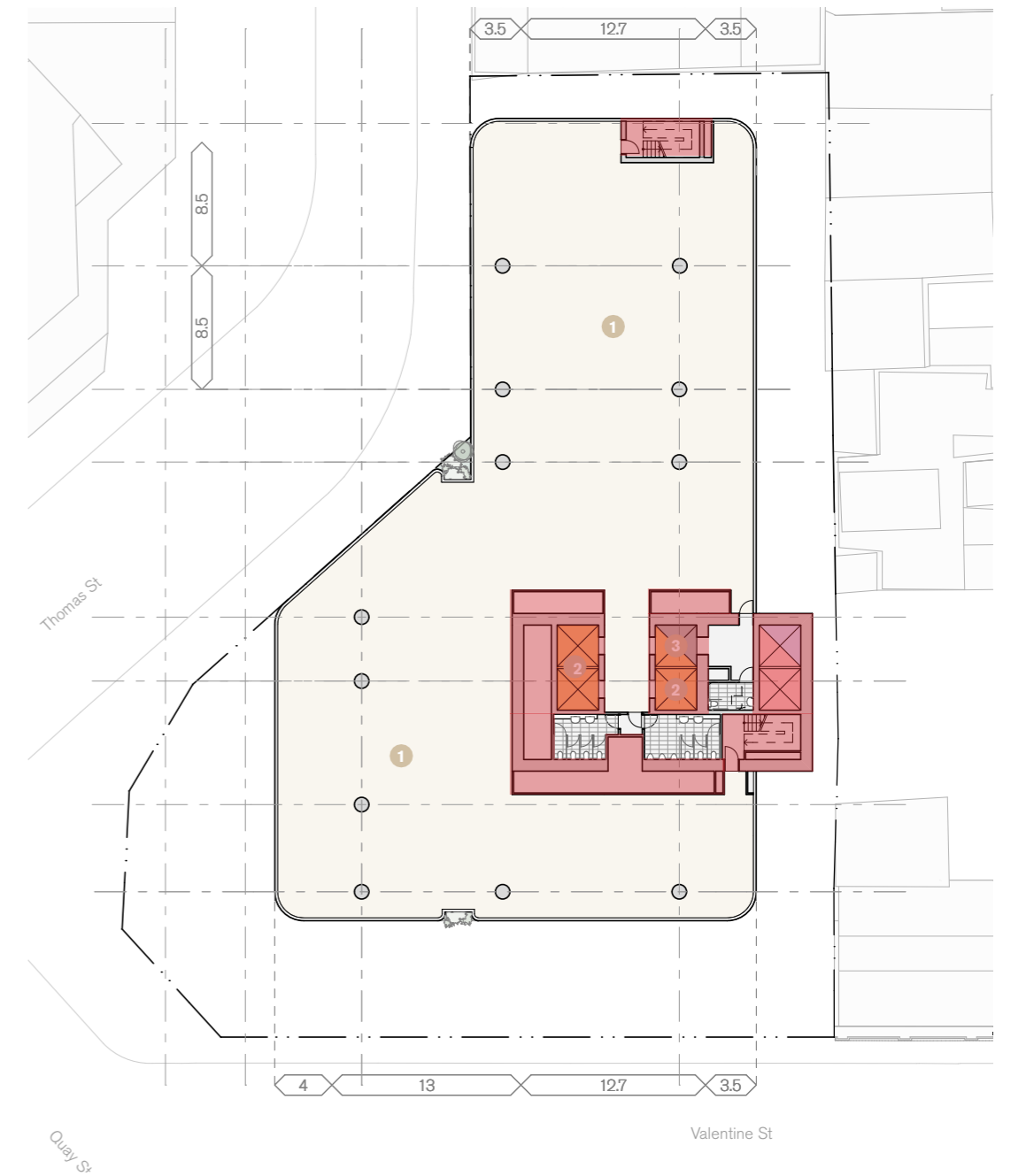
Indicative GFA/GBA Efficiency
 51714sqm /70106sqm = 73.8%

927



Low Rise Commercial Floor Plan

GBA (Low Rise Commercial Per Floor)= 1502 sqm
 Core (Low Rise Commercial)= 269 sqm
 CORE/GBA= 269/1502 = **17.9%**



