

Response to Submissions and Amendments to Proposed Development



Building R4A (SSD 6964)

Barangaroo South

Submitted to Department of Planning and Environment
On Behalf of Lend Lease (Millers Point) Pty Ltd

February 2017 ■ 10051

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Executive Summary

The Environmental Impact Statement (EIS) in support of State Significant Development Application (SSDA 6964) for construction and use of a residential building known as Building R4A at Barangaroo South was publicly exhibited for a period of 44 days inclusive between 29 September 2016 and 14 November 2016. Building R4A forms part of three proposed residential towers in Barangaroo South Stage 1B, referred to collectively as 'One Sydney Harbour'.

Public exhibition occurred in accordance with the requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Twelve (12) submissions were received in response to the public exhibition of the EIS, including submissions made by government agencies and authorities and the general public, as follows:

- government authorities and agencies - 6
- members of the public - 6

The Department of Planning and Environment (the Department) has also prepared a letter setting out additional information or clarifications prior to the final assessment of the project.

The key issues raised in submissions (agencies and members of the general public) can be broadly grouped into the following categories:

- built form; and
- residential amenity.

The proponent Lend Lease (Millers Point) Pty Ltd (Lendlease) and its expert project team have considered all issues raised in the submissions made, pursuant to the requirements of the EP&A Act.

A considered and detailed response to all submissions made has been provided in the accompanying documentation, with the key issues outlined above expanded on at Section 2.0.

In responding to and addressing the range of matters raised by government agencies and authorities and the general public, Lendlease has sought to refine the proposal for the construction and use of Building R4A and the overall One Sydney Harbour development. The refined proposal also captures changes made by the project team post exhibition to enhance the design. The nature and range of changes made post public exhibition of the EIS are overall relatively minor and include:

- minor internal reconfiguration of some apartments;
- refinement of core structure;
- modified materials and articulation of core exterior façade and roof;
- modification to the finished floor level of Level 69;
- removal of retail mezzanines; and
- modification to lobby entry doors.

Section 3.0 and Section 4.0 and the accompanying documentation provide an analysis and assessment of the proposed changes and the refined project more broadly. In summary, the nature of the changes is considered to result in a development that does not substantially differ from the original application that was publicly exhibited. Furthermore, the refined proposal will deliver improvements to the visual quality and residential amenity of the proposal. All other environmental impacts of the amended development remain consistent with the original application.

Final measures to mitigate the impacts associated with the refined proposal are detailed at Section 5.0.

In conclusion, the proposal for the construction and use of Building R4A represents a key part of the Barangaroo South urban renewal project that will have significant public benefits for Sydney. It will contribute to the overall aim to provide a diverse range of housing options and support Sydney's reputation as a global city with a new world-class building that achieves design excellence.

1.0 Introduction

An Environmental Impact Statement (EIS) for State Significant Development Application 6964 (SSDA6964) for the construction and use of a residential building known as Building R4A at Barangaroo South was publicly exhibited for a period of 44 days inclusive between 29 September 2016 and 14 November 2016. Building R4A forms part of three proposed residential towers in Barangaroo Stage 1B, referred to collectively as 'One Sydney Harbour'.

In total, twelve (12) submissions were received in response to the public exhibition of the EIS. This included submissions made by government agencies and authorities and the general public, as follows:

- government authorities and agencies - 6
- members of the public - 6.

The Department of Planning and Environment ('the Department') has also prepared a letter setting out additional information or clarification prior to the final assessment of the project.

The proponent Lend Lease (Millers Point) Pty Ltd (Lendlease) and its expert project team have considered all issues raised in the submissions made, pursuant to the requirements of the EP&A Act.

This report, prepared by JBA on behalf of the proponent, sets out the responses to the issues raised in accordance with Clause 85A of the *Environmental Planning and Assessment Regulation 2000* ('the Regulation') and details the final project design and final mitigation measures for which approval is now sought. The final project design includes amendments made by Lendlease pursuant to Clause 55 of the Regulation, including changes to address matters raised in the submissions.

The report provides a detailed response to all of the issues raised by the various government agencies and the general public. Whilst the submissions received from agencies have been addressed individually, the submissions made by the general public have been addressed on an issue by issue basis. This approach has been adopted to reflect that many of the submissions raised similar issues and concerns.

The key issues raised in submissions (government agencies and the general public) can be broadly grouped into the following categories:

- built form; and
- residential amenity.

This report provides a detailed response to each of the above issues and outlines the proposed amendments to the exhibited EIS. Where individual issues are not discussed in this report, a detailed response can be found in the tables at **Appendix A** and **Appendix B**.

1.1 Amendments to Proposed Development

To reflect the design changes that have been made to the proposed development following public exhibition of the proposal and for which approval is now sought, and to address issues raised in submissions, a range of updated plans and documentation has been prepared.

The revised drawings include Architectural Drawings prepared by Renzo Piano Building Workshop and Lendlease Design (**Appendix C**) and a Supplementary Design Report prepared by Renzo Piano Building Workshop (**Appendix C**).

The following consultants' reports and supporting information has also been updated or further supplements the material originally submitted in support of the EIS:

- Addendum Wind Report prepared by Windtech (**Appendix D**).
- Crime Prevention Through Environmental Design Report prepared by Harris Crime Prevention Services (**Appendix E**).
- Solar and Daylight Access Study prepared by Lendlease (**Appendix F**).
- Access Report prepared by Morris Goding Accessibility Consultants (**Appendix G**).
- BCA Report prepared by McKenzie Group (**Appendix H**).
- Lift Letter prepared by Lendlease Design (**Appendix I**)

The revised supporting documentation enables the Department to undertake an informed assessment of the amended proposal. The findings of the revised supporting consultant documentation are summarised at Section 2.0 of this report as relevant.

A final schedule of the mitigation measures proposed to mitigate the impacts associated with the proposed works is provided at Section 5.0.

This report should be read in conjunction with the EIS prepared by JBA, dated 16 September 2016, as relevant.

2.0 Key Issues and Proponent's Response

This section of the report provides a detailed response to the following key issues raised by the Department, government agencies and authorities and the general public during the public exhibition of the SSDA:

- built form; and
- residential amenity.

A response to each of the individual issues raised by the Department and submitters is provided in the tables at **Appendix A** and **Appendix B**.

An overview of the parties who made submissions and their key issues for consideration is provided below. Other issues which require further assessment, such as assessments against statutory policies and plans are considered at Section 4.0.

Government Authorities and Agencies

As highlighted earlier in this report, six submissions were received from government agencies and authorities in response to the exhibition of the EIS. Specifically, responses were received from:

- NSW Environment Protection Authority;
- City of Sydney Council;
- NSW Department of Family and Community Services;
- NSW Foreshores and Waterways Planning and Development Advisory Committee;
- Office of Environment and Heritage; and
- Transport for NSW.

A number of these submissions comprised the agencies or authority confirming they had no comment on the application or providing guidance on recommended conditions. These included the submissions from the NSW Environment Protection Authority, NSW Department of Family and Community Services, NSW Foreshores and Waterways Planning and Development Advisory Committee, Office of Environment and Heritage and Transport for NSW.

The Department also provided a letter (as the assessment authority) summarising the key matters to be addressed and additional information to be provided. A response to the Department's correspondence is provided at **Appendix A**.

The remaining government authority to make a submission, being the City of Sydney Council, raised a variety of issues and sought clarification on a number of matters as detailed throughout this section and at **Appendix A**.

Members of the Public

JBA has analysed the submissions received from the general public in response to the public exhibition. In summary:

- a total of 6 public submissions were received.
- all public submissions objected to the proposal.
- submissions were received from members of the public who lived, worked or owned property in the vicinity of Barangaroo.

Together these submissions raised a variety of issues including relationship to the surrounding urban environment, impact on existing residents, scale of the proposed buildings, the impact that additional residential density would have on existing infrastructure in the neighbourhood and the aesthetic impact of the combined One Sydney Harbour buildings. A detailed response to the issues raised by the general public has been provided at **Appendix B**.

2.1 Built Form

2.1.1 Issue

The built form of the proposed building was raised a number of times in submissions by Council and members of the public.

In particular, the Department has requested that a further assessment is provided on the proposal's consistency with the *Barangaroo South Built Form and Urban Design Guidelines* ('the Guidelines') in relation to the design of the podium. The Department has confirmed this request largely relates to Building R5, but should be addressed for all three buildings. The Council noted concern that the design of the building did not include elements to minimise building bulk or wind impacts and that the proposed built form would prevent the establishment of a consistent street wall along Hickson Road.

A number of public submissions asserted that the proposed building is in contrast to the buildings currently under construction or approved at Barangaroo and in the surrounding area.

Concern was also raised by Council on the design of the Strada in relation to public accessibility and urban design considerations. The Department has requested further details on this element of the proposal.

2.1.2 Proponent's Response

Podium Design

The design of the proposed building has resulted from a competitive design process and was selected both because of its consistency with the building envelope controls set under the Barangaroo Concept Plan (MOD 8) and the Design Guidelines, as well as for its contribution to design excellence in Sydney.

Building R4A incorporates a three-storey podium that provides retail tenancies and the residential lobby at ground level, with residential facilities provided above. The low-rise podium has been designed to be consistent with the maximum height of RL 22 set under the Design Guidelines, rising to a height of RL 17.8. The podium is also consistent with Control 1 for Block 4A + 4B contained in the Design Guidelines, which seeks to facilitate an appropriate podium height through the following objective:

The podium shall be low to allow sunlight penetration through the buildings to the public domain.

An extract from the Design Guidelines is reproduced at **Figure 1** to demonstrate that the height of the podium has been carefully designed in accordance with these guidelines, whilst **Figure 2** provides a detailed diagram of the building envelope which has guided the built form.

