

Attachment A22

**Sky View Factor Report - 15-25 Hunter and
105-107 Pitt Street, Sydney**

15-23 Hunter Street & 105-107 Pitt Street

Milligan Group

Sky View Factor Report

June 2022

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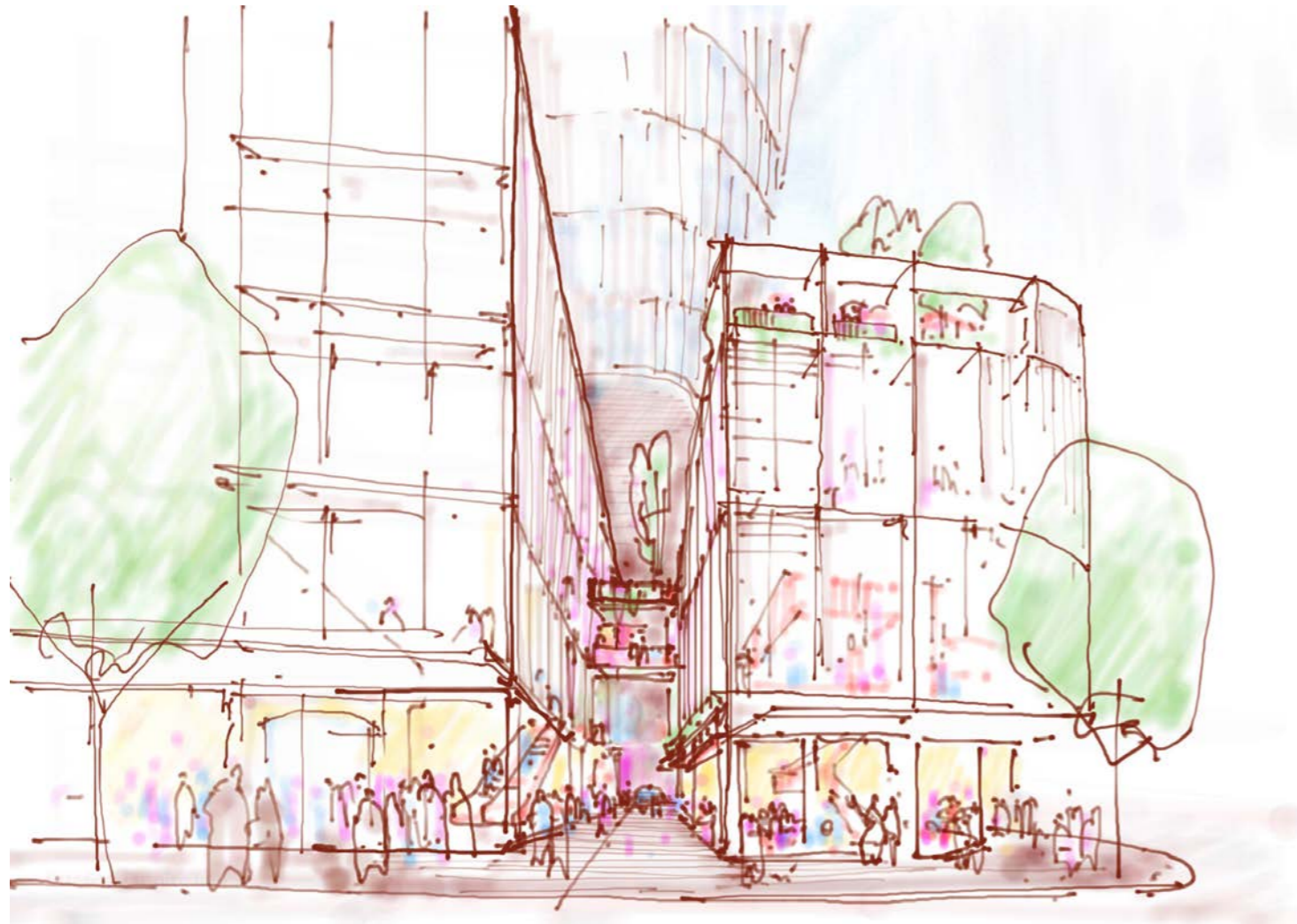
Traffic, Waste, & Services WSP

Structure TTW

Project Number 12353

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1.0

Introduction

15-23 Hunter Street and
105-107 Pitt Street Sydney



1.1 Introduction

This Sky View Factor (SVF) Report has been prepared by Bates Smart on behalf of Milligan Group for the site at 15-23 Hunter Street and 105-107 Pitt Street, Sydney. This Report supports a Planning Proposal which seeks to progress a Floor Space Ratio (FSR) control for the site in the Sydney Local Environmental Plan (SLEP) 2012 where the development is for the purpose of commercial and mixed use premises. This proposed amendment to the SLEP 2012 would allow for the development capacity of the site to be optimised through the delivery of a mixed-use development, including a rooftop bar, retail laneways, and commercial office space.

This Report summarises data collected on the extent of sky visible above multiple points in proximity to the site as a proportion of the total possible sky hemisphere above the point.

SVF is a calculation of the proportion of sky visible when viewed from the ground up. SVF is a value that ranges from 0 to 1. An SVF of 0 signifies that no sky is visible and an SVF of 1 signifies that the sky is completely visible to the horizon in all directions.

A base envelope which complies with Schedule 11 requirements outlined in the City of Sydney's Development Control Plan (2012) was constructed. This envelope was tested against the proposed envelope.

A total of 17,980 test points were analysed. When averaged across all test points, the results demonstrate a minimal improvement to sky visibility between the Schedule 11 base case envelope and the proposed scheme. The SVF of the Schedule 11 envelope has a value of 0.14604 and the proposed scheme has an SVF value of 0.14605. The resultant overall improvement in average sky visibility of the proposed envelope relative to the Schedule 11 envelope is **+0.001%**.

Given that on average, the proposed envelope performs "better than or equivalent" to the envelope which satisfies the Schedule 11 criteria, the proposed development scheme is found to be acceptable.

Image: Bates Smart / Base photography by Mark Merton of Sydney Images and commissioned by Milligan Group



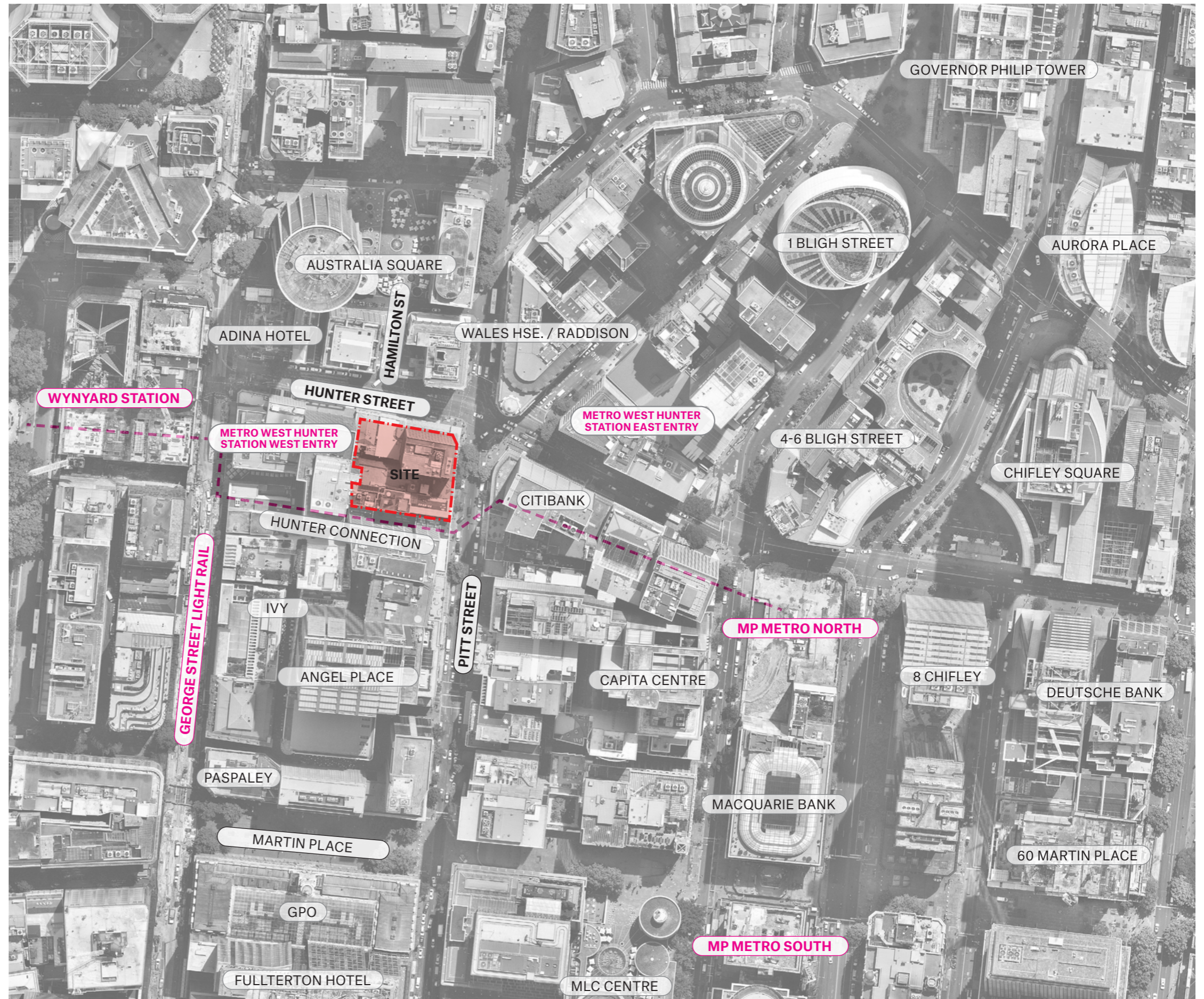
1.2 Site Location

The site is located on the corner of Hunter and Pitt Street in the central zone of the CBD. It is in close proximity to Wynyard Station, George Street Light Rail, and the Northern Entrance to the Martin Place Metro.

Address: 15 - 23 Hunter Street
& 105 -107 Pitt Street

DEVELOPMENT SUMMARY

Site Area	2,108 m ²
Podium Retail GFA	5,465 m ²
Rooftop Bar / Restaurant GFA	2,390 m ²
Commercial GFA	43,300 m ²
Articulation & Facade Zone Allowance	
Percentage of Envelope	15%+
Total GFA	51,150 m ²
Proposed Above Ground FSR	22.26 : 1
Proposed Below Ground FSR	2.00 : 1
Maximum Height	
	RL 222.5m 52 Levels



Site Area: 2,108 m²
 Hunter Street Frontage: 48.2 m
 Pitt Street Frontage: 39.2 m

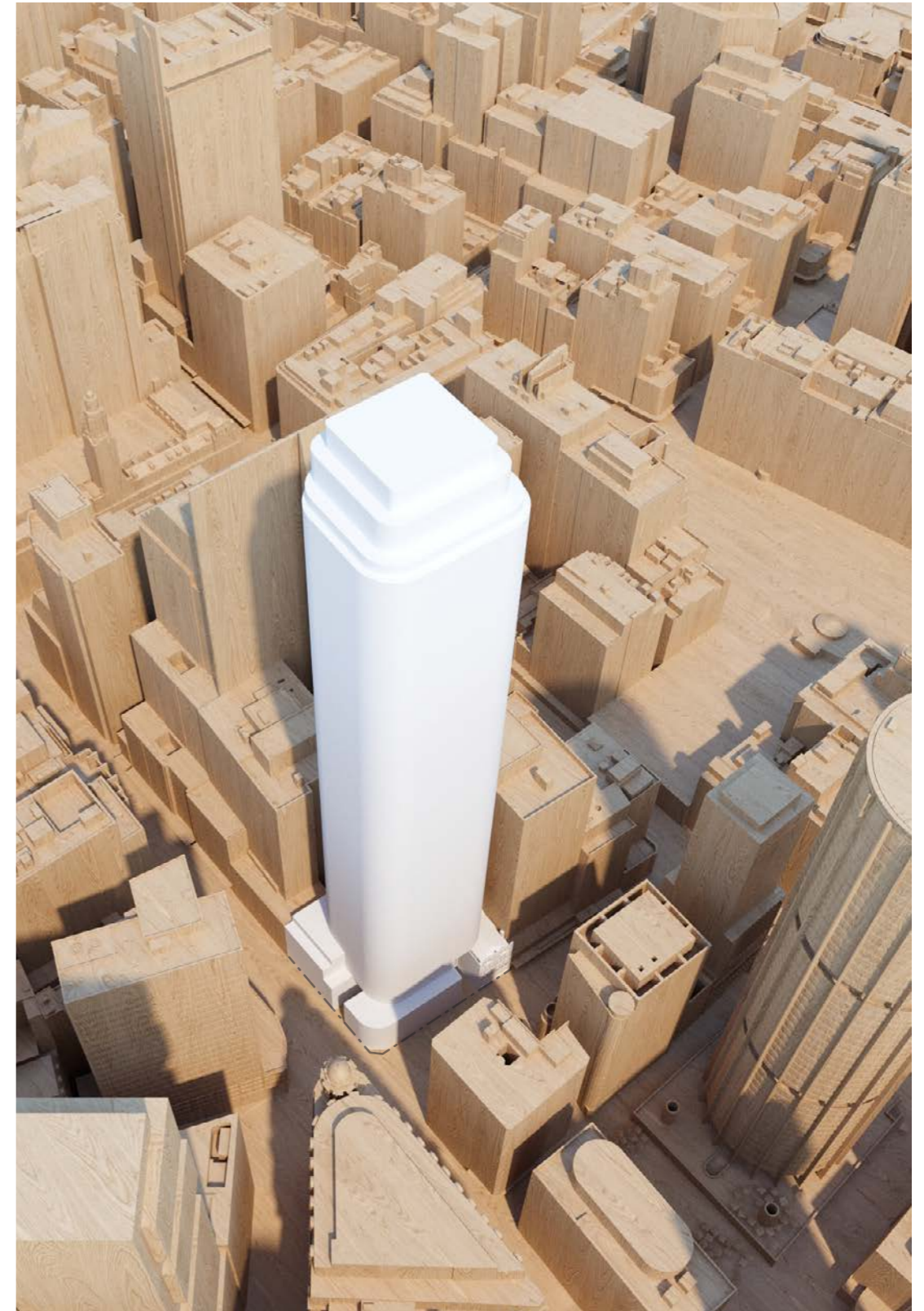


1.3 Disclaimer

This Sky View Factor assessment process is a computer generated estimate of the views obstructed by buildings in their context.

This estimate is based on a moderately simplified version of the surrounding context located in the Sydney Central Business District. The digital assessment is a simulation and cannot fully represent all of the detail of the Sydney Central Business District and the perspective of pedestrians.

However, the assessment is a useful and methodical tool to compare the potential impact of various envelopes and proposals.



Envelope Comparison Models

Image source: Bates Smart

2.0 Planning Context

15-23 Hunter Street and
105-107 Pitt Street Sydney



2.1 The Central Sydney Planning Strategy

The site is identified as an opportunity site forming part of a future tower cluster within the Central Sydney Planning Strategy prepared by The City of Sydney.

The Central Sydney Planning Strategy (CSPS) unlocks economic opportunities and investment in jobs and supports public improvements that make Sydney an attractive place for business, workers, residents and visitors. The CSPS outlines 10 key moves which prioritize employment growth, increase capacity and ensure infrastructure keeps pace with growth, creating a more sustainable and vibrant public spaces. The CSPS is a 20 year growth strategy that revises previous planning controls and delivers on the City of Sydney's Sustainable Sydney 2030.

