

05 Built Form Strategies

Introduction

The Built form envelope and Reference Design

Developed in consultation with the City of Sydney, the built form envelope documents the geometric envelope achievable within the constraints of the subject site.

A competitive design process will be undertaken for the commercial tower building. The competitive design process aims to achieve a high quality solution which addresses the constraints and opportunities of the subject site and achieves design excellence. Outcomes of the design process will see the refinement of a tower and podium that fit closely within the defined envelope.

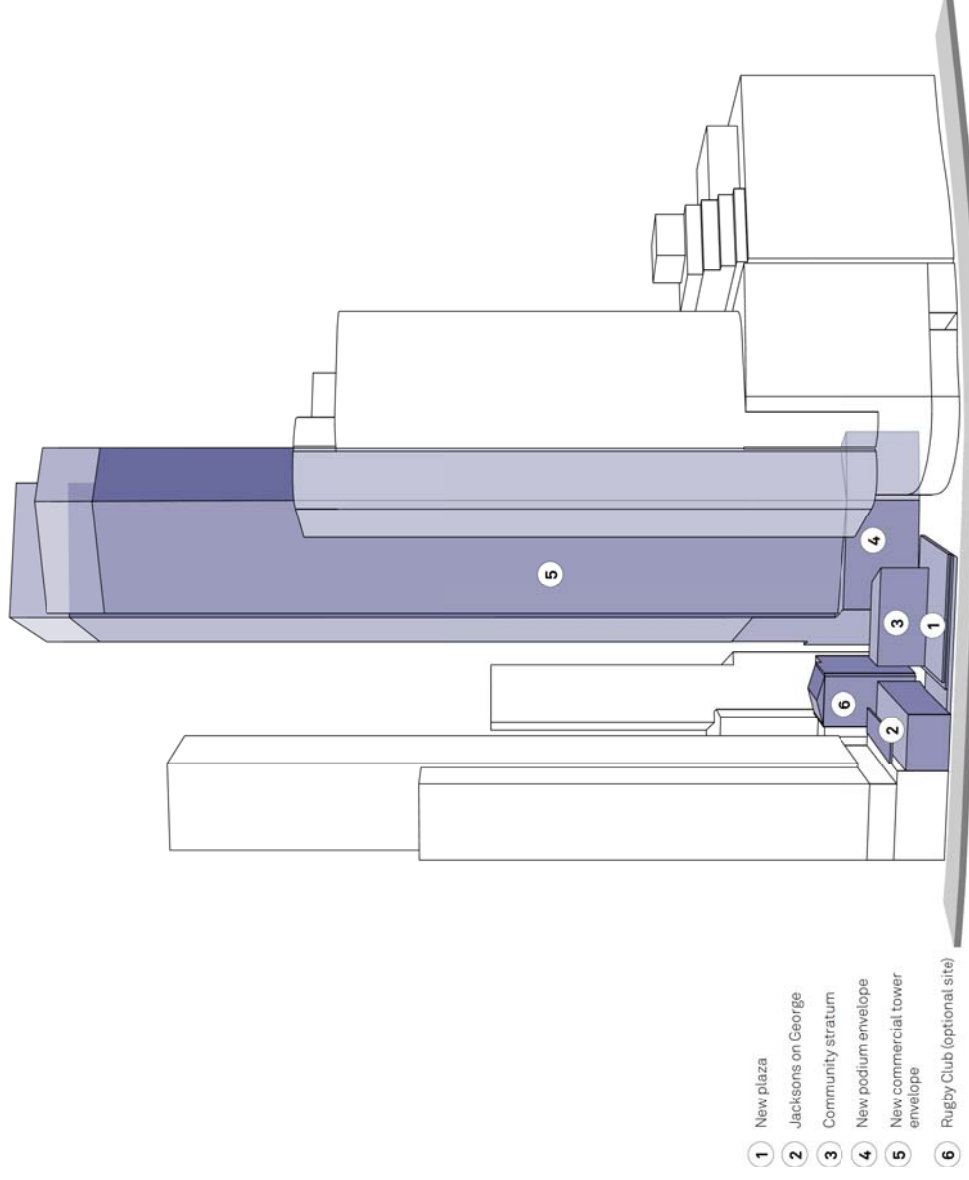
The following pages propose a built form envelope for a new podium and tower on the 33-35 Pitt Street site and new community stratum on the 182 George Street site.

It is important to test the proposed building envelope with a reference design to ensure a sensitive, quality solution is achievable within the constraints of the envelope and the allowable floor area.

The reference design illustrated in this document is one indicative solution that could be achieved within the proposed envelope.

“Good building design should positively contribute to the overall architectural quality of the city and provide buildings appropriate to their context. In some circumstances, this contribution may be as an iconic or landmark building, but more typically it is as a well-mannered building that fits sensitively into the streetscape”

Central Sydney DCP 1996



Figure_5.1_3D model perspective illustrating the components of the project

05 Built Form Strategies Envelope

Built form controls

The following key Sydney LEP and DCP controls have been considered in the development of the built form envelope for the subject site.

Erection of tall buildings

In accordance with the Sydney Local Environmental Plan (LEP) 2012 clause 6.16, the built form envelope has been developed to ensure that the following principles are preserved and the new tower development:

- Provides amenity for the occupants of the tower and neighbouring buildings,
- Does not adversely affect the amenity of public places,
- Is compatible with its context,
- Provides for sunlight to reach the sides and rear of the tower,
- Promotes the ventilation of Central Sydney by allowing the free movement of air around towers, and
- Encourages uses with active street frontages.

Envelope Height

The Sydney LEP 2012 heights map specifies a maximum height across the APDG block, however there is provision in 'alternative building heights' clause 6.20, for additional building height on parts of the APDG block (area 4 on the height of buildings map) if the development provides publicly accessible open space, lanes and other links through the site.

Following discussion and consultation with the City of Sydney a proposed maximum envelope height of 220m (excluding the 15m roof feature zone) is proposed on the eastern section of the subject site, stepping down to 210m on the western section of the site (excluding the 15m roof feature zone).

Sun Access Planes

Sun access plans outlined in clause 6.17 of the Sydney LEP 2012 have no impact on the proposed development.

Solar Overshadowing of certain spaces

The envelope has been developed to prevent overshadowing to certain public spaces as outlined in clause 6.19 of the Sydney Local Environmental Plan (LEP) 2012.

Solar access should be maintained to the following relevant places:

- Australia Square Plaza—between 12.00–14.00,
- Lang Park—between 12.00–14.00,
- Macquarie Place (beyond the shadow that would be cast by a wall with a 35 metre street frontage height on the eastern alignment of Lotus Street)—between 10.00–14.00.

Street wall height

A maximum street wall height of 45m along the northern, southern and eastern edges of the 33-35 Pitt Street site is identified in Diagram 6.11 of Sydney DCP 2012, therefore a maximum height of 45m has been established for the podium envelope.



Figure 5.2. Sun access protection map from Sydney LEP 2012



05 Built Form Strategies

Envelope

Defining the envelope for the new 182 George Street building

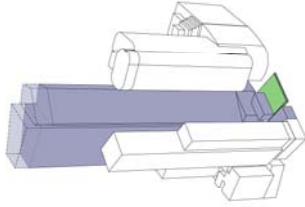


Figure 5.4. 3D model illustrating the proposed envelope within the surrounding proposed context

The following diagrams illustrate a sequential process of establishing a new building envelope.



Building height

— Extrude a notional building footprint bounded by the surrounding streets and laneways to a height of 220m on the east and 210m on the west.



Street wall

— Establish a podium street wall height of 45m to respond to Pitt Street street wall height



George Street context

— Establish a podium street wall height at RL24 (approximately 20m) at the western end of the podium to respond to the George Street context including existing Rugby Place, Jacksons George and proposed community stratum



Laneway open to the sky

— Create a 6m wide laneway along Rugby Place and minimum 7.5m wide laneway at north-south laneway both open to the sky
— Incorporate active uses at ground level



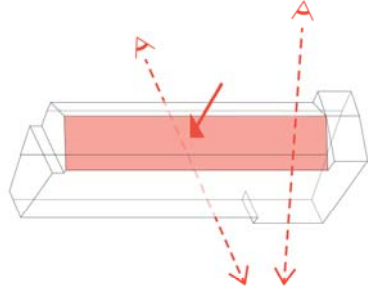
Tower separation

- _Ensure a minimum of 6m separation at tower level from the 200 George Street tower and above RL 18.3 at the podium level



Street setback

- _Provide a 6m setback along Pitt Street above the 45m street wall height



View sharing

- _Chamfer envelope to enable view sharing from 200 George Street and the setback along Pitt Street above street wall height will enable view sharing from 37-49 Pitt Street



19-31 Pitt Street setback

- _Provide a 6m setback from the podium level of the approved development at 19-31 Pitt Street (and approximately 9.5m setback from the tower of the approved development)



Tower Articulation

- _Provide a 3m deep articulation zone in tower



Roof feature

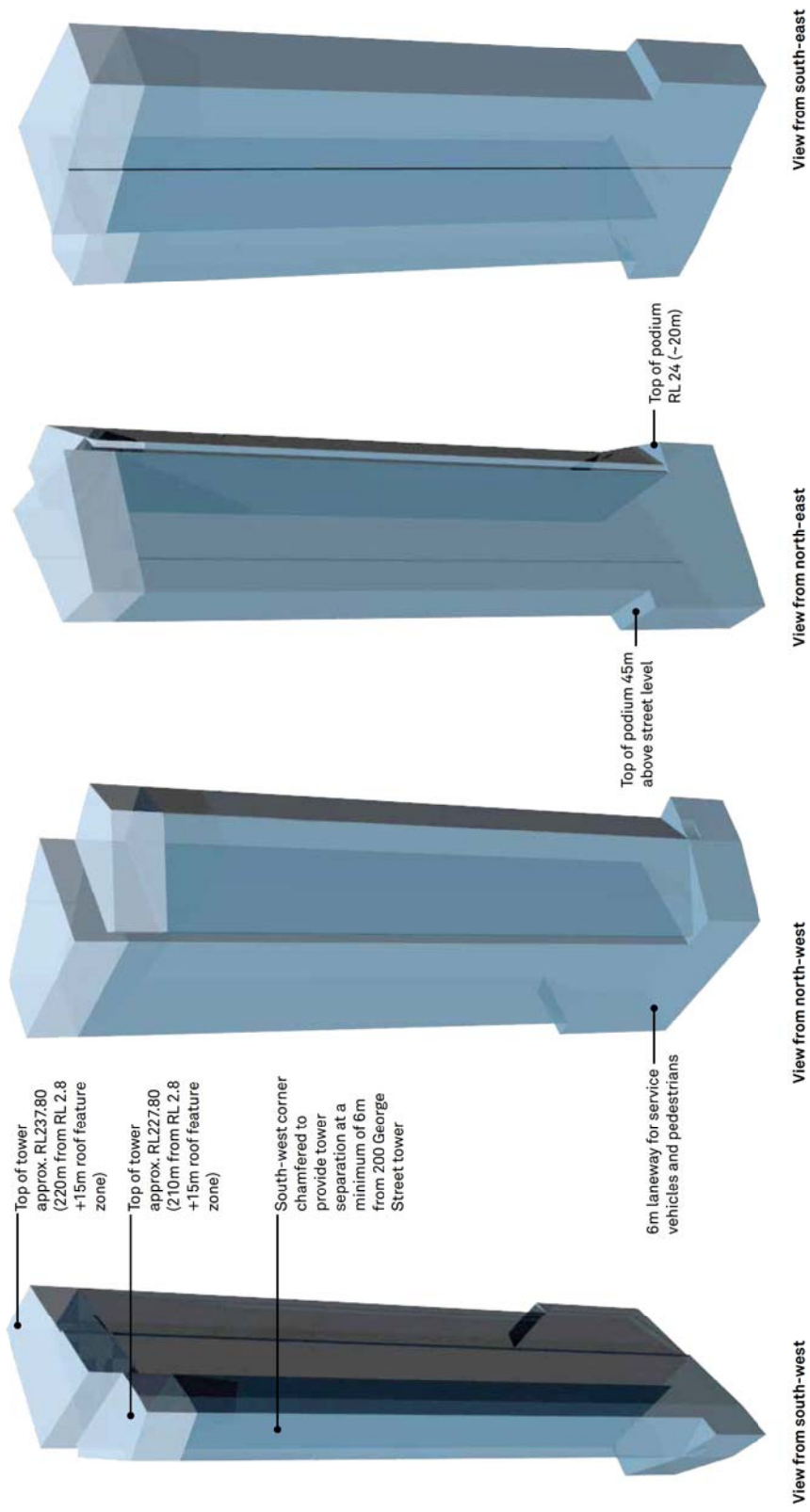
- _Allow for a 15m architectural roof feature zone (to future design)