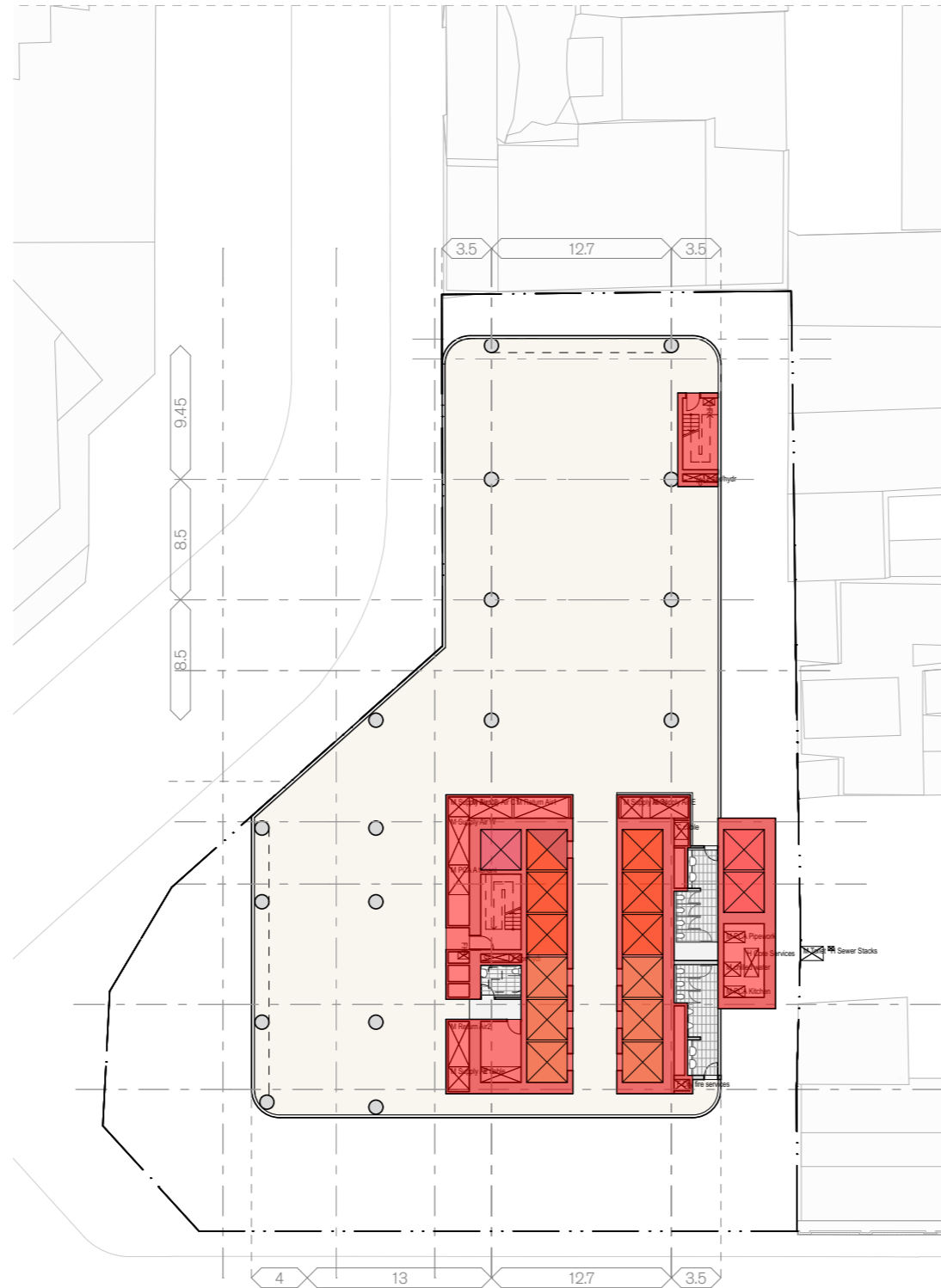
High Rise Commercial Floor Plan

GBA (High Rise Commercial Per Floor)= 1498 sqm
 Core (High Rise Commercial)= 235 sqm
 CORE/GBA= 235/1498 = **15.7%**

