

Supplementary Design Statement

Section 75W Report

MP11_0044 Commercial Building C3

RSHP Australia Pty Limited

13th September 2013

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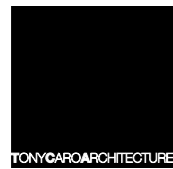
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Illustration of the s75W scheme for building C3

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INTRODUCTION



Photomontage of the C3 site in its context

Introduction

The Project Application for Building C3 was submitted on 11th November 2011. It was publicly exhibited during November and December of 2011 and modified in a Preferred Project Report submitted in February 2012. Approval was granted by the Minister for Planning in respect of MP11-0044 on 24th April 2012.

This Supplementary Design Statement has been prepared to support an application made pursuant to Section 75W of the Environmental Planning and Assessment Act 1979. The document demonstrates and explains how design refinements have improved the visual form of the building, while maintaining the principles described in the Project Application (PA).

Section 2.1 describes the design refinements made to the tower lobby and the adjacent podium buildings.

Section 2.2 describes the design refinements made to the tower.

Section 3 illustrates the resultant built form in terms of the public realm and massing.

Section 4 describes the compliance of the revised scheme with the relevant provisions, namely the Concept Plan MP06_162 Mod 6 (subject to approval).

Appendix A provides an area schedule.

Design Excellence

Through a rigorous design and critique process, 'Design Excellence' has been the overriding goal of the design team. The design team is comprised of RSH+P (tower and lobby), PTW (east podium) and Tony Caro Architects (west podium).

The previous architectural design options were reviewed in a formal review process and workshops established to test design refinements, in conjunction with an ongoing collaborative design process amongst the project team of designers, consultants, contractors, and subcontractors. This enabled the application to draw on the wide breadth and depth of the collective teams' experience, resulting in a holistic integrated design which reinforces the integrity and philosophy of the project.

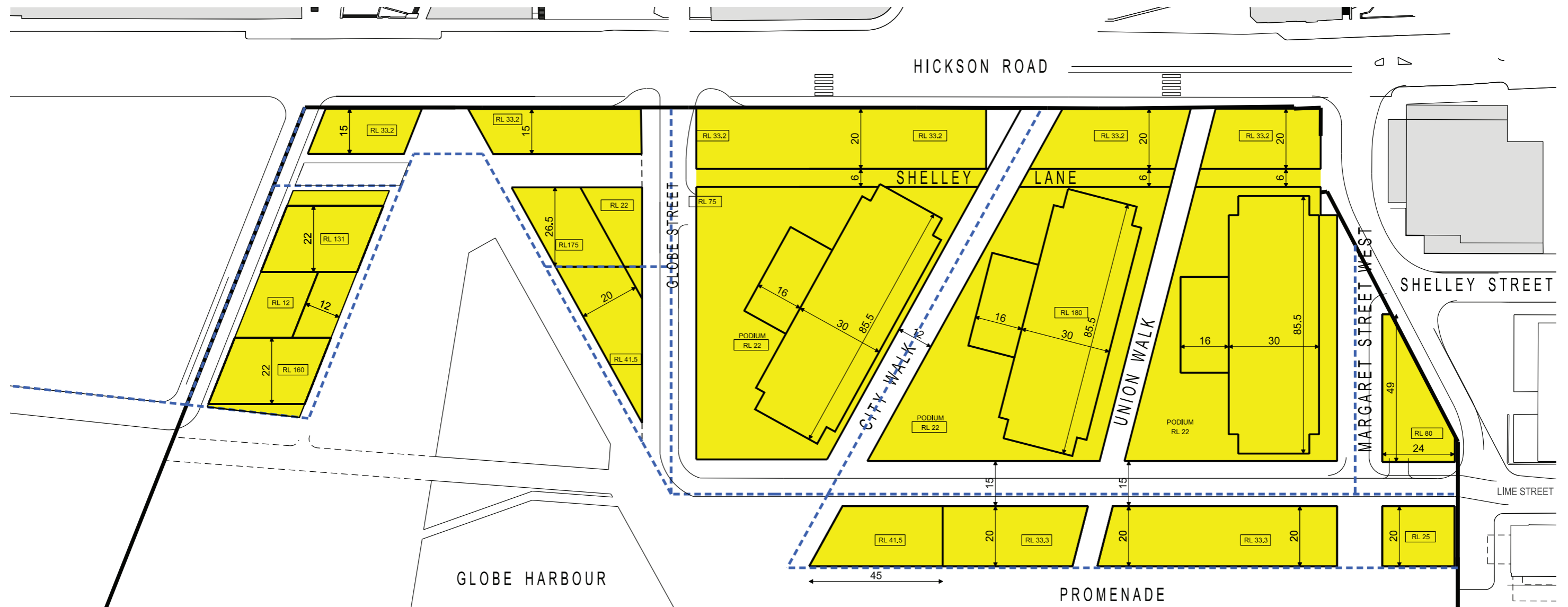
The design has been presented to both the Barangaroo Delivery Authority and their design advisory panel.



View from East Balmain

Introduction

C3 in the context of MP06_162 Mod6 (Subject to approval)



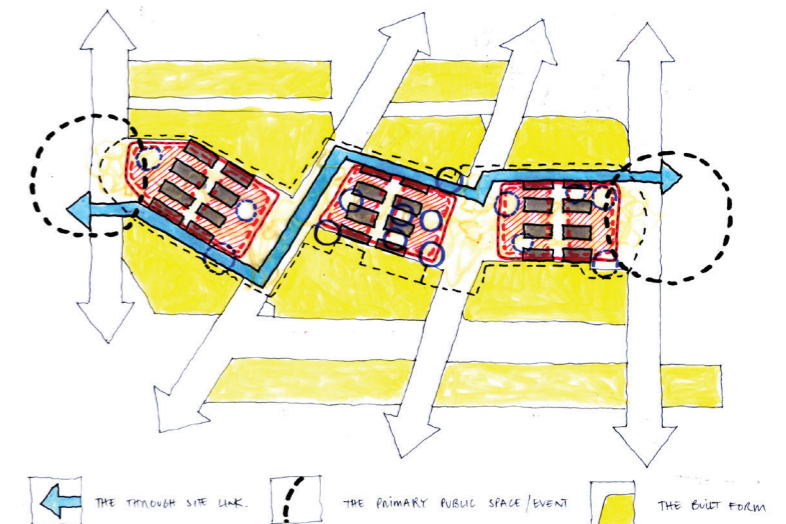
This drawing is an extract from the lodged MP06_162 Mod6 documentation (subject to approval)

Building C3 is considered as a part of an ensemble of three sibling buildings who share a dialogue whilst having their own individual identity.

Building C3 marks the highest point of the three ascending forms and acts as the primary north elevation of the Barangaroo commercial tower ensemble. The design refinements proposed in this 75W Report strengthens C3's identity on the city scale, building and human scale, to reinforce the design principles set out in the Planning Application.

These refinements include:

- Podium design in relation to modifications proposed to the Master Plan through MP06_162 Mod 6 (subject to approval)
- Podium design in relation to its facade, materials and finishes
- Podium internal planning
- Tower shading fins
- Tower roof plan
- Tower north core resolution
- Necking of tower to podium
- A new north lobby



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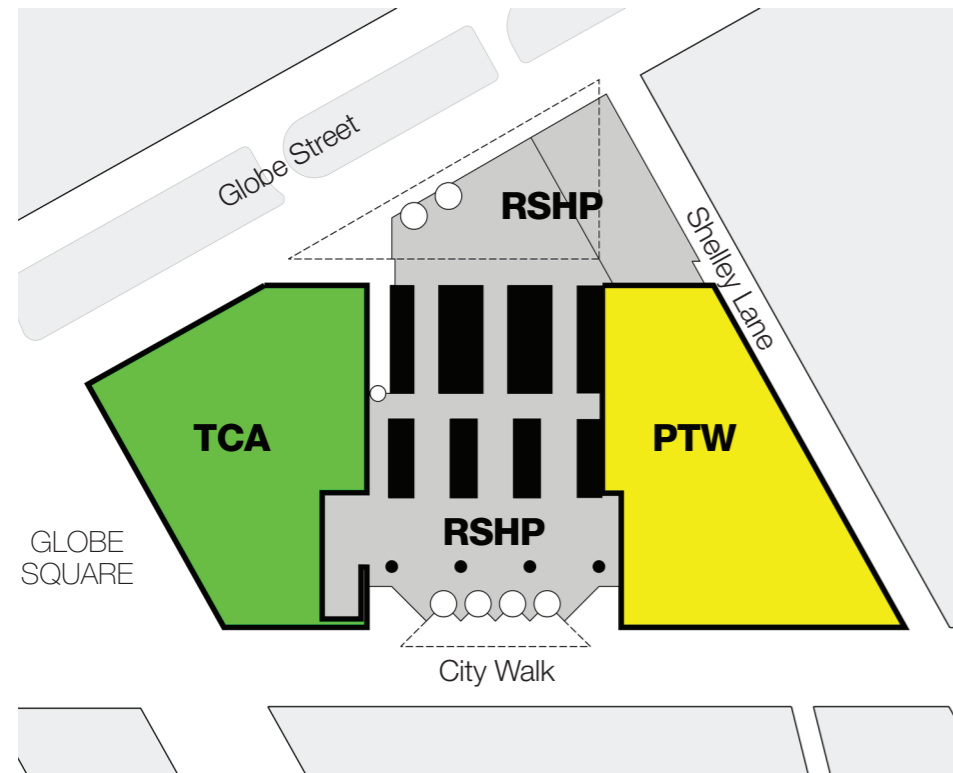
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2.1 PODIUM + LOBBY DESIGN REFINEMENTS

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Podium + Lobby Design

Overview



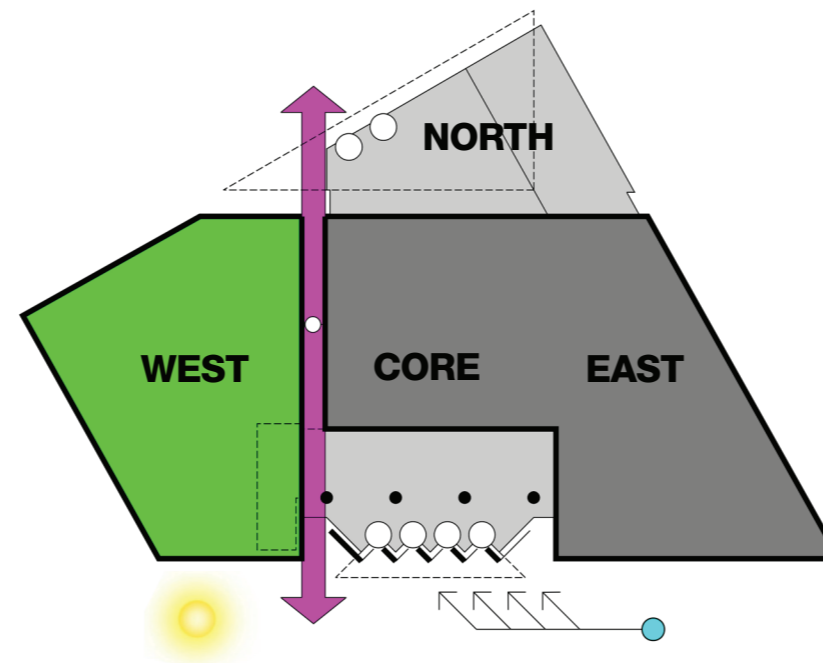
URBAN CONTEXT

The C3 podium buildings have developed in direct response to their urban context.

The site is bounded to the north by Globe Street - a grand boulevard which connects Hickson Road to Globe Square and the water beyond. This is the northern entry point, or end-marker, to the commercial towers and the Through Site Link which weaves between them. To the east is Shelley Lane - an active pedestrianised laneway to which the podium presents a series of intimately scaled retail opportunities. To the South, City walk - a pedestrianised city street - connects Hickson Road bridge link to Globe Square.

Design responsibility for the composition has been divided between Co-Architects in the following manner:-

- North Lobby - RSHP
- South Lobby - RSHP
- East Podium - PTW
- West Podium - Tony Caro Architects



THROUGH SITE LINK + FOLDED FACADE

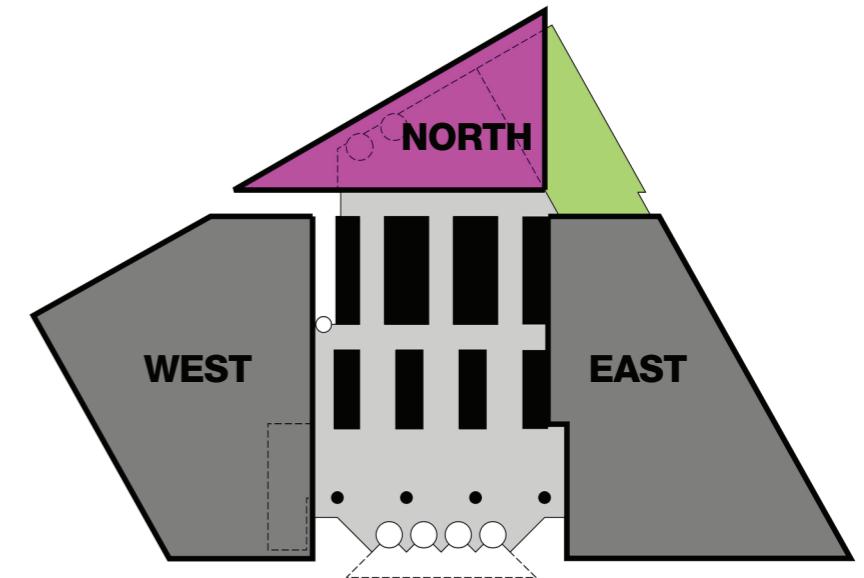
Unique to C3 is the position of the Through Site Link on the western side of the lobbies. Retail activity has been maximised along Shelley Lane to the east, resulting in back of house facilities being concentrated against the tower core.

The eastern podium building therefore becomes united with the tower core, whilst the western podium building is only connected to the rest of the podium by an upper level links to the core above the Through Site Link.

Wrapping the materiality and architectural language of the western podium building around in to the Through Site Link emphasises its separation.

The facade of the southern lobby is set back from the street, creating both an expansion of the public realm and a separation between the different elements of the podium by enabling the podium buildings to turn the corner before they meet the lobby.

The multifaceted facade is a response to the orientation of Tower C3 both in terms of resultant solar load and pedestrian activity. By alternating the angle of the glass, one face presents itself to the east and pedestrians approaching from Wynard, whilst the other, presenting itself to the west can incorporate a degree of solar shading.



NORTHERN MARKER

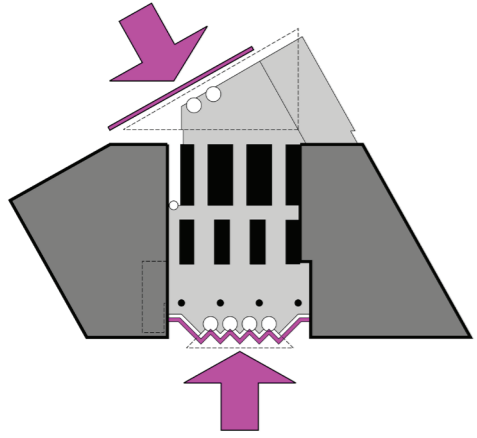
The northern lobby plays a unique role in the Barangaroo South commercial precinct - it is the northern face of the commercial towers; a gateway to the precinct.

The Northern lobby responds to its context, unifying the geometries with a strong triangular grid. A grand roof, or marker, hovering above a series of functions. The materiality of the roof responds to the function below and its shading requirements - whether it be to enclose the lobby or provide shading and definition to the northern nodal entry point to the Through Site Link or shade to the elevated garden space above the ramp to the basement.

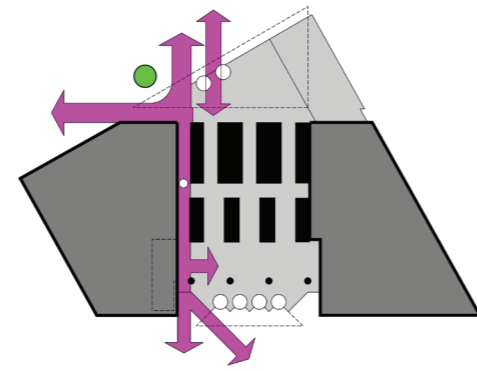
Beyond the roof the north core clearly continues to ground uninterrupted.

Podium + Lobby Design

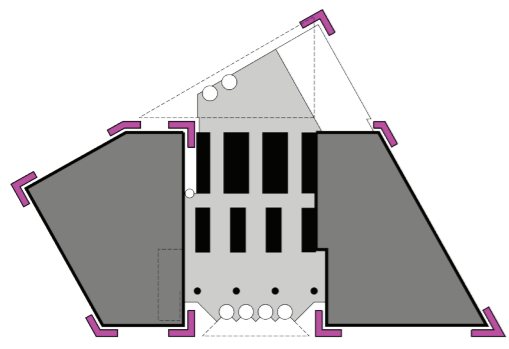
Overview Diagrams



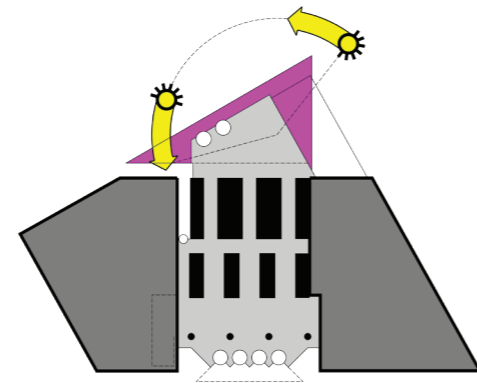
ADDRESS



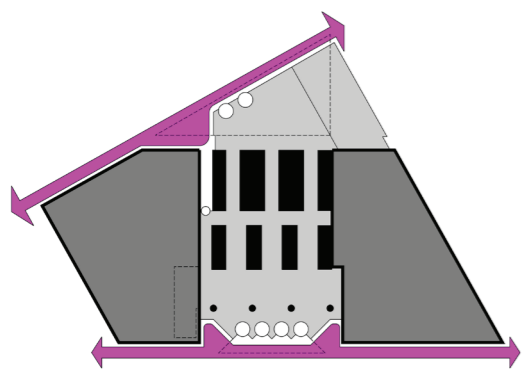
PUBLIC CONNECTIONS



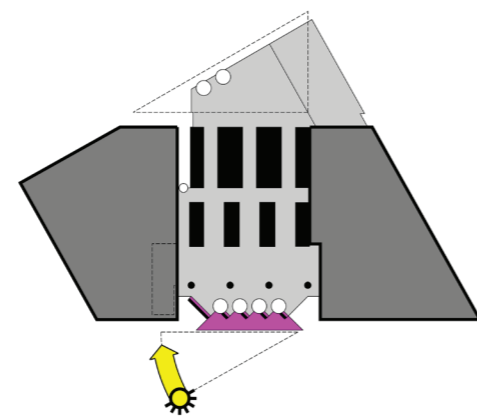
CORNERS + ABUTMENTS



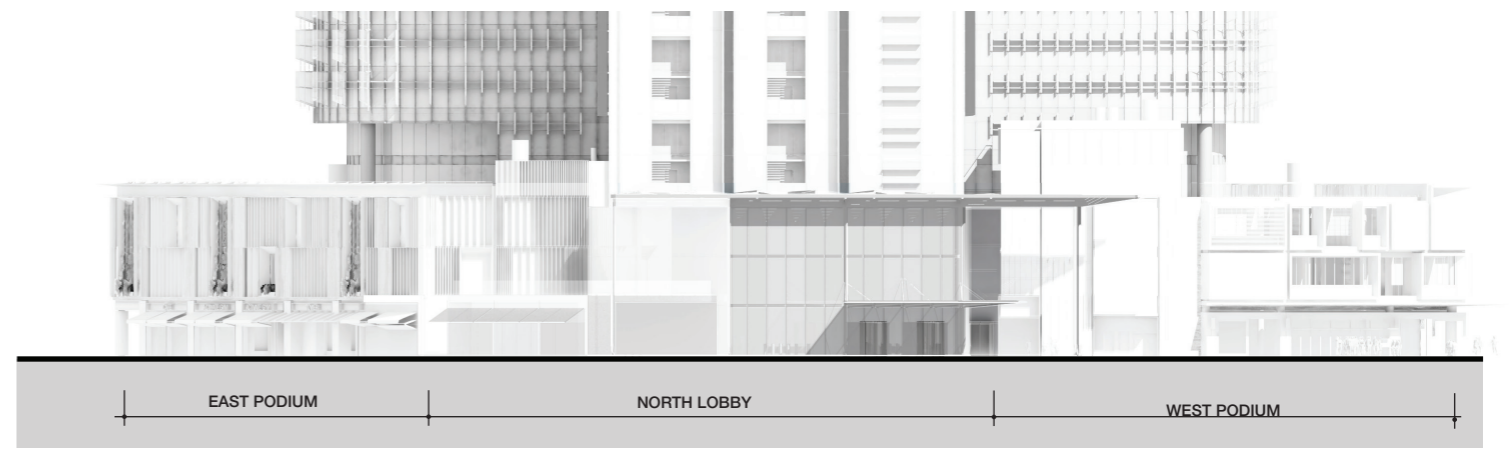
NORTHERN SOLAR RESPONSE



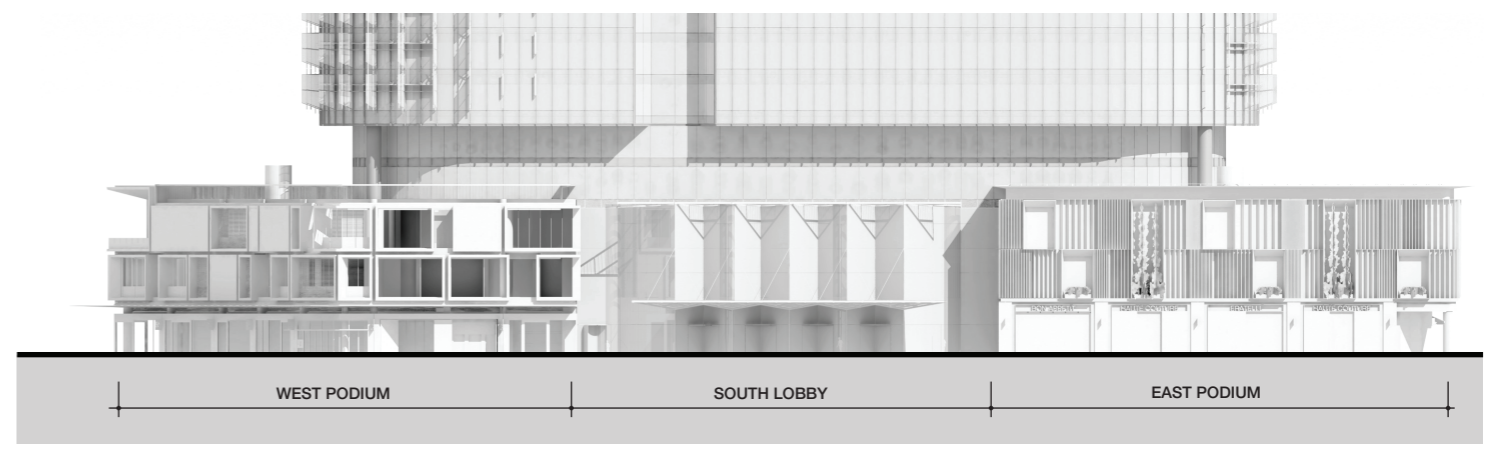
STREET EXPANSION



SOUTH WESTERN SOLAR RESPONSE



NORTH ELEVATION



SOUTH ELEVATION

Lobby Design

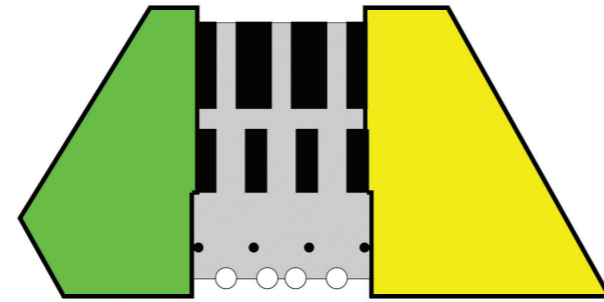
Overview

The proposed lobby is based on six key concepts:

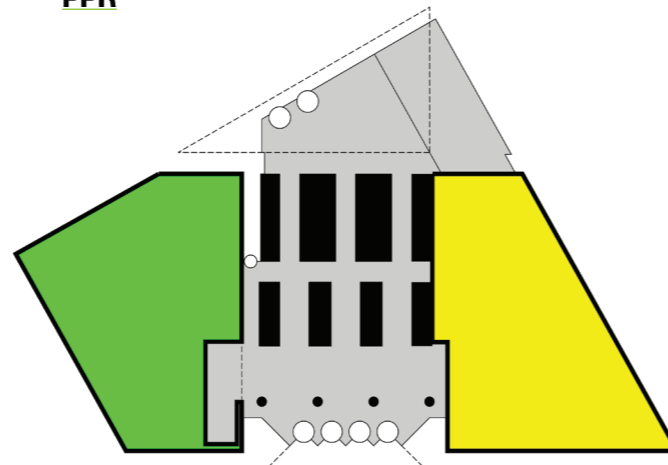
- **Address:** Providing address to both tower and precinct
- **Unification:** Acting as unifier of podium buildings
- **Expansion:** To the North announcing the Precinct
- **Retraction:** To the South inviting entry
- **Permeability:** One lobby with two entrances
- **Solar Response:** Using building geometry to respond to solar exposure

The glazed facade of the south lobby is setback from its adjacent facades, clearly distinguishing between the elements, and signaling its presence when viewed on approach. The setback allows for planting to be introduced into the lobby threshold, blurring the boundary between commercial lobby and public realm. The transparency of the glass facade enhances this concept, implying an expansion of space from outside to inside.

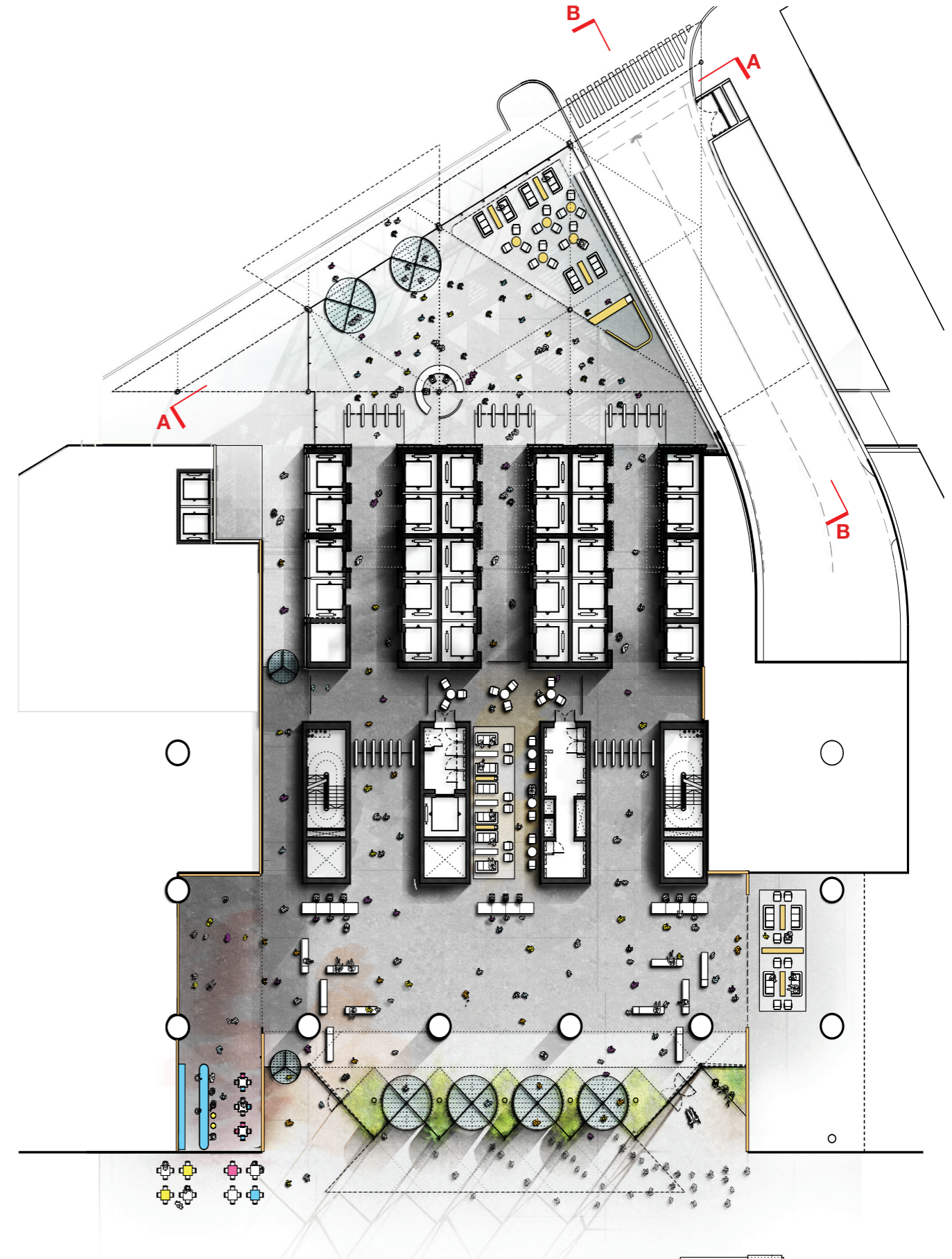
The northern lobby is defined by its geometric roof expanding over the public domain, formulating a clear marker and gateway, subduing the basement entry and signals the Through Site Link. Its height continues the podium datum and holds the street line. A pair of large scale picture windows signal an entry point to both lobby and precinct.



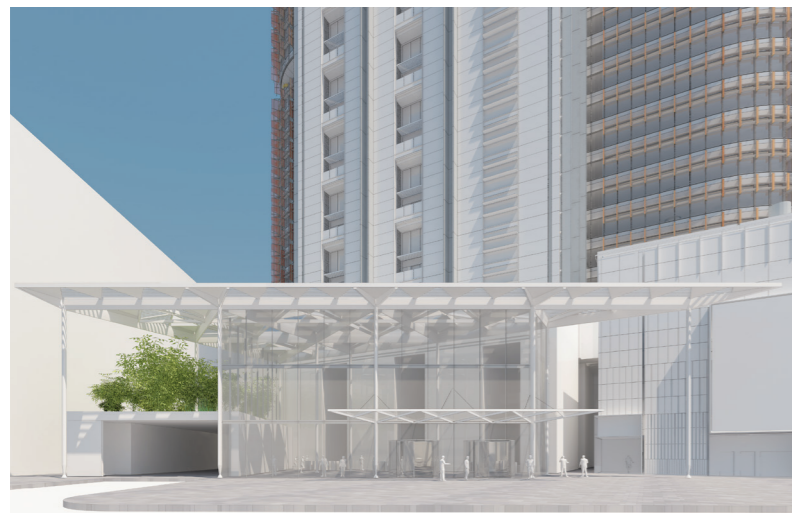
PPR



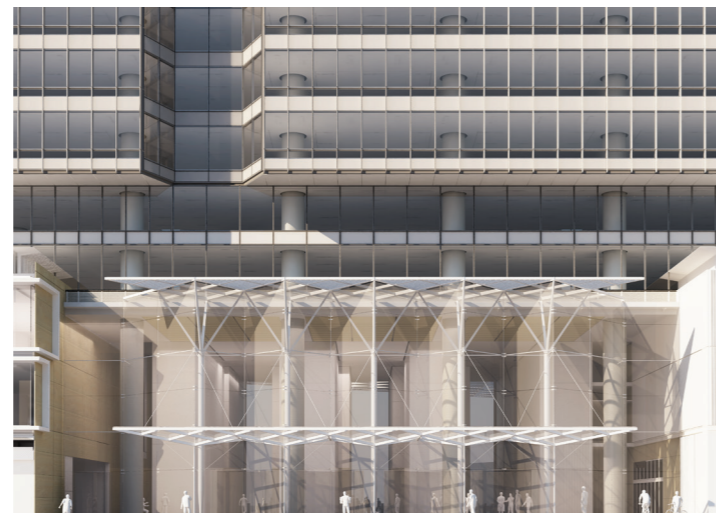
SECTION 75W



Ground Floor Plan of the Tower Lobby



North Lobby Entrance

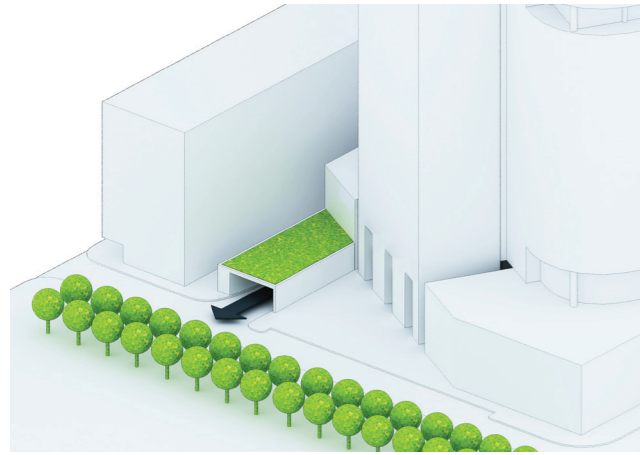


South Lobby Entrance

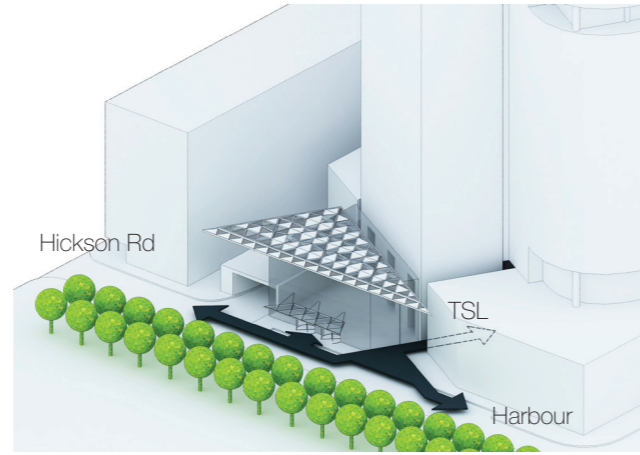
Lobby Design

North Lobby

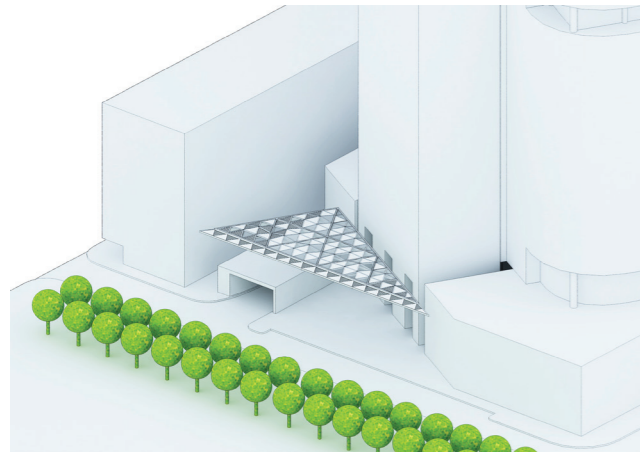
Development Diagrams



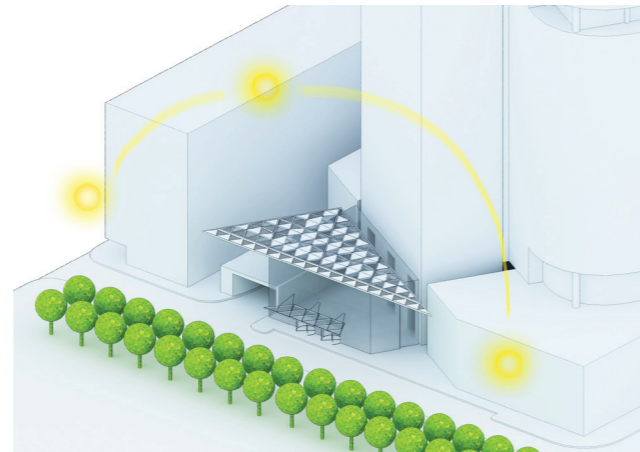
Elevated Garden over Basement Entry



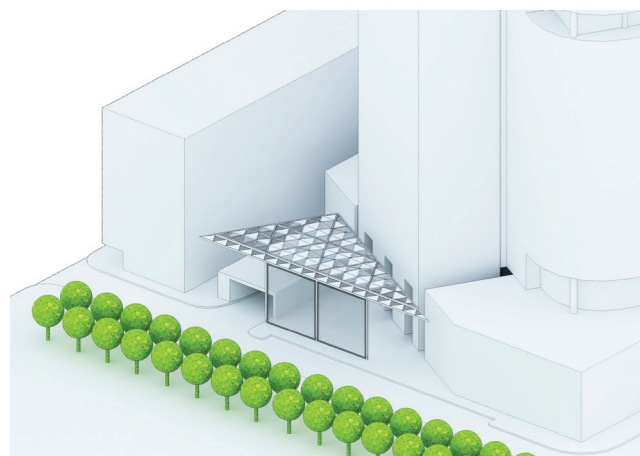
Connecting Node Point



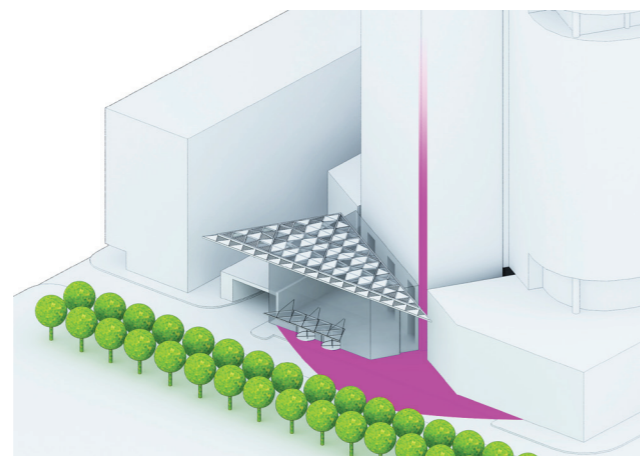
Floating Roof Defines Three-storey Volume



Solar Response



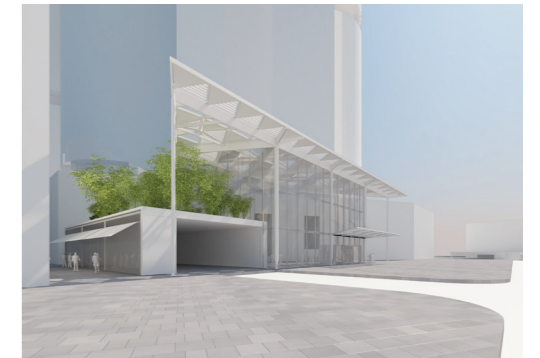
Picture Windows to North Precinct Entry



Tower Core Revealed in Public Realm



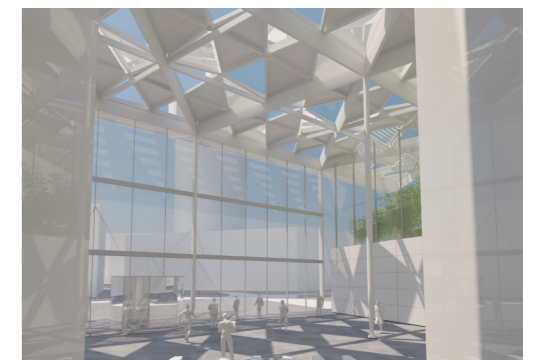
Shelley Lane Elevation



North Lobby - North East Elevation



North Lobby - North West Elevation



North Lobby - Internal View

The northern lobby is defined by the geometry of its surrounding context and is a gateway to the Commercial Towers.