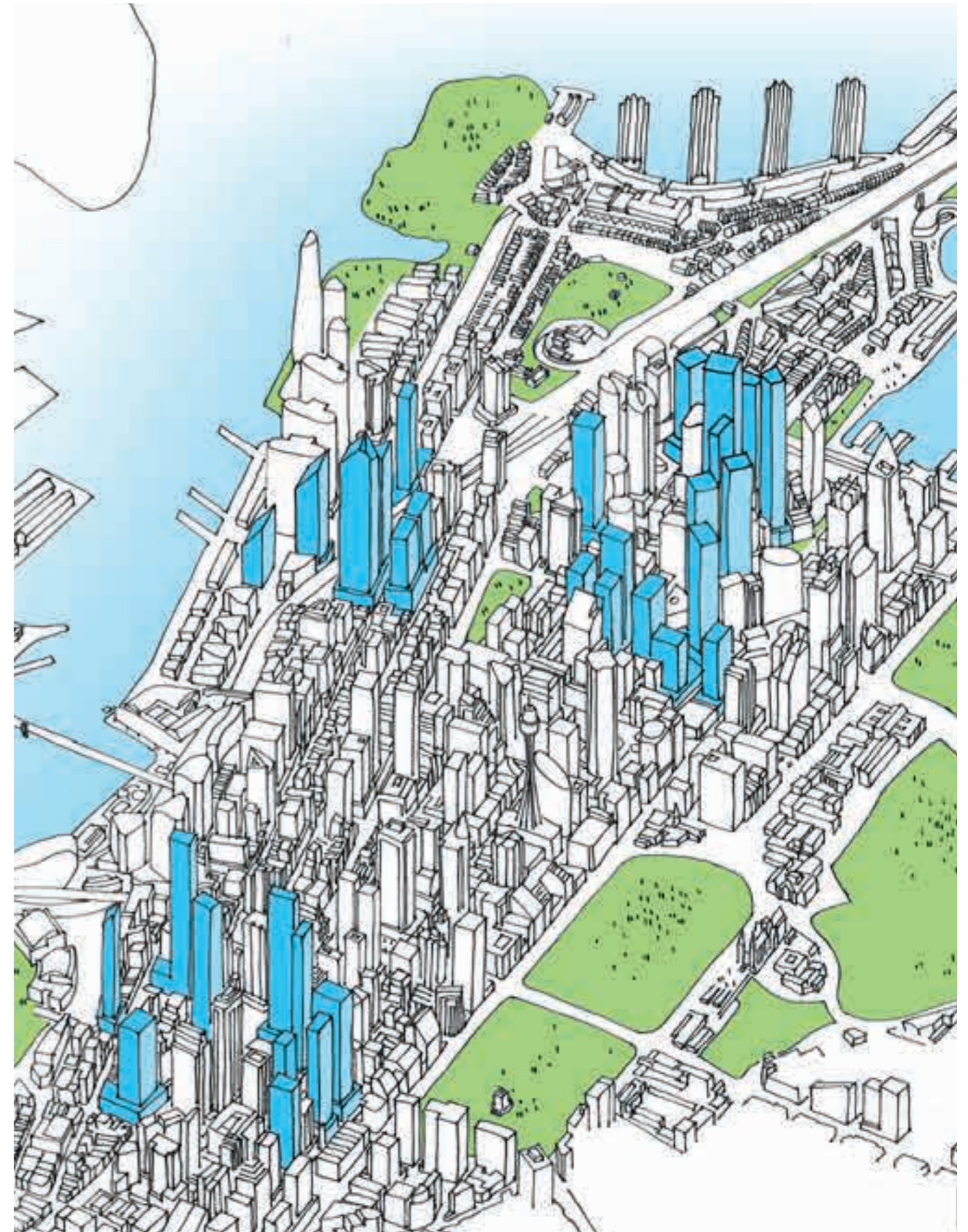
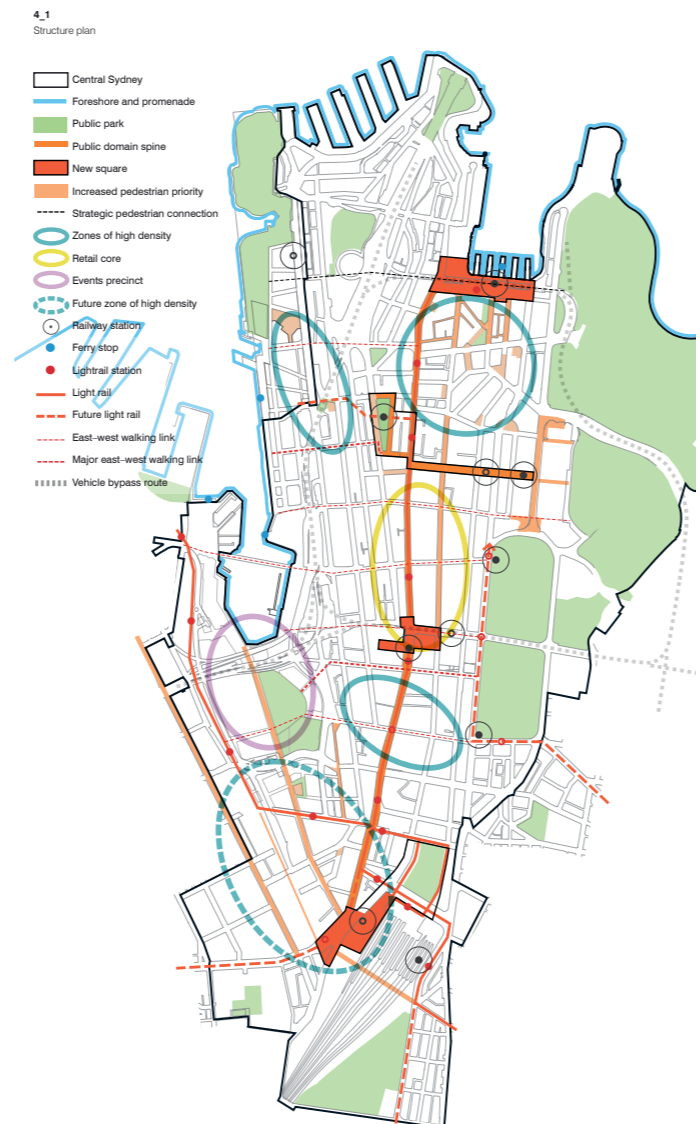


Source: The Central Sydney Planning Strategy Document prepared by The City of Sydney

4 Provide for employment growth in new tower clusters

Introducing a new planning pathway for heights and densities above established maximum limits will increase growth opportunities for employment floor space, promote the efficient use of land, and encourage innovative design. It will also unlock opportunities for the delivery of cultural, social and essential infrastructure and improved public spaces commensurate with growth.

These opportunities are focused in those areas of Central Sydney less constrained by sun access planes. As opportunities are taken up over the next 20 years, new tower clusters will form in Central Sydney to 2036 and beyond.



Images from The City of Sydney's Central Sydney Planning Strategy Document.

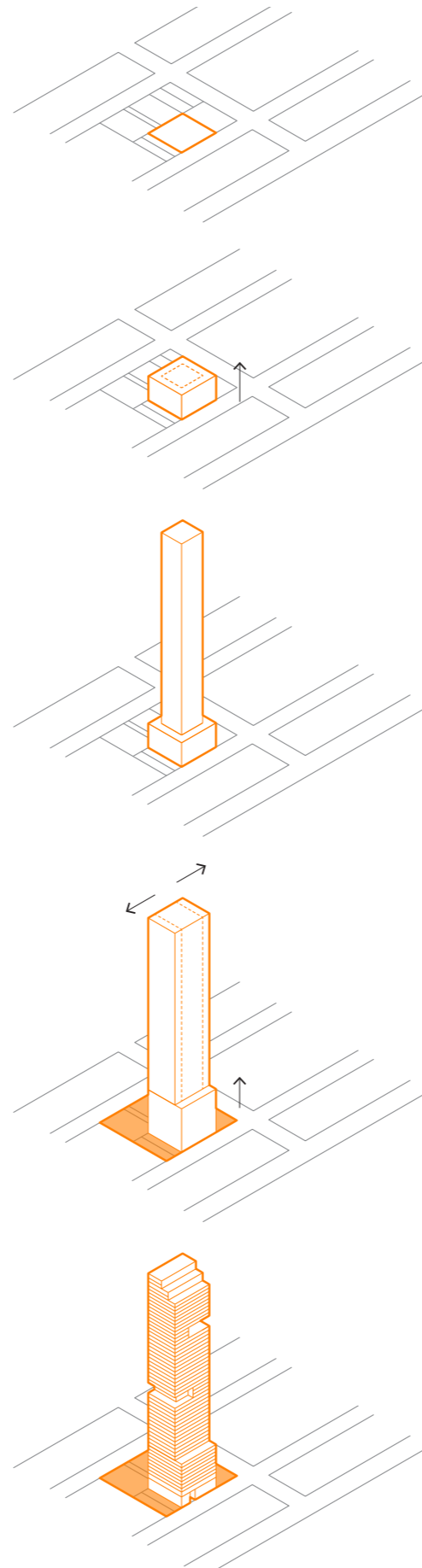
2.2 Envelope Design Process

The City of Sydney DCP Schedule 11 provides "procedures for demonstrating compliance with variation provisions for setbacks, separations and tapering in Central Sydney."

This planning proposal has followed this procedure.



Source: Guidelines for Site Specific Planning Proposals in Central Sydney prepared by The City of Sydney



Step 1

identify a site(s) complying with the Guidelines minimum Site Area

Step 2

define a podium form in compliance with Sydney DCP

Step 3

define a tower form in compliance with the Guideline in relation to maximum height and Sydney DCP in relation to Built Form Controls

Step 4

test and define a non-compliant podium and tower form in line with Schedule 11 of Sydney DCP and a negotiated Block Agreement with neighbouring sites

Step 5

determine a density based on the envelope achieved using floor space efficiencies consistent with the Guideline

Attachment C: Draft Guideline for Site Specific Planning Proposals in Central Sydney / 2019

2.3 Schedule 11 Base Envelope

As the subject site is greater than 1,000m², the initial step in the procedure is to determine a base case massing for comparison.

NOTES

The maximum permissible building height includes all other relevant controls including No Additional Overshadowing Controls, ect.

The resulting tower form must be tapered by scaling it horizontally in both horizontal directions (X and Y) by 95% between 120-240m

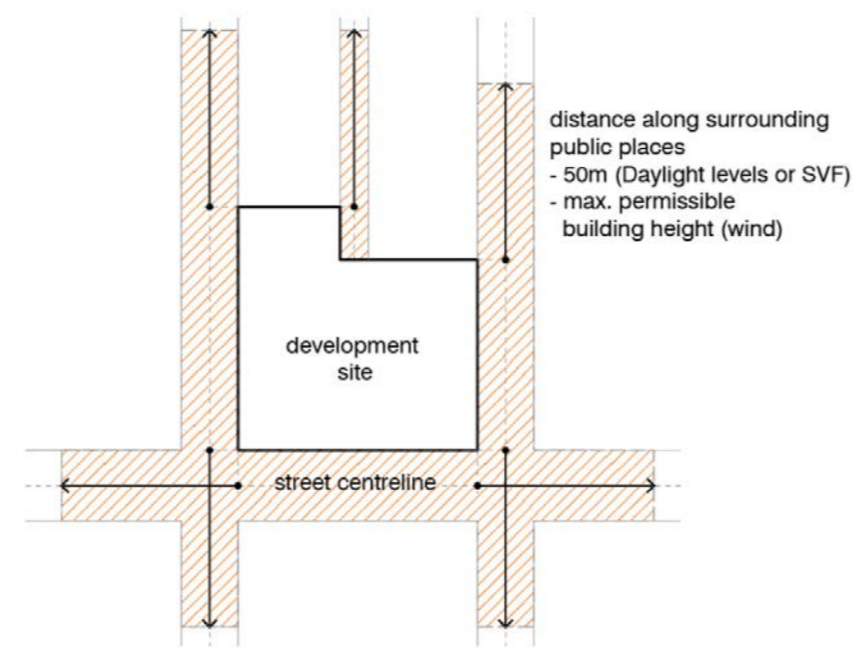
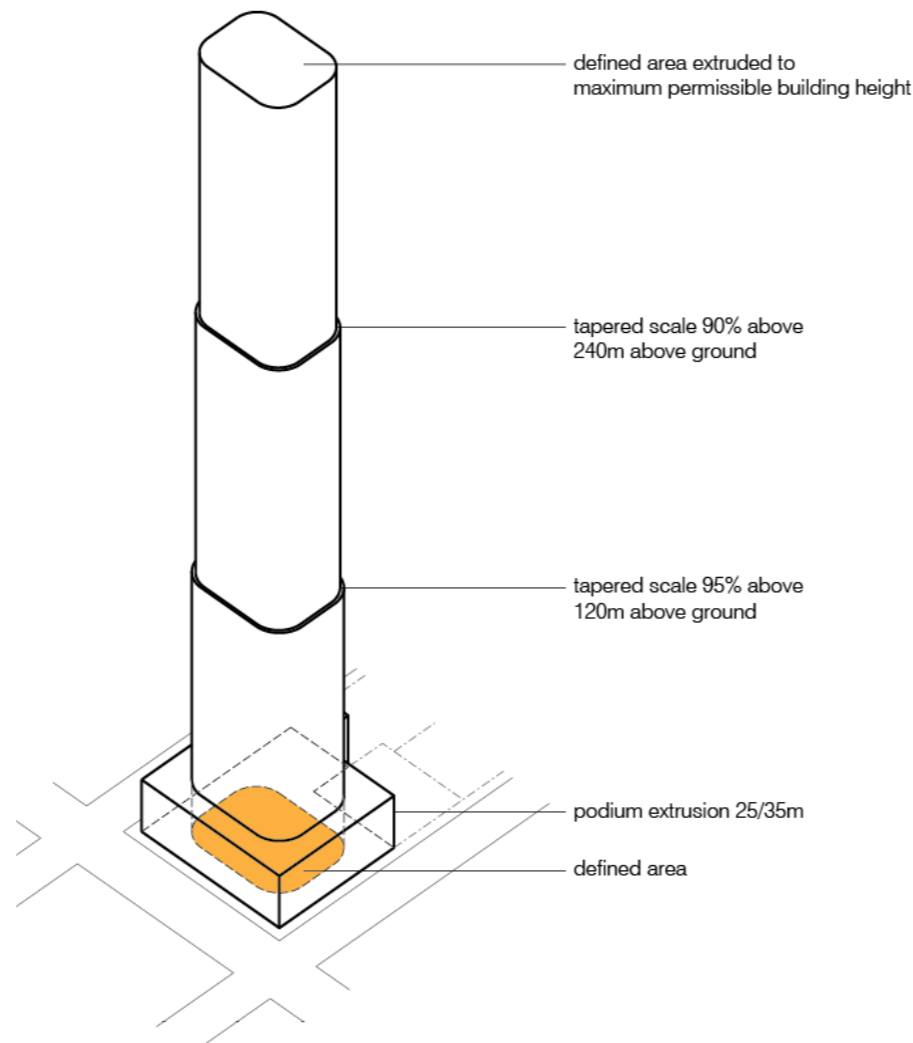


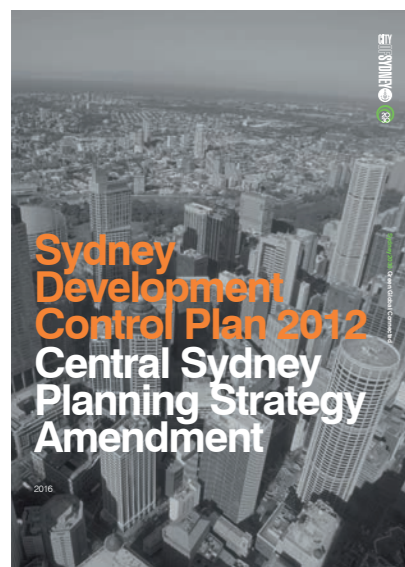
Figure 1.10: Measuring wind speeds and Average daylight level or Sky View Factor measuring minimum distance from the site boundaries.