05 Built Form Strategies

Envelope

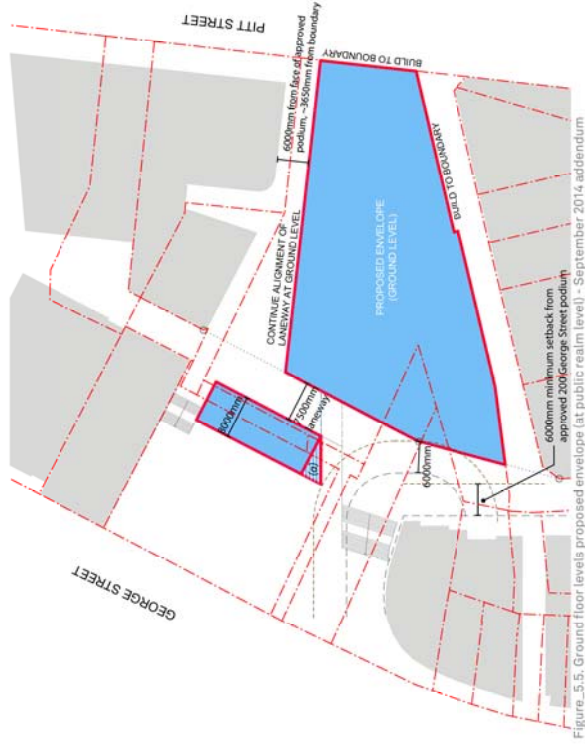
The proposed envelope

The proposed built form envelope documents the geometric envelope achievable within the constraints of the subject site.

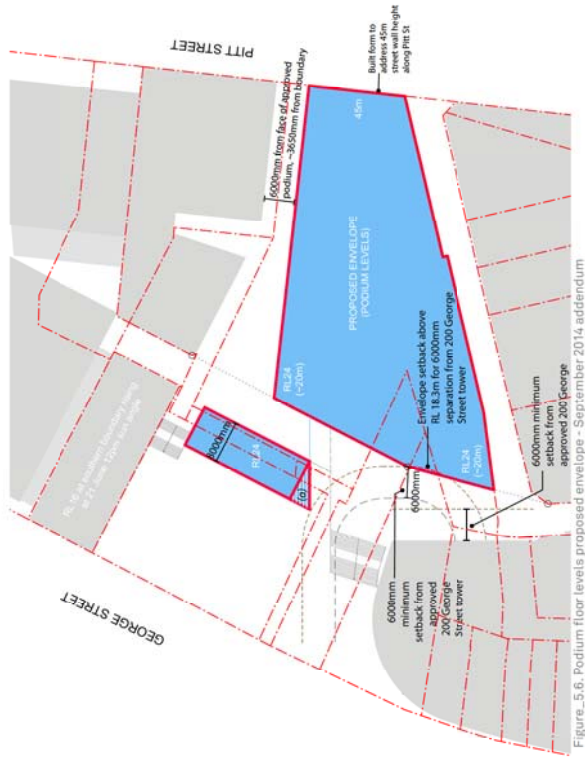


05 Built Form Strategies Envelope

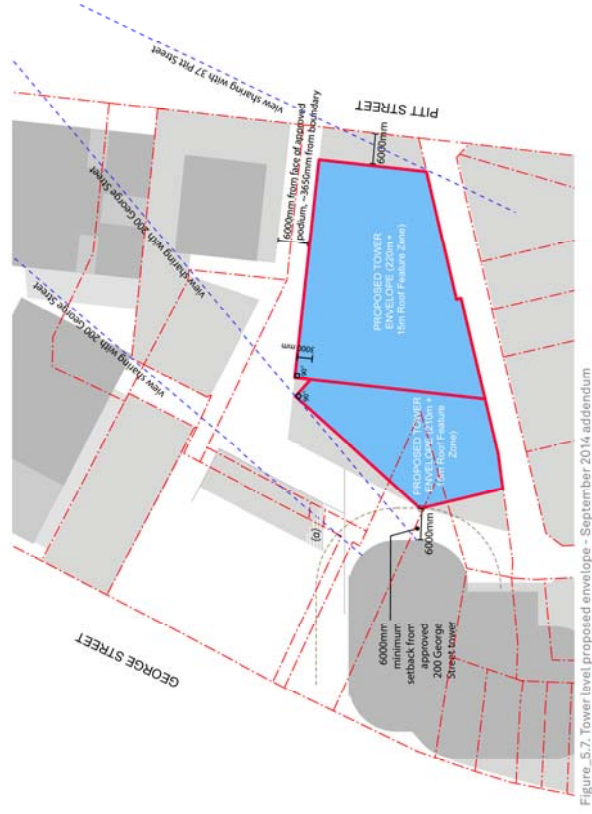
The proposed envelope



Figure_5.5. Ground floor levels proposed envelope (at public realm level) - September 2014 addendum



Figure_5.6. Podium floor levels proposed envelope - September 2014 addendum



Figure_5.7. Tower level proposed envelope - September 2014 addendum

*Note:
Building overhangs such as balconies, awnings and other projections not shown for clarity.
(b) September 2014 addendum note:
The final shape and size of the community building is to be resolved through the concept design process.

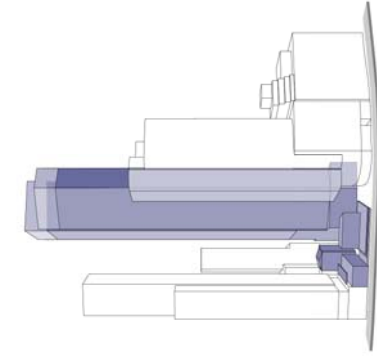
05 Built Form Strategies

Community Stratum

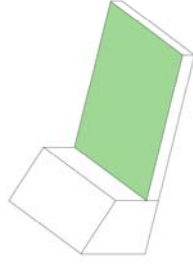
Defining the envelope for the new Community Stratum

The new community stratum is an important element in defining, activating and ultimately creating a successful public space. The Jacksons on George building provides definition on the northern edge of the plaza and the new 200 George Street building on the southern edge of the plaza.

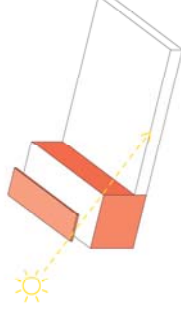
Following the discussion and feedback from the City of Sydney the proposal places a building on the eastern boundary, activating both the plaza and laneway. It is envisaged that the building will be up to double height on the plaza (with extra high levels at approximately 5 metres for ground at plaza level and 4 metres for first floor), responding to the low scale surrounding buildings, and mediating to the new 182 George Street podium behind. No built form is proposed along the George Street edge, making for a highly visible and inviting plaza space. Importantly, it will not be overshadowed by a new built form, creating a public space that is basked in lunch time and afternoon sunlight.



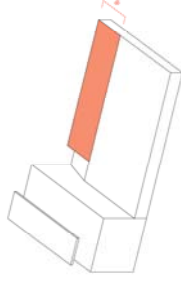
3D model illustrating the plaza and community stratum in the surrounding proposed context.



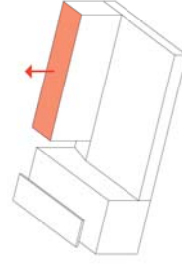
Step 1
A significant new public square off George Street



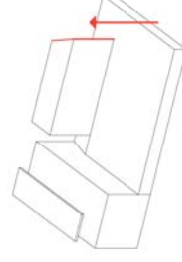
Step 2
Adaptive reuse of Jacksons on George to create a vibrant northern edge to the new plaza while maintaining solar access in midwinter



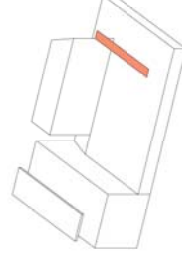
Step 3
Create a defined edge to the eastern side of the plaza



Step 4
Activate with built form that responds to the existing George Street context



Step 5
Chamfer edge to create a clear and legible entry and address to new commercial buildings

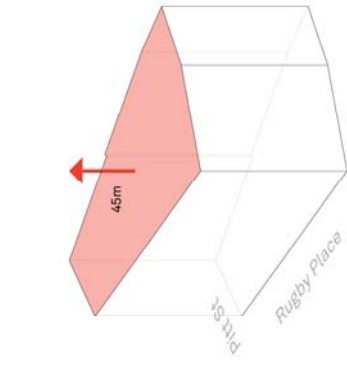


Step 6
Provide covered pedestrian access from George Street

05 Built Form Strategies

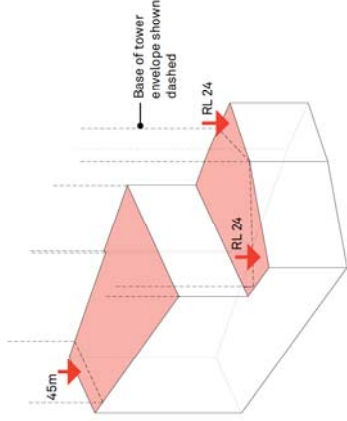
Podium

Podium Strategies (Indicative)



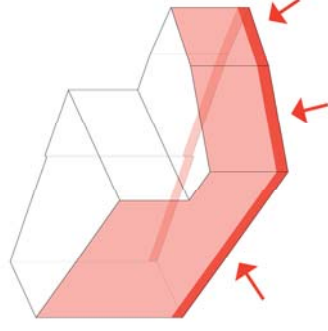
Maximise full extent of the subject site and respond to Pitt Street context

The podium reinforces the street wall alignment along Pitt Street with a 45m level datum height.

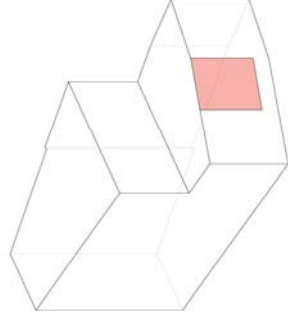


Establish levels that are contextually responsive

In addition to reinforcing the 45m street wall alignment along Pitt Street, respond to the low scale character of the surrounding key buildings along the western edge, such as the 31A Pitt Street (Sydney Rugby Club) and 174-176A George Street (Jacksons on George) by stepping the podium down to meet RL 24 (approximately 20m).

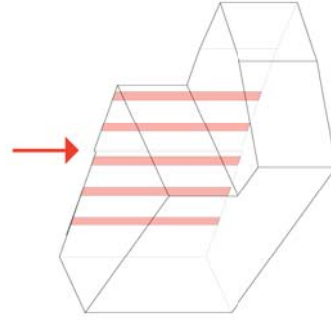


Respond to easements and activate laneways
Create a 6m laneway at Rugby Place and 7.5m north-south laneway open to the sky that provides functional access to easements. It is envisaged that the commercial lobby could be elevated above the ground level, thereby creating more area for fine-grain, laneway activation.