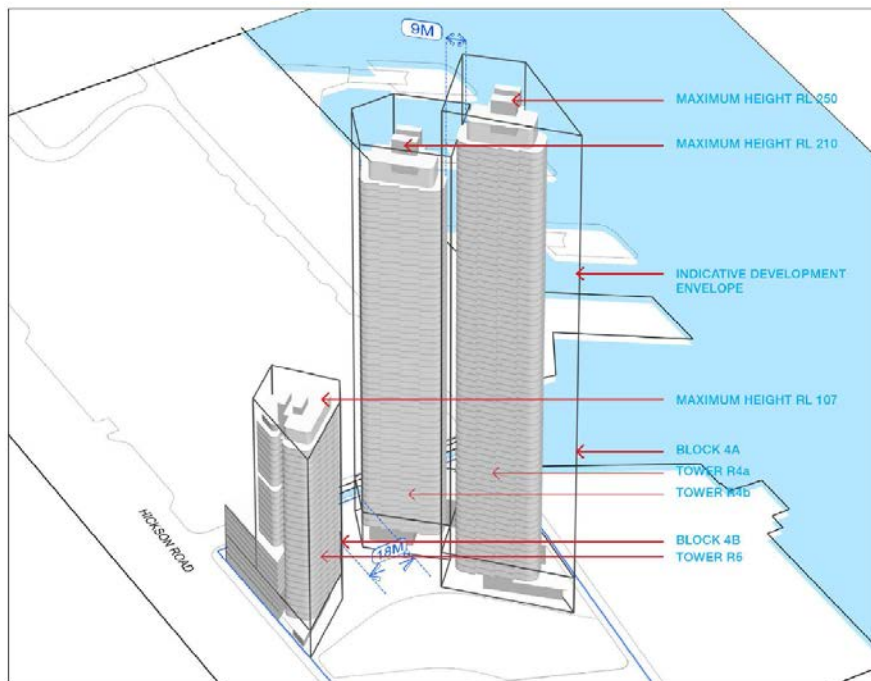


Figure 1 – Design Guidelines Building Mass and Location diagram
Source: *Barangaroo South Built Form and Urban Design Guidelines*

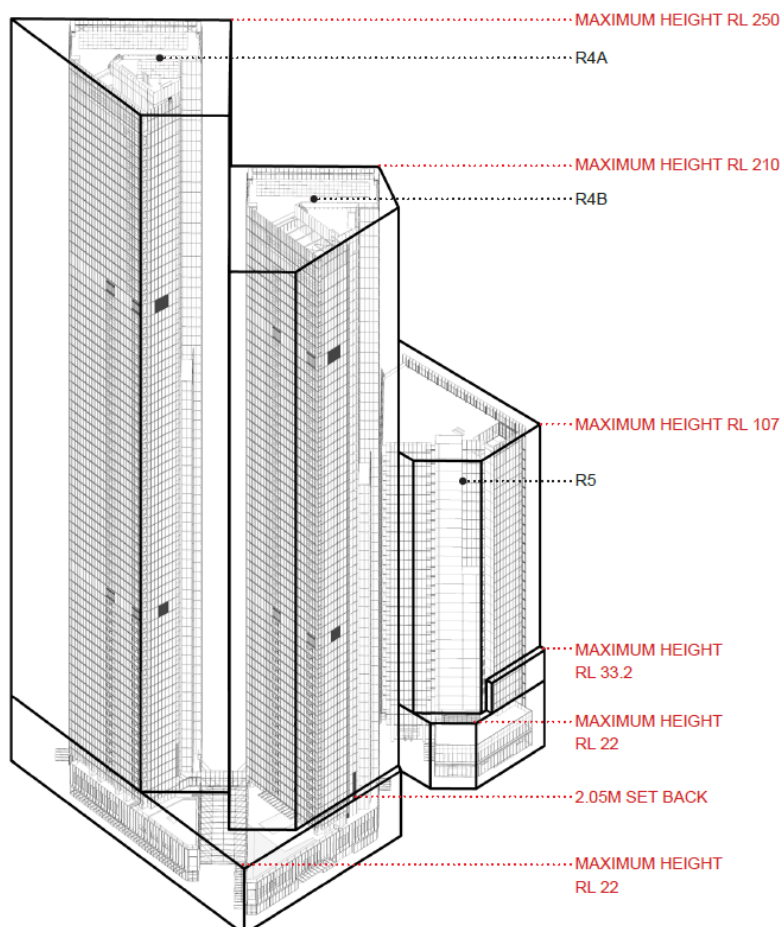


Figure 2 – Detailed envelope diagram
Source: *RPBW*

The podium is defined by the provision of glass awnings and has been deliberately designed to create a human scale at street level, as outlined in the Supplementary Design Report at **Appendix C** and as shown at **Figure 3**.



Figure 3 – R4A Exterior Perspective Concept Render showing glass awnings
Source: RPBW

The careful positioning of awnings above street level minimises any perception of building bulk from the ground plane and also functions to shelter pedestrians from inclement weather conditions, such as wind or rain. The function of the podium in minimising wind impacts is further detailed in the Wind Environment Commentary prepared by Windtech (provided at **Appendix D**), which finds that the design of the podiums, in combination with the separation of the towers, minimises wind impacts. Further to this, wind mitigating barriers will be provided along the Strada to ensure that a comfortable pedestrian environment is maintained between Building R4A and Building R4B.

The low-rise podiums adopted for all three buildings that comprise One Sydney Harbour have been carefully designed to allow sunlight to penetrate through the built form to the surrounding areas of public domain, as required by the Design Guidelines. This has been achieved through the distribution of building mass across the site, with the space created between each building also providing visual connections through the public domain between Watermans Quay and Sydney Harbour to the future Hickson Park.

The Supplementary Design Report at **Appendix C** details how the retail shopfronts and lobby at ground level will utilise transparent materials to create visual connectivity between the buildings and the surrounding public domain as well as achieve a consistent level of activation around the building edge, further ensuring that the design of the podium creates a human scale environment.

Where the building adjoins Barangaroo Avenue, the podium has been aligned to meet the street and incorporates consistent materials and details to ensure that a unified street wall is established.

Overall, the proposed building, in combination with the other two buildings that comprise One Sydney Harbour (Building R4B and Building R5), have been carefully designed to create a streetscape that provides a comfortable environment for future residents, workers and visitors and that is consistent with the objectives and standards contained in the Design Guidelines. A full assessment against the objectives and standards of the Guidelines was provided at Section 4.2.2 of the submitted SSDA.

Relationship to Surrounding Urban Environment

The design for the proposed building, in combination with the two other towers that comprise One Sydney Harbour, has arisen from the building envelope controls set by the Barangaroo Concept Plan (MOD 8) and the *Barangaroo South Built Form and Urban Design Guidelines*. In addition to this, the proposed building has been designed with careful consideration of the existing neighbourhood, characterised by Sydney Harbour, the completed International Towers and residential buildings at Barangaroo South and a variety of residential and commercial buildings at the edge of the Sydney CBD. **Figure 4** shows a photomontage of One Sydney Harbour in the context of the surrounding built environment, which demonstrates that the built form achieves a complementary relationship to both existing and future development.



Figure 4 – Photomontage of One Sydney Harbour, including Building R4A
Source: RPBW

As a result of this careful planning process, the proposal arising from a competitive design process and the existing urbanised character of the surrounding area, the proposed building is complementary to the surrounding urban environment and will make a positive contribution to the area. Through the provision of a building that incorporates a high standard of architectural design, materials and detailing as well as provides holistic amenity for future residents, workers and visitors, Building R4A will contribute to the achievement of design excellence in Sydney.

The Strada

The Strada is located between Building R4A and Building R4B and will function as a through-site-link that will connect Watermans Quay and the foreshore promenade (now known as Wulugul Walk) to Hickson Park. The land where the Strada is located is zoned B4 Mixed Use under the *State Environmental Planning Policy (State Significant Precincts) 2005*, which is intended to encourage a variety of commercial, retail, residential and cultural uses alongside each other in a way that achieves an appropriate urban design outcome and environment. This zoning is in comparison to other parcels of land within Barangaroo South which are zoned RE1 Public Recreation, where the predominant use is to be public domain rather than new built form elements. Under the Concept Plan (as modified), the Strada is located in the centre of Block 4A, a development parcel intended to accommodate built form opposed to an area of significant public domain.

The Strada is an important part of the overall design of One Sydney Harbour as it provides for a range of retail and outdoor dining opportunities to activate the area for residents, workers and visitors. The Strada also improves the permeability of the area and its relationship to the public domain that is provided along the waterfront at Watermans Quay and Wulugul Walk as well as Hickson Park.

Figure 5 and **6** show perspectives of the Strada, demonstrating its relationship to the built form of each of the towers and the opportunities it provides for building activation.



Figure 5 – Perspective of the Strada

Source: RPBW



Figure 6 – Perspective of the Strada

Source: RPBW

A canopy is provided over the Strada to provide a continuation of the glass awnings utilised on the other building edges that will ensure a human scale is created at the street level, as well as to ensure that the pedestrian environment is protected from any extreme weather conditions. Above the canopy, a pedestrian bridge is proposed that will link Building R4A and Building R4B. This bridge will enable residents to access the communal facilities provided within each building without the need to exit and re-enter each building.

The pedestrian bridge also provides benefits for the operation and management of the buildings as it will enable efficient access for services between the buildings as well as an additional escape route in the event of an emergency.

Details of the canopy and proposed pedestrian bridge are provided in the Architectural Drawings as well as in the Supplementary Design Report (refer to **Appendix C**) and a detailed section is shown at **Figure 7**.

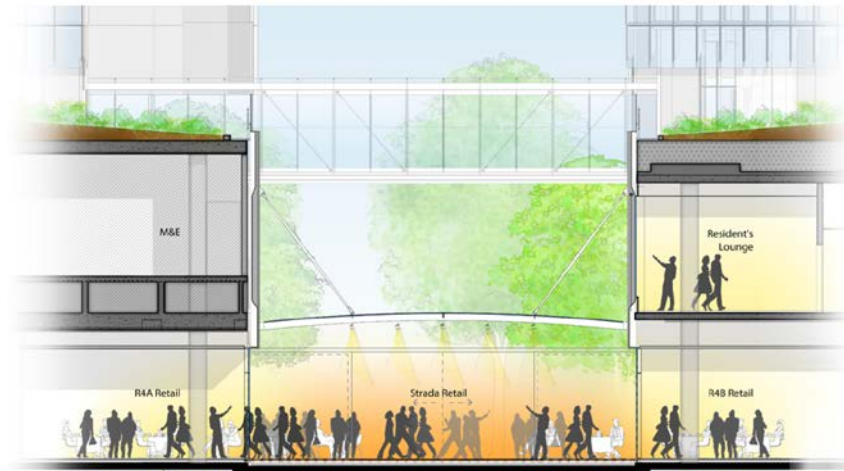


Figure 7 – Illustration of Strada and pedestrian bridge
Source: RPBW

Figure 8 shows an extract from the Design Guidelines, which demonstrates the primary access routes around Block 4A and Block 4B. Control 5 provides objectives and standards to achieve ground floor permeability and accessibility of the public realm, including:

Provide two north to south primary connections across the block including the Hickson Road colonnade and Barangaroo Avenue.