Core Area

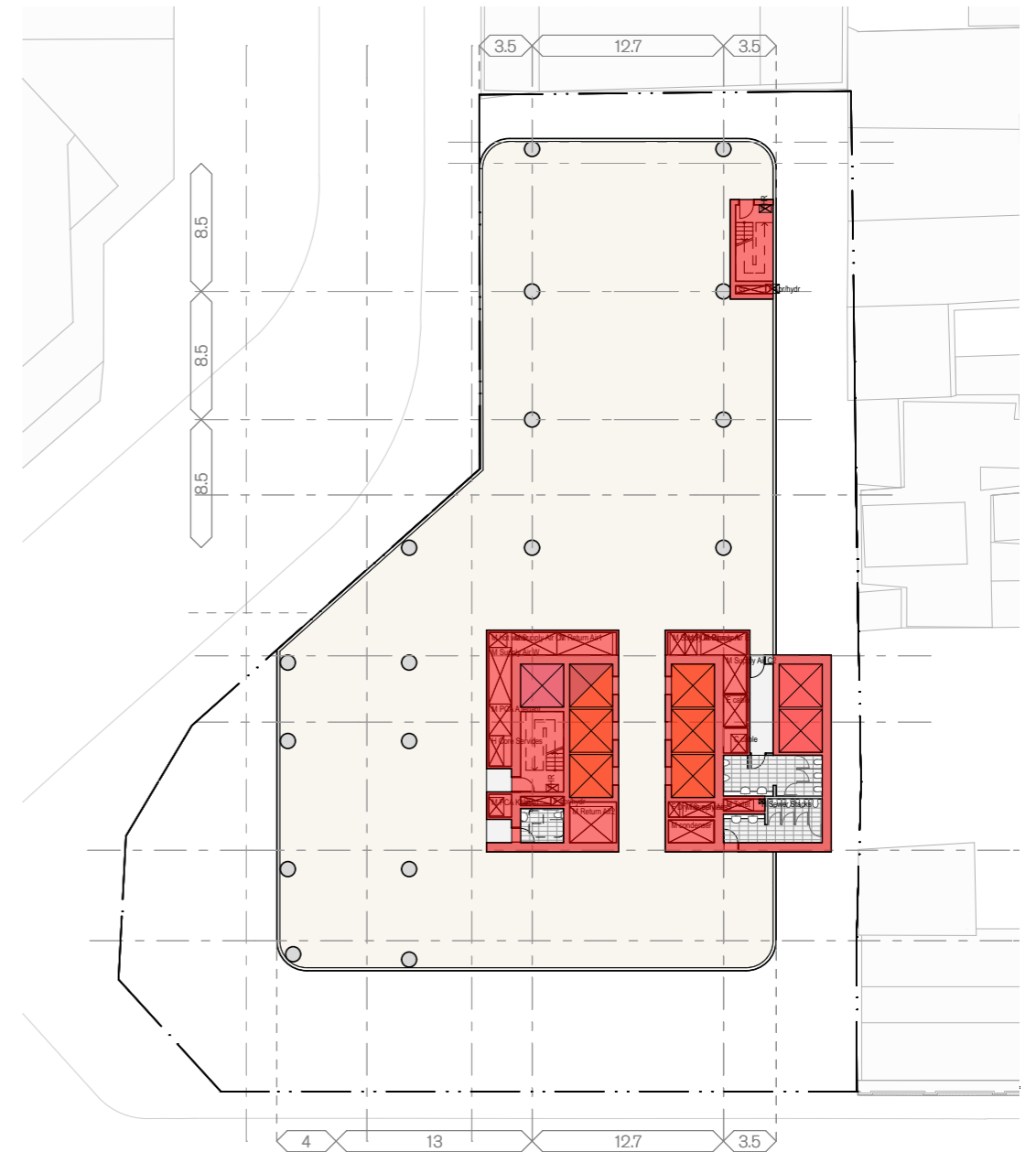
Conventional Lifting Study

Indicative GFA/GBA Efficiency
 56849sqm /78095sqm= 72.7%



Low Rise Commercial Floor Plan

GBA (Low Rise Commercial Per Floor)= 1502 sqm
 Core (Low Rise Commercial)= 346 sqm
 CORE/GBA= 346/1502 = **23.0%**
 => 5% increase compared to stacked lifting



High Rise Commercial Floor Plan

GBA (High Rise Commercial Per Floor)= 1498 sqm
 Core (High Rise Commercial)= 244 sqm
 CORE/GBA= 244/1498 = **16.3%**
 => 1% increase compared to stacked lifting