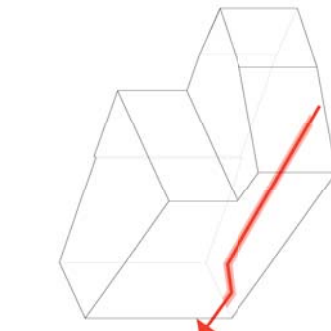
George Street address

Main entrance to new commercial lobby to be accessed from George Street. This lobby is to be clearly visible from George Street to increase legibility and wayfinding.



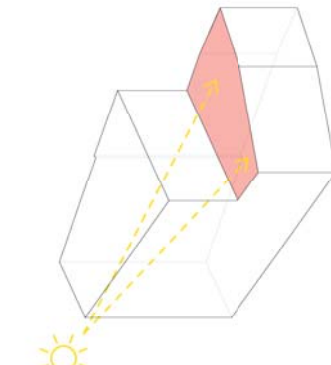
Articulate and activate Underwood Street laneway

Potential articulation to the building facade and possible activation can occur between the lift core to minimise 'blank' or inactive façades.



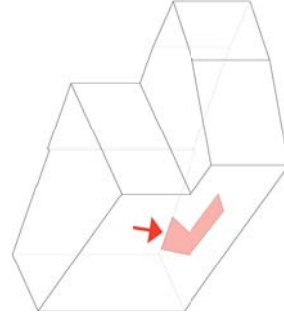
Create an accessible connection

A controlled accessible link from the plaza through to Pitt Street creates a permeable, inviting building.



Create active terraces with good solar access

North-western orientated roof terraces or balconies create active roof tops and engage with the surrounding public domain. They also work to increase natural light to the internal building spaces.



Careful placement of basement access

The basement access is located on the south-east corner of the subject site, minimising shared service vehicle and pedestrian zones.

05 Built Form Strategies

Adaptive Re-use

Jacksons on George

Jacksons on George (176 George Street) is an existing four storey building (three storeys at George Street level) with an entertainment use, built in the mid 1970's. The existing building is bound by the podium of Gold Fields House on the north and 182 George Street on the south. By removing 182 George Street there is an exciting opportunity to adaptively re-use the building to create a revitalised, lively and engaging northern edge to the new plaza. Further opportunity to open the existing roof and create an open roof terrace could be explored, as this will not only add another layer of activity but also increase solar access to the new public plaza. The diagrams to the right illustrate some indicative ideas for the adaptive re-use of Jacksons on George.

Roof top activation

As defined by the City of Sydney, any height addition to Jacksons on George must fall within the solar plane determined by RL 16 at the southern boundary rising at 21 June 12pm sun angle.

It is recommended that a roof awning be provided at the new roof level for weather protection and roof top activation, provided it does not create additional overshadowing of the George Street Plaza. As demonstrated in Figure 5.11, the roof awning will sit within the solar plane and therefore cause no additional overshadowing to the George Street Plaza.



Figure 5.8. View of the existing Jacksons on George building from George Street.

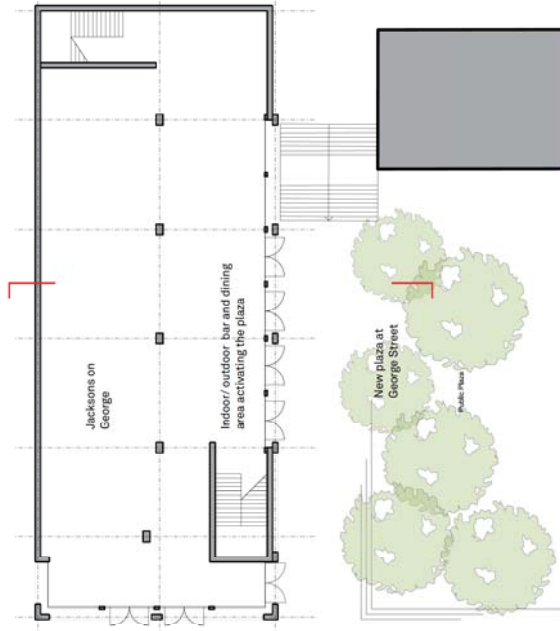


Figure 5.9. Indicative ground level plan of Jacksons on George illustrating the potential to open the building to the south creating a new active facade.



Figure 5.10. Indicative southern elevation of Jacksons on George illustrating potential adaptive re-use to create a lively, engaging edge to the new plaza.

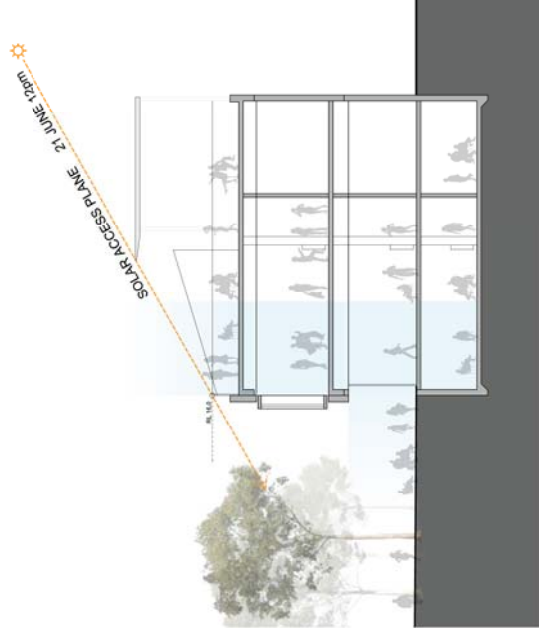


Figure 5.11. Indicative north-south section of the potential adaptive re-use of Jacksons on George within the defined solar plane.

05 Built Form Strategies Adaptive Re-use

Jackson on George adaptive re-use precedent images



01



02



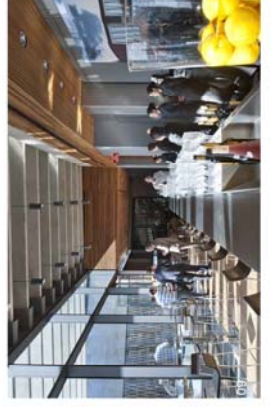
03



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08



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Figure 5.12. Adaptive re-use precedent images

Images 01-03: Fearon Hay's redevelopment of the Imperial Buildings, Auckland. A creative mixture of heritage and new building fabric with a new laneway network. (images: Patrick Reynolds, <http://www.archdaily.com/>)

Images 04 and 09: Foster and Partner's Faustino Winery, Spain. The project uses a rich palette of materials, taking the opportunity to look afresh at the building whilst maintaining a sense of the historical building type (images: <http://www.fosterandpartners.com/>)

Image 05: Natural Sydney sandstone used in 30 The Bond building (image: www.ptw.com.au)

Images 06, 07 and 08: Recent adaptive re-use of Peel Street, Adelaide into a vibrant mix of uses, but including all the original building fabric. The project rejuvenated this space into a popular urban community. (images: www.sensational-adelaide.com; www.theaustralian.com.au; and www.adelaidenow.com.au)

05 Built Form Strategies Sustainability

Ecologically Sustainable Design (ESD) Strategies

The proposed development is to be designed to exceed minimum requirements in terms of ESD.

Minimum targets include:

- 5 Star Green Star - As Built Office (v3) rating (which is considered 'Australian Excellence').
- 5 Star base building rating in operation under the NABERS Energy scheme.
- 4 Star base building rating in operation under the NABERS Water scheme.

Summary of key strategies to achieve these minimum targets include:

- Range of energy and water conservation initiatives.
- High performance facade systems.
- High quality indoor environmental quality that meets health and comfort expectations (including appropriate air quality, daylight levels and exclusion of adverse conditions such as glare).
- Well serviced by public transport facilities.
- Provision of cyclist and pedestrian facilities.
- Positive contributions to the public domain including the adaptive re-use of buildings and new activated open space and laneways.*

(*Source - 'Ecologically Sustainable Design Report' by Cundall, 2014. Refer to this report for a further explanation of the key ESD initiatives).

Foreseeable Wind Impacts

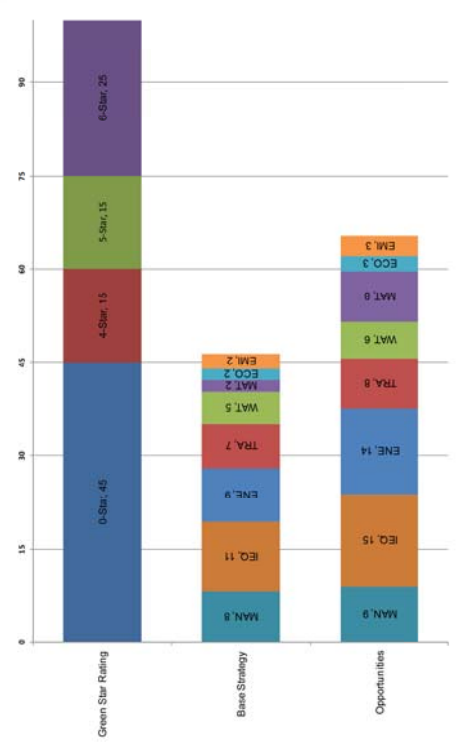
A wind tunnel study was conducted by Cermak Peterka Petersen (CPP) to assess the impact of the proposed built form massing on pedestrian wind comfort at ground level.

A summary of the results are as follows:

- Wind conditions at the proposed George Street plaza (to the west of the subject site) were found to be relatively calm for an outdoor area in the Sydney CBD.
- Wind conditions at specific sections of the internal laneways were found to be suitable for window-shopping and cafe-style activities.
- Street level conditions along George and Pitt Streets are expected to be similar to current typical wind conditions.

- It is concluded that the proposed general configuration and land use of the public plaza and laneways are appropriate to the foreseeable wind impacts.***

(***Source - 'Wind Tunnel Tests for Lend Lease Circular Quay Report' by Cermak Peterka Petersen, 2014. For further explanation of the wind tunnel assessment, refer to this report).



