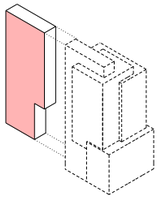
The roof and skyline



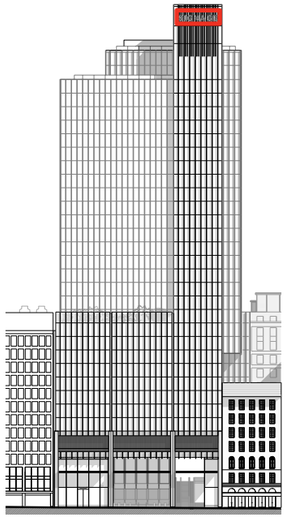
The skyline and silhouette of the building define both the character of the building, but also that of the city in which it sits. The interlocking form of the concept finds ultimate expression in the slim bay that rises from George Street up into the Sydney skyline. This is the fifth compositional element: the Sky-Bay.

Within the city, this simple, elegant component stands in strong relief to the cluttered and disparate surroundings, drawing the eye upwards. At the top a double-height office suite looks over the city – a signature space visible from the eastern CBD – and is topped by a series of filigree fins concealing the prosaic plant, while providing a visual full-stop to the composition.

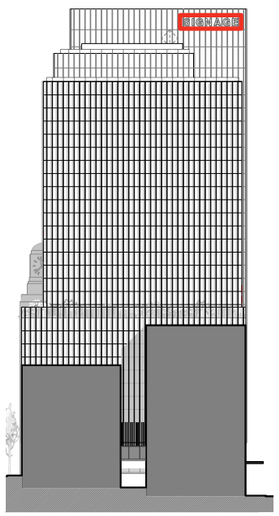
There are four identified locations, one on each of the four elevations, but the final design will commit to only two of these. The signs will sit forward of the filigree plant fins.

All maintenance equipment and plant will be housed wholly within the plant enclosures, in order to maintain the clean lines of the interlocking volumes.

Proposed building signage locations

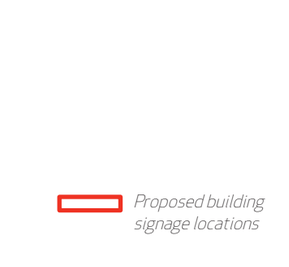


George Street (east) elevation



Wynyard Lane (south) elevation

Carrington St (west) elevation



Margaret St (north) elevation

Model photograph
From Hunter Street facing west

Illustrative view:
Elevated view west on Hunter Street

Architectural expression

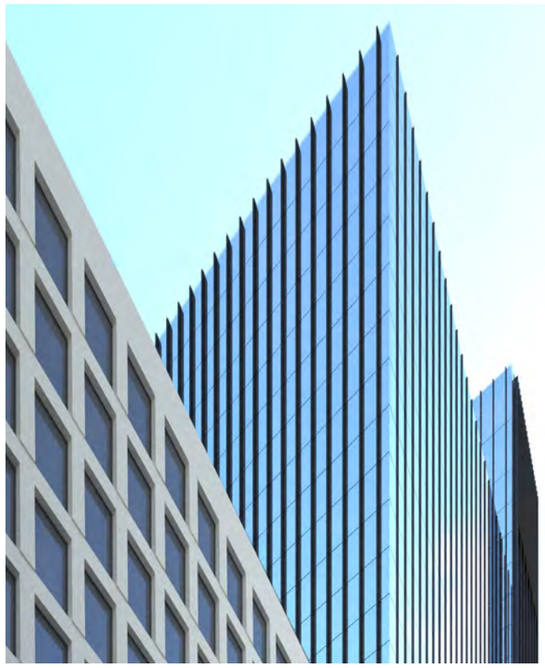
The earlier building-by-building study of the surrounding streets uncovered an exciting mix of architectural styles and treatments. Grounding this variety are the historic structures, often large in scale, aspiration and architectural expression, if not size. Although often steel frames, these early buildings are frequently, though not exclusively, clad in the load-bearing masonry facades in local sandstone and enjoy the rich details and moulding of the period. Due to the porosity and friability of the sandstone, a stronger material such as granite or bronze was used at the base. The lasting impression is one of warmth, both from the play of light across the facades and the materiality.

Office tower – high level

At high level, the proposals utilise bronze anodised aluminium in projecting fins forward to clear double-glazed units. This material changes dramatically in direct sunlight, with the metal appearing to glow as it holds rather than reflects the light. At these times, the colour evokes the rich tones and seams of local sandstone.

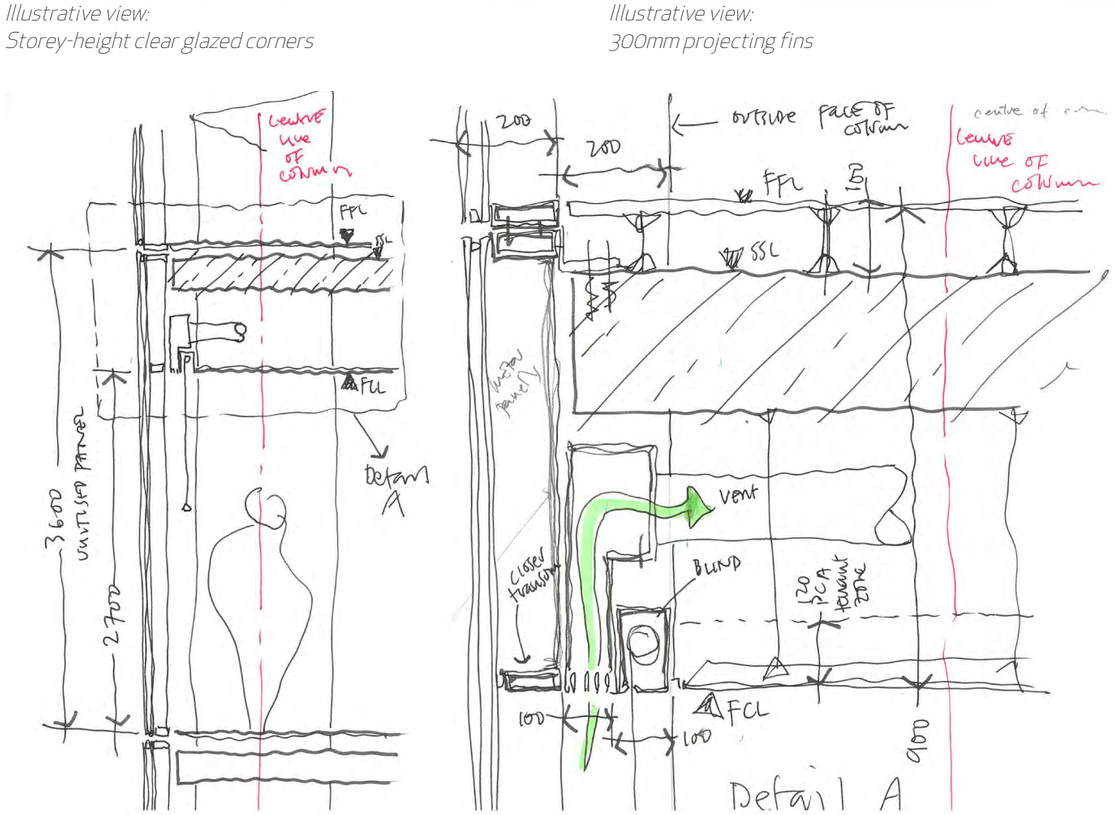
The office tower will be clad with storey-height clear-glazed double-glazed units, with vented internal blinds. Externally there is a single glass pane spanning from floor-to-floor that is broken internally into a lower, clear section and an insulated upper area, to conceal blinds, services and structure. The internal roller blinds will have three fixed settings to maintain visual appearance externally.

To the street frontages of George and Carrington Streets, a 300mm fin is utilised to allow the fully-glazed blocks to visually lock into their surroundings as the oblique angles create a warm bronze base. To the north and south, a 100mm fin maintains the sense of a single building, while reducing the visual density of these larger scale higher components. This variation in depth and form allows the building to change character as one moves around the site and as the sun moves.