A pair of 15m high picture windows form the northern elevation, above which a triangulated roof perches on a series of slender columns. Whilst providing enclosure to the lobby for the commercial tower, this hovering structure also extends to cover a nodal point, a convergence of the Through Site Link, the retail lifts, the commercial lobby or axis points of the the park or water nearby as well as covering the elevated garden space located above the basement entry ramp.

Providing a breathing space at the end of Shelly Lane (a counterpoint to Hickson Place at the southern end) this elevated garden is also an external landscaped amenity space for Tower C3, and a visual amenity for the lobby - an informal splash of green under the geometrical roof.

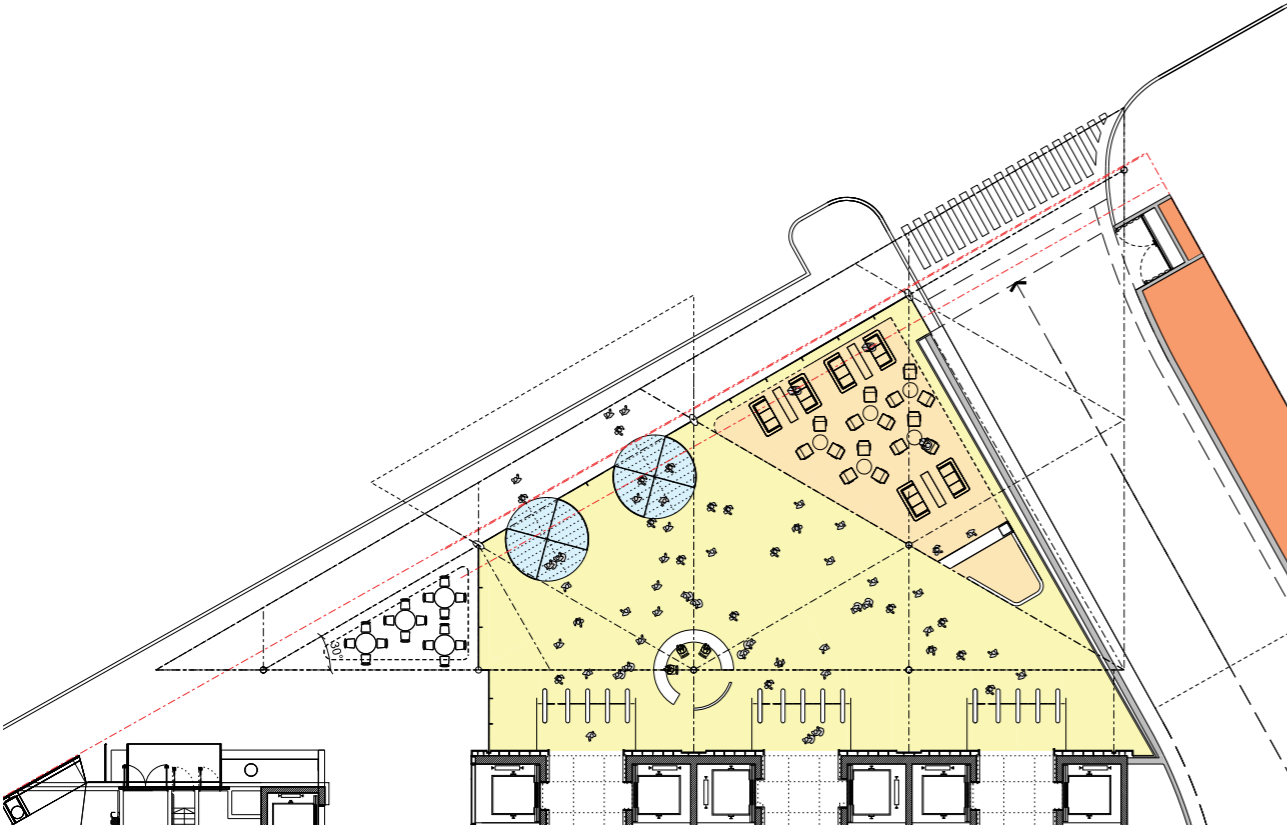
The inside/outside nature of the roof allows the materiality of the triangular infill pieces to vary responding to both function and solar requirements.

A lightweight transparent margin connects the northern lobby to the tower with the northern face of the north core extending to ground behind with this 'gap'. This rationalises the dual geometry of the lobby with that of the tower and visually separates the two.

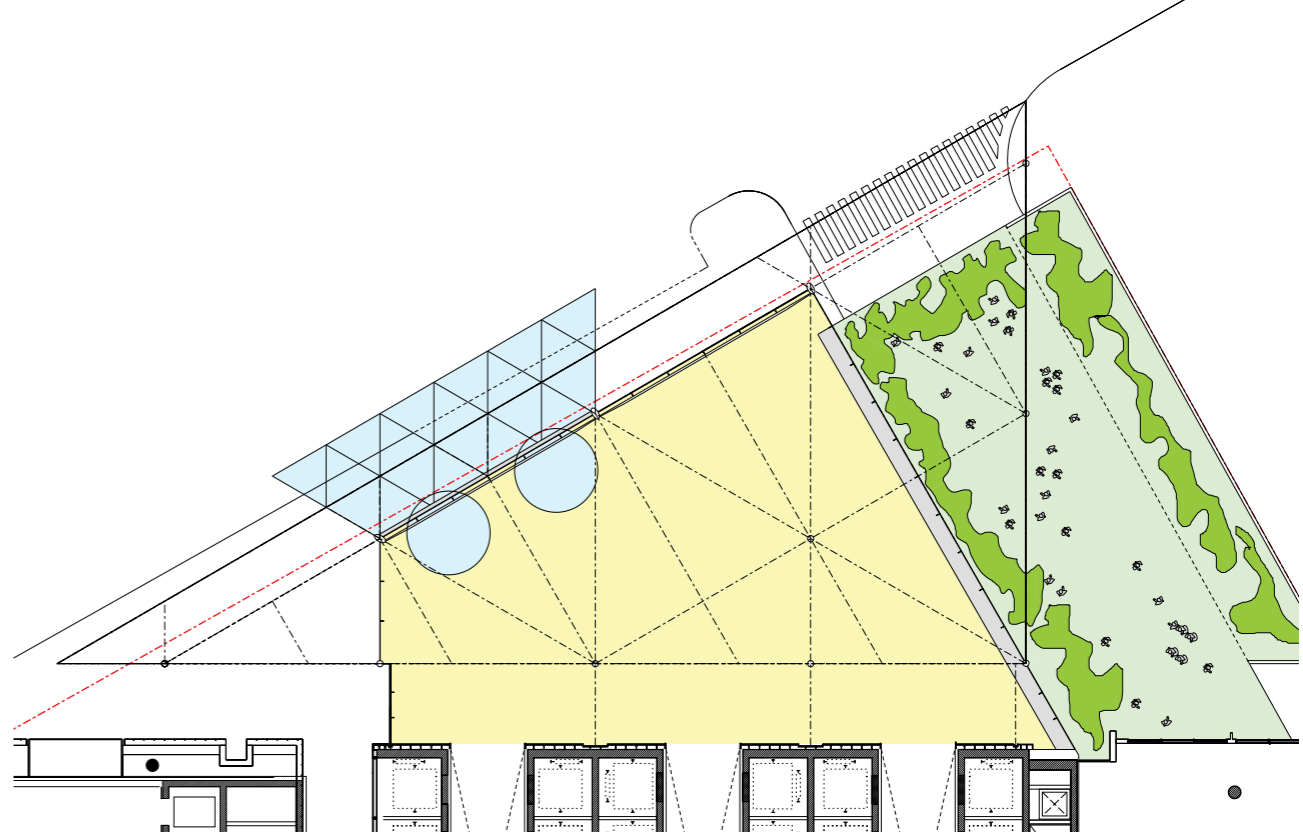
As the north of TCA's podium building aligns with the tower core, it enables the lobby to face the waterbody.

Lobby Design

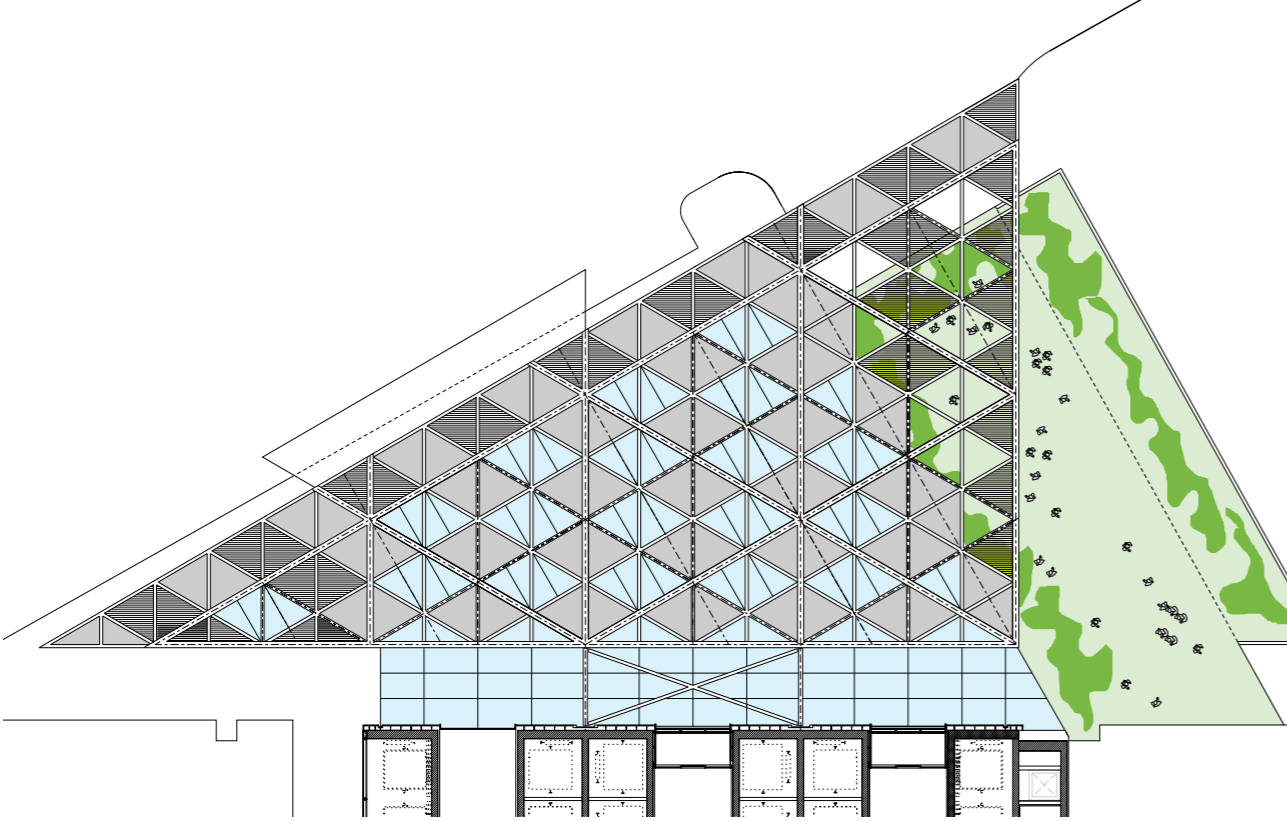
North Lobby



North Lobby - Ground Floor Plan



North Lobby - First Floor Plan



North Lobby - Roof Plan

Lobby Design

South Lobby

South Lobby - Exploded Isometric

The south lobby facade has been developed to provide a clear presence that is both highly transparent and faceted. It has been developed to clearly identify the main entrance to the tower through a strong geometric order, which has similarities to the north lobby, thereby creating a common language for the two main entrances to the tower.

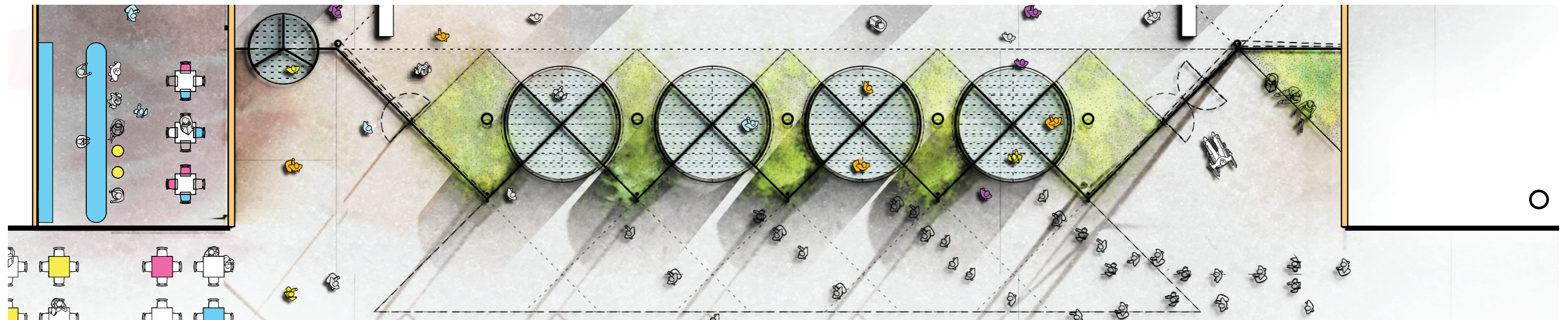
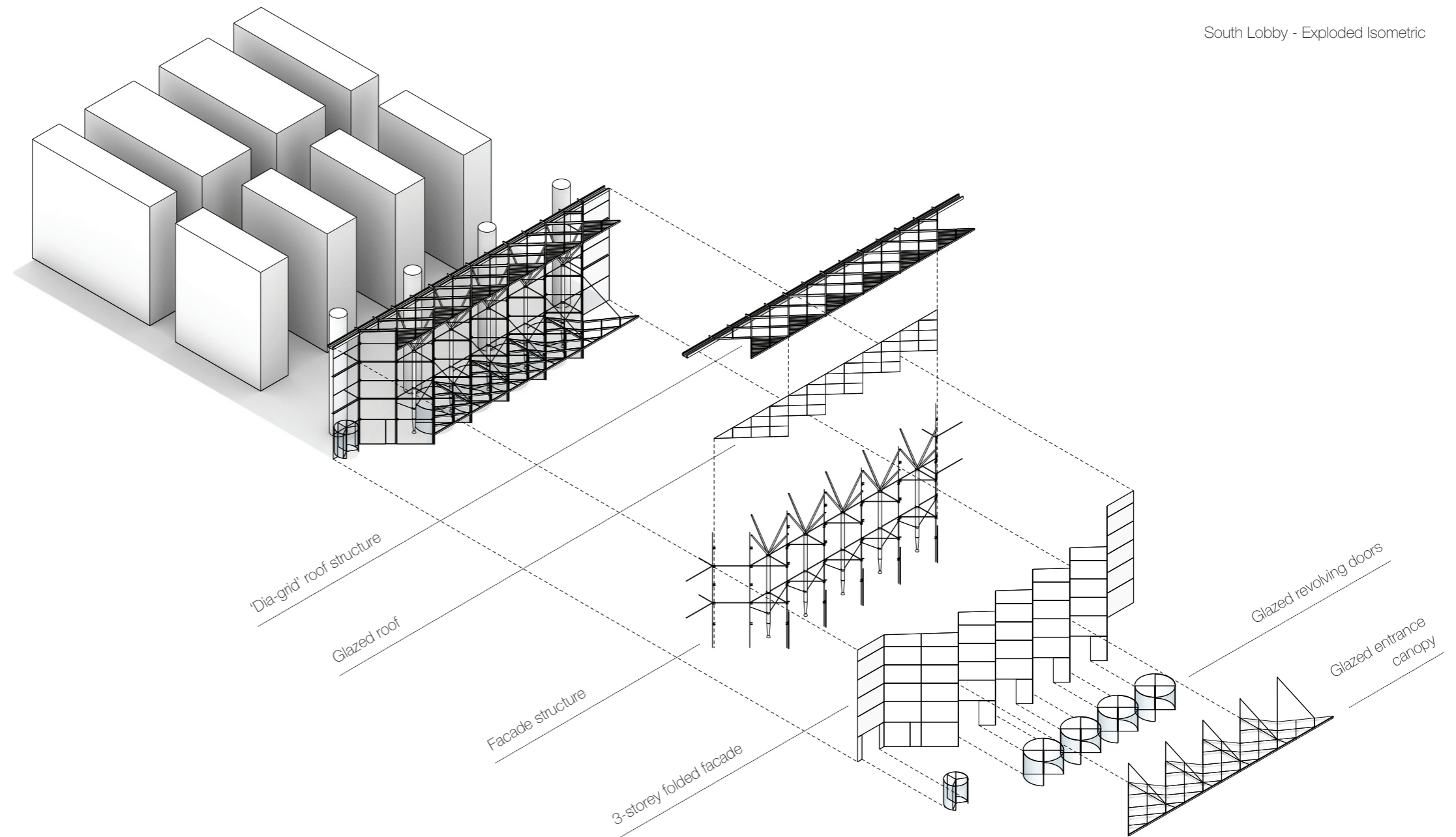
The glazing line has a series of vertical folds that give the facade a 3-dimensional quality and depth that is distinct to the other tower lobbies.

The angled geometry acknowledges the angle of approach to the lobby along City Walk, whilst enabling solar control to the west thus resulting in a potential for different expressions when arriving from either the east or the west.

The triangulated geometry is also extended to the glazed entrance canopy, which clearly marks the main entrance to the building.

The facade is subtly set back from the street, with deeper recesses on either side to allow the street to broaden out and extend into the lobby, while providing a clear visual delineation between the lobby and the adjacent podia.

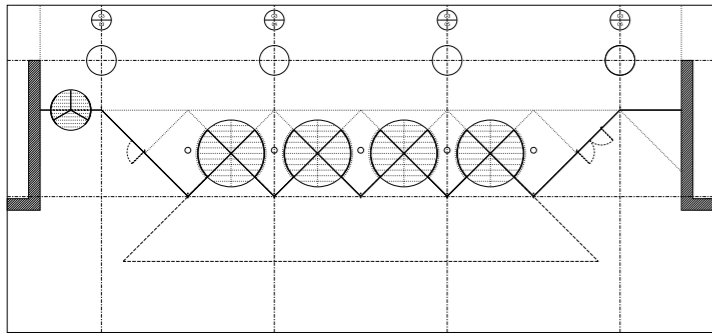
As with the other lobbies a 'green threshold' creates a landscaped transition zone between street and the lobby, blurring the boundary and providing a welcoming sense of arrival.



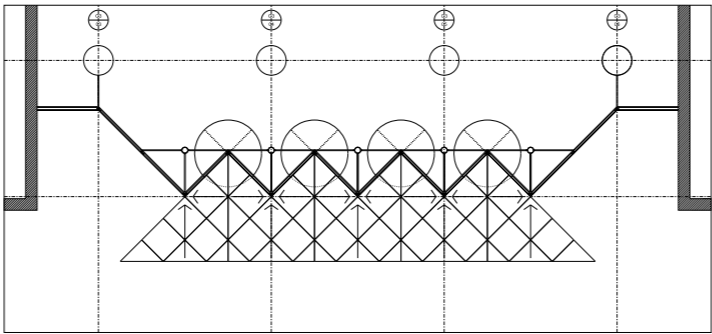
South Lobby - Illustrative Plan

Lobby Design

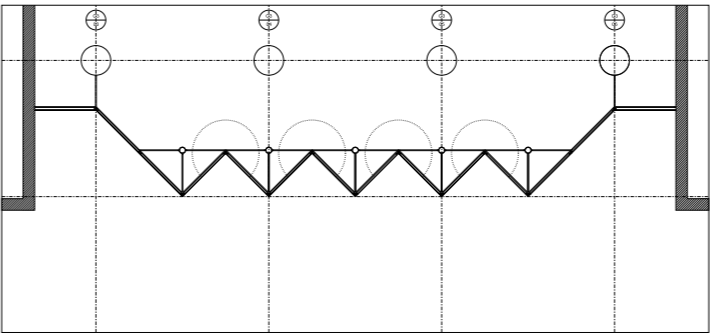
South Lobby



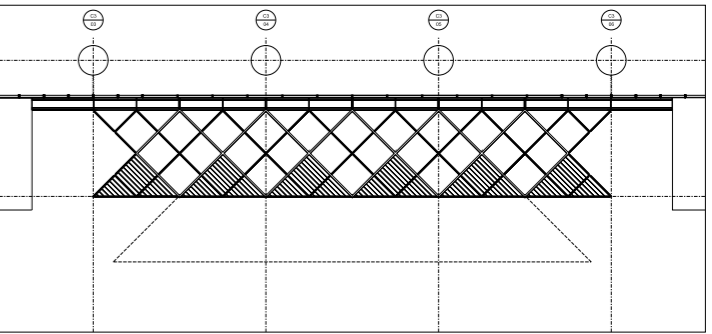
Ground Level Plan



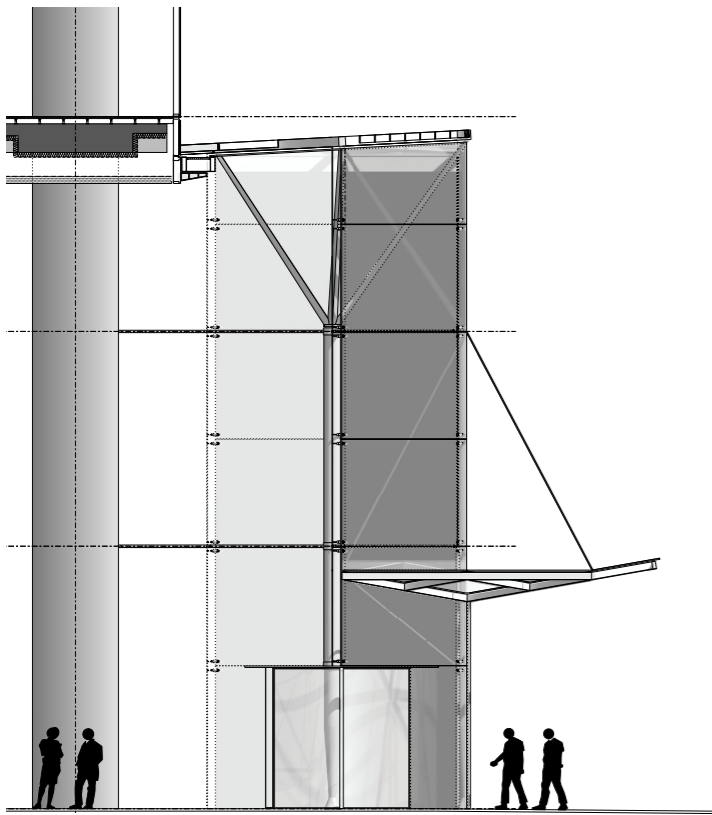
Level 01 Plan



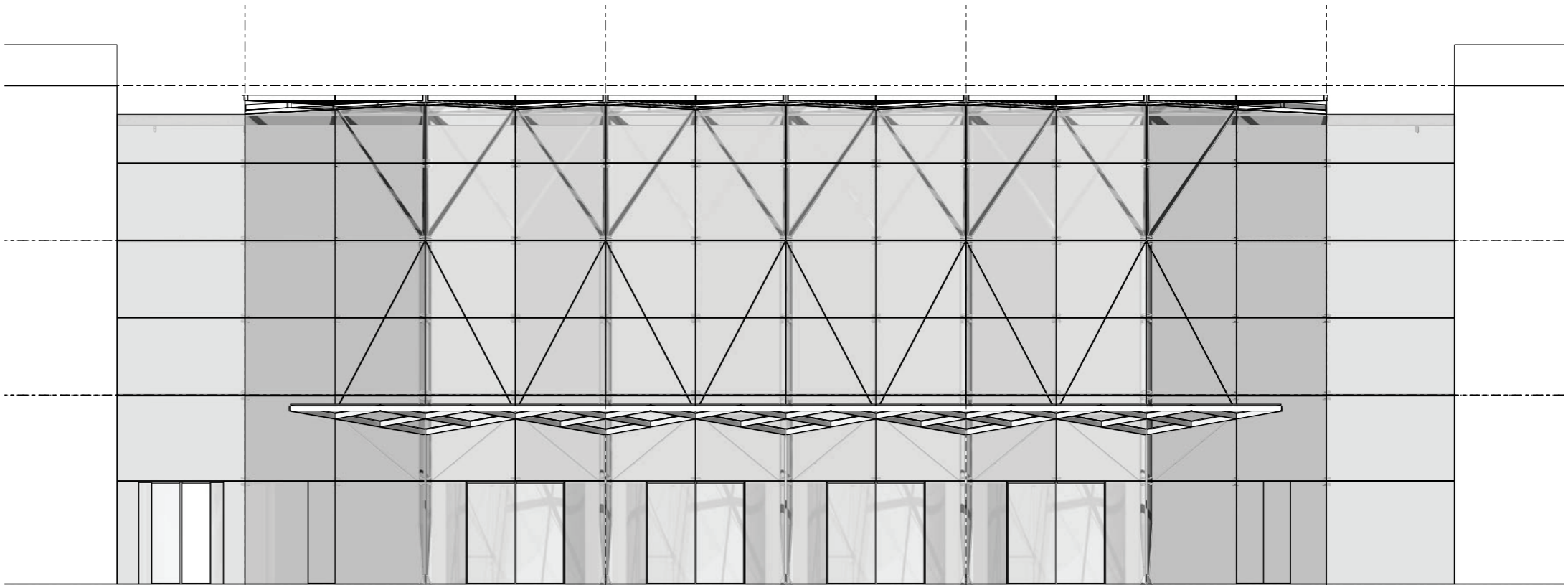
Level 02 Plan



Level 03 Plan



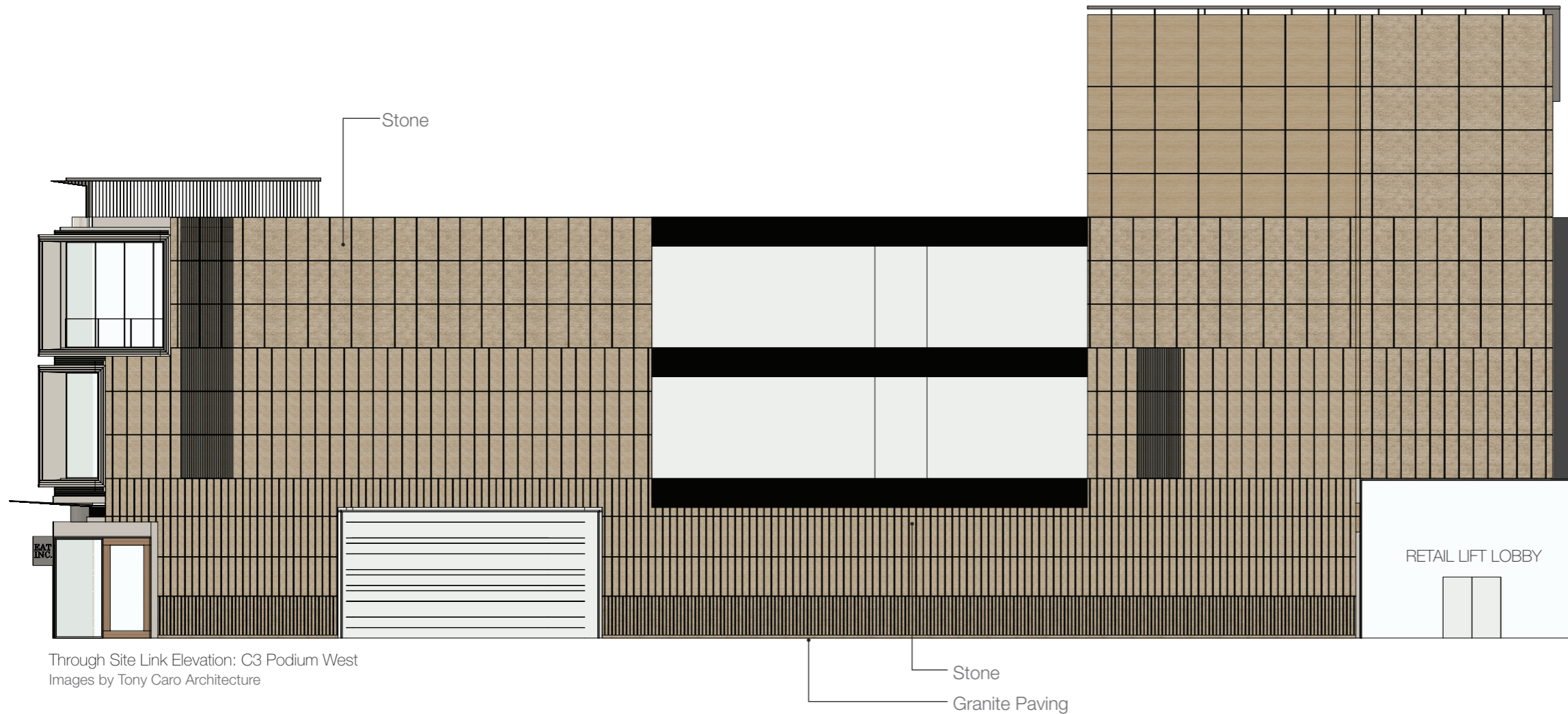
South lobby section



South lobby elevation

Through Site Link

Connectivity Through the Site



Through Site Link Elevation: C3 Podium West
Images by Tony Caro Architecture

The Through Site Link (TSL) of the C3 podium connects the east-west routes of City Walk and Globe Street, creating opportunity for nodal points to be developed at their intersections.

It is at these intersections that the opportunity to interlink with the podia of Towers C4 and C5 occurs, creating a meandering north-south pedestrian routeway along which a sequence of distinctive public spaces mark their entrances.

In the C3 podium, the internal route of the Through Site Link manifests itself within the commercial lobby whilst the external route reveals the activated glazed lift shafts. It presents the opportunity for people to mix, once again blurring the boundaries between the public realm and the commercial lobby spaces.

Unlike in Towers C4 and C5, this route is located at the western edge of the C3 lobby, separating the western podium building from the tower lobby at ground level.

The fine modulation of the ground level flanking walls responds to the public nature of the routeway and creates a human scale environment. Above ground level the modulation expands, forming a relationship between the scale of the podium and that of the tower above.

The northern and southern corners of the western podium have been developed to identify entry to the Through Site Link. Its location to the west ensures its visibility to the majority of the people arriving from the east.

At the southern threshold the elevated retail boxes wrap around the corner signals a continuation of the City Walk retail experience. The southern activity inner corner is consistent with C4 and C5's TSL southern entries.

As per C4 and C5, the northern C3 TSL entry is an unique marker on the corner. In C3, the northern end is signalled in a more formal manner. A monolithic corner, the corner rises above the general podium datum, signifying the entry point to the upper levels of retail whilst also denoting a key nodal point on the Through Site Link.

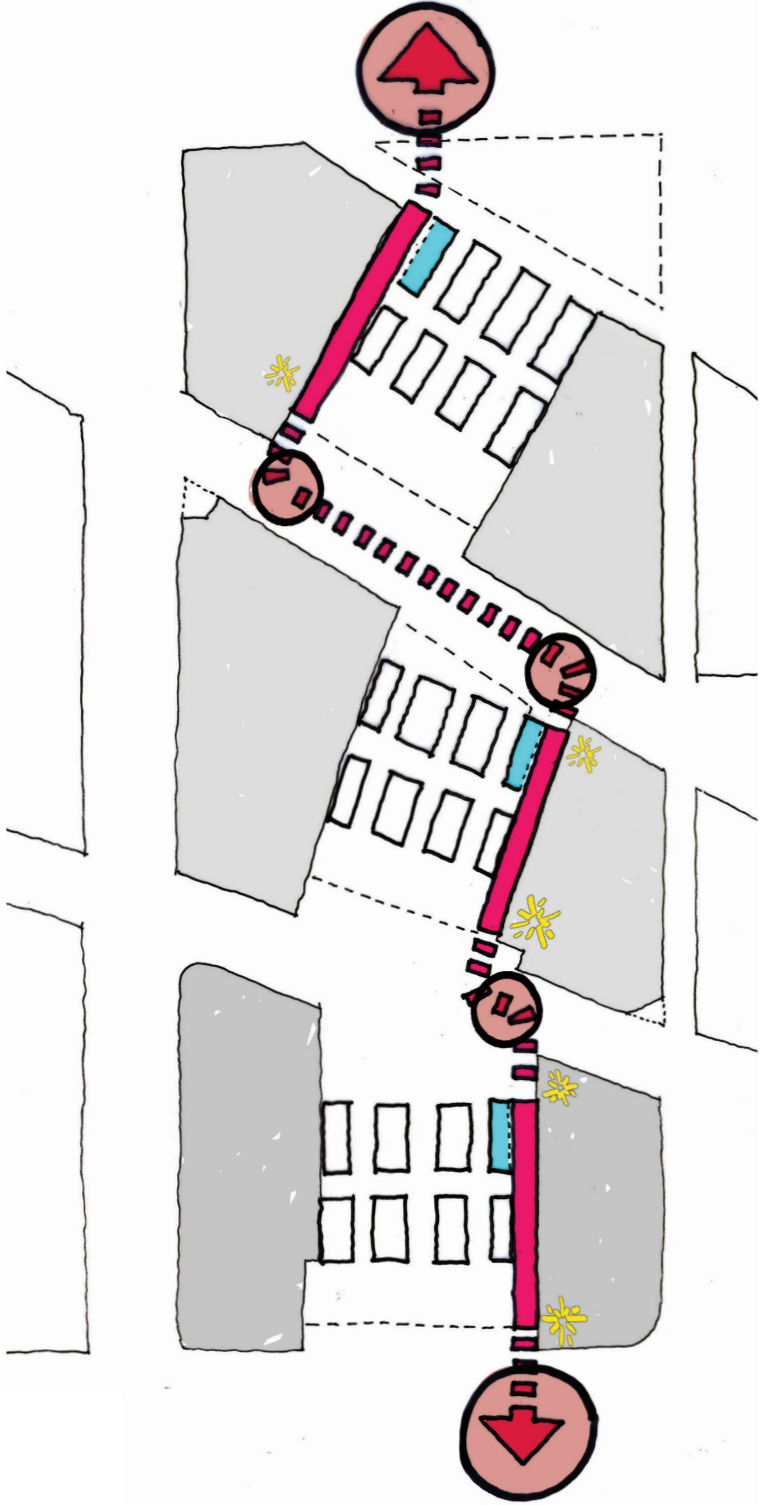


South Entry to TSL

Through Site Link

Connectivity Through the Site

Through Site Link
The Through Site Link is a meandering north-south route connecting C3, C4 and C5 podia. It is a sequence of different spaces and experiences, passing by glazed lift shafts and public nodal points.



South lobby and through-site-link

Podium Design

Overview

The podium of Building C3 is composed of two distinct elements joined by the central lobby of the tower - an element through which the tower form visually connects to the ground.

The architects for the podium east and west buildings (PTW and Tony Caro Architecture) have worked in collaboration with RSHP to develop a cohesive urban design strategy for the podium as a whole.

Distinct design identities have been developed for each of the podium buildings, ensuring diversity across the precinct. Once combined with the tower lobby these create a clear and legible composition which contributes to the character of the streetscape and creates natural wayfinding.

The following sections of this report describe the proposed refinements to the design of the podium buildings.

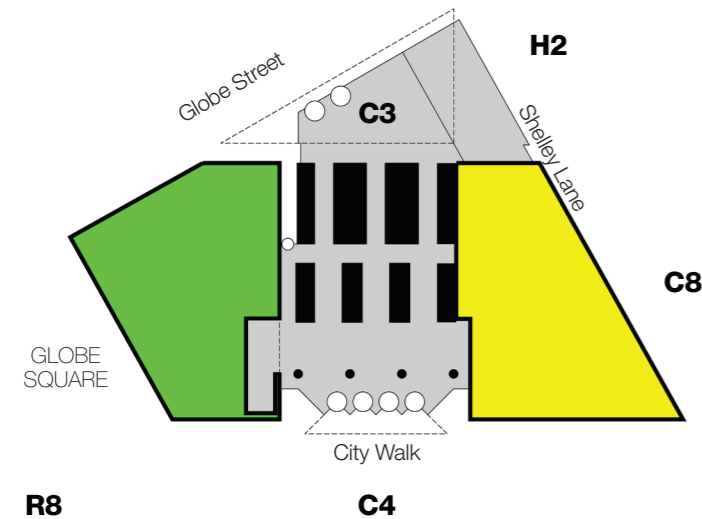


Diagram showing the different elements of the podium.