Core Area

Floor Efficiencies Benchmarks
200 George Street, Sydney

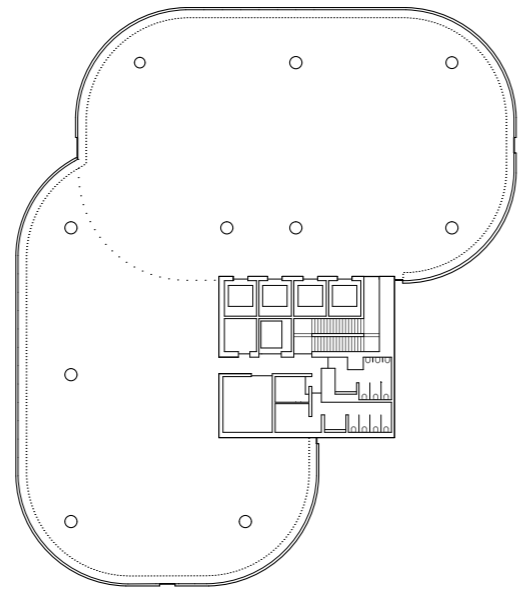


Office Building, Sydney, Australia, Completed 2016

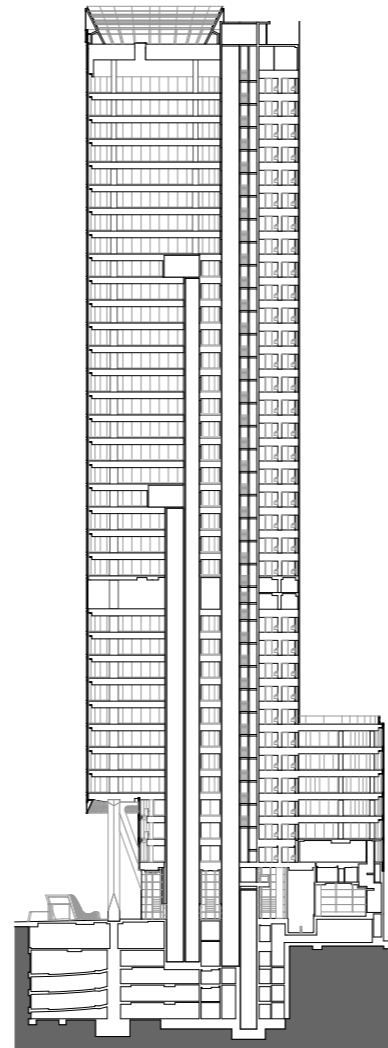
Architects: Francis-Jones Morehen Thorp

- 37 storeys
- PCA premium grade
- 6-star Green Star Office Design

Indicative GFA/GBA Efficiency
 43078sqm / 63372sqm = 68%



Typical floor plan



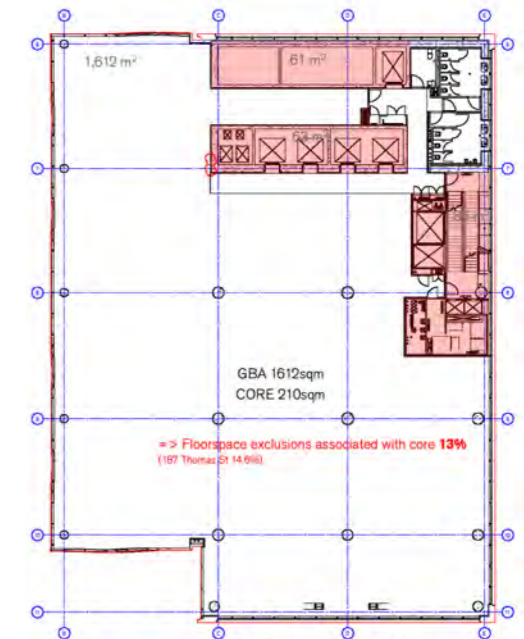
Section

Floor Efficiencies Benchmarks
80 Collins Street, Melbourne



Indicative GFA/GBA Efficiency

1402 sqm / 1612 sqm = 86.9%



Typical floor plan

Floor Efficiencies Benchmarks
4-6 Bligh Street, Sydney



Office/Hotel Building, Sydney, Australia

Planning Proposal 2018,
 Reference Design by Architectus

- 55 storeys

