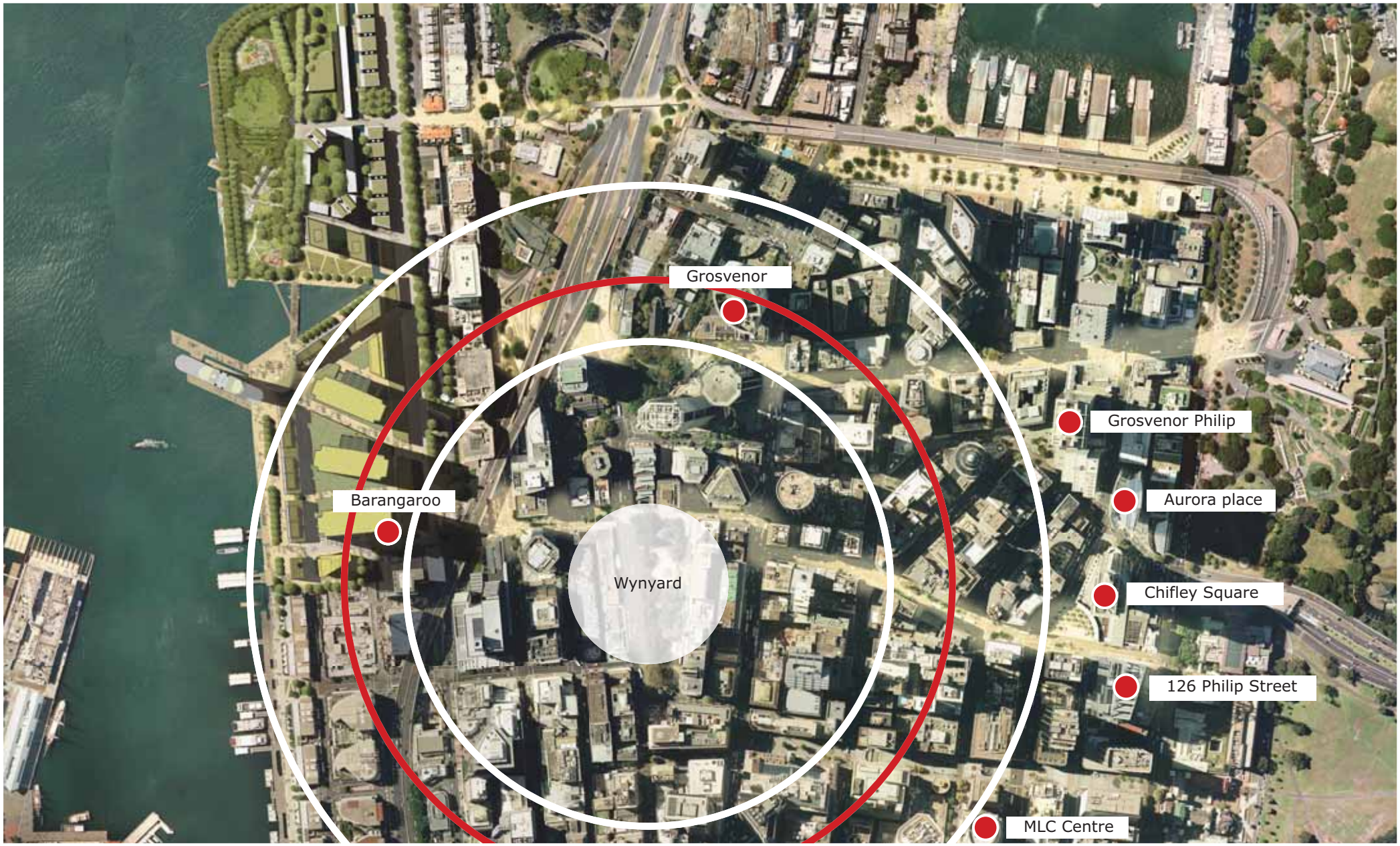
3

BULK OF THE OFFICE TOWERS - A RESPONSE



Note: Images are illustrative depictions of design concepts only

Introduction

This report is prepared in response to the Department of Planning letter dated 27th September 2010 which requires an additional justification for the length and width of the commercial office buildings.

Historical Background

Traditionally, commercial office floor space has been a function of scale, with small amounts of capital producing small buildings. Post the Second World War, technology and the growth of the knowledge based economy have driven changes in the function of the office, while globalisation and the drive for economies of scale, through mergers and amalgamations, has produced multinational corporations with evolving workplace requirements.

Up to the 1970's, the typical office procurement strategy in Sydney meant that the majority of the main CBD buildings were built by a company securing the land, engaging an architect, building and then occupying the office on completion.

This paradigm shifted as companies preferred to focus their capital on core activities and opted to rent office space that met their needs rather than own their office building. Increasingly for multinationals this has meant prime buildings, in prime locations. The larger floor plates enabled them to consolidate and occupy fewer floors, reducing costs, and provided improved commununication and interface, with all staff in one location, in non-hierarchical office layouts.

Between 1970 and 2009, the office floor area of the Sydney CBD increased at an average rate of 2.4% per annum, inflated somewhat by the construction booms of the mid-1970s and late-1980s. However, over the past ten years (2000–2009), the development cycle largely by-passed Sydney, with the average annual growth rate of office floor area just 0.7% per annum.

Sydney's building stock is becoming increasingly dated and reflects the designs and characteristics of the 1980s. Only 10% of Sydney's office stock is less than ten years old, while almost 47% of the stock is more than 30 years old, the highest proportion in any Australian CBD office market.

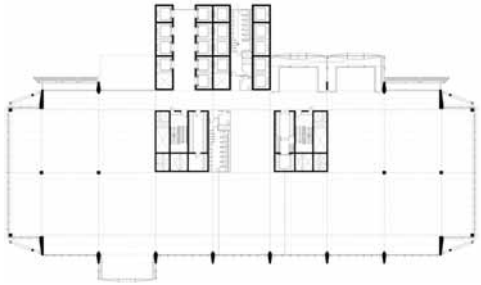
There is a shortage of prime stock in the Sydney CBD that fits the requirements of firms in the Finance & Insurance (F&I) sector, in particular for buildings with average floor plates above 1,500 sqm and increasingly over 2,000 sqm. Around one-third of the prime grade stock in the Sydney CBD in terms of NLA has an average floor plate above 1,500 sqm, equivalent to around 845,000 sqm. However, when this figure is analysed by the number of floors, which is a more relevant comparison, only 24% of the prime floors in Sydney are above 1,500 sqm, and only 4.4% are above the 2,000 sqm threshold.

The process of trying to create prime buildings or development sites in the Sydney CBD is increasingly difficult as it requires buying a series of smaller adjacent sites and amalgamating them. This is a slow and often expensive process that has led to Sydney's limited supply of prime office space and in some circumstances, could lead occupiers to move away from the CBD, as they did in London and New York, or even away from a city, state or country.

This risk is acknowledged in the recent Urban Design Study on The Alfred, Pitt, Dalley and George Street site prepared for the City of Sydney Council by the Government Architect's Office. This study advocated a strategy to expedite "global towers" in the Sydney CBD with floor plates of 1500m2 or more and 200m in height to cater for the future requirements of CBD tenants.

Brownfield sites provide an opportunity to accelerate this process and Barangaroo is one of the very few remaining locations in Sydney's CBD that can accommodate larger office footprints.

C4 Barangaroo South, Sydney



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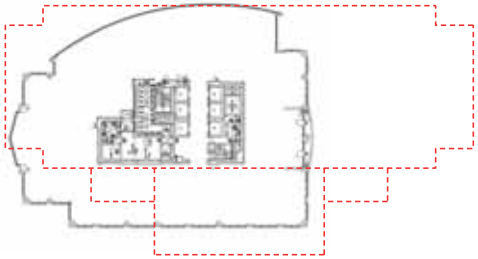
Australian Examples of Similar Office Buildings