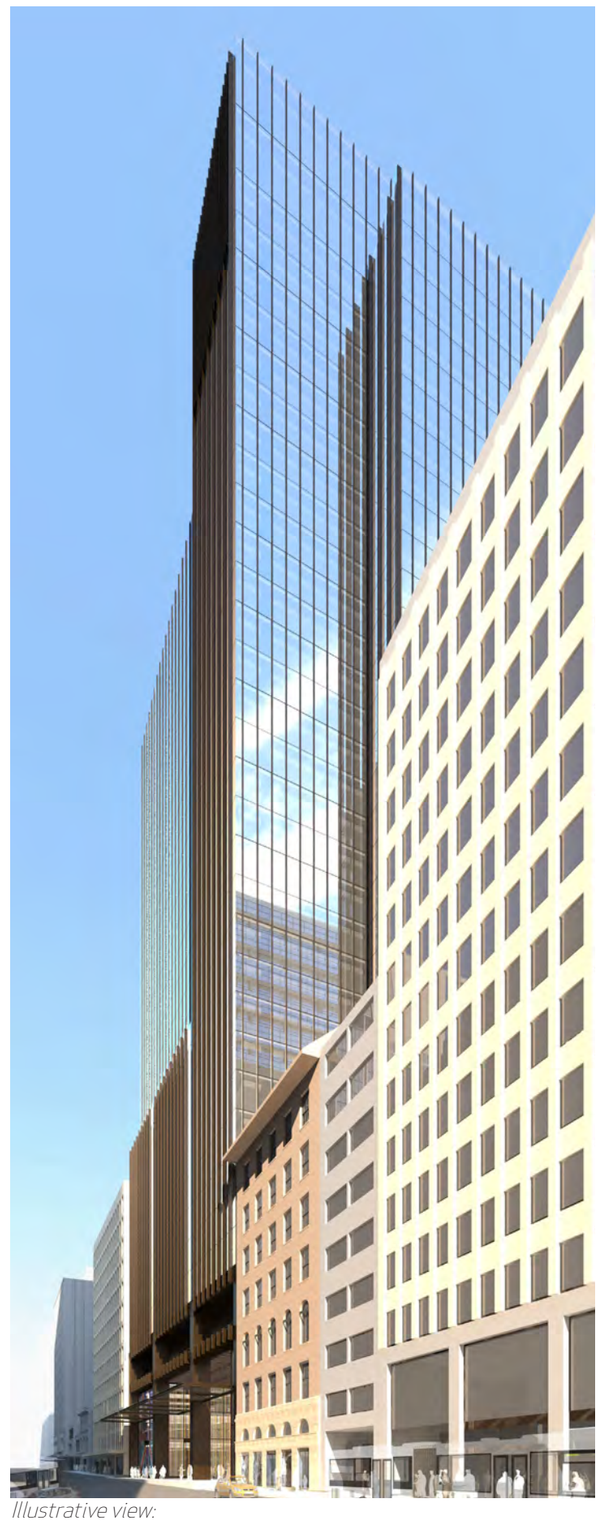


Illustrative view:
Storey-height clear glazed corners

Illustrative view:
300mm projecting fins



Sketch:
Typical office floor facade section



Illustrative view:
Looking south along George Street

The base
The building structure changes at the mezzanine level as the central tower core transfers out, with large mega-columns carrying the gravity loads and the party walls engaged to transfer the lateral loads.

The horizontal expression of the mezzanine level reflects both the unifying nature of this floor and also the direction of load transfer. The 1.50m grid of fins wraps this section and continues through, connecting George and Carrington Streets.

The mega-columns are represented as strong, simple elements, clad in thick sheet metal, with carefully articulated junctions to the glazed bays above. These columns represent a visual break with the finer detailing above to deliberately accentuate their structural purpose, making their role legible to the professional or lay person.

The oblique approach along George Street allows the full depth of these 2m columns to be read. These columns would continue through the entire area, down to the lowest concourse levels and within the office entrance lobbies.

The view from the street
The proposals have been developed by the views from street level and the changing experience of the building on approach, focusing on the helicopter views that are rarely seen.

George Street is experienced almost wholly in oblique views. On the approach from Hunter Street – a relatively long view at the corner – the office floors are at their most open, rising from a firm base at mezzanine level which frames the portal to Wynyard Station. On approach, the viewing angles get tighter and the podium's apparent solidity references the vertical proportions and expression of the surrounding historic buildings.

From Carrington Street, the narrow oblique views express the dramatic interlocking of the building components. This becomes ever more open as one moves back and views the building above the dense tree canopies of Wynyard Park.

These shifting readings allow the tower to present an ever-changing face, acting as a foil to the static mass of many towers.

Illustrative view:
Looking north along George Street frontage

Design development

Material

The initial stage 1 of the competition looked at a range of facade treatments, but unified by a darker black anodised finish. The anodising allows the material to reflect and refract light back. Under the light of Sydney, this effect is magnified.

During Stage II the team was asked to investigate lighter materials. The composition and range of facade treatments was also reduced, which began to simplify the reading and make the components' articulation clearer. A silver anodised finish was selected. While during a strong sunset the western elevation would hold those colours, the resultant building for the rest of the day became bland, with the blocks losing their definition.

The jury concurred with this assessment and suggested that the original darker palette had been more successful.

The proposals utilise a dark anodised finish, eschewing the earlier black of Stage 1, in order that the action of the sun can have maximum impact.

Expression

The vertical expression of Stage II is developed and refined in the submitted proposals. With the benefit of continual and detailed exploration of the street views and action of light in Sydney, the proposals have been tuned to clearly articulate:

1. The interlocking blocks of the composition.
2. The internal arrangements of structure and use.
3. The visibility and changing character of the composition as one moves around the site and as the sun tracks around.

This process has validated the original design principles, but where these had been treated with heavy-handed articulation and edging of the blocks, the new proposals harness the surroundings to create a more effortless, elegant solution.

Stage I

Stage II

Illustrative view from Wynyard Park

Illustrative view:
Carrington Street elevation looking north-east across Wynyard Park

Carrington Street

1. *Office lobby.*
2. *Shuttle lifts.*
3. *Lobby cafe/retail.*
4. *Retail.*
5. *To George Street.*
6. *Reception lounge.*
7. *Lift lobby.*

Station and transport interchange

The new laneway through to George Street is framed by the Carrington Street pavilions, to create an 8m-wide link lined with active frontage. The clear lines of sight instate a strong visual link through the site for the first time and provide access into the transit hall.

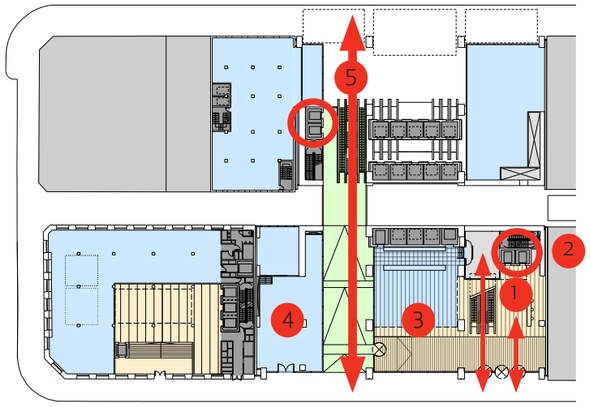
The expression of the office and retail pavilions below the continuous canopy or soffit of the transit increase the legibility of the through route, removing the need for excessive directional signage.

Retail

A pair of 8m-high two-storey pavilions flank the Carrington Street frontage. While they utilise the full height of the space internally, their external expression includes a recessed soffit detail to make them visually subservient to the overarching canopy.

The northern pavilion is wholly retail in nature.

The southern pavilion houses both retail and office lobby functions. The central bay, fronting both the laneway and Carrington Street, houses a cafe at street level with office lounges above. The southern and narrowest bay is the double-height office lobby with escalators and lifts. Thus active frontage and amenity is maximised, while retaining legibility for office visitors.



Carrington Street level

Upper ground level

Illustrative view of Carrington Street frontage

Office lobby

The One Carrington Street office entrance is located to the south of the Carrington Street frontage. It is conceived as a pavilion under the 8m-high canopy that connects Carrington Street to George Street. Three revolving doors mark the entrance.

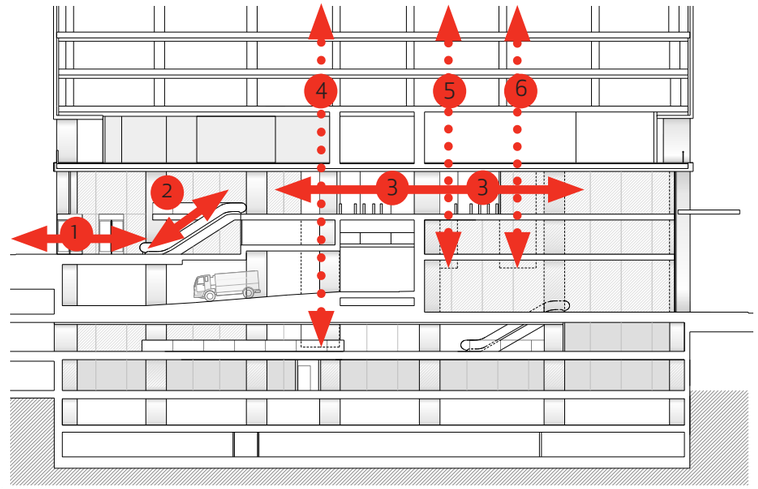
The lobby is split-level, with a visitor reception at street level adjacent to a group of three escalators and two lifts that bring tower users to the elevated upper lobby level.

At ground floor, the frontage is largely given over to cafe and retail functions to maximise street-level activity, while the office lobby extends across the frontage one level up to accommodate the security and tenant functions.

The shuttle lifts and associated stairs also provide direct access down to the parking levels and end-of-trip facilities.

Illustrative view of office lobby

1. *Office entrance lobby.*
2. *Upper ground office lounge.*
3. *Lift lobby.*
4. *High-rise lift group and goods lifts.*
5. *Mid-rise lift group.*
6. *Low-rise lift group.*



West-east section

Illustrative view of Carrington Street frontage

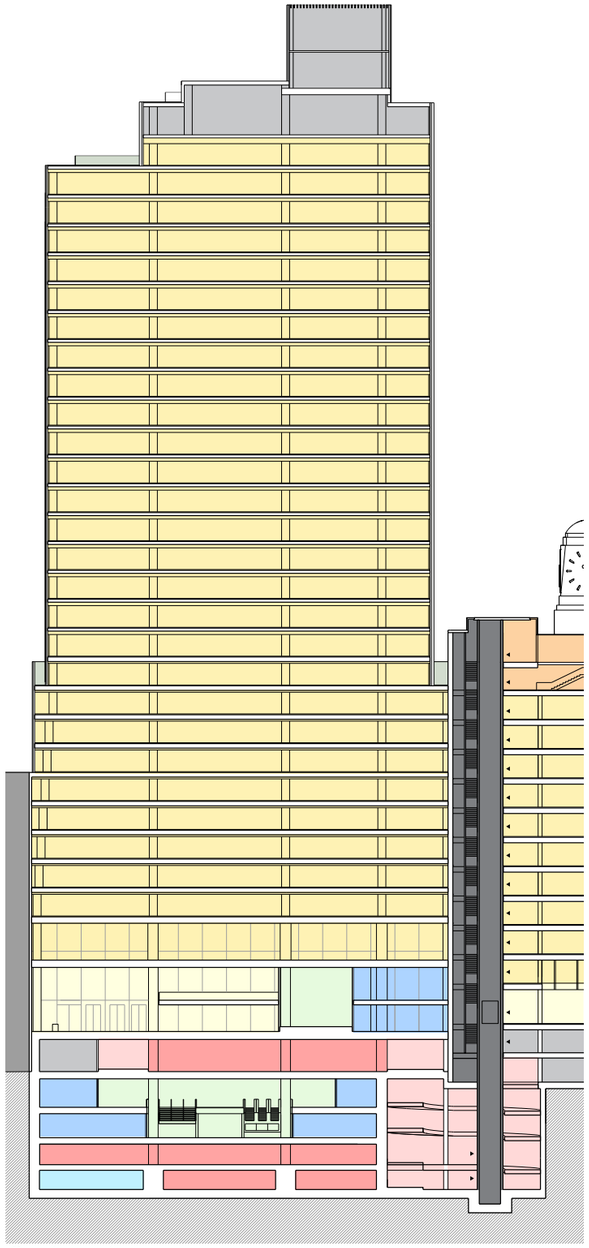
Commercial office tower:
Office floors

Floorplate and core
The floor plans have been set out to provide large, efficient, orthogonal floorplates that are able to evolve and adapt in response to changing requirements.