- site area 1,217.8sqm

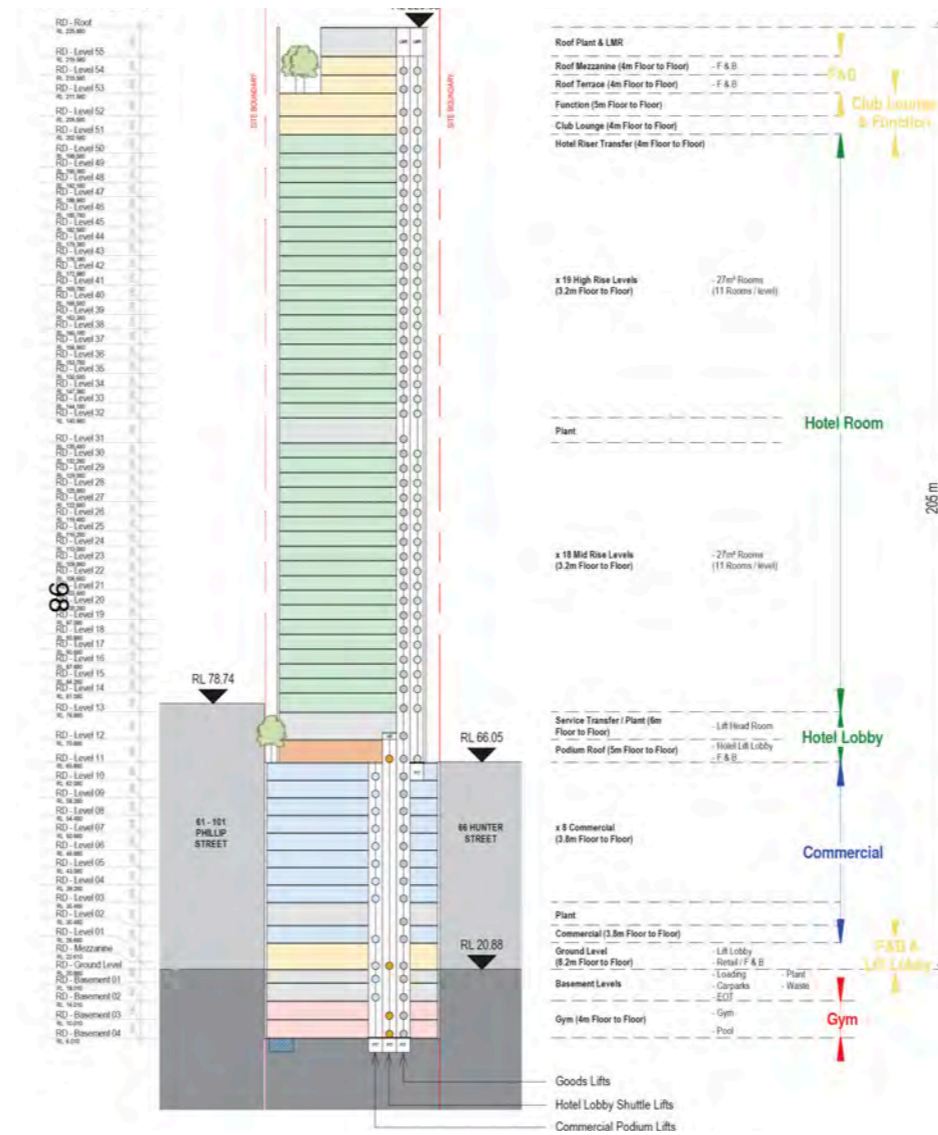
- FSR sought in planning proposal 22:1

Indicative GFA/GBA Efficiency

26792sqm /39153sqm = 68.4%



Typical floor plan



Section

Appendix P ARCHITECTURAL ARTICULATION & EFFICIENT BUILDING ENVELOPE DESIGN

Architectural Articulation

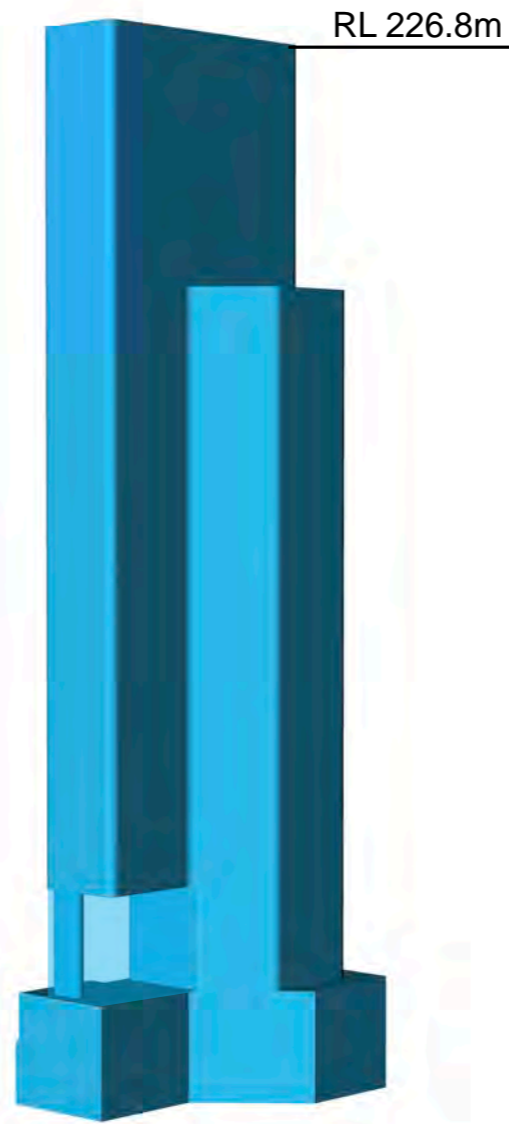
The reference design includes a heavily articulated envelope. Major building setbacks are at level 8, level 22 and level 48 with additional setback floors at levels 4 and 37. A large void spanning over 4 levels and vertical gardens to multiple facades provide further articulation.

Increased floor to floor heights at ground, level 2, 3 and sky lobby visually break up the facade and allow for additional flexibility in the envelope.