One north-south secondary connection is to be provided in Block 4A.

A generous through site link to promote visual and physical permeability is to be provided through Block 4A.

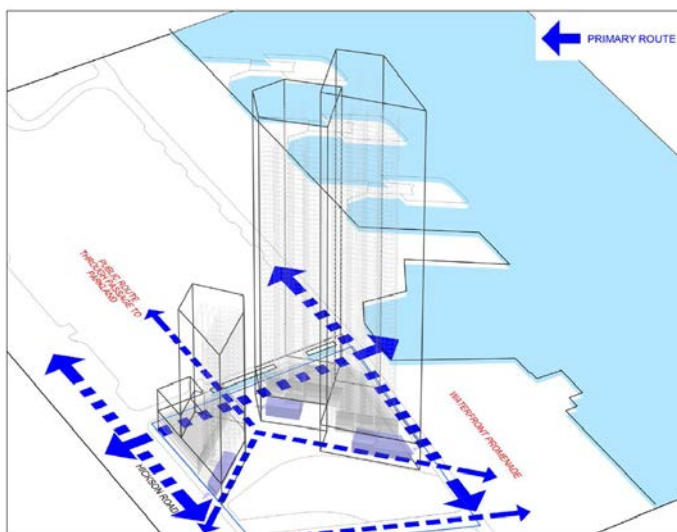


Figure 8 – Ground Floor Permeability and Accessibility of Public Realm diagram
Source: Barangaroo South Built Form and Urban Design Guidelines

Primary north-south access routes are provided along Hickson Road and Barangaroo Avenue, in accordance with the Design Guidelines, whilst the Strada achieves the standards outlined in Control 5 of the Design Guidelines as it provides a secondary north-south connection through Block 4A. The Strada, through the use of high quality glazing, also facilitates visual and physical permeability by allowing pedestrians to easily navigate between Hickson Park and Watermans Quay.

To ensure that a comfortable pedestrian environment is provided through the Strada at all times, it is proposed to include retractable doors at either end of the Strada to provide a wind barrier to minimise adverse wind impacts. A detailed study was undertaken by Windtech to test wind conditions when the Strada was fully open, partially open and fully enclosed. The results of this study are discussed by Windtech in their letter provided at **Appendix D**. In instances where there was a significant opening at either or both ends of the Strada, the area was found to be exposed to adverse wind impacts that would render the area unsuitable for retail trade and outdoor seating. As a result of this, retractable doors are proposed as a wind barrier that may be operated to the degree necessary to create a comfortable pedestrian walking and sitting environment. In addition to this wind mitigation measure, wind baffles of varying heights will be provided throughout the Strada and additional tree planting will be provided at the corner of Barangaroo Avenue and Watermans Quay, as shown at **Figure 9**.

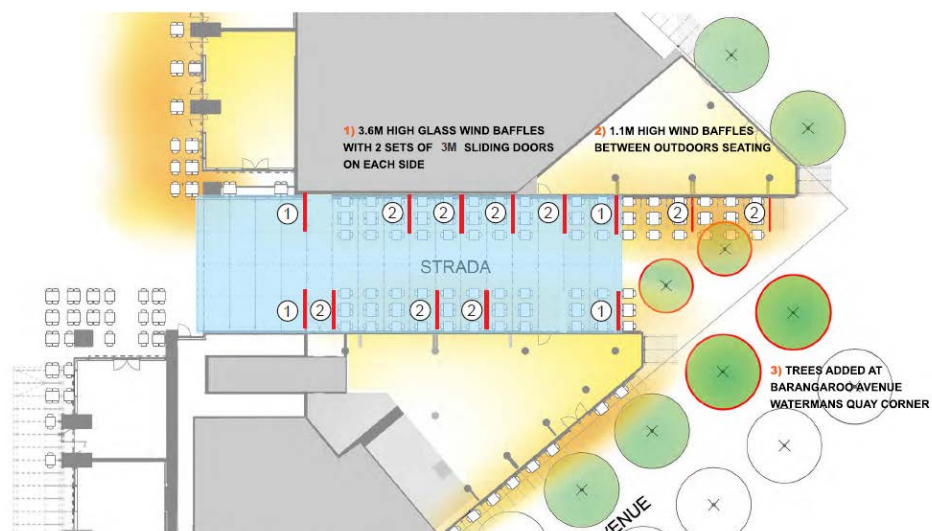


Figure 9 – Wind mitigation measures diagram

Source: RPBW

The combination of these wind mitigation measures will ensure that the area provides a pedestrian/retail environment that will allow residents, workers and visitors to utilise the through-site-link for walking as well the outdoor dining opportunities that will be provided.

The provision of retractable doors as a wind mitigation measure has the dual benefit of enabling the space to be secured overnight, when opportunities for passive surveillance in the area are reduced and after retail operations conclude. Following recommendations included in the Crime Prevention Through Environmental Design (CPTED) Report prepared by Harris Crime Prevention Services (refer to **Appendix E**), it is proposed that the Strada will operate between 7am to 11pm and will be secured outside of these hours to prevent any threat to safety or security. In particular, the CPTED Report noted that there is a risk for anti-social behaviour or crimes such as vandalism, trespassing, theft or assault to occur based on crime statistics in the area.

Whilst the risk of these threats occurring is considered to be low to medium, closing the space at night time would further minimise the possibility of any anti-social or criminal activity occurring.

A similar approach to enclosing through-site links outside key hours was adopted for the management of the through-site-links provided as part of the International Towers. At present, each of the International Towers features a through-site-link that operates during business hours which is then secured after-hours to minimise any safety or security threats. This arrangement is considered to be acceptable and is intended to be adopted for the operation of the Strada.

To maximise visual connections and opportunities for passive surveillance, the Strada and all wind mitigation features will be designed to maintain maximum transparency through the area at all times. This will ensure that the standard contained in Control 5 to *'promote visual and physical permeability'* is achieved and that a quality public realm is created.

2.2 Residential Amenity

2.2.1 Issue

The Department and Council both noted consistency with the Apartment Design Guide (ADG) as a matter requiring further clarification.

Solar Access

Further information was requested by both the Department and Council to clarify how the proposed development meets the design criteria for solar access, with technical details to be provided as part of a solar access study.

Cross Ventilation

It was requested by the Department that detailed information be provided to demonstrate how cross ventilation is achieved, including detailed diagrams. In particular, it was noted that cross ventilation from corridors should not be counted and that wintergardens should not be permanently enclosed.

Visual Privacy and Building Separation

It was noted by Council that the proposed building separation is less than the design criteria set out under Objective 3F-1 of the ADG and that providing such separation is important to protect visual and acoustic privacy as well as to achieve a high level of amenity for future residents.

The following matters were also identified as requiring further information to be provided:

- depth of habitable rooms;
- depth of apartments;
- size of balconies/wintergardens for three bedroom apartments;
- amenity of study rooms;
- provision of communal open space;
- total number of apartments serviced per lift; and
- provision of storage.

In addition to further clarification on the matters outlined above, the Department requested a detailed schedule containing a breakdown of the key numeric design criteria of the ADG.

2.2.2 Proponent's Response

A detailed response to each of the matters outlined above is provided at **Appendix A** and **Appendix B**.

As requested by the Department, a detailed schedule providing an assessment of the proposal against the key numeric criteria in the ADG has been prepared by Renzo Piano Building Workshop and Lendlease Design and is included in the Supplementary Design Report at **Appendix C**. This schedule demonstrates the proposal's general compliance with the key numeric criteria.

In addition to the information provided, an updated assessment of the proposal's consistency with the objectives of the ADG is provided in **Table 1**. Matters that warrant further consideration are discussed below.

Table 1 – Apartment Design Guide assessment

Design Criteria	Proposal															
Part 3 Siting the Development																
3D Communal and Public Open Space																
<i>Objective</i> An adequate area of communal open space is provided to enhance residential amenity and to provide opportunities for landscaping	✓															
<i>Design Criteria</i> Communal open space has a minimum area equal to 25% of the site	✓															
Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter)	Achieves intent as assessed in submitted SSDA.															
3E Deep Soil Zones																
<i>Objective</i> Deep soil zones provide areas on the site that allow for and support healthy plant and tree growth. They improve residential amenity and promote management of water and air quality.	✓															
<i>Design Criteria</i> Deep soil zones are to meet the following minimum requirements: <table><tr><td>Site Area</td><td>Minimum Dimensions</td><td>Deep Soil Zone (% of site area)</td></tr><tr><td>Less than 650m²</td><td>-</td><td>7%</td></tr><tr><td>650m² – 1,500m²</td><td>3m</td><td></td></tr><tr><td>Greater than 1,500m²</td><td>6m</td><td></td></tr><tr><td>Greater than 1,500m² with significant existing tree cover</td><td>6m</td><td></td></tr></table>	Site Area	Minimum Dimensions	Deep Soil Zone (% of site area)	Less than 650m ²	-	7%	650m ² – 1,500m ²	3m		Greater than 1,500m ²	6m		Greater than 1,500m ² with significant existing tree cover	6m		Achieves intent as assessed in submitted SSDA.
Site Area	Minimum Dimensions	Deep Soil Zone (% of site area)														
Less than 650m ²	-	7%														
650m ² – 1,500m ²	3m															
Greater than 1,500m ²	6m															
Greater than 1,500m ² with significant existing tree cover	6m															
3F Visual Privacy																
<i>Objective</i> Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external and internal visual privacy.	✓															
<i>Design Criteria</i> Separation between windows and balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side and rear boundaries are as follows: <table><tr><td>Building Height</td><td>Habitable rooms and balconies</td><td>Non-habitable rooms</td></tr><tr><td>Up to 12m (4 storeys)</td><td>6m</td><td>3m</td></tr><tr><td>Up to 25m (5-8 storeys)</td><td>9m</td><td>4.5m</td></tr><tr><td>Over 25m (9+ storeys)</td><td>12m</td><td>6m</td></tr></table>	Building Height	Habitable rooms and balconies	Non-habitable rooms	Up to 12m (4 storeys)	6m	3m	Up to 25m (5-8 storeys)	9m	4.5m	Over 25m (9+ storeys)	12m	6m	Achieves intent. Refer to discussion below.			
Building Height	Habitable rooms and balconies	Non-habitable rooms														
Up to 12m (4 storeys)	6m	3m														
Up to 25m (5-8 storeys)	9m	4.5m														
Over 25m (9+ storeys)	12m	6m														
3K Bicycle and Car Parking																
<i>Objective</i> Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas	✓															