Plan: Ground floor plan showing C3 and the podium in context

Illustrative Plan by Aspect Oculus

Podium Design

West Podium

Section by Tony Caro Architecture

The C3 West Podium site is defined by some of Barangaroo Souths key public domain places, being Globe Square and Lime Street (west), City Walk (south) and Globe Street (north). The podiums eastern "facade" also forms an important edge and interface with the tower north and south lobbies across the proposed cross-site pedestrian link.

Urban Design Concept

The building facades and their articulation respond to the scale of these public spaces and adjacent podium buildings, whilst also demonstrating a carefully considered architectural relationship with the scale and texture of the C3 tower above.

The urban design concept for C3 West Podium facades was established through a series of model studies that addressed the following design criteria:

- The location of the site on the new public square by the water.
- The urban form relationships to adjacent streets and the cross-site link.
- The scale, articulation and materiality of the podium in relation to the C3 East and T4 podiums.
- The scale, articulation and materiality of the podium as a counterpoint to the tower, as identified in the Barangaroo South Urban Design Framework.

The C3 West Podium footprint has evolved subsequent to the Modification 4 approval, as a result of resolution and refinement of the Barangaroo South Stage 1B Structure Plan. The western facade of the West Podium now occupies an extended frontage to Globe Square, between re-aligned Globe Street and City Walk.

The Barangaroo South Urban Design Framework identifies the need for a carefully considered relationship between the Tower and Podium at this key location, given the strong visual exposure of these

two elements together from within Globe Square. The concept for the West Podium facades addresses this relationship by juxta-positional counterpoint of its muscular precast-concrete portal elements with the fine vertical pattern and glassy/metallic materiality of the office tower primary facades.

Responding to the scale and place-specific qualities envisaged for Globe Square by the Urban Design Framework, the design of the C3 West Podium facades creates a unique and integrated architectural expression appropriate to the scale of the public domain in this location.

Architectural Concept

The podiums general height and key horizontal datum lines are consistent with both the East Podium and main lift lobbies. A strong horizontal cornice line at the street wall parapet defines the scale of the street corridor and mediates the height of the towers above.

The West Podium will offer an exciting range of quality food and beverage tenancies across each of its three levels. In this context, its architectural expression is imagined as a contemporary interpretation of the verandah-encased "corner hotel" that has traditionally occupied this type of site throughout inner Sydney and nearby suburbs.

The building facades will contribute a lively sculptural focus and edge definition to the square. The facades are activated by occupied verandah/terraces and bay windows, extending a sense of human occupation and enjoyment from the ground plane of Globe Square up into the facade.

The main facade system wraps around into both Globe Street and City Walk, to invest the podium form with a strong homogeneous quality. The primary corner to the Square is articulated with additional height and scale, to ensure a strong visual presence and memorable identity.

The eastern elevation addressing the cross site link has an expression that mediates its quasi-public nature



Illustration of C3 podium - north west corner



Illustration of C3 podium - south west corner

Podium West - Materials and Finishes

Section by Tony Caro Architecture

with the “public room” character of the tower lobbies just beyond. This is achieved by the composition, pattern and texture of the sandstone cladding to its predominantly solid vertical surfaces.

A distinctive change in the main facade treatment occurs on the northern facade, where the building line cuts away from the street alignment to open up visual access to the northern tower lobby. This monolithic element is a sturdy sandstone form that returns and visually ties into the cross-site link, and is punctuated by two large bay window elements that signify the ground level and upper floor access lobbies to the restaurant tenancies. It also creates an appropriate transition in scale and detail from the typical West Podium facades to the dramatic solid vertical lift shafts expressed on the northern tower facade.

The size and rhythm of the main facade portal elements varies along each public domain frontage and on each of the upper two levels. Portals are intermittently “deleted”, to enhance the singular, sculptural quality of the facades and avoid a more conventional appearance.

An over-scaled portal that breaks the cornice continuity is positioned on the key north-west corner overlooking the Square. This distinctive space, along with others at various locations on the upper levels will be open verandah-like outdoor eating spaces on days when climate permits.

Flexibility of use for the verandah spaces will be developed through the use of operable sliding track glass door systems. This operability will offer the tenant ultimate flexibility with the use of the space, and allows the appropriate functioning of a bar/restaurant across different times and weather conditions.

The ground floor facades have a separate expression and detail that is responsive to their street level location and the need for open-ness and flexibility. These facades are situated below a perforated metal awning that visually distinguishes them from the upper floor facades. A range of custom dark metal and timber shopfront suites has been developed, to provide choice for tenants and visual diversity along the footpath.

A key objective for facade material selection is to address the Barangaroo South General Podium Facade principles. These require that podiums provide a robust masonry expression in contrast with the lighter, glassier forms of the towers above.

The concrete portal system proposed for the West Podium offers a strong masonry expression with a robust, 350mm wide edge frame and deep recesses to the glazing line. The portal frames to the street are formed by a custom-formed precast concrete stepped profile. The inner surfaces of the portal elements are to be lightly honed. The concrete is to be off white with selected light to mid-grey aggregates.

The cross site link and northern return are to be clad with sandstone panels or an acceptable alternative. The large surfaces of these elements will be attenuated by a customised pattern and a texture rising from a rusticated street level base through to a sawn surface at the upper levels.

The ground floor footpath awning, balustrades and parapet cornice will be made of dark bronze or dark bronze-coloured metal elements. A combination of planar structural steel plates and rods will form these elements. The plate will be partially perforated to soften the leading edge and allow additional light into certain areas adjacent to the facade. The balustrades will be designed to preserve visual permeability between the Square and the Verandah Rooms, whilst also demonstrating a sense of robustness appropriate to the scale of the Verandah boxes.



North Elevation: C3 Podium West - Globe Street
Images by Tony Caro Architecture



West Elevation: C3 Podium West - Globe Square
Images by Tony Caro Architecture

South Elevation: C3 Podium West - City Walk
Images by Tony Caro Architecture

Podium Design

East Podium

Section by PTW

The urban design strategy adopted for Barangaroo South propose two interrelated built form elements: City scaled towers and street scaled podium base buildings.

The podium elements generally comprise three generously proportioned levels to the perimeter of the street blocks

Design

The C3 East podium addresses City Walk to the South, Shelley Lane to the East and an access road to the North. City Walk is an important pedestrian street linking the waterfront to Hickson Road and the City. Both the City Walk elevation and Shelley Lane elevations have a regular grid of masonry piers at ground level and above a continuous screen of finer timber blades. Both Maintain datum levels and architectural elements common to all podium buildings of the precinct; that is the projecting cornice element and the line of the top of the ground floor fenestration.

The design proposal draws on the idea of a Glass tower resting on a masonry base. The scale of the 3 storey lobby & podium is broken down by tripartite articulation of the floor levels. At ground level, a sense of gravitas is maintain by the grid of masonry piers around the podia. Between the piers are dark steel framed modules, in filled with a operable glazed walls, glazed doors and fixed glass display case on stone plinths.

The building is designed with façade modulations to animate views down these narrow lanes and has a materials palette consistent with that of other podium buildings of the precinct. The façade has been designed to compliment both the design of the tower above and that of the adjacent podium buildings to the west and south. In particular the abstract pattern of projecting display boxes set against the plain timber screen element harmonises with the abstract box composition of the TCA C3 West podium design.

This screen element is made up of wide timber blades rotated on range of orientations to allow views from within up and down the lane. The screen is animated by series of projecting display boxes.

The arrangement dramatizes the experience of entering and traversing the laneways; on approaching the lane the blades of the screen combine to read as a solid timber wall element, as one enters the lanes and looks directly at the building, between the blades the screen appears more open and the building lighter and transparent with clear views in and out of the internal space. The spacing and nature of the screen element changes along its length, in part to conceal the pattern of columns within the building and in part to create an abstract pulsing pattern along the length of the façade. As the screen approaches the glazed foyer it transforms from fine timber blades to a solid sandstone wall. The of timber blades is gradually interspersed with fine masonry louvre blades, with the proportions varying from all timber, to a mix of timber and masonry and finally within the foyer to all sandstone walls.

This surface composition on the upper levels is also punctuated projecting steel boxes, with mirror lining to the angled soffits, reflecting the events and activities on street level. Planters are also introduced within these elements to soften street edge and to create dramatic organic counterpoints to the built elements of the façade. The appearance of the façade will be highly animated, yet always composed by the regular ground level grid and strong shadow line of the cornice element.

On the ground level, there's a variety of retail conditions to suit the various street characters. City Walk with it's wider and more formal setting, gives way to articulated retail shopfront modules. Shelley Lane takes advantage of the intimacy of a tighter street width with informal operable thresholds to cafes and restaurants.

The first and second levels has been designed to allow for flexibility to suit the various genres of tenancies.



Illustration of C3 podium - north east corner



Illustration of C3 podium - south east corner

Podium East - Materials and Finishes

Section by PTW

Façade Components

The City Walk Street Elevation has clear glazed display cases set between the masonry piers at ground level.

The Shelley Lane Street elevation has frameless glass operable walls at ground level that fold away to completely engage the cafes and retail areas with the lane.

The upper levels clear fixed glazing behind vertical battens with framed projections with planters onto the street.

Signage Zones to City walk and Shelley lane are above the display cases within the sandstone and metal framed modules . Air intake grills have been integrated behind the signage. No signage will be mounted off the stone blade elements.

The City Walk street wall returns into the foyer area giving the podia a 3 dimensional 'whole building' character, rather than a 2 dimensional applied skin.

A dark steel cornice clearly separates the architecture of the podia from that of the towers above, and is an important common element, linking each of the 5 podia buildings.

Materials

- Sandstone with fine sawn finish to the ground level piers
- Charcoal coloured micaceous iron oxide painted steel cornices
- Reconstituted durable timber faced louvre blades.
- Dark grey aluminium composite panels
- Stainless steel armature to tilt-up shopfront doors
- Linished stainless steel for door hardware and fine facade metalwork such as handrails and bracketing
- Charcoal coloured mild steel framed projections with mirrored finish linings
- Dark stone shopfront plinths

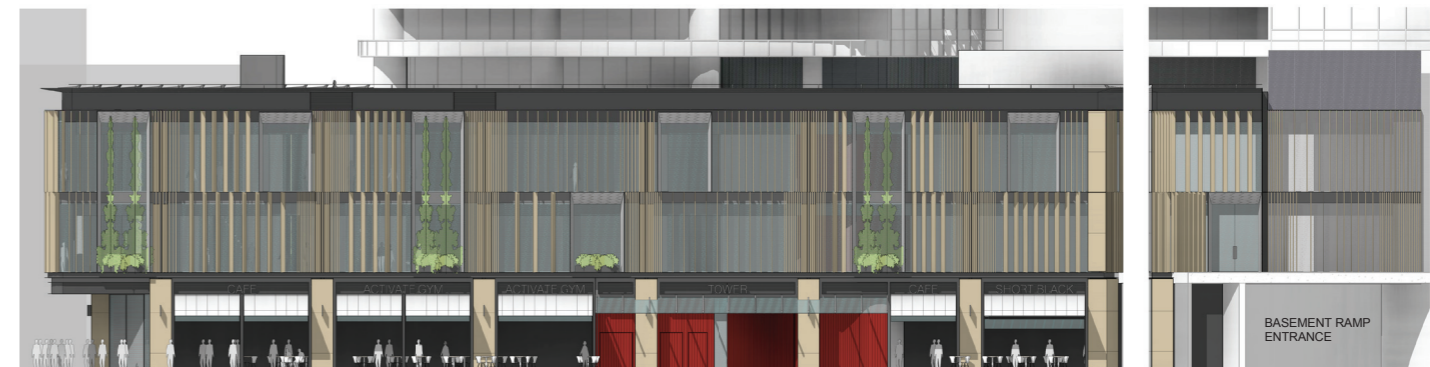
Each of these materials is robust and durable in the harsh environment of the area.

The grid of large masonry elements at the base lays the foundation for a articulated surface composed of a light vertical batten system above. This is punctuated by sharp metal framed modules with mirrored linings. A strong tonal contrast between the pilasters and shop front surrounds allow for a variety of designs as desired by specific retailers without undermining the compositional structure of the façade.



West Elevation: C3 Podium East - Lobby
Images by PTW

South Elevation: C3 Podium East - City Walk
Images by PTW



East Elevation: C3 Podium East - Shelley Lane
Images by PTW

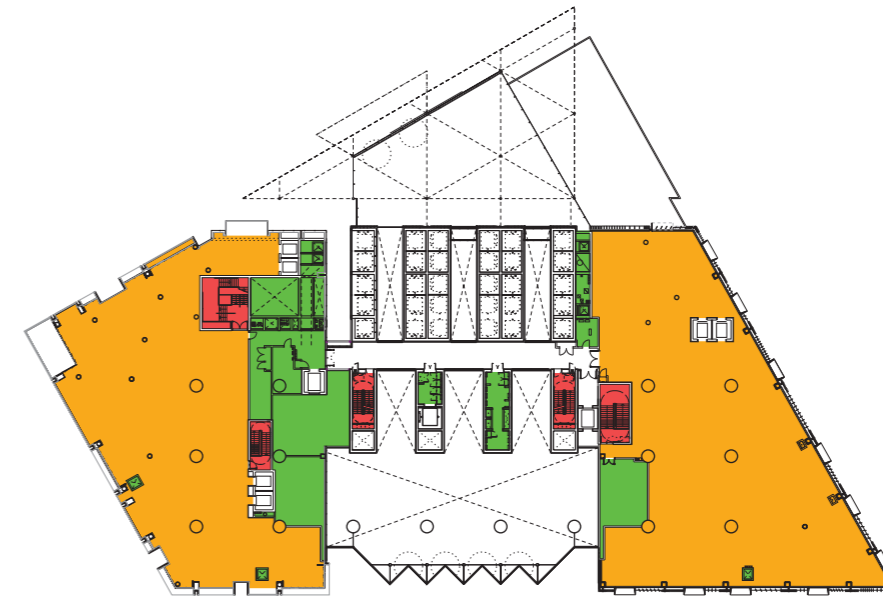
North Elevation: C3 Podium East
Images by PTW

Podium and Lobbies

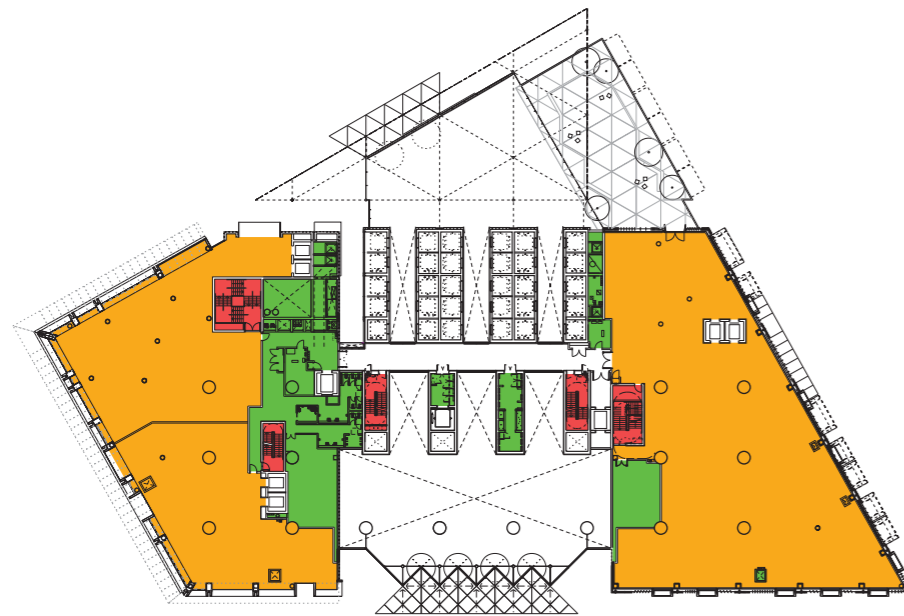
Internal Planning



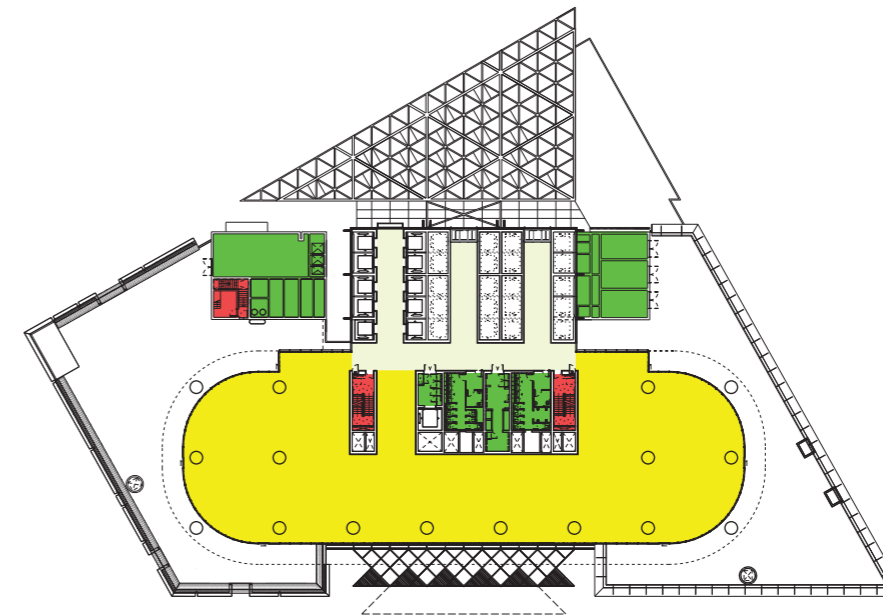
Ground floor plan



Second floor plan



First floor plan



Third floor plan (podium roof)

The podium internal planning proposal relocates fire egress from the tower and podium, carpark lifts and service risers.

These rearrangements and their effects are summarised below:

- Fire egress are relocated towards the north to achieve a continuous retail activated street edge for the corner of City Walk and Globe Street.
- Services including plant, risers and carpark lifts are concentrated within the podium.

The relocations allow for uninterrupted street frontages to activate the principle north-west and south-east corners. This ensures a continuous street retail frontage along Globe Street and Shelley Lane.

Key

- | | |
|---|--|
| ■ Retail | ■ Office |
| ■ Lobbies | ■ Egress |
| ■ Plant + BOH | |

Podium and Lobbies

Podium Terrace

The proposed landscape treatment of the podium roof garden is a permanent solution and provides a mix of hardscape areas surrounded by 'extensive' and 'intensive' planting areas. Fixed seating elements integrated within raised planters provide opportunities for communal tenant use.

Low robust planting is proposed with a number of vegetated areas that mound up and provide deep soil and 'intensive' planting zones.

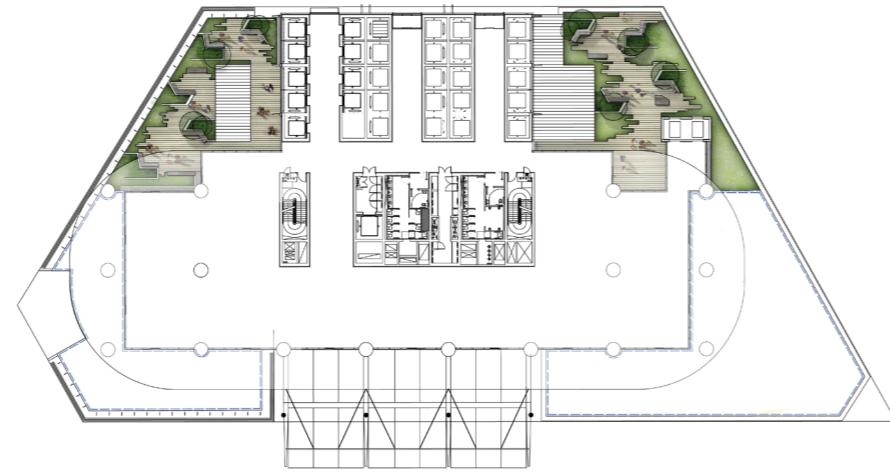
The planting palette for the roof terrace varies slightly to the south side of the building to include a selection of hardy, shade tolerant species that will withstand the prevailing environmental conditions.

The design also considers the prospect that the roof gardens will be overlooked from above by future and existing adjacent buildings and as such recognises the importance that they have to have strong compositions as well as being highly functional places, with a range of spatial experiences.

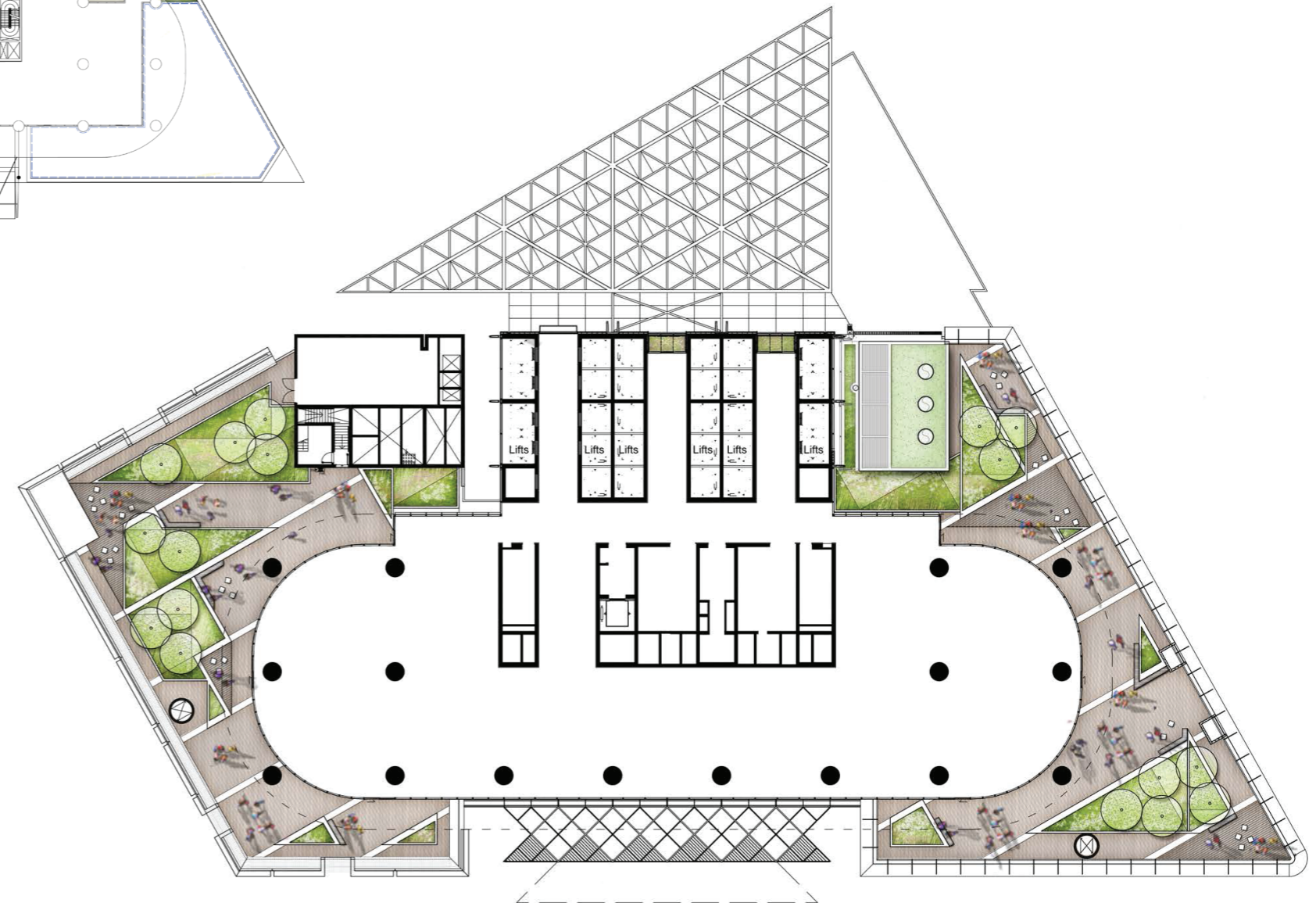
The amenity has been considerably increased by the Mod. 6 adjustments, enabling wider access to the views out toward Globe Square and the Southern Cove.

The level 3 office space has a revised necking facade to the east and west ends dematerialising the threshold and blurring the boundaries between inside and out.

The primary materials are concrete, timber and metal, with a series of raised beds incorporating seating elements creating aspects of enclosure.

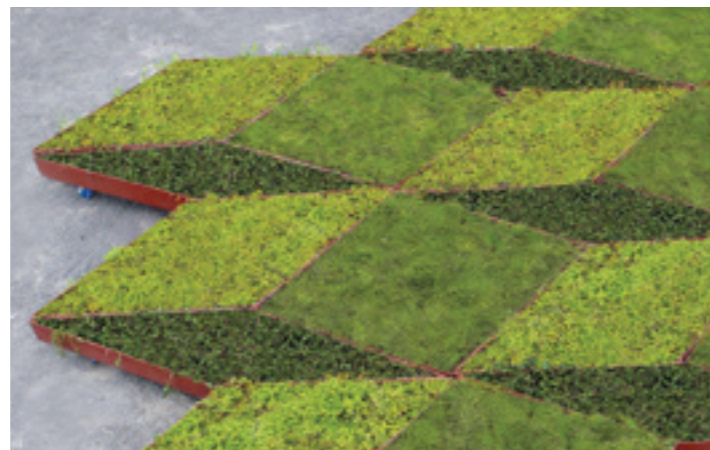


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Precedent images



2

2.2 DESIGN REFINEMENTS - TOWER

Tower Design

Overview

Building C3 is considered as a part of an ensemble of three sibling buildings, that dialogue with each other whilst having their own individual identity.

C3 has a unique orientation and architectural expression and acts as the primary north elevation to Barangaroo South. The design refinements proposed in this section 75W report strengthens C3's identity on the city scale and building scale, to reinforce the design principles set out in the Planning Application.

- Building Composition
- The Sibling Relationship
- Massing
- Setback Levels - the "Neck"
- Shading Fin Development
- Articulation of the lift shafts
- Services and Plant
- Evolution of the North Core
- The Stability Brace and Lifting Beams
- The Colour Story

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Illustration of the Approved Scheme of building C3

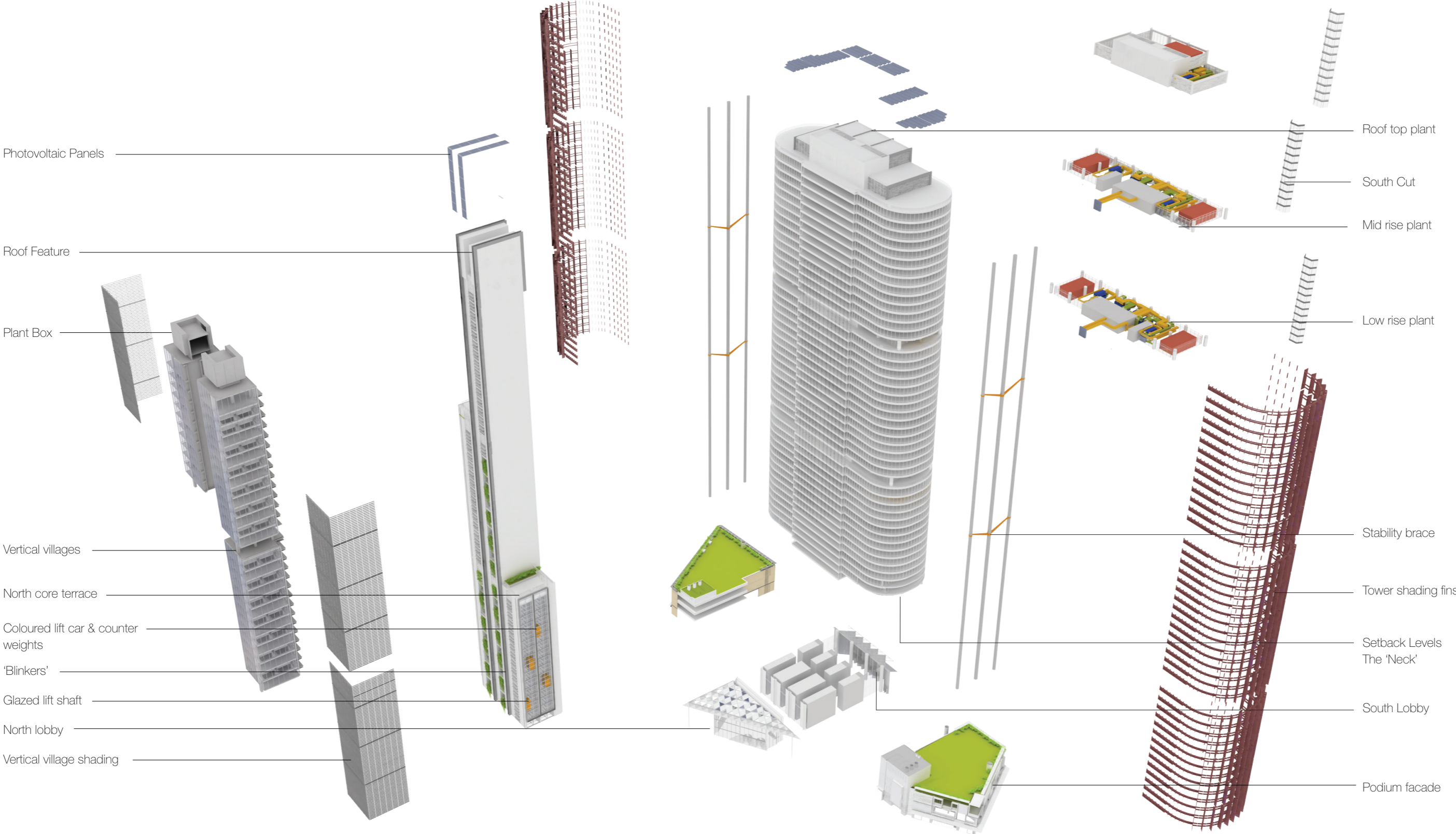
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Illustration of the Proposed Scheme of building C3

Tower Design

Building Composition

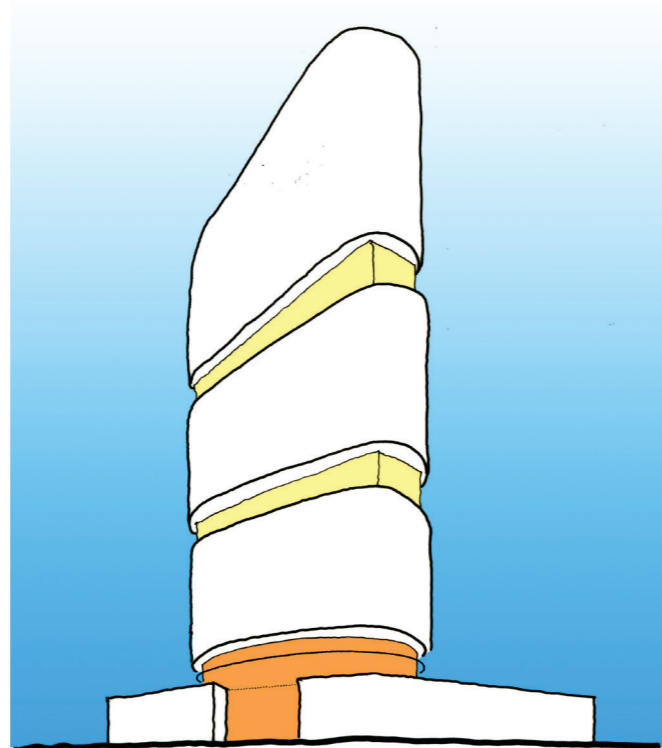


Setback Levels

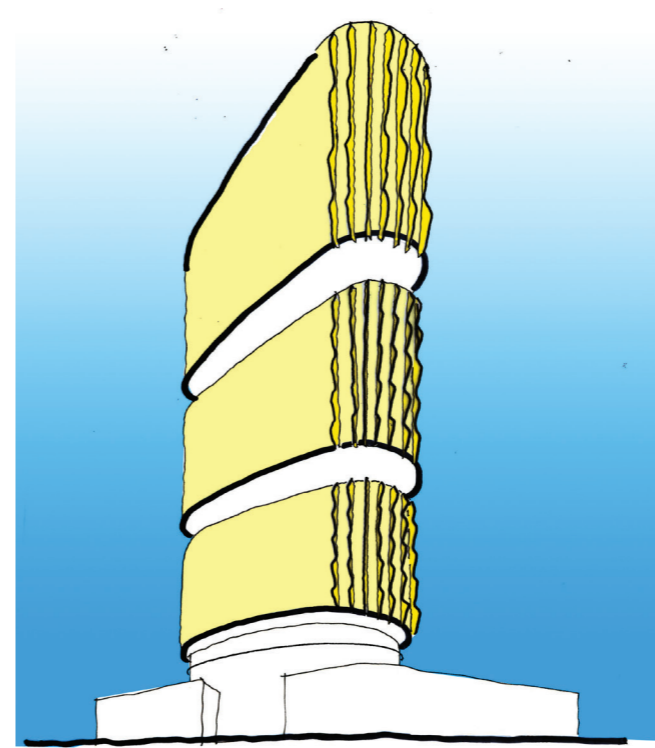
The setback levels have been amended to help lift the tower's base from the podium, enabling clear separation between the two masses. Emphasis has shifted to a horizontal articulation through a double floor continuous setback at levels three and four. The vertical fins have been lifted one level to reveal the full extent of the recess.

The setback sweeps around the building following the curved geometry of the tower floor plates. The external soffit panels strengthen the radial set out of the facade as the joint lines extend out to the extended mullions. The continuous surface of the soffit allows a better opportunity to up light at level four to help lift the tower from the podium at night. Together, these moves create clear separation between tower and podium.

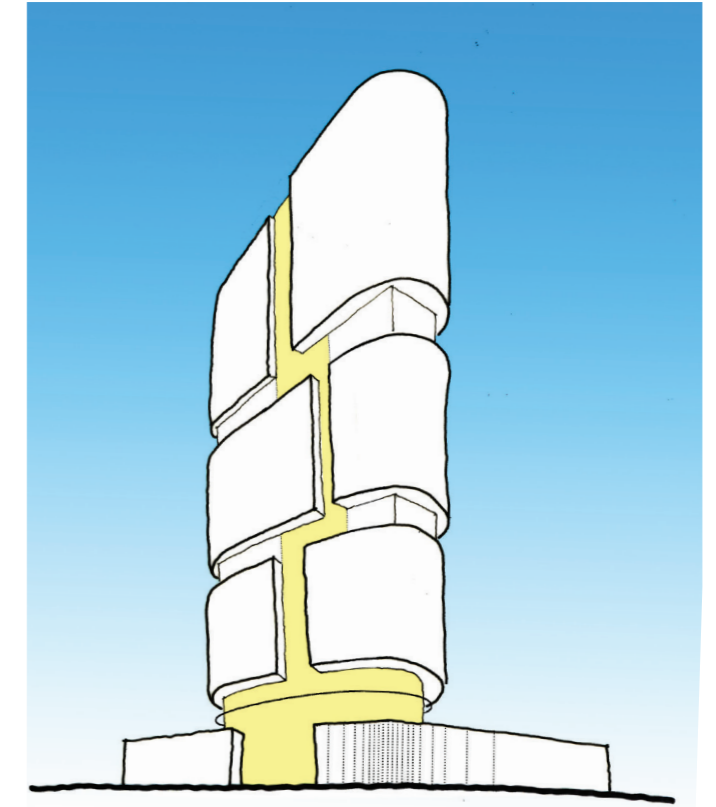
Section 75W September 2013 - Principles Diagrams



Horizontal Articulation
Tower's base lifted from podium



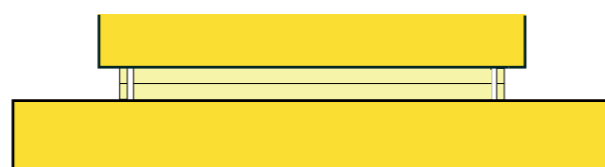
Facade and Shading
Solar shading lifted to reveal the setback



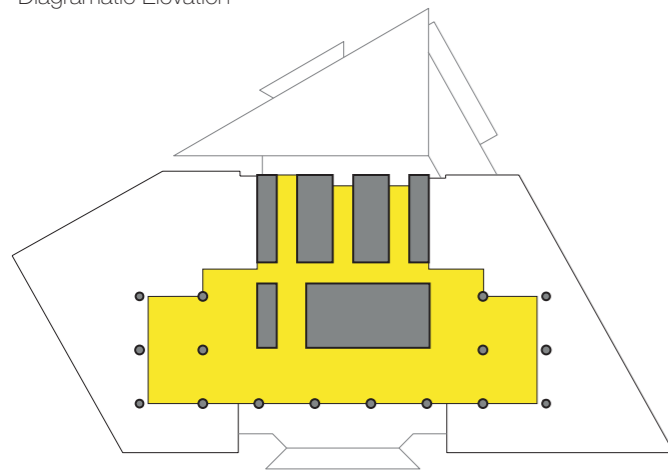
Vertical Connection to the Ground
Continuation of south vertical glazed expression to ground



Diagrammatic Elevation

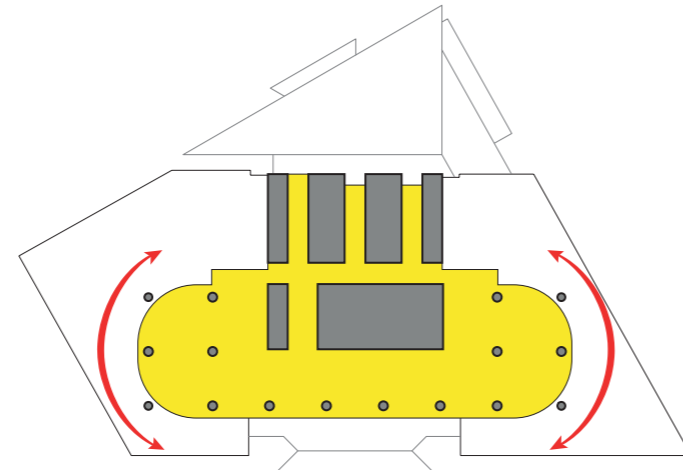


Diagrammatic Elevation - Necking



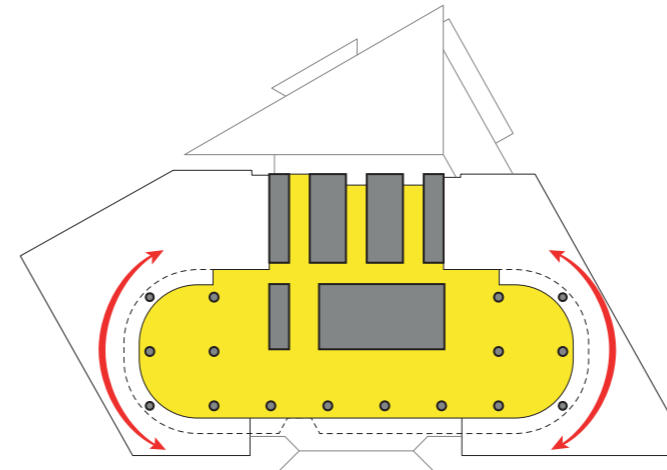
L3 Glazing Line Diagram

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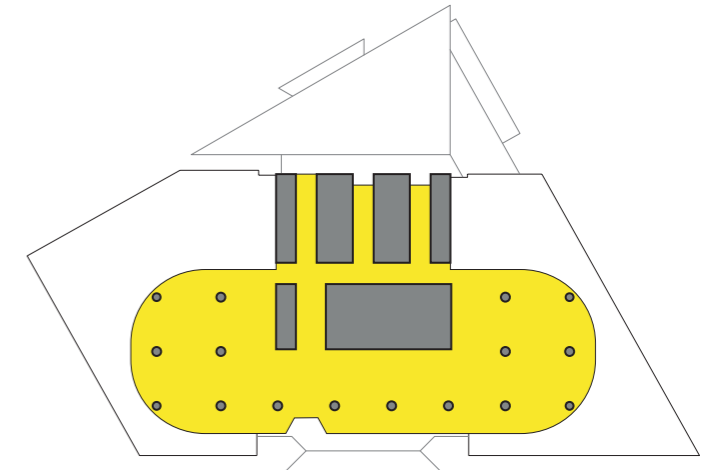


Level 3 - Glazing Line Diagram
Setback follows the sweep of the tower floorplate

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Level 4 - Glazing Line Diagram
Setback follows the sweep of the tower floorplate



Level 5 - Glazing Line Diagram

Facade

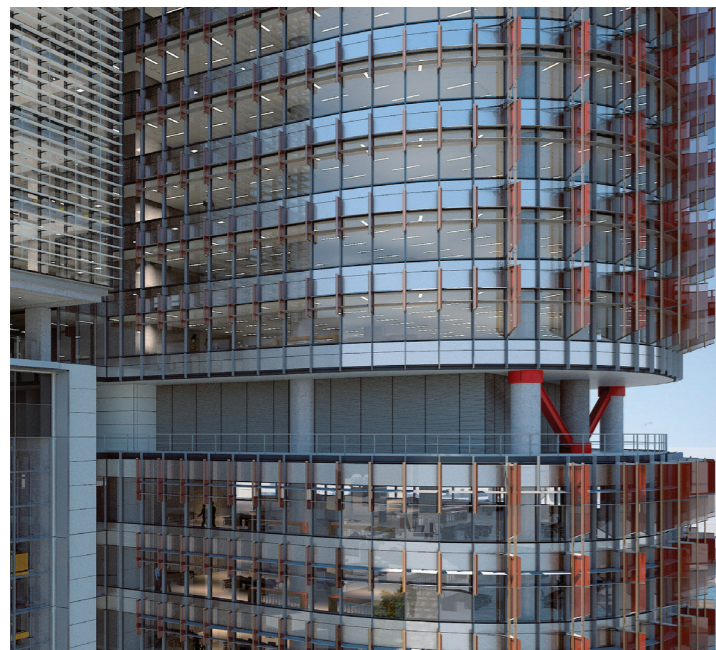
Shading Fin Development

The concept for the design of the floorplate shading fins remains unchanged but the design has been refined, reinforcing the vertical reading of the tower and continuing the theme of legibility of component parts.