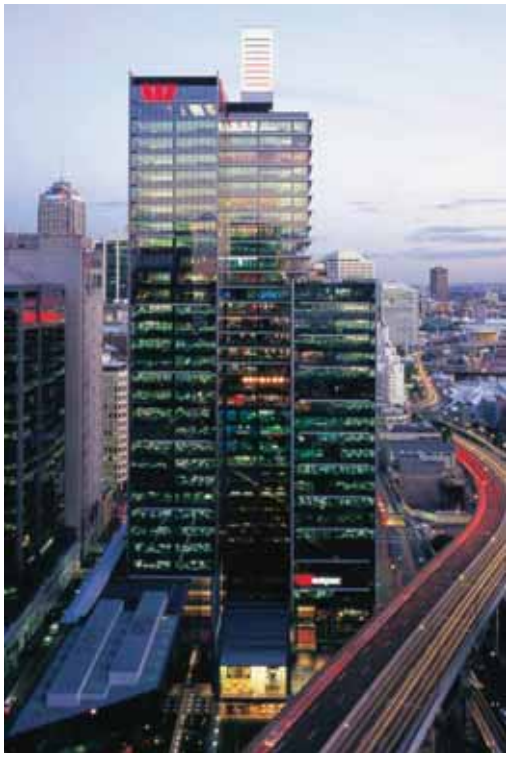
Chifley Square, Sydney



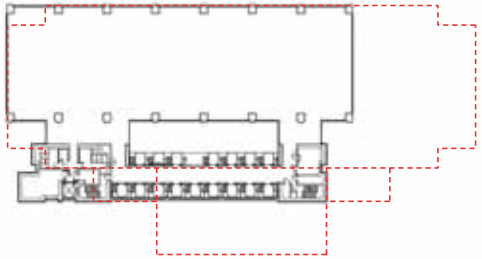
Length: 56m
Width: 40m
Height: 216m
Floorplate area: 1600m²

Westpac Headquarters, Sydney

Length: 80m
Width: 63m
Height: 145m
Floorplate area: 2600m²

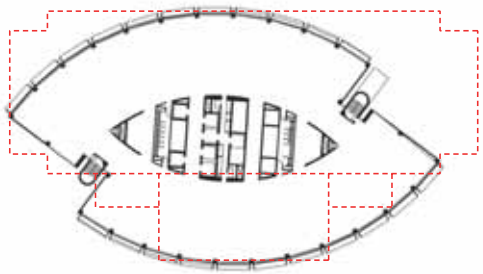


Deutsche Bank Place, Sydney



Length: 64m
Width: 35m
Height: 160m
Floorplate area: 1440m²

Grosvenor Place, Sydney

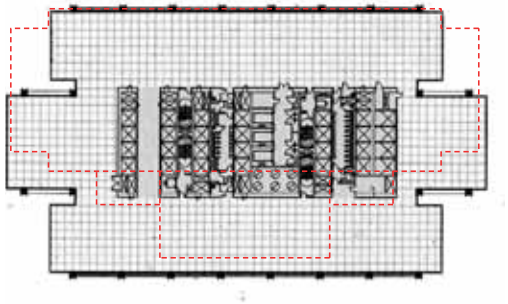


Length: 80m
Width: 45m
Height: 180m
Floorplate area: 2000m²

Note : All dimensions are approximate

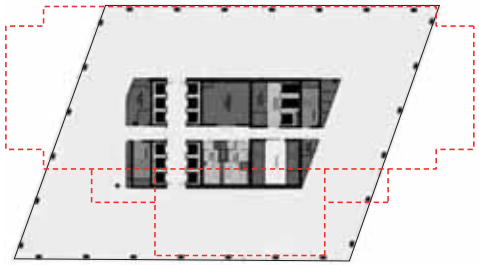
Worldwide Examples of Similar Office Buildings

Canary Wharf RS1, London



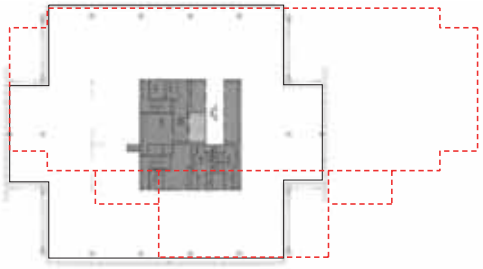
Length: 90m
Width: 46m
Height: 240m
Floorplate area: 2700m²

7 World Trade Centre, New York



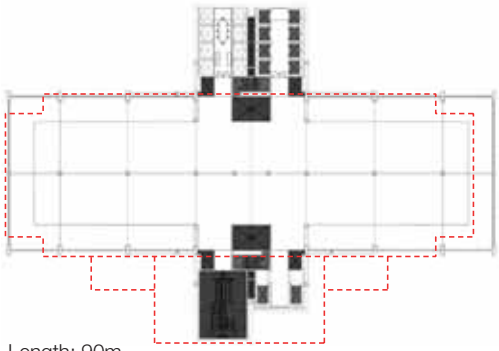
Length: 80m
Width: 45m
Height: 225m
Floorplate area: 2200m²

New York Times Building, New York



Length: 60m
Width: 48m
Height: 228m
Floorplate area: 2000m²

Port Authority Bus Terminal, New York



Length: 90m
Width: 55m
Height: 246m
Floorplate area: 2500m²

Note : All dimensions are approximate

Note: Images are illustrative depictions of design concepts only

Worldwide References

The 21st Century has seen a global resurgence of how cities are seen and lived in, reversing urban decay in under-utilised sites and encouraging the migration of people back into city centres.

Throughout the centuries, some of the most desirable locations in the world have also been some of its highest density neighbourhoods - places where a mixture of uses (living, working and relaxing) generate character and vitality. Critical mass coupled with high quality public spaces provides the throughput of pedestrians to make a vibrant place. A compact city quarter, with well-designed public spaces and amenities, will thrive economically and provide a high quality of life for residents.

In addition, there is an ecological imperative. As populations grow, and cities intensify, there is increasing recognition of the need for a more environmentally responsible and sustainable approach to development: reduced land up-take, reduced reliance on the car, and shared resources.

In London in the 1980's the rise of Canary Wharf was a direct response to The City's inability to accommodate large companies. As a result of the success of Canary Wharf, there was a relaxation of the development rules in the City and cluster of towers were proposed like Heron Tower and 30 St Mary Axe ("The Gherkin") amongst others.

In Paris, high buildings were banned inside the 20 arondissements after the construction of a 210m tower in Montparnasse, which led to the larger companies requiring premium space moving to La Defense.

In Melbourne a similar migration has started to appear, with ANZ, NAB and Myer moving to the new Docklands developments in Melbourne because no suitable sites, with the requisite larger floor plates, are available in the existing CBD.

Barangaroo South represents a unique opportunity for Sydney. It is a rare brownfield site which can offer large floor plates to commercial businesses, and its location on the edge of the city means it can integrate easily into the existing CBD. The site therefore will allow Sydney to cement its position as a global business hub with the provision of commercial buildings that can cater for the future requirements of global businesses.