Figure_5.13. Preliminary Green Star assessment illustrating the Green Star total points targeted** (ESD Report by Cundall, 2014)

**The number of points shown are indicative only and are subject to detailed design development



Figure_5.14. Relatively calm pedestrian wind conditions at ground level is encouraged to support active outdoor land uses

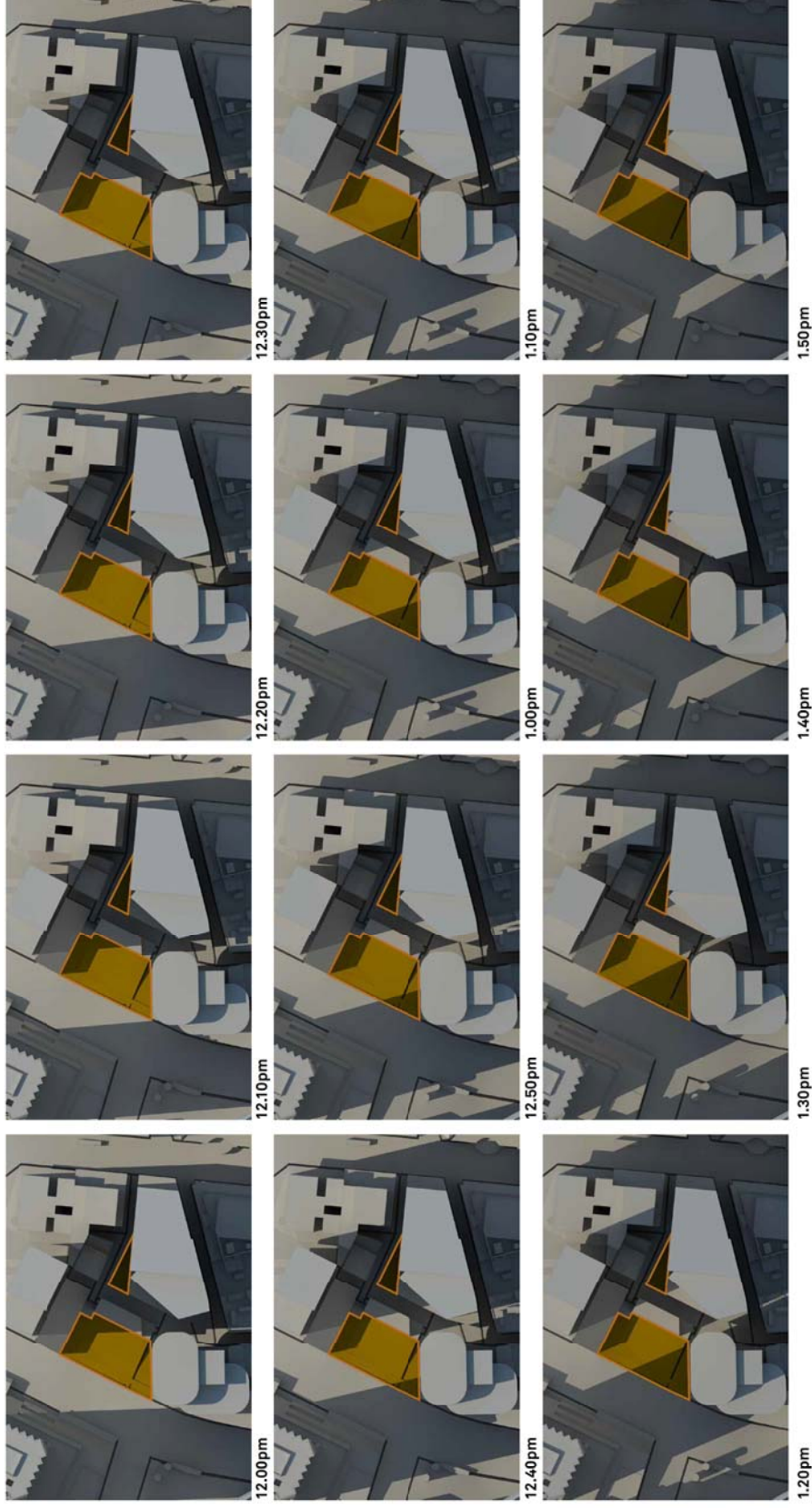
05 Built Form Strategies Sustainability

Shadow Impact Analysis

A shadow impact analysis was conducted to assess the quantity of solar access to the proposed new publicly accessible plaza on George Street (including adjacent publicly accessible land at 200 George Street). The analysis has taken into consideration the proposed built form envelopes. If we were to consider the worst case scenario, the images to the right illustrate that during winter on the 21 June between 12pm - 1.50pm, solar access to the George Street plaza is generally good for the lunch time peak.

The location of the publicly accessible plaza in the current DCP would achieve 0% solar access during the same period. Therefore, there is a significant increase to solar access levels by locating the main plaza along George Street rather than the centre of the block.

(For further information refer to Chapter 06 'Planning Provisions, Solar Study Comparison' and Appendix A, Part 02 'Shadow Studies Report' for more information).



Figure_5.15. Shadow study results looking at plaza from the current Sydney DCP 2012. Image shown above is at 12pm, 21 June. The plaza receives 0% solar access for the remainder of the lunch time peak.

Figure_5.16. Shadow study results looking at proposed publicly accessible plaza including adjacent publicly accessible land at 200 George Street on June 21, 12.00pm - 1.50pm



05 Built Form Strategies Reference Scheme

Reference Scheme (Indicative)

The indicative reference scheme demonstrates one possible arrangement of the floor space quantum in the proposed envelope.

Indicative distribution of floor space (GFA and NLA) by land use and within buildings

	Indicative GFA	Indicative NLA
Jacksons on George	989m ²	890m ²
Community Stratum/ Plaza Building and End of Journey Cycle Facilities	Not accountable	Not accountable
Laneway retail	1,300m ²	1,040m ²
Commercial office tower	66,354m ²	61,000m ²
Rugby Club (optional site)	1,357m ²	1,221m ²
TOTAL	70,000m²	64,150m²



Figure 5.17. Reference design plan at lower ground level.

Lower Ground (Pitt Street level)

The lower ground level illustrates a high percentage of active frontage. This is achieved by elevating the lobby, thereby freeing the lower ground laneway area to become a vibrant laneway network of fine-grain laneway tenancies. A potential through-site link between lift banks of approximately 4 metre clear height to connect the proposed extension of Queens Court and Underwood Street to Rugby Place has been indicated.



Figure 5.18. Reference design plan at upper ground level - September 2014 amendment

Upper Ground (Pitt Street level)

The upper ground level links the George Street plaza with a controlled accessible link through to Pitt Street. The new commercial, lobby and retail will activate the building form and engage with the plaza and laneway network.



(b) September 2014 addendum note:
The final shape and size of the community building is to be resolved through the concept design process.



05 Built Form Strategies Reference Scheme

Reference Scheme (Indicative)



Figure_5.19. Reference design plan at typical podium level (up to ~20m (RL 24))

Typical podium level (Up to ~20m (RL 24m))

A typical lower podium level has potential to be a commercial or mixed use floor plate. It is envisaged that articulation will be provided to engage with the plaza and surrounding building context.



Figure_5.20. Reference design plan at typical podium level (up to RL 47.8)

Typical podium level (Up to RL 47.8)

The typical upper podium level addresses the 45m street wall height on Pitt Street and relates to the tower form above. The north-western edge is chamfered to allow for view sharing from the 200 George Street building and the south-west corner is chamfered to improve building separation from 200 George Street.



05 Built Form Strategies Reference Scheme

Reference Scheme (Indicative)



Figure_5.21. Reference design plan at typical lowrise tower level.

Typical tower (low rise)

A typical tower level is designed to orientate the core on the southern edge of the subject site, taking advantage of the northern views and light. A consistent relationship between the core and envelope has been suggested in order to achieve premium grade commercial space.



Figure_5.22. Reference design plan at typical midrise tower level.

Typical tower level (mid rise)

A typical mid rise sees the core starting to drop off, releasing premium floor space on the north-east side of the building.



05 Built Form Strategies Reference Scheme

Reference Scheme (Indicative)



Figure 5.23. Reference design plan at typical high rise tower level.

Typical tower level (high rise)

The high rise floor plate has a core that is centrally located on the southern boundary, allowing for premium grade floor space with good access to daylight and views.

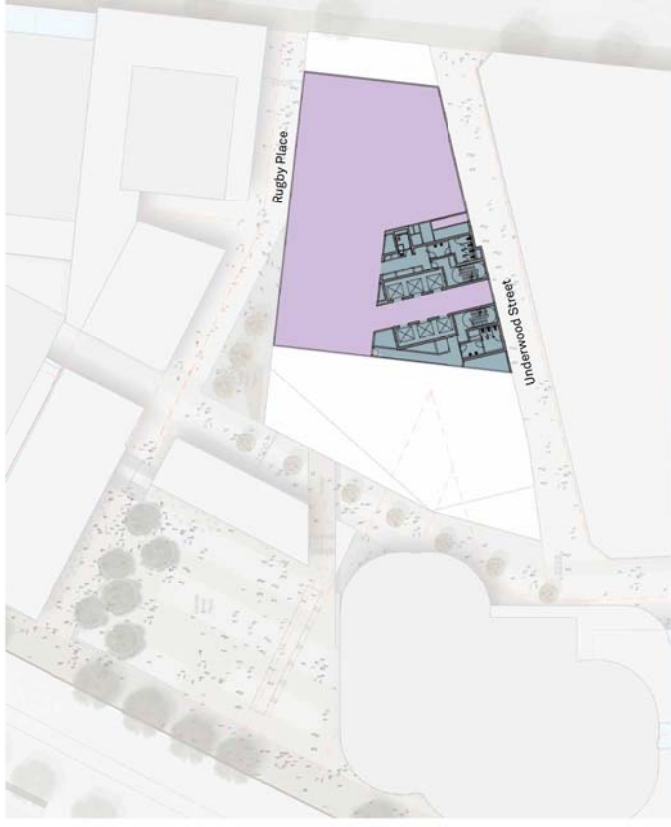


Figure 5.24. Reference design plan at typical upper high rise tower level (above RL 212)

Typical tower level (upper high rise)

Above RL 210m the tower form steps, creating a smaller boutique floor with a side core. The south-west core position allows for expansive views towards the harbour from a majority of the floor area.



05 Built Form Strategies Reference Scheme

Reference Scheme (Indicative)