Design Criteria	Proposal												
<i>Design Criteria</i> For development in the following locations: - on sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area; or - on land zoned, and sites within 400 metres of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre The minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less. The car parking needs for a development must be provided off street.	✓												
Part 4 Designing the Buildings													
4A Solar and Daylight access													
<i>Objective</i> To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space	✓												
<i>Design Criteria</i> Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas.	Achieves intent. Refer to discussion below.												
A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid winter.	✓												
4B Natural Ventilation													
<i>Objective</i> The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents	✓												
<i>Design Criteria</i> At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed.	Further clarification provided below.												
Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line.	✓												
4C Ceiling Height													
<i>Objective</i> Ceiling height achieves sufficient natural ventilation and daylight access	✓												
<i>Design Criteria</i> Measured from finished floor level to finished ceiling level, minimum ceiling heights are: <table> <tr> <td>Minimum ceiling height</td><td></td></tr> <tr> <td>Habitable rooms</td><td>2.7m</td></tr> <tr> <td>Non-habitable</td><td>2.4m</td></tr> <tr> <td>For 2 storey apartments</td><td>2.7m for main living area floor</td></tr> <tr> <td></td><td>2.4m for second floor, where its area does not exceed 50% of the apartment area</td></tr> <tr> <td>Attic spaces</td><td>1.8m at edge of room with a 30 degree minimum ceiling slope</td></tr> </table> These minimums do not preclude higher ceilings if desired.	Minimum ceiling height		Habitable rooms	2.7m	Non-habitable	2.4m	For 2 storey apartments	2.7m for main living area floor		2.4m for second floor, where its area does not exceed 50% of the apartment area	Attic spaces	1.8m at edge of room with a 30 degree minimum ceiling slope	✓
Minimum ceiling height													
Habitable rooms	2.7m												
Non-habitable	2.4m												
For 2 storey apartments	2.7m for main living area floor												
	2.4m for second floor, where its area does not exceed 50% of the apartment area												
Attic spaces	1.8m at edge of room with a 30 degree minimum ceiling slope												
4D Apartment Size and Layout													
<i>Objective</i> The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity	✓												

Design Criteria	Proposal															
<i>Design Criteria</i> Apartments are required to have the following minimum internal areas: <table><tr><td>Apartment Type</td><td>Minimum internal area</td></tr><tr><td>Studio</td><td>35m²</td></tr><tr><td>1 bedroom</td><td>50m²</td></tr><tr><td>2 bedroom</td><td>70m²</td></tr><tr><td>3 bedroom</td><td>90m²</td></tr></table> The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5m ² each. A fourth bedroom and further additional bedrooms increase the minimum internal area by 12m ² each.	Apartment Type	Minimum internal area	Studio	35m ²	1 bedroom	50m ²	2 bedroom	70m ²	3 bedroom	90m ²	✓					
Apartment Type	Minimum internal area															
Studio	35m ²															
1 bedroom	50m ²															
2 bedroom	70m ²															
3 bedroom	90m ²															
Every habitable room must have a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight and air may not be borrowed from other rooms.	Achieves intent. Refer to discussion below.															
<i>Objective</i> Environmental performance of the apartment is maximised	✓															
<i>Design Criteria</i> Habitable room depths are limited to a maximum of 2.5 x the ceiling height.	✓															
In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window.	Achieves intent. Refer to discussion below.															
<i>Objective</i> Apartment layouts are designed to accommodate a variety of household activities and needs	✓															
<i>Design Criteria</i> Master bedrooms have a minimum area of 10m ² and other bedrooms 9m ² (excluding wardrobe space).	✓															
Bedrooms have a minimum dimension of 3m (excluding wardrobe space).	✓															
Living rooms or combined living/dining rooms have a minimum width of: 3.6m for studio and 1 bedroom apartments 4m for 2 and 3 bedroom apartments	Achieves intent. Refer to discussion below.															
The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts.	✓															
4E Private Open Space and Balconies																
<i>Objectives</i> Apartments provide appropriately sized private open space and balconies to enhance residential amenity	✓															
<i>Design Criteria</i> All apartments are required to have primary balconies as follows: <table><tr><td>Dwelling Type</td><td>Minimum Area</td><td>Minimum internal area</td></tr><tr><td>Studio apartment</td><td>4m²</td><td>-</td></tr><tr><td>1 bedroom apartment</td><td>8m²</td><td>2m</td></tr><tr><td>2 bedroom apartment</td><td>10m²</td><td>2m</td></tr><tr><td>3+ bedroom apartment</td><td>12m²</td><td>2.4m</td></tr></table> The minimum balcony depth to be counted as contributing to the balcony area is 1m.	Dwelling Type	Minimum Area	Minimum internal area	Studio apartment	4m ²	-	1 bedroom apartment	8m ²	2m	2 bedroom apartment	10m ²	2m	3+ bedroom apartment	12m ²	2.4m	Achieves intent. Refer to discussion below.
Dwelling Type	Minimum Area	Minimum internal area														
Studio apartment	4m ²	-														
1 bedroom apartment	8m ²	2m														
2 bedroom apartment	10m ²	2m														
3+ bedroom apartment	12m ²	2.4m														
For apartments at ground level or on a podium or similar structure, a private open space is provided instead of a balcony. It must have a minimum area of 15m ² and a minimum depth of 3m.	N/A															
4F Common Circulation and Spaces																
<i>Objective</i> Common circulation spaces achieve good amenity and properly service the number of apartments	✓															
<i>Design Criteria</i> The maximum number of apartments off a circulation core on a single level is eight.	✓															
For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40.	Achieves intent. Refer to discussion below.															
4G Storage																
<i>Objective</i> Adequate, well designed storage is provided in each apartment	✓															

Design Criteria	Proposal										
<i>Design Criteria</i> In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided: <table> <tr> <th>Dwelling Type</th><th>Minimum Area</th></tr> <tr> <td>Studio apartment</td><td>4m²</td></tr> <tr> <td>1 bedroom apartment</td><td>6m²</td></tr> <tr> <td>2 bedroom apartment</td><td>8m²</td></tr> <tr> <td>3+ bedroom apartment</td><td>10m²</td></tr> </table> At least 50% of the required storage is to be located within the apartment.	Dwelling Type	Minimum Area	Studio apartment	4m ²	1 bedroom apartment	6m ²	2 bedroom apartment	8m ²	3+ bedroom apartment	10m ²	Achieves intent. Refer to discussion below.
Dwelling Type	Minimum Area										
Studio apartment	4m ²										
1 bedroom apartment	6m ²										
2 bedroom apartment	8m ²										
3+ bedroom apartment	10m ²										

Solar Access

The ADG notes that solar and daylight access are important for apartment buildings as they reduce reliance on artificial lighting and heating, improve energy efficiency and enhance residential amenity. Objective 4A-1, which addresses solar and daylight access, seeks the following:

To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space

Two design criteria are provided to achieve this objective without any need for further merit assessment. As the proposed development does not numerically comply with these design criteria, therefore an alternative solution has been adopted to achieve compliance with the objective.

The ADG acknowledges the difficulty in achieving a rigid numerical standard in all instances. As such, a set of design guidance are provided as a starting point for any alternative solution. The proposal is consistent with the following design guidance:

- The design has maximised north aspect apartments within the approved building envelopes;
- Living areas are located to the north and service areas to the south and west of apartments where northern aspects are achieved; and
- Dual aspect apartments have been provided to optimise the direct sunlight to habitable rooms and balconies.

A detailed Solar and Daylight Access Study has been prepared by Lendlease to provide additional information about solar access calculations (attached at **Appendix F**).

Solar access was modelled for two scenarios, both of which included the shadow cast by the surrounding buildings including the Crown Integrated Hotel Resort.

In the first scenario, solar access is modelled between 9am and 3pm in accordance with the design criteria contained in the ADG under Objective 4A-1. In this scenario, 65% of apartments received direct solar access to living rooms and private open spaces. Considering the three towers of One Sydney Harbour as a whole, 66% of apartments receive direct solar access during this timeframe.

In the second scenario, an extended timeframe was adopted from 9am until 4.45pm. This scenario extends the timeframe suggested in the ADG by an additional one hour and 45 minutes. As a result, apartments within the proposed development are likely to benefit from solar access even when the sun is low in the sky (e.g. after 3pm at midwinter). In this extended timeframe, 96% of apartments in Building R4A receive solar access to living rooms and private open spaces.

This increase in apartments receiving solar access occurs as the entire height of the building ceases to be overshadowed by Crown Integrated Hotel Resort after 3pm. Considering all buildings in One Sydney Harbour, 85% of apartments benefit from solar direct solar access in this extended timeframe.

A summary of the results of the Solar and Daylight Access Study is presented in **Table 2**.

Table 2 – Results of solar and daylight access study

	R4A		R4B		R5		Total	
	%	Total apartments	%	Total apartments	%	Total apartments	%	Total apartments
9am – 3pm								
Living Rooms and Private Open Spaces	65%	212	64%	191	70%	105	66%	508
9am – 4.45pm								
Living Rooms and Private Open Spaces	96%	313	80%	237	70%	105	85%	655

Solar access modelling also considered apartments that receive no direct sunlight in the two scenarios. In the first scenario, the timeframe of between 9am and 3pm suggested in the ADG was adopted and results showed that there are no apartments in Building R4A that do not receive solar access between 9am and 3pm. As such, all apartments in Building R4A receive solar access during this period. Considering the One Sydney Harbour development as a whole during this timeframe, only 4% of apartments received no solar access.

A second scenario using an extended timeframe was also modelled, which resulted in no change to the apartments in Building R4A receiving no solar access. A summary of these results is presented at **Table 3**.