Key:
- City Block
- Outline of Barangaroo South

Figure Ground of the Concept Plan Amendment for Barangaroo, Sydney

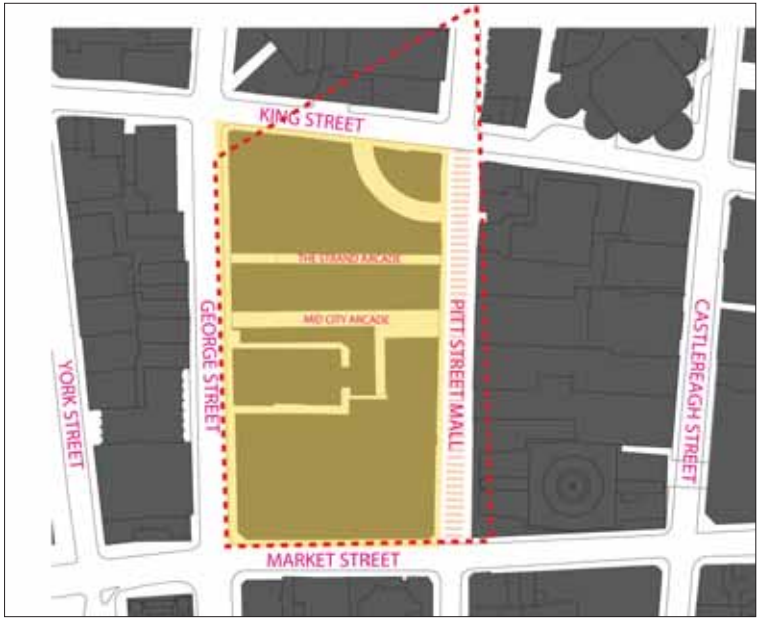


Figure Ground of Pitt Street Mall, Sydney

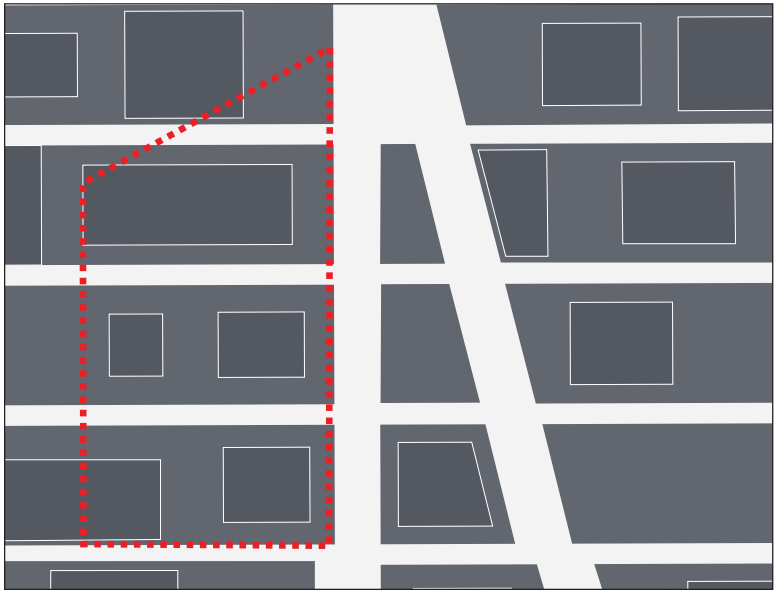


Figure Ground of Midtown, New York

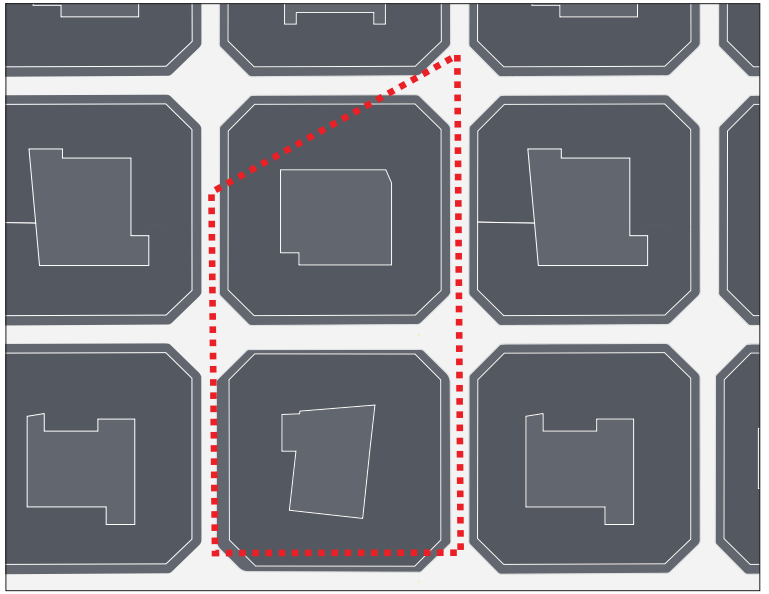


Figure Ground of Barcelona

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Barangaroo Opportunities

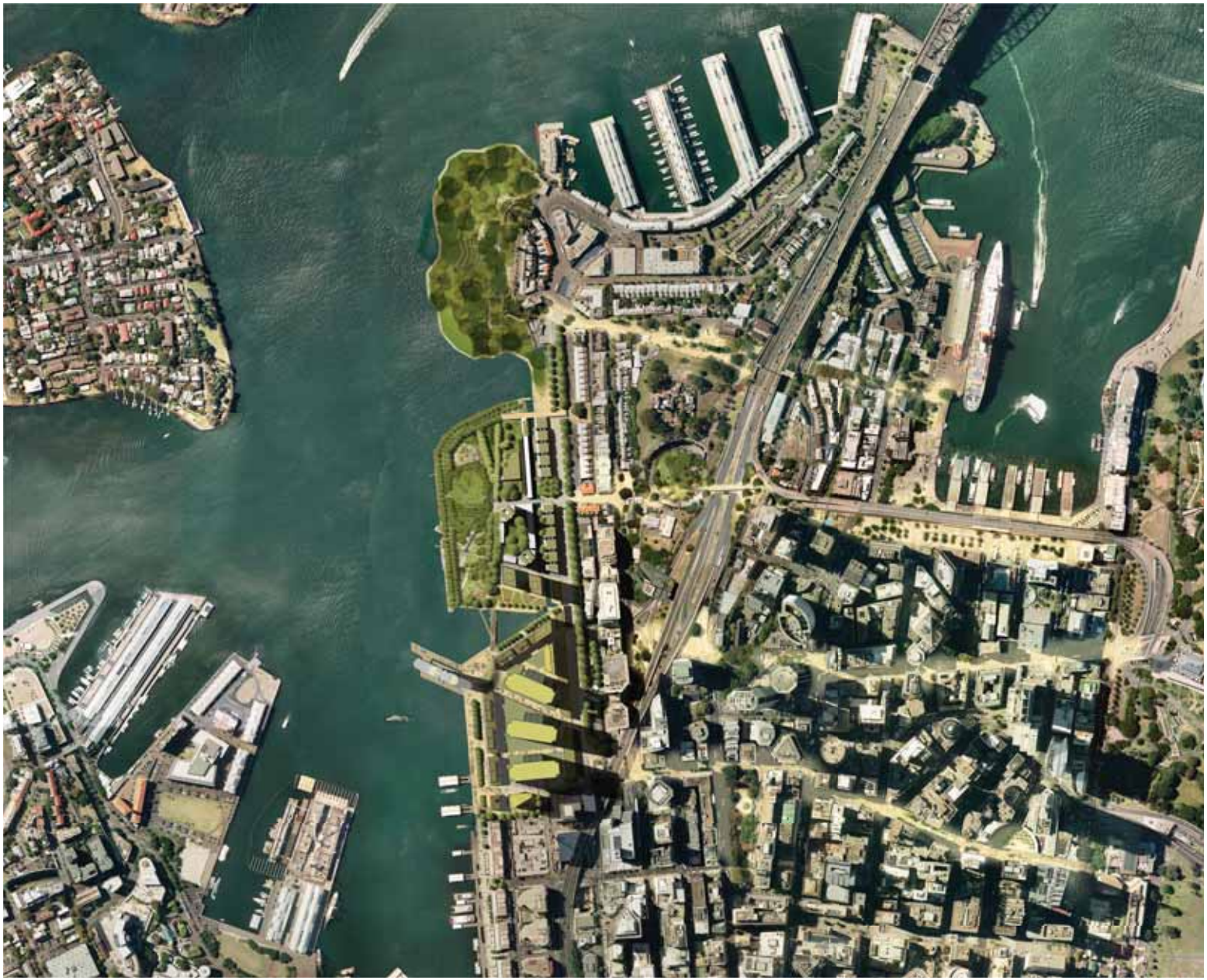
To form an integrated extension of Sydney's commercial district that will attract major international financial and professional services organisations to support the city's growth, with world class buildings designed to respect and respond to the heights, density and morphology of buildings in the rest of the CBD.

In order for the benefits of the redevelopment of Barangaroo to be fully realised, it is essential that Barangaroo South forms an integrated part of the existing CBD rather than a stand alone development. This requires that the new buildings are connected with the rest of the city, which can be achieved through clear pedestrian and vehicular connectivity. However the buildings at Barangaroo South provide an opportunity to create a new but complementary identity for the western edge of the city. The buildings can offer design and dimensions that will not only attract major organisations and support the growth of the city, but will also create new visual interest in the City skyline.

The design intent is to build fewer, but larger commercial towers at Barangaroo South that respond to the site and its location adjacent to the CBD. The towers have an east to west orientation and are placed in a fan arrangement to provide a better outcome for solar penetration, view corridors and shading. All proposed towers within Barangaroo South remain within the established heights of the core buildings within the CBD.

The proposed increase in GFA better supports the City's continued growth. Independent research data from BIS Shrapnel forecasts demand for an additional 720,000 sqm of commercial office space in Sydney over the next decade.

The increased GFA at Barangaroo South within the Approved Concept Plan only meets around 45% of this forecasted demand. Maximising the Barangaroo South opportunity to address as much of this forecast demand as possible reduces the amount of new space that will have to come from increasing building density elsewhere within the city or from areas adjacent to the CBD, which is a less sustainable alternative. If this demand is not met, there will be the obvious consequent constraints on the city's future growth.