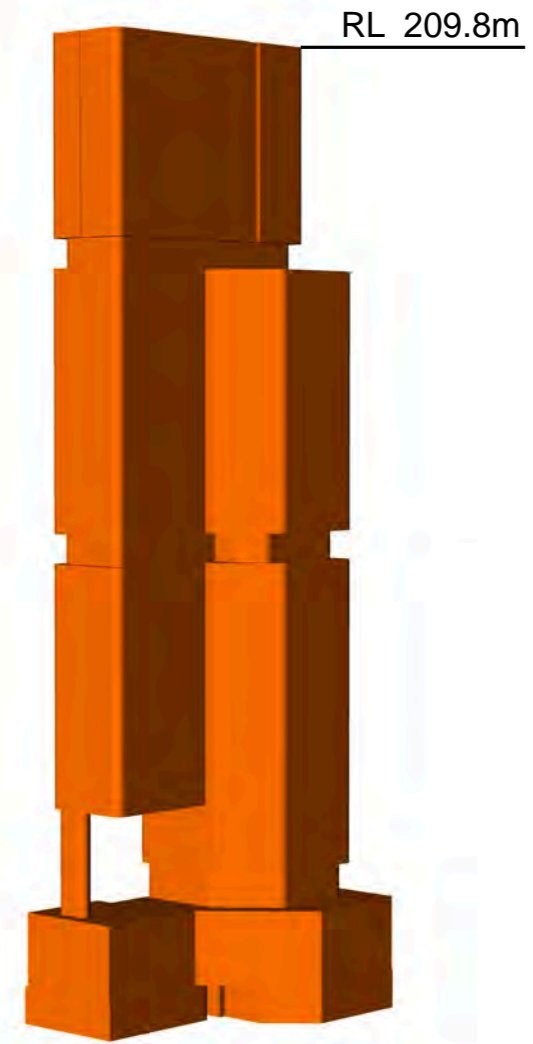


 Architectural Articulation

931



Proposed DCP Envelope



Preferred Indicative Scheme (FSR 22:1)

Proposed DCP Envelope

320849 m3

Preferred Indicative Scheme (FSR 22:1)