Table 3 – Results of solar access and daylight modelling for apartments that receive no direct sunlight

	R4A		R4B		R5		Total	
	%	Total apartments	%	Total apartments	%	Total apartments	%	Total apartments
9am – 3pm								
Living Rooms and Private Open Spaces	0%	0	9%	28	0%	0	4%	28
9am – 3.30pm								
Living Rooms and Private Open Spaces	0%	0	0%	0	0%	0	0%	0

Each building has been carefully oriented and incorporates materials to maximise solar access and daylight to each apartment. In particular, the highly glazed façade proposed will allow high light transmission. The towers benefit from open space to the north and Sydney Harbour to the west (demonstrated in **Figure 10**), which minimises the possibility that solar access will be impacted by future development and means that the One Sydney Harbour living areas, private open space and bedrooms will benefit from higher daylight levels year round than many other residential buildings within the Sydney CBD.



Figure 10 – Concept render of towers demonstrating proximity to Hickson Park and Sydney Harbour
Source: RPBW

The level of amenity achieved for Building R4A should be considered holistically in the context of the One Sydney Harbour development and overall Barangaroo precinct, which provides a high level of amenity to enhance liveability for future residents. In addition to the internal amenity offered by the design of Building R4A, residents will be provided with an additional level of amenity through access to a significant amount of open space along the Sydney Harbour foreshore, a number of public transport options, a range of retail offerings and close proximity to the Sydney CBD.

In the context of the surrounding environment, it is considered that the level of solar access achieved for Building R4A and across the One Sydney Harbour development is acceptable and that the design features which have been incorporated into each building will maximise opportunities for solar and daylight access.

Cross Ventilation

Cross ventilation is achieved in 60% of apartments in the first nine levels of Building R4A, consistent with the design criteria of Objective 4B-3 of the ADG.

Natural ventilation is achieved in the majority of apartments through the provision of dual aspects, whilst natural ventilation is achieved in one other apartment through the use of natural ventilation ducting. Three apartment types in the Building R4A floor plate benefit from a dual aspect, whilst one apartment type in the floor plate utilises ventilation ducting. This ducting facilitates air circulation, gaining air intake from an adjacent façade, carrying it through a ceiling duct and dispersing it into the apartment. This system captures wind from different pressure regions and has been designed to achieve a minimum free area of 0.4m² to enable suitable flow within the apartment. Expert advice provided by Windtech (attached at **Appendix D**) confirms that this arrangement will enable cross ventilation consistent with the ADG.

Figure 11 shows the achievement of cross ventilation on a typical floor plate and further detail is provided in the Supplementary Design Report at **Appendix C**.

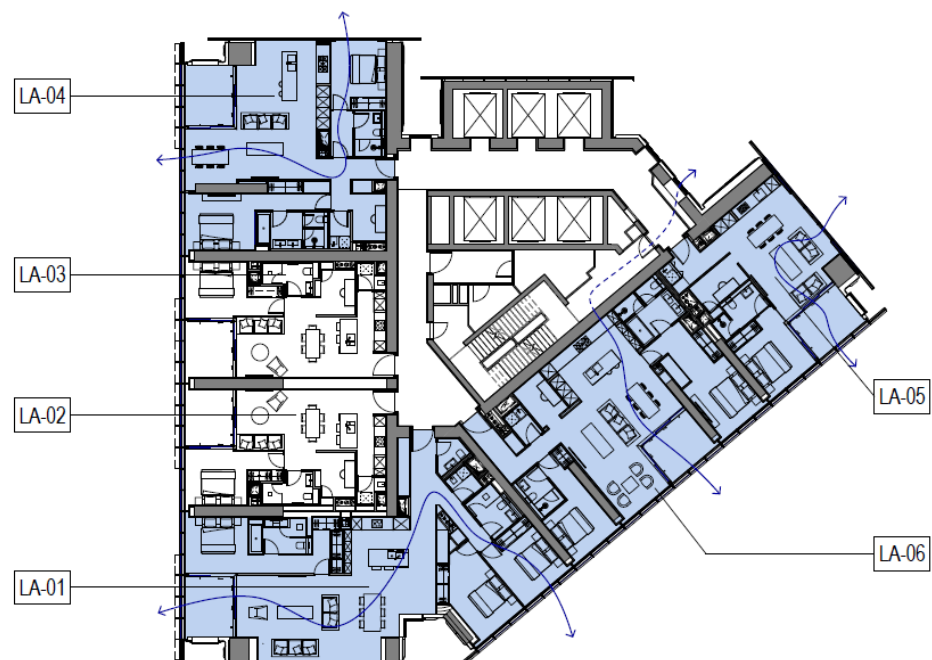


Figure 11 – Achievement of cross ventilation on a typical floor plate between Levels 4 - 7
Source: RPBW

In addition to this, the wintergarden glazing system has a minimum fixed opening of 150mm to ensure that the wintergardens can never be fully enclosed. This ensures that cross ventilation is maximised, capturing breezes from Sydney Harbour and Hickson Park below.

As a result of these design measures, and the optimal location of the development benefitting from the natural winds from Sydney Harbour and the public domain below, cross ventilation is achieved in accordance with Objectives 4B-1, 4B-2 and 4B-3 of the ADG.

Visual Privacy and Building Separation

The proposed building location and separation distances are in accordance with the Design Guidelines and are consistent with the design criteria outlined in Objective 3F-1 of the ADG, except as addressed below. The building siting of all three towers comprising One Sydney Harbour has carefully considered visual privacy, balanced against achieving a holistic level of amenity arising from solar access, natural ventilation and views to Sydney Harbour, Hickson Park, Barangaroo Headland Park and the city surrounds.

The arrangement of the towers on the site has been deliberately staggered to ensure that direct sightlines between apartments are minimised and windows have been carefully located to limit overlooking between apartments.

The Supplementary Design Report at **Appendix C** provides detailed diagrams demonstrating the separation between each building and design measures that have been incorporated to maintain visual privacy. **Figure 12** shows the relationship of Building R4A to Building R4B and the future Crown Integrated Hotel Resort. The separation distance between Building R4A and the Crown Integrated Hotel Resort is 27 metres and thus exceeds the maximum building separation suggested under the design criteria of Objective 3F-1 of the ADG.

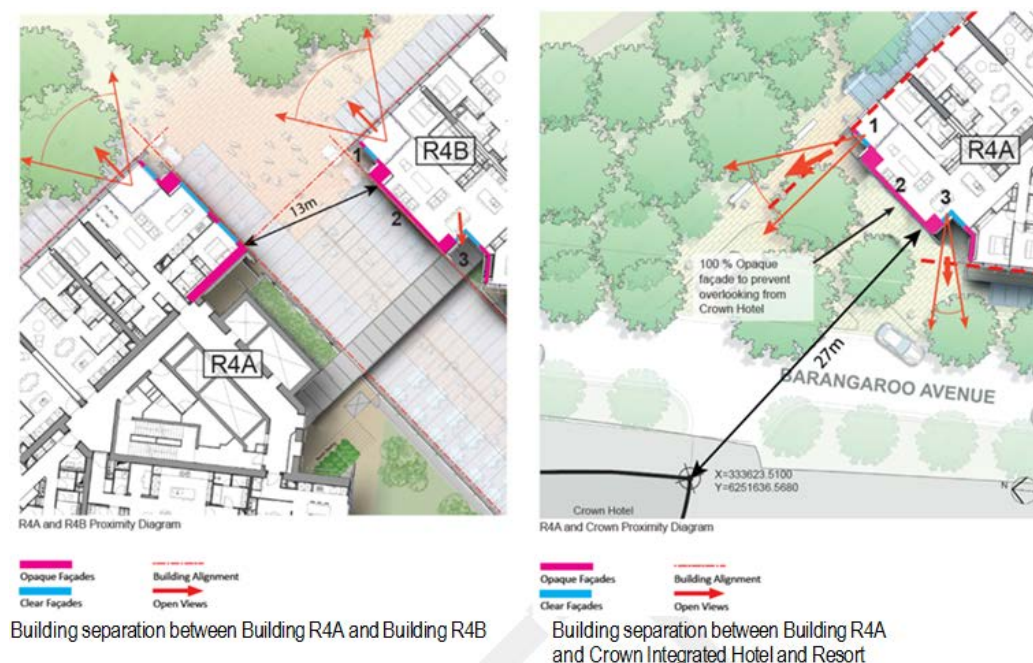


Figure 12 – Building separation
Source: RPBW

The Design Guidelines approved under the Barangaroo Concept Plan (MOD 8) contain a number of standards relating to building location that has informed the proposed building separation on the site. As shown in **Figure 13**, towers in Block 4A should be separated by a minimum of nine (9) metres.

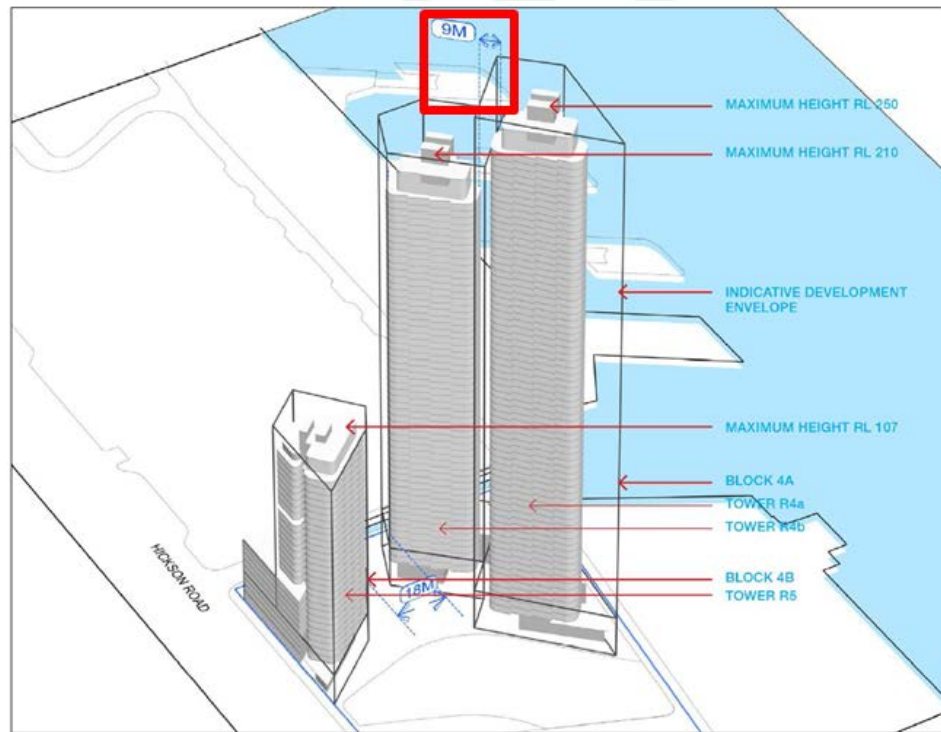


Figure 13 – Building mass and location diagram, required separation outlined in red box
Source: *Barangaroo South Built Form and Urban Design Guidelines*

The minimum separation distance between Building R4A and Building R4B is 13 metres, which is in excess of the amount required by the Design Guidelines and is therefore consistent with the approved Concept Plan (as modified).