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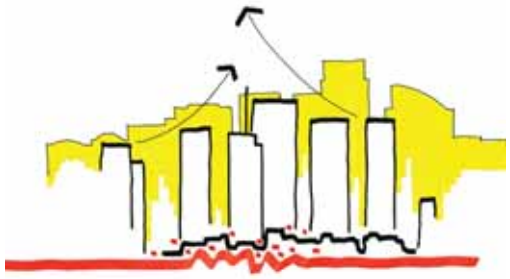
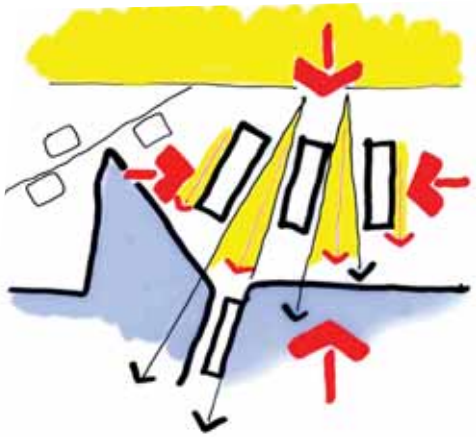
The Proposal - Urban Composition

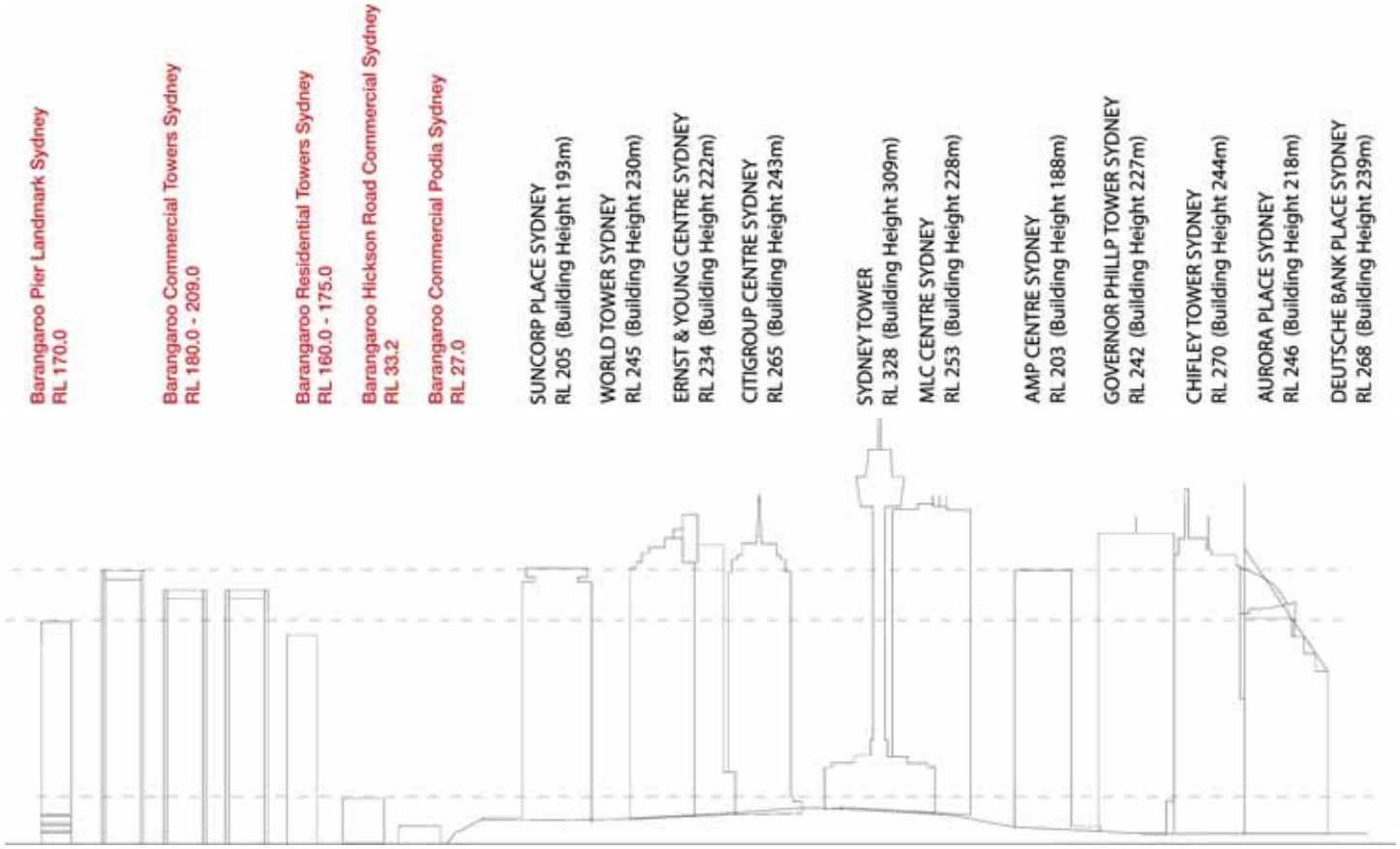
The three commercial buildings have more space between them (on average) than most other parts of the Sydney CBD that contain large buildings (eg, Aurora Place, Governors Phillip and Macquarie Towers, Chifley Tower and Deutsche Bank). In many parts of the city existing older buildings form “walls” of buildings that block views and sunlight (eg, York Street from 2 pm has virtually no sun reaching its pavements).

The arrangement of the buildings at Barangaroo South provides more transparency than many existing urban clusters in the city, with better local and long-distance view sharing and a greater sense of the sky coming to the ground.

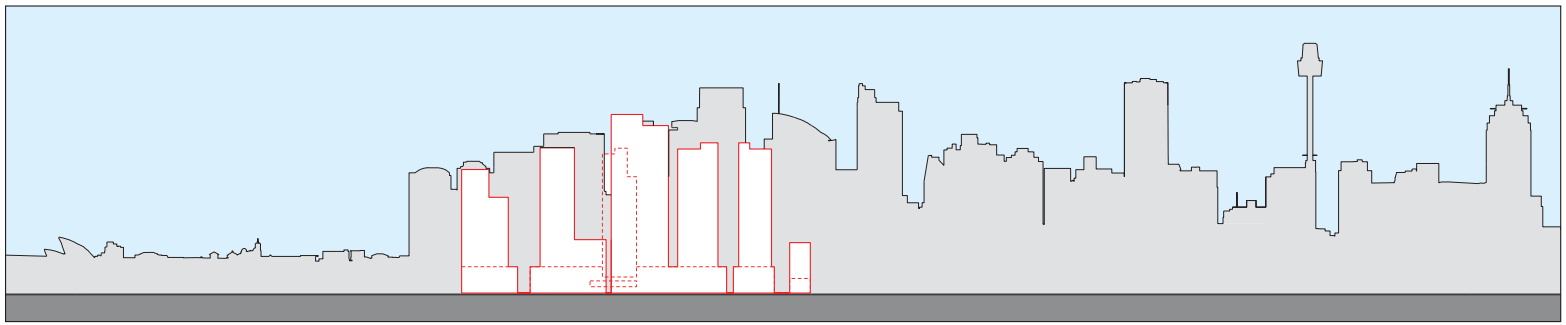
The proposed towers at Barangaroo South are not tall by world standards and the tallest permissible within the CPA would not feature in a list of the top five towers in the CBD.







Height comparison Sydney



Master Plan profile no higher than existing skyline

Note: Images are illustrative depictions of design concepts only

Financial services sector in NSW

New South Wales (NSW) is the most populous state in Australia. The NSW economy produced AUD 392 billion in 2009–2010 or about 32% of Australia's GDP. This figure is one-third larger than that of the second-largest state in the country, which is Victoria. The Sydney metropolitan area alone is estimated to account for almost one quarter of Australia's GDP.

The importance of the Finance and Insurance (F&I) sector to Sydney and the NSW economy has increased over the past decade. The sector has one of the highest growth rates in NSW and increased its share of gross output from 9.7% during 1998–1999 to 14.1% during 2008–2009.

The space requirements of the businesses within the F&I sector also continue to evolve, reflecting globalisation and consolidation within the sector. In addition to the larger floor plates that these international financial institutions require, tenants now consider a range of additional factors when reviewing their accommodation needs. These include building location and accessibility, design efficiencies and flexibility, environmental sustainability as well as how the office format supports staff interaction and corporate culture.

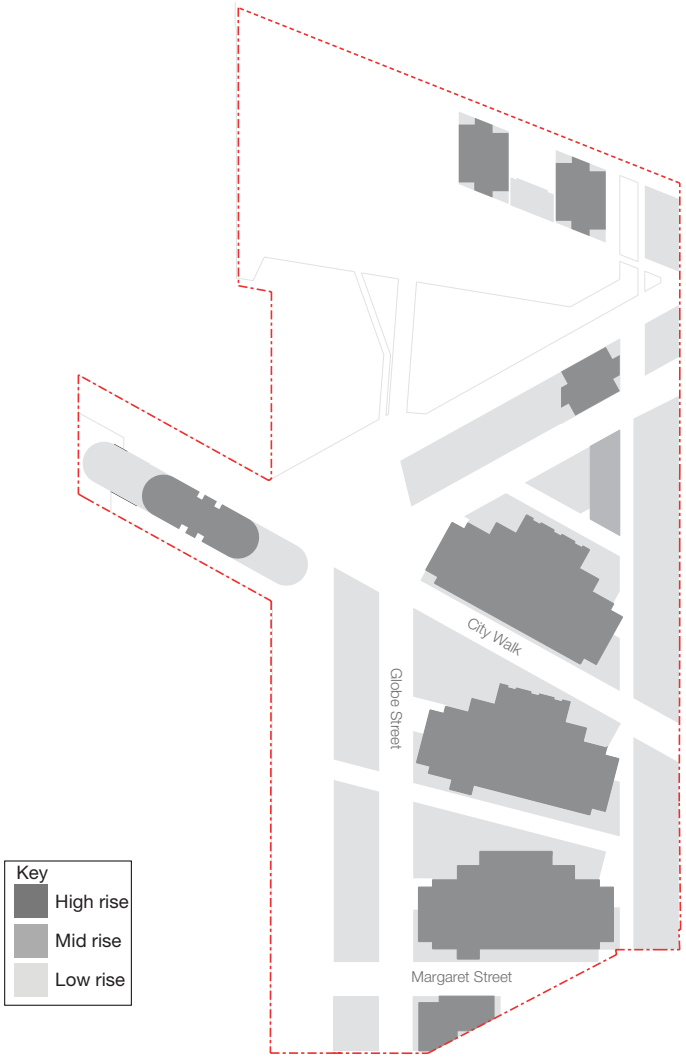
Barangaroo offers a unique opportunity to design and provide buildings that meet these tenant demands and increase Sydney's competitiveness as a South East Asian financial and professional services hub.