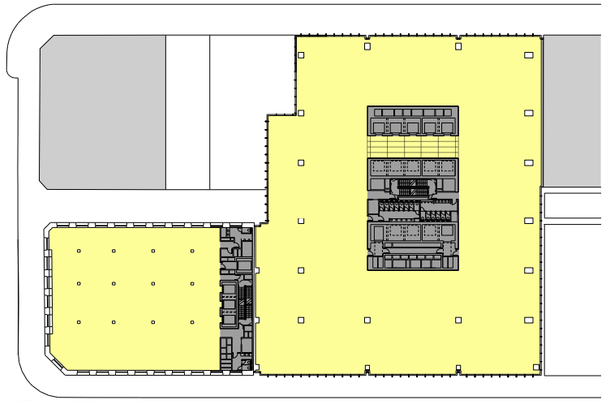
The central core maximises sunlight and daylight into the floor, while providing the flexibility to create inter-connecting atria and stairs around the space. Tenancy splits are easily created within this form and the core can be expanded through 'bolt-ons', to respond to changing tenant demands and requirements.

There are large accessible terraces on levels 4, 9 and 27.

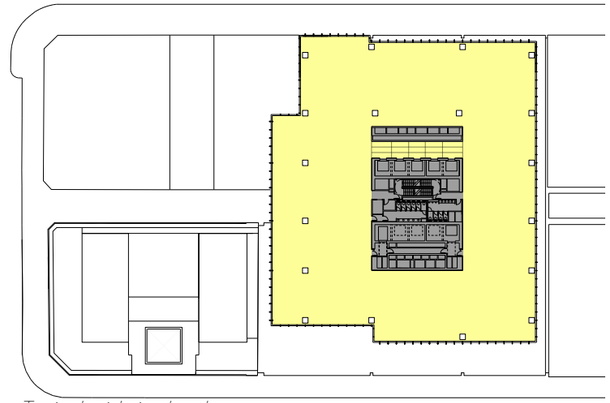
Through internal reconfiguration, it would be possible to create visually and physically contiguous floors between Shell House and the tower of some 90m length – a unique offer in central Sydney.



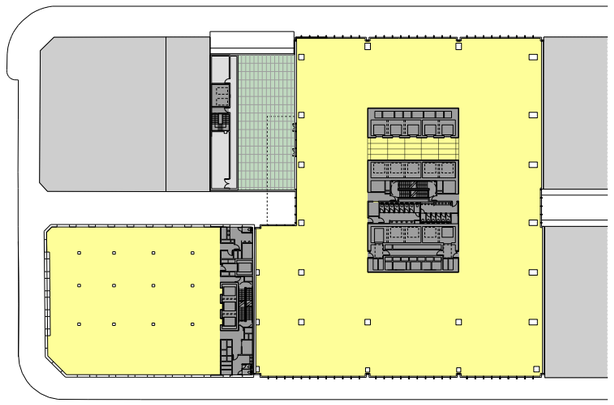
South-north cross-section



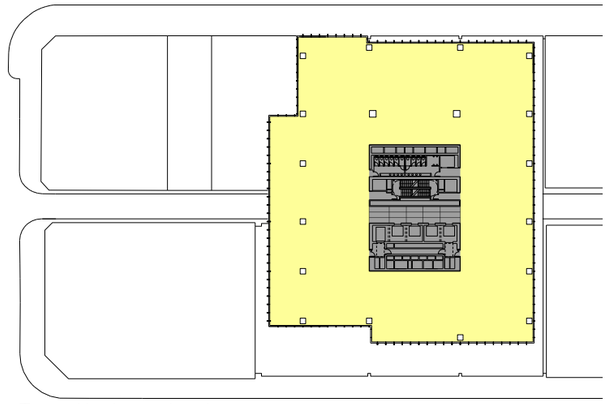
Typical low-rise level



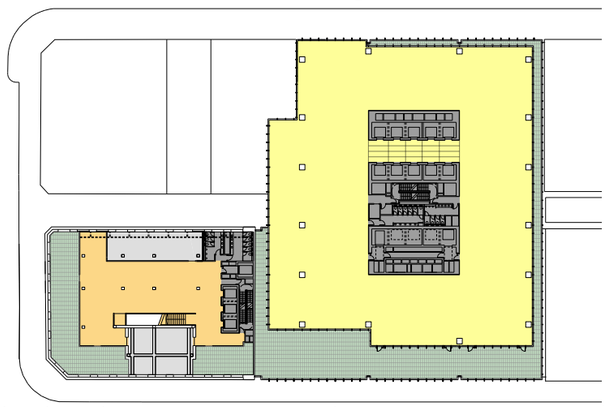
Typical mid-rise level



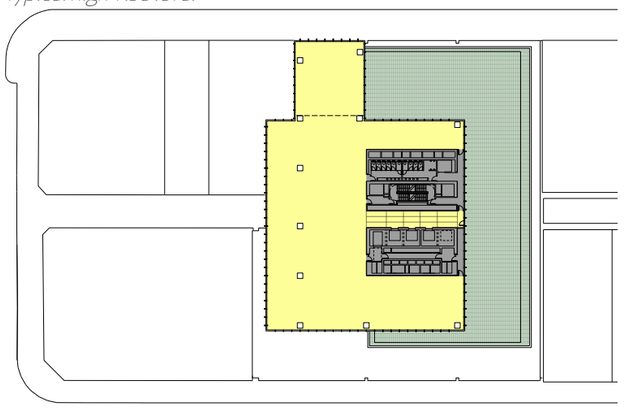
Level 4, with terrace to roof of 285 George Street



Typical high-rise level



Level 9, with terrace to perimeter and opportunity to connect to Shell House roof terraces



Level 27, with roof terrace to perimeter

Interface with office tower

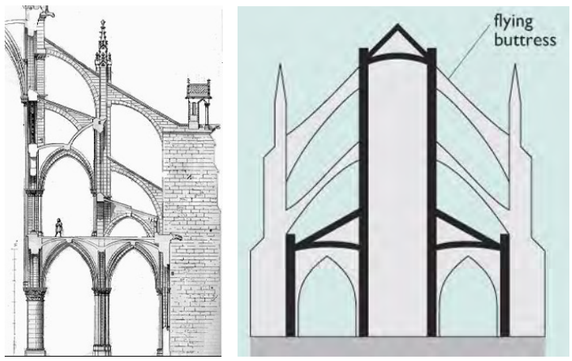
There is the potential for conflict or a disappointing compromise between the office tower above and the transit hall below. This proposal removes this conflict and harnesses the solution, to create a unique sense of place that enriches the experience of the building for all.

The transit hall and station concourse access is arranged through a centrally located, wide and generous direct route from street to the ticket barriers, removing all the barriers to visual or physical movement. The centre of activity is in the heart of the site, with continuous active frontage.

Above, a centrally positioned core is surrounded by flexible office space, maximising daylight and removing deep floorplates. If these were simply overlaid, as in the existing building, then the core would block the transit hall and there would be a route either side.

The proposed solution transfers the lateral loads to the perimeter at the mezzanine levels, leaving only large columns for gravity loads. The structural solution borrows from the Gothic by re-appropriating the flying buttress. Within this grid of structural columns are the suspended lift shafts, contrasting the vertical movement of the office with the parallel linear movements of the commuter.

The lifts are like a theatre's proscenium arch, blurring the line between player and audience. The section at eye level that defines the entrance to the station integrates signage, departure and information boards. The final form and design of these will be developed with TfNSW to ensure a seamless, coordinated passenger experience.



Flying buttress diagrams

Illustrative view of suspended lift core within George Street concourse

Shell House:
Entrance and access

The proposals seek to retain the existing structure as far as is practically possible, and in particular limiting excavation or structural works to the south of Shell House tower.

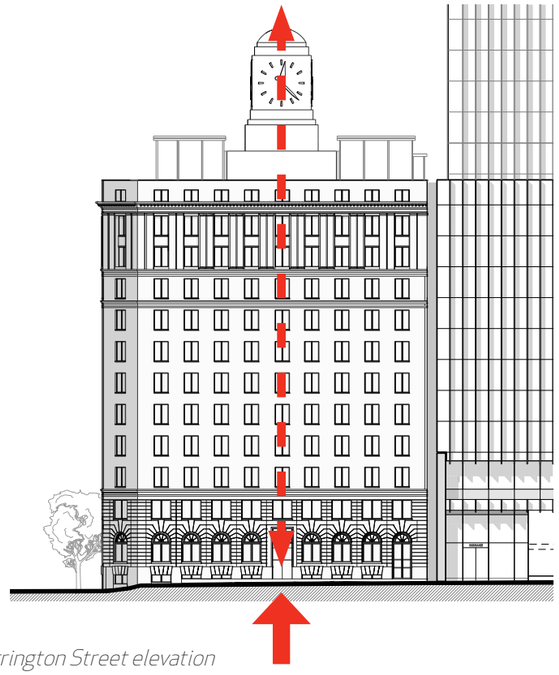
Entrance
The original entrance, centrally located below the clock tower on Carrington Street and currently used as an emergency exit for the hotel, will be reinstated as the building entrance, with generous steps and access lift to the building's raised ground floor.