SCHEDULE 11

Procedure B: Equivalent or improved wind comfort and wind safety and daylight levels in adjacent Public Places

In order to demonstrate compliance with Section 5.1.1.1(3)(b) and Section 5.1.1.3(5) in regards to varying Minimum Street Setbacks and Side and Rear Setbacks, Building Form Separations and Tapering provisions respectively, the following procedure must be followed:

- (1) Procedure B can only be used to vary setbacks for sites larger than 1000m².
 - (2) Where (1) is satisfied, variation to relevant setbacks may be permitted to building massing that provides equivalent or improved wind comfort, wind safety and daylight levels in adjacent Public Places relative to a base case building massing with complying Height, Street Frontage Heights, Street Setbacks, Side and Rear Setbacks and Tapering.
 - (3) The base case building massing with complying Street Frontage Heights, setbacks and tapering is established by modelling 3 dimensional podium and tower components as follows:
 - (a) The podium is modelled by extruding the subject site boundary vertically 35m above existing ground level (as it varies around the site perimeter) for buildings up to 120m high and 25m above ground level for taller buildings.
 - (b) The Tower Component is modelled by defining an area set out by the required street, side and rear setbacks, excluding areas over heritage items and Tower Component areas narrower than 6m wide. For Tower Components where at least one face is longer than 30m the resultant area is chamfered with a 10m radius at all external corners. The resultant shape is extruded to the maximum permissible building height as it varies around the site. The resulting tower form must be tapered by scaling it horizontally in both horizontal directions (X and Y) by 95% between 120-240m and by 90% above 240m above ground level.
- Note: the maximum permissible building height excludes architectural roof features but includes all other relevant controls including LEP height controls, Sun Access Planes, No Additional Overshadowing Controls, Special Character Area height and setback controls, View Controls Airport restrictions etc.



Source: Sydney Development Control Plan 2012. CSPA Amendment prepared by The City of Sydney

2.4 Tower Height

Martin Place Solar Access Plane

Under the City of Sydney Central Sydney Planning Strategy, the maximum heights of both the Schedule 11 Comparison Envelope and the Proposed Envelope are determined by relevant Solar Access Planes and No Additional Overshadowing Controls.

The following image shows the Martin Place Solar Access Plane as constructed using MGA located points and rays set out in the City of Sydney's LEP.

This determines the maximum height allowable of the Schedule 11 Comparison Envelope under the solar access plane.

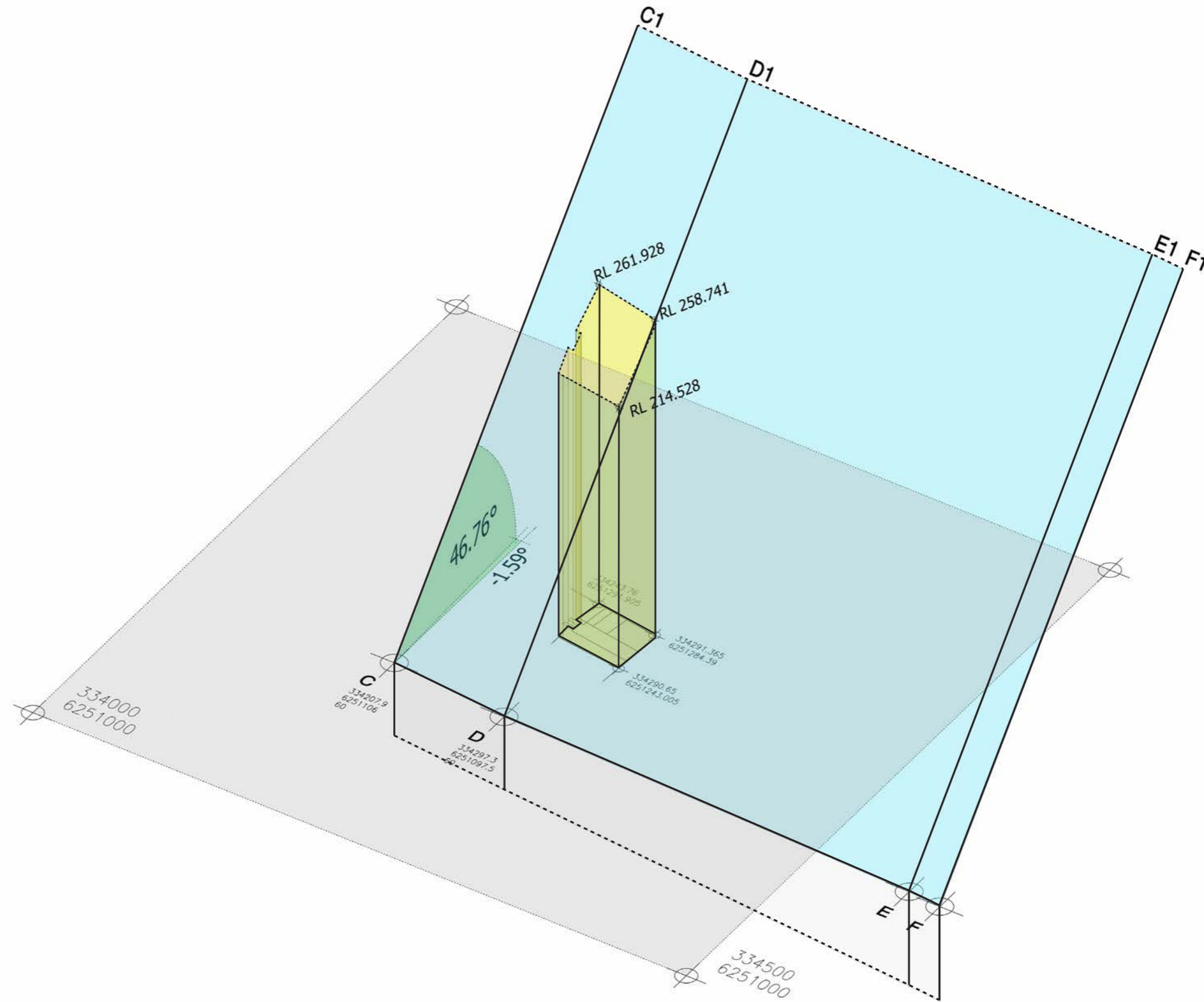


Image source: Bates Smart

Martin Place Solar Access Plane

The adjacent image shows the plane sitting within its context, which is an MGA located 3d model provided under license by professional digital surveyors AAM Group.

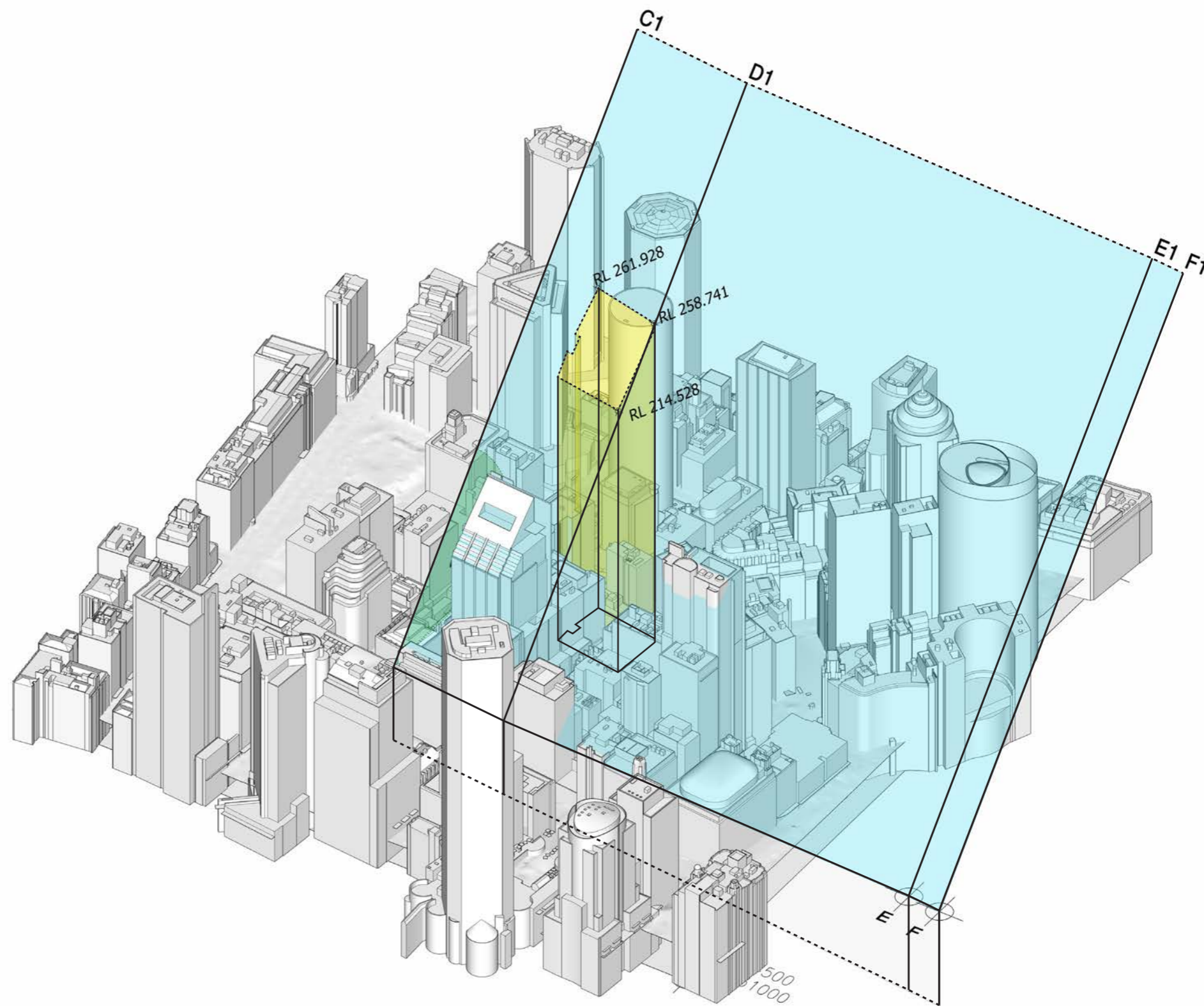


Image by Bates Smart, showing a 3d city model provided under license from AAM Group, and the Martin Place Solar Access Plan constructed as per the City of Sydney's suggested methodology.

Overshadowing

In addition to the Martin Place Solar Access Plane, draft DCP objectives request no additional overshadowing of Martin Place between George Street and Pitt Street, as highlighted in the adjacent image.

Due to existing buildings to the south of the subject site, in particular Angel Place, there is no additional overshadowing to Martin Place when complying with the Martin Place Solar Access Plane.

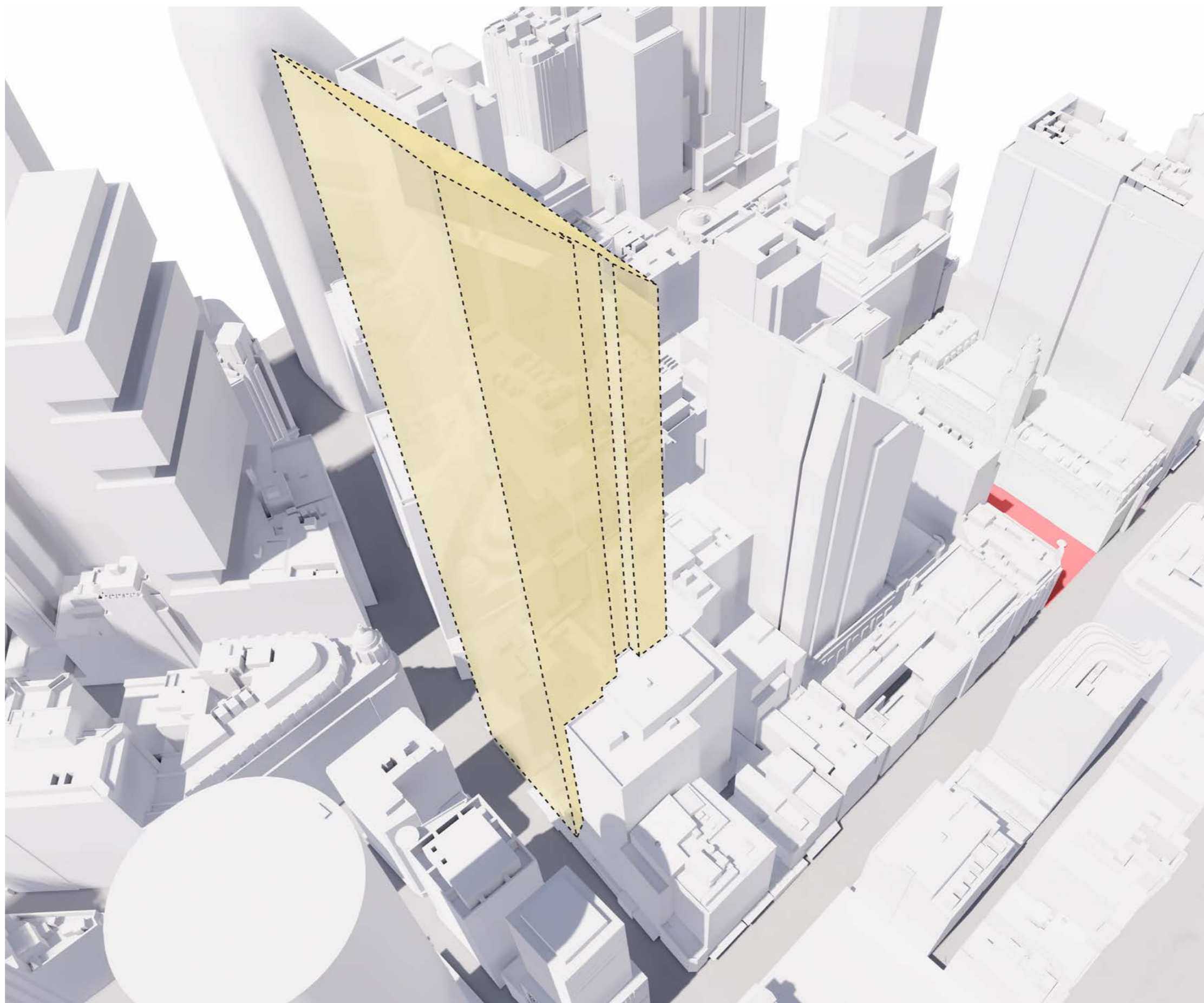


Image source: Bates Smart

The No Additional Overshadowing DCP Objective affects adjacent sites along George Street, which have more limited height potential as a result, but does not impact the subject site.

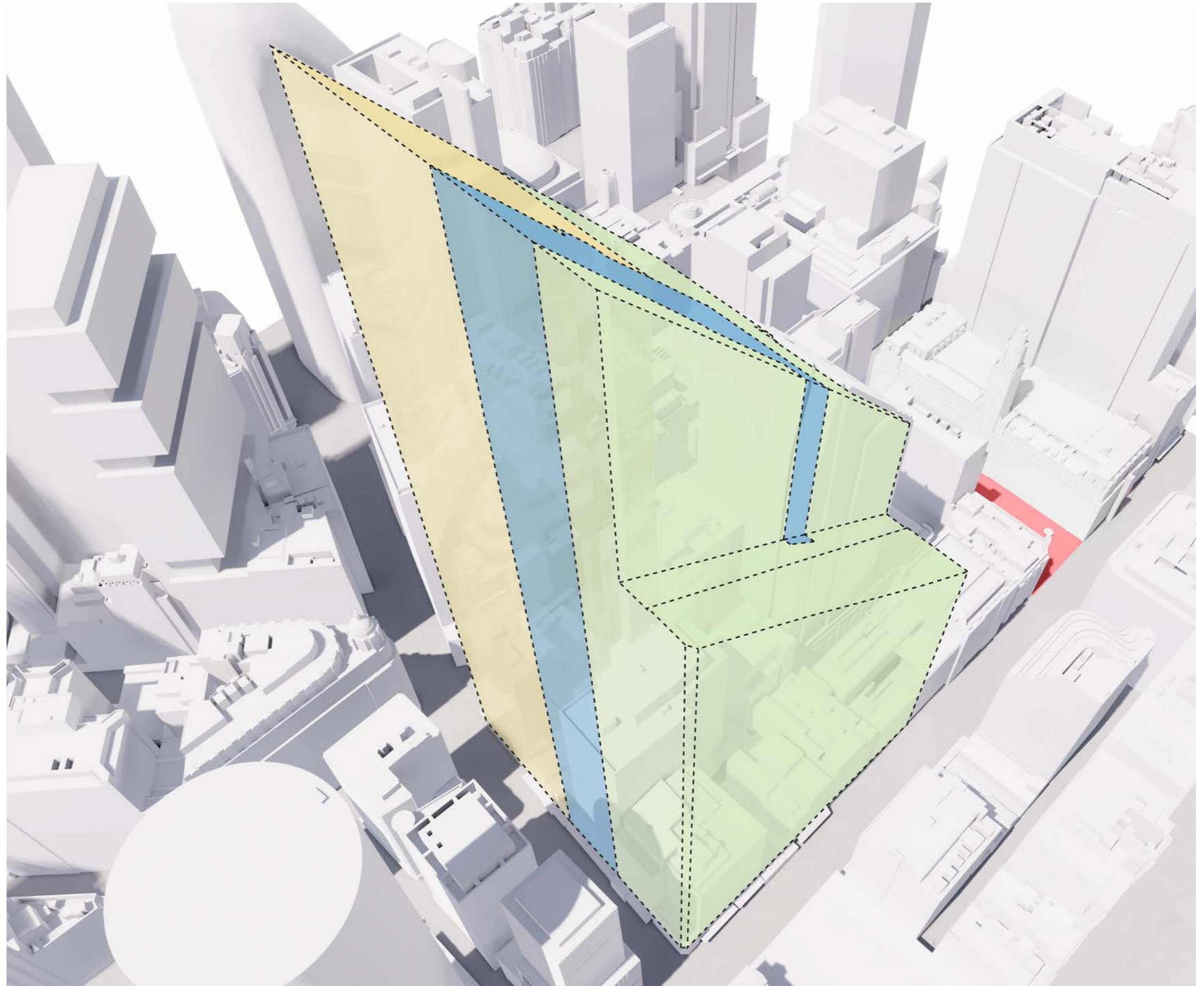


Image source: Bates Smart

2.5 Draft DCP Objectives Podium Height

Buildings with street frontage heights between 20 and 45m reinforce the characteristic built form of Central Sydney. The maximum street frontage height that may be permitted anywhere in Central Sydney is 45m.

wind conditions; create an overwhelming sense of enclosure; and affect growing conditions for street trees.