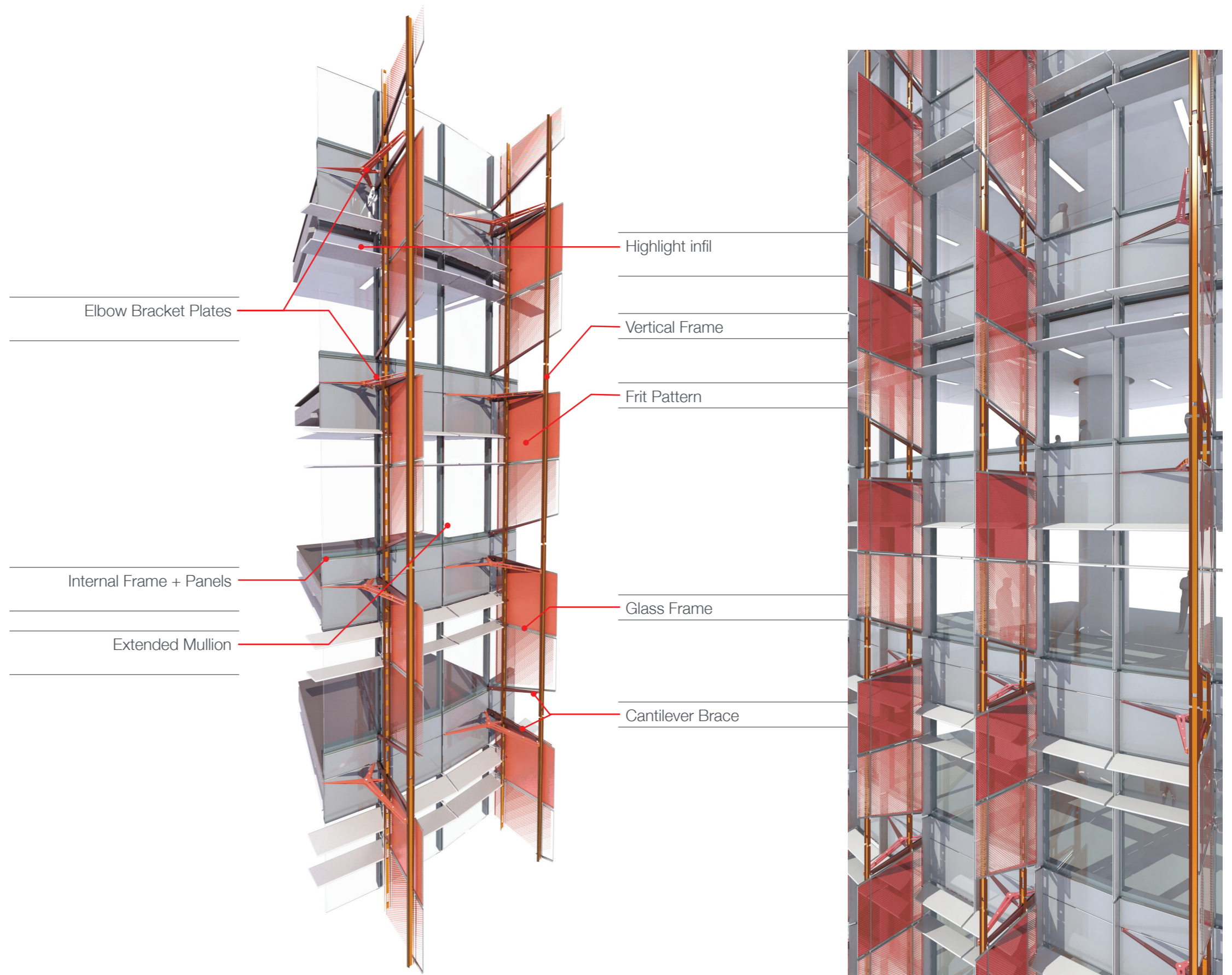
The shading fins to east and west facades sit on a 3m module and are framed by continuous vertical structural members. This framing provides a building scale vertical reading whilst floor by floor glass infills break this scale down to a human scale. Ceramic frits and interlayers of varying opacity and have been developed in a manner which offers a more sophisticated response and create a softer edge to the building.

The verticality of the tower is primarily emphasised by the large vertical fins, and where additional shading is required, smaller horizontal shading elements are added to the system.

The revised colour strategy for the tower enhances the elemental design of the fins by highlighting the details of the component parts of the assembly.



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Facade

Termination and Articulation of the Lift Shafts

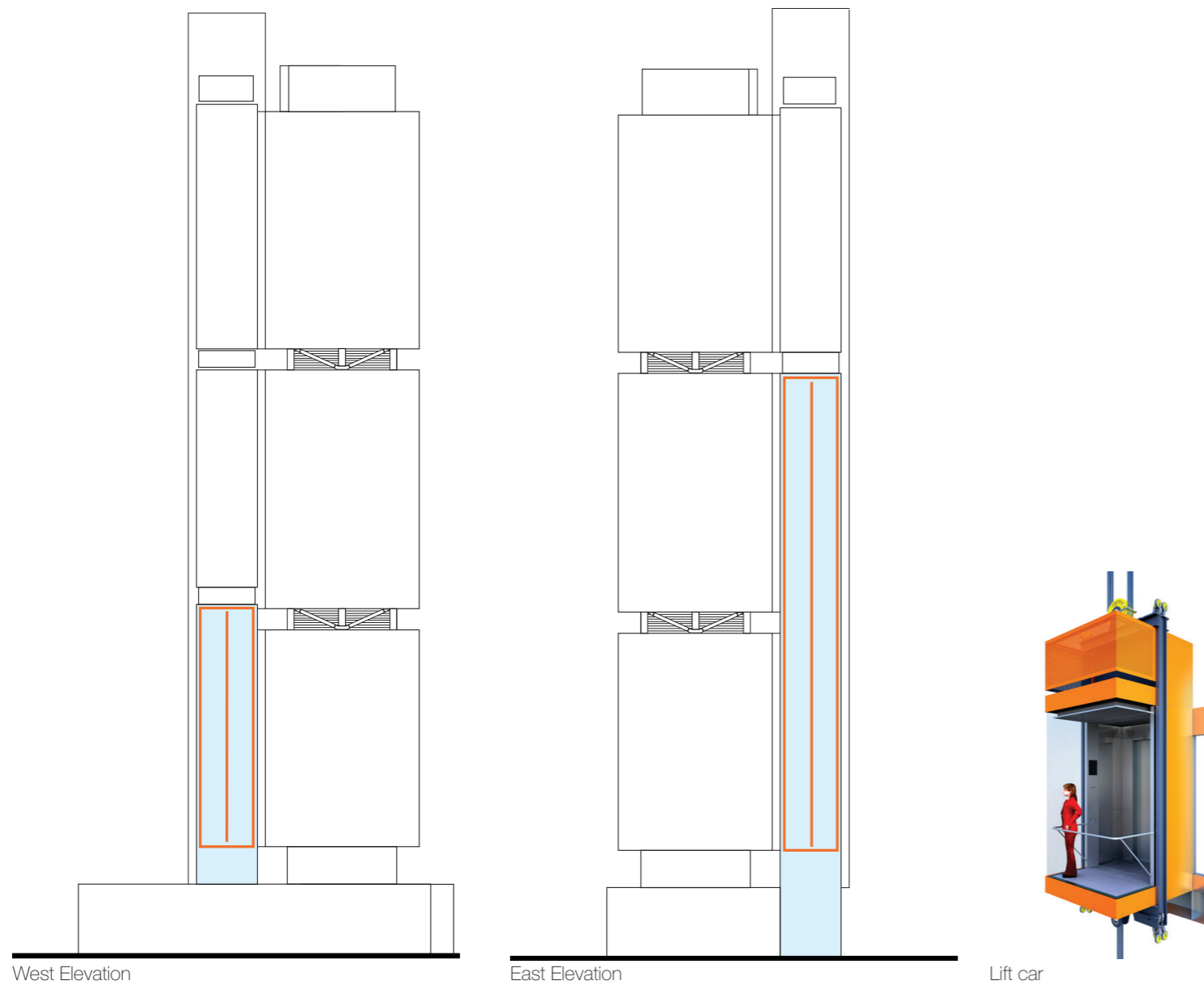
On the east and west elevations the shading system for the glazed lift shafts has been separated from the gap making system of the north core. Three vertical shading devices form a subdivided picture frame with horizontal elements linking them at the top and at bottom. These 'blinkers' cast shadows on the glass, increasing its transparency and therefore visibility of the moving parts within the shaft.

The 'blinkers' terminate at level 5, aligning themselves with proposed necking for the tower, leaving the glazed

lift shafts free to interface with the podium at level 4 and below.

The glazing to the mid rise shafts continues all the way to the ground level extending this façade in to the public realm of the through site link.

A refined colour strategy emphasises the reading of the activated lift shaft. The neutral facade elements with the supporting steelwork contrasts with the boldly coloured, dynamic glass fronted lift cars and counterweights.



Lift car
Note: This image indicates proposed lift car colour for C3.



Glazed Lift Shaft: View of the glazed lift shaft, the neutral colour strategy of the steelwork and facade elements contrasts with the dynamic and boldly coloured lift cars and counterweights.

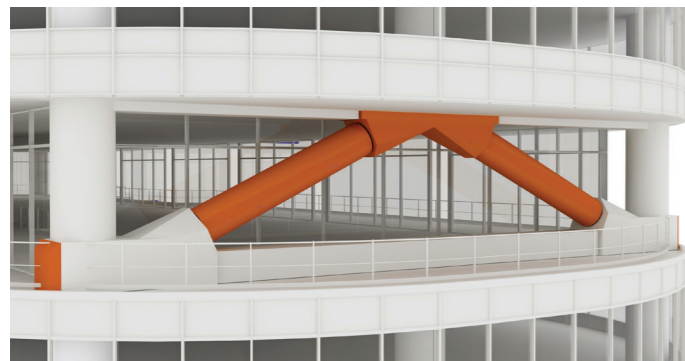
Plant Floors - Low + Mid Rise

Evolution of the Stability Brace

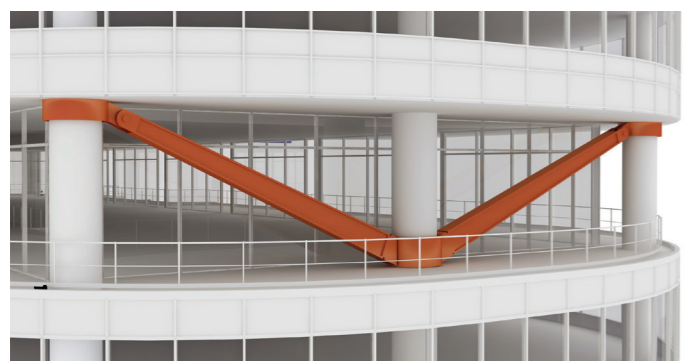
Further structural design development of the 'K-brace' had resulted in significant additional structure in order to create a workable solution. The K brace required a massive concrete tie at its base to stop it from splaying. The size of the nodal points required for this were such that they extended beyond the floorplate edge and through the facade zone. The splay was further constrained by the plantroom floor to floor height.

The proposed scheme inverts the 'K' brace to be a 'V' brace which assists with the structural stability of the main core and reduces building sway. When combined with concentrically offset columns, it also reduces the size of the tower perimeter columns by 150mm on both the low and mid rise stacks. This results in a clearer structural diagram and creates more space between the column and the facade, providing a more open and usable floorplate.

The solid square end of the mid level plant rooms provides the backdrop to the stability brace, accentuating it as an architectural feature and the inverted nodes provide a stronger visual reading.

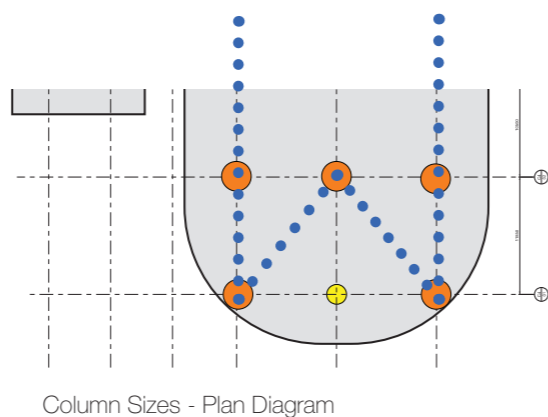
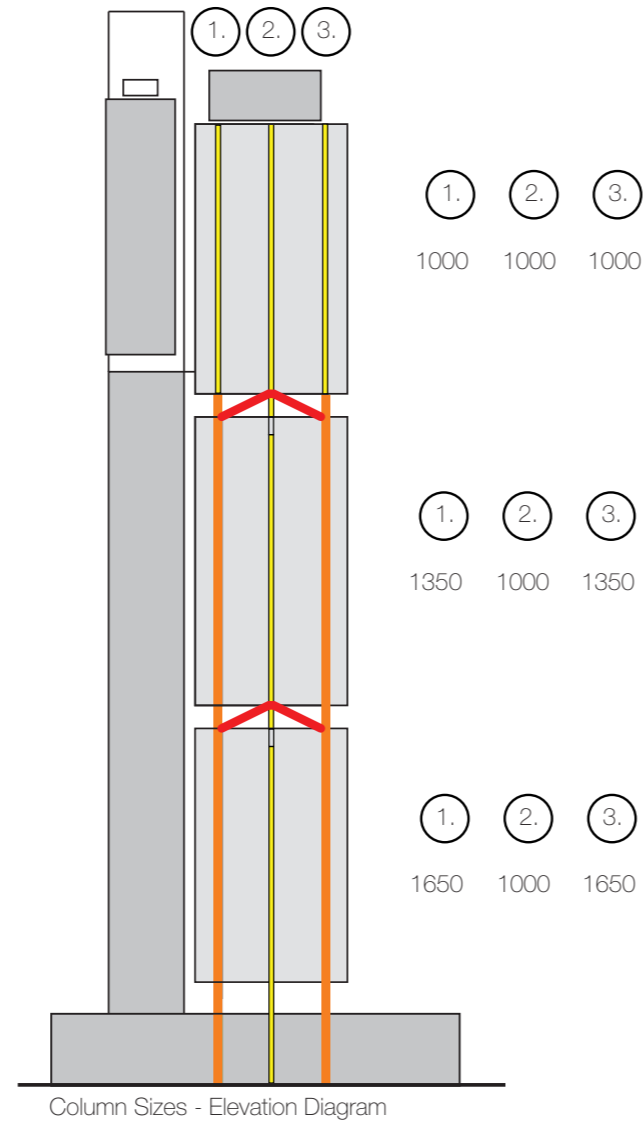


K Brace

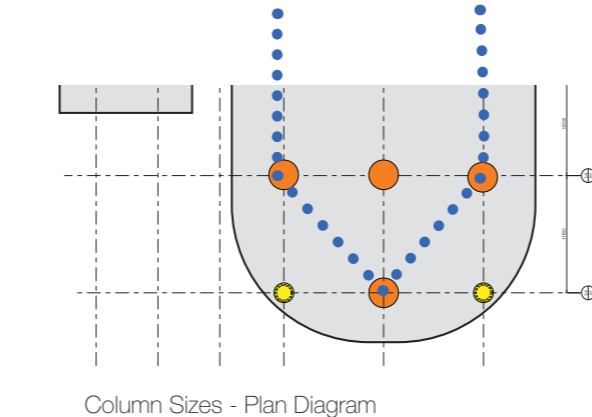
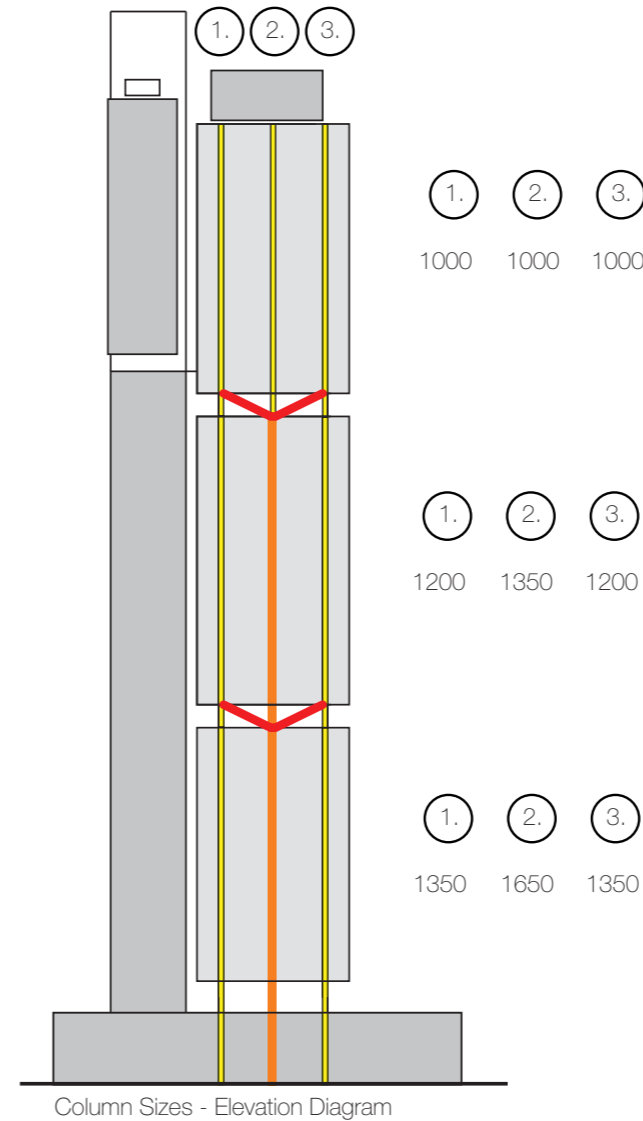


V Brace

Section 75W October 2011 (Mod1)

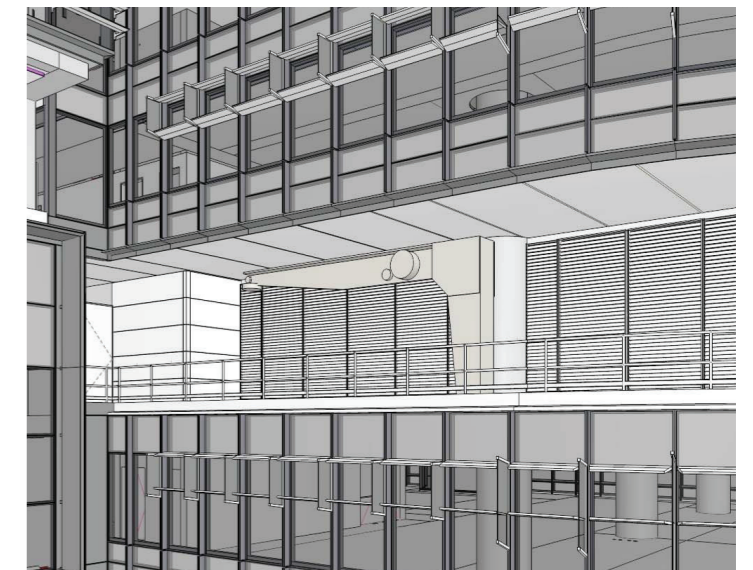


Section 75W September 2012 (Mod2)

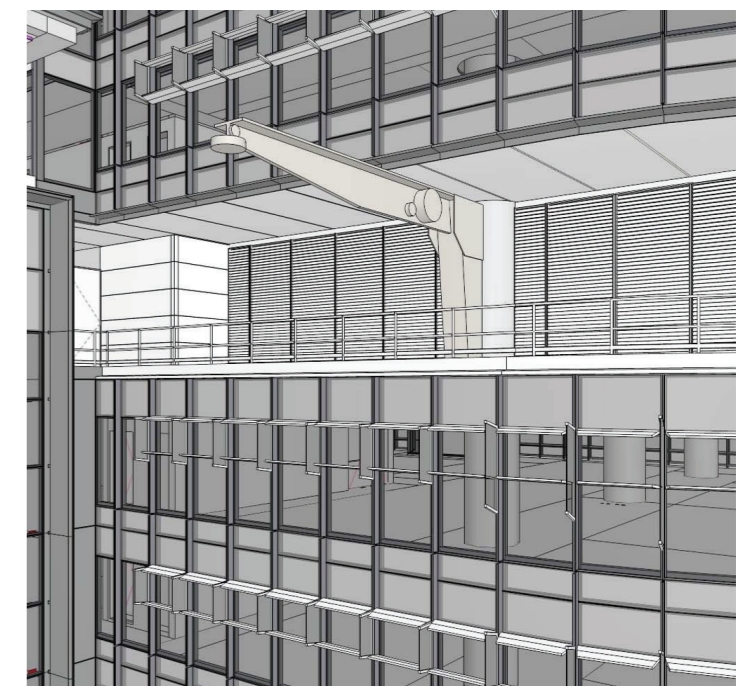


Lifting Beam

A lifting beam is required to deliver and potentially replace transformers to the intermediate plant floors. This has been located on the north western side of the floorplate, tucked beneath the overhang in its resting position, pivoting 90 degrees when in operation. The lifting beam is integrated into the overall design of the plant room.



Lifting beam in resting position



Lifting beam in active position

Roof Form

The Sibling Relationship

The rooftop of tower C3 has been modified, rationalising its form through review of its planning efficiency, its formal continuity with low and mid-rise plant levels below and its functional logic. These characteristics are echoed in towers C4 and C5 and further serve to establish sibling ties.

Key Roofscape Considerations:

- Services and plant functionality
- Massing (scale, form and organisation)
- PV Opportunities (to main floorplate, north core signage boxes and high rise core)
- BMU rationalisation (expression of operation of building)
- Signage (opportunities)

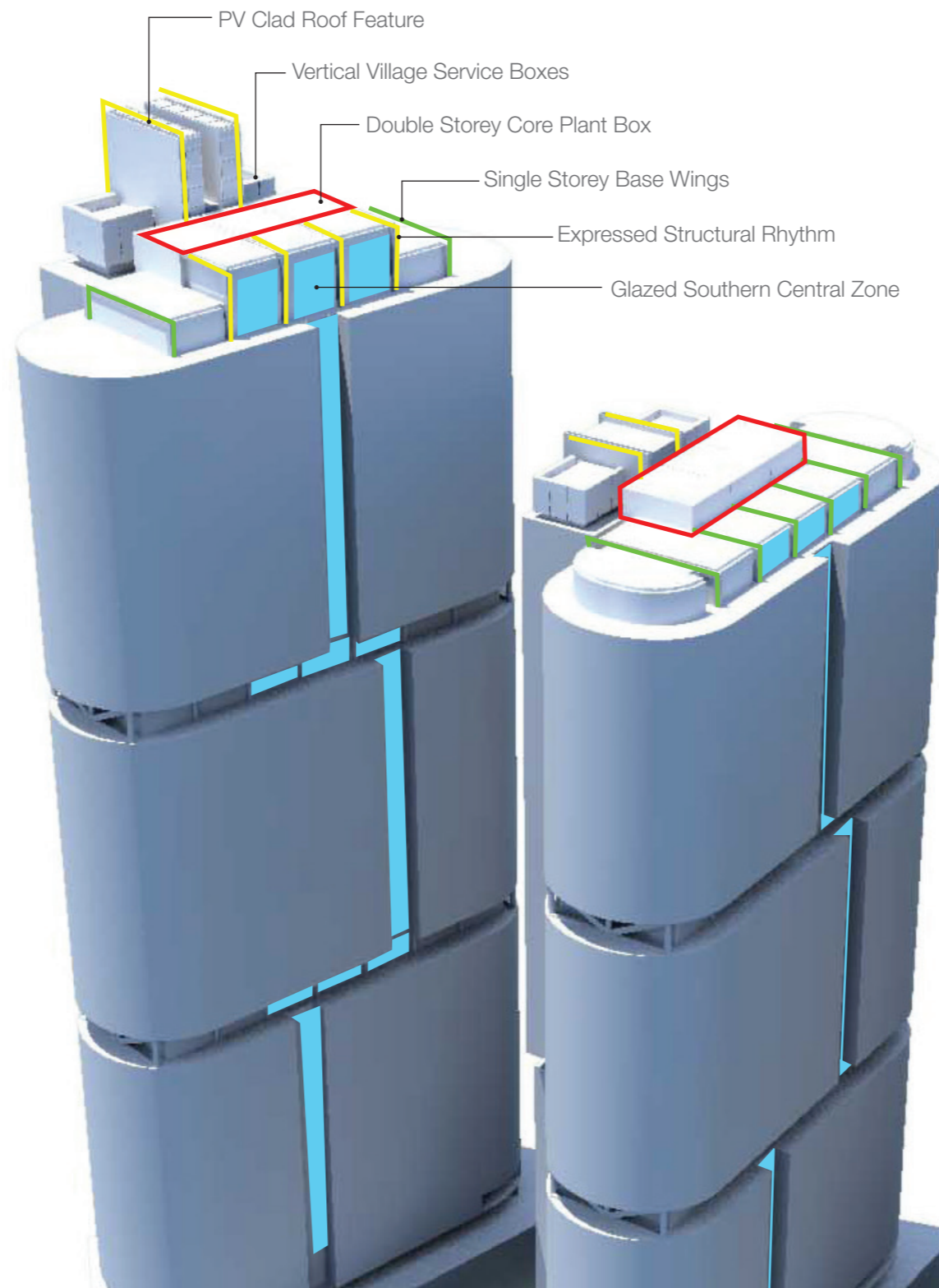
These considerations have been reviewed holistically, with the intent of:

- Creating an efficient plantroom with the minimum building volume.
- Maximising the usable area for photovoltaic cells.
- Providing roof termination appropriate to the tallest of the sibling towers.

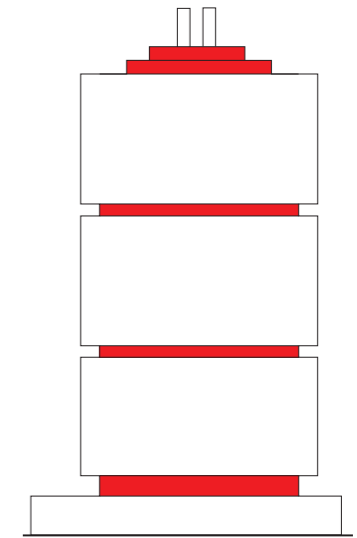
The rooftop plant manifests itself as an efficient component based system; the concrete integrated plant box, the service spine, the glazed central bays and louvred AHU wings grounding the mass.

The top of the north core is the termination point of the building. Its proportion and composition has been refined, enhancing its legibility. The AHU service boxes located on top of the Vertical Villages have now become 'self contained' functioning as independent units serving the 'special spaces' below.

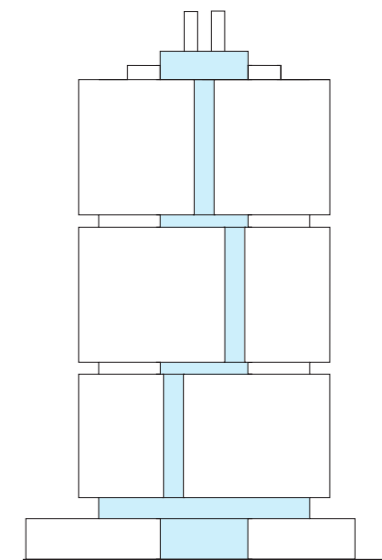
The subsequent increase in size of these boxes has created a stronger termination of the north core and coupled with the revisions to the intermediate plant floors creates greater legibility of the served and servant elements of the tower.



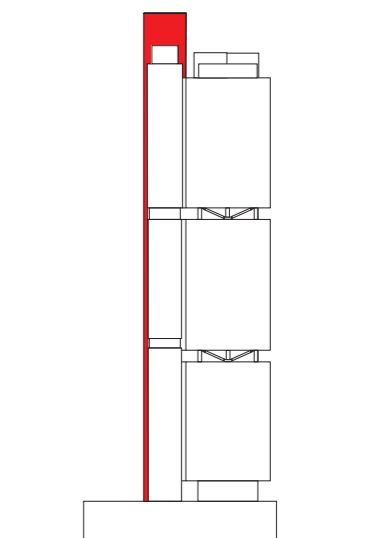
The sibling tower composition



Tripartite Tower Composition



Internals Revealed Through Southern Mid Zone



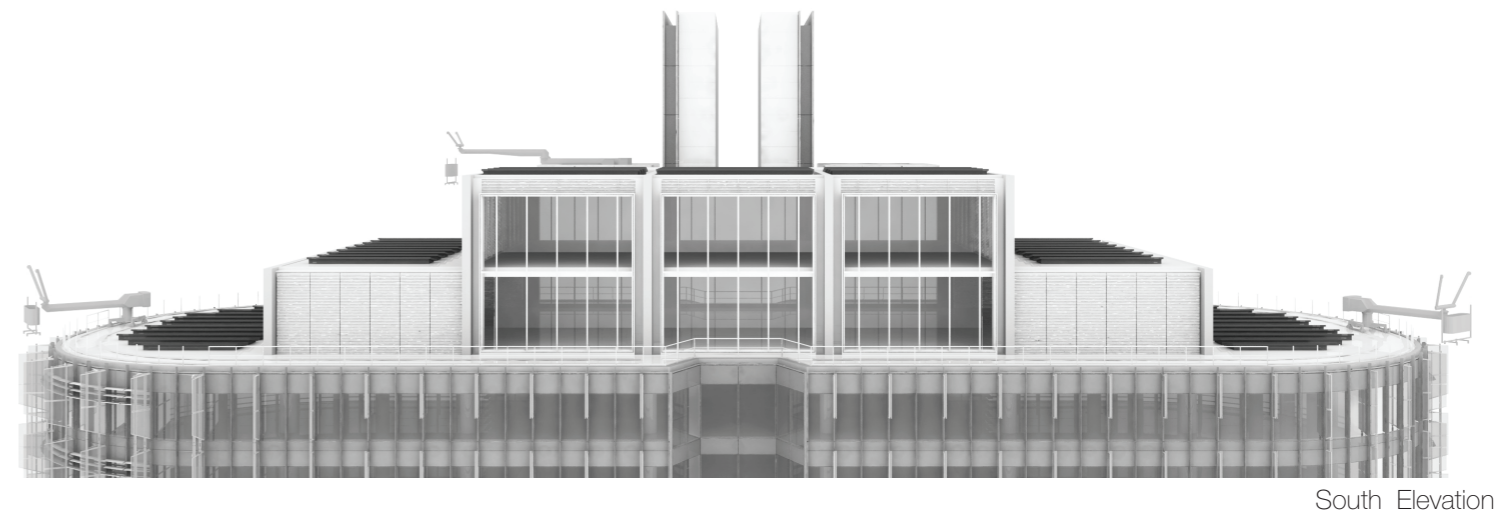
Strengthened North Core Termination

Roof Form

Massing

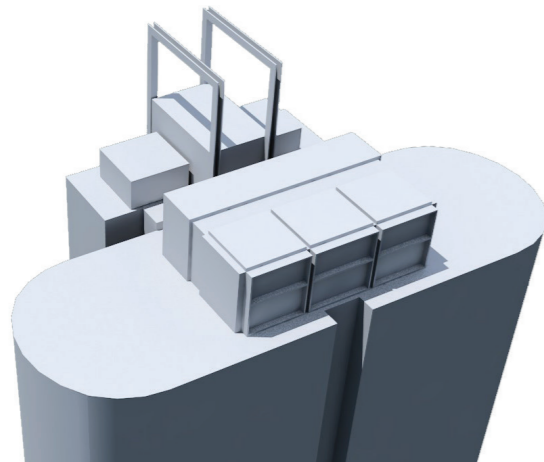
Core Plant functions have been reorganised to fit within a system of bays defined by primary structural framing which serve to organise the plant room both internally and externally. This rhythm is further related back to the north core through a clear and consistent second floor plant box. The alignment of this integrated upper plant box serves to accentuate the served and servant relationship of north and south cores, whilst adding to the sibling tie relationship across all 3 towers. The central southern glazed bays offer an insight into the workings of the building whilst the metal clad end bays anchor the central two storey mass and reflect the proportions of the plant boxes on the sibling rooftops.