A Location that provides clustering benefits

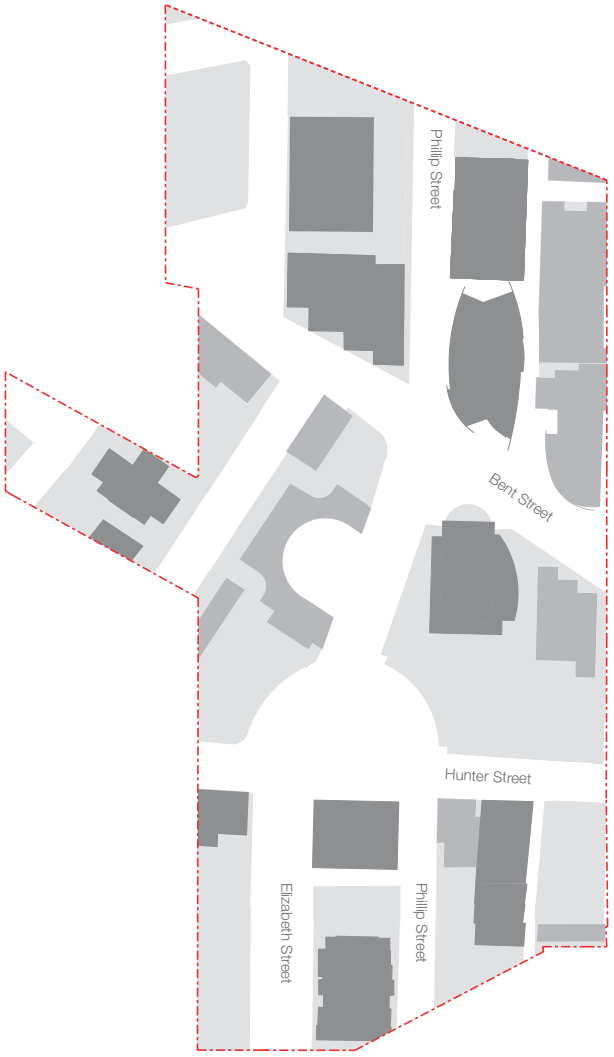
The NSW and Commonwealth Governments continue to promote Sydney as Australia's financial centre and as a major regional financial services hub. The Sydney CBD and, specifically, its Western Corridor, already includes a cluster of F&I businesses. Barangaroo will add to this cluster, with large floor plate buildings that accommodate the requirements of global F&I businesses.

The economic benefits of business clusters are well established. They provide comparative advantage for a city, country or region and benefits both the local economy and the firms within the cluster. These benefits include: increased innovation through best practice and technology spill-over; a greater number of secondary support businesses with increased competition between suppliers; and, access to a larger pool of experienced and qualified potential employees.

The development of Barangaroo provides the opportunity to add to the F&I cluster on Sydney's western edge and enhance its global competitiveness as a South East Asian financial and professional services hub. Moreover, it will deliver direct and indirect benefits to the state and national economy.



Proposed Sydney CBD West



Proposed Sydney CBD East

Note: Images are illustrative depictions of design concepts only

Reducing the Elevational Mass

Large floor plate buildings of 2,000+ m2 requires a proportional response in terms of building height and articulation. To mitigate the perceived facade length of the office towers the floor plates have been revised from 25x90m to 30x85.5m, with corner redents introduced to accentuate verticality.

The visual effect is one of reduced elevational mass. By introducing architectural elements such as “prows” to the east and west ends of these reduced floor plates, the facade will appear shorter.

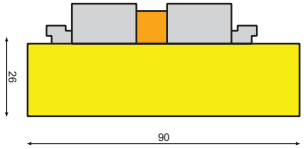
The placement of the external lift cores in the centre of the north facing facade and the introduction of vertical villages to both the north and south elevations, adds articulation and provides for the use of different materials. This increases visual variety and mitigates the elevational mass of these longer facades.

Vertical mass is also reduced at ground level by three and four storey podiums and further broken up by horizontal articulation by the introduction of two plant levels at the 17th and 30th floors, which are inset from the main façade and provide space for green planting.

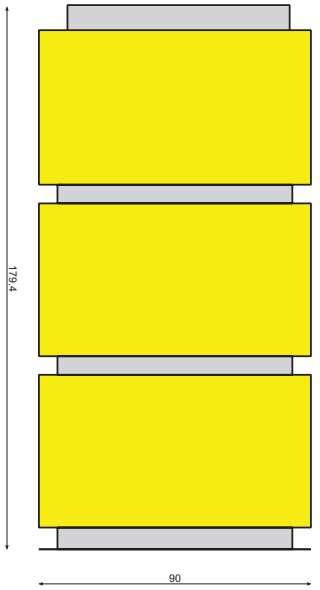
Whereas the 30m width may exceed the stipulated width, the visual effect is one of greater perceived verticality by introducing “bay windows” to the bulk of the floorplate which has been reduced, enabling the floor to be read as 73.5m with architectural expression, a device also used at the Grosvenor, which has a similar length of 80m.

Furthermore, a setback has been introduced at the corners of the commercial towers therefore the maximum full floorplate length will not be more than 73.5m in one plane.

Previous Proposal

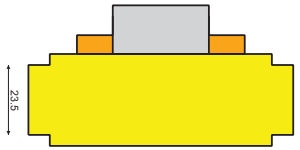


Tower Plan

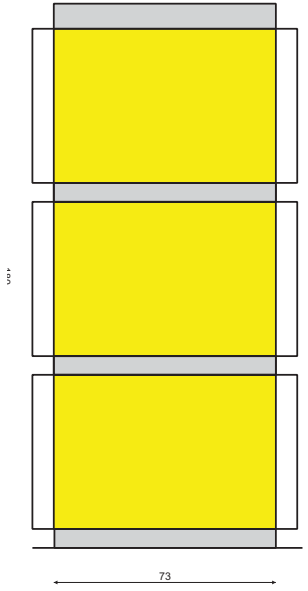


Tower south elevation

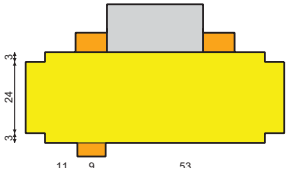
Amended Proposal



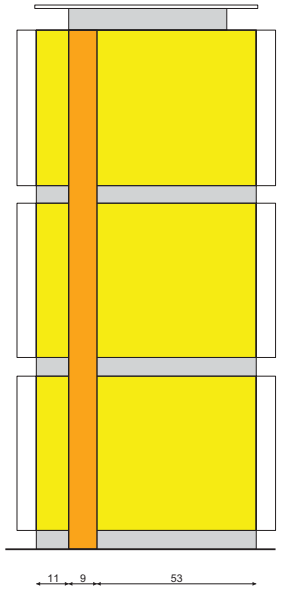
Tower Plan



Tower south elevation - with corner redents



Tower Plan



Tower south elevation - with ‘vertical villages’

Note: Images are illustrative depictions of design concepts only

Office Flexible Space Analysis

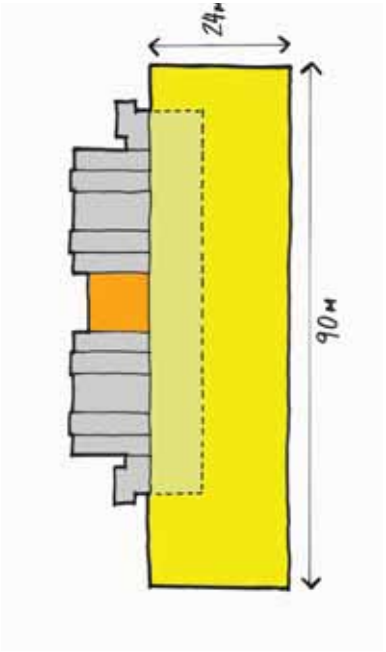
The shape, size and layout of a building's floor plate impacts occupier efficiencies.