Setting back higher elements of buildings preserves reasonable levels of daylight at street level and helps minimise wind problems to create a comfortable street environment.

A 10m setback doubles the amount of sky seen on an average 20m street in Central Sydney and significantly reduces wind impacts.

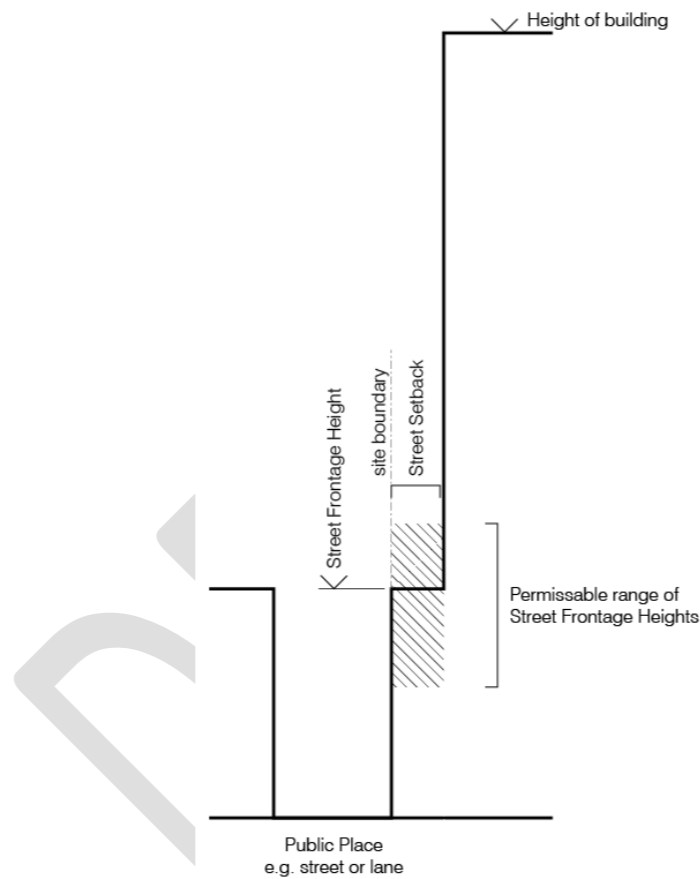
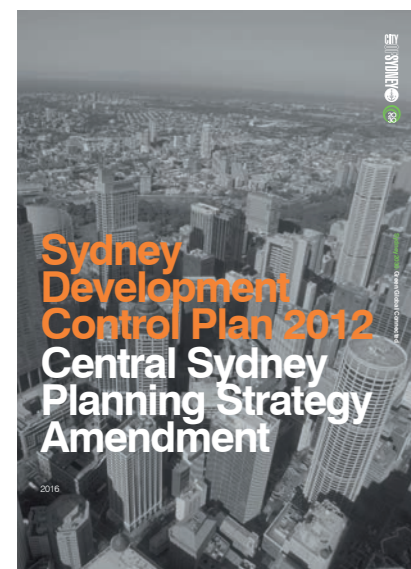


Figure 5.1: The street frontage height of development outside of special character areas should range between 20m and 45m

Objectives

- (a) Achieve comfortable street environments for pedestrians with high levels of daylight, appropriate scale, sense of enclosure and wind mitigation.
- (b) Encourage flexibility in building design while reinforcing the character of Central Sydney and ensuring built form is compatible with heritage items and the desired streetscape character.
- (c) To recognise the variety and patterns of street wall heights throughout Central Sydney.



Source: Sydney Development Control Plan 2012. CSPS Amendment prepared by The City of Sydney

- (d) To ensure that buildings address and define laneways consistent with their special character.
- (e) To provide setbacks above the Street Frontage Height that promote good separation between tall buildings, across streets, maintain views to the sky and create a sense of openness in the street.
- (f) To allow flexibility for setbacks above Street Frontage Height but only where better performance in relation to wind mitigation and daylight access to Public Places can be demonstrated.
- (g) To protect long, low angle views of open sky and landmark features.

Provisions

- (1) The Street Frontage Height and Street Setbacks of a building must be in accordance with Table 5.1 – Permissible range of Street Frontage Heights and Table 5.2 Minimum Street Setbacks, except for buildings in Special Character Areas that must be in accordance with the Minimum Street Frontage Heights for Special Character Areas in Table 5.3 and the Minimum Street Setbacks and Maximum Street Frontage Heights as shown in the Special Character Area maps at Figures 5.3 to 5.15 in Section 5.1.1.2.

Note: Section 5.1.1.1(2) Street Setback variation provisions do not apply to Heritage Items or in Special Character Areas, unless noted on Special Character Area maps.

Table 5.1: Permissible range of Street Frontage Heights

Permissible range of Street Frontage Heights		Proposed total height of building		
		Up to 55m	Greater than 55m up to 120m	Greater than 120m
Context	Non-heritage items outside Special Character Areas	Frontage adjacent to a Public Place with a width greater than 8m wide 20-35m* Or 20-45 for street block corner sites less than 1000sqm	20-35m*	20-25m*
	Frontage adjacent to a Public Place with a width up to 8m wide (eg lanes)	20-45m	20-45m	20-25m*
	Heritage items outside Special Character Areas	Existing height	Existing height	Existing height

* up to 45m subject to Section 5.1.1.1(2)

- (2) Notwithstanding Section 5.1.1.1(1) and Table 5.1, buildings that contain more than 40% residential accommodation including serviced apartment floor space, may have a Street Frontage Height of up to 45m where all floors between the height shown in the table

Street Setbacks

Table 5.2: Minimum Street Setbacks

Minimum Street Setbacks			Proposed total height of building		
			Up to 55m	Greater than 55m up to 120m	Greater than 120m
Context	Non-heritage items outside Special Character Areas	Frontage adjacent to Public Places with a width greater than 8m wide	8m or 6m where adjoining sites Street Setbacks are less than 6m	8m*	8m*
		Frontage adjacent to Public Places with a width up to 8m wide (eg lanes)	2m	8m*	8m*
	Heritage items outside Special Character Areas	10m to Public Places greater than 8m wide (streets). 2-10m on Public Places up to 8m wide (lanes) determined by heritage values and context.			
* may be varied subject to 5.1.1.1(2)					

(3) Where noted in Table 5.2 Minimum Street Setbacks and on the Special Character Area maps, variation to Street Setbacks may be permitted to building massing that provides:

- (a) encroachment(s) 2m forward of the minimum Street Setback within the middle third of the frontage to a Public Place and provision of compensating recess(es) of equal to or greater area up to 4m behind the minimum Street Setback; or
- (b) equivalent or improved wind comfort, wind safety and daylight levels in adjacent Public Places relative to a base case building massing with complying Street Frontage Heights and Street Setbacks (i.e. variation to massing is governed by achieving equal or better performance).

Procedures for demonstrating compliance with 5.1.1.1(3)(a) and (b) are set out in Schedule 11.

(4) Notwithstanding Section 5.1.1, greater Street Setbacks may be required through the application of 5.1.1.4 Built form massing, tapering and maximum dimensions, 5.1.4 Development outlook and amenity and/or SEPP 65 (State Environmental Planning Policy No 65 - Design Quality of Residential Apartment Development) and the Apartment Design Guide.

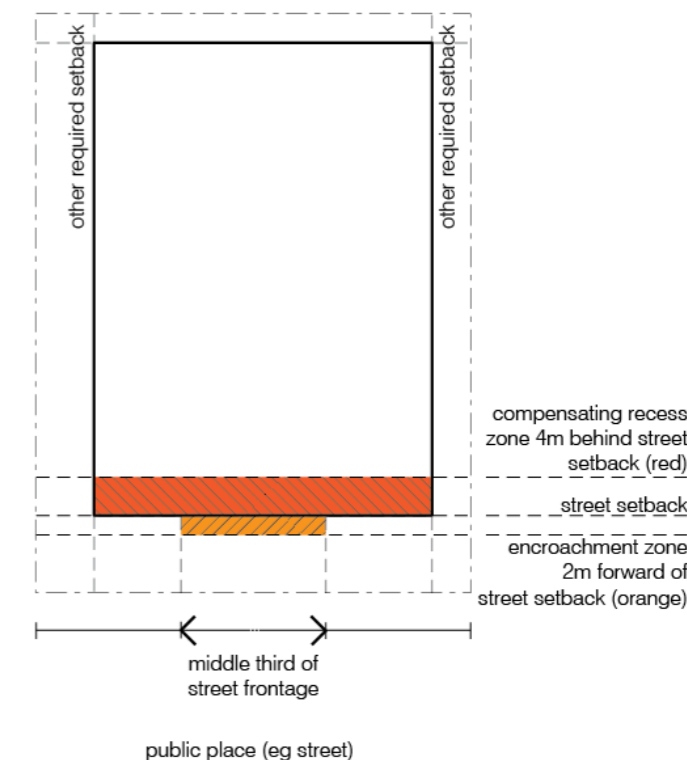
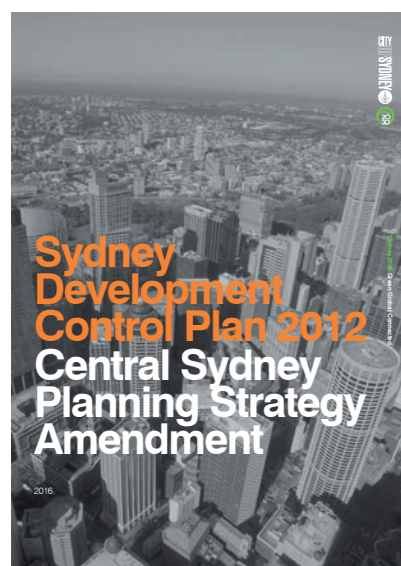


Figure 5.2: Setbacks provide building design flexibility – Minimum Street Setbacks may be varied in accordance with Section 5.1.1.1(3) and the procedures for demonstrating compliance at Schedule 11.



Source: Sydney Development Control Plan 2012. CSPA Amendment prepared by The City of Sydney

Side & Rear Setbacks

Table 5.4: Minimum Side and Rear Setbacks and Building Form Separations

Minimum Side and Rear Setbacks and Building Form Separations	Proposed total height of building			
	Up to 55m	Greater than 55m up to 120m	Greater than 120m up to 240m	Greater than 240m
Side and Rear Setback above Street Frontage Height	0m	4m	3.33% of the proposed total height of building	8m
Building Form Separations on the same site	0m	8m	6.66% of the proposed total height of building	16m

Note: For separation on the same site use the lower building form height to determine the required separation.

- (5) Variation to Side and Rear Setbacks and Building Form Separations may be permitted to building massing that provides equivalent or improved wind comfort, wind safety and daylight levels in adjacent Public Places relative to a base case building massing with complying Side and Rear Setbacks (i.e. variation to massing is governed by achieving equal or better performance).

Procedures for demonstrating compliance with 5.1.1.3(4) are set out in Schedule 11.

- (6) Notwithstanding 5.1.1.3 Side and Rear Setbacks and Separations, greater setbacks and separation may be required through the application of 5.1.1.4 Built form massing, tapering and maximum dimensions, 5.1.2 Development outlook and amenity and/or SEPP 65 (State Environmental Planning Policy No 65 - Design Quality of Residential Apartment Development) and the Apartment Design Guide.

5.1.1.4 Built form massing, tapering and maximum dimensions

Value Statement

The impact of tall buildings on the amenity of the public domain increases as building height increases. It is appropriate to manage building dimensions and massing to ensure that buildings are not overwhelming in scale and impact on the amenity of the public domain.

Objectives

- Ensure that tall buildings are slender and do not appear as walls or as overly massive from any direction.
- Ensure residential accommodation, serviced apartment and self-contained hotel developments present as slender buildings.
- Ensure that buildings are slimmest at their peaks so that in the overall city form buildings become less bulky at their upper limits.

Provisions

- (1) Above Street Frontage Height the maximum horizontal dimension of a building including all external elements (for example architectural elements like horizontal or vertical fins) measured in any direction (including diagonally across the site – see Figure 5.18) is not to exceed:

- 50m for residential accommodation and serviced apartment developments; and
- 100m for all other developments.

- (2) For residential accommodation, serviced apartments or self-contained hotels with a height above 55m, the size of any floor plate above the Street Frontage Height must not exceed 1,000 square metres floor space area (as per the Gross Floor Area definition).

- (3) Above the Street Frontage Height the total Building Envelope Area may occupy the following proportion of the site area less any areas of heritage items and required DCP setbacks:

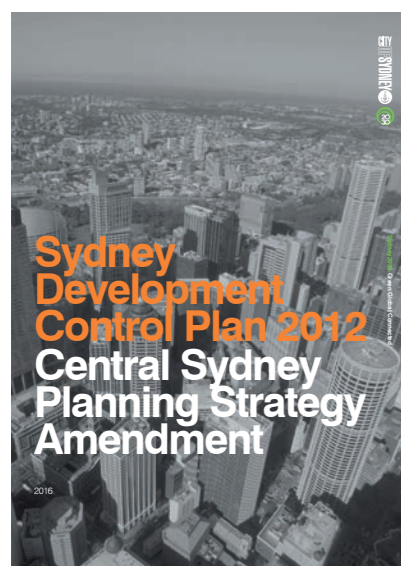
- 100% up to 120m above ground;
- 90% above 120m up to 240m above ground; and
- 80% above 240m above ground.

- (4) For the purposes of calculating Building Envelope Area:

Building Envelope Area is the area including all internal and external built elements and enclosed voids between that floor level and the next floor level measured in plan.

Note: Where a heritage item or part thereof is within a required setback that area is only subtracted once.

Note: Where compliance with Sections 5.1.1.1(2) and 5.1.1.3(5) has been demonstrated in relation to a varied setback, and the resultant Building Envelope Area fails to comply with Section 5.1.1.4(3), the variation to Section 5.1.1.4(3) may be permitted.



Source: Sydney Development Control Plan 2012. CSPA Amendment prepared by The City of Sydney

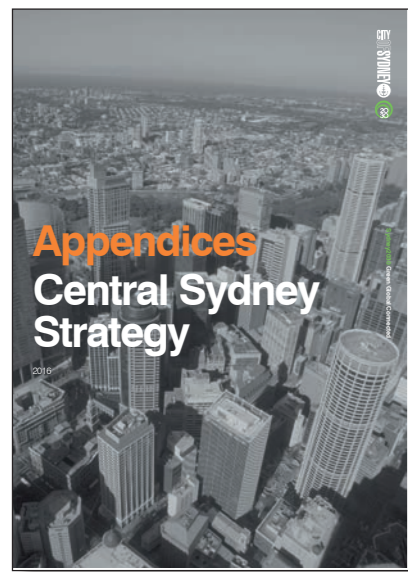
2.6 Heritage Items

No part of the site is heritage listed, with the exception of The Tank Stream, which runs underneath the site's western edge.