The existing raised lobby, accessed from the street by a shuttle lift and stairs, will provide access to both the office floors and the potential upper level restaurants and bars. The section of the entrance hall overlooking the park can be used for informal meetings or a cafe area, linked or independent of the main restaurant.

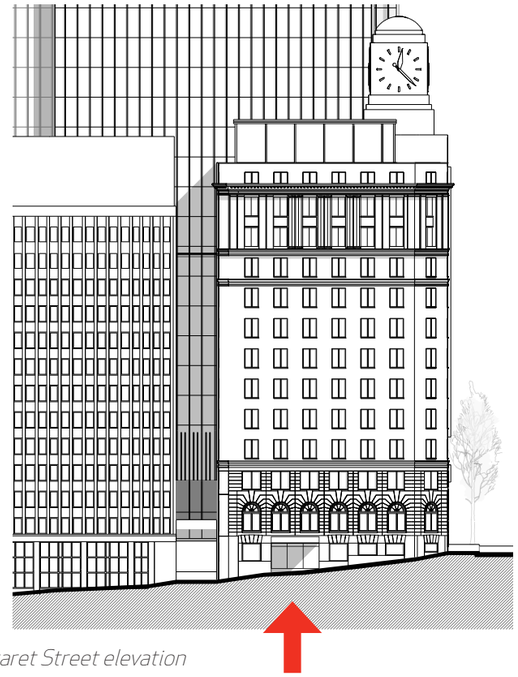
Vehicular access
There is no motorised vehicular access within the external elevation. This allows the Wynyard Lane elevation to be restored to its original proportion and layout.

The existing sub-basement floor below Shell House is utilised for courier parking bays, accessed from the entrance ramps within the tower footprint.

Street level retail
Retail is located both at the raised Carrington Street level and the lower Margaret Street/Wynyard Lane level. These can be stand-alone units, or can be linked into one unit. Soft spots are identified for the tenant, to be located at any stairs or lifts to connect this space.

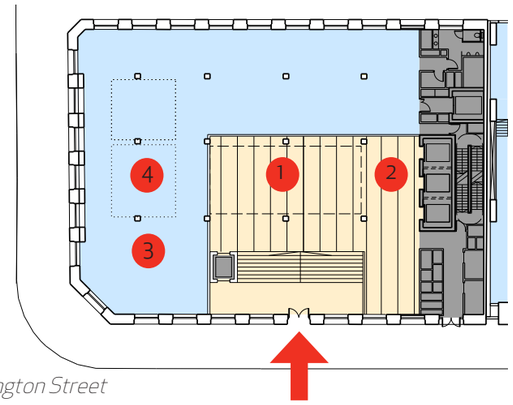


Carrington Street elevation

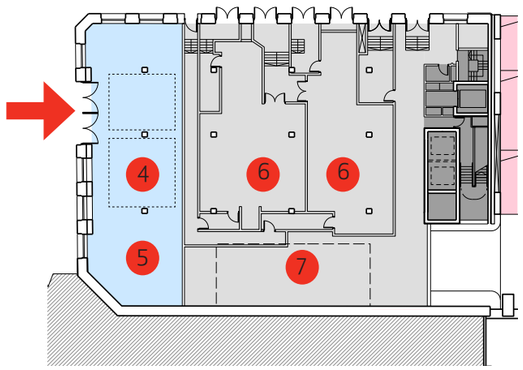


Margaret Street elevation

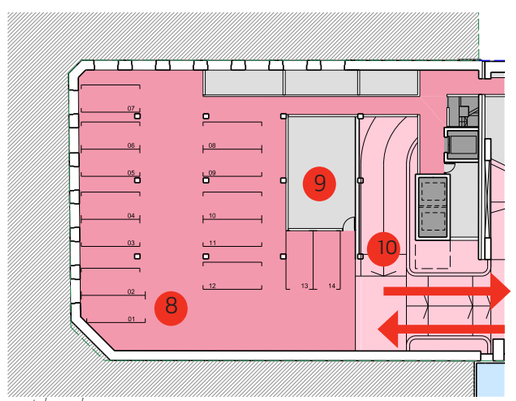
1. *Entrance hall*
2. *Office core*
3. *Margaret Street / Carrington Street retail*
4. *Soft-spots to connect Margaret Street & Carrington Street retail*
5. *Margaret Street/ Wynyard Lane retail*
6. *Ausgrid substation*
7. *Store*
8. *Courier parking*
9. *Plant*
10. *Access to basement car parking*



Carrington Street



Margaret Street/Wynyard Lane



Basement level

Photo: Carrington Street elevation with original door opening in centre of picture

Photo: Margaret Street elevation with existing entrance and canopy

Shell House:
Office levels

In order to minimise works to the existing fabric, a new core is proposed along the southern boundary. This area is being excavated as part of the building of the tower and the integration of a new basement access ramp.

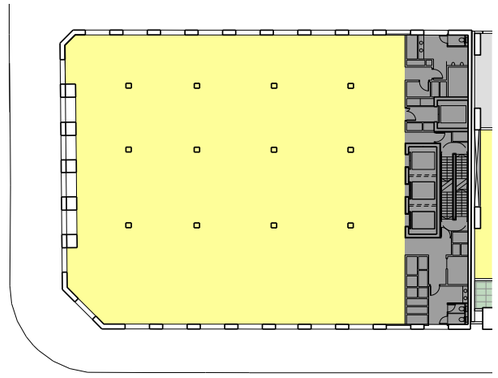
The core is composed of:

1. Three new passenger lifts, which can serve all levels at ground and above. In addition, two of these lifts continue down to the basement parking floor and act as shuttle lifts.
2. A separate goods lift. This is an additional provision to that required for a building of this quality and use, but provides additional access to the loading, courier and plant levels and an opportunity to service a non-office use within the roof pavilion.
3. A scissor staircase serving the upper levels.
4. The toilets are located on the southern elevation on the office floors, either side of the fixed core elements.

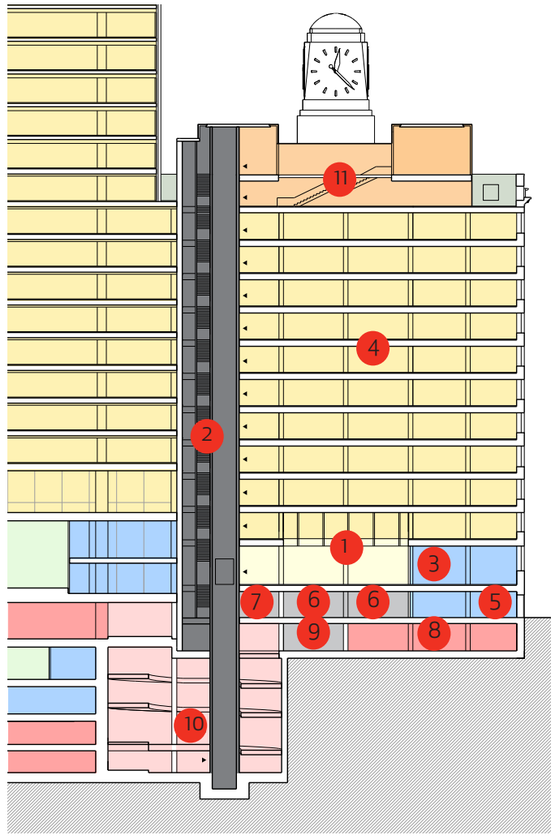
The DA proposes infilling the existing lightwell in all but the first floor, where it is retained. The 1980s windows will be replaced and the blank section on the western frontage opened up in the same manner as the other three faces. At the top of the lightwell, a lightweight glazed canopy is proposed to temper the space and provide cover to a stair and gallery link within the new roof pavilions.

In order to maximise the potential accommodation on the upper roof levels, the plant that needs to be located at high level is stacked at level 8 and 9 on the Wynyard Lane elevation.

1. *Entrance hall.*
2. *Office core.*
3. *Carrington Street retail.*
4. *Commercial office space.*
5. *Margaret Street/Wynyard Lane retail.*
6. *Ausgrid substation.*
7. *Store*
8. *Courier parking.*
9. *Plant.*
10. *Access to basement car parking.*
11. *Rooftop suite (two levels).*



Typical Shell House office level



North-south section

Illustrative view looking south along Carrington Street at junction with Margaret Street

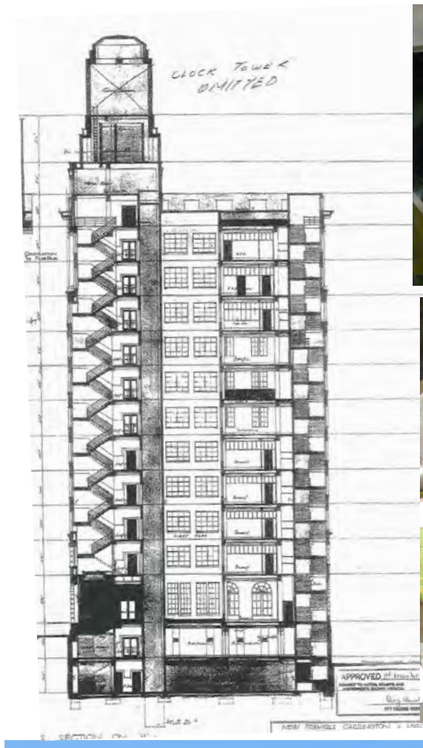
Shell House:
Roof

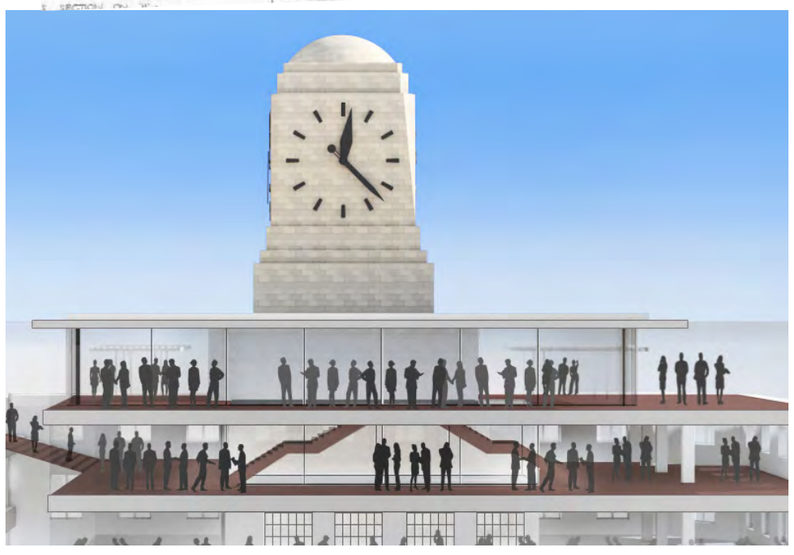
The upper roof levels have been arranged to form either a unique office accommodation with extensive terraces, or a multi-level roof bar/restaurant.