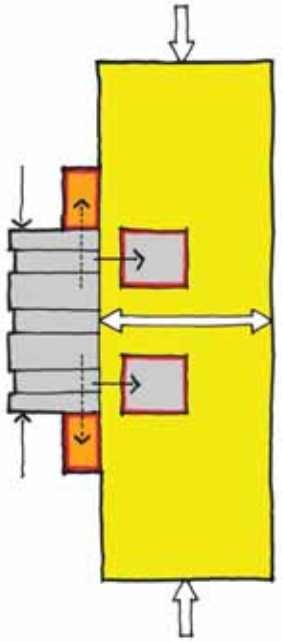
Financial services tenants are seeking offices that provide a minimum of 2,000 sqm floor plates, with minimal intrusions in terms of columns and core areas. A rectangular design with a side core and column free floors is considered to be optimal for the following reasons:

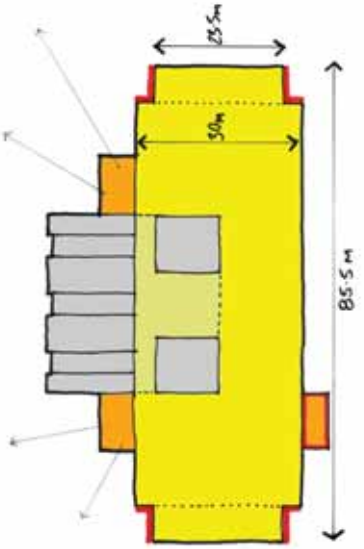
- It encourages a collaborative workplace that enables stronger relationships between specialist businesses;
- It allows for greater connections between team members;
- It provides flexibility in accommodating project space; and,
- It is adaptable to changing space requirements.

Interaction is further enhanced by the centralisation of gathering points such as breakout lounges, kitchens and meeting rooms, and by a more efficient balance between horizontal and vertical connectivity.

The preference shown by larger tenants for floor plates of 2,000 sqm and above is highlighted by the breakdown of the Sydney CBD vacancy rate. The total market vacancy in 2010 for all building grades was 7.9%, but for prime buildings with floor plates up to 2,000 sqm, the vacancy rate was up to 4.9%. This reduces to just 0.3% for buildings with average floor plates in excess of 2,000 sqm.







1. Concept Plan Amendment (Mod 4)

Defined Core and defined floor space

Open floorplate

Thin building profile

2. Design Development

Compact lift core to center of Northern facade

Move Vertical Villages to gain better aspect

Reduce overall length

Increase Width

3. Prefered Project Report

Improved internal environment

Increased articulation to reduce percieved bulk

Compact core

Prime vertical village aspect

Note: Images are illustrative depictions of design concepts only

Building Orientation and Bulk

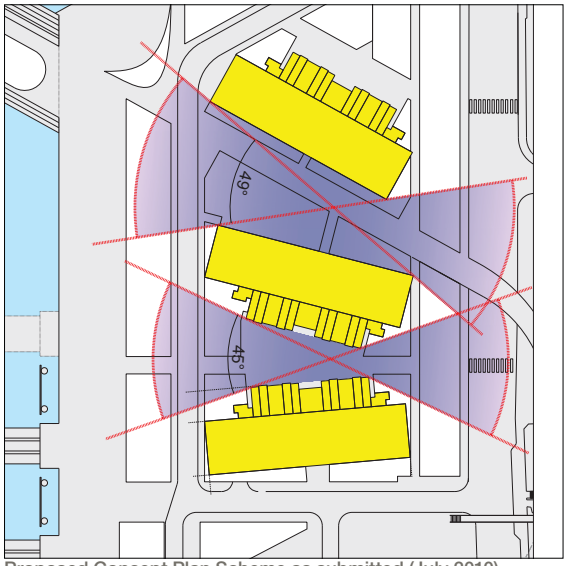
The east west orientation of the three commercial towers at Barangaroo South aligns the slender elevations with the city and the harbour views. These elevations are further reduced in width by the use of corner redents, which introduce narrower “prows” on each facade and give the perception of reduced bulk.

The use of architectural components and elements such as prows and corner redents will also ensure the integration of the buildings into the western city skyline.

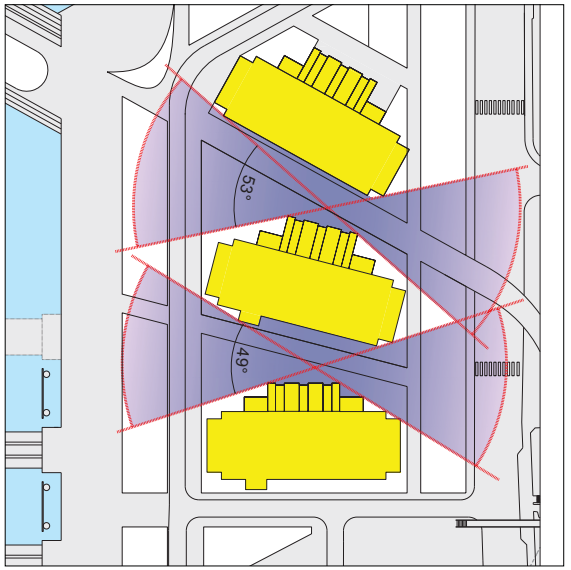
In addition, the placement of the three buildings in a fan arrangement optimises solar access and view-sharing both from within and between the buildings. This effect has been further improved by the repositioning of the external structures on the middle tower to its north elevation, creating more equal view sharing and solar penetration between each of these towers.

Illustration of a possible outcome if Project Applications are submitted for the Hotel at RL170, C3 at RL209, C4 at RL180 and C5 at RL160

Illustration of a possible outcome if Project Applications are submitted for the Hotel at RL170, C3 at RL209, C4 at RL180 and C5 at RL180 (July 2010)



Proposed Concept Plan Scheme as submitted (July 2010) (minimum 18m)



Current Proposed Concept Plan Scheme (minimum 20m)

Note: Images are illustrative depictions of design concepts only

Building Orientation and Bulk

Other design modifications that have been implemented to address perceived bulk include:

- a reduction in the length of the buildings from 90m to 85.5m,

- the concentration of the lift cores in the centre of each building, giving them a more compacted appearance,

- the addition of articulated components to the north and south elevations to add visual variety to the built form and to modulate and reduce the appearance of building mass,

- The extension of building podiums to better frame the areas of public realm and to enhance the human scale environment at ground level.

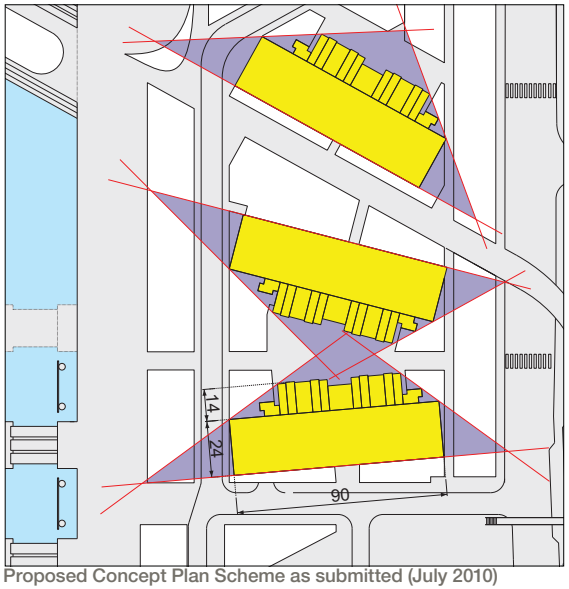
These design moves, together with the use of carefully selected facade materials allied to specific architectural components, will all contribute to reducing apparent building mass and add human scale to the buildings.

Within the parameters of the CPA, opportunities exist for additional modulation of building heights within the proposed block envelopes. These opportunities continue to be considered and explored, which will provide further benefits for visual bulk.