Heritage items

Heritage items listed in the planning controls are excluded because the maximum potential floor space may not be able to be achieved due to the significance of the item. There are 270 heritage items in Central Sydney as shown in Figure A_06 Heritage items.

The City's heritage floor space scheme enables some of the capacity to be on-sold to other development sites. This floor space is captured in the total capacity for other sites as its purchase is a requirement of the 'accommodation floor space' bonus. Therefore the transfer of heritage floor space is not counted in this study.



Source: The City of Sydney's Central Sydney Planning Strategy

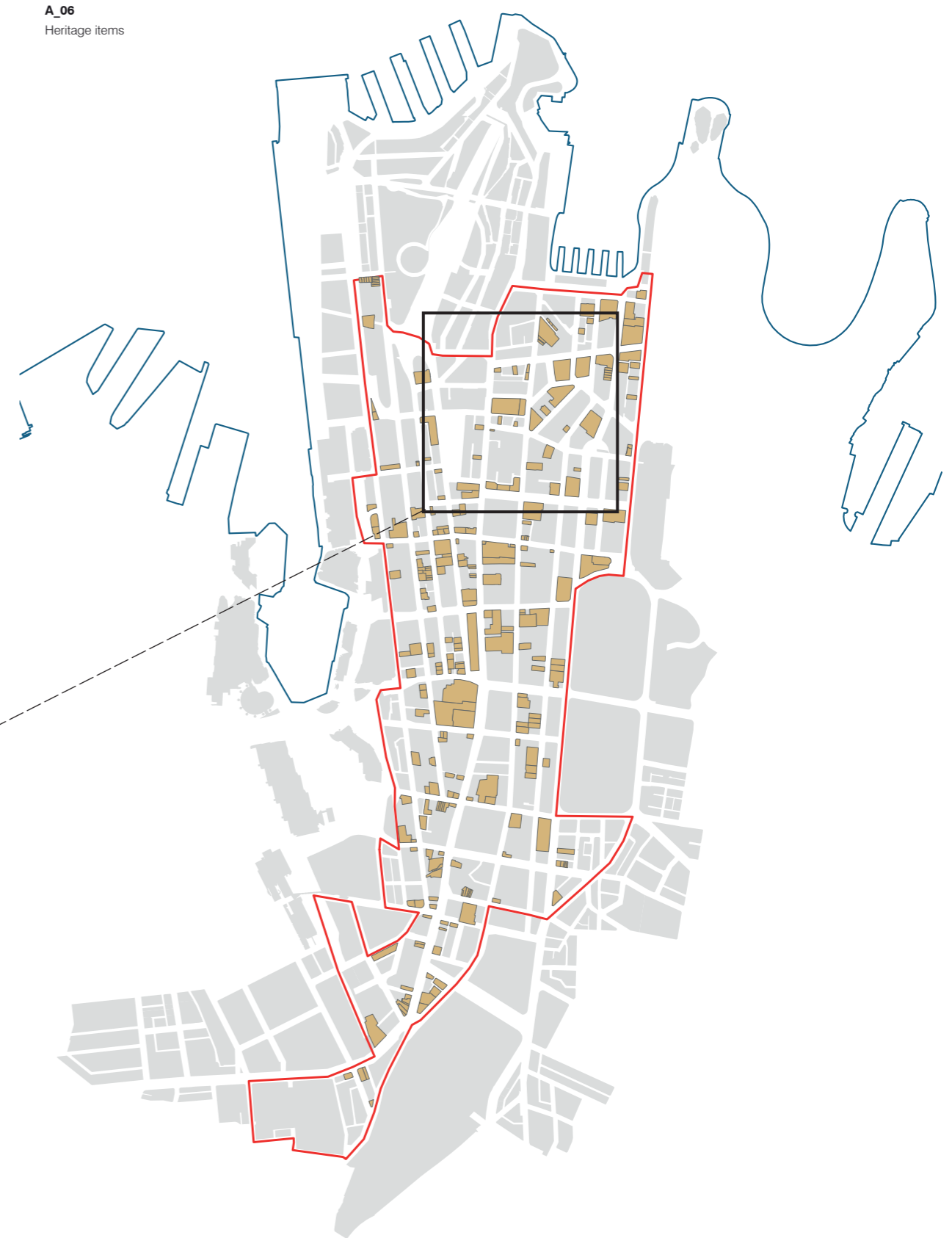
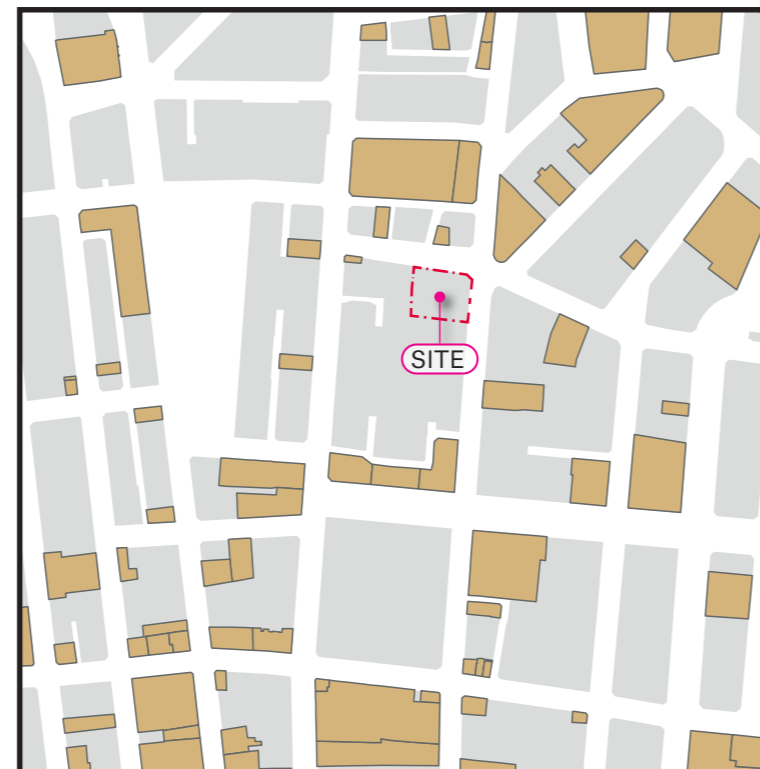


Image source: The City of Sydney's Central Sydney Planning Strategy

Method | 31

2.7 Retention of Existing Building 15 - 17 Hunter Street

KEY NOTES

The existing building is four-storeys, six-bays, and is built in a Victorian Italianate style.

The building is not currently defined as a heritage item of the Local or State Heritage Registers or in the CSPPS.

The interiors have been significantly altered with the removal of much of the original fabric and detail.

The proposal is to restore and largely retain the entire building whilst providing access points to connect with the activated podium.



Image source: Approved DA D/2006/2017

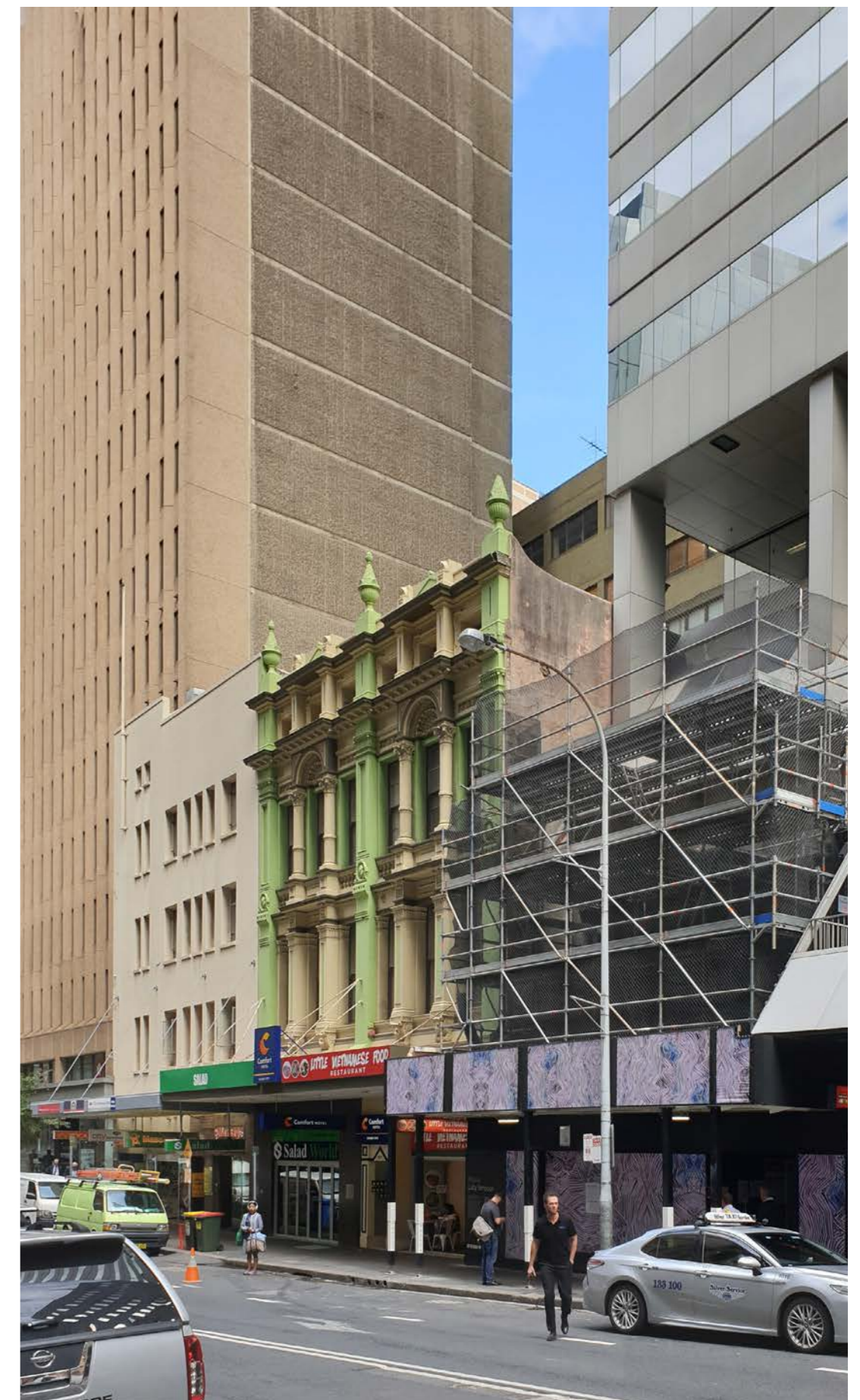


Image source: Bates Smart

2.8 Heritage Assessment of 15 - 17 Hunter St

TEXT SOURCE: OCTOBER 2021 HERITAGE IMPACT STATEMENT BY URBIS:

"This proposal seeks to heritage list the 19th century commercial building at 15-17 Hunter St (also known as Former Pangas House). Former Pangas House is a four-storey, masonry building with a heavily modelled façade, it is an example of Late Victorian Italianate commercial architecture in the Sydney CBD. The original 3 stories were constructed in early to mid-1880, and an additional fourth story was later added c. 1896."

Front Façade Description

"The original façade (above the awning) is intact and illustrates the c1896 condition. The façade features two bays, each with three sets of windows flanked with ornate columns. Likewise, the windowsills and window arches also feature decorative moulding."



Image of 15-17 Hunter St Façade

"The first, second and third floors are occupied by the Comfort Hotel, the interiors were reportedly rebuilt in 1986 and then once again in 2007, during which period, the upper floors were converted into a hotel."



Image of Comfort Hotel interior



Image of Comfort Hotel interior

Ground Level & Awning Description

"After undergoing an extensive modification, the ground floor currently consists of two contemporary shopfronts and the entrance to the hotel lobby. Also featured is an awning that dates from the mid-20th century. The extent of alterations on the ground floor and its interior ensures that no features of the original structure remain on the ground floor and therefore the ground level of the building has been deemed historically insignificant."



Image of shop front on ground level of 15-17 Hunter St



Image of shop front on ground level of 15-17 Hunter St

The proposal retains the existing 15-17 Hunter Street building. The proponent views the existing structure as an asset and wishes to retain, restore, and celebrate the structure in the proposed development.



Source: October 2021 Heritage Impact Statement by Urbis

Rear Empire Lane Façade Description

"The rear façade is located on Empire Lane. The rear façade is utilitarian in style and characteristic of commercial buildings of the period. Although the façade fenestrations has been modified, partly due to infill, remnants of the original rear loading bays (including original lifting beam and doors) remain."



Image of Rear Façade



Image of Current Empire Lane

Summary and Recommendations

"In February 2020, the City of Sydney were considering the heritage listing of the former Pangas House. Subsequently, Urbis was engaged by Milligan group to assess the historical significance of 15-17 Hunter St via Heritage Assessment. The report concluded that the building does not meet criteria for inclusion as heritage item. Stating that,

"The former PangasHouse, 15-17 HunterStreet does not meet the criteria for heritage significance. The façade is a good example of the Victorian Italianate style as applied to commercial buildings and presents a well detailed façade, perhaps with the exception of the c.1896 third floor, which truncates the typical vertical proportions of the building. While it is acknowledged that the building façade above the awning is generally intact (to the c.1896 condition), and of some aesthetic and representative merit as a heavily moulded commercial building façade in the Victorian Italianate style, the interiors, ground floor and rear facades have been altered such that the collective value of the place is considered to be compromised. The Italianate style was common for buildings designed in the Victorian period and the building is not considered rare " (Feb 2020, pg 22).

"However, The City of Sydney has decided to proceed with heritage listing of the Former Pangas House (15-17 Hunter St). In support of this decision Milligan Group seeks the heritage listing of the site. Consequently, the proposed redevelopment of the site seeks to retain and celebrate the structure and by facilitating its conservation and improved presentation to Hunter st. It is the only surviving example of 19th century architecture on the south side of Hunter St between George and Pitt St and is a remnant of the 19th century redevelopment of Hunter St."

"Supporting this position, a Heritage Impact Statement (Oct 2021, pg 31) prepared by Urbis argues that the former Pangas House, 'Is of heritage significance for its historic, aesthetic and representative values as a remnant of the 19th century commercial development of the CBD in the boom period of the 1880s.' and therefore advocates for the heritage listing of the former Pangas House and its inclusion on Schedule 5 of the Sydney Local Environmental Plan 2012 (SLEP 2012)."