The lower level of this accommodation sits wholly within the existing parapet level. The upper level features two visually lightweight pavilions that flank and connect to the clock tower. A protective glazed canopy over the lightwell protects a stair and loggia that connects the pavilions with each other and the level below. A separate hydraulic lift will provide full accessibility to this upper level. The parapet level is accessed by means of the main passenger and goods lift core.

The clock tower is a cavernous void, rendered all the more dramatic by having no windows, in contrast to the bright external parapet level within which is sits. The proposals open this space to public access, as an integrated part of the upper roof level suite.

The four faces are still connected to the original clock mechanism. This would be refurbished and protected for visitors to view. During detail design development, the completion of the original design with the planned rotating sphere atop the tower will be investigated. The mechanism is in place within the tower; although the sphere was never installed, it features on the historic drawings.





This page, clockwise from top right :

1. *Historic record drawing – Shell House section.*
2. *Original clock workings – current images.*
3. *View of clock face at parapet level.*
4. *Study section exploring use of parapet level and new pavilion level.*

Opposite:
Illustrative view of Shell House and tower at parapet level.
Overleaf:
Illustrative view looking north-east across Wynyard Park to Carrington Street.

Shell House:
Visibility of clock tower

Historically the Shell House clock tower was a significant component of the Sydney skyline. As building heights increased, both local to the site and within Sydney, the clarity of this tower in the wider city context has been lost.

To Wynyard Park, the clock remains clearly visible, and the works proposed will enhance this by making the clock functional once more.

Along Hunter Street, the clock tower is visible but easily lost amongst the visual clutter of the context. Although the Concept Approval allows for massing to be built in front of the clock which would obscure certain views, the proposals seek an alternative approach: that is to maximise views of the restored clock.

The proposed roof pavilions and glazed link have been located to preserve the view of the clock face along the length of Hunter Street. Due to the rising topography of Hunter Street towards the eastern CBD, the elevated aspect allows this to be achieved simply. The tightest view and lowest elevation is further west at the junction of Little Hunter Street and Hunter Street and is the last view of the clock face before disappearing behind the Shell House parapet. This is the controlling view that sets out the heights of the roof elements, to ensure that visibility of the clock face is maintained.

Illustrative view:
Looking west along Hunter Street

Existing view:
Looking west along Hunter Street

Existing view:
Final view of the whole clock face at junction of Hunter and Little Hunter Streets

Illustrative view:
New pavilions set either side of the clock face to maintain street level view of the clock

Wynyard Lane

Following the setting up of a Working Group and the consequent studies, it was confirmed that Wynyard Lane will be retained as a one-way access road running north-south through the site. The existing alignment and width is maintained and there is a minimum clear height of 4.50m. Wynyard Lane is a secondary route and as with all the laneways in Sydney, derives its character in contrast to the main thoroughfares such as George Street.

The competition proposals significantly changed the road levels in order to reduce the height of the Carrington/George Street link. These proposals continue the road heights set to the north of the site to the south, with a single rise to the height south of the site. This maintains the existing drainage run-off routes.

East-west access

Unimpeded and safe pedestrian access across Wynyard Lane is provided above and below the roadway in an east-west direction. An additional link between George Street and Wynyard Lane is provided along the same alignment. At this point there is a short stair and one of the lifts is configured to stop at this mid-way point. There is a visual connection into Wynyard Lane at this connection, through from George Street and up from the station concourse. The link crossing Wynyard Lane provides views into the lane and there is direct lift access from the upper link down to Wynyard Lane.

Servicing and retail activation

With the addition of 285 George Street, there is the opportunity to control much of the character of the northern section. The southern section has many service bays directly fronting the lane, with waiting and loading on-street, but in this section servicing access for Shell House and the tower will be housed wholly within the new tower via two points.

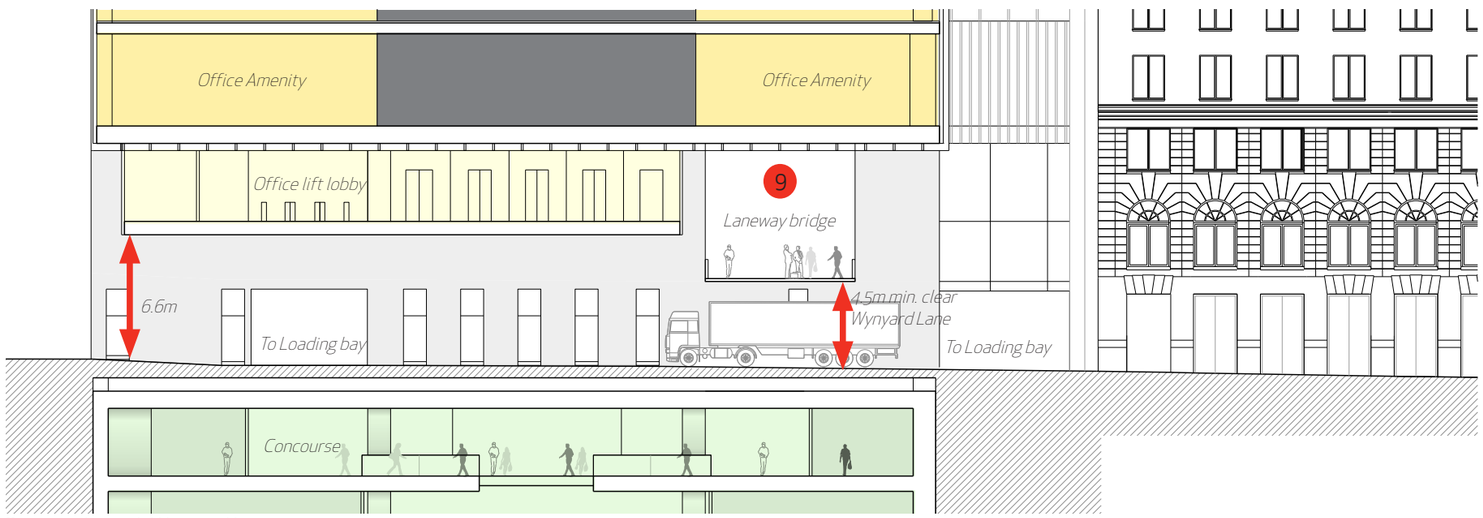
Shell House at the junction with Wynyard Lane and Margaret Street will be reoccupied with retail uses. The next section is occupied by the access requirements of Ausgrid to their substations.

285 George Street can be opened up with access to the main unit, a series of smaller street side units or a new basement retail unit. The large southern unit can also be configured to address the lane or provide smaller units, with the potential for links down to the station concourse.

1. *George Street retail below*
2. *Access to Wynyard Lane from George Street.*
3. *285 George Street retail.*
4. *285 George Stree retail below*
5. *Soft spots to connect Margaret Street and Carrington Street retail.*
6. *Margaret Street/Wynyard Lane retail.*
7. *Store*
8. *Ausgrid sub-station.*
9. *Laneway bridge*
10. *Access to Lower Basement cycle parking and end of trip facilities*
11. *Access to Wynyard Lane from 285 George Street.*