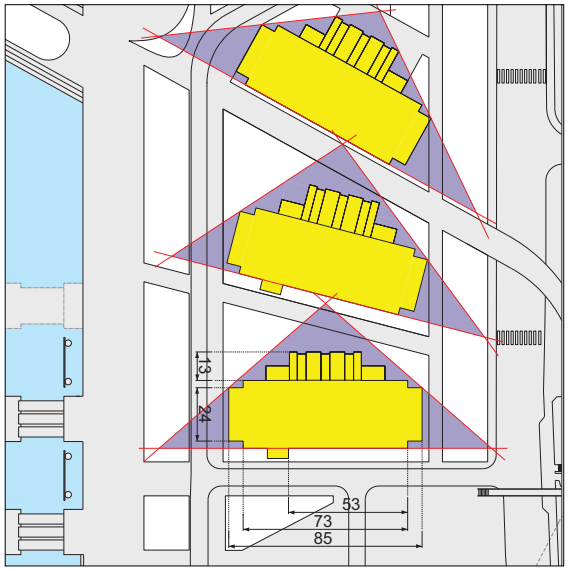
Illustration of a possible outcome if Project Applications are submitted for the Hotel at RL170, C3 at RL209, C4 at RL180 and C5 at RL160

Note: Images are illustrative depictions of design concepts only

Illustration of a possible outcome if Project Applications are submitted for the Hotel at RL170, C3 at RL209, C4 at RL180 and C5 at RL180 (July 2010)



Proposed Concept Plan Scheme as submitted (July 2010)
(minimum 18m)



Current Proposed Concept Plan Scheme (minimum 20m)

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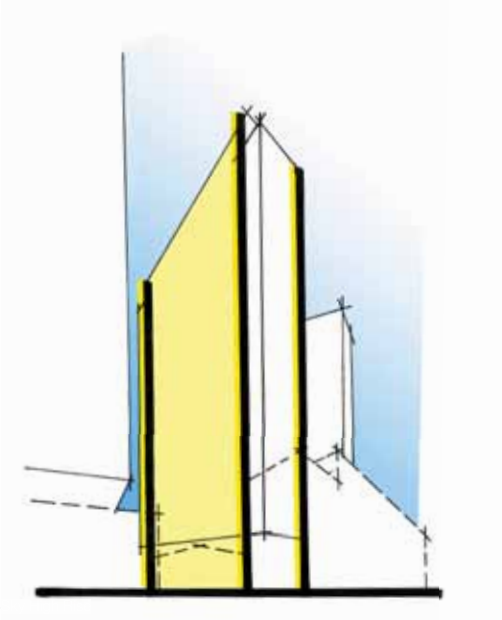
Design Principles

One consequence of the increasing demand for prime office space is the need for taller and/or larger footprint buildings – increasingly both. These buildings have the potential for increased visual impact due to their greater mass and bulk, when viewed from surrounding areas.

The larger commercial buildings at Barangaroo South have been carefully considered by the design team, resulting in a suite of design strategies and building features that have been developed and applied to the buildings to ameliorate these visual impacts.

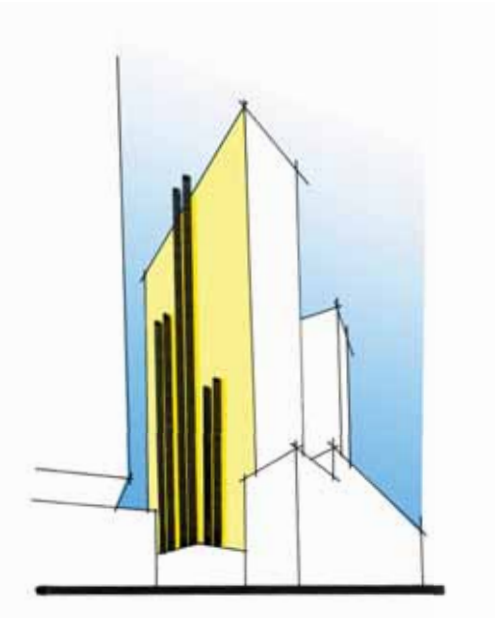
Among the key principles for towers arrangement are:

- World leading sustainable design
- Simple flexible office floorplates of approximately 2,000m² NLA
- Communal break-out spaces or 'villages' that encourage communication and social exchange
- Good access to daylight – generally no work station should be located further than 12-15 metres from the external wall
- High performance façades and building services that offer a comfortable and sustainable environment
- Maximisation of openness and views out from the building throughout its height
- Human scale at ground level and the way the building presents itself to users, visitors and passers-by
- Legibility of lift elements of the tower and a clear definition between served and servant elements of the building. A structural solution which communicates the way the building was designed and built
- A building that adds to the Sydney skyline
- Flexibility of working environment by provision of large office floorplates in combination with smaller, more task-focused and specially designed village areas
- Maintain views to and from the CBD to the water
- Wind mitigation



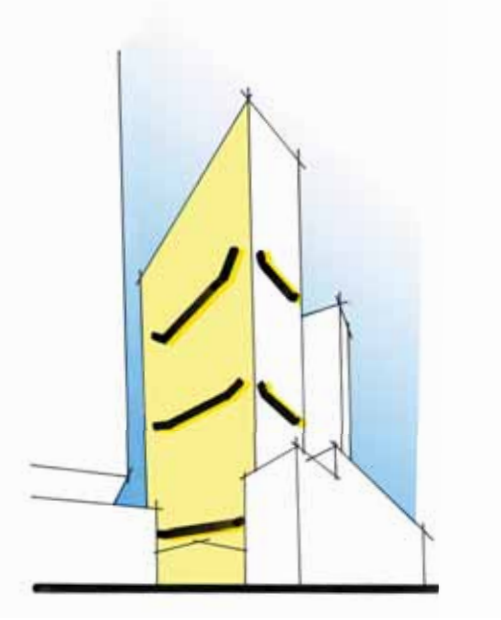
Visible connection to ground plane

Key structural elements of the tower have to visibly connect with the ground plane to provide drama and legibility of the built form



Legible distinction between key 'served' and 'servant' elements of the building

Expressed vertical transportation cores and lift lobbies to be in contrast to the rest of the building.



Horizontal articulation / breakdown of scale

Façades to be broken down horizontally to achieve appropriate scale and skyline resolution

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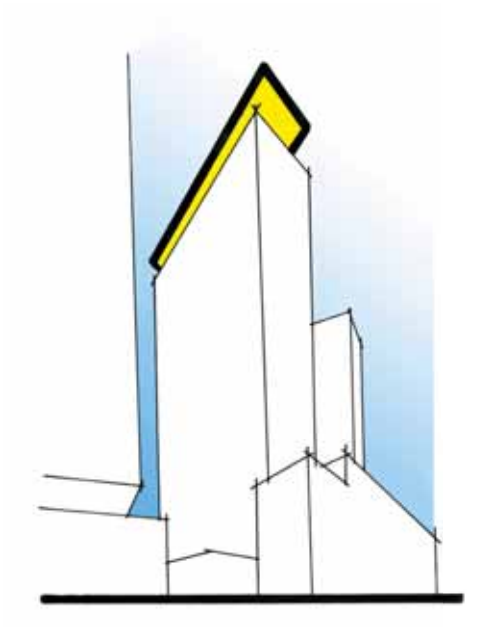
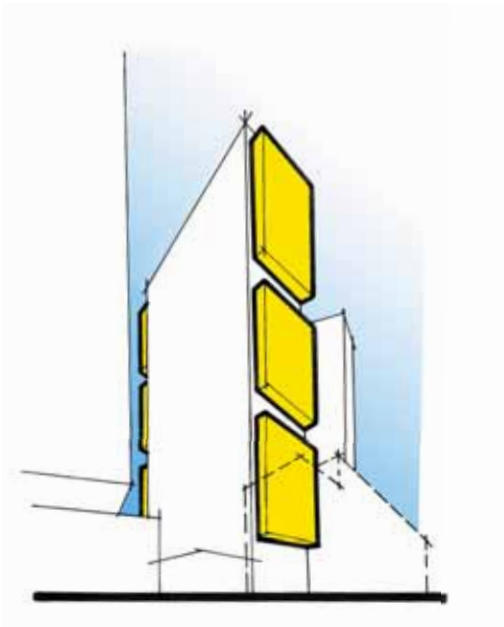


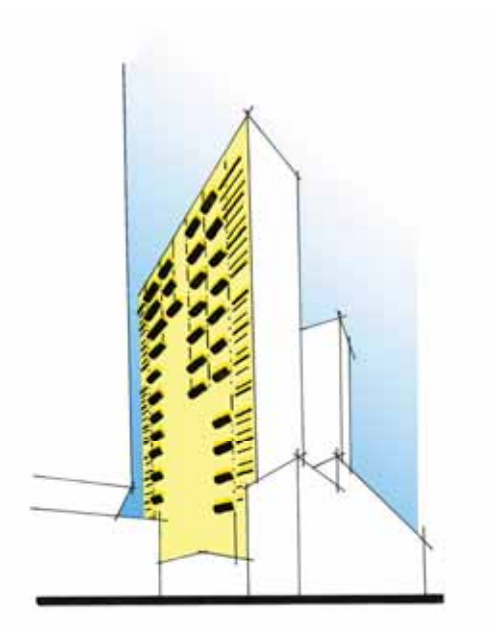
Expression of the tower top

Articulated top of the building to provide expression to the tower's appearance against the skyline