272,540 m3

Occupancy Ratio

84.9%

Architectural Articulation

15.1%

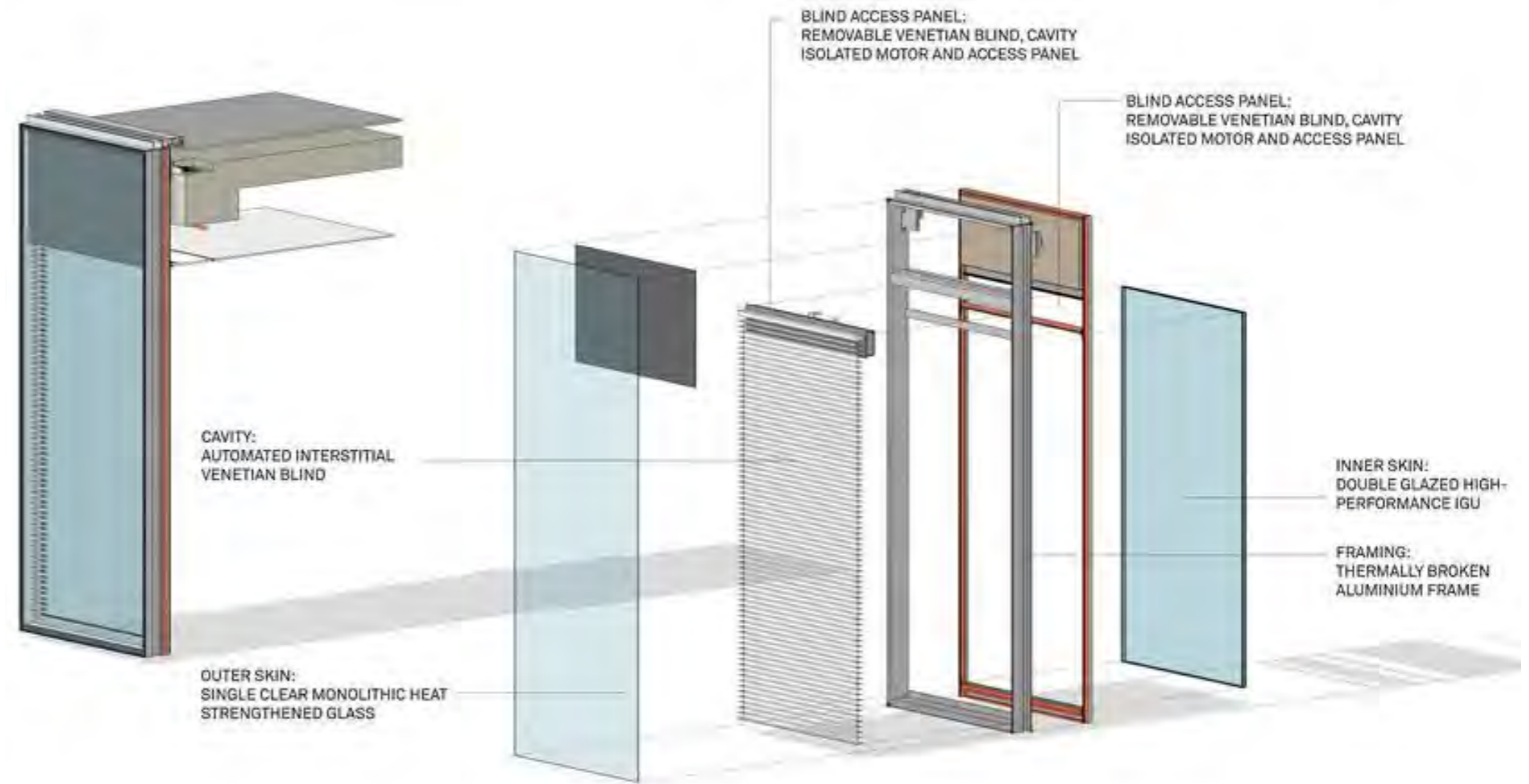
Closed Cavity Façade System

The 750mm benchmark dimension for façade zone assumes a naturally ventilated double skin façade (DSF) or similar. These systems typically comprise of a low-iron exterior pane of glass and an interior DGU skin with low-e glazing and thermally broken frames. The two skins are separated by an open air cavity (600mm) with blinds, naturally ventilated by air passing through a void at the bottom and top of each floor plate. Air passes through the cavity, cooling the temperature before being expelled through another void at the top of the ceiling slab.

A Closed Cavity Façade (CCF) on the other hand that has a sealed and pressurised cavity rather than a naturally ventilated one. It is designed to have a slight leakage so a small amount of dehumidified pressure can be pumped into the cavity to stop the ingress of dust.

The CCF allows a significantly reduced thickness of the façade zone - (150-200mm which effectively sits within the depth of a traditional commercial DGU façade system). It uses less material and is effectively cheaper, but also delivered the performance of the naturally ventilated double skin system.

As the typical floor plate for this reference scheme is relatively small a CCF is proposed in order to use the floor space in the most efficient way.



Appendix Q ENVELOPE EFFICIENCY & ALIGNMENT WITH DRAFT COUNCIL DCP ASSUMPTIONS



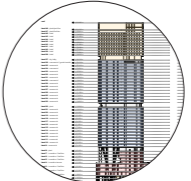
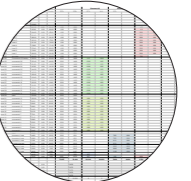
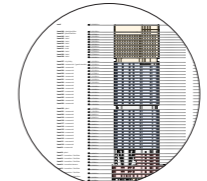
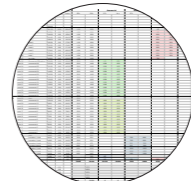
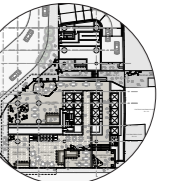
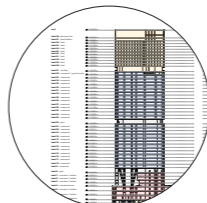
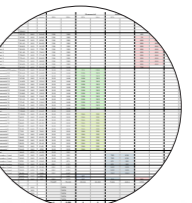
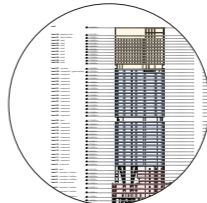
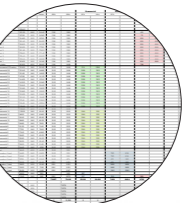
DRAFT CSPS 2020

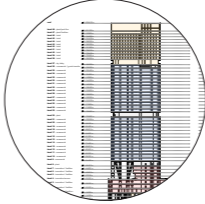
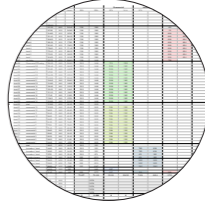

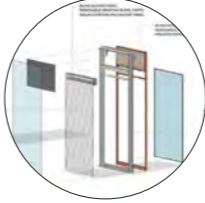
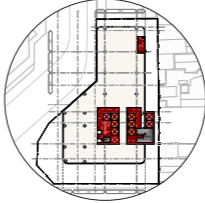
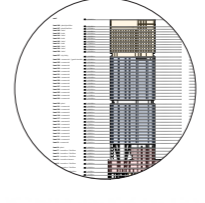
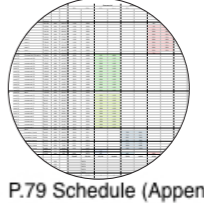

Sydney DCP 2012 - Tower Cluster Areas and Design Excellence Procedure Amendment

3.3.2 Design excellence strategy

(1A) (d) provide an indicative FSR for each massing envelope where the envelopes and estimated FSRs assume: (i) - (x).

The chart demonstrates the compliance of the Preferred Indicative Scheme within the Proposed DCP Envelope with Draft Council DCP Assumptions.