Wynyard Lane/Margaret Street level

Wynyard Lane looking north

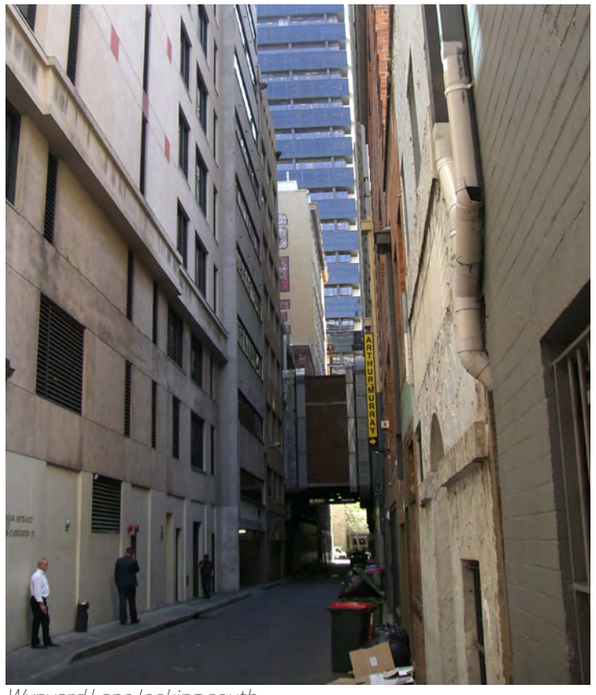


Section through Wynyard Lane

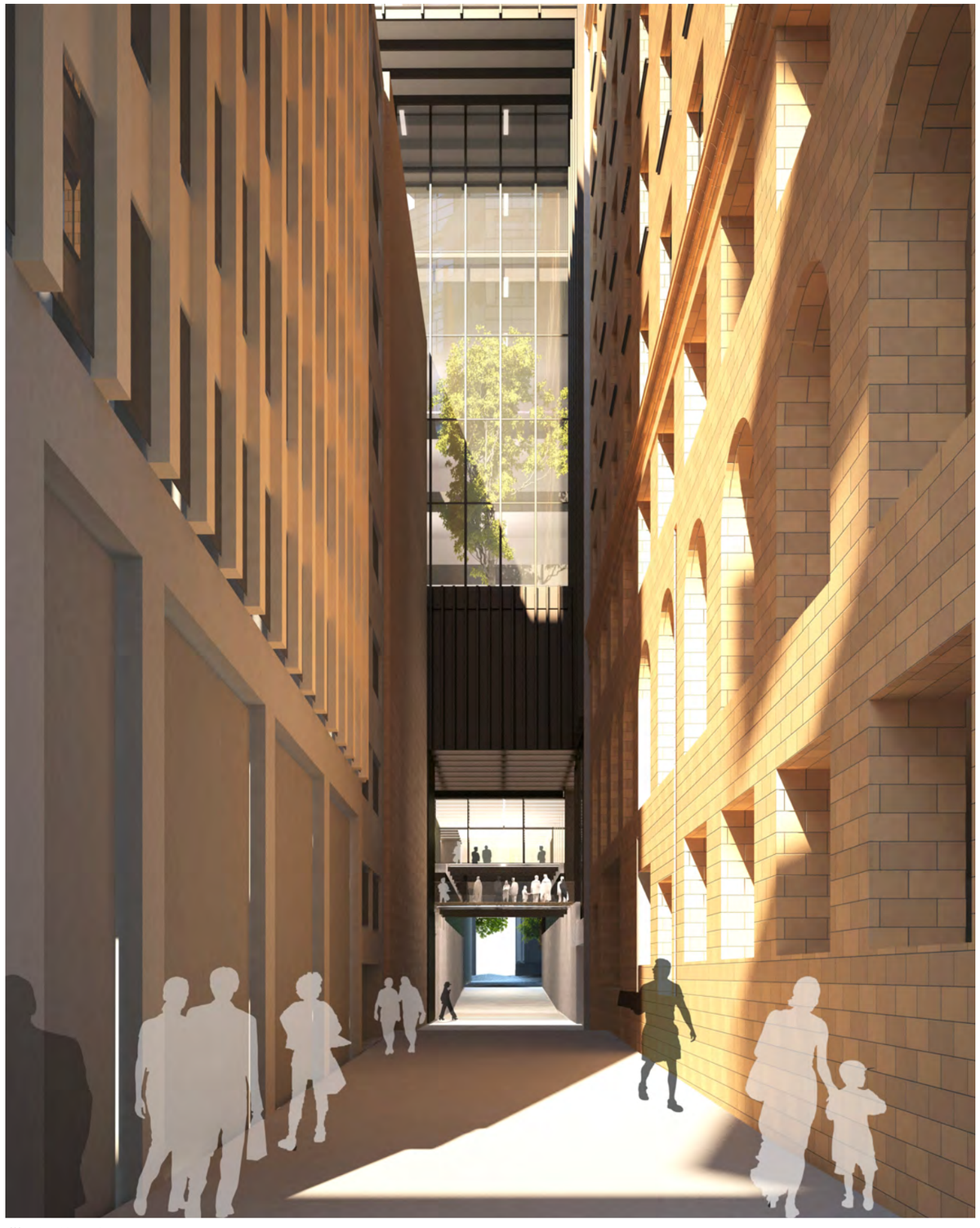
Architectural expression

A constant soffit forms a canopy across the entire site, including Wynyard Lane. The elements that cross Wynyard Lane are conceived as subservient components hovering below, in the same manner as the retail pavilions sitting below the soffit on George and Carrington Streets. These activities layer up and provide a cross-section through the building's uses.

1. The George/Carrington Street laneway slims down to a 300mm-deep bridge crossing the lane. It is extended south to form a seating area serviced from the neighbouring retail units, maximising activity and passive surveillance.
2. The office lift lobby is a glazed box hanging from the soffit, connecting to the suspended lift shafts that frame the lane.
3. The suspended lift shafts are glazed and lit from within, maximising light penetration and acting like a large chandelier.
4. Above the soffit is the mezzanine plant and structural transfer zone, with a filigree arrangement of bronze fins.
5. The office above is configured to allow full floors. The introduction of enclosed atria up the height of the lane is one of a number of locations for atria within the tower.



Wynyard Lane looking south



Illustrative view:
Wynyard Lane looking south, with potential for enclosed atria in the office

Servicing and parking

Overview

Access points

- There are three access points to separate vehicles that are not serving the new proposals from those that do:

1. Southern section of Wynyard Lane

- Used for service vehicle entrance and entry/exit for the retained RailCorp public car park.
- There is a security line into the loading bay.
- Access to cycle parking for the office tower is adjacent to this entry point.

2. Northern section of Wynyard Lane

- Used for service vehicle entrance and entry/exit for motorcycle and car parking within the tower basements.

3. Existing Shell House entrance

- The existing service bay is used to access Shell House basement accommodation

Loading and servicing

- The car parking, loading and servicing area is accessed via a single route at the southern section of Wynyard Lane within the new office tower.
- A large loading bay area with 7 spaces and increased height is located directly below the commercial office tower lobby.
- The tower goods lift is located directly adjacent to the service area. One of the high-rise group also serves this and every level, with the ability to be switched to goods use should it be required.
- The lower ground floor below Shell House is utilised for 14 courier parking bays. Vehicles are able to enter directly into the area, but can be held on exit by traffic lights to remove any conflict with the car park ramp.
- Dedicated goods lifts from these loading and courier areas serve the commercial office tower and Shell House, with two further goods lifts serving the concourse retail areas to the north and south.
- Service vehicles leave by a different access point north of the entrance point.
- Service vehicles for the retail within the concourse outside of the application demise will utilise the southern access/exit ramp, with bays within the RailCorp facility.

Cars and motorcycles

- Private cars and motorcycles will enter using the northern access point. These will be used solely for the use of the site's occupants.
- Access to the existing RailCorp facility is via the southern access point, providing access completely outside the security line for the tower servicing areas.
- A traffic light-controlled one-way ramp provides access to the basement area, as well as the car park serving the above commercial office spaces.
- A one-way car park access ramp leads from the lower ground area down to the basement car park. This is controlled by means of a vehicle activated system (VAS) utilising an induction loop within the roadway at the top and bottom of the ramp. At the top of the ramp, there is a waiting area for any cars, with these vehicles at the top having priority to prevent any backing up of vehicles.
- There are 89 car parking spaces.

Cycle parking and changing/end-of-trip facilities

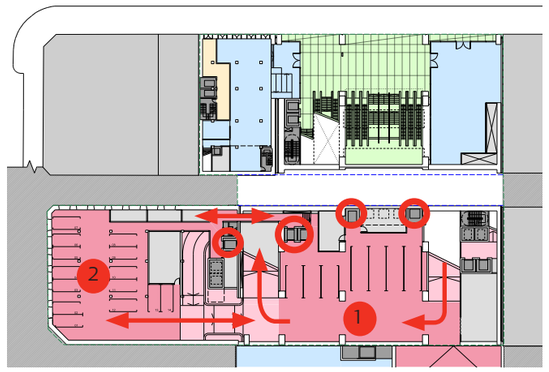
- Cycle parking is located at the Lower Basement for both Shell House and the office tower, with access via dedicated cycle lifts off Wynyard Lane.
- Consolidated changing/end-of-trip facilities for Shell House and the tower are located at the lower basement level.

Access

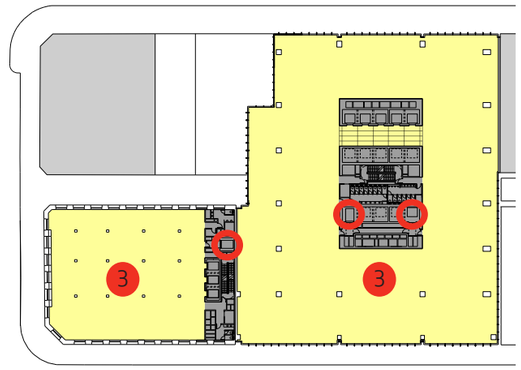
- Separate shuttle lifts and stairs connect all parking areas with the commercial office lobbies.
- These arrive in the lobby outside of the secure zone, adjacent to the reception/security desks.
- The pair of lifts serve the tower's end-of-trip changing facilities and the upper entrance lobby, creating a clean and dirty loop.