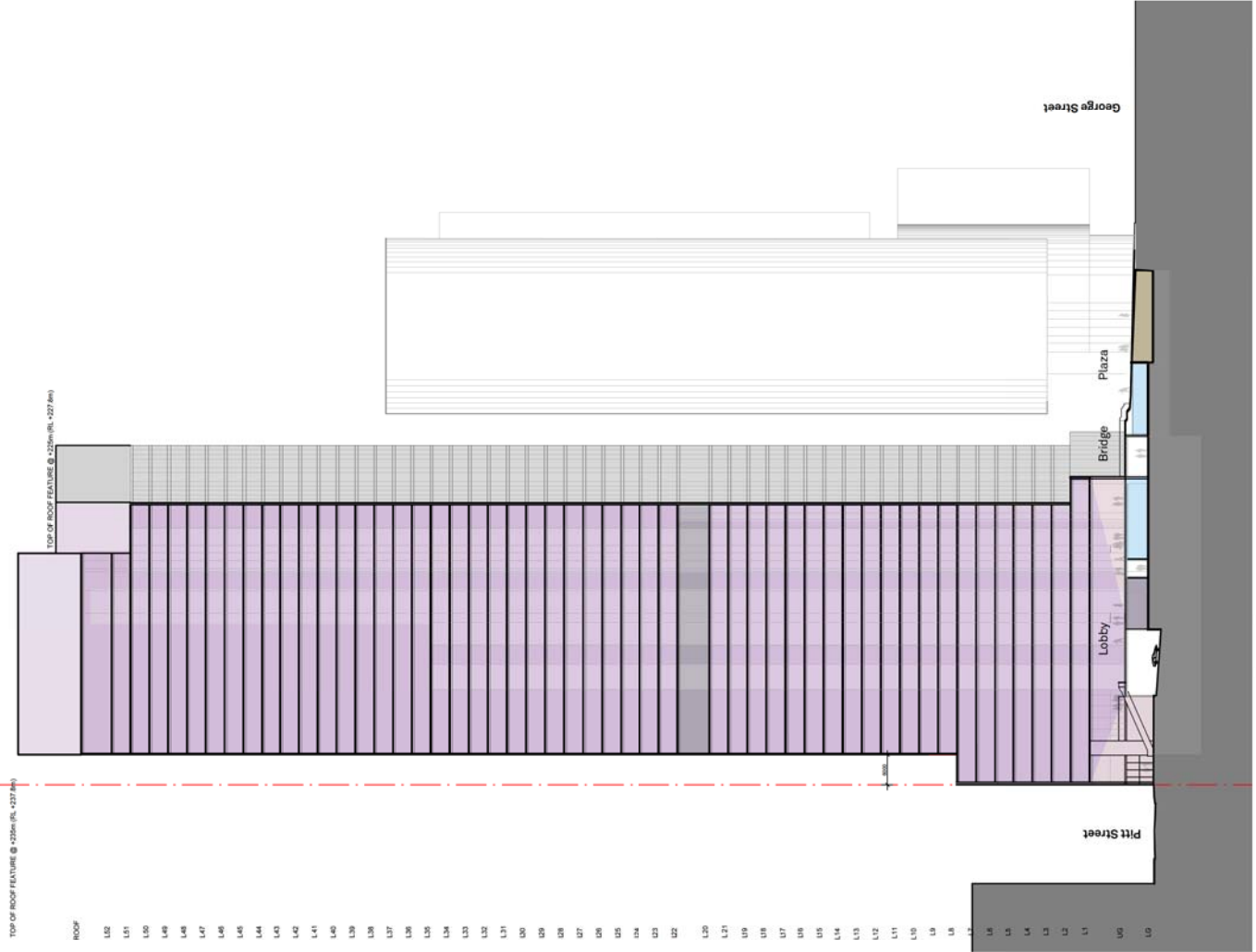
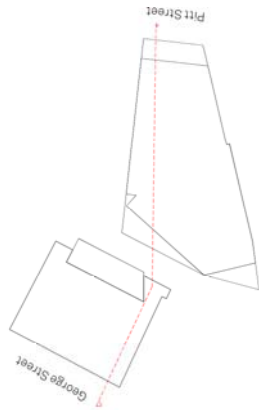
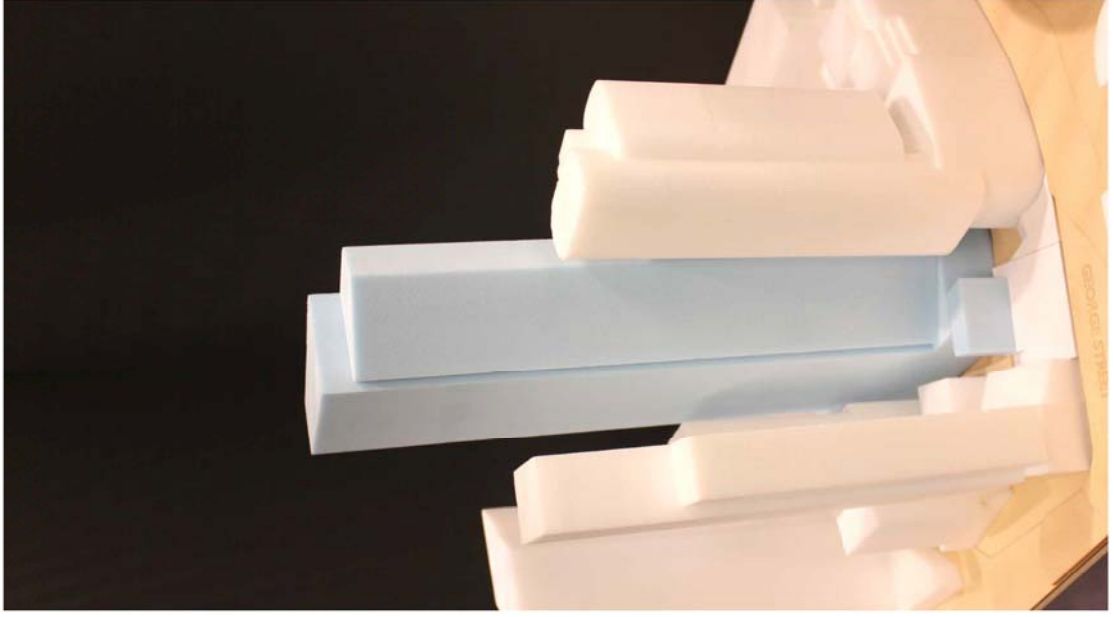


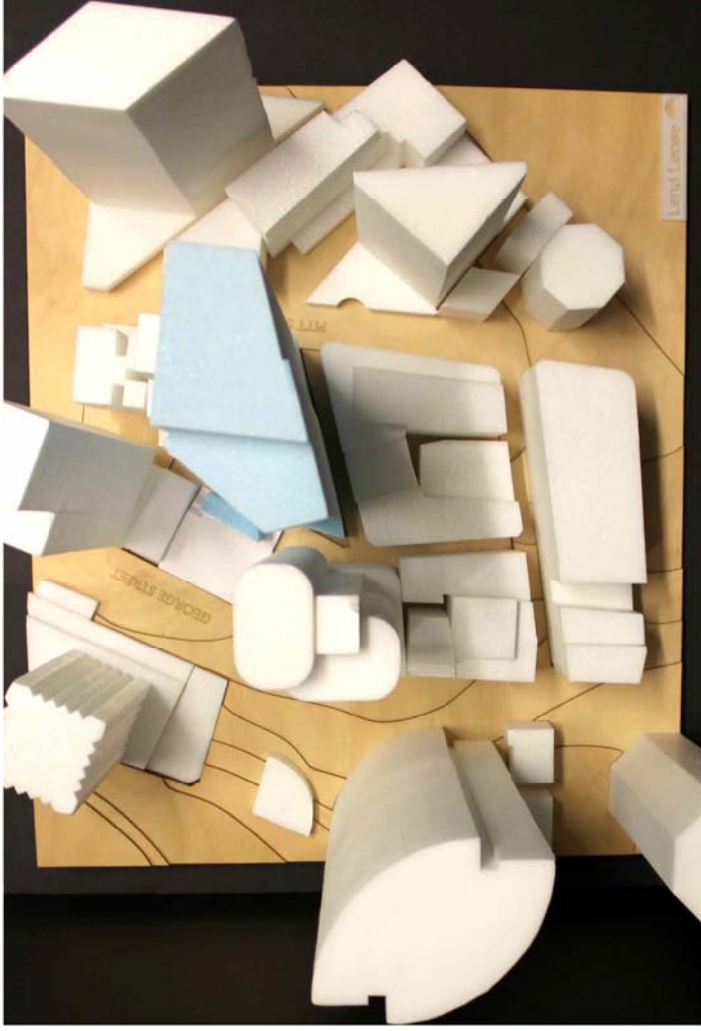
Figure 5.25. Concept reference scheme section (east west) through the proposed commercial tower, podium and plaza

05 Built Form Strategies Reference Scheme

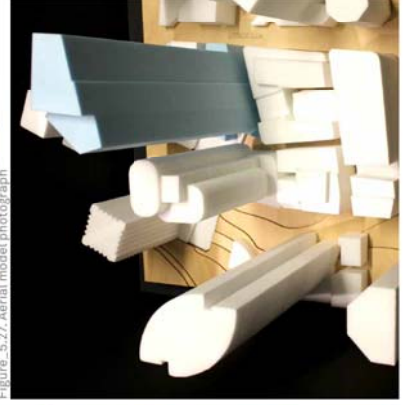
Model Photographs



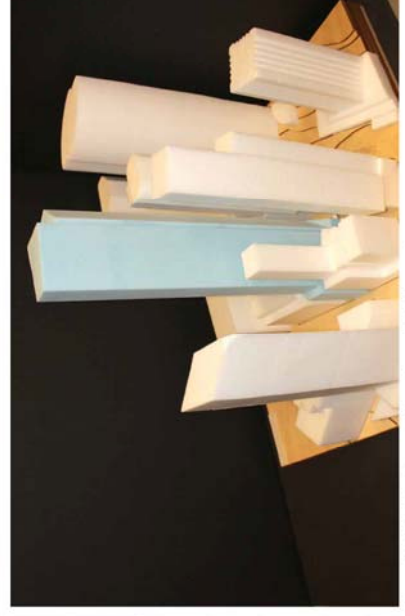
Figure_5.26. Model photograph from the west looking east



Figure_5.27. Aerial model photograph



Figure_5.28. Model photograph from the south looking north



Figure_5.29. Model photograph from the north looking south

05 Built Form Strategies
Reference Scheme

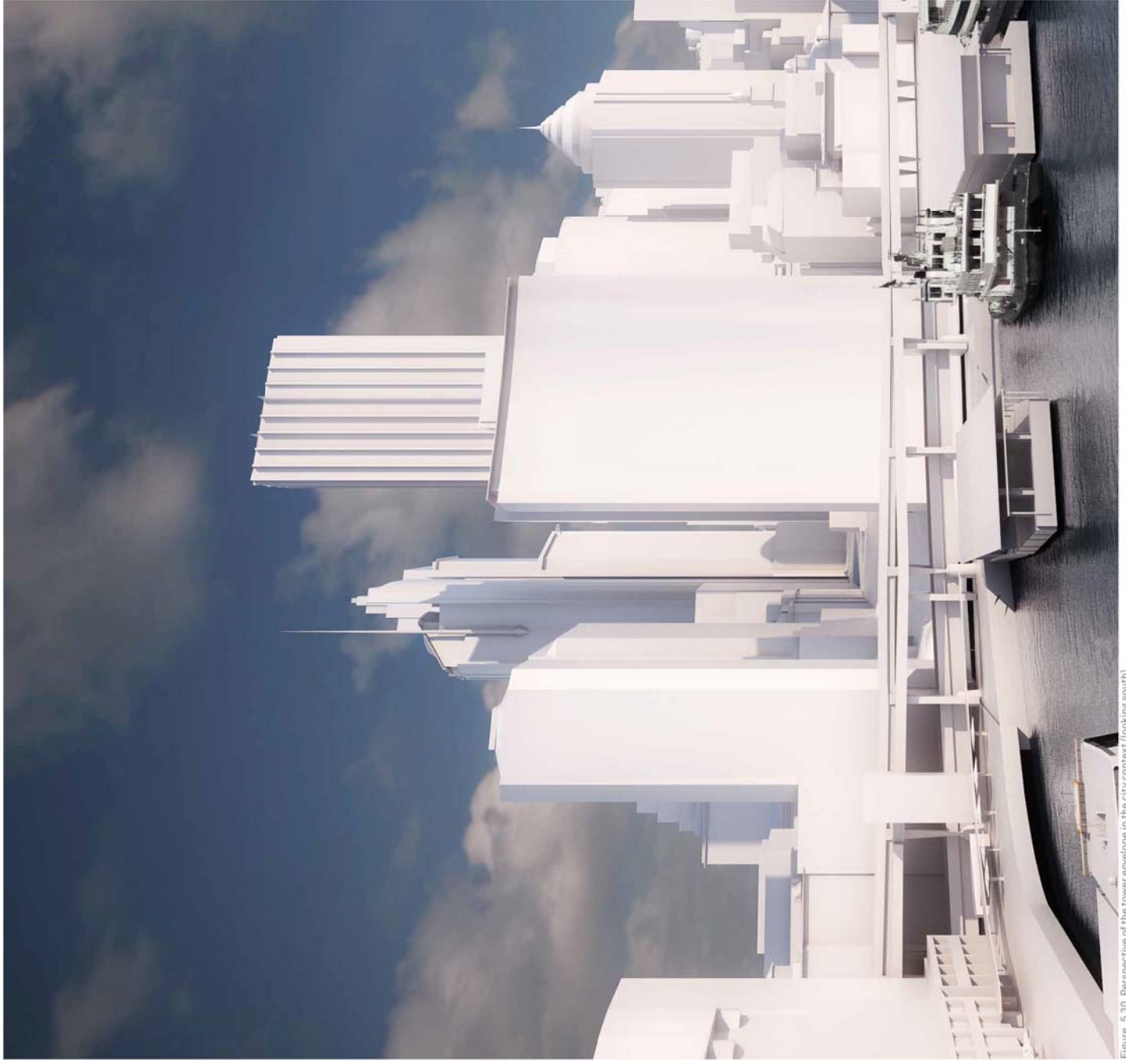
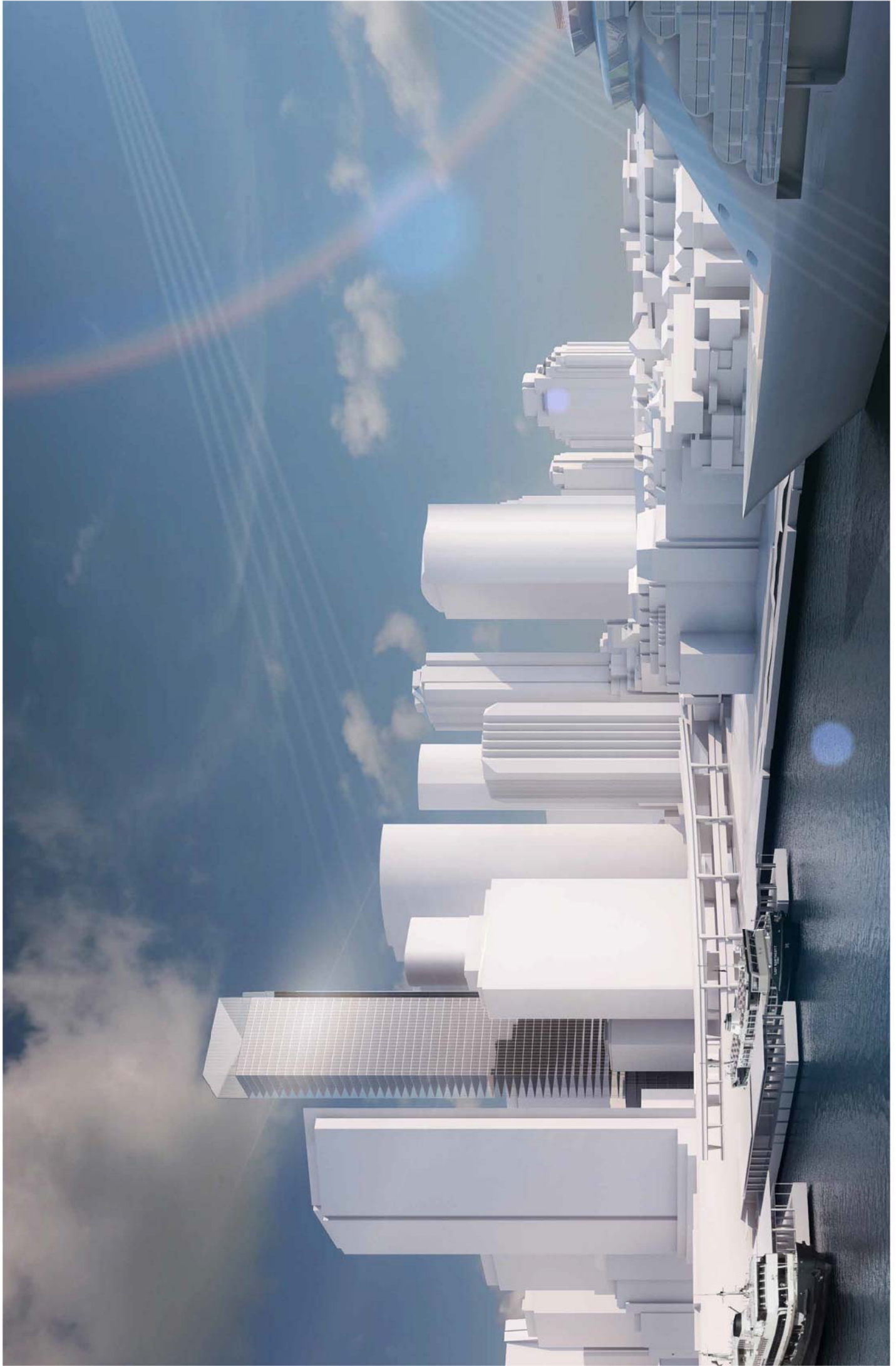