To minimise any visual privacy impacts, an opaque glazed façade system will be utilised where the building siting and orientation result in a reduced building separation distance. This is complementary to other design measures to achieve consistency with Objective 3F-1, which were outlined in the original SSDA and include:

- Sightlines into a living area or wintergarden / balcony from an adjacent living area or wintergarden / balcony have been avoided through the arrangement of the floor layout of each building and apartment.
- Sightlines between living areas / wintergardens / balconies and bedrooms are obstructed by architectural elements including opaque facades and overlapping façade wings.
- Apartments are offset or oriented towards views to the north and north-east, rather than towards bedrooms and living rooms of apartments in the adjacent buildings.

Consistent with the approach to delivering holistic amenity throughout the One Sydney Harbour development, all apartments have been oriented to maximise uninterrupted views toward Sydney Harbour to the north, north-east and west as demonstrated at **Figure 14**, with all apartments achieving a good outlook or view depending on their position within the building.

Whilst the total building separation suggested in the design criteria of Objective 3F-1 is not achieved, access to views to the surrounding Harbour provides a more desirable outcome than if the building siting was modified to achieve the ADG separation distance.

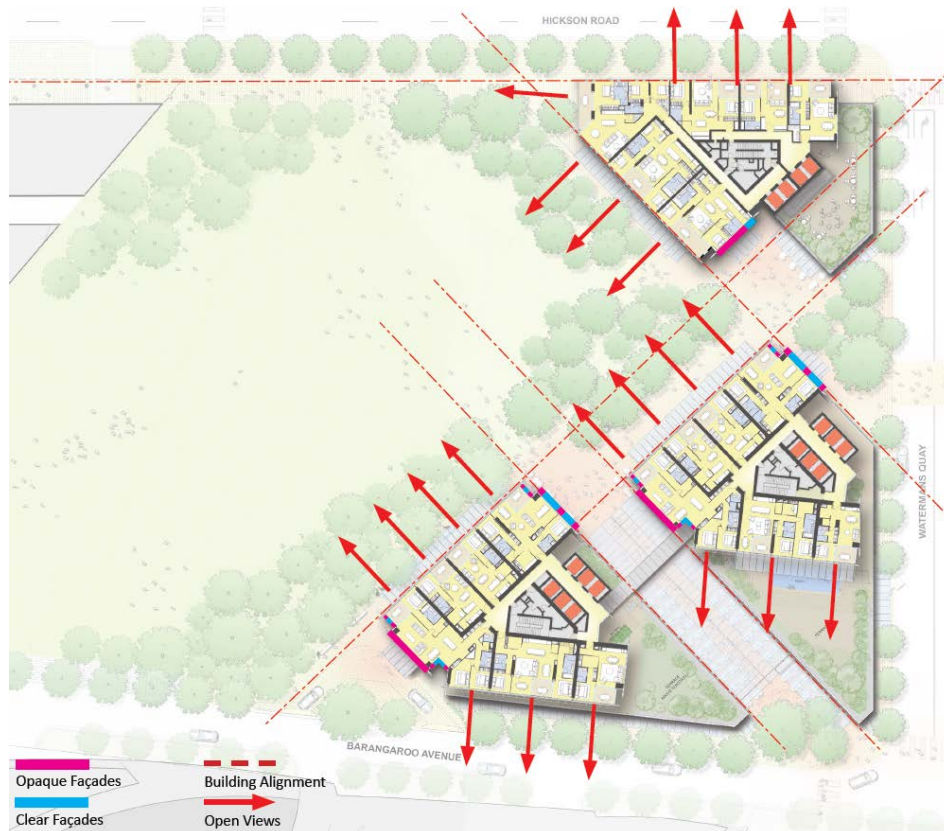


Figure 14 – Orientation of apartments to primary views

Source: RPBW

The design of the proposed building has sought to achieve a balance between achieving a high level of amenity by maximising views to Sydney Harbour, whilst maintaining visual privacy for residents. Through the incorporation of a range of design measures including the utilisation of opaque facades, floor plan layout and the staggered arrangements of towers on the site, a high level of external and internal visual privacy will be achieved.

Apartment Layout

All apartments are generously proportioned and incorporate a layout that allows flexibility for future residents. In addition to this, all apartments have been designed to maximise environmental performance by providing generous ceiling heights. The Supplementary Design Report at **Appendix C** includes detailed apartment layout diagrams that show the key dimensions and areas contained in the ADG. In addition to this, **Appendix C** also includes a detailed schedule of all key metrics.

To enhance the flexibility of each apartment and ensure that the layout of each apartment is well-organised and functional in accordance with Objective 4D-1 of the ADG, a number of apartments include a study to provide an extension to the open-plan living area or additional storage space. Following the design guidance of Objective 4D-1, each of these study rooms benefits from a direct line of sight to a window. **Figure 15** shows a typical floor plate in Building R4A, demonstrating that studies are provided with a direct line of sight to a window and are located with a direct opening onto the living area where possible.



Figure 15 – Studies and line of sight to a window
Source: RPBW

To ensure that studies benefit from a line of sight to a window, the apartment layout has been reconfigured to maximise the open plan living areas and resulting in a reduction in size to the study area. As a result of these minor amendments, the provision of studies and overall apartment layout will maximise access to daylight from within each apartment and provide future residents with enhanced flexibility and amenity. These features will contribute to the overall level of amenity that will be achieved for residents of One Sydney Harbour, benefitting from a high level of internal amenity achieved through careful apartment layout and design in addition to access to significant open space and communal facilities.

It is noted that 62 one bedroom apartments have a minimum width of 3.4 metres for living areas (equivalent to 18% of overall apartments), which is a 0.2 metre reduction from the width recommended in Objective 4D-3 of the ADG. These apartments have been designed to be consistent with the design guidance provided in Objective 4D-3, providing an overall apartment size that meets the minimum area recommended, as well as storage space to accommodate a variety of household activities and needs. This variation is considered to be minor and would not be perceived by future residents who benefit from the overall amenity provided by the generous size of each apartment and flexible, open-plan layout.

The living spaces are rectangular shaped, orthogonal rooms. These regularly shaped rooms allow for a variety of furnishing types and layouts, providing flexibility to future residents. Furniture has been realistically scaled within the living spaces, containing standard furniture which would be expected within an ordinary one bedroom apartment. All the day to day needs of future occupants are catered for within these apartments, with quality assured through the delivery of the project by Lendlease (one of Australia's and the world's leading residential developers).

Additional detailed diagrams demonstrating that all studies are provided with a direct line of sight to a window are provided in the Supplementary Design Report at **Appendix C**.

Private Open Space

All balconies and wintergardens have been designed to function as an extension of the open plan living areas and to allow for a range of uses. To facilitate this, all balconies/wintergardens open directly onto the primary living area of each apartment.

It is noted that 50 three bedroom apartments (15%) provide alternatively sized balconies/wintergardens. Each of these alternatively sized balconies/wintergardens is 2.7 metres in depth, which is in excess of the minimum of 2.4 metres described in the design criteria for Objective 4E-1 of the ADG.

These balconies/wintergardens are 11m², representing an alternative size difference of 1m² compared to the design criteria under Objective 4E-1 of the ADG. This is considered to be an extremely minor alternative, and would not generally be perceived by residents utilising the balconies/wintergardens. Furthermore, **Figure 16** illustrates diagrams demonstrating that these balconies/wintergardens are able to be comfortably furnished to accommodate a range of uses.

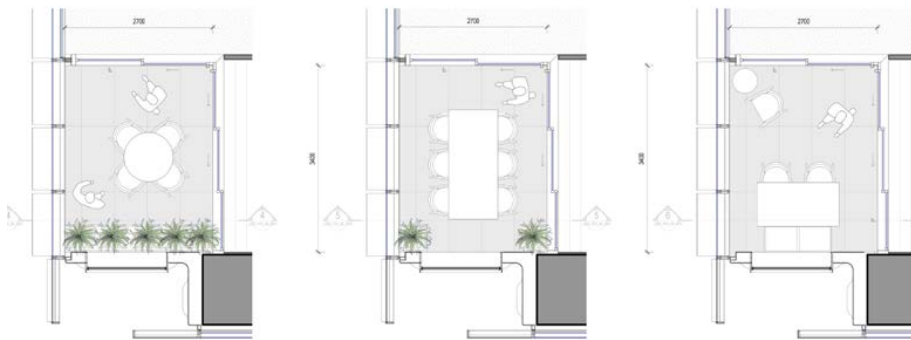


Figure 16 – Alternative arrangement diagrams of balconies/wintergardens

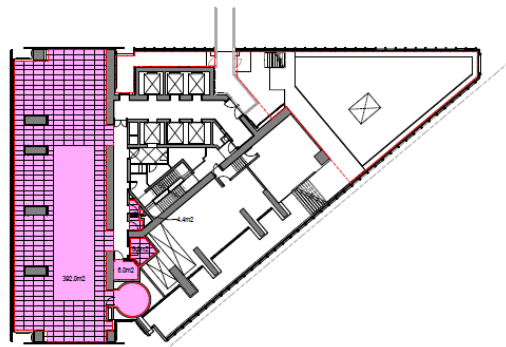
In addition to the private open space provided, the proposal is consistent with Objective 4E-1 of the ADG as residents will benefit from the amenity provided by the significant amount of communal open space within One Sydney Harbour as well as in the adjoining Hickson Park and wider Barangaroo precinct. As a result of the variety of communal and open space options available to residents, the proposed design of the wintergardens provides a high level of residential amenity and is consistent with the ADG objectives for private open space. A detailed schedule which includes the area and dimensions of all private open space is included in the Supplementary Design Report at **Appendix C**.