- **Plant** - efficient + consistent use of space
- **Exhaust** - integrated into plant box form
- **Form** - unique profile appropriate to building scale , + sibling ties. Efficient, rational and organised
- **PV** - celebrated within north core roof feature and optimised layout in high yield areas
- **BMU** - efficient + consistent maintenance access strategy
- **Signage** - north core opportunity further encourages sibling ties

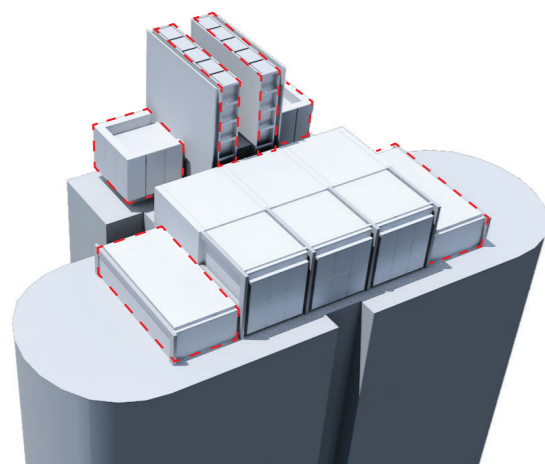


South Elevation

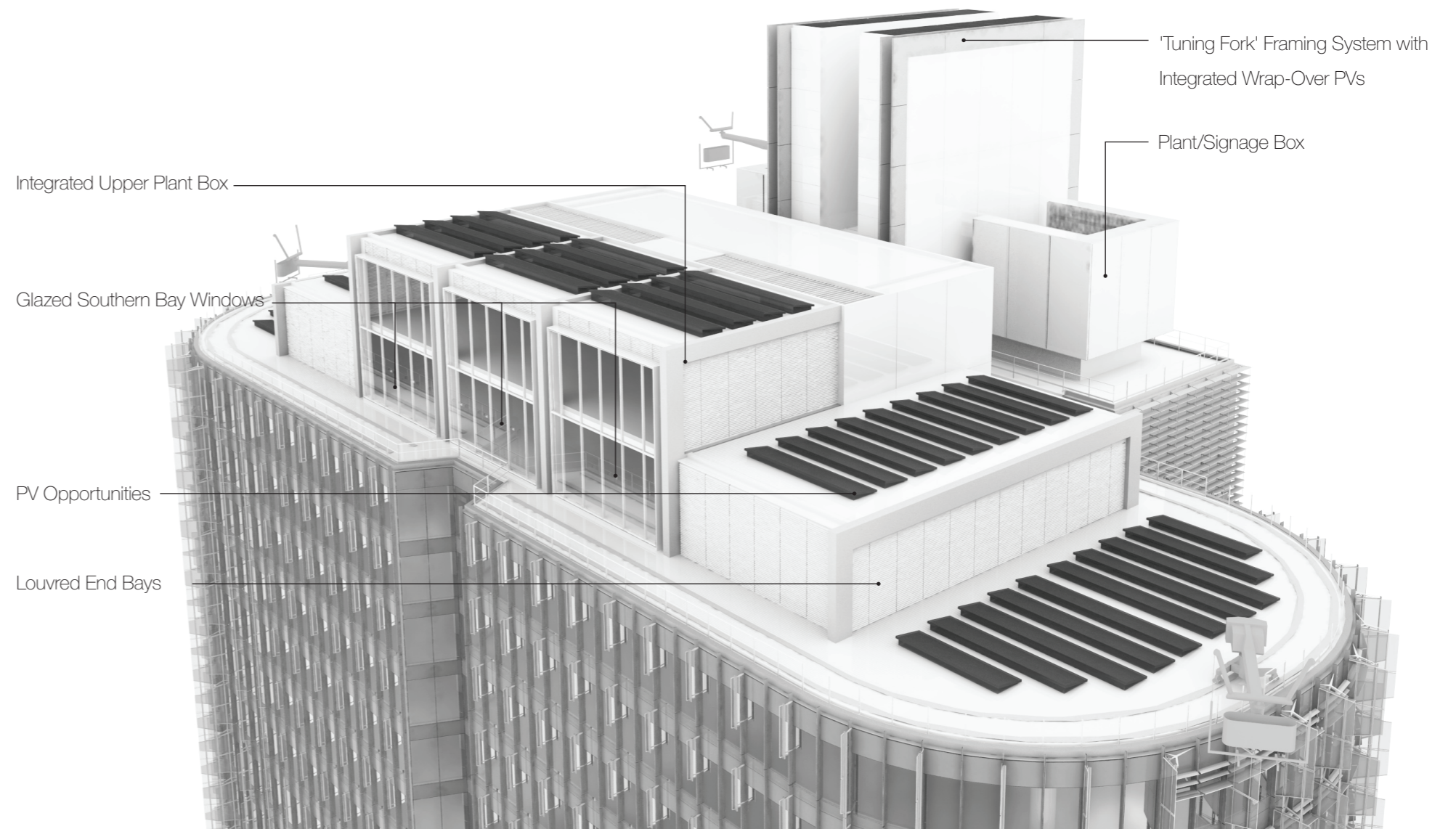
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Massing Revisions



'Tuning Fork' Framing System with Integrated Wrap-Over PVs

Plant/Signage Box

Integrated Upper Plant Box

Glazed Southern Bay Windows

PV Opportunities

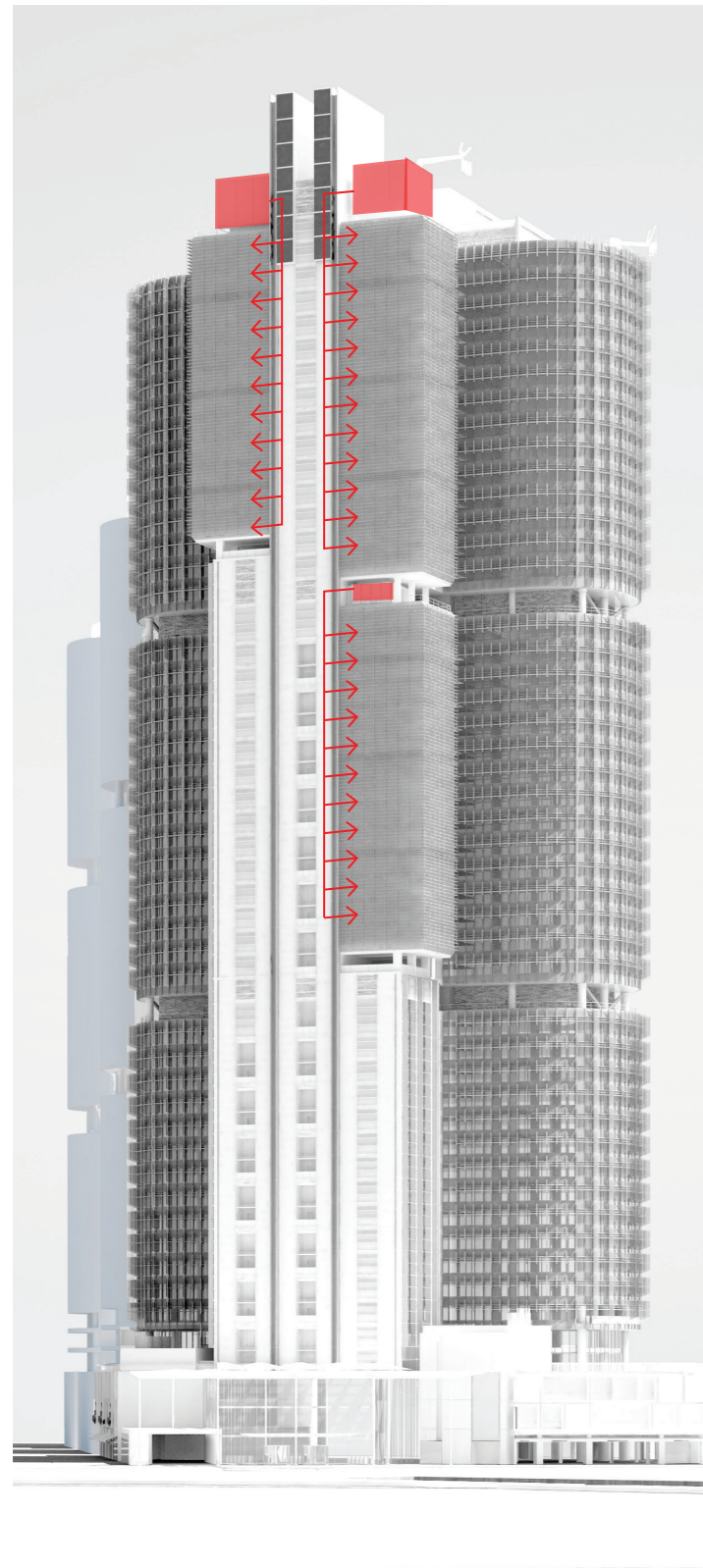
Loured End Bays

South East View

Roof Form

Evolution of the North Core

Plant Strategy



North Elevation_Vertical Village Plant Service Zones

Services and Plant

A clear, efficient, and rational rooftop composed from a component based system.

A centrally located two storey box contains all of the cellular plant components for mechanical, hydraulic and electrical services.

The addition of a single storey wing to each end, provides an opportunity for an open plan arrangement of AHU boxes and a location for any residual plant elements to be housed. Similar in form to those on the rooftops of C4 and C5 these wings enhance the sibling relationship of the three towers. The stepped profile of the rooftop form anchors the two storey volume to the rooftop, resulting in a composed southern elevation.

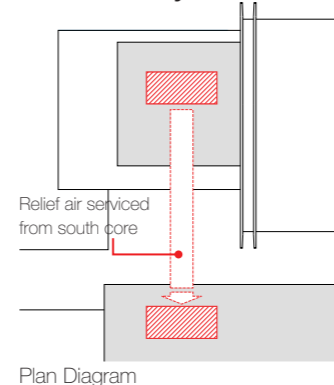
The increased volume of the C3 rooftop plant rooms has allowed a basement sub-station to be relocated to roof level. This has in turn increased the quantity of active facade able to be provided at ground level.

Vertical Village Plant

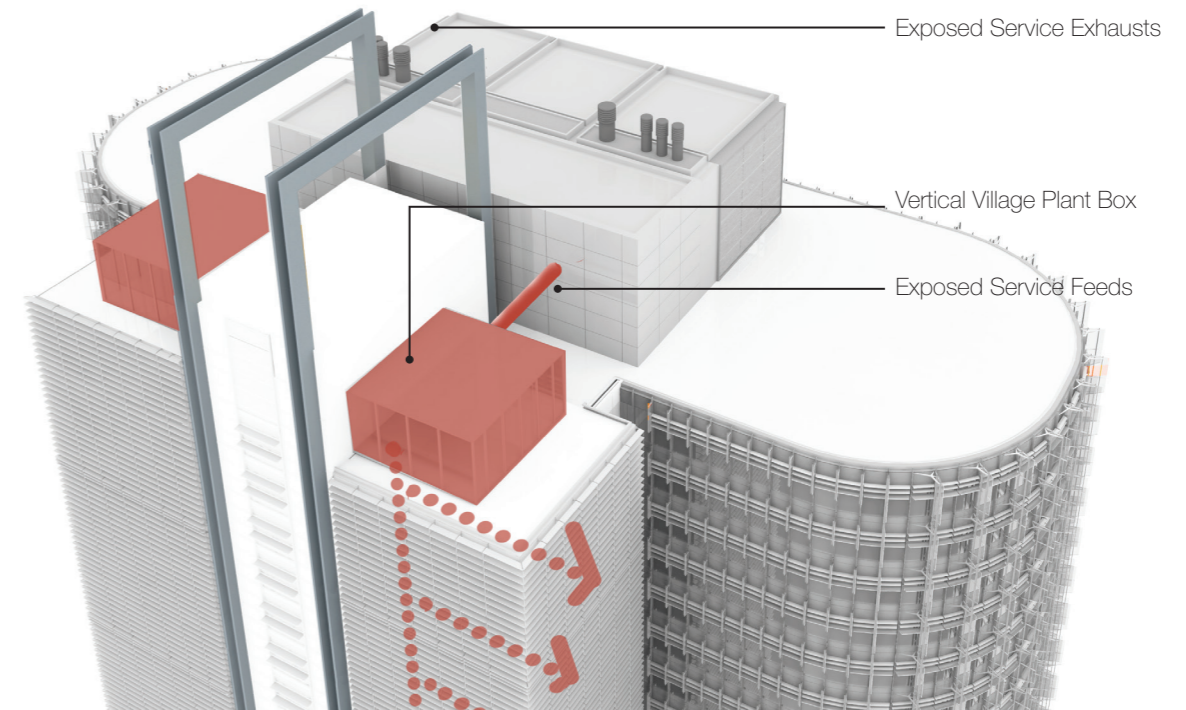
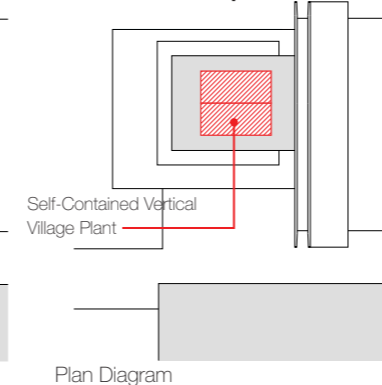
By incorporating all Vertical village related plant within its own dedicated service box, high level ducts and service connections to the south core are no longer required.

These enlarged plant volume provides opportunity to articulate these rooftop boxes, with recessed shadow gaps accentuating the elements.

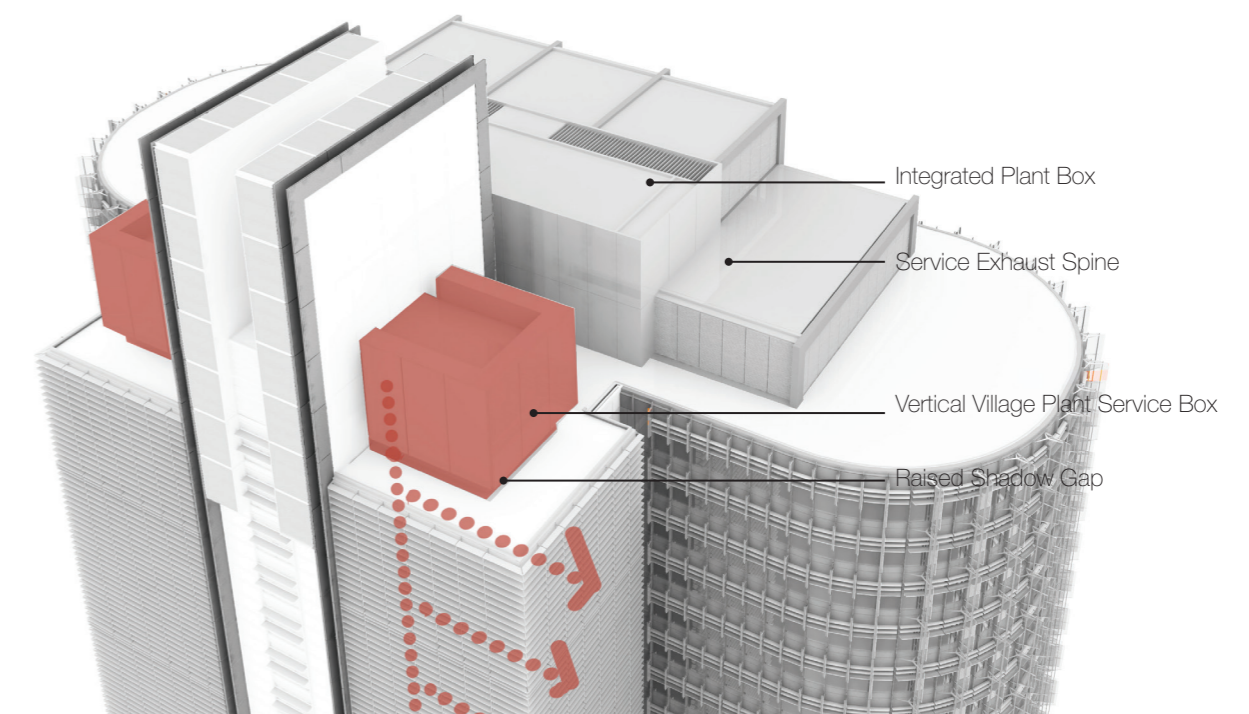
PPR February 2012



Section 75W April 2013



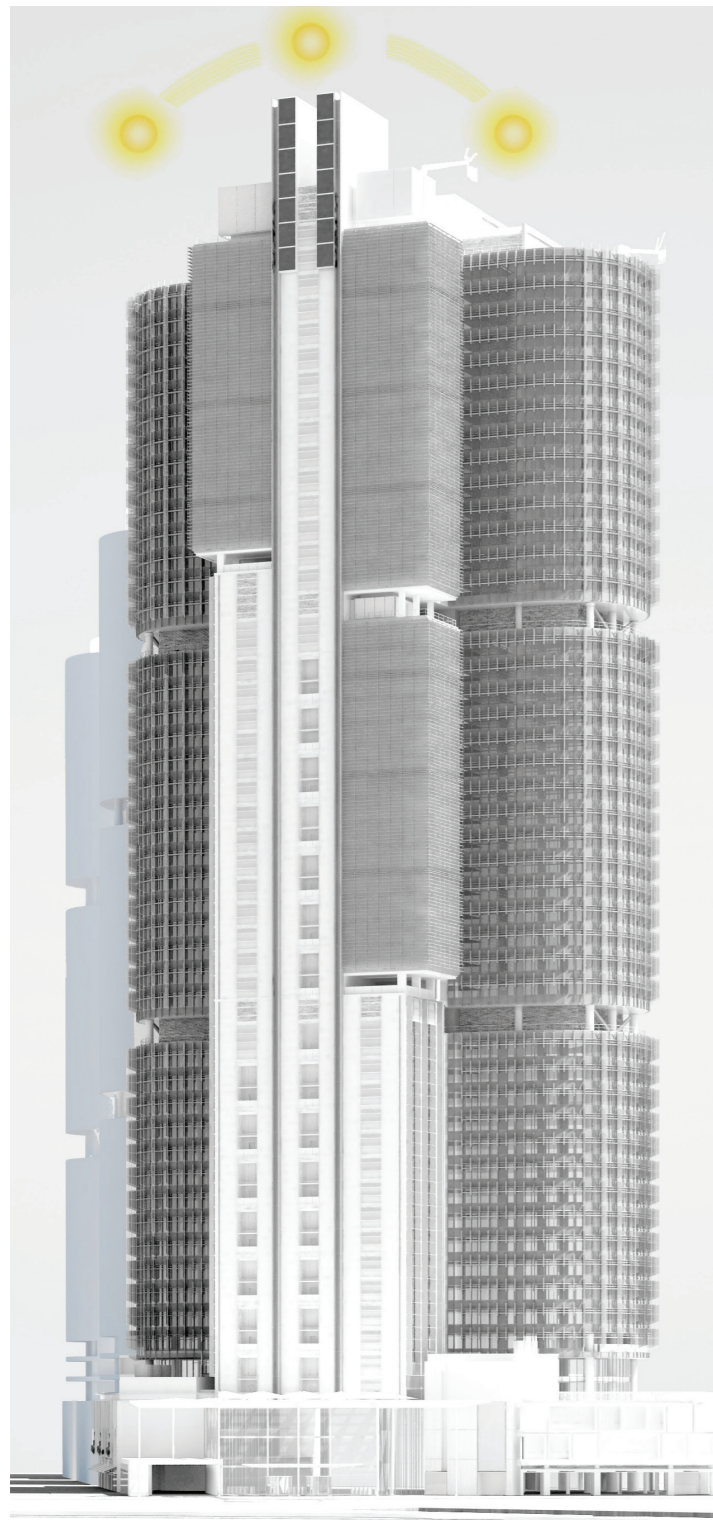
PPR February 2012



Section 75W September 2013

Roof Form

Evolution of the North Core



North Elevation_PV sun access

A Precinct View to Sustainability

At Barangaroo South there is a shared commitment to deliver both a sustainable building and a sustainable precinct. The roof levels of the C3 tower offer a unique opportunity to signal a precinct approach to sustainability through the harvesting of renewable sources of energy.

Key drivers behind this approach are as follows:-

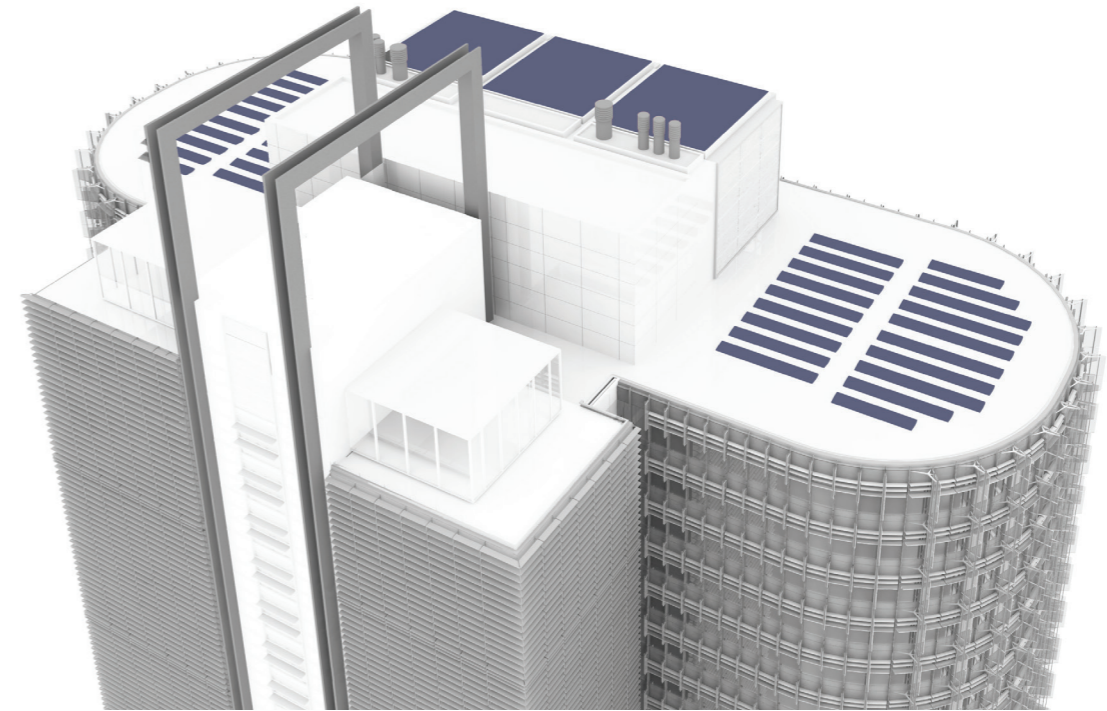
- establishing a strong sustainability narrative
- establishing a strong architectural narrative
- identifying an integrated approach to unite both

The Unique C3 Opportunity

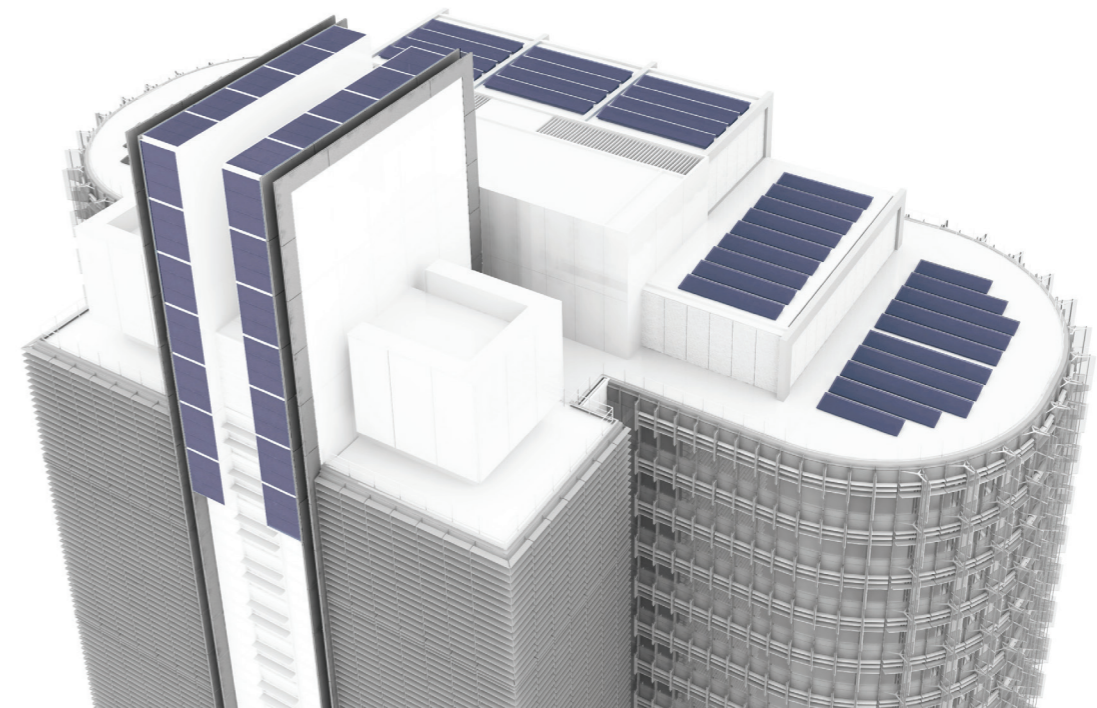
As the tallest and most northerly tower, C3's location and elevation offers both pragmatic and symbolic opportunity to the Barangaroo South development. The absence of any overshadowing allows the PV zones to be optimised both on the horizontal and vertical plane at its rooftop.

Three tiers of PV zones are provided on the main tower floorplate, utilising the stepped profile of the rooftop form.

At a height of RL 219m, the extended North Core offers an opportunity to showcase the commitment of Barangaroo South to fulfilling its renewable energy responsibilities as set out in its 'Sustainability Plan, by displaying a significant array of PV cells.



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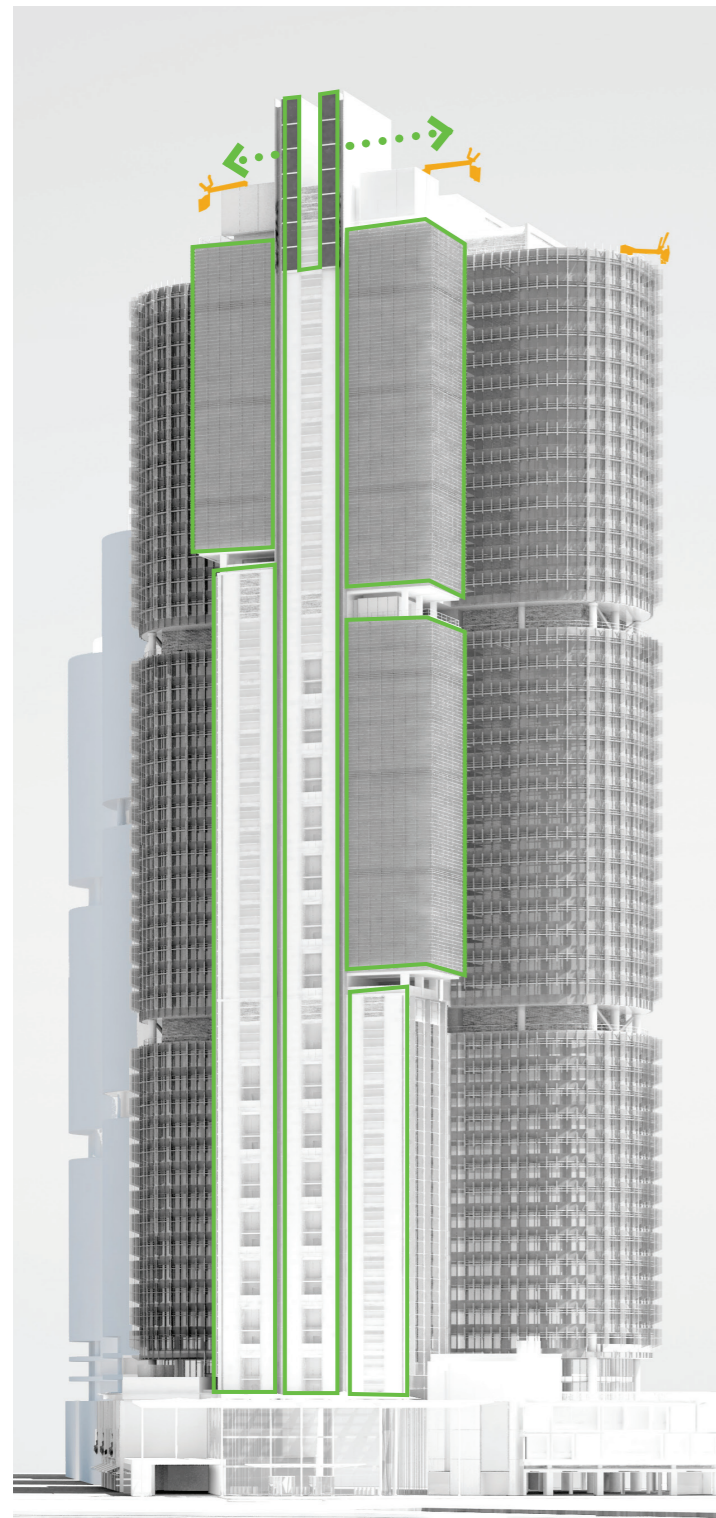


Section 75W September 2013

Roof Form

Evolution of the North Core

BMU Strategy



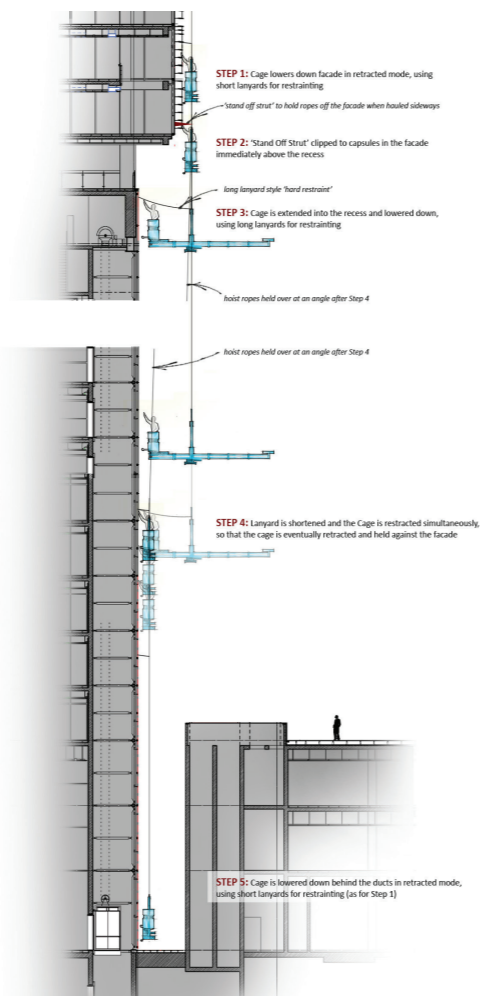
North Elevation_zones accessed from north core BMU

A Co-ordinated Approach

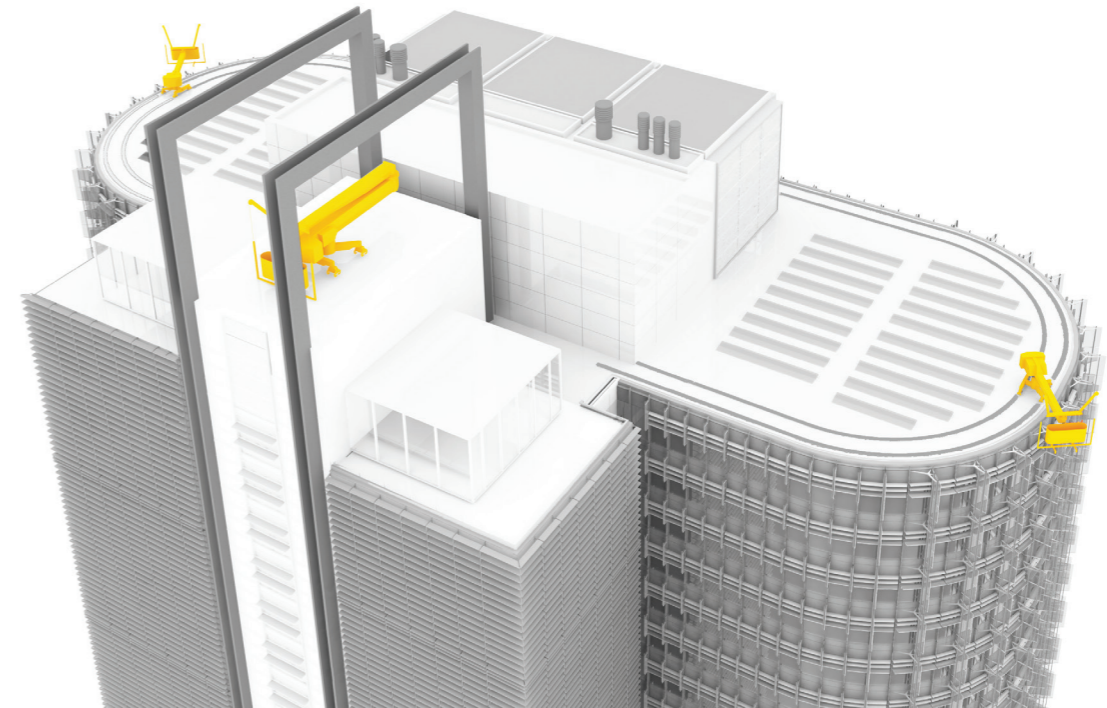
The approved North Core BMU design required a long reaching static BMU to co-ordinate the delivery of its operating cage through the open framing of the elevated 'tuning forks'. This strategy compromised efficient service.

The proposed design locates the mobile BMU at the same level as the Vertical Village plant, which traverses east-west along the north core. This enables a more efficient, shorter reach unit to operate on both the east and west cores.

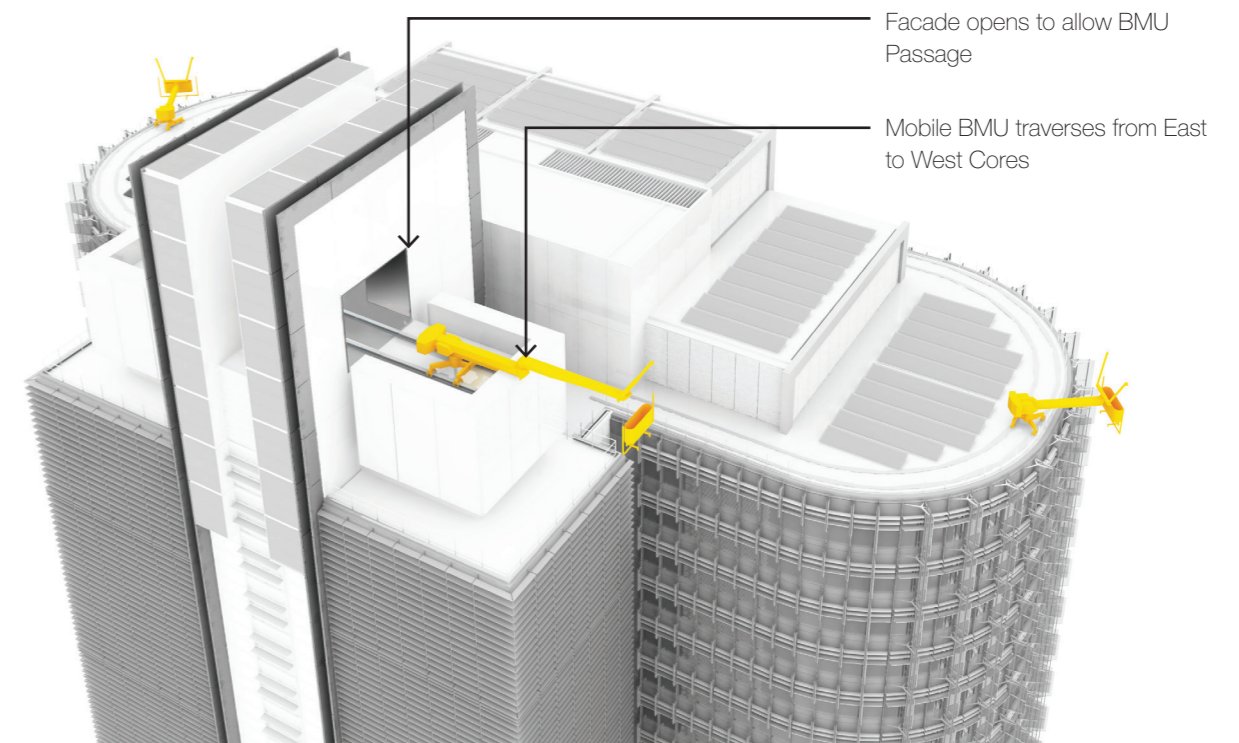
The proposed north core servicing strategy integrates the delivery of renewable energy with Vertical Village plant operation, a building signage opportunity and presents a bold coordinated marker to the Barangaroo South precinct.