Figure 5.30. Perspective of the tower envelope in the city context (looking south)



05 Built Form Strategies

Reference Scheme

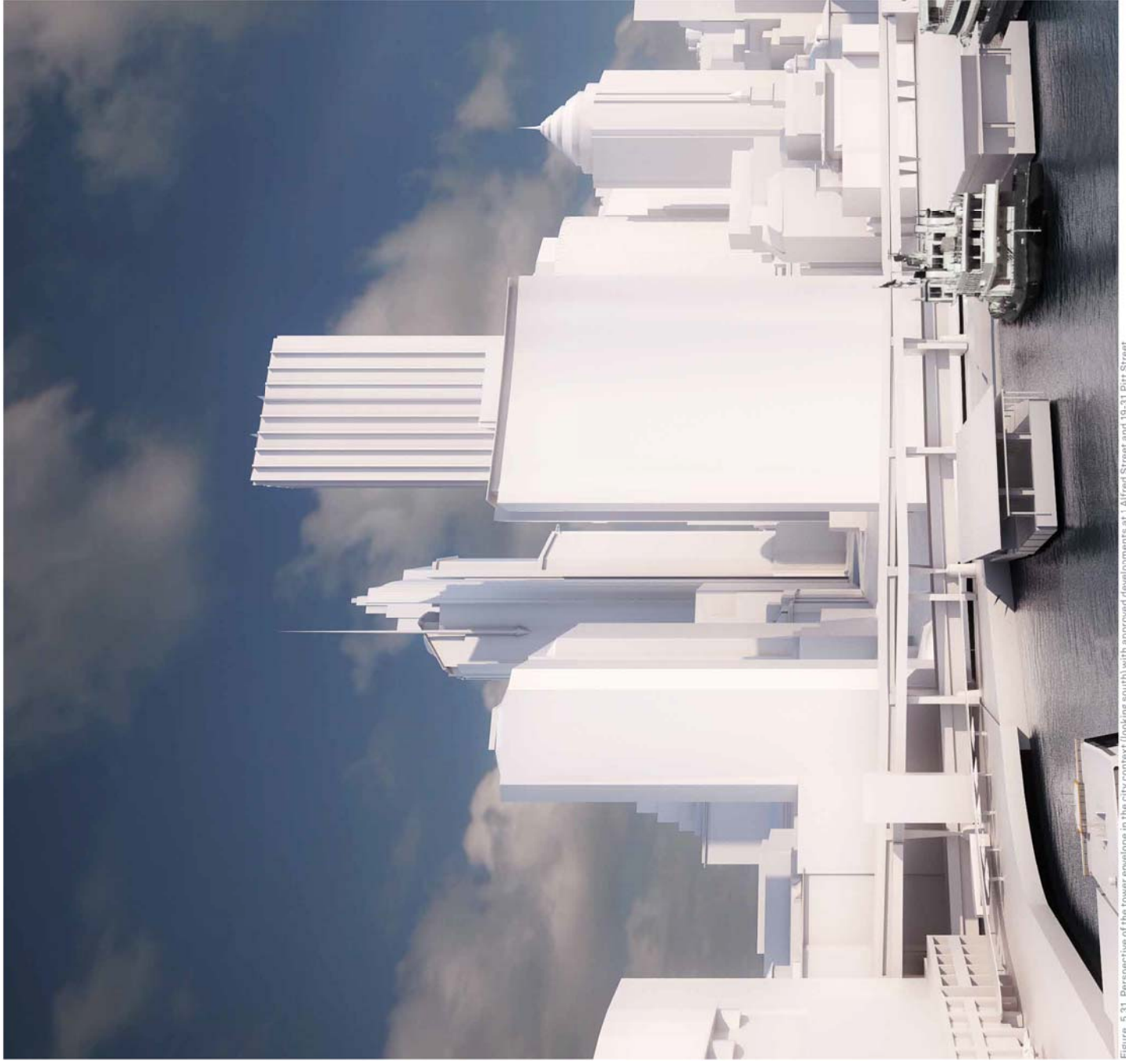
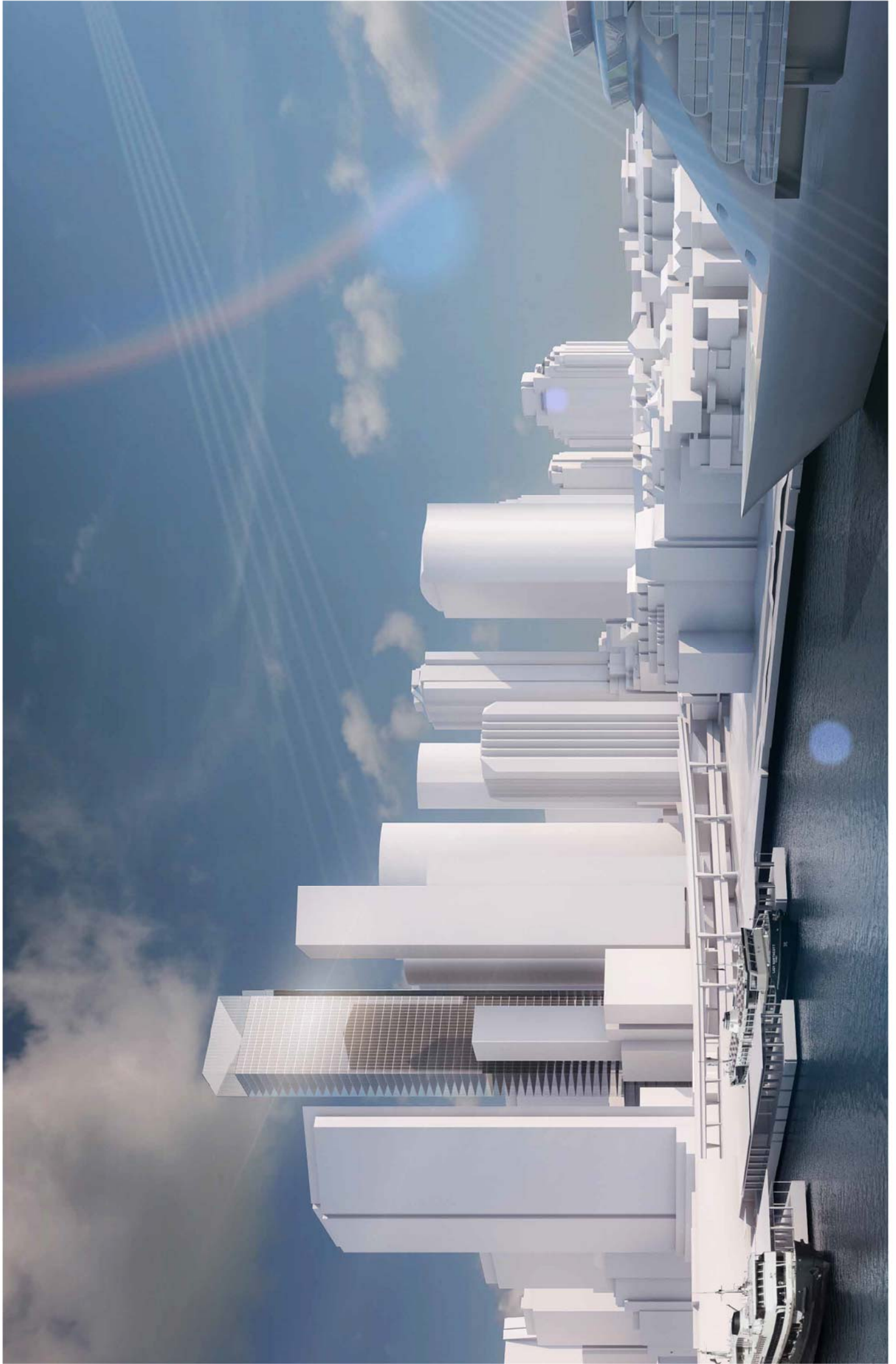