Loading and deliveries

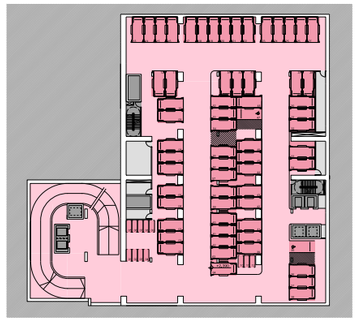
1. *Loading bay.*
2. *Courier parking.*
3. *Office.*
4. *Cafe.*
5. *Office lobby.*
6. *Retail.*



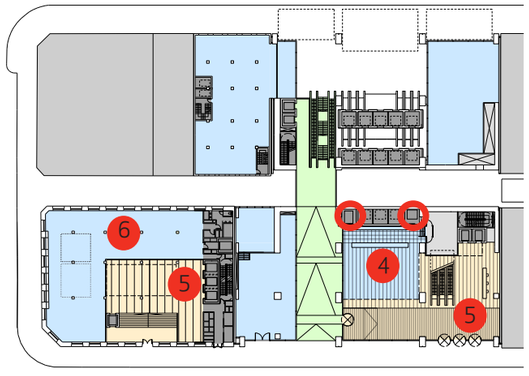
George Street level (loading bay level)



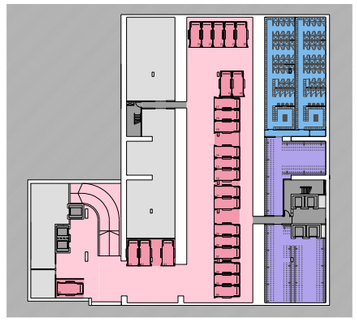
Typical lower level



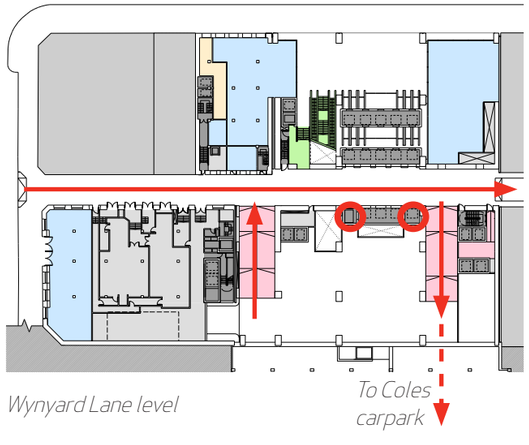
Car parking level 1



Carrington Street level



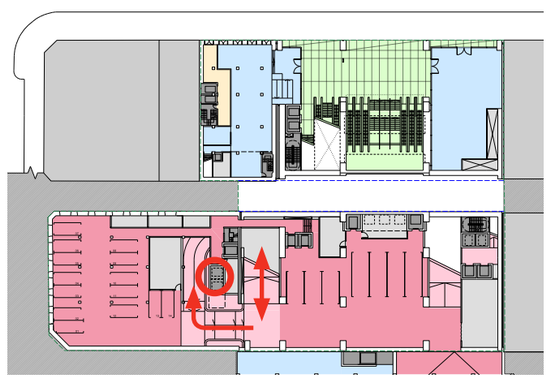
Car parking level 2 and end-of-trip facilities



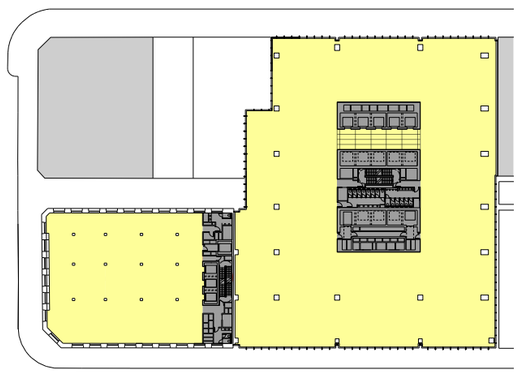
Wynyard Lane level

Car parking

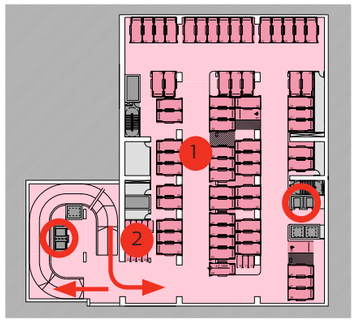
1. *Car parking.*
2. *Motorcycle parking.*
3. *Office.*
4. *Office lobby.*



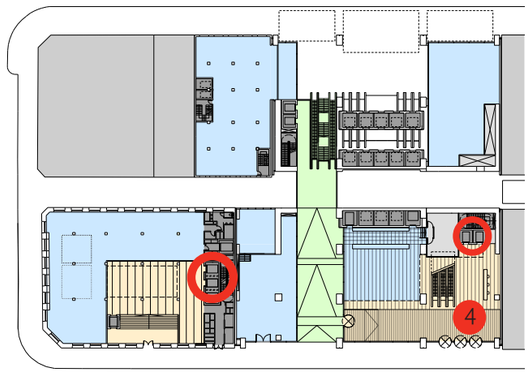
George Street level (loading bay level)



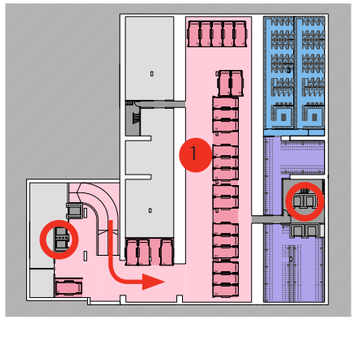
Typical lower level



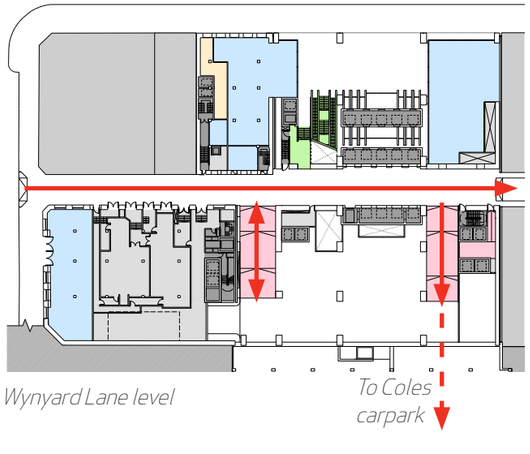
Car parking level 1



Carrington Street level



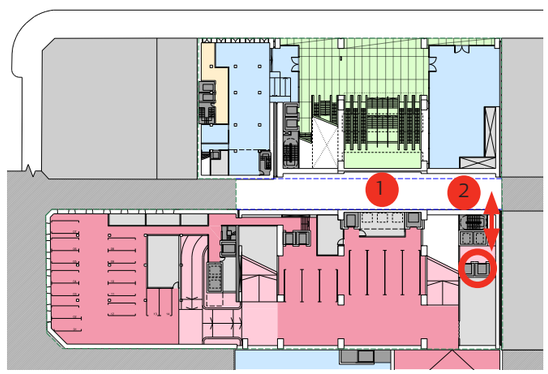
Car parking level 2 and end-of-trip facilities



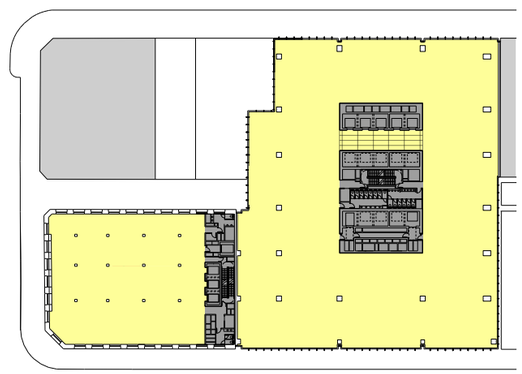
Wynyard Lane level

End-of-trip facilities

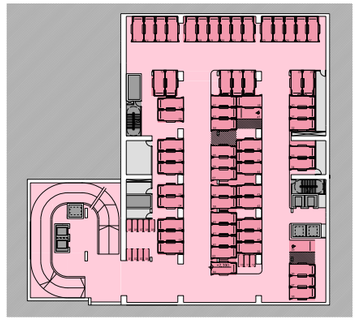
1. *Wynyard Lane above.*
2. *Cycle access from Wynyard Lane.*
3. *Cycle parking.*
4. *End-of-trip facilities.*
5. *Office lobby.*
6. *Office.*



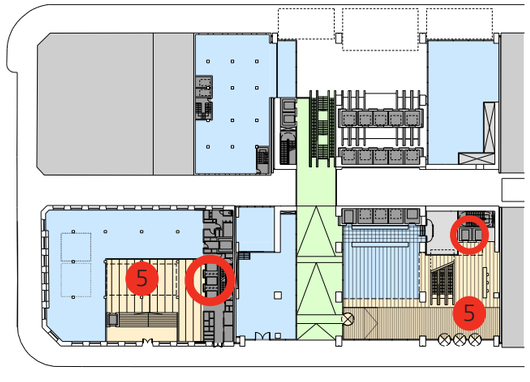
George Street level (loading bay level)



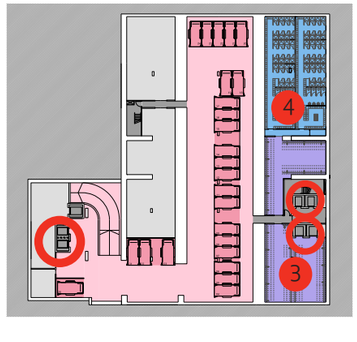
Typical lower level



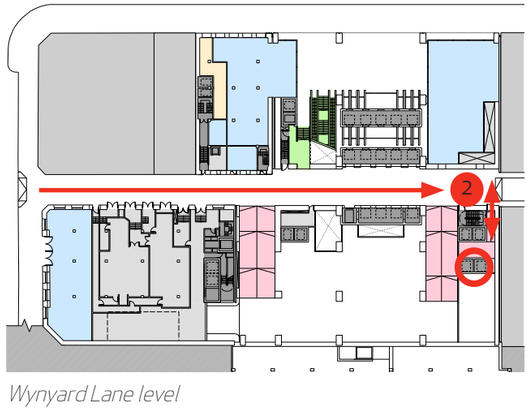
Car parking level 1



Carrington Street level



Car parking level 2 and end-of-trip facilities



Wynyard Lane level

Ecological Sustainable Development (ESD)

The Concept Approval dated 3 April 2012 identifies a series of commitments. For ESD (commitment 17), these are defined as follows:

A. The detailed design of the commercial office of the development is to achieve a minimum 5 Green Star rating.
B. The potential for delivery of a central plant for the office component of the development is to be considered at the detailed design stage.
C. The detailed design of the development is to review the sustainability targets for commercial office buildings and residential centres, with the aim of maximising sustainability and future flexibility while reducing energy use and carbon/C02 emissions.
D. The detailed design of the non-commercial office components of the development is to implement the guiding principles of Green Star to the greatest extent reasonably practical.