Lift Shaft Cleaning Strategy



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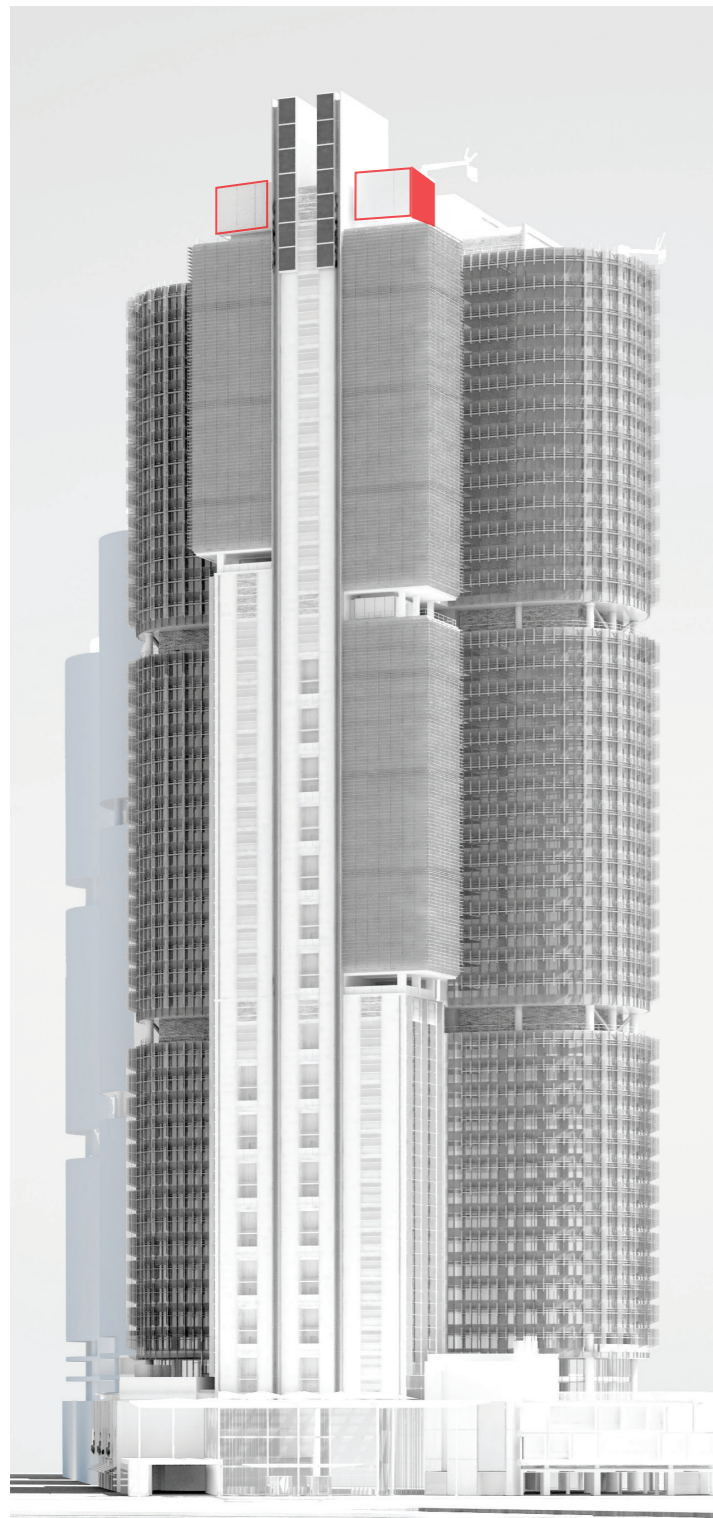


Section 75W September 2013

Roof Form

Evolution of the North Core

Signage Strategy



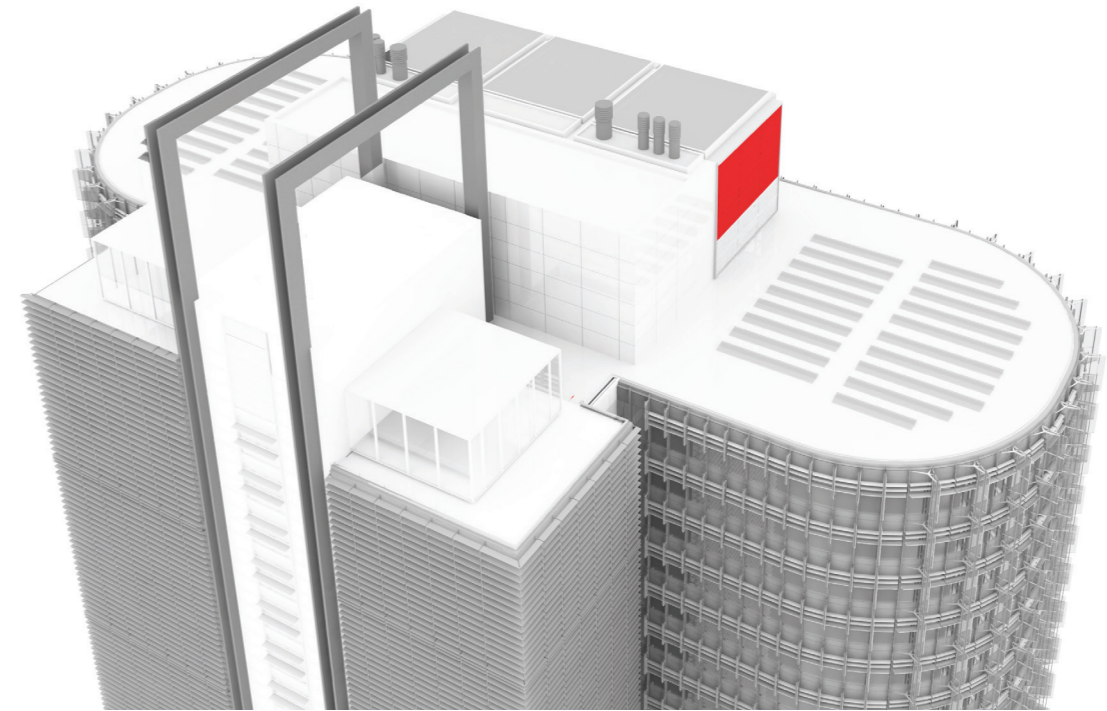
Gateway to a Precinct

Tower C3's north core offers a highly visible signage opportunity, situated 200m up the north core.

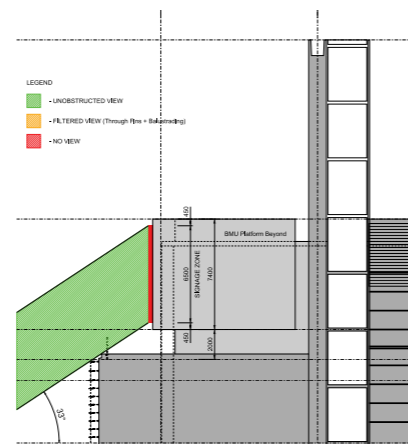
Two plant boxes sit on top of the Vertical villages. Elevated above roof level, these cubic elements appear to float above the north core and present a high profile signage opportunity for the buildings tenants.

Whilst any branded sign itself will be limited to a single face (east and west respectively), the three dimensional nature of these boxes allows for the sign as a whole to be viewed from any angle

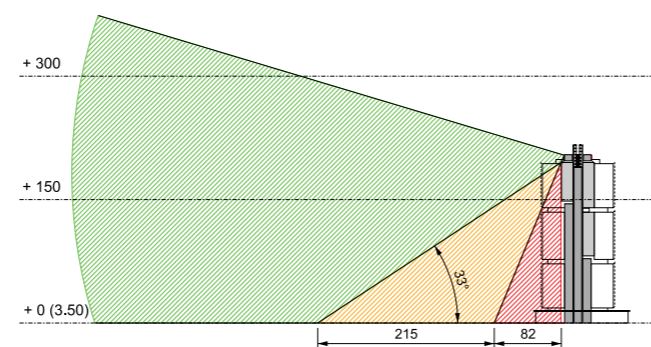
There is potential for the signage cubes to be lit either internally or externally, presenting a crowning element - beacons to the city - whilst also maintaining sibling relationship of the three commercial towers.



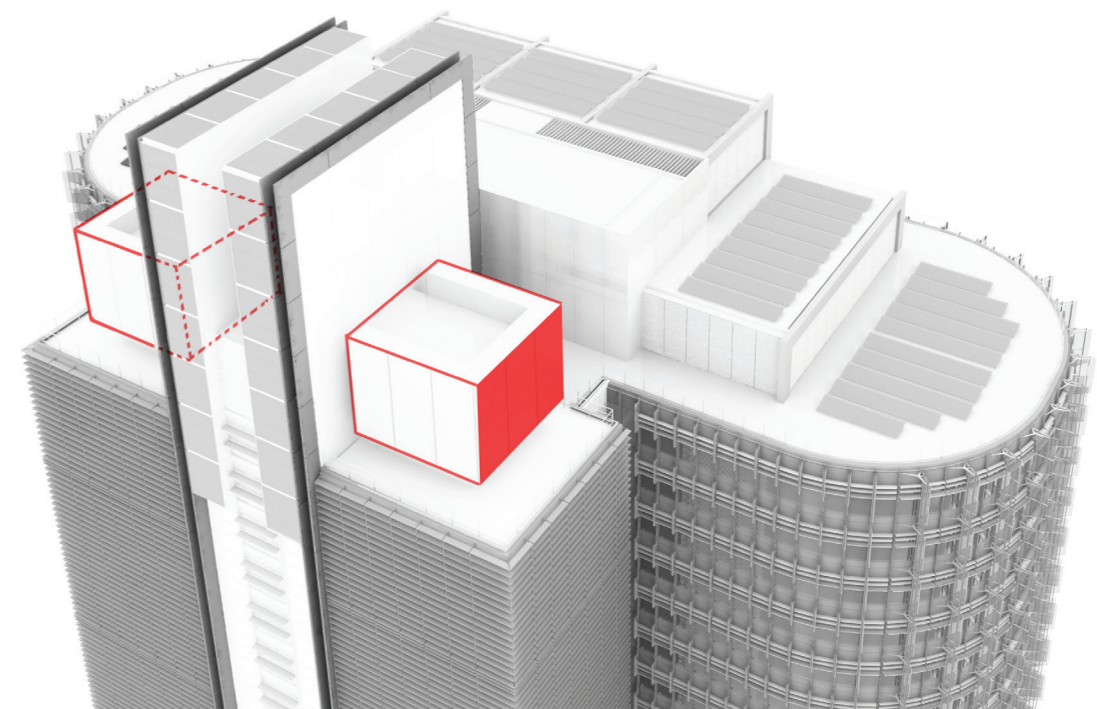
PPR February 2012



Detail Section of Signage Box



Clear View Cone Analysis



Section 75W September 2013

North Elevation_Signage View

Colour Strategy

The Colour Story

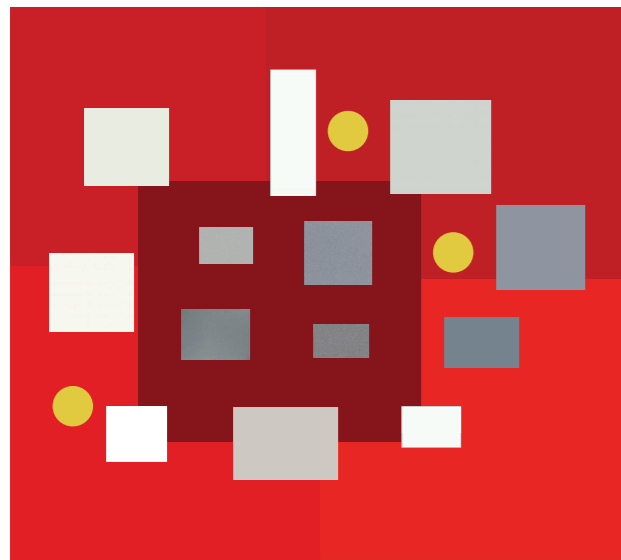
- The colour strategy creates a unifying framework across the precinct, within which each sibling tower is able to express its own character.
- The colour palette is accentuated with vibrant tones of umbers, ochres and pearl blues.
- Shared components and base systems are consistently muted through the ensemble while variations such as the solar shading and lift cars are accentuated with highlight colours.
- Within the precinct the C4 tower plays a neutral role, embodied within its silver colouration, tying the bookend towers, C3 and C5, together.

Building Legibility

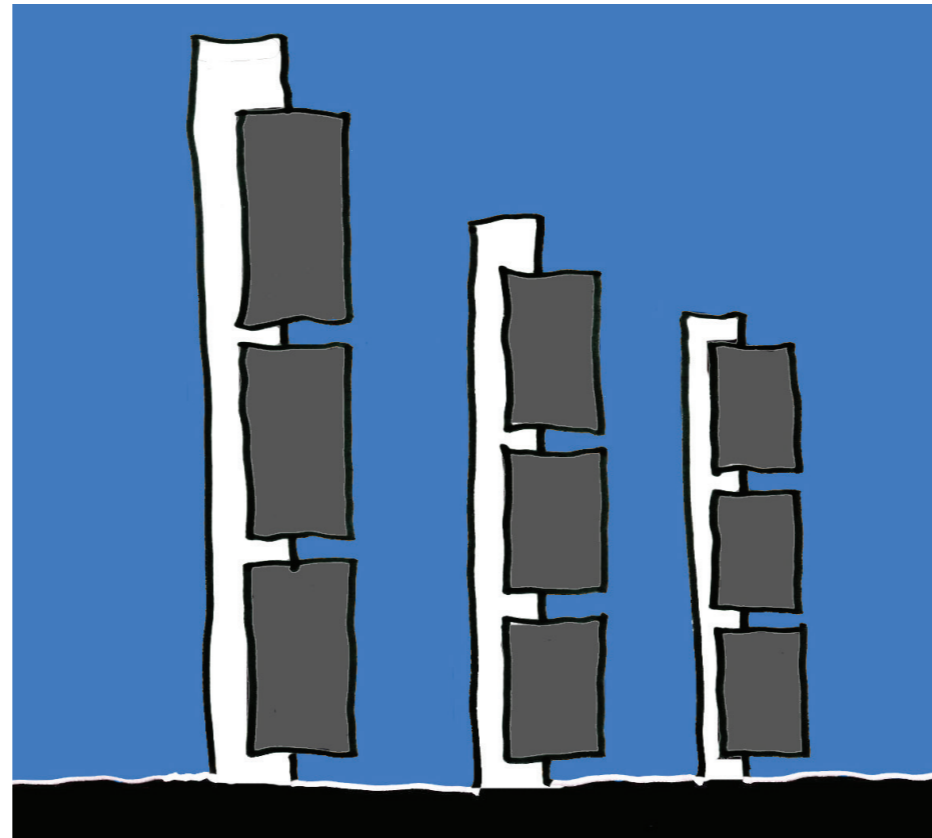
- The colour strategy reinforces the design concept of served versus servant.
- The tower's legibility at the city, building, and human scale are enhanced through colour.

Colour Palette

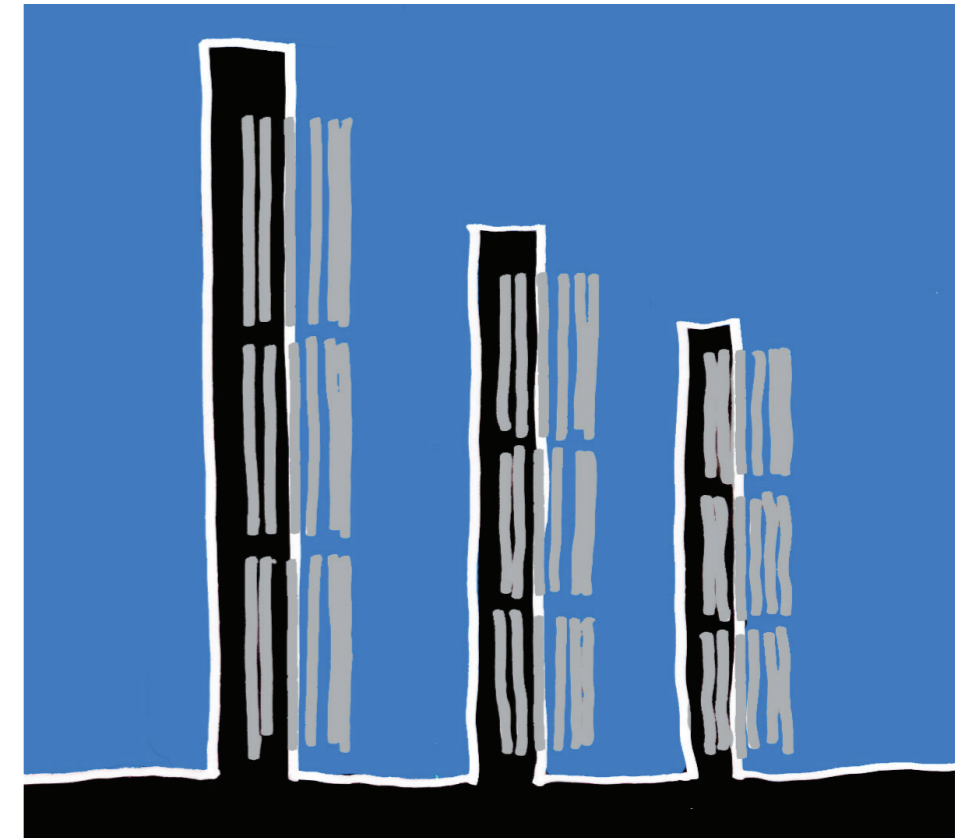
- Base Systems – whites, silvers, and greys
- Facade System – umber/bronze, melon yellow
- Accent Colors – melon yellow, traffic red



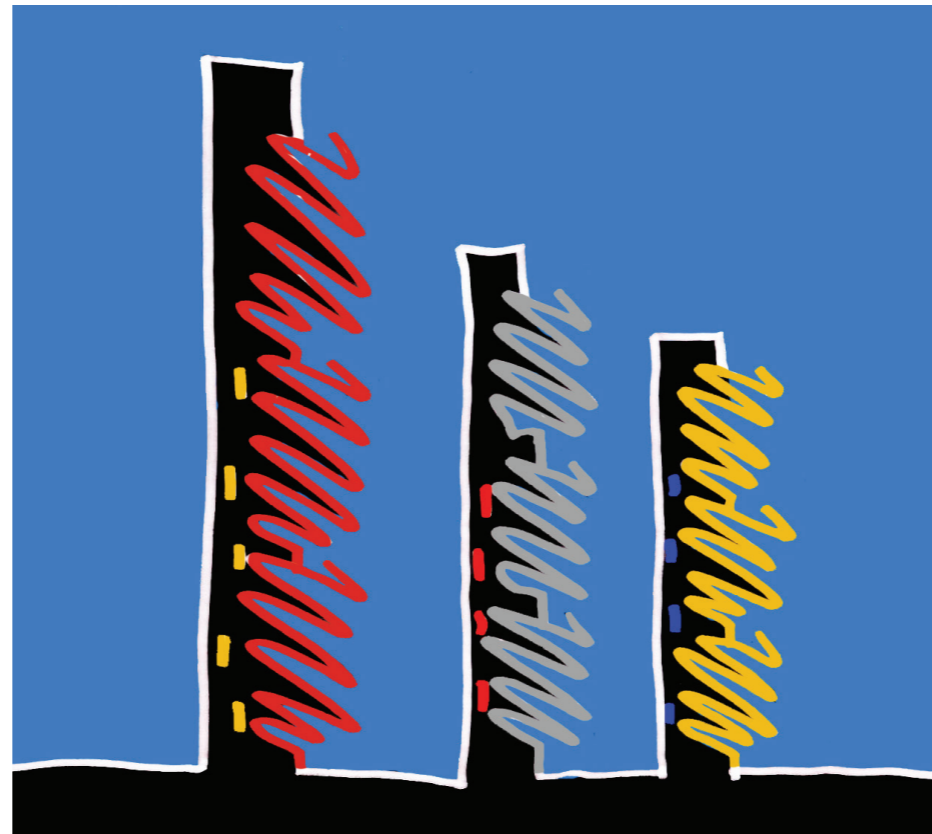
Colour palette



Expression of served and servant: White represents the servant space including the tower core, lift shaft and lobbies. Grey denotes the served space.



Served Spaces: Vertical highlights express plan form of served space



Expression of individual character: Each tower's character is expressed in its solar shading and lift system.



Barangaroo Palette: The neutral C4 backdrop complements the colourful C5 tower palette

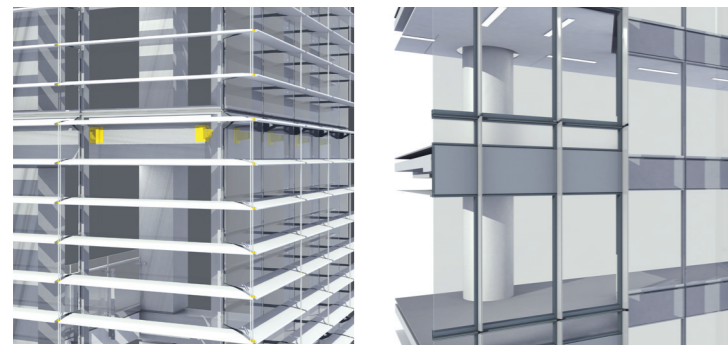
Colour Strategy

C3 Neutral Base

Expression of the Façade

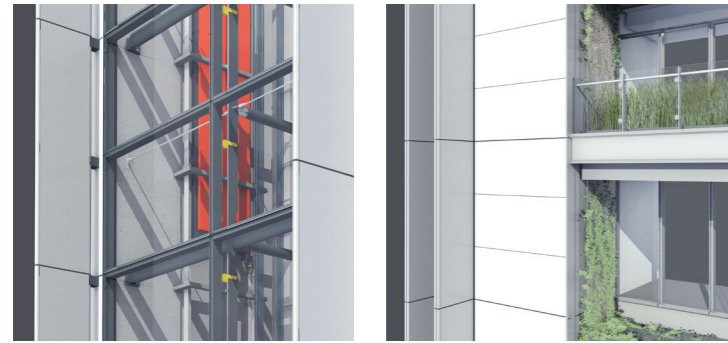
- The dark greys of the main tower's curtain wall system contrasts with the white tones of the north core.
- Extended mullions express the plan form of the floorplate.
- The individual character of the C3 tower is expressed through its umber and bronze coloured fritted glass fins.
- Coloured-back glass spandrels are muted to accentuate the vertical fins.

Detail Views



Vertical Village Bracketry

Extended Mullions



Lift Shaft

North Core Meeting Rooms

Structural Expression

- Located on the water's edge, the white backdrop of the north core becomes a highlight against Sydney's blue skies.
- Neutral palette steelwork in the glazed lift shaft emphasises the boldly coloured lift cars and counterweights
- Plant level sway braces highlighted at a larger scale with the use of pearl blue accent colouring.

C3 Character

Clear Expression of Façade Components

- The primary umber/bronze colouration of the tower is further enriched with highlights of melon yellow and traffic red
- Bracketry contrasts with the primary elements to enhance the legibility of assembled components

C3 Character: Detail Views



Sway Brace

Solar shading

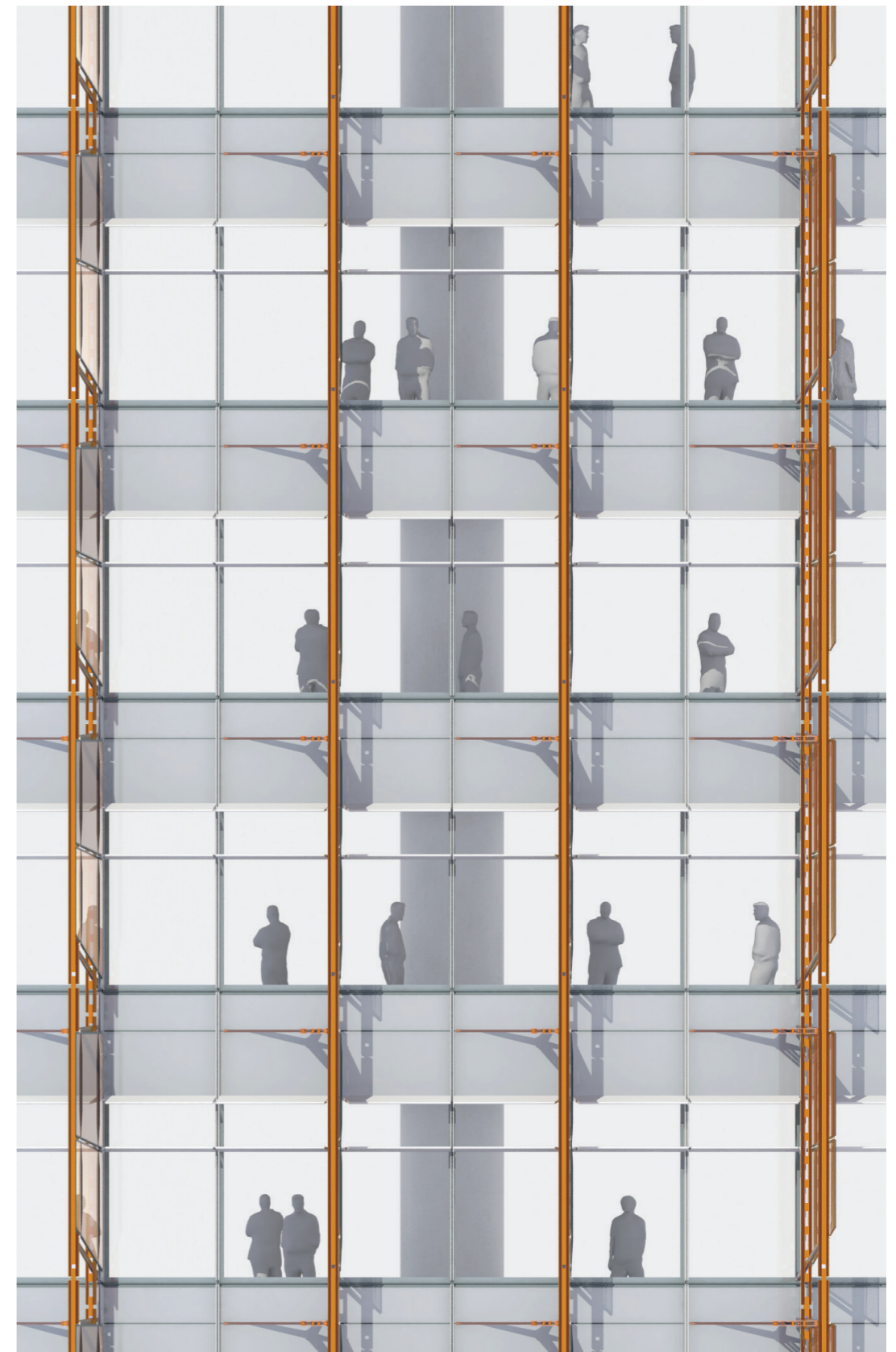


Plant room glazing and machinery

Lift car

Expression of Machinery

- Dynamic lift cars within the glazed lift shaft highlighted in melon yellow.
- Plant room machinery also highlighted in melon yellow behind glazed façade of plant levels.



Western Bay Elevation

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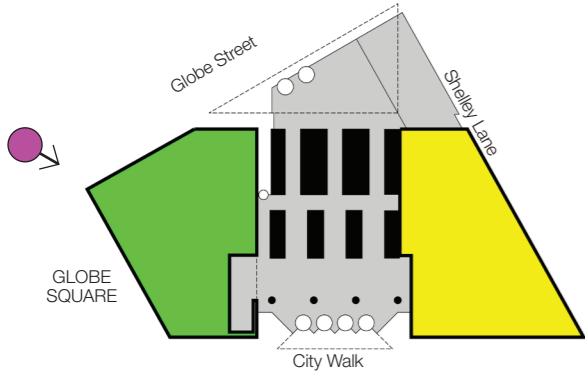
MASSING AND PUBLIC REALM VISUALISATIONS

3.1 Podium Visualisations

West Podium



View from Globe Street - north west corner

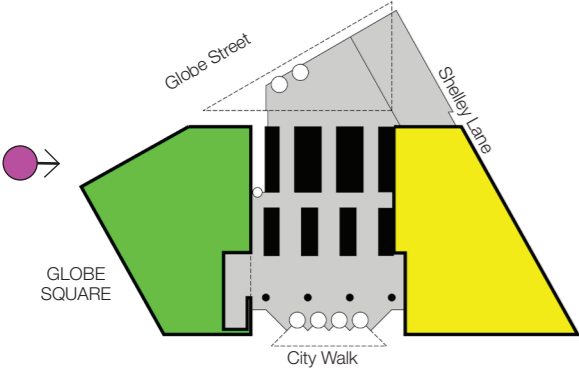


3.1 Podium Visualisations

West Podium

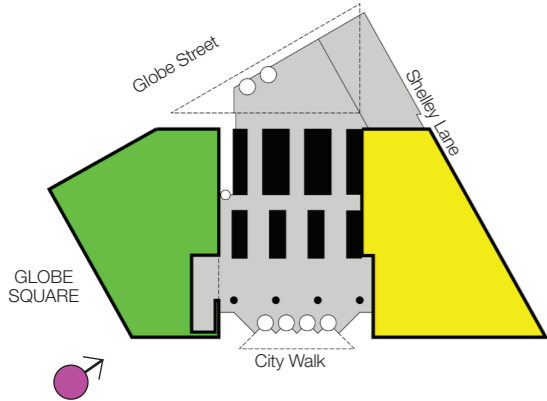


View from Globe Street - north-west corner



3.1 Podium Visualisations

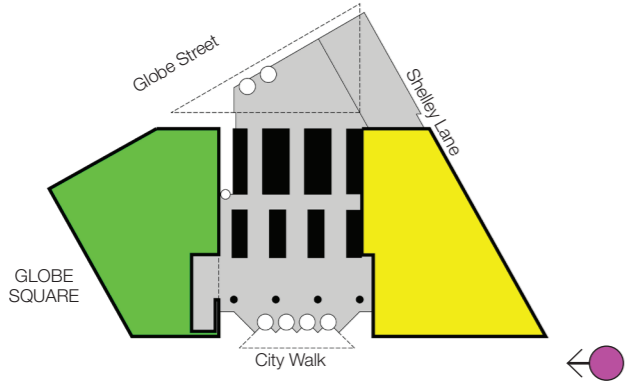
West Podium



View from Globe Street along City Walk - south west corner

3.1 Podium Visualisations

East Podium



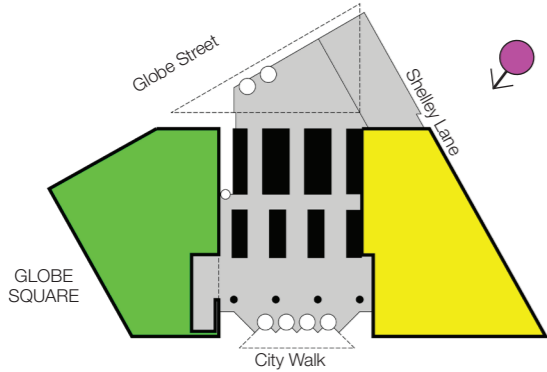
View from Shelley Lane along City Walk - south east corner

3.1 Podium Visualisations

East Podium

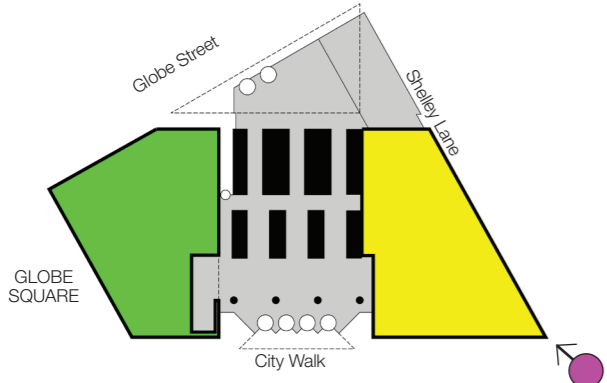


View from Shelley Lane



3.1 Podium Visualisations

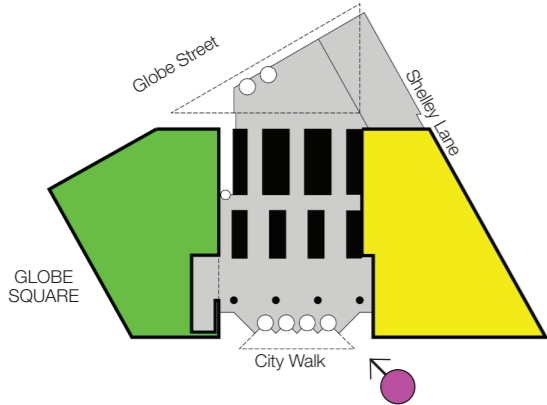
East Podium



View from Shelley Lane - south east corner

3.1 Podium Visualisations

South Lobby



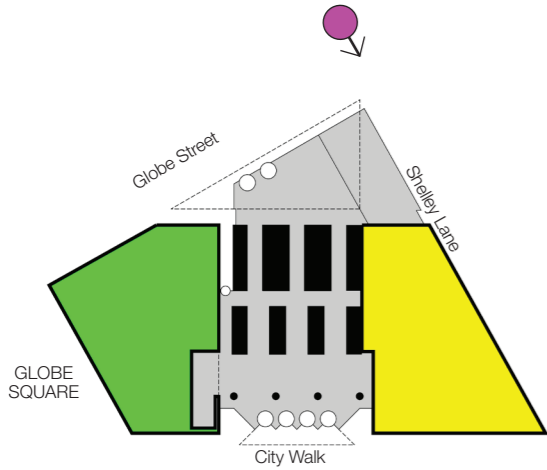
View from City Walk - southern entrance

3.1 Podium Visualisations

North Lobby



View from Globe Street - north east corner



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COMPLIANCE WITH APPROVED CONCEPT
PLAN MP06_0162 MODIFICATION NO.6
(PENDING APPROVAL)

Please Note : All illustrations in this section are indicative only

Building Mass and Location

Objectives:

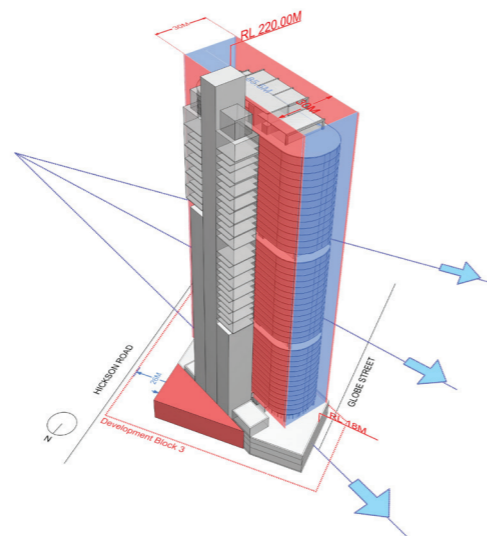
- Adoption of “fanning principle” for siting of buildings.
- To ensure building mass is appropriate within the envelope.
- The northern part of the block shall contain built form of a comparatively lower scale (when compared to the tower forms) as generally indicated in the indicative design.
- The proposed podium is predominantly three-storeys with a roof height of 18m nominally. The north-west corner is less than 27m.
- The depth of the horizontal floorplate of the east and west elevation of the tower form is 30m.
- Horizontal articulation is achieved with deeper recesses at the plant floor to all elevations.

Standard:

- The length of the horizontal floor plate of the North and South elevation of the tower form is to be no more than 85.5m.
- The bulk of building mass is to be set back from the Hickson Road alignment by a minimum of 20m.
- The primary floor plate depth, excluding structure and shading devices of each tower form sits between vertical planes (red), which establishes a 30m zone. Expressed structure and secondary floor plate is allowable outside this dimension.
- Podium to be a minimum predominant height of 3 storeys and a maximum of RL27

Methods of achieving the Objectives:

- The tower is set out utilising the “fanning principle”.
- The length of the horizontal floor plate of the North and South elevation of the tower form is 85.5m with environmental controls outside this zone.
- The mass of the tower form is articulated to break down its scale. A tripartite composition has been created horizontally (using the recesses at the plant floors) and a modulated façade vertically is achieved through an offset vertical cut (south cut recesses related to active lift lobby floors of the northern cores).



Street Wall Establishment

Objectives:

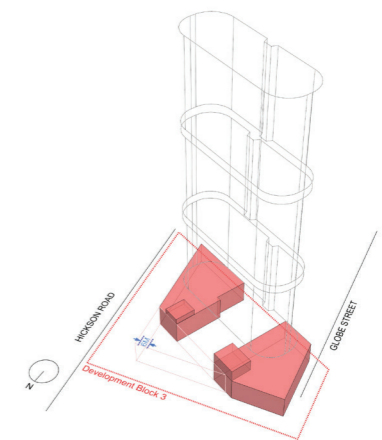
- To establish spaces to articulate and define facades.
- Building mass at podium to form a continuous Street Wall with a minimum predominant podium height of 3 storeys.
- Street Wall to define Globe Street.
- Podium height shall be determined having regard to compatibility of streetscape form with the surrounding area, and appropriate engagement and framing of the public domain, together with environmental considerations on the public domain and surrounding buildings.

Standard:

- To establish a colonnade along Hickson Road. The width and height of the colonnade along Hickson Road shall be appropriate to encourage its use, and be integrated into the proportions of the buildings of which it is a part.
- Building form to create a Street Wall with a one storey minimum height for most of the public accessible ground floor facade.
- Building mass to define a Street Wall on Globe Street, City Walk and Hickson Road.
- Shelley Lane to be a minimum of 6m in width with a defined eastern edge parallel to Hickson Road at ground level.

Methods of achieving the Objectives:

- Three storey high streetwall is created around the perimeter of the podium.
- Future location of Shelley Lane is to the east of the podium wall and is envisaged to be 6m wide.



Building Articulation

Objectives:

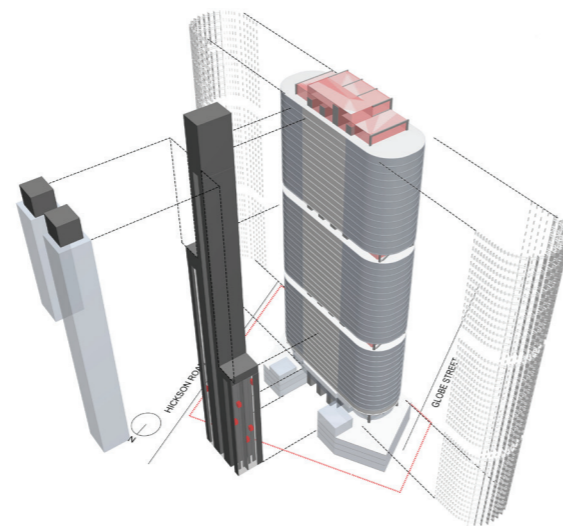
- To establish an articulated, well proportioned building mass.
- To reduce the impact of the building mass,

Standard:

- The building envelope and floor plates are to be articulated and modulated, using a range of architectural components such as prows, corner redents, Vertical Villages, expressed lift cores, bay windows and other structural expression.
- Tower Form to express sustainability features such as access to natural light.

Methods of achieving the Objectives:

- Building façades consist of a family of elements and are highly articulated to express volumetric configuration and environmental orientation of the building. Please refer to 5000 series drawings (Elevations) and 6000 series drawings (Façades).
- Redents stagger vertically up the southern elevation of the tower provide articulation to the facade and correspond with the active lift lobbies to the north. The plant rooms are recessed which provides horizontal facade articulation.
- A slender recess is expressed between the north core and the main floorplate. This reinforces the vertical expression of the tower when viewed from both the city and the water and articulates the building's primary reading, 'served and servant'.
- Shading to the facades is arranged as one family of elements that increase or decrease in size
- Plant Boxes above the 'Vertical Villages' have been elevated with recessed 'neck' zones to express the 'served and servant' relationship.



Building Legibility

Objectives:

- Constituent elements of the building need to be articulated.
- The elements and structure should be legible at the base of the building.

Standard:

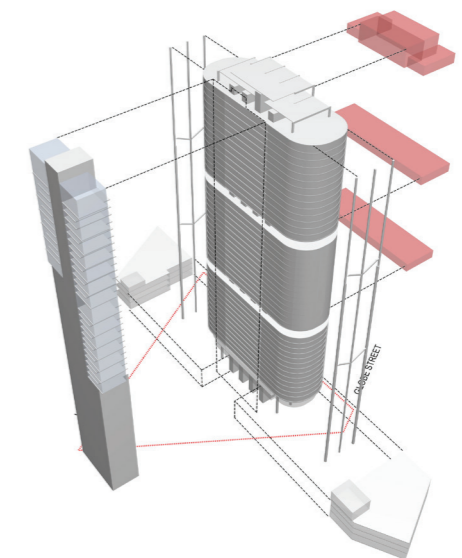
- The separate primary components of the building will be expressed.
- Visible parts of the towers primary structure are to extend to the ground plane and be expressed as a separate element from the podium.