Image of 19th Century Hunter St

"Subsequently, the Heritage Impact Statement (Oct 2021, pg 44) prepared by Urbis recommends that future development of 15-17 Hunter St should consider the following:

- Form scale, materiality, articulation and the façade treatment of the proposed podium to respond to the adjacent building at 15-17 Hunter St.
- Extent of evacuation and sub surface works to ensure that there are no impacts to the retained commercial building at 15-17 Hunter st.
- Opportunities for the conservation and reinterpretation of the retained Victorian Italianate buildings. "



Source: October 2021 Heritage Impact Statement by Urbis

3.0

Methodology

15-23 Hunter Street and
105-107 Pitt Street Sydney

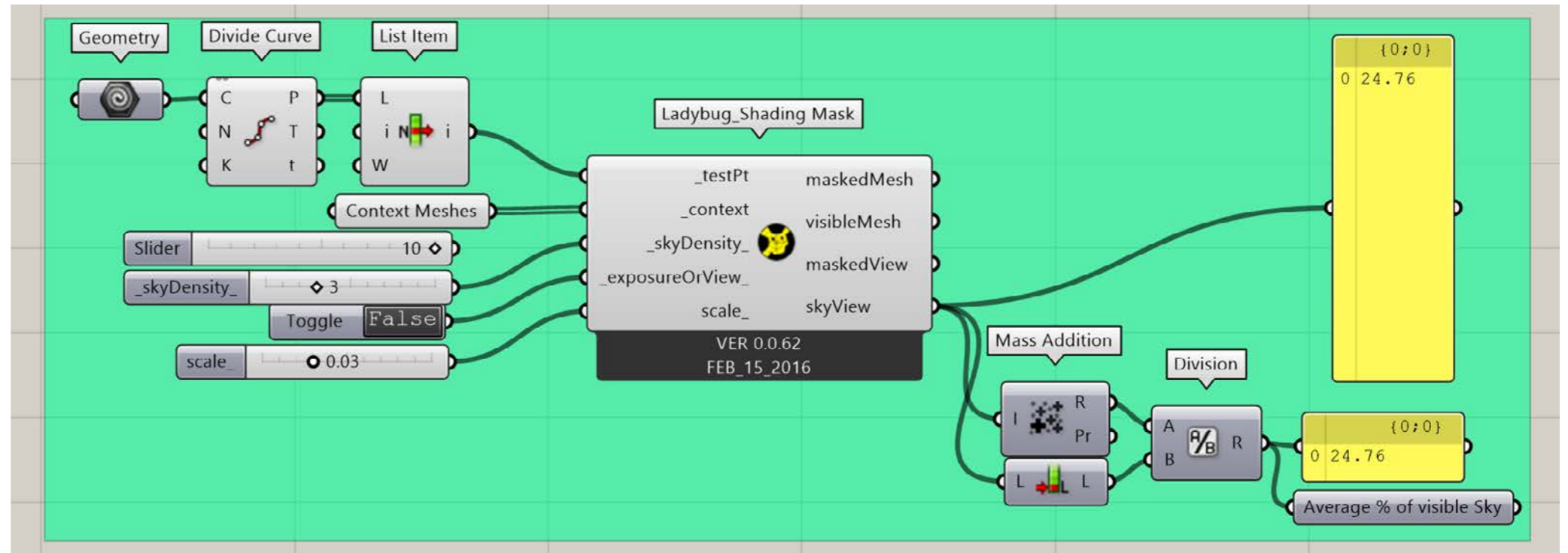


3.1 Sky View Factor Script

Modelling Methodology

The Sky View Factor analysis was conducted using modelling software Rhinoceros 3D and Grasshopper, with an environmental plugin called 'Ladybug'.

Figures below indicate the methodology used to present the analysis used in this report.



TEST GEOMETRY (LEFT)
PARAMETRIC SCRIPT (RIGHT)

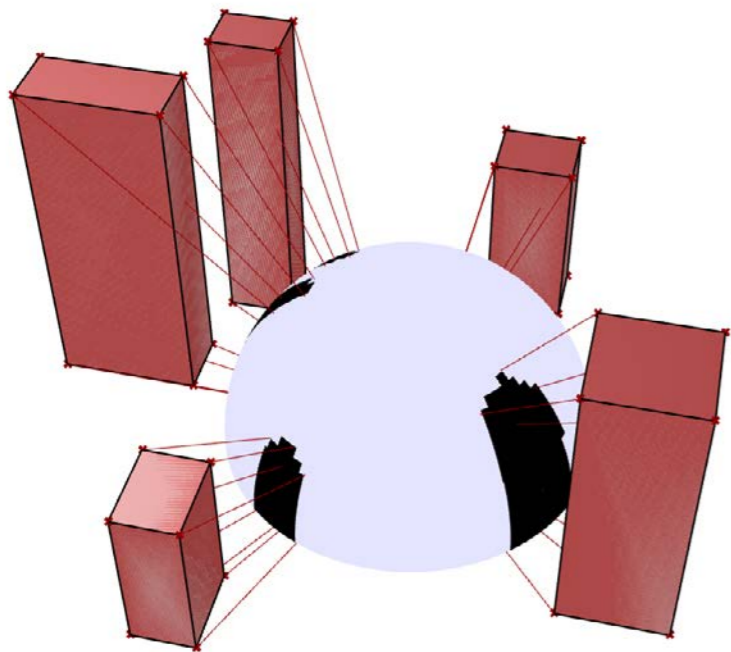


Image source: Bates Smart

3.2 Test Extents

150m Extents

The Sky View Factor assessment has been carried out at 150m extents from the boundaries of the subject site.

The number of test points is 17,980. This equates to 1 test point per square meter within the test extents.

For consistency with other sites, Australia square's private open space was excluded as requested by Council as it was considered private land.

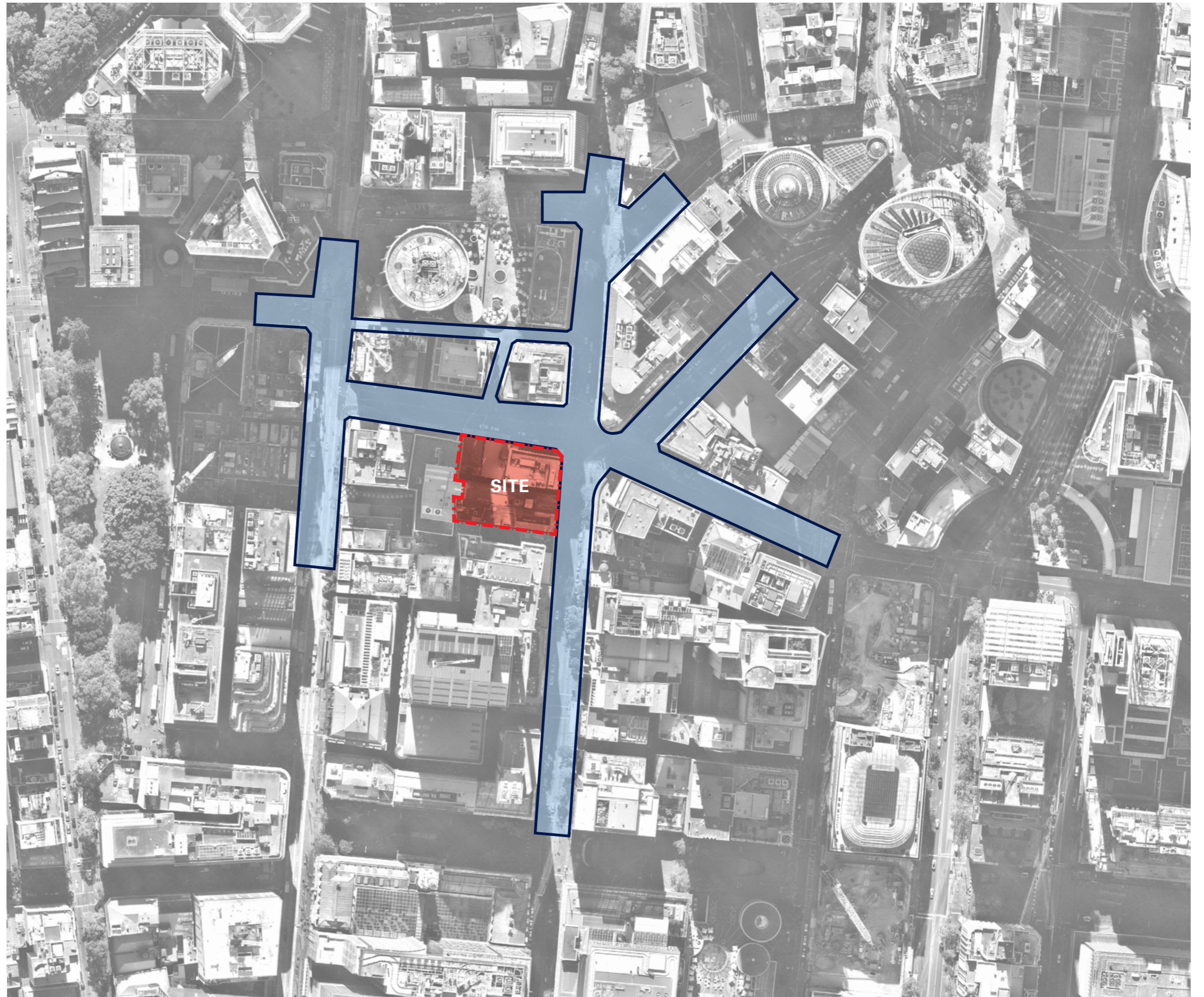


Image source: Bates Smart

150m Extents
With digital city model

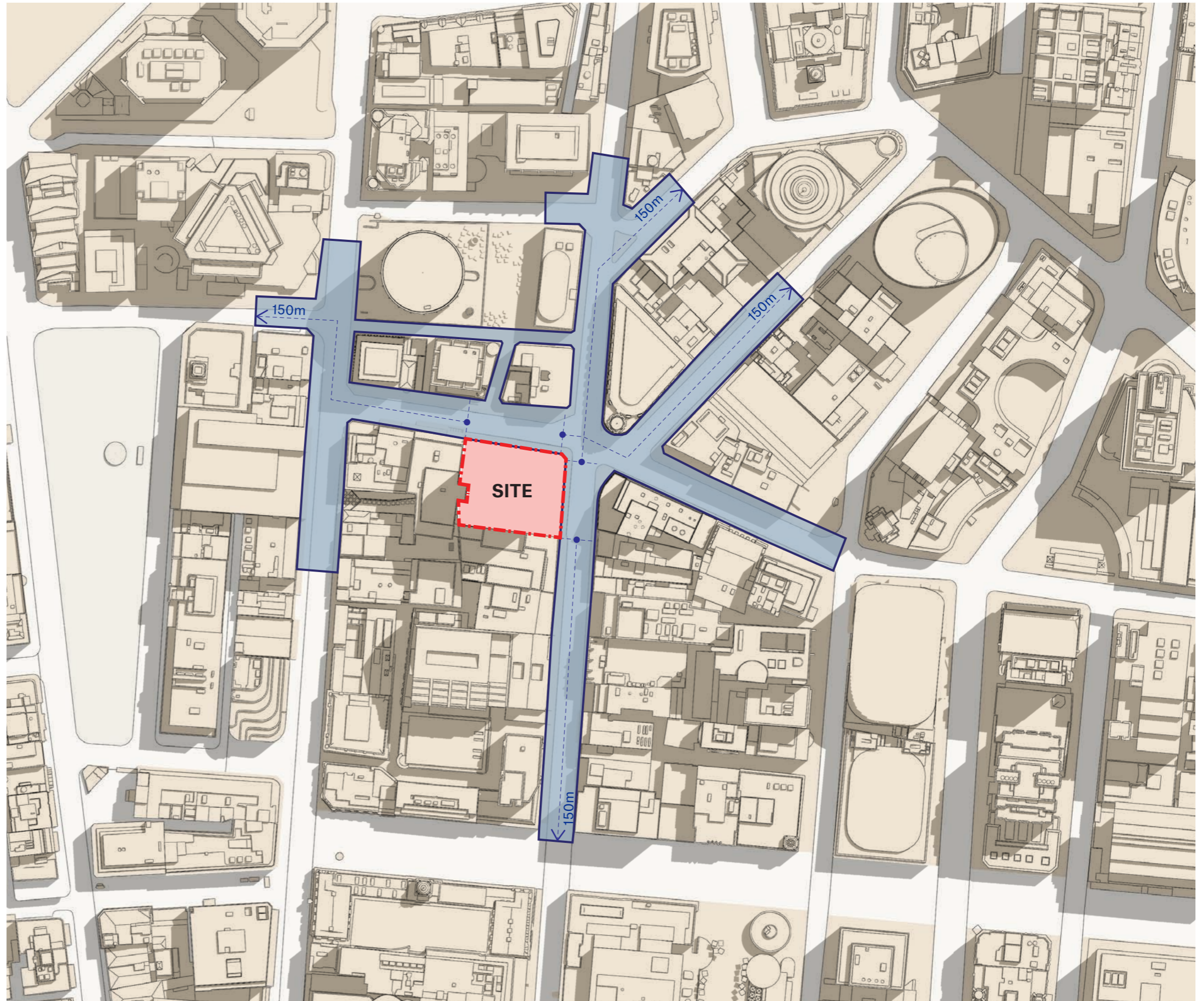


Image source: Bates Smart

3.3 Context Model

The Sky View Factor assessment uses a 2019 Sydney City context model purchased from the industry leading digital mapping and surveying firm AAM Group. Bates Smart then built recent constructions and added envelopes for buildings given planning approval. These models were generated based on their development application drawings accessible on the City of Sydney's website. Every effort has been made to ensure the context is as accurate as possible with the information available.



Image source: Bates Smart

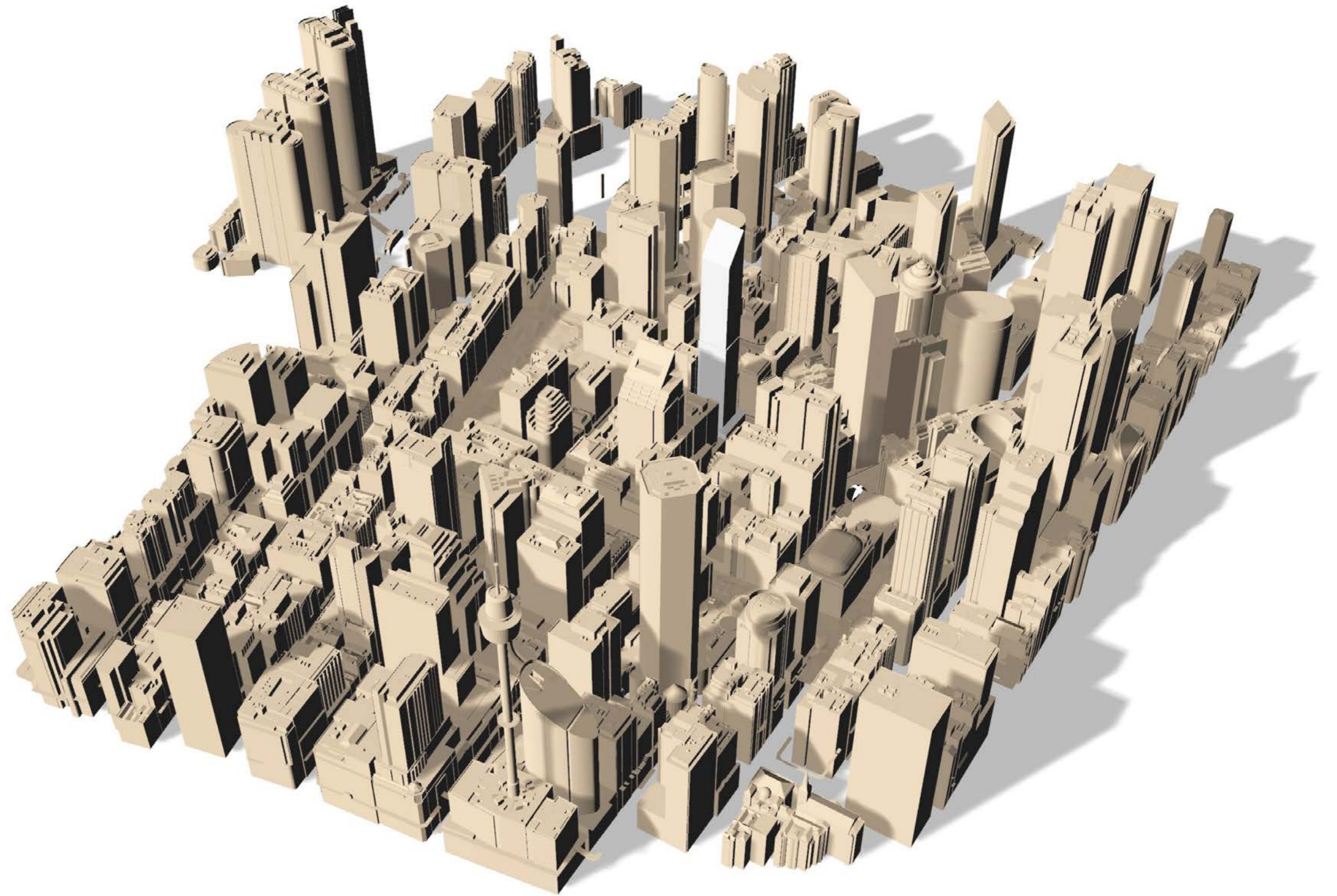


Image source: Bates Smart

3.4 SVF Hemisphere Resolution

For each analysis point (1 per sqm) within the model extents, a digital hemisphere is created by script, which then assigns a value to that hemisphere based on what proportion of sky is visible.

Using scripting, each hemisphere is constructed of 180,000 faces.

In the image shown right, 20.75% of the sky (the white colour) is visible, with the rest shown as obstructed by buildings.

The 17,980 test points are then averaged together to help assess an overall comparison between envelopes.