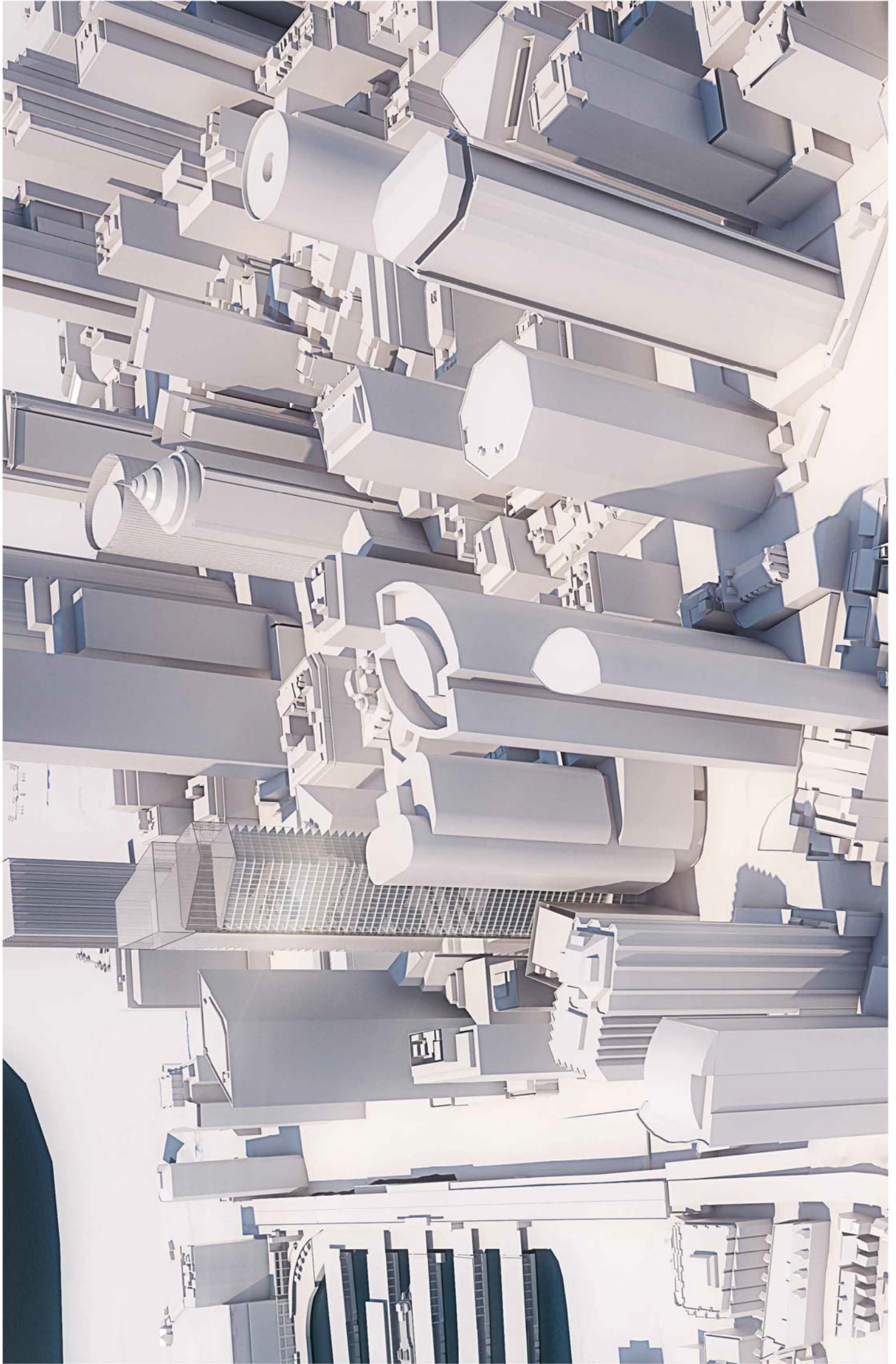
Figure 5.31. Perspective of the tower envelope in the city context (looking south) with approved developments at 1 Alfred Street and 19-31 Pitt Street



05 Built Form Strategies
Reference Scheme



Figure 5.32. Perspective of the tower envelope in the city context (looking east)



05 Built Form Strategies
Reference Scheme

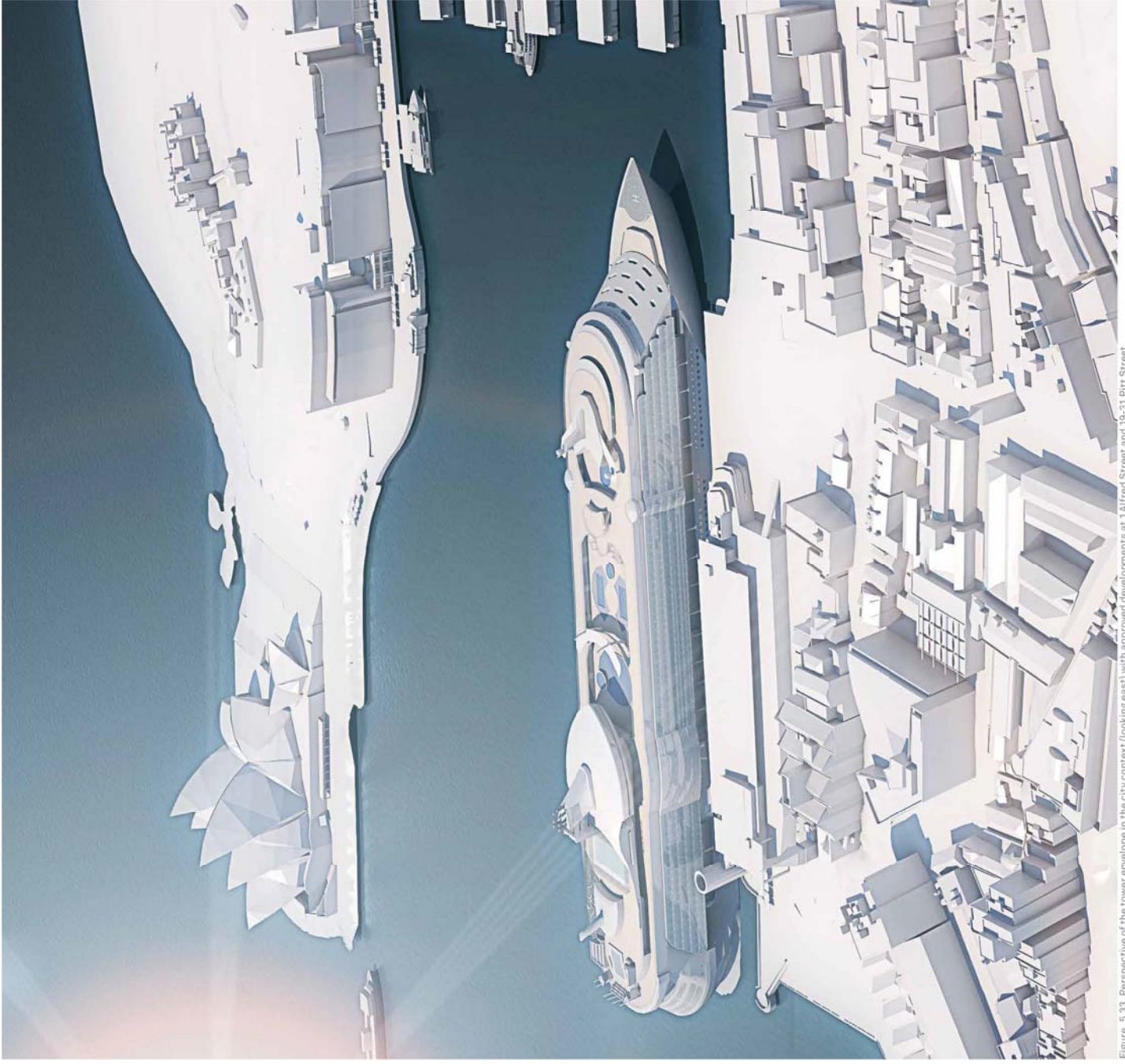
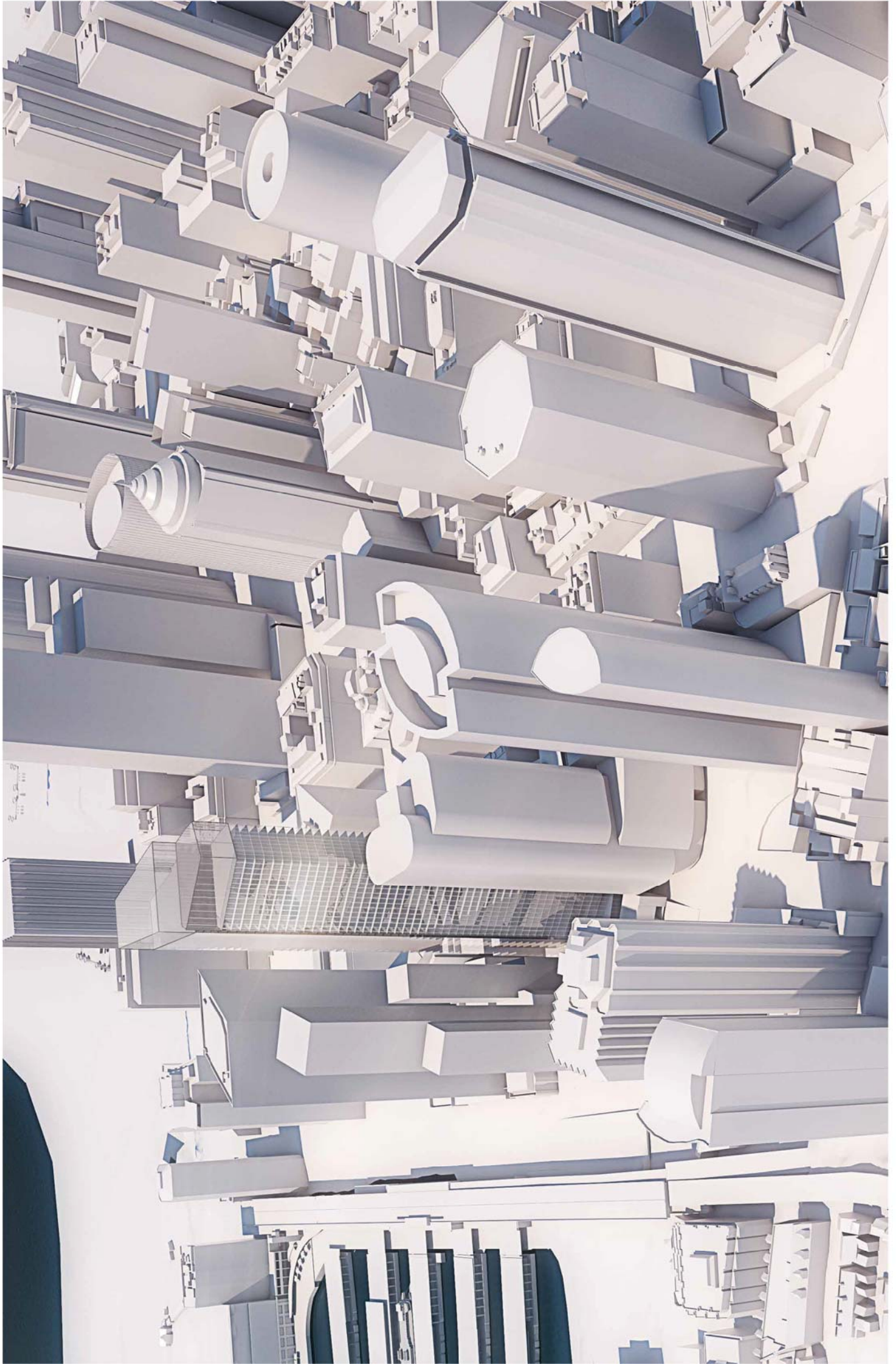


Figure 5.33. Perspective of the tower envelope in the city context (looking east) with approved developments at 1 Alfred Street and 19-31 Pitt Street