Methods of achieving the Objectives:

- Structure, cladding, vertical transportation cores, external shading and special floor areas are expressed as separate legible elements.
- The base of the building is composed as four components - the north lobby, the two separate adjoining podium buildings and the south lobby entrance. The north and south lobbies are 3 storey glazed volumes, to increase natural light and visual permeability.
- Key structural elements of the tower visibly connect with the ground plane to provide drama and legibility of the built form - the expressed vertical transportation cores and lift lobbies are contrasted to the rest of the building on the northern side.
- The integration of the lift cores and the Vertical Villages makes a clear contrast between the verticality of the core and horizontally of the primary office floor plates.
- Façades are broken down horizontally to achieve an appropriate scale and skyline resolution with deeper recesses at plant levels.
- Glazed lift shafts express the vertical

transportation systems.

- Deeper recessed setback floors, as horizontal articulation at the base of the tower, enhance the separation between the tower mass and podium.



Ground Floor Permeability and Accessibility of Public Realm

Objectives:

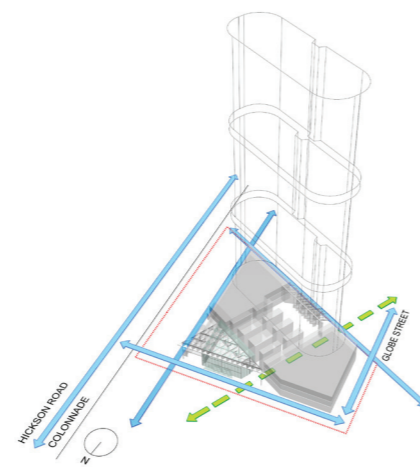
- To provide permeability and accessibility through Barangaroo South.
- To maximise safety in the public realm.

Standard:

- Public access around the Block is to be maintained on all edges.
- Provide two north-south primary connections, including the Hickson Road Colonnade and two east-west primary connections (City Walk and Globe Street).
- Provide one north-south secondary public access route through the block.
- Shelley Lane must be not less than 50% open to the sky.
- For security purposes the secondary routes may be closed at certain times.

Methods of achieving the Objectives:

- Permeability and accessibility have been provided with public access maintained along the full perimeter of the podium. Consideration has been given to the threshold at the lobby glazing line to help blur the boundary between the public realm and the lobby.
- The proposal allows for two north-south primary routes, along Globe Street and the Hickson Road colonnade.
- The proposal allows for two east-west primary routes namely Globe Street and City Walk.
- The proposed secondary connections are Shelley Lane, the north-south connection along the east of C3. The 75W scheme has introduced a 'through-site-link' that connects the site together through the commercial lobbies, allowing the public to experience the tower lobbies.



Ensuring Quality of Rooftops

Objectives:

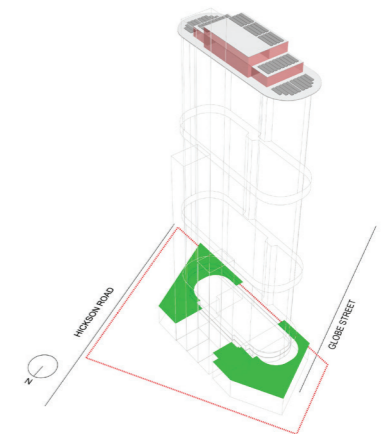
- The mass at the rooftop shall be articulated and legible.

Standard:

- Roof forms to incorporate architectural elements.
- Lift shafts, overruns, and control rooms are to be extruded above the roof line and used to provide architectural articulation to the roof.
- Exposed mechanical equipment is to be avoided.
- The architectural treatment of the roof and its form is to be designed, coordinated and remain sympathetic to adjacent context.
- Good quality materials (ie durable, hardwearing, sustainable) to be used.
- Roof design to integrate sustainable features.

Methods of achieving the Objectives:

- Podium roofs are designed to be green and accessible.
- The C3 tower roof is articulated by protruding, architecturally composed lift motor rooms and overruns; and terrace areas. Photovoltaic panels are on top of the plantroom and northern roof feature. Please refer to 4000 series drawings (Sections) and 5000 series drawings (Elevations).
- The top of the tower has been emphasised to break up the building silhouette with a consolidated plant room and roof feature that dematerializes in the sky.
- The proposed 75W adjustments refine the expression of the tower through the rationalisation of the roof plant form, continuation of typical plant level expression through to the roof, and an ordered structural approach.



Façades

Objectives:

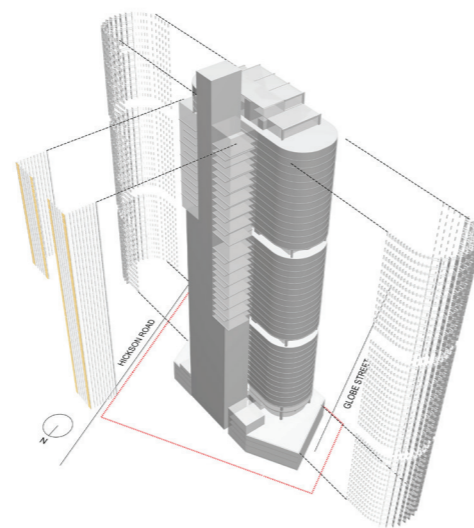
- To ensure the architectural quality of the facades.
- To articulate the building's functions and massing with appropriate facade design and detailing.
- To ensure the facades contribute to the building's articulation and mass.
- To contribute to the "carbon neutral" aims for Barangaroo South.

Standard:

- Depth and layering of facades is to be achieved through relief and protrusions. Mirrored facades should be avoided.
- The choice of appropriate materiality for longevity, durability and flexibility. Materials such as steel, glass, concrete, timber and aluminium.
- Environmentally sustainable design is to be incorporated on all facades.
- Facade components such as external shading shall be used to provide light and shade to the building and reinforce Controls 2+3.
- Facades longer than 60m are to be modulated above podium level by distinctive and significant architectural elements eg as Vertical Villages, cores or external staircases, in the vertical plane.
- There shall be no single plane in the facade having dimensions greater than 60m in length and 60m in height (or equivalent area) without articulation, and change in plane from adjoining building elements, unless otherwise determined by the Director-General in consultation with the Barangaroo Delivery Authority.

Methods of achieving the Objectives:

- Façades are highly articulated to express the building's functions. Please refer to 5000 series drawings (Elevations) and 6000 series drawings (Façades).
- Elements of the façade construction are arranged in layers to achieve visual depth and an appropriate level of detail.
- Shading to the facades is highly visible and arranged as one family of elements that increase or decrease in density depending upon the orientation of the facade.
- Maximum length of an unmodulated façade (south and north face) is approximately 50m long.
- The primary east and west podium facades achieve these objectives through articulation and layering, and the use of high quality materials, including stone.



Active Streetfronts

Objectives:

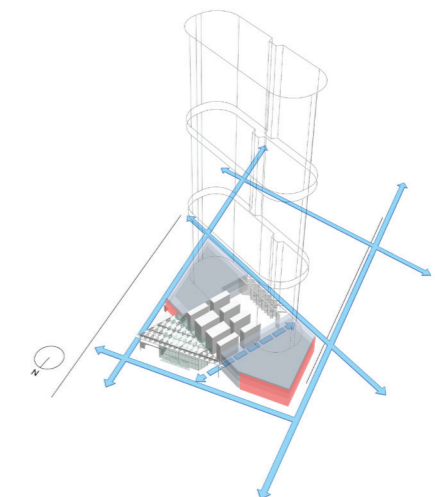
- To ensure a vibrant public domain will be created at street level.

Standard:

- At least 60% of the Ground Level is to be active on the primary Street Wall facades
- Building entrances to internal areas such as office lobbies, exit ways and service areas or loading docks shall not count toward to 60% requirement.
- Building service areas, parking entrances & loading docks will be located on Napoleon Street.
- The width of driveways shall be minimised.

Methods of achieving the Objective:

- Building C3 forms a portion of Block 3 of which at least 60% of the Ground Level will be active on the primary Street Wall facades.
- A vibrant public domain is created at street level.
- The proposed 75W amendments to the podium design achieves greater continuous active street frontages, both on the east and west podium.



Signage

Objectives:

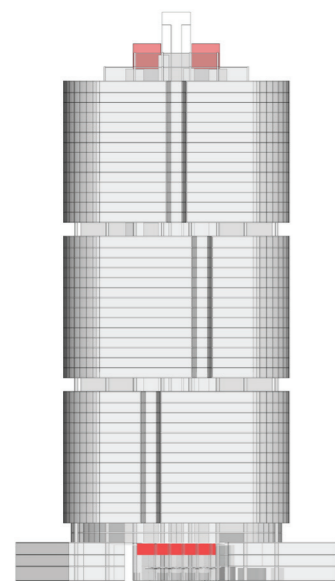
- To ensure that the location, size, appearance and the quality of the signage on the building is appropriate.

Standard:

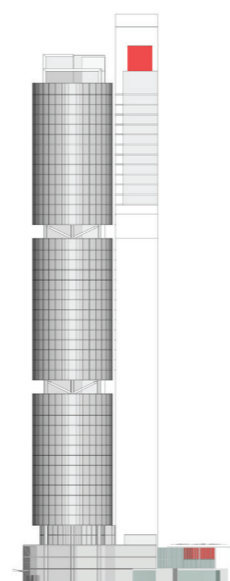
- High level signage is to be limited to a maximum of 2 separate faces per building.
- Signage is not to exceed 60sqm per sign.
- Identity signage only to be incorporated within the building facades/structure.
- Details of signage to be considered as part of the overall design of the building for the purposes of Design Excellence.
- Signage shall not be greater than 1 building storey high (between floor slabs).

Methods of achieving the Objective:

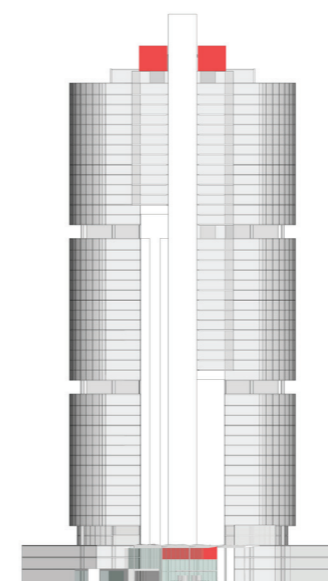
- The principle location options for signage are at roof level north core plant, above the entrance lobbies. (Refer to 5000 series drawings). The signage will be appropriately designed for the proposed building and will be compliant with the above.



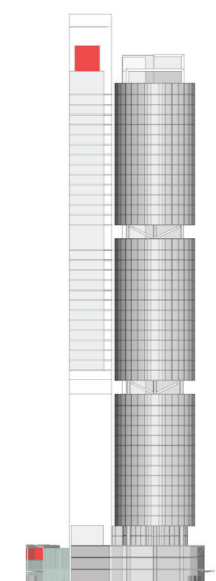
South Elevation



East Elevation



North Elevation



West Elevation

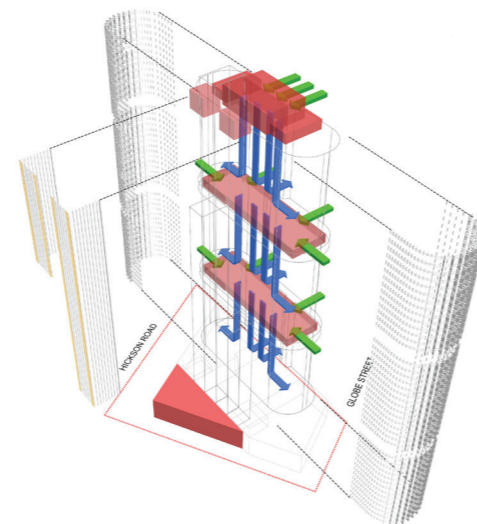
Sustainable Building Design

Objectives:

- The design of the buildings and the public domain shall incorporate, utilise and integrate leading sustainability practices in design, massing, materials and detailing. Buildings should be a model for sustainable building design and construction, and where accepted sustainability measures exist for the type of building being proposed, an industry-leading rating should be achieved. Sustainability measures should preferably be legible and discernible in the building design.

Methods of achieving the Objective:

- Green planting, solar shading, photovoltaic panels and other sustainable strategies are clearly articulated in the building's appearance.
- The building will achieve a 6 star green star design rating.
- Solar shading is a highly visible and legible part of the building design. Photovoltaic panels on the roof, and green planting in areas of the building facade along with glazed plant floors illustrate the environmental strategies of the building.



This report has been produced for Lend Lease for the purpose of supporting Lend Lease's Planning Application submission for MP11_0044 Commercial Building C3 and, in accordance with RSHP's normal practice, RSHP does not accept any responsibility or liability for the contents of this report towards any person other than Lend Lease or for the consequences of this report being used for a purpose other than the purpose for which it was commissioned.

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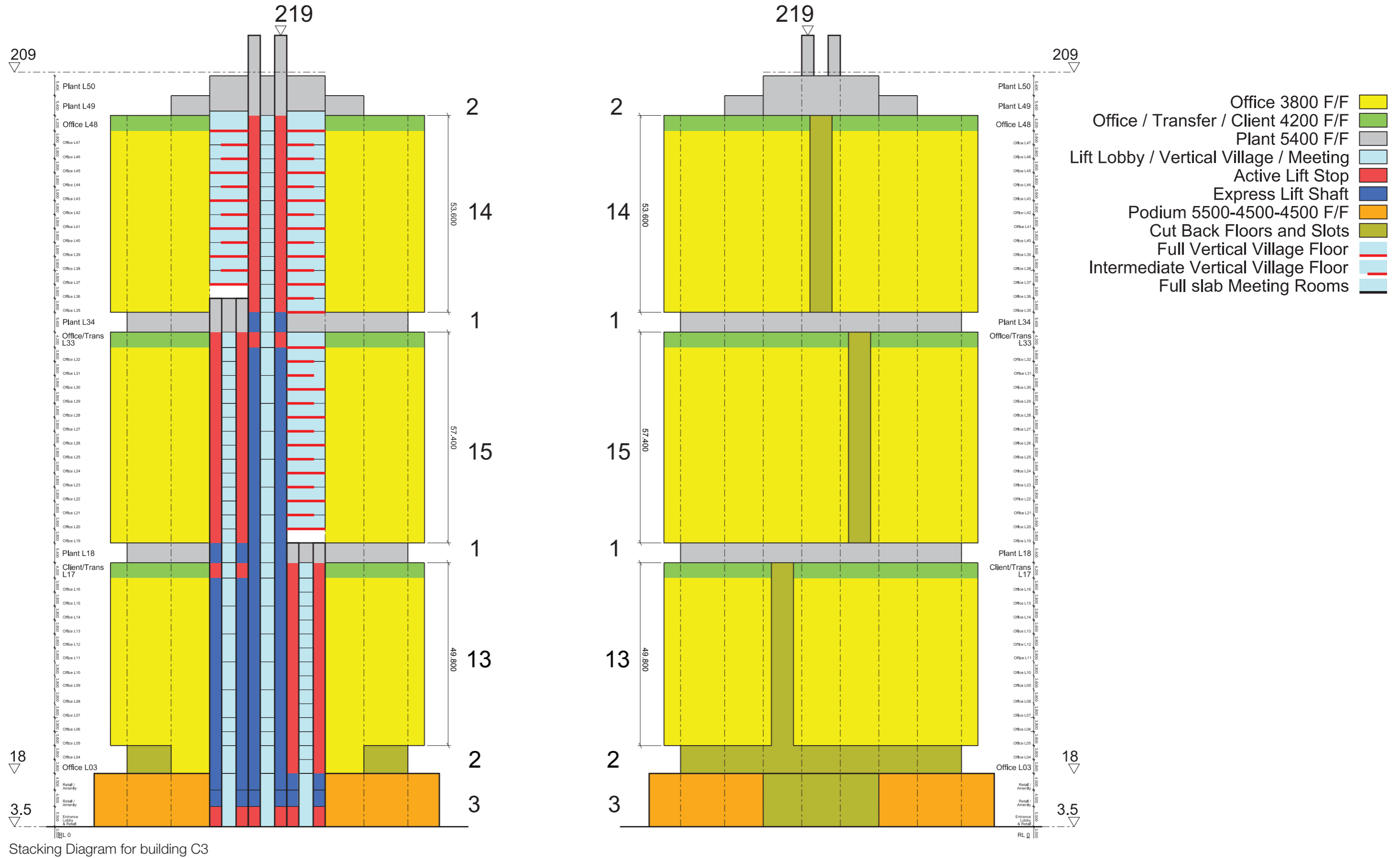
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APPENDIX A

AREA SCHEDULE

75W Report Submission - Stacking Diagram



75W Report Submission - Area Schedule

Areas produced by LendLease Design

C3 Commercial Building Office Gross Floor Area (GFA) Schedule				
Lld - 06 September 2013				
Floor Level	Relative Level (m)	Prevailing Function	Floor to Floor	GFA per floor
Top of Lifts				
Roof				0.0
49	197.560	Plant	5.09	2.8
48	193.000	Client	4.56	2701.6
47	189.200	Office	3.8	2590.5
46	185.400	Office	3.8	2590.5
45	181.600	Office	3.8	2701.6
44	177.800	Office	3.8	2590.5
43	174.000	Office	3.8	2701.6
42	170.200	Office	3.8	2590.5
41	166.400	Office	3.8	2701.6
40	162.600	Office	3.8	2590.5
39	158.800	Office	3.8	2701.6
38	155.000	Office	3.8	2590.5
37	151.200	Office	3.8	2701.6
36	147.400	Office	3.8	2464.7
35	143.600	Office	3.8	2487.6
34	138.560	Plant	5.04	3.5
33	134.000	Client & Transfer	4.56	2549.8
32	130.200	Office	3.8	2486.8
31	126.400	Office	3.8	2486.7
30	122.600	Office	3.8	2542.4
29	118.800	Office	3.8	2486.7
28	115.000	Office	3.8	2542.4
27	111.200	Office	3.8	2486.7
26	107.400	Office	3.8	2542.4
25	103.600	Office	3.8	2486.7
24	99.800	Office	3.8	2542.4
23	96.000	Office	3.8	2486.7
22	92.200	Office	3.8	2542.4
21	88.400	Office	3.8	2486.7
20	84.600	Office	3.8	2542.4
19	80.800	Office	3.8	2361.0
18	75.760	Plant	5.04	3.5
17	71.200	Client & Transfer	4.56	2390.5
16	67.400	Office	3.8	2383.7
15	63.600	Office	3.8	2383.3
14	59.800	Office	3.8	2383.7
13	56.000	Office	3.8	2383.3
12	52.200	Office	3.8	2383.7
11	48.400	Office	3.8	2383.3
10	44.600	Office	3.8	2383.7
9	40.800	Office	3.8	2383.3
8	37.000	Office	3.8	2383.7
7	33.200	Office	3.8	2383.3
6	29.400	Office	3.8	2383.7
5	25.600	Office	3.8	2383.7
4	21.800	Office	3.8	1981.0
Tower 3	18.000	Office	3.8	1979.3
Podium 2	13.500	Retail	4.5	2437.2
Podium 1	9.000	Retail	4.5	2717.0
Ground	3.500	Retail	5.5	1719.3
Ground	3.500	Lobby	0	1739.9
				117,852

		Tower Total GFA:	110,978
		Total Retail GFA:	6,874
		Total GFA:	117,852

AREA CALCULATIONS

These areas have been measured from plans produced at Schematic stage of the design and are approximate and illustrative only. Further development of the design, measurement and construction tolerances and/or further client/tenant requests will inevitably result in changes to these areas [which could involve significant reductions] and RSHP accepts no legal responsibility for any decision, commercial or otherwise, made on the basis of these areas.

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APPENDIX B

SHADOW DIAGRAMS




Barangaroo - C3 75W - Shadow Study
In the Context of Approved Concept Plan Amendment Mod 6

21st September, 9am



Block 3
Envelope Shadow


C4 & C5 Scheme
Footprint and Shadow


C3 Shadow


C3 Footprint


Shadows cast by Existing
City Buildings


SEPP Block Plan
(Mod 6)



Barangaroo - C3 75W - Shadow Study
In the Context of Approved Concept Plan Amendment Mod 6

21st September, 12pm

 Block 3 Envelope Shadow	 C4 & C5 Scheme Footprint and Shadow	 C3 Shadow	 C3 Footprint	 Shadows cast by Existing City Buildings	 SEPP Block Plan (Mod 6)
---	---	--	---	---	---




Barangaroo - C3 75W - Shadow Study
 In the Context of Approved Concept Plan Amendment Mod 6

21st September, 3pm


 Block 3
 Envelope Shadow

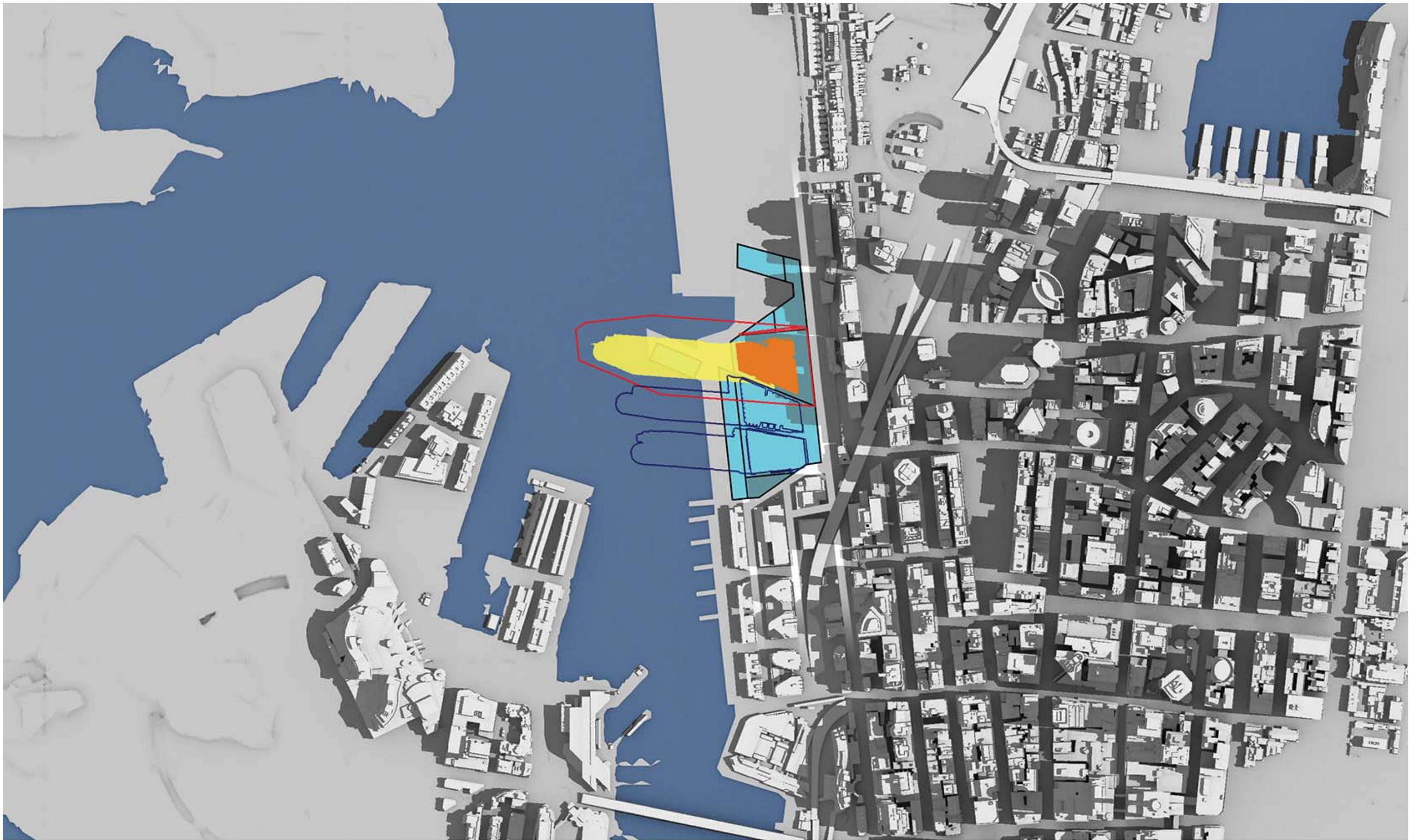

 C4 & C5 Scheme
 Footprint and Shadow


 C3 Shadow


 C3 Footprint

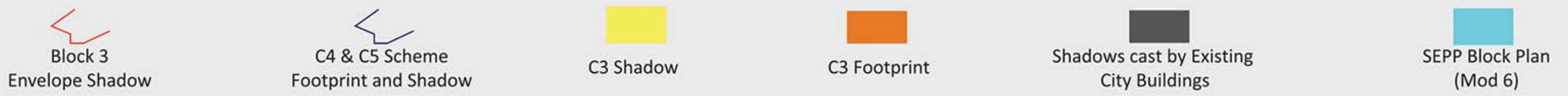

 Shadows cast by Existing
 City Buildings


 SEPP Block Plan
 (Mod 6)



Barangaroo - C3 75W - Shadow Study
 In the Context of Approved Concept Plan Amendment Mod 6

21st December, 9am





Barangaroo - C3 75W - Shadow Study
 In the Context of Approved Concept Plan Amendment Mod 6


21st December, 12pm



 Block 3
 Envelope Shadow


 C4 & C5 Scheme
 Footprint and Shadow


 C3 Shadow


 C3 Footprint


 Shadows cast by Existing
 City Buildings


 SEPP Block Plan
 (Mod 6)




Barangaroo - C3 75W - Shadow Study
 In the Context of Approved Concept Plan Amendment Mod 6


21st December, 3pm


 Block 3
 Envelope Shadow

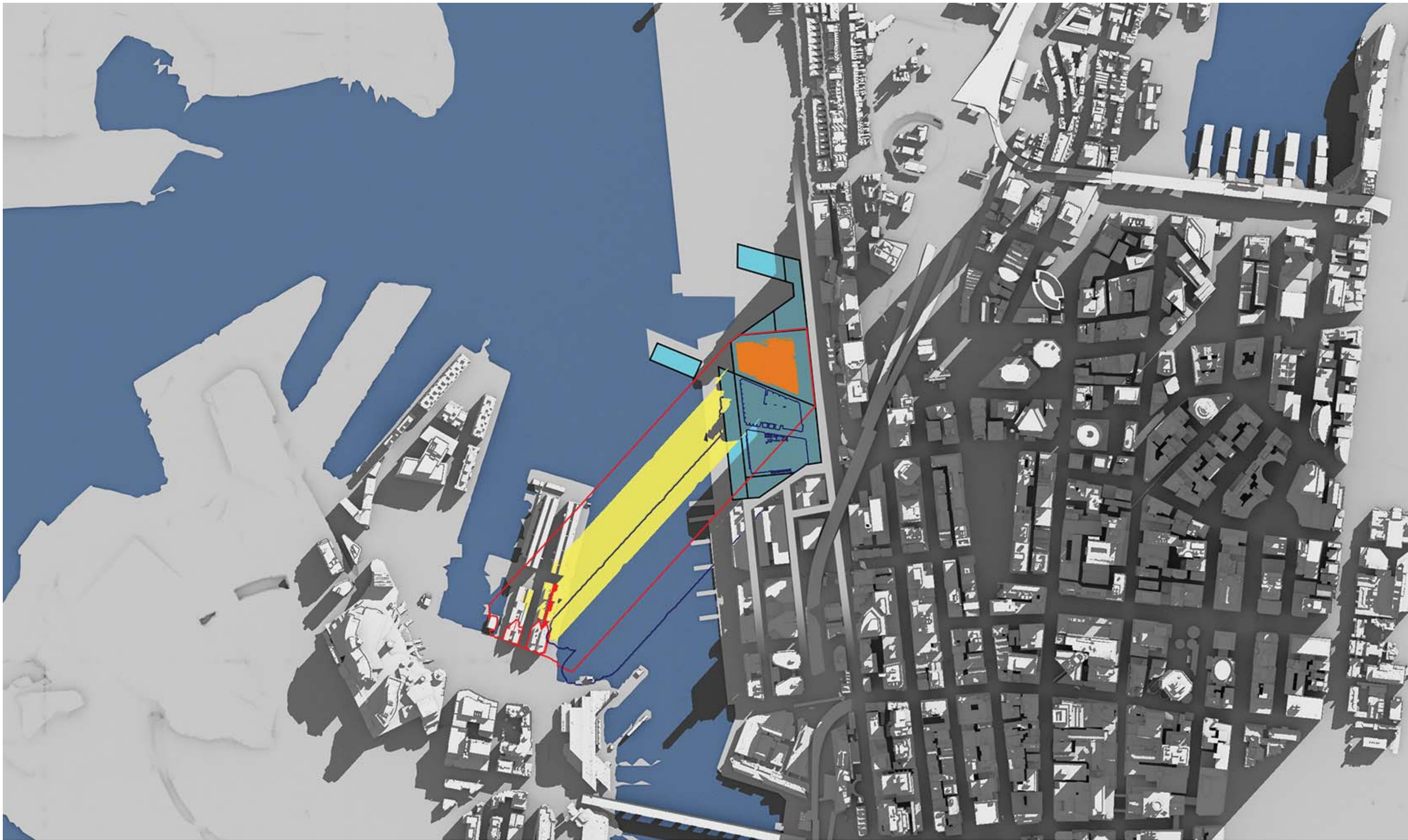

 C4 & C5 Scheme
 Footprint and Shadow


 C3 Shadow


 C3 Footprint


 Shadows cast by Existing
 City Buildings


 SEPP Block Plan
 (Mod 6)




Barangaroo - C3 75W - Shadow Study
In the Context of Approved Concept Plan Amendment Mod 6

21st June, 9am


Block 3
Envelope Shadow


C4 & C5 Scheme
Footprint and Shadow


C3 Shadow


C3 Footprint


Shadows cast by Existing
City Buildings


SEPP Block Plan
(Mod 6)





Barangaroo - C3 75W - Shadow Study
In the Context of Approved Concept Plan Amendment Mod 6

21st June, 12pm


Block 3
Envelope Shadow


C4 & C5 Scheme
Footprint and Shadow


C3 Shadow


C3 Footprint


Shadows cast by Existing
City Buildings


SEPP Block Plan
(Mod 6)



Barangaroo - C3 75W - Shadow Study
 In the Context of Approved Concept Plan Amendment Mod 6


21st June, 3pm


 Block 3
 Envelope Shadow

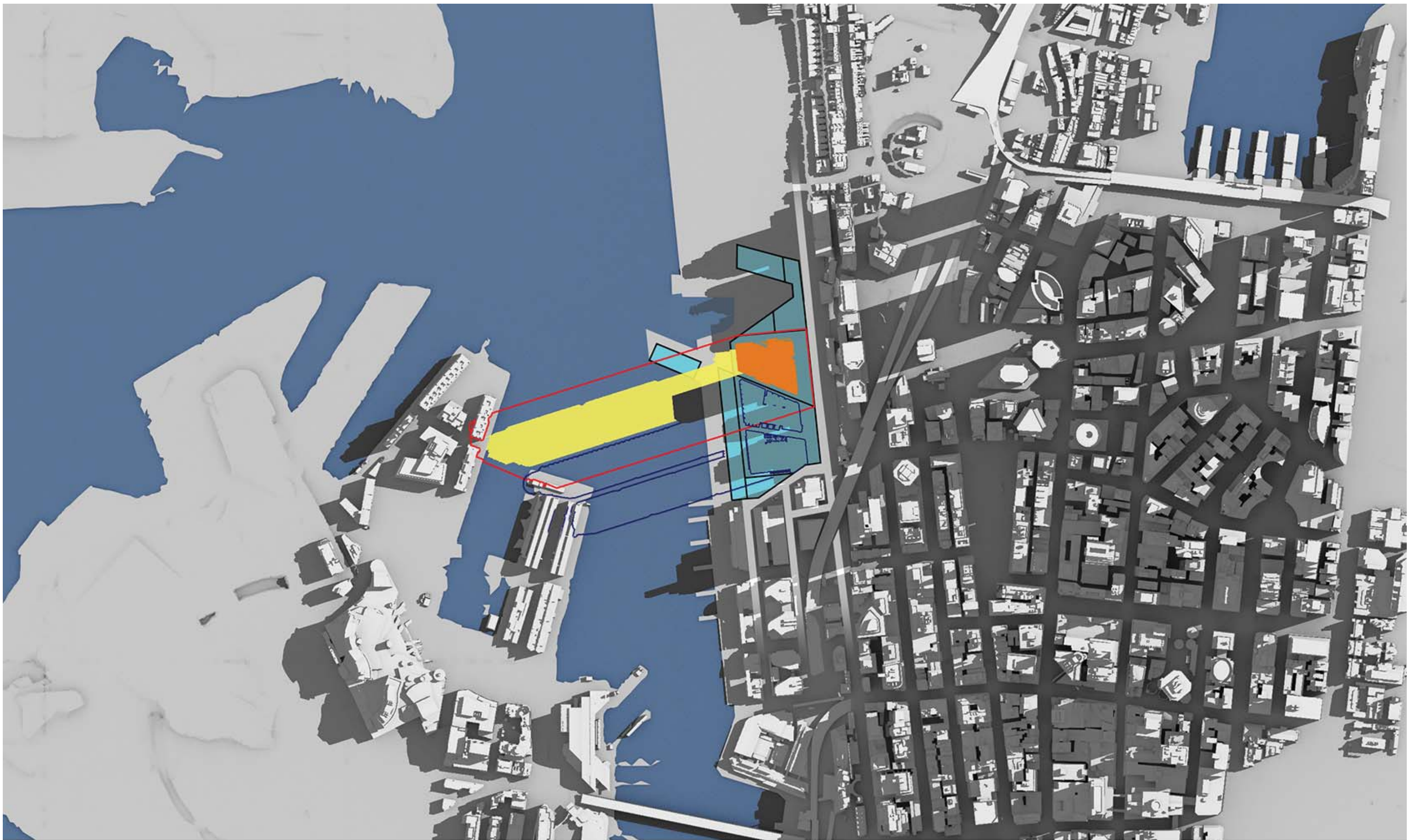

 C4 & C5 Scheme
 Footprint and Shadow


 C3 Shadow


 C3 Footprint


 Shadows cast by Existing
 City Buildings


 SEPP Block Plan
 (Mod 6)





Barangaroo - C3 75W - Shadow Study
In the Context of Approved Concept Plan Amendment Mod 6

21st March, 9am


Block 3
Envelope Shadow


C4 & C5 Scheme
Footprint and Shadow


C3 Shadow


C3 Footprint


Shadows cast by Existing
City Buildings


SEPP Block Plan
(Mod 6)




Barangaroo - C3 75W - Shadow Study
In the Context of Approved Concept Plan Amendment Mod 6

21st March, 12pm



Block 3
Envelope Shadow


C4 & C5 Scheme
Footprint and Shadow


C3 Shadow


C3 Footprint


Shadows cast by Existing
City Buildings


SEPP Block Plan
(Mod 6)



Barangaroo - C3 75W - Shadow Study
 In the Context of Approved Concept Plan Amendment Mod 6

21st March, 3pm

 Block 3 Envelope Shadow	 C4 & C5 Scheme Footprint and Shadow	 C3 Shadow	 C3 Footprint	 Shadows cast by Existing City Buildings	 SEPP Block Plan (Mod 6)
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APPENDIX C

VIEW ANALYSIS

Visual Impact Photomontage Methodology for Barangaroo Commercial Building C3 Planning Application

BACKGROUND

This document was prepared by Virtual Ideas to describe the processes used to create the visual impact photomontages and illustrate the accuracy of the results, and show media to allow assesment of visual impact..

Virtual Ideas is a highly experienced 3D visualisation company which commonly prepares material for both application and court use, and is familiar with requirements to provide 3D visualisation media that will communicate the visual impact of proposed developments. Our methodologies and results have been inspected by various court appointed experts in a variety of cases and have always been found to be accurate and acceptable.

OVERVIEW

The process of creating accurate photomontage renderings begins with the creation of an accurate, real world scale digital 3D model. We then take site photographs from known locations and place cameras in the digital 3D model that match the real world position of the site photography.

By matching the lens properties of the cameras in the digital 3D software, to that of the real world photography, and rotating the cameras in the software so that surveyed points in 3D space align with the corresponding points on the photograph, we can create a rendering that is correct in terms of position, scale, rotation, and perspective. Time and data information is also recorded during the site photography so that accurate lighting conditions can be reproduced in the 3D rendering.

A digital image is then rendered from the camera in the 3D software application that is then superimposed into the real world photo to generate an image that represents accurate form and visual impact.

DESCRIPTION OF COLLECTED DATA

To create the 3D model and establish accurate reference points for alignment to the photography, a variety of information was collected. This includes the following:

- 1) 3D model of the Approved Concept plan (Mod 6)
 - Supplied by: Lend Lease
 - Format: DWG
 - Content: 3D model of the Approved Concept plan
- 2) Ortho-corrected aerial photography of the city of Sydney and surrounds
 - Created by: Department of Lands
 - Supplied by: Department of Lands
 - Format: ecw
 - Content: Ortho-corrected aerial photography
- 3) Digital terrain model of the city of Sydney and surrounding suburbs
 - Created by: Department of Lands
 - Supplied by: Department of Lands
 - Format: DWG
 - Content: 3D contours of the ground plane only (no buildings)
- 4) Surveyed 3D model of the city of Sydney buildings and ground plane
 - Created by: AAM Hatch
 - Supplied by: Lend Lease
 - Format: DWG
 - Content: 3D model of the city of Sydney buildings and ground plane
- 5) 3D model of the Barangaroo Commercial Building C4, C3 & C5
 - Created by: RSHP Architects
 - Supplied by: Lend Lease
 - Format: DWG
 - Content: 3D model of the Barangaroo buildings
- 6) Site photography
 - Created by: Luke Kolln of Virtual Ideas (VI Photos)
 - Format: JPEG file
 - Content: High resolution photo

CREATION OF THE DIGITAL 3D MODEL

Creating the surrounding terrain model

Using our software application (3D Studio Max) we imported the Lands 3D topographical CAD data and created a three dimensional terrain model at real world scale. This model was referenced back to MGA co-ordinates using a common reference point that all project drawings are being referenced to. The ortho-corrected aerial photography was then mapped to this model giving us a relatively accurate source for referencing camera positions in both position and height.