		Compliant	Note	Reference
(i)	a 15 metre architectural roof feature zone for sites where the maximum height of the building is determined by Sun Access Planes, No Overshadowing Controls or Public View Protection Planes	✓	- The top of building of the reference scheme is at RL 209.8m, which is lower than the Sun Access Plane of Prince Alfred Park above the site.	 <ul style="list-style-type: none"> • P.29 Tower Height (3.0 Key Urban Design Principles)
(ii)	a 30 metre architectural roof feature/construction zone where the maximum height of the building is determined by Sydney Airports Prescribed Airspace (excluding the Obstacle Limitation Surface)	✓	- The top of building of the reference scheme is at RL 209.8m including 9m roof feature. With considering a 15m construction crane zone, it is at RL 224.8m which is lower than the PANS-OPS at RL290 .	   <ul style="list-style-type: none"> • P.29 Tower Height (3.0 Key Urban Design Principles) • P.78 Section (Appendix B Preferred Indicative Scheme FSR 22:1) • P.79 Schedule (Appendix B Preferred Indicative Scheme FSR 22:1 Development Summary)
(iii)	5 metres clear floor to floor for ground and first floors and allowances for new pedestrian links and public domain improvements supported by urban design analysis	✓	- Ground floor : 7.6m clear floor to floor height - Level 1 : 5.2m clear floor to floor height - New pedestrian links and public domain improvements are demonstrated in the design report	   <ul style="list-style-type: none"> • P.78 Section (Appendix B Preferred Indicative Scheme FSR 22:1) • P.79 Schedule (Appendix B Preferred Indicative Scheme FSR 22:1 Development Summary) • P.20-25 (3.0 Key Urban Design Principles)
(iv)	3.85 metres floor to floor for typical commercial floors and structural transfer zones at steps in the building massing		- 3.8m floor to floor height is proposed for typical commercial floors, which is suitable for relatively small 1,200 m2 GFA floor plate.	  <ul style="list-style-type: none"> • P.72,73,78 Plan & Section (Appendix B Preferred Indicative Scheme FSR 22:1) • P.79 Schedule (Appendix B Preferred Indicative Scheme FSR 22:1 Development Summary)
(v)	3.3 metres floor to floor for typical hotel floors and structural transfer zones at steps in the building massing		- 3.2m floor to floor height is proposed for typical hotel floors, which is able to achieve 2.9m ceiling height.	  <ul style="list-style-type: none"> • P.78 Section (Appendix B Preferred Indicative Scheme FSR 22:1) • P.79 Schedule (Appendix B Preferred Indicative Scheme FSR 22:1 Development Summary)

		Compliant	Note	Reference
(vi)	A full floor plant level at least for every 20 occupied levels at minimum 6 metres floor to floor should be provided for plant and equipment with no floor space	✓	- 3 full floor plant levels are designed at level 8, 22 and 48 over the 48 storey building.	 <ul style="list-style-type: none"> • P.78 Section (Appendix B Preferred Indicative Scheme FSR 22:1)  <ul style="list-style-type: none"> • P.79 Schedule (Appendix B Preferred Indicative Scheme FSR 22:1 Development Summary)
(vii)	Minimum 15 per cent of the design envelope for architectural articulation (not occupied by floor space, structures, sun shading or the like)	✓	- 15.1% of Proposed DCP Envelope is used for the architectural articulation.	 <ul style="list-style-type: none"> • P.154 (Appendix P Architectural Articulation & Efficient Building Envelope Design)
(viii)	Minimum 750mm facade depth for facade and external shading elements		- 200mm facade based on a closed cavity facade system achieving a higher solar performance and spatial efficiency.	 <ul style="list-style-type: none"> • P.155 (Appendix P Architectural Articulation & Efficient Building Envelope Design)
(ix)	Minimum 16 per cent floor space exclusions allocated to building core and other internal non-floor space elements	✓	- Highly efficient floor plate is achieved by the double decker lifts scheme - 17.9% core area in Low-rise commercial floor - 15.7% core area in High-rise commercial floor	 <ul style="list-style-type: none"> • P.150 (Appendix O Floor Space Efficiency Study)
(x)	Vehicle access, servicing, services, balconies, voids or other areas are not counted as floor space and should be determined from demonstrated best practice or reference designs.	✓	- The high level strategy of Vehicle access, servicing and the services are described in the technical report. - In the reference scheme, the floor to floor height is increased at Ground floor for retails and lobbies, Level 2 and 3 for the innovation and Level 37 for the hotel sky lobby, which activate the spaces and provide amenities.	 <ul style="list-style-type: none"> • P.78 Section (Appendix B Preferred Indicative Scheme FSR 22:1)  <ul style="list-style-type: none"> • P.79 Schedule (Appendix B Preferred Indicative Scheme FSR 22:1 Development Summary)  <ul style="list-style-type: none"> • P.43 Innovation Hub (4.0 The Vision - A Hybrid Tower)