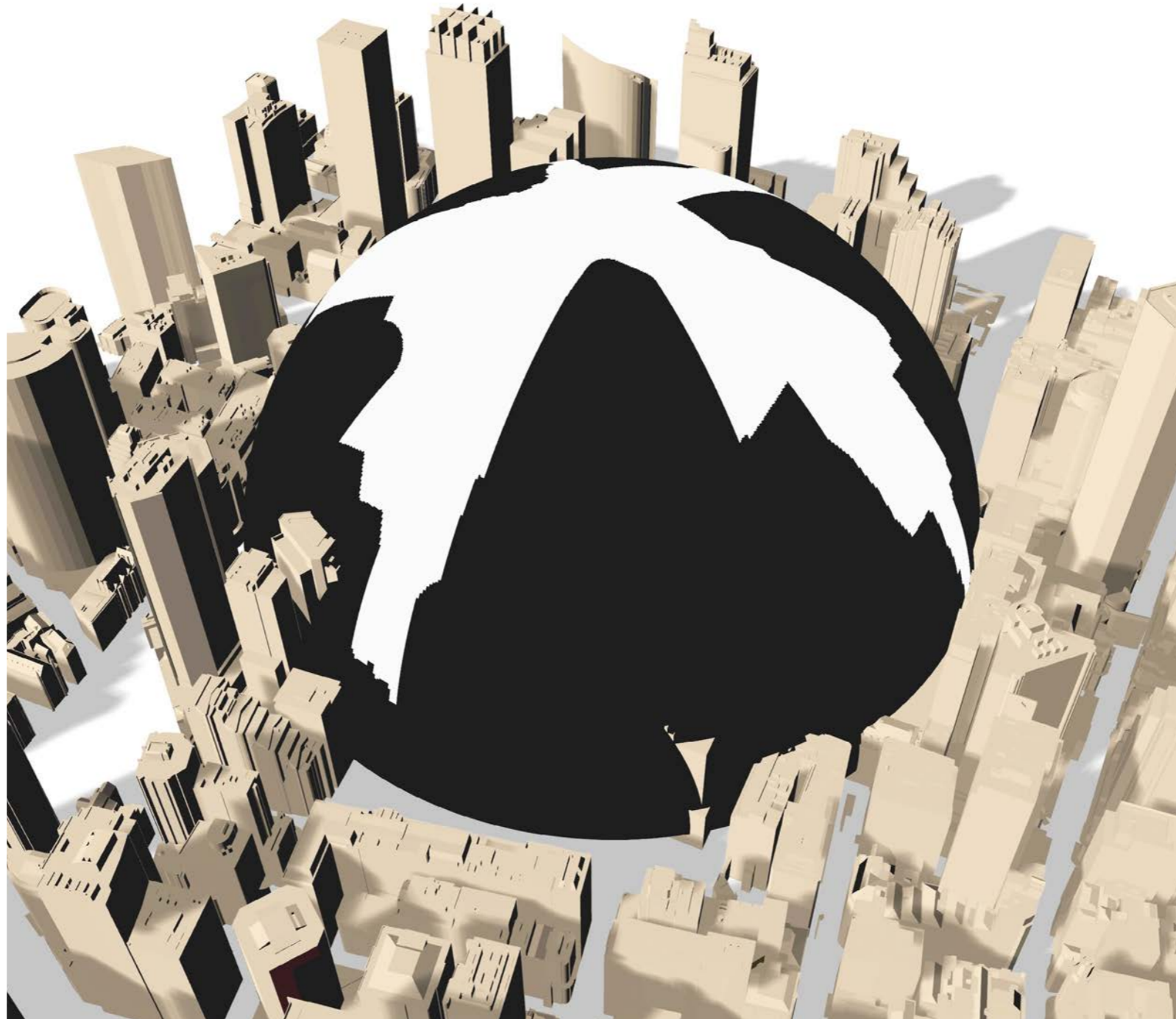


Image source: Bates Smart

3.5 Schedule 11 Envelope

This base envelope for comparison complies with Schedule 11 requirements.

Sky View Factor: **14.604%**
*at 150m extents

GBA per tower floorplate
 25 - 120m: 817m²
 120 - 212m: 739m²
 212 - 240m: < 739m²

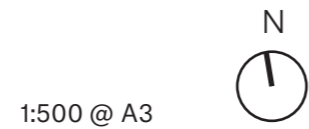
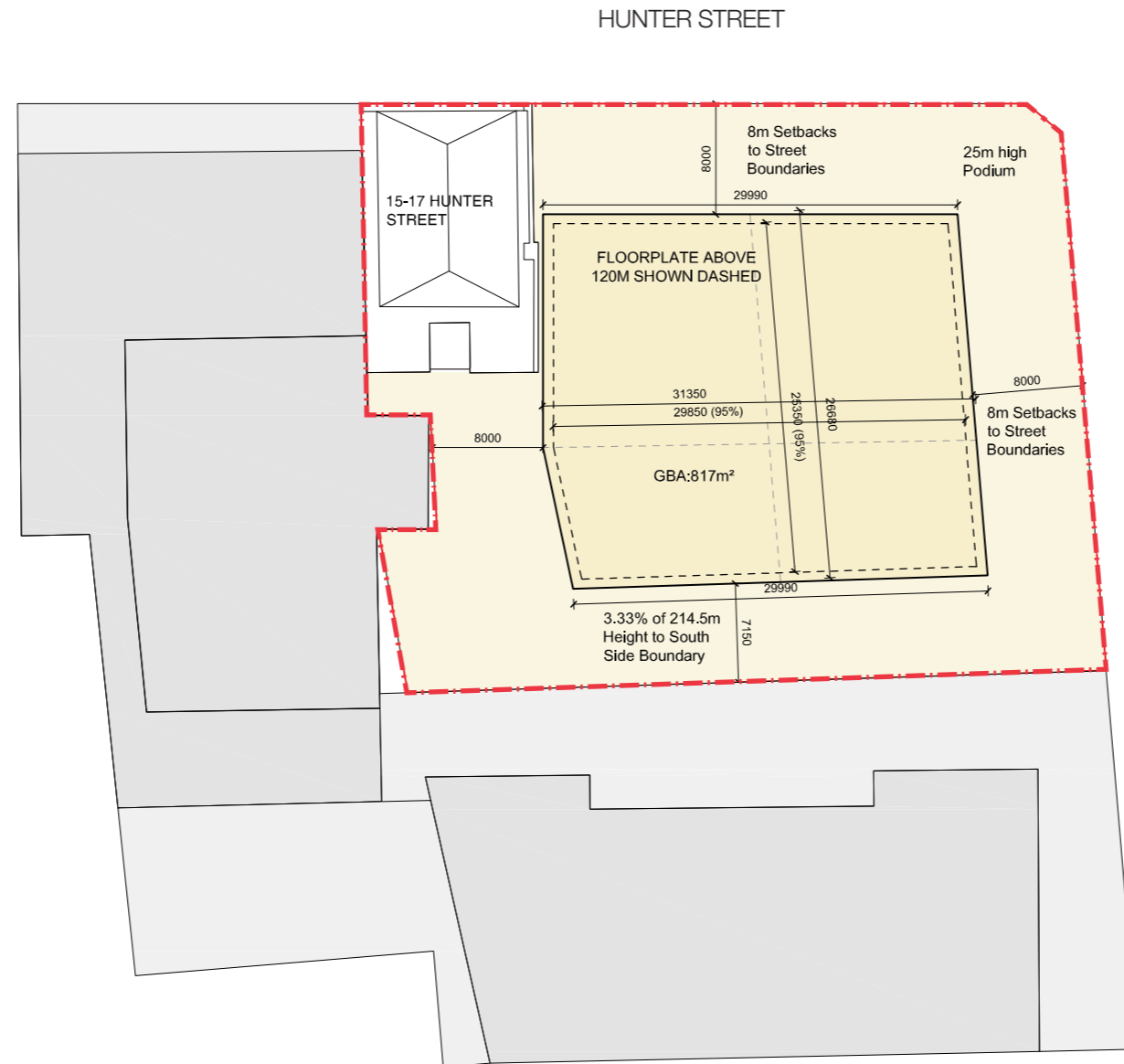


Image source: Bates Smart

Pitt Street Elevation

 **SUN ACCESS PLANE**

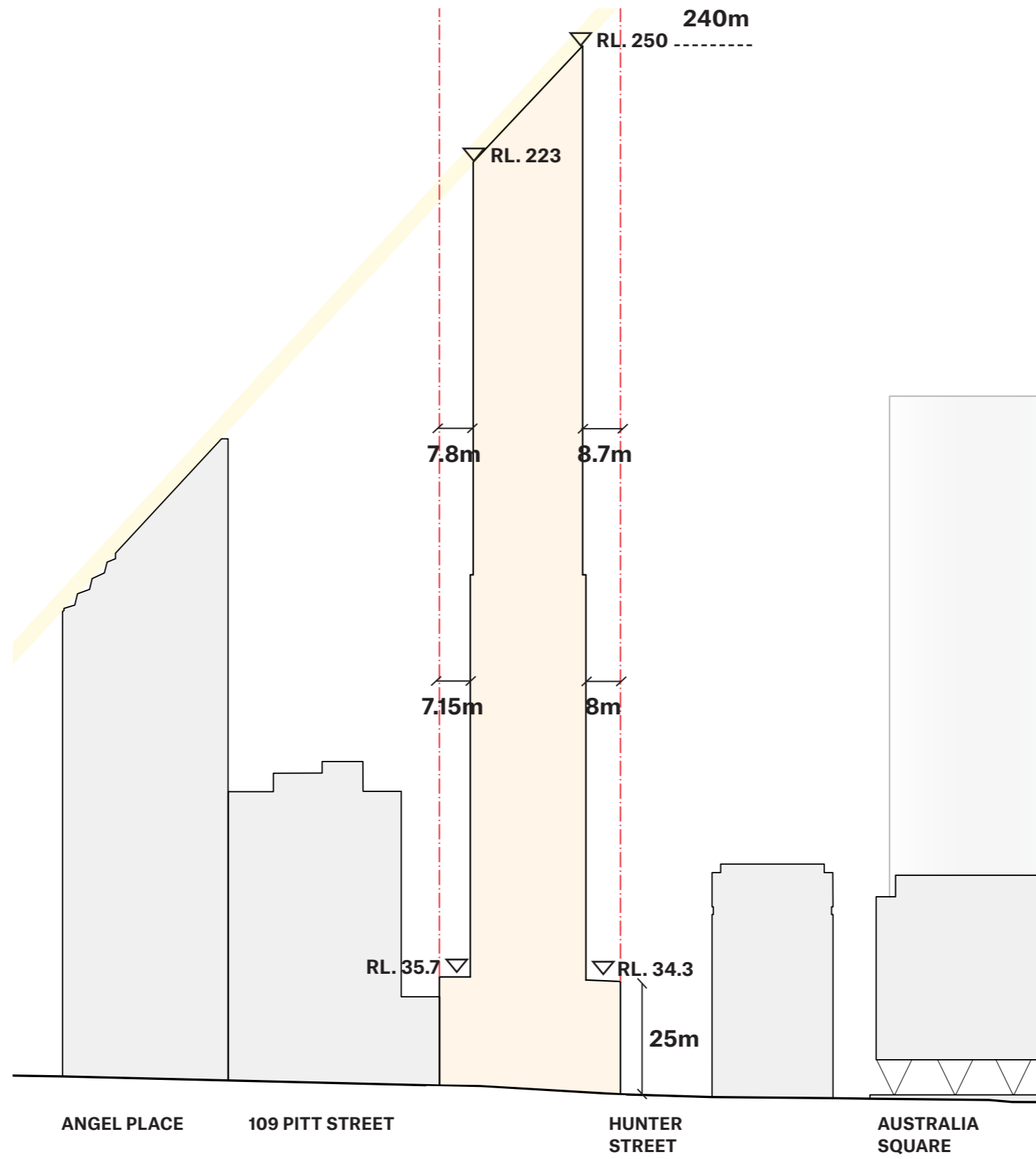


Image source: Bates Smart

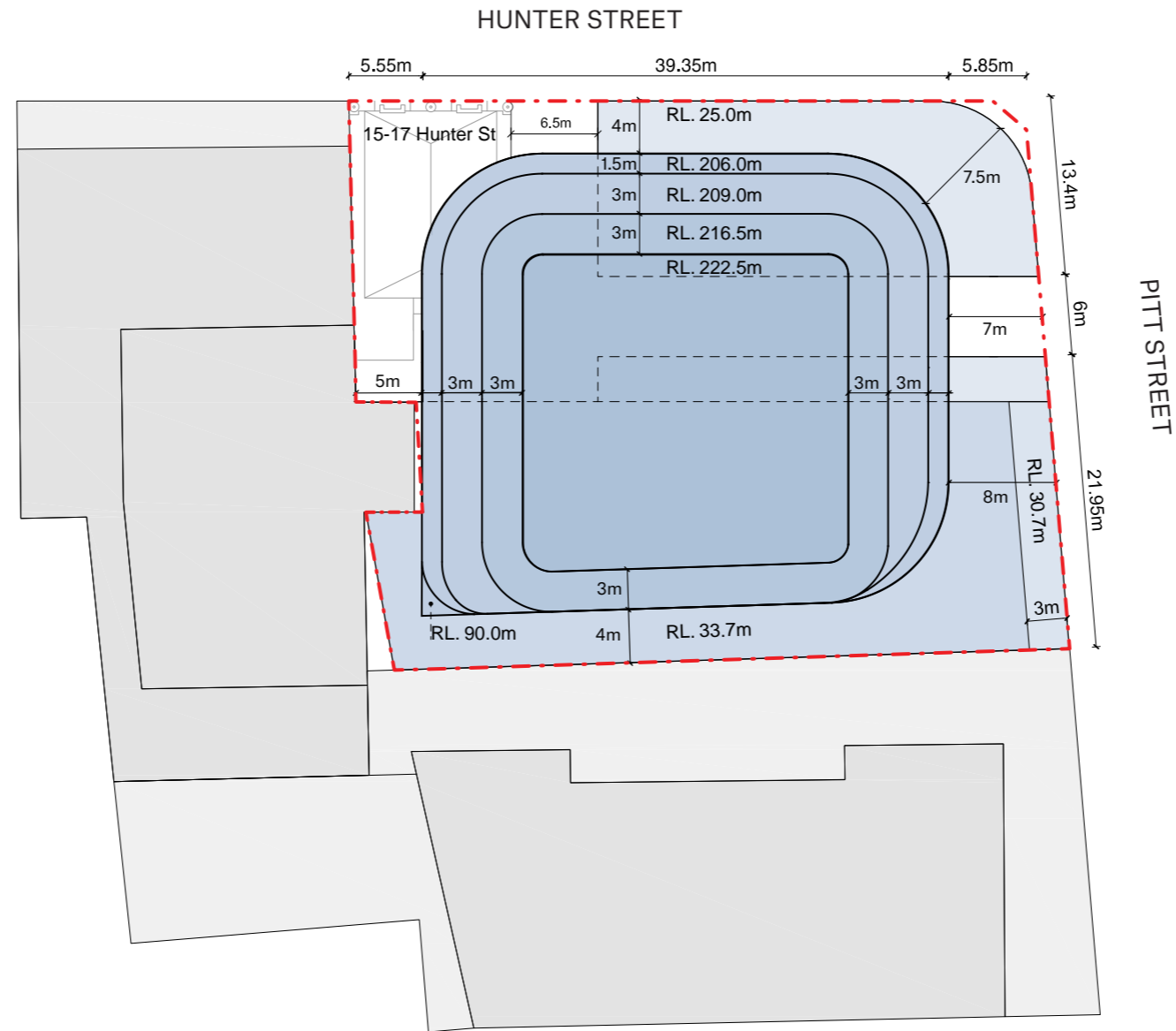
3D view of schedule 11 comparison envelope digital model in context



3.6 Proposed Envelope

The proposed envelope Sky View Factor is “better than” the Schedule 11 SVF.