Creating the Sydney city buildings 3D model

To have sufficient survey data that would allow us to accurately align the 3D model to the photography, a surveyed 3D model was purchased from AAM hatch and positioned into the 3D scene using the common MGA reference point as the origin. In addition a surveyed ground plane from AAM Hatch was also purchased and positioned under the buildings.

The building survey was created by AAM Hatch using photogrammetric mapping equipment and techniques.

Creating the Barangaroo Commercial Buildings 3D model

The Barangaroo 3D building model was supplied by RHSP and Lend Lease. The building was supplied in its correct MGA referenced position and was correct in height and scale.

SITE PHOTOGRAPHY

Site photography was taken from the positions agreed with Lend Lease. The positions were selected to fulfil the Director General Requirements provided by the department of planning. The DGR requirements did not specify a lens size for the photographs.

Additional locations for photomontages were requested by the city of Sydney, and subsequently photographed.

The lens selection for each shot was based on the following criteria:

- The on-site location for the photograph should be as close as possible to the instructed location.
- The entirety of the proposed buildings, including the approved concept plan envelope should be in view in each photo where possible.
- Surrounding existing buildings should also be visible in each photomontage to allow for fair and accurate comparison to existing built form.

The lens size selected for each shot ranges from 17-40mm. For further explanation of digital photography and the human eye refer to Appendix A.

In most cases we consider that a 17-24mm lens is a fair representation of the focal length of the human eye. It is difficult to define the exact focal length of the eye as we have to consider the distance to the subject and peripheral vision. There are many studies to support that 17mm is acceptable. Also many scientists consider 20-24mm acceptable when looking at a specific item in the distance. - Please see appendix A.

CREATION OF PHOTOMONTAGES

The positions of the real world photography were located in the 3D scene using the lands and AAM Hatch 3D models, and the orthorectified photography.

Cameras were then created in the 3D scene to match the locations and height of where the photographs were taken from and the lens data stored in the metadata of the photograph. The cameras was then aligned in rotation so that the points of the 3D model aligned with their corresponding objects that are visible in the photograph.

A realistic sun & skylight light system was then created in the 3D scene and matched to the precise time and date of when each photograph was taken.

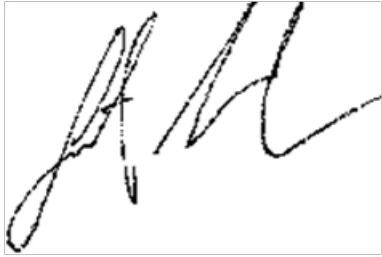
3D renderings of the new built form was then created from the selected cameras, at the exact pixel dimensions and aspect ration of the original digital photograph. (4368 x 2912 pixels)

The 3D renderings were then place into the digital photography, and masked out where existing form appeared in front of the buildings.

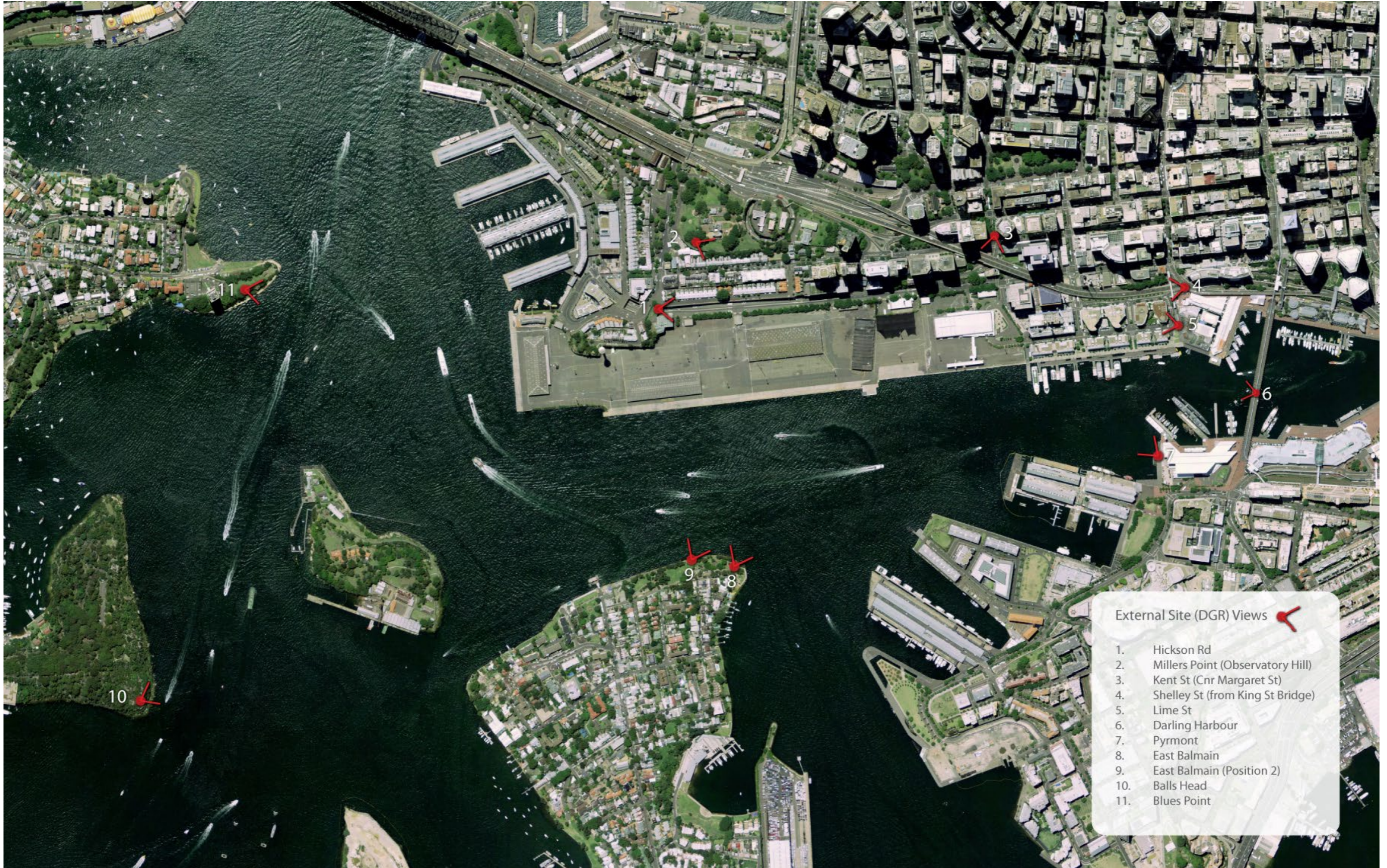
In conclusion, it is my opinion as an experienced 3D architectural visualisation professional that the images provided accurately portray the level of visibility and impact of the built form with respect to the surrounds.

Yours sincerely

Grant Kolln,
Director Virtual Ideas

A handwritten signature in black ink, appearing to read 'G Kolln', enclosed in a thin black rectangular border.

MAP SHOWING CAMERA LOCATIONS



- External Site (DGR) Views 
1. Hickson Rd
 2. Millers Point (Observatory Hill)
 3. Kent St (Cnr Margaret St)
 4. Shelley St (from King St Bridge)
 5. Lime St
 6. Darling Harbour
 7. Pyrmont
 8. East Balmain
 9. East Balmain (Position 2)
 10. Balls Head
 11. Blues Point



Image showing block 3 from the approved concept plan (Mod 6)



Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: HICKSON ROAD
 Camera R.L. 17.5m
 MGA coords: X: 333734.347, Y: 6252097.407
 Lens: 24mm
 Dimensions: 4368 x 2912
 Date: 18/06/2010 12:30 PM
 Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 24mm lens was to capture the heights of several existing city buildings to the left of the image, and also show the building immediately to the right of the viewer. Including the handrail in this image also visually describes that the viewer is standing on the bridge.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)



Image showing block 3 from the approved concept plan (Mod 6)



Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: MILLERS POINT (OBSERVATORY HILL)
 Camera R.L. 43.2m
 MGA coords: X: 333894.874, Y: 6252001.792
 Lens: 40mm
 Dimensions: 4368 x 2912
 Date: 2/06/2010 2:57 PM
 Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 40mm lens was that from this specific location the wider lens only captured more of the underside of the canopy and did not see any additional built form. Therefore we selected a 40mm lens as this balanced the amount of built form vs the surrounding nature in the image.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Artists Impression

Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)

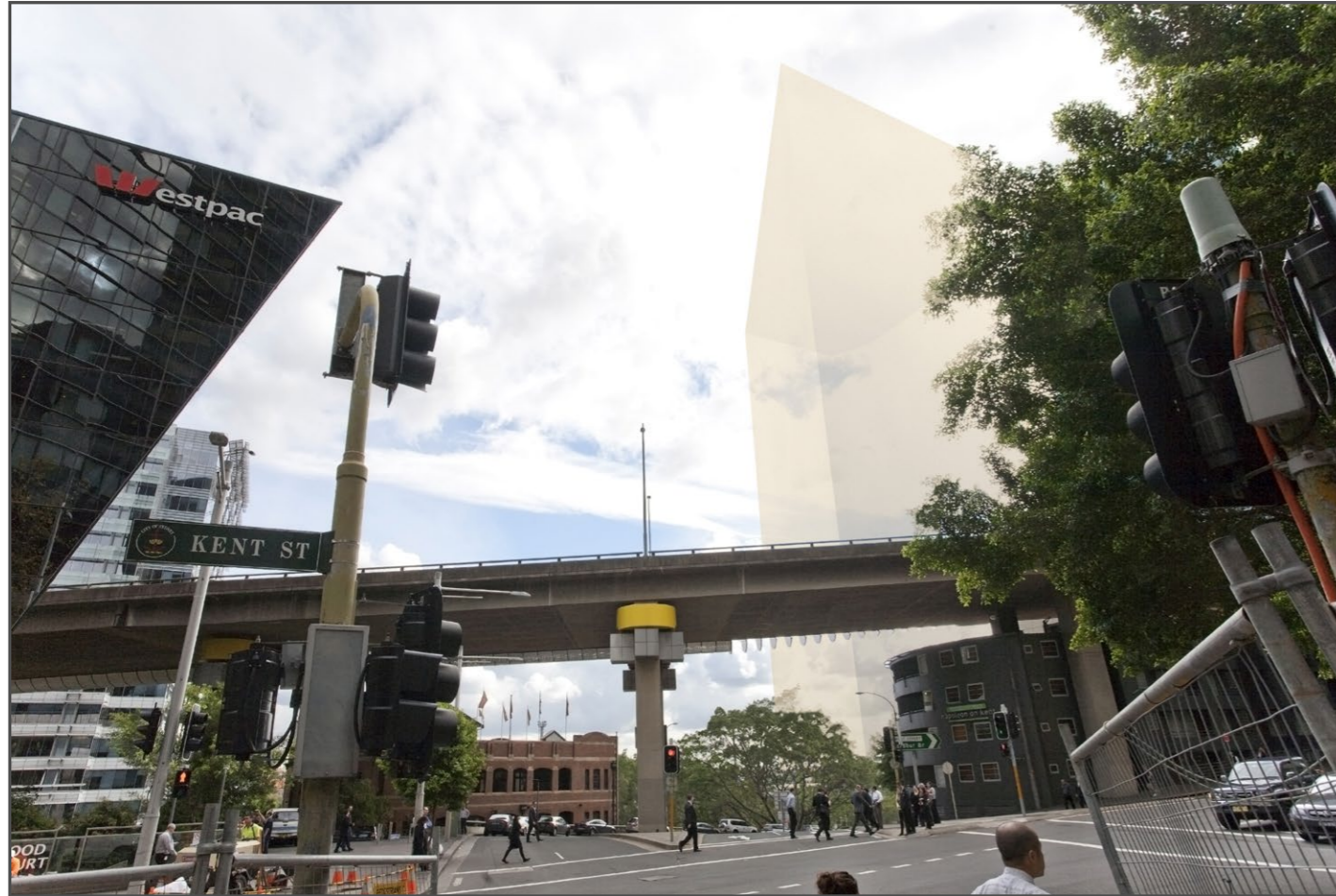


Image showing block 3 from the approved concept plan (Mod 6)



Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: KENT ST (CNR MARGARET ST)
 Camera R.L. 17.9m
 MGA coords: X: 333899.463, Y: 6251329.789
 Lens: 20mm
 Dimensions: 4368 x 2912
 Date: 2/06/2010 2:19 PM
 Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 20mm lens was to capture the heights of the Westpac building, while also providing enough room to see the extent of the future Barangaroo buildings and the approved concept plan.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)



Image showing block 3 from the approved concept plan (Mod 6)

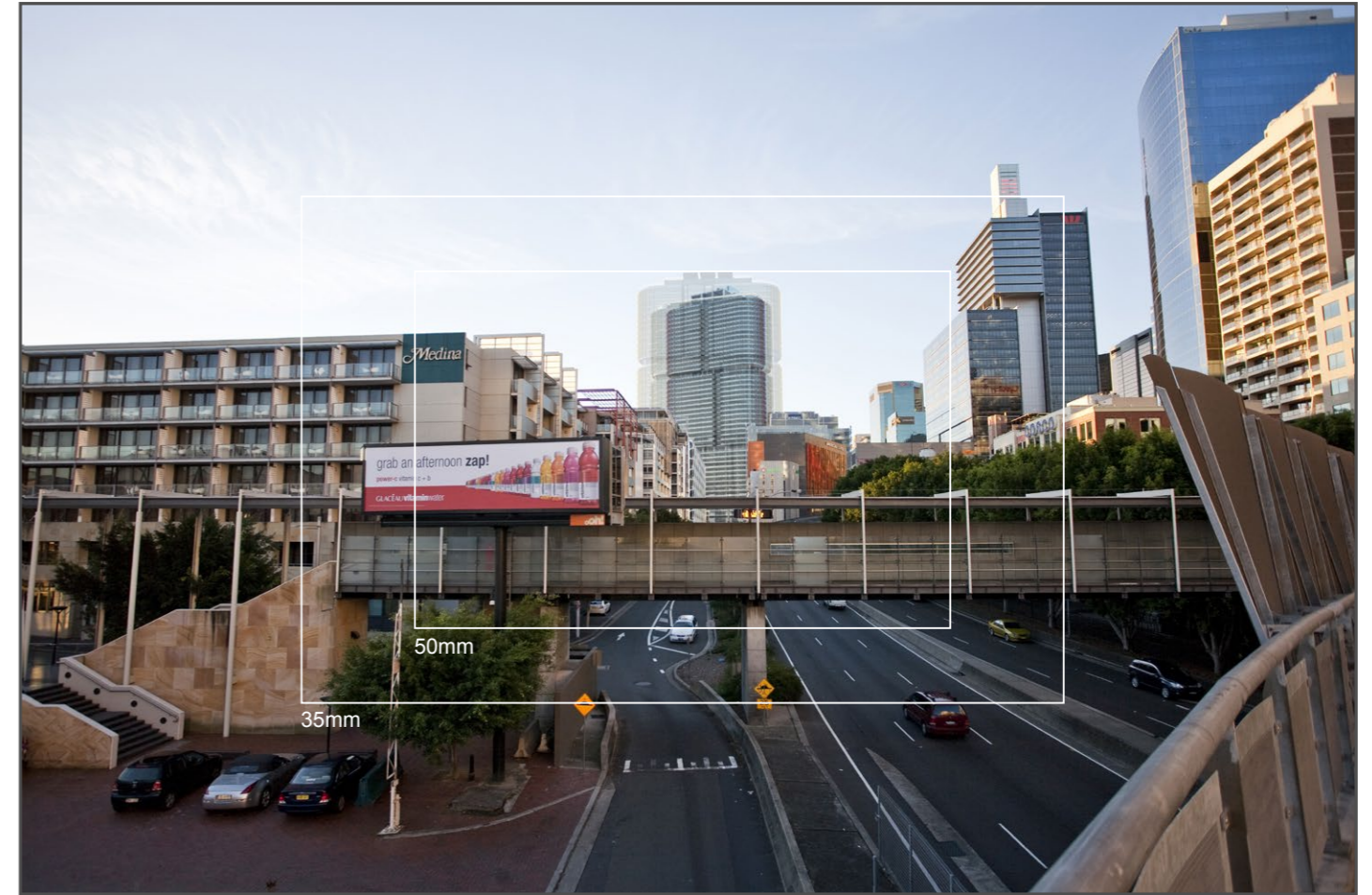


Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: SHELLEY ST FROM KING ST BRIDGE
 Camera R.L. 11.8m
 MGA coords: X: 333775.939, Y: 6250899.372
 Lens: 20mm
 Dimensions: 4368 x 2912
 Date: 8/06/2010 5:41 PM
 Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 20mm lens was to capture the heights of several existing city buildings to the right of the image, and also show some of the built form to the left of the viewer. Including the handrail in this image also visually describes that the viewer is standing on the bridge.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Artists Impression

Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)



Image showing block 3 from the approved concept plan (Mod 6)



Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: LIME STREET
 Camera R.L. 6.7m
 MGA coords: X: 333693.502, Y: 6250920.272
 Lens: 22mm
 Dimensions: 4368 x 2912
 Date: 8/06/2010 5:47 PM
 Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 22mm lens was that to show the width of the street in front of the viewer, as well as to capture the height of the lime st buildings.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)



Image showing block 3 from the approved concept plan (Mod 6)

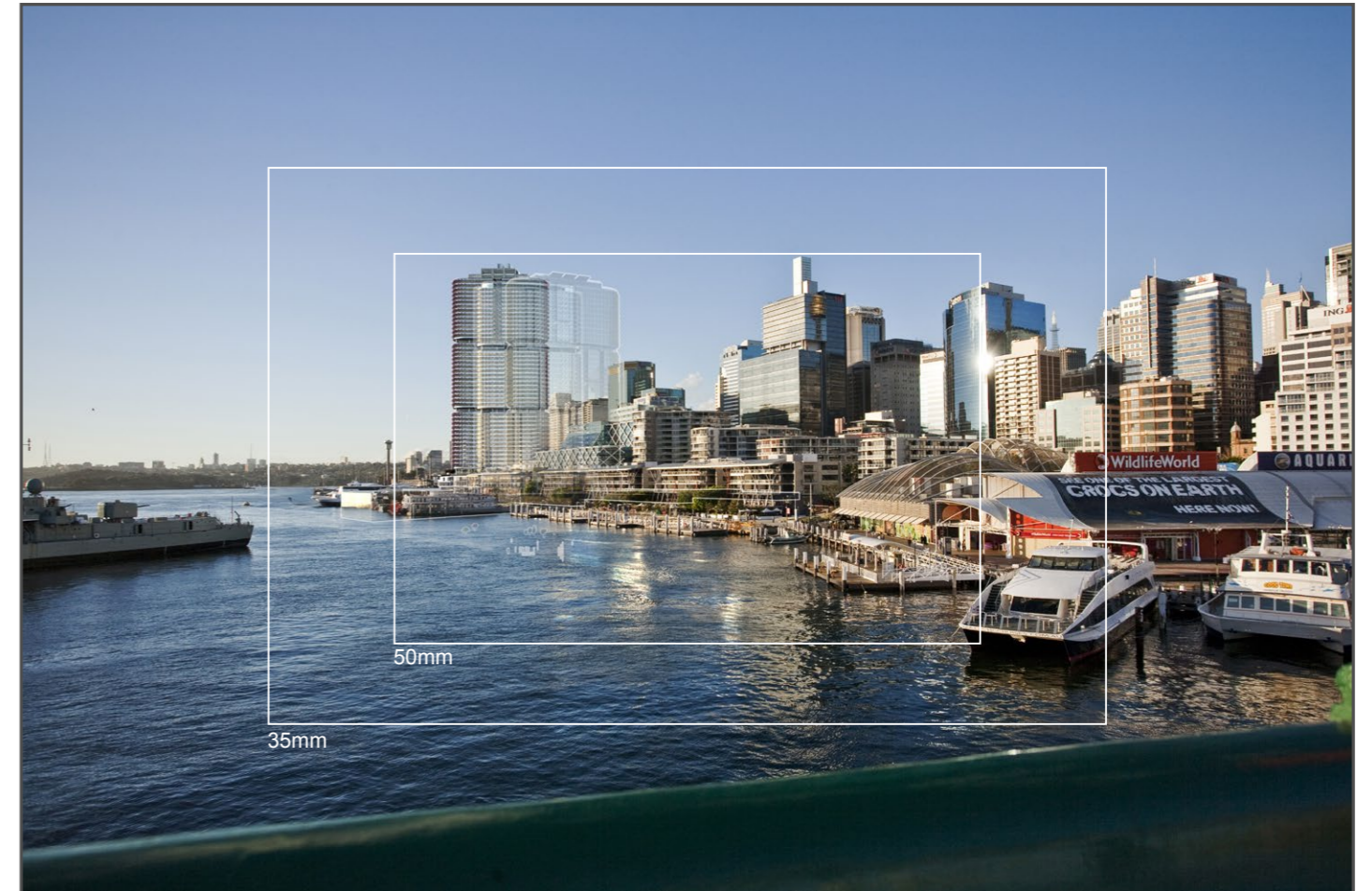


Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: DARLING HARBOUR
 Camera R.L. 13.6m
 MGA coords: X: 333547.744, Y: 6250747.816
 Lens: 22mm
 Dimensions: 4368 x 2912
 Date: 8/06/2010 5:15 PM
 Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 22mm lens was to capture the surrounding city buildings, while capturing some of the foreground elements so that the viewer could feel like they were standing on the bridge.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image. (See appendix B)



Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)



Image showing block 3 from the approved concept plan (Mod 6)

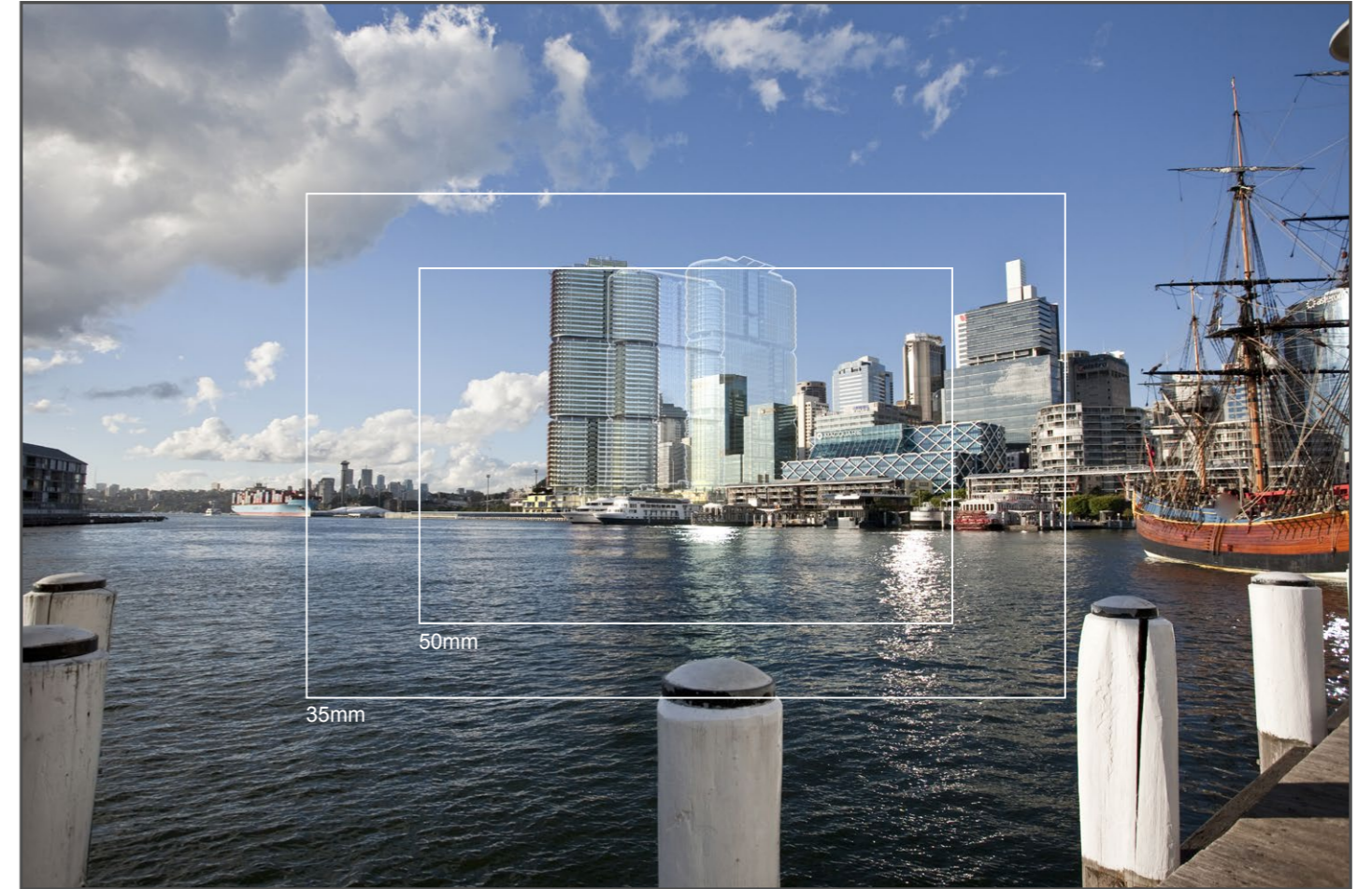


Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: PYRMONT
 Camera R.L. 4.9m
 MGA coords: X: 333401.942, Y: 6250969.394
 Lens: 20mm
 Dimensions: 4368 x 2912
 Date: 8/06/2010 4:43 PM
 Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 20mm lens was to capture the surrounding city buildings, while capturing some of the foreground elements so that the viewer could feel like they were standing at the waters edge. We also wanted to ensure that the edge of Sydney wharf was included in the photo so that the distance between the Barangaroo site and Sydney wharf was clearly visible.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Artists Impression

Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visable)



Image showing block 3 from the approved concept plan (Mod 6)

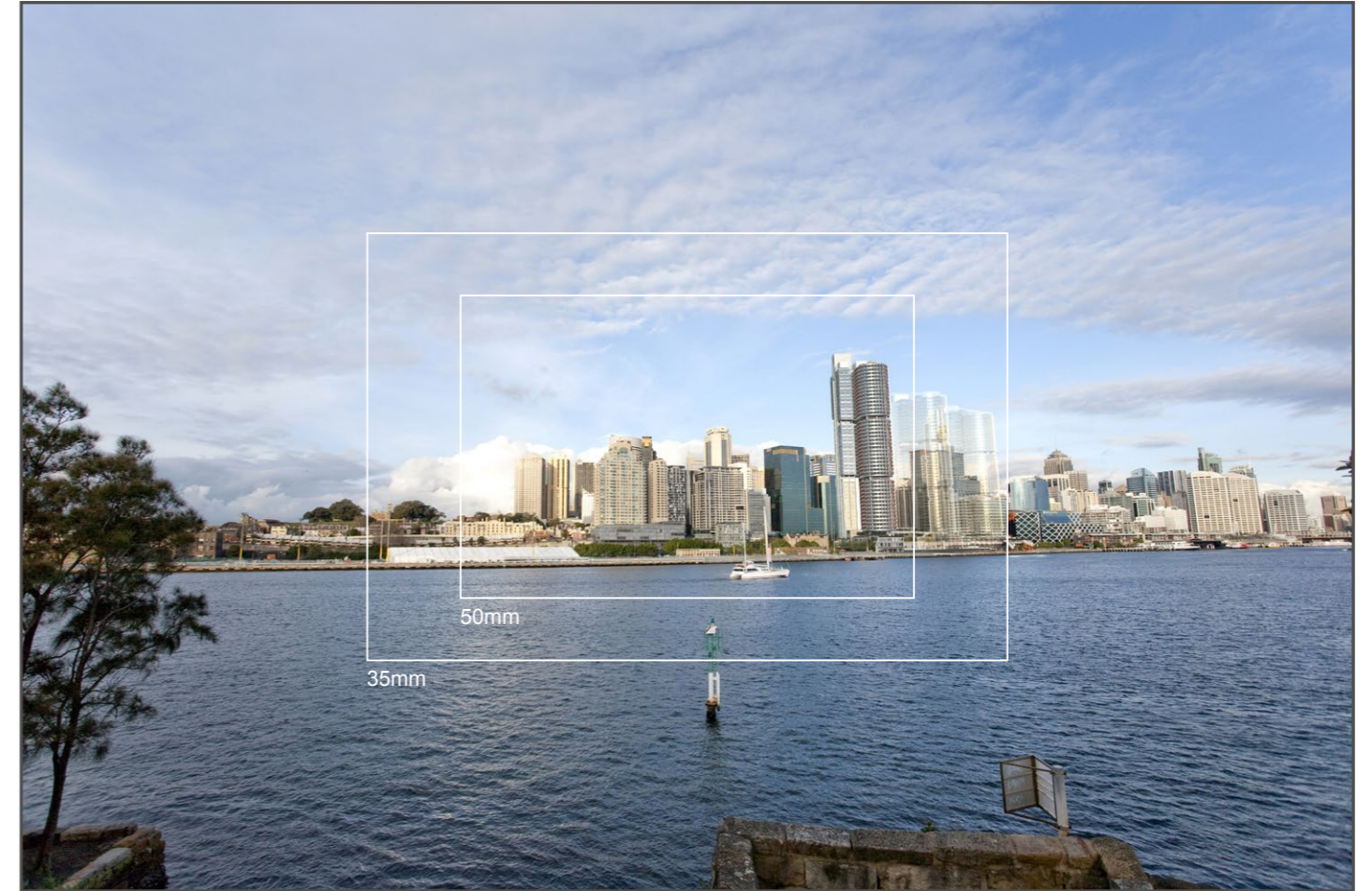


Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: BALMAIN EAST
Camera R.L. 11.6m
MGA coords: X: 333142.111, Y: 6251923.256
Lens: 17mm
Dimensions: 4368 x 2912
Date: 2/06/2010 4:55 PM
Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 17mm lens was to capture as much of the city buildings as possible from the selected position. We also wanted to show some of the foreground element so the viewer knows where they are standing.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)



Image showing block 3 from the approved concept plan (Mod 6)



Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: EAST BALMAIN (POSITION 2)
 Camera R.L. 6.5m
 MGA coords: X: 333168.223, Y: 6251983.911
 Lens: 21mm
 Dimensions: 4368 x 2912
 Date: 2/06/2010 5:05 PM
 Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 21mm lens was to capture the extent of the city skyline and also provide some foreground information so that the viewer knows that they are at the waters edge.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)



Image showing block 3 from the approved concept plan (Mod 6)



Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: BALLS HEAD
Camera R.L. 32m
MGA coords: X: 332869.201, Y: 6253291.613
Lens: 40mm
Dimensions: 4368 x 2912
Date: 2/06/2010 4:17 PM
Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 40mm lens was that the location was quite far away and zooming to this extent captured the city and the Barangaroo site as a whole. We also included some of the foreground foliage for reference.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)



Image showing block 3 from the approved concept plan (Mod 6)



Image showing proposed building montaged into existing photograph & crop marks for longer lenses sizes.

Photographic data

Location: BLUES POINT
Camera R.L. 14.6m
MGA coords: X: 333783.957, Y: 6253021.351
Lens: 21mm
Dimensions: 4368 x 2912
Date: 2/06/2010 3:58 PM
Camera: Canon EOS 5D

Rationale for lens selection

The rationale for using a 21mm lens was to capture as much of the city buildings as possible from the selected position. We also wanted to show some of the foreground elements so the viewer knows where they are standing.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.



Image showing proposed C3 building montaged into existing photograph with C4 & C5 shown ghosted (where visible)

APPENDIX A - DIGITAL CAMERA LENSES FOR PHOTOMONTAGES AND VISUAL IMPACT ASSESSMENTS

The intention of a photomontage rendering is to visually communicate how proposed built form sits in respect to its surroundings. To achieve this, a digitally rendered image from a digital 3D model is accurately superimposed into a digital photograph to provide an accurate representation in terms of light, material, scale, and form.

Camera lens selection also plays an important part in creating a photomontage that communicates visual impact. There are several things to consider with respect to lens selection.

Field of View of the Human Eye

This is a topic that varies depending on the source of information. In many cases the field of view of the eye is stated to be 17mm. Other sources of information on the web say that it is more like 22-24mm. Whichever the case it is clear that the human eye has quite a wide field of view and when we stand close to a subject (say a building) we have quite a lot of vision towards the top, sides and bottom. In addition to this the human eye can change focus and target direction extremely quickly allowing us to view a large structure in a very short period of time, effectively making our perceived field of view even larger.

The Perspective of the human eye

It is difficult to accurately reproduce what the human eye sees by the means of a printed image. As the back of the human eye is curved and the sensors on cameras are flat the perspective of a photograph can look quite different to how we see things in the real world, especially with a larger field of view, or wider lens.

In digital photography circles it is commonly stated that using a longer lens (approx 50mm) reduces the amount of perspective in an image and therefore looks more like the human eye would see reality, but this is talking about perspective only, and does not consider the field of view of the eye. If you take a photo using a 50mm lens, print the photo, and hold the print out against the actual view in the same location the photo was taken from, it becomes very clear that the human eye can see much more of the surrounding information than what is shown on the print out.

Changing the FOV on a digital camera

The main difference in using a longer lens vs. a wider lens is the amount of information that is displayed at the edges of the subject. Changing the lens to a smaller FOV produces the same result as cropping in on the wide angle image, providing that the position and the angle of the camera remains constant while taking the photographs. In short, a lens with a wider FOV does not create an image that has incorrect perspective it simply means that the perspective is extended at the edges of the image showing more of the surrounds in the images.

What all of this means for visual assessment is that there is no one fits all solution for lens selection. If we follow the opinion that a longer lens produces images that are closer to the perspective of the human eye, we will inevitably be in the situation where we cannot show the entirety of our subject and enough of the surrounds that it resides in. Also if we strictly stick to a 17mm lens we will have situations where the subject is far away and looks very small in the image, again making it difficult to assess visual impact. For these reasons we have taken the view that we can never totally represent what the human eye will see on a piece of paper, and for visual impact photomontages we should select lenses that strike a balance between the two and can accurately display the built form in its surroundings.

The most effective way to accurately gauge visual impact and get a real world feeling for scale would be to take prints of the photomontages to the exact site photography locations and compare the prints with the scale of the existing built form.

Extract from the web site - The Physics Factbook - Concerning the Focal Length of a Human Eye

<http://hypertextbook.com/facts/2002/JuliaKhutoretskaya.shtml>

The human eye is the organ which gives us the sense of sight, allowing us to learn more about the surrounding world than we do with any of the other four senses. We use our eyes in almost every activity we perform, whether reading, working, watching television, and driving a car, among countless other ways.

And how exactly does the eye work? The eyeball is a spherical structure approximately 2.5 cm (about 1 in) in diameter with a pronounced bulge on its forward surface, the cornea. Just behind the cornea is the iris, a coloured area with a hole in the centre called the pupil. Circular muscle tissue in the iris allows it to open and close the pupil to regulate the amount of light that gets inside the eyeball. Just behind the iris and pupil is the lens. The cornea and the lens work together to focus images on the retina, which is the light-sensitive layer that lines the inside of the eyeball.

Light moves in straight lines. Whenever a light ray encounters a surface of a different transparent medium, however, it refracts. The amount of refraction depends on the refractive index of the substance, the angle at which the light hits it, and the colour of the light. On a curved surface such as a lens, parallel rays of light will hit the surface at different angles and will be refracted in different directions.

The eye focuses on an object by bending all of the light rays from a single point on the observed object toward a single point on the retina. In the eyeball, light rays passing through the cornea are bent by its curvature toward the pupil. The lens flexes to change its curvature and finish the focusing process. When an object is located at infinity, the focal length, or the distance from the cornea to the retina, of a normal relaxed eye is about 1.7 cm (17 mm).

Bibliographic Entry	Result (w/surrounding text)	Standardized Result
Serway, Raymond & Beichner, Robert. <i>Physics for Scientists and Engineers with Modern Physics, Fifth Edition</i> . Saunders College Publishing. 2000.	"For an object distance of infinity, the focal length of the eye is equal to the fixed distance between the lens and the retina, about 1.7 cm"	17 mm
Cameron, John R.; James G. Skofronick & Roderick M. Grant. <i>Physics of the Body. Second Edition</i> . Madison, WI: Medical Physics Publishing, 1999.	"The diameter of the central bright spot at the retina is the product of the effective aperture to retina distance (17 mm) ..."	17 mm
Alexander, David. Light and Color (PHYS 1230) Lecture 21 . University of Colorado. 1997.	"The normal relaxed eye focuses rays from infinity onto the retina, with a focal length of about 1.7 cm or power of about +60 diopters."	17 mm
The Eye: The Wonder of Accommodation . The Physics Classroom and Mathsoft Education and Engineering, Inc. 2002.	"The distance from the cornea (where the light undergoes most of its refraction) to the central portion of the fovea on the retina is approximately 1.7 cm."	17 mm

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APPENDIX D

PODIUM MATERIALS BOARD

*TOWER MATERIAL SAMPLE BOARD IN
PREPARATION*

*PODIUM MATERIAL SAMPLE BOARD IN
PREPARATION*

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APPENDIX E

VIEW ANALYSIS: INTERNAL SITE

Podium Visualisations

East Podium

Preferred Project Report February 2012



View from Hickson Road - north east corner



View from Hickson Road - south east corner

Section 75W September 2013



View from Hickson Road - north east corner



View from Hickson Road - south east corner

Podium Visualisations

West Podium

Preferred Project Report February 2012



Artist Impression

View from Globe Street - north west corner



Artist Impression

View from Globe Street - south west corner

Section 75W September 2013



Artist Impression

View from Golbe Street - north west corner



Artist Impression

View from Globe Street - south west corner

This report has been produced for Lend Lease for the purpose of supporting Lend Lease's Planning Application submission for MP11_0044 Commercial Building C3 and, in accordance with RSHP's normal practice, RSHP does not accept any responsibility or liability for the contents of this report towards any person other than Lend Lease or for the consequences of this report being used for a purpose other than the purpose for which it was commissioned.

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