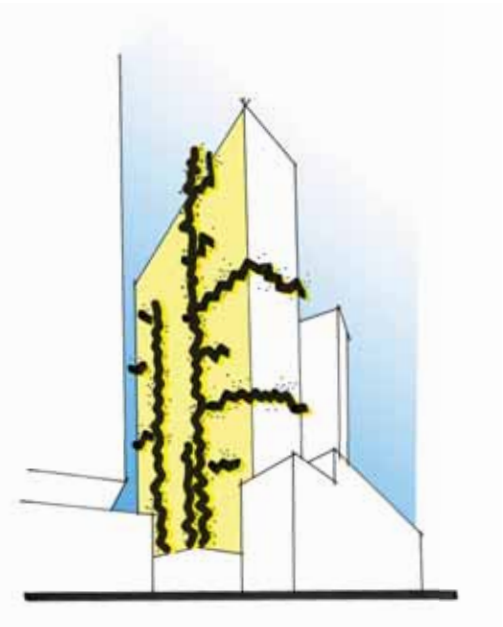
Building prows

East and west sides of the tower mass have slender 'prows' that project forward the core. These slim ends reinforce vertical expression of the tower when viewed from both the city and the water and break the scale of the long north and south elevations



Layering and visual depth

Elements of the façade construction are arranged in layers to achieve visual depth and appropriate level of detail



Visible environmental strategies

Ensure that green planting, solar shading, photovoltaic panels and other sustainable strategies are clearly articulated in the building's appearance

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Building Scale

The design of the towers has evolved to create a cluster that is expressive and articulate at the scale of the city, the scale of the building, and the scale of a person.

At city scale the massing of the towers has been considered in relation to their function, their CBD location and position on the city skyline.

At building scale the main design elements of the proposed towers are more clearly articulated to make the operational and sustainable aspects of the buildings legible.

At human scale the elements that people see and touch are being designed to make them usable and understandable, and to make the working environment interesting, comfortable and human.

At all scales the response to sustainability and environmental issues has been a major driver of the design, as has the desire to make Barangaroo a lively vibrant area that connects the western harbour with the rest of Sydney.

City Scale

Building Scale

Human Scale

Early design development model showing principles of building scale

Scheme Concept and Tower Components

Articulating the towers produces a layering so that the elements of the building can be “read”. Most CBD buildings are draped with a skin of monotonous glazed curtain walling bringing little relief to their bulk and mass.

One of the enduring values of the Gothic cathedral is the contrast between a powerful armature and layers of elaboration, which counteract the sheer mass/bulk, not least through the effects of light and shade.

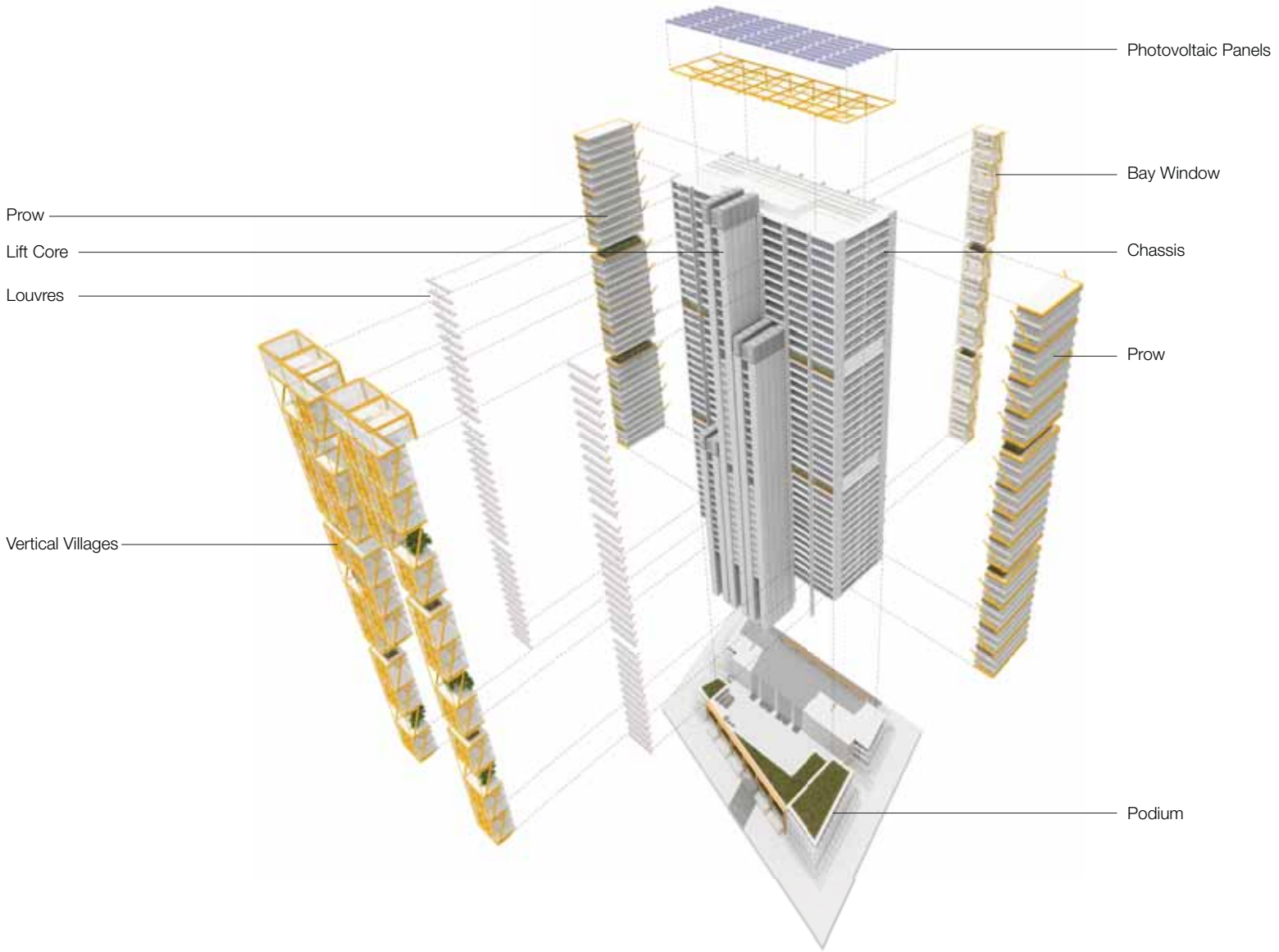
At Barangaroo South the proposed main elements of the towers are clearly articulated: the tower and its structure, the lift cores and the podium. At a smaller scale additional elements are added to the basic ‘chassis’ of the building: the photovoltaic panels, the vertical villages, the prows and the solar shading.

Variation in the nature of the add-on elements will allow each individual building to respond to the particularities of its size, location, orientation and brief. Each building will have a unique identity but with a ‘sibling’ relationship to its neighbour.

The design of the towers has evolved to allow a clear articulation of the tower along with friendly, human scale pedestrian spaces around and through the building.

At the east and west ends, where the tower has its narrow dimension, the visible structure is brought down to ground level. This helps make the overall composition of the building legible at ground level where the main entrances to the towers are located, clearly linking the lobby to the tower above and giving the building an address.

Along the longer north and south sides of the building, and wrapping around the four corners, a human scale podium extends beyond the footprint of the towers to define the surrounding streets. The podiums containstreet front retail that activates the base of the buildings and forms an appropriate frame for the streets.



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Conclusion

Barangaroo is an unparalleled opportunity to create a lively, well-designed, and successful mixed-use district that is sustainable and vibrant in character, global in importance and an extension of the existing CBD area in scale and form.

It is a unique and rare opportunity to extend the CBD to the west on a brownfield site that can readily accommodate the large floor plate offices that tenants are increasingly requiring and is integral to the ongoing viability and success of Sydney as a global city and key financial centre.

Previous masterplans for Barangaroo have envisaged buildings with more modest floor plates, based on the requirements and commercial models of previous decades. This has been addressed in the CPA through the urban design standards for the three commercial towers that will allow them to meet market demand and support the city's reputation as a global business hub.

The "fan" form of the buildings creates a strong relationship between the occupiers of all of the buildings and their principal views, as well as establishing a welcoming, open relationship to the west. Urban design elements have been incorporated throughout to reduce the visual mass and scale of these prime office buildings.

The towers assist in completing the strong city framework of tall buildings, at Circular Quay and adjacent to the Botanical Gardens. Together the towers will establish a rising form from south to north and a strong edge to the open water beyond. This cluster of buildings, which are similar in height to existing tall CBD buildings, completes the city's north-western limit, provides for world class buildings of design excellence, and is a catalyst for the wider regeneration of the area in the future.

Barangaroo South will help create a new, vibrant waterfront on the western edge of the CBD. It will showcase Australia's sustainability leadership and strengthen Sydney's economy and its position as a major south-east Asian financial centre. In short, it will help define Sydney as a leading 21st century world city providing for jobs, economic growth and great public places for Sydneysiders, workers and visitors to enjoy.

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