Sky View Factor: **14.605%**
 = +0.001% better than Schedule 11 Envelope at 150m extents



1:500 @ A3



- SUN ACCESS PLANE
- SCHEDULE 11 ENVELOPE

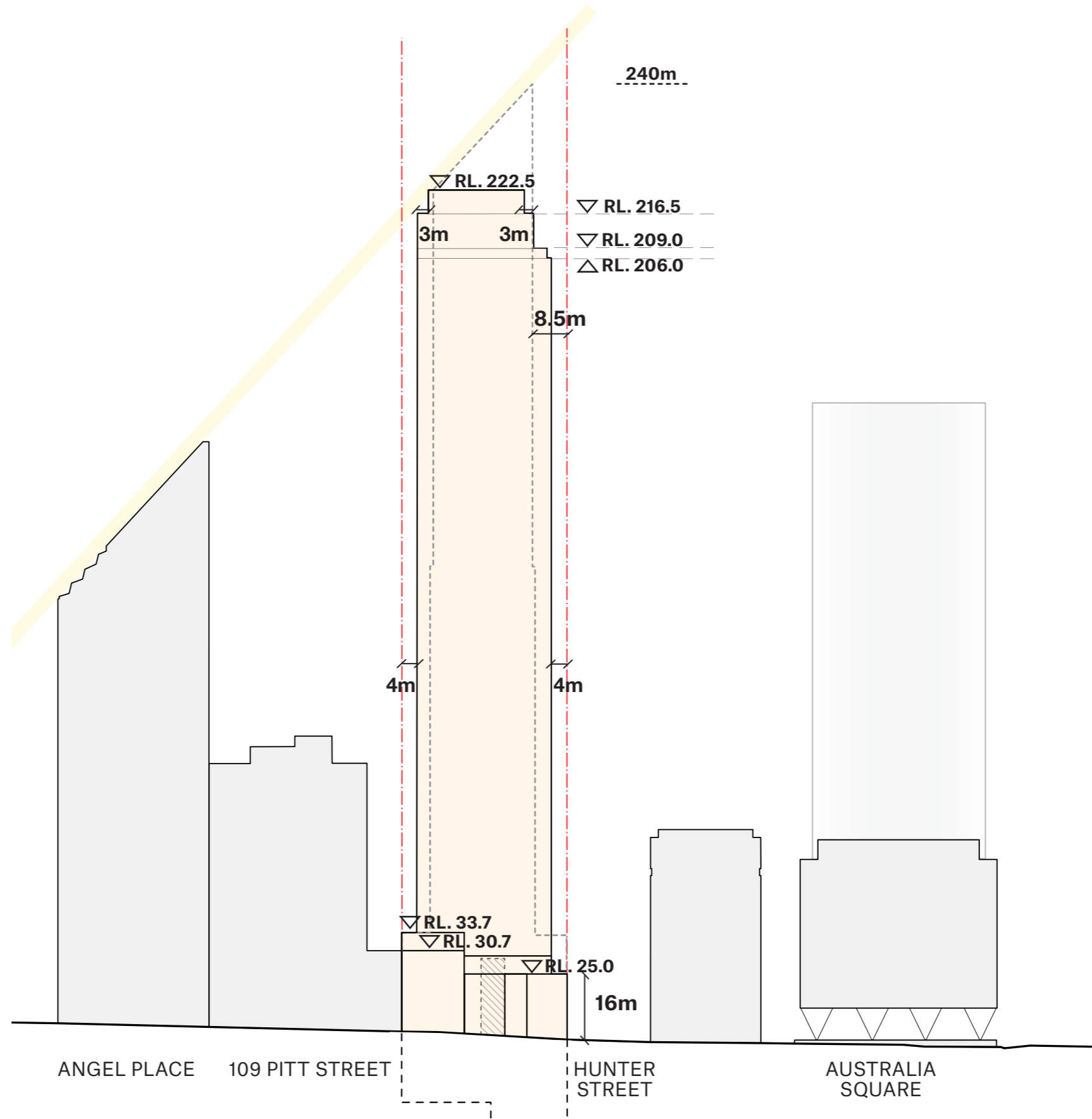


Image source: Bates Smart

PITT STREET ELEVATION

----- SCHEDULE 11 ENVELOPE
SHOWN DASHED

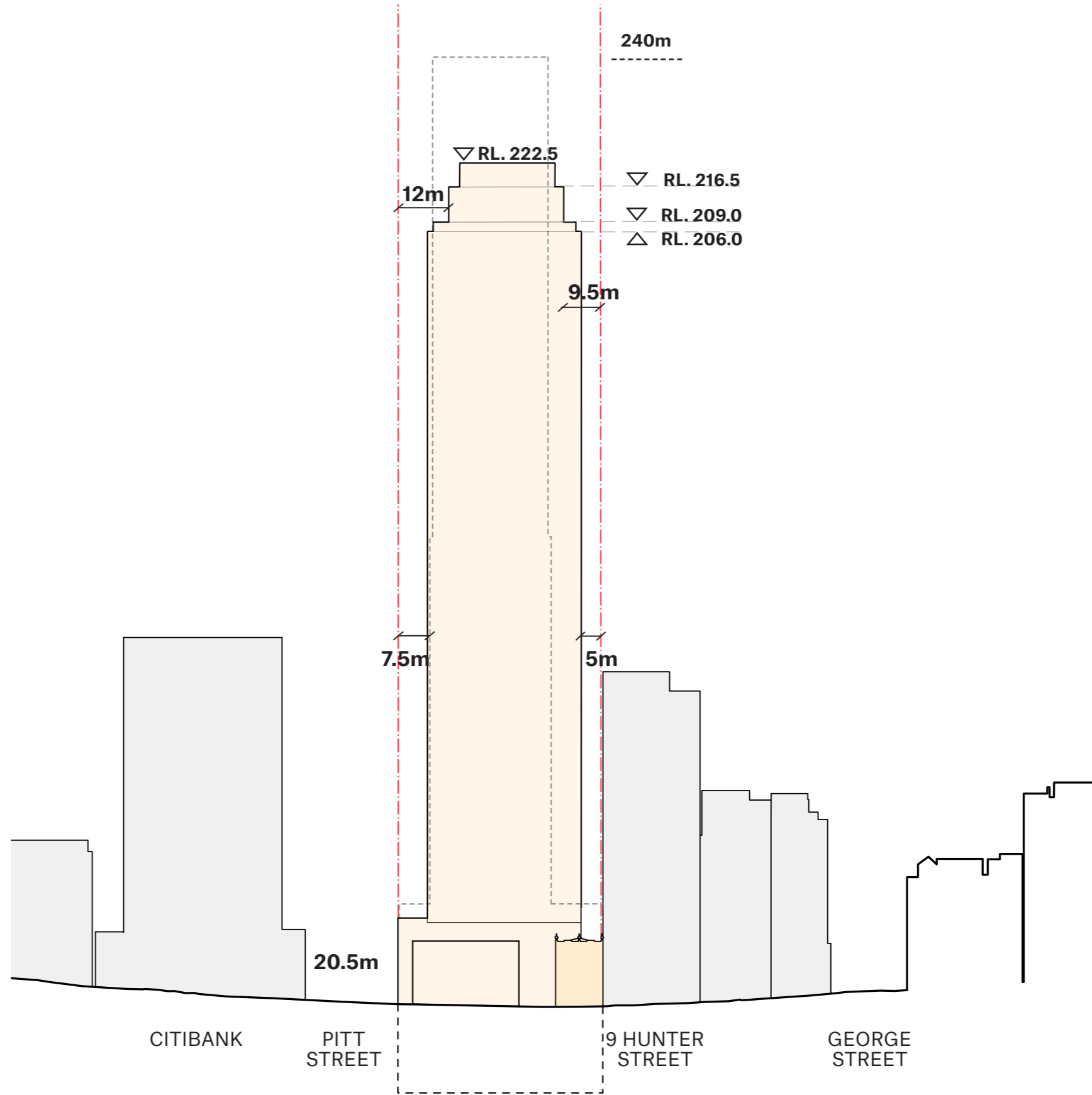


Image source: Bates Smart

HUNTER STREET ELEVATION

4.0

Sky View Factor Analysis

15-23 Hunter Street and
105-107 Pitt Street Sydney



4.1 Sky View Factor Analysis

Reference Point	Schedule 11 Envelope	Proposed Envelope	Difference
1	19.98 %	19.76 %	- 0.22 %
2	12.08 %	12.04 %	- 0.04 %
3	16.30 %	16.32 %	+0.02 %
4	15.45 %	15.59 %	+0.14 %
5	19.84 %	19.72 %	- 0.12 %

RESULTS

This Sky View Factor (SVF) analysis calculates a value based on the amount of sky visible when viewed from the ground up, from points in proximity to the site. The value is presented as an indicator of the total possible sky hemisphere above that point. The SVF value ranges from 0 to 1, where an SVF of 0 indicates no sky visible and an SVF of 1 indicates that the sky is completely visible to the horizon in all directions. For the purpose of our analysis we will present the SVF values as a percentage (where an SVF value of 0 is described as 0% and an SVF value of 1 is described as 100%). Using percentage values allows the comparative differences to be read clearly.

A total of 17,980 test points were analysed within 150m extents of the site at 15-23 Hunter Street and 105-107 Pitt Street. The results demonstrate a marginal increase in sky visibility from the Schedule 11 envelope to the proposed scheme, when averaged across all test points. The envelope which complies with Schedule 11 requirements has an SVF value of 14.60374% and the proposed scheme has an SVF value of 14.60547%, resulting in an overall increase in average sky visibility with an SVF value of **+0.00173%**.

Data has been compiled into excel spreadsheets where totals and averages can be extracted. The SVF values and overall averages can be found in Appendix A.

Visualisations of selected SVF test point results are provided in the following pages (Figures 15-19). The visualisations are presented as 'dome views' and show the extent of visible sky above a point as a proportion of the total possible sky hemisphere above the point. The selected 'dome views' are representations of five test points from the total of 17,980 total points.

The location of the selected five test points (shown in Figures 12-19) are:

1. Intersection of Hunter Street and George Street
2. Intersection of Pitt Street and Martin Place
3. Intersection of Pitt Street and Hunter Street
4. Intersection of Pitt Street and Bond Street
5. Intersection of Hunter Street and Castlereagh Street

Selected Test Point Locations

Figure 12: Analysis Points 1 to 5

The five analysis points are identified by the circular 'dome views' along Hunter and Pitt St within 150m from site.

Visualisation of results

The outcome of the Sky View Factor data for these test points is provided in Figures 12-19 as visual comparisons of the Schedule 11 envelope and the proposed envelope.



Image source: Bates Smart



FIGURE 13: SCHEDULE 11 COMPLIANT SCHEME (INCLUDING URBAN CONTEXT)

The five analysis points are identified by the circular 'dome views' along Hunter and Pitt St within 150m from site.



FIGURE 14: PROPOSED DEVELOPMENT SCHEME (INCLUDING URBAN CONTEXT)

The five analysis points are identified by the circular 'dome views' along Hunter and Pitt St within 150m from site.

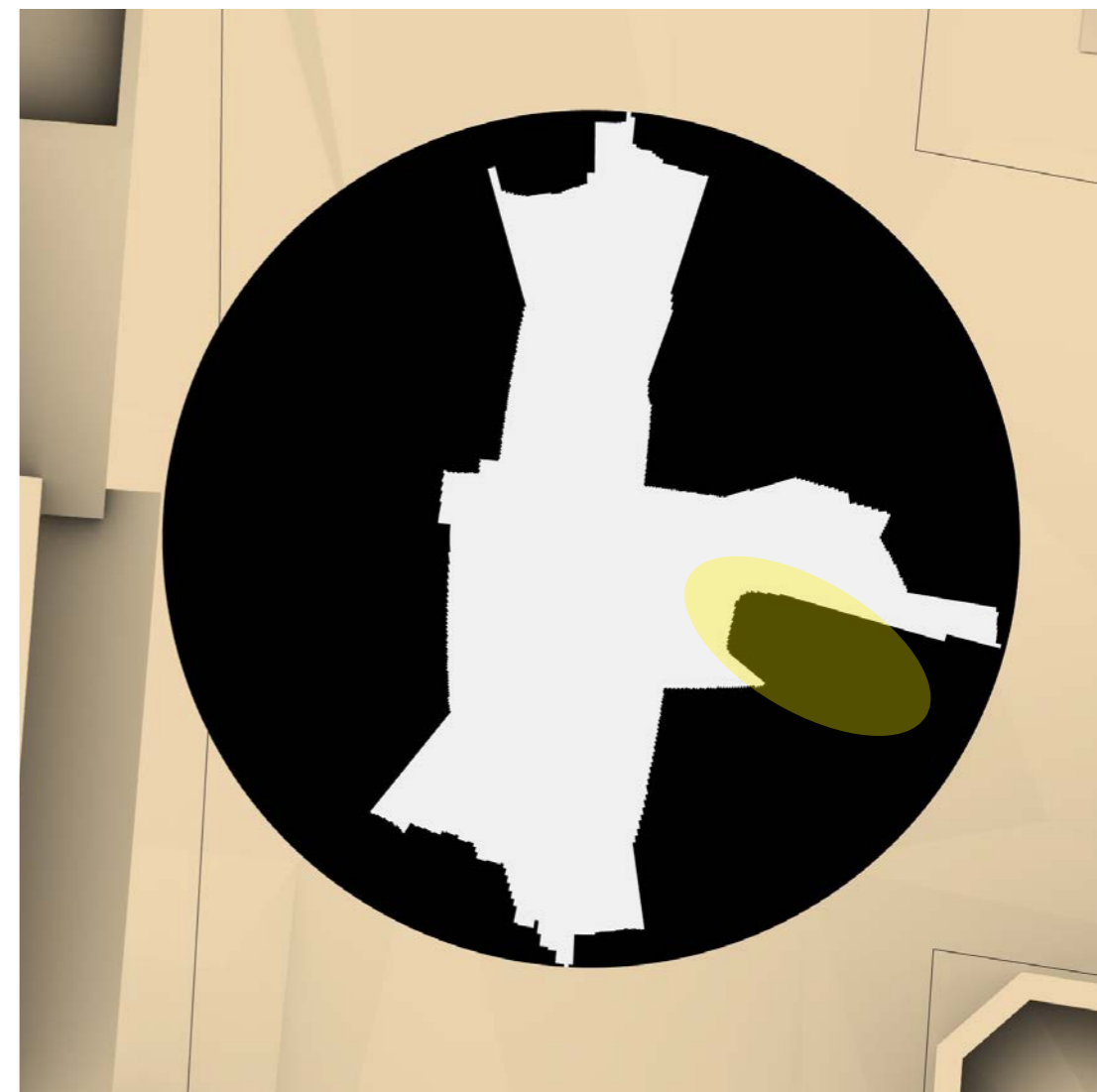
Visualisation

The following images contain some visualisations of the amount of sky that is visible at each analysis point.

The black areas represent sky that is obstructed by the surrounding buildings and the white areas represent sky that is visible from the test point. The area of change between each development scheme is highlighted with yellow ovals. Figures are labelled to identify which test point they belong to.



Schedule 11 Base Case Envelope.
Sky View Factor: 19.98%



Proposed Envelope
Sky View Factor: 19.76%

FIGURE 15: ANALYSIS POINT 1

Image source: Bates Smart



Schedule 11 Base Case Envelope
Sky View Factor: 12.08%

FIGURE 16: ANALYSIS POINT 2



Proposed Envelope
Sky View Factor: 12.04%



Schedule 11 Base Case Envelope
Sky View Factor: 16.30%

FIGURE 17: ANALYSIS POINT 3



Proposed Envelope
Sky View Factor: 16.32%

Image source: Bates Smart



Schedule 11 Base Case Envelope
Sky View Factor: 15.45%

FIGURE 18: ANALYSIS POINT 4



Proposed Envelope
Sky View Factor: 15.59%



Schedule 11 Base Case Envelope
Sky View Factor: 19.89%

FIGURE 19: ANALYSIS POINT 5



Proposed Envelope
Sky View Factor: 19.72%

Image source: Bates Smart

5.0 Conclusion

15-23 Hunter Street and
105-107 Pitt Street Sydney



The proposed envelope's Sky View Factor average is “better than” the Schedule 11 Comparison Envelope's.

SKY VIEW FACTOR: **14.605%**
Δ = +0.001% better than the Schedule 11 Comparison Envelope at 150m extents

As such the proposed envelope is deemed acceptable and is compliant with the Schedule 11 Procedure B equivalency test of the Draft Central Sydney Planning Strategy.



Image source: Bates Smart