Communal Open Space

Building R4A provides 699.7m² of communal open space within the podium, which is equivalent to 28% of the site area and is consistent with Objective 3D-1 of the ADG. Plans illustrating the area and dimensions of the communal open space are provided in the Supplementary Design Report at **Appendix C** and is illustrated at **Figure 17**.



R4A Communal Open Space - Podium P2



R4A Internal Communal Space - Podium P2

Figure 17 – Building R4A Communal Open Space

Source: RPBW

Communal facilities will be accessible to residents of all buildings, providing residents with a variety of spaces to gather and interact, in addition to access to the amenity provided by the significant amount of open space in the wider Barangaroo precinct. **Figure 18** demonstrates the amount of open space provided throughout Barangaroo and its proximity to Building R4A.


Figure 18 – Open space throughout Barangaroo

Source: RPBW

Common Circulation

Six lifts are provided in Building R4A to service a total of 327 apartments, equating to 55 apartments serviced by a single lift. Whilst the design criteria of Objective 4F-1 of the ADG recommends that a maximum of 40 apartments are serviced by a single in buildings 10 storeys and over, advice provided by Lendlease Design (**Appendix I**) indicates that the design and speed of the lifts to be installed will be able to comfortably accommodate residents movements.

Storage

Storage for each apartment is provided both within the apartment and in the basement, with apartments planned to optimise opportunities for storage including coat cupboards, linen cupboards, home office storage and additional laundry, kitchen and robe provisions above the minimum amounts recommended under Objective 4G-1 of the ADG. Where possible, the majority of storage has been accommodated within the apartment whilst dedicated cages in the basement provide additional space for storage including bicycles.

The Supplementary Design Report at **Appendix C** illustrates that basement storage cages have been appropriately sized to ensure that the storage requirements recommended in the ADG can be achieved, in addition to accommodating a bicycle in this space.

An illustration of this outcome is provided at **Figure 19**.

Dimensions of internal and external storage areas are provided in the detailed schedule as part of the Supplementary Design Report at **Appendix C**. This schedule demonstrates that where 50% of storage is not able to be achieved internally within apartments, the remainder is provided in the basement storage cage.

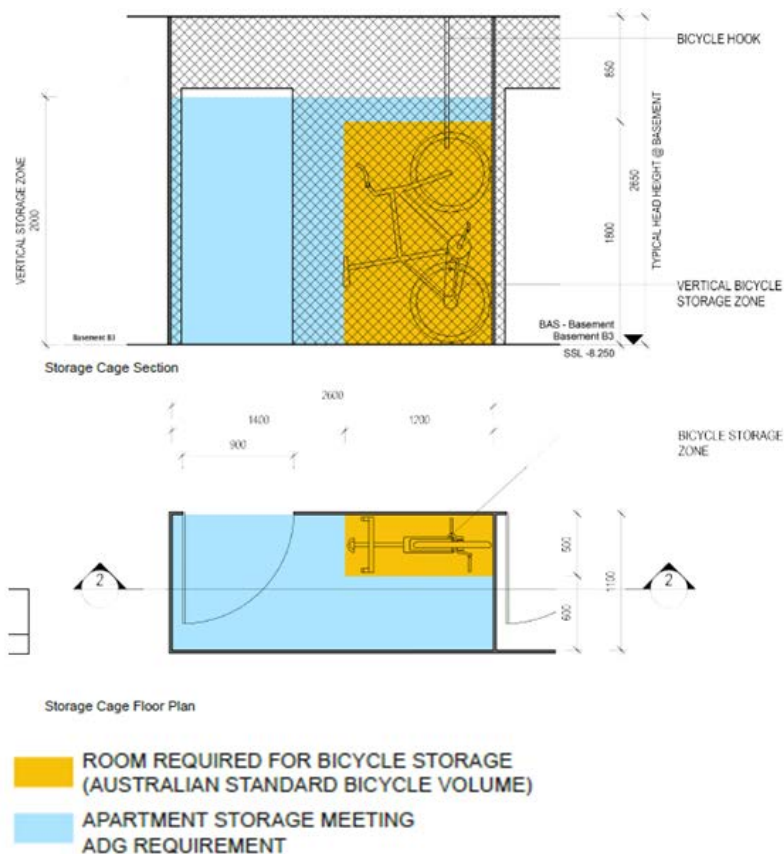


Figure 19 – Basement storage cage accommodating both ADG requirement and bicycle

Source: RPBW

3.0 Proposed Amended Development

Since public exhibition of the proposal, minor amendments have been made to the proposed development. The changes include those made in response to some of the issues and comments raised by the Department, Council and the general public, along with adjustments made to strengthen and enhance the design of the proposal.

The proposed changes are shown on the revised Architectural Drawings prepared by Renzo Piano Building Workshop and Lendlease Design at **Appendix C**. It is noted that not all of the originally submitted plans are proposed to be amended, however a full set of drawings has been provided for completeness. **Table 5** provides a detailed schedule of the proposed changes.

The following section presents a brief updated description (where relevant) of the modified development for which approval is sought. As illustrated within the list of refinements at **Table 5**, the overall changes are considered to be positive and aim to deliver an improved outcome. Accordingly, and as detailed in **Section 4**, the changes are not considered to give rise to any material alteration to the environmental assessment of the potential impact considered as part of the original development application.

3.1 Overview of Proposal (as amended)

The application seeks approval for the construction, use and fit-out of a 72 storey residential building (RL 250) known as Building R4A. Building R4A comprises 47,564m² of residential floor space, with 432m² of retail uses in the podium.

The application also seeks approval for:

- Fit-out and use of the Stage 1B Basement car park (approval for construction sought under the Stage 1B Basement application) to accommodate 377 residential car spaces, 1 retail car space, residential and retail storage, waste rooms, facilities management offices, shared plant and services, and circulation spaces.
- Limited demolition of interim basement elements, such as access points and service risers, constructed on a temporary basis under the Stage 1B Basement application to allow for the integration of the basement elements with the proposed building.
- Interim and permanent landscaping works, including pedestrian paving immediately surrounding the building (including paving of the pedestrian plaza, referred to as the 'Strada') and a podium garden.
- A signage zone to accommodate building identification signage on Barangaroo Avenue.

3.2 Numerical Overview (as amended)

Table 4 below provides the key numerical information of the proposed amended development.

Table 4 – Key development information

Component	Amended Proposal		Change
GFA	47,996m ²		+114m ²
Apartments	327		No change.
Maximum height	Top of Roof Level	RL 246.67	No change.
	Top of Stationary BMU	RL 250	
	Top of Roof Feature	RL 250	
	Metres (to top of roof feature)	246.5 metres	
	Storeys	72	
Total proposed car parking spaces to be allocated within concurrent Stage 1B basement	Maximum of 378, comprising: – 377 residential – 1 retail		- 13

3.3 Refinement of Core Structure and Façade

Core Design

The core has been redesigned to achieve structural efficiencies. The amended design provides greater flexibility on the floor plates and will reduce the core slab thickness, allowing increased space for services in the ceiling. A comparison of the previously submitted design to the currently proposed design is provided at **Figure 19**. It is noted that the proposed design will also result in an overall reduction in embodied energy throughout the building.

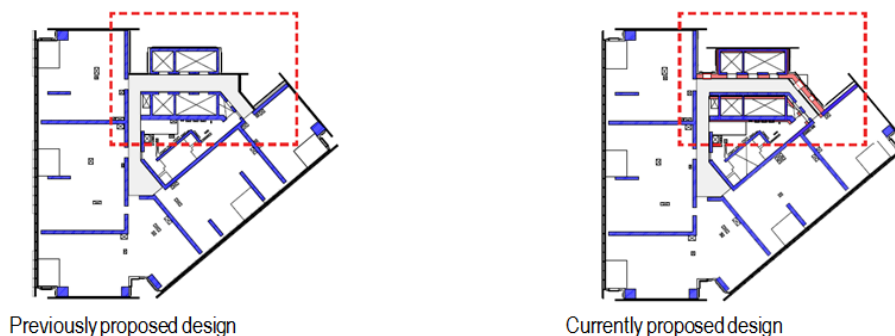


Figure 20 – Comparison of core design
Source: RPBW

Façade and Roof Design

Resulting from the amendment to the core structure, changes are proposed to the façade exhibited. These include:

- refinement to the lift core façade;
- addition of notch windows at the corner of the tower forms; and
- roof layout rationalised.

An illustration of the refined core cladding concept is provided at **Figure 21**. **Figure 22** illustrates the notch concept to be provided at the corners of the tower. The refined roof layout is shown at **Figure 23**.

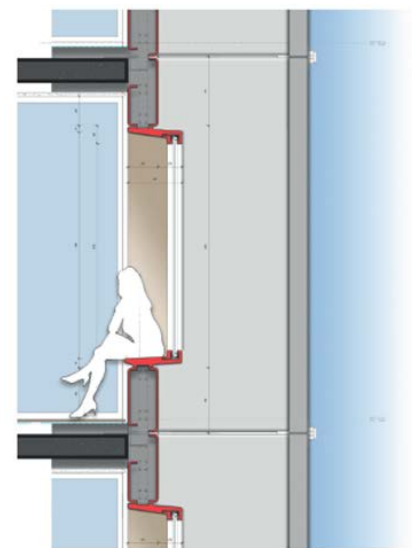


Original Proposal



Current Proposal

Figure 21 – Refined core concept
Source: RPBW



Notch Concept Section



Notch Perspective View

Figure 22 – Proposed notch window
Source: RPBW

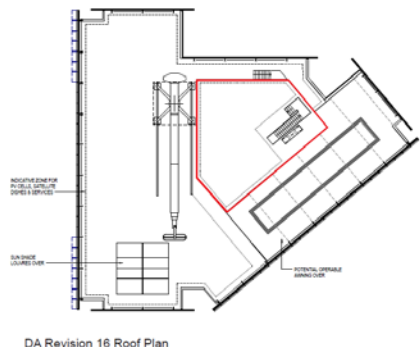
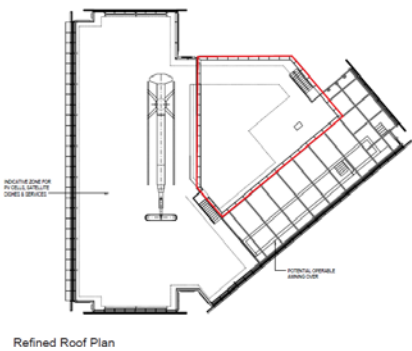


Figure 23 – Refined roof layout
Source: RPBW



3.4 Schedule of Design Changes

In addition to the changes described above, a small number of design amendments are also sought to the proposal as exhibited. **Table 5** provides a full list of all proposed design changes.