05 Built Form Strategies

Reference Scheme

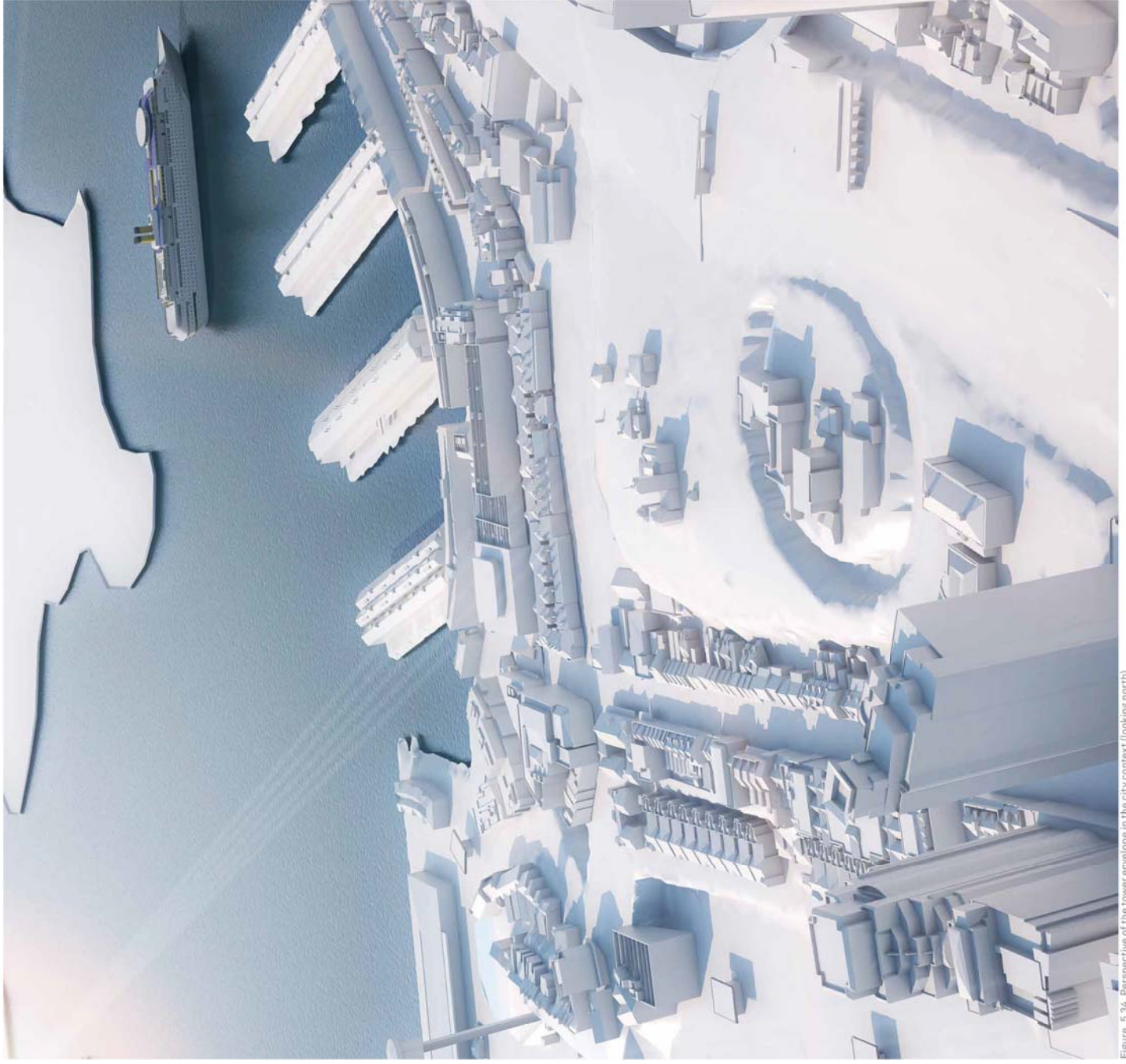
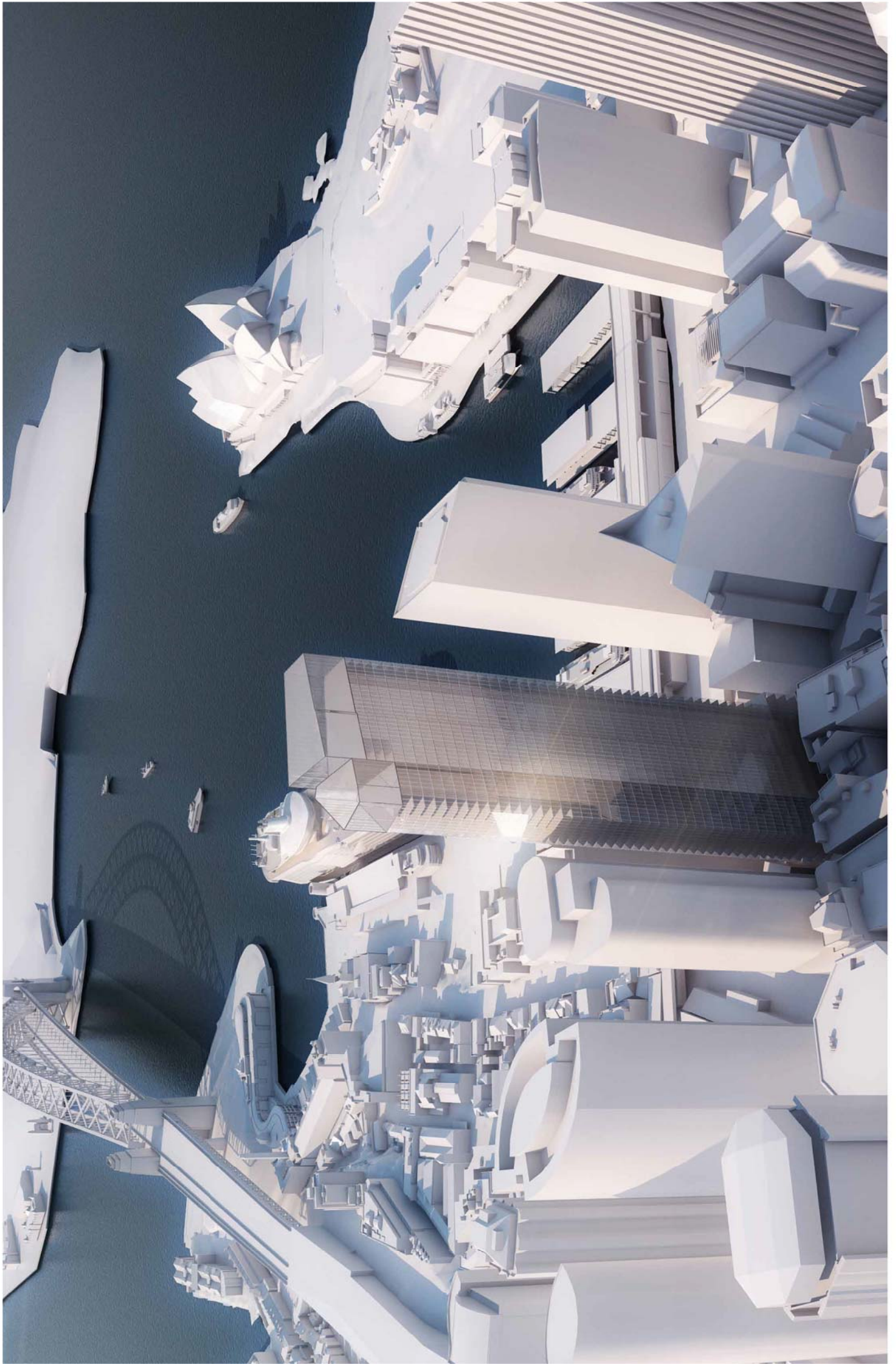


Figure 5.34. Perspective of the tower envelope in the city context (looking north)



05 Built Form Strategies

Reference Scheme

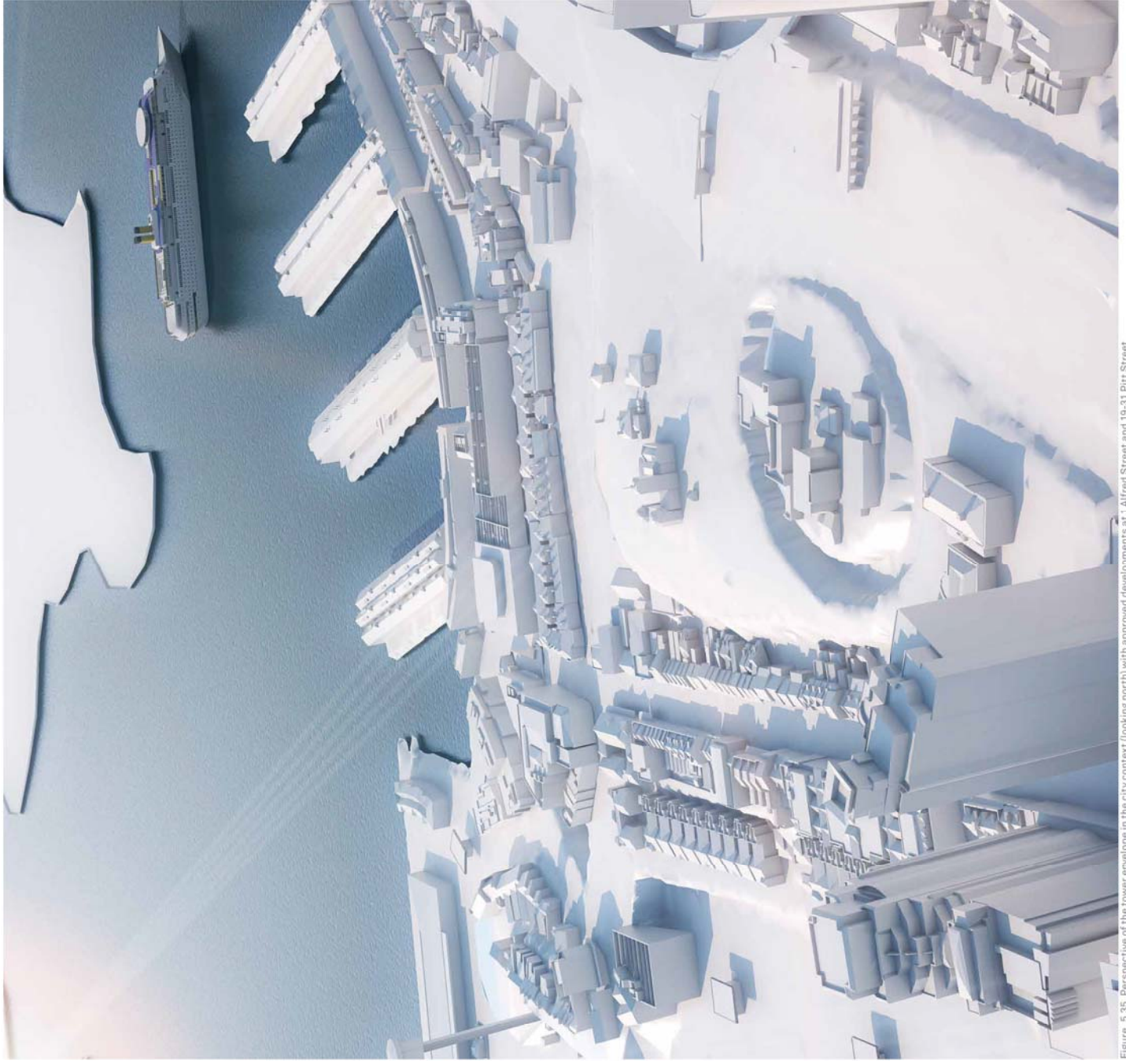


Figure 5.35. Perspective of the tower envelope in the city context (looking north) with approved developments at 1 Alfred Street and 19-31 Pitt Street