The ESD report which forms part of the Development Application describes the detailed strategies to satisfy these commitments and this section of the Design Report provides a summary.

The following ESD targets have been set for the project:

- Minimum 5 star Green Star Office Design V3 Design and As Built rating.
- Minimum 5 star base building NABERS energy rating for continued operational energy efficiency.
- Designing a future adaptable building to reduce future emissions, in line with City of Sydney 2030 targets.
- NCC section J certification for thermal performance for the new-build tower's office and retail accommodation.
- Deemed to satisfy NCC section J compliance for heritage buildings Shell House and 285 George Street.

Shell House and 285 George Street are existing buildings with facades listed on the State Heritage Inventory. The NCC section J deemed to satisfy the strategy for Shell House and 285 George Street is summarised below:

- The existing windows will be replaced with high-performance glass to achieve the deemed to satisfy requirements of section J.
- Dispensation is required for the NCC section J compliance of the heritage facades. Given the heritage nature of both the internal and external surfaces of the facade, no insulation to the external walls can be installed.
- New insulation will be added to the underside of the existing roof slab, to achieve deemed to satisfy compliance with section J.

The design response to each commitment is summarised in the table on the right:

Commitment	Strategy
The detailed design of the commercial office of the development is to achieve a minimum 5 Green Star rating.	Green Star and energy efficiency: The target is to achieve a 5 Green Star design and as-built rating and 5 NABERS for the new commercial tower (office and retail), Shell House and 285 George Street. Principal design measures: • The energy efficiency of the building has been optimised through efficient facades and building services including: • Highly efficient facade with automated internal blinds and very high-performance glass that still maintains good daylight levels. • Perimeter chilled beams and low temperature VAV (variable air volume) ventilation units throughout all centre zones. • Mixed mode ventilation (natural and mechanical) opportunities to lobby spaces will be considered, in balance with acoustic and air quality considerations. • High-efficiency central plant that supplies all chilled water, heating water and condenser water to commercial and retail tenants.
The potential for delivery of a central plant for the office component of the development is to be considered at the detailed design stage.	A central thermal plant is being developed that supplies all chilled water, heating water and condenser water, if required, to commercial and retail tenants. This will provide a considerable energy and peak load reduction for the entire site.
The detailed design of the development is to review the sustainability targets for commercial office buildings and residential centres, with the aim of maximising sustainability and future flexibility while reducing energy use and carbon/C02 emissions.	The central energy plant for the site provides considerable annual and peak energy reductions, as well as providing opportunities for tenancy chiller water and future fuel source switching. The use of a hybrid standby power and gas cogeneration system to provide low carbon electrical supply with hot water for retail will also reduce carbon emissions.
The detailed design of the non-commercial office components of the development is to implement the guiding principles of Green Star to the greatest extent reasonably practical.	The non-office components of the development, primarily retail areas, will also follow the guiding principles of Green Star as follows: • The retail component of work will be connected to the central energy plant, giving the tenants a choice of chilled water or condenser water. • Water efficient appliances will be used throughout. • Tenant's guidelines for energy, water and waste usage in food outlets will be provided, as well as sustainable fit-out guidelines. • The development team will work with some smart waste management contractors to ensure the recycled rate for waste is maximised.

Environmental design

The design seeks to engender a culture of environmental sustainability in those who occupy and visit the building.

The two overarching environmental design principles for the scheme are to be lean and use energy efficiently, following a two-step strategy:

The first step is to reduce the energy demand for the development by passive means.

After demand has been reduced through passive means, the second step is to reduce consumption through the application of energy efficiency systems

This simple, holistic approach ensures the scheme is designed in an inherently environmentally progressive and responsible way.

Step 1 – The key passive design measures to reduce overall energy demand generated by the scheme are as follows:

- Location of building on public transport interchange (train, bus and future light rail) reduces demand on private cars.
- Extensive cycle parking and end of trip facilities (showers, lockers etc.) are provided to encourage cycle use.
- High-performance glass specification incorporating solar control coatings that are neutral in appearance applied to the glass, to improve the shading performance of the glass (g-value) while maintaining good visual light transmittance (VLT).
- Internal blind to control solar gain and glare, with an adjacent extract vent to remove heat at the facade.
- Vertical fins – either 300 or 100mm in depth – provide external shading to low-angle sun.
- Good thermal performance (U-value) of curtain wall facade to reduce energy demand.
- Optimised air tightness of the facade to ensure conditioned air is kept within the building, while gaining benefit from allowing internal heat gains from lights, computers, people etc) to pass through the facade.

Step 2 – The primary energy efficient systems to meet the reduced energy demand are as follows:

- Low-energy variable air volume (VAV) ventilation system to the central areas of the office floors allows the amount of air provided to match demand and reduce overall energy consumption.
- Water cooled active chilled beams to the perimeter of the office accommodation are energy efficient and may be controlled to match demand.
- Mixed-mode ventilation opportunities (natural or mechanical ventilation, in response to prevailing external conditions) to lobby spaces will be considered in balance with acoustic and air quality considerations.
- High-efficiency lighting solutions with intelligent lighting controls.
- Low-flow sanitary fixtures and fittings will be specified to reduce potable water consumption.
- High-efficiency central plant that supplies all chilled water, heating water and condenser water to commercial and retail tenants for the new tower, Shell House and 285 George Street. This will provide a considerable energy and peak load reduction for the entire site.
- The use of a hybrid standby power and gas cogeneration system to provide a low-carbon electrical supply with hot water for retail.

Future adaptability to allow building systems to change and incorporate low-energy technologies, as they develop and become viable:

- Centralised plant options for future biofuel.
- A number of options are being considered in building informatics systems that provide the occupants with the right level of digital information, at the right time, so they can make informed decisions about reducing resource usage.
- The development team is considering a waste management strategy that considerably reduces operational waste to landfill and will identify smart strategies for tenant waste/ fit-out recycling and ongoing electronic waste management.

The environmentally responsible specification of building materials will be undertaken to optimise recycled content, minimise waste and carbon emission during manufacture and limit the use of harmful volatile organic compound (VOC) materials.

Appendix I
Consistency with Concept Approval and Design Criteria

The proposals comply with the modified Concept Approval and Design Criteria. This section discusses the difference between the modified and original approvals.

Consistency with Concept Approval

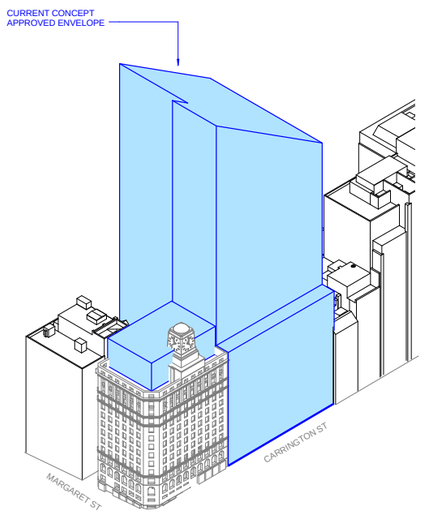
The addition and integration of 285 George Street, thereby increasing the size of the development site, necessitates a revised Concept Approval Envelope.

The additional section of the envelope sits above a plan area taking in a section of 285 George Street, set some 6m back from George Street and a further section of Wynyard Lane. Unlike the previous envelope, where the entire section of Wynyard Lane between blocks was incorporated, this is a smaller extension of some 8m.

This extension allows for the allowable development area to be incorporated, without losing some of the design improvements developed as part of the competition design. These enhancements included the introduction of a setback to George Street and deeper setbacks around the Shell House clock tower.

The proposed extension does not seek to increase the overall height of the development, which would be possible and still maintain the solar plane to the GPO. Rather it maintains the current height of the Concept Approval. A full overshadowing study is submitted as part of this application.

The drawings opposite form part of the separate S75W submission.



1 Current Approved Envelope
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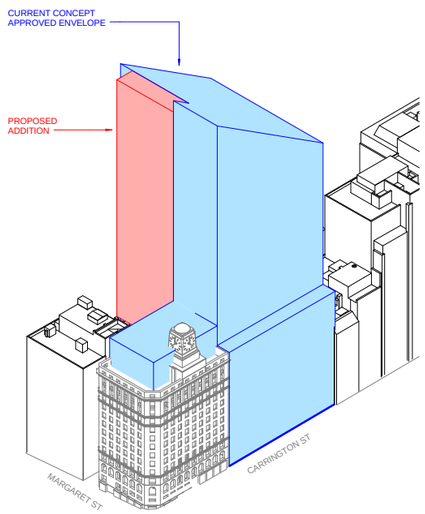

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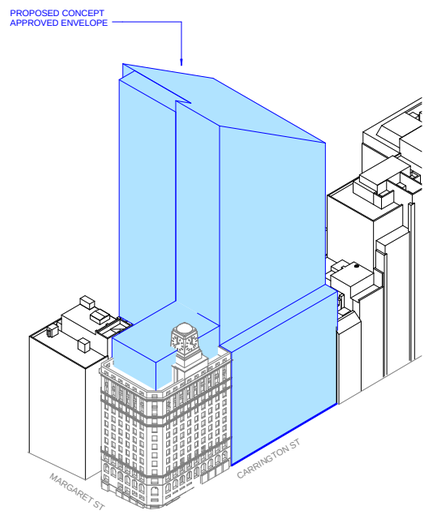
Scale:



3 Proposed Envelope
Scale:

issue	reason for issue	date	checked
Rev 00	S75W	17.03.2014	MC

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drawing: Building Envelope Diagrams

scale	1:100	status	
drawn	D. Wright	drawing no.	**S75W8000**
paper size	A1		
checked	M. Curzon	issue	Rev **00**
project no	m: 958 a: 120298.00		

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