Table 5 – Schedule of design changes

Key Changes	Driver for Change
Podium	
Retail mezzanines	Retail mezzanine levels have been removed in the towers as a result of market feedback indicating that retail space located at mezzanine level would not be viable.
Lobby Vestibules and Entry Doors	The lobby entry doors will be amended from a revolving door to a vestibule arrangement, which improves pedestrian experience, is comfortable in all weather conditions, and provides equitable access.
Tower	
Apartment layout revisions	Minor reconfiguration of apartment layouts has been undertaken to maximise views to windows from within the apartment.
Core Structure Refinements	A review of the structure was undertaken to identify design efficiencies to improve the embedded carbon efficiency. The core structure refinement has had a positive effect on the lift lobbies through a reduction of glass, removing the need to heavily air condition the space. The end result of this change is a reduction in building energy load and glare.
Core Façade Refinement	Changes to the structural design of the core have driven a concurrent re-examination of the core exterior façade. The design of the low-rise lift core now becomes an outer glazed facet of the tower with the central core expressed as an opaque element in a cluster of glass planes with the upper lift core changing to an opaque materiality.
Notch Window Articulation	The notch is a cut out of the slab edge at the corner between the glazed façades. At this location the facade becomes opaque and a pop out window creates a series of shadow variations that will articulate the edges of the tower. The window facilitates a visual connection to the outside and minimises overlooking. The articulation given by the introduction of the pop out window in the opaque reveal improves the sense of lightness of the glazed façades framing the tower volume.
Roof Core Façade	Further study of building roofs and the fringe façade detail has resulted in a simplified geometry to the upper roof profile and also responds to the change in materiality of the upper lift core.
Building Fringe Materiality	As part of the structural refinements, an opaque concrete blade wall to the penthouse roof terrace has been replaced with an extension of the glazed fringe to enhance the sense of openness and to access the views to the east.
Building Fringe Structure	The refinement of the glass fringes at the roof level introduces a horizontal bracing system on the penthouse pool deck where the fringes are more than a storey high. This framework will be designed to allow for future sun shading screens over the pool area if required.
Penthouse Floor Level	The RL of Level 69 has been reduced to improve the proportion of the spaces on the lower floor of the penthouse and to increase the ceiling height in the master bedroom.

4.0 Additional Information and Assessment

The exhibited EIS addressed the potential impacts of the overall development against a range of matters relevant to the development. Except where addressed in this report, the conclusions of the original assessment remain unchanged. Therefore, the assessment of the following matters remains unchanged:

- land use and GFA;
- design excellence;
- prescribed airspace for Sydney Airport and Sydney Observatory impacts;
- amenity;
- ecologically sustainable development;
- public domain and public access;
- transport, traffic, car parking and accessibility impacts;
- heritage;
- contamination;
- infrastructure provision;
- noise;
- air quality and odour;
- water, drainage and stormwater;
- sediment, erosion and dust control;
- construction and operation waste management;
- BCA;
- structural engineering;
- environmental, construction and site management;
- staging;
- sea level rise; and
- consultation.

As identified in **Section 1.1**, the following consultants' reports and supporting information has been updated or further supplements the material originally submitted in support of the EIS:

- Addendum Wind Report prepared by Windtech (**Appendix D**).
- Crime Prevention Through Environmental Design Report prepared by Harris Crime Prevention Services (**Appendix E**).
- Solar and Daylight Access Study prepared by Lendlease (**Appendix F**).
- Access Report prepared by Morris Goding Accessibility Consultants (**Appendix G**).
- BCA Report prepared by McKenzie Group (**Appendix H**).
- Lift Letter prepared by Lendlease Design (**Appendix I**).

The updated supporting documentation and assessment information relating to built form and residential amenity have been addressed at Section 2.0 of this report as relevant to respond to key issues raised in submissions.

The further information and assessment material that has not otherwise been addressed at Section 2.0 of this report is summarised in the following sections.

4.1 Consistency with Original SSDA Scheme

All key elements of the proposed development remain unchanged from what was originally submitted. The scheme remains generally consistent with, and does not substantially differ from, the development as originally proposed and submitted. Whilst design refinements have resulted in a minor increase in GFA, the proposal remains consistent with the maximum GFA permitted for Block 4A under the Barangaroo Concept Plan (as modified). Importantly, the building continues to achieve design excellence and offer significant benefits in terms of providing Sydney with a new world-class building to contribute to the city's global status.

4.2 Consistency with the Barangaroo Concept Plan MP06_0162 (MOD 8)

As described above, all key elements of the proposed development remain unchanged from what was originally submitted and exhibited. The proposal remains consistent with the Barangaroo Concept Plan MP06_0162 (MOD 8) as well as the accompanying *Barangaroo South Built Form and Urban Design Guidelines* as set out in further detail as part of this Response to Submissions report.

Importantly, the proposal remains consistent with the key development standards for the Barangaroo South Site, including the maximum height and the overall GFA permitted within Block 4A.

4.3 Visual Impact

As a result of the refinements undertaken post-exhibition of the original SSDA, the materiality and structure of the façade has been subject to minor amendments as outlined in Section 3.0. **Figure 24** provides a comparison of the originally proposed design to what is currently proposed, as well as an updated render illustrating the expression of the upper levels of Building R4A.

The amended design is an improvement to the visual appearance of the building and the refinement now proposed to the design does not significantly alter the assessment of visual impacts undertaken as part of the submitted SSDA. As there is no change to the height, setbacks or overall built form of the tower, there is no change to the conclusions of the Visual and View Impact Assessment submitted as part of the SSDA.

Importantly, Building R4A will not affect the relevant and appropriate view, vista, outlook and visual impact objectives previously approved, and the impacts of the proposal remain consistent with those identified in Concept Plan (Mod 8).



Figure 24 – Comparison of originally proposed façade to current proposal (top) and revised rooftop expression
Source: RPBW

5.0 Final Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Table 6** below. These measures do not change from those outlined in the original EIS.

Table 6 – Final mitigation measures

Mitigation Measures
Air and Odour The Building R4A construction works are to be incorporated into the existing environmental management plans including a reactive Air Quality Management Plan (including a reactive dust mitigation system) which has been implemented across the Barangaroo site. Further measures are outlined at 4.17.
Reflectivity All glazing and materials must not exceed 28% reflectivity.
Wind – The inclusion of strategic planting in the form of densely foliating trees at ground level around the site. To be effective in wind mitigation, these trees should be capable of growing to a height of approximately 5m to 6m, with a canopy diameter of approximately 4m to 5m. – The inclusion of portable café screening on the north-eastern aspect of Building R4A to be controlled by the operator to provide suitable conditions for patrons during adverse wind conditions. Conditions will be suitable as a pedestrian thoroughfare when the café area is not in operation. – The inclusion of a 3m high screen on the western aspect of the podium roof level (only required under Scenario 1). – The inclusion of wintergardens to offer protection from wind and generally improve the amenity of balconies at levels 21 and over.
Traffic and Parking – A Travel Demand Management Plan in accordance with the TMAP prepared by ARUP and dated August 2015, and will be prepared and implemented prior to occupation of the building. – Construction traffic will be managed in accordance with the following principles, as outlined in the TMAP prepared by ARUP and dated August 2015: ▪ Construction access driveways are designed to allow trucks to enter and leave the site in a forward direction; ▪ Construction access driveways are managed and controlled by site personnel; ▪ Safety for works and the public in the vicinity of the worksite is maintained; ▪ Designated truck routes for all access points are developed which minimises the impacts on the local road network; ▪ A safe, convenient and appropriate environment is established for pedestrians and cyclists at all times; and ▪ Appropriate capacity for pedestrians along the Hickson Road footpath is maintained.
Noise and Vibration Project specific noise and vibration control measures will be incorporated into the Construction Noise and Vibration Management Sub Plan. These are: ▪ General measures to include plant noise audits; operator instruction; equipment selection; site noise planning; and installation of noise barriers between site and street frontages. ▪ Community Relations Programme to be included in Lendlease's Community and Stakeholder Engagement Strategy. ▪ Noise & Vibration Management Plan whereby measures required by this assessment are to be incorporated into the revised version of the sub plan.
Building Code of Australia, Accessibility and Fire Safety Work will be carried out in accordance with the recommendations of: ▪ Building Code of Australia (BCA) Assessment prepared by McKenzie Group Consulting and dated July 2015. ▪ Preliminary Fire Safety Engineering Review prepared by Defire and dated July 2015.
Waste Management Waste will be managed in accordance with the Waste Management Plan prepared by ARUP, and dated July 2015.
Construction Framework Environmental Management Plan The CFEMP should be implemented into the construction phase of the development.

Mitigation Measures
ESD
Building R4A will be designed and constructed to achieve 5 Star Green Star – Multi Unit Residential v1 Tool Design and As- Built ratings.

6.0 Conclusion

The proponent Lend Lease (Millers Point) Pty Ltd and its expert project team have considered all submissions made in relation to the public exhibition of the proposal. A considered and detailed response to all submissions made has been provided within this report and in the accompanying documentation.

In responding to and addressing the range of matters raised by government agencies and authorities and the general public, Lendlease has sought to refine the project design. The refined proposal also captures changes made by the project team post-exhibition.

As outlined within this report, the analysis of the amendments to the proposed development confirms that all key elements of the original proposed development that was exhibited remain unchanged.

The refined development does not substantially differ from the original publicly exhibited development proposal. To the benefit of the overall project, the environmental impacts of the amended development remain consistent with the original application and deliver a project that results in an overall improvement to the original publicly exhibited development. The proposal has significant planning merits as it will:

- contribute to design excellence in Sydney through the delivery of high quality building designed by internationally renowned architects;
- achieve development on the site that is consistent with the objectives of the relevant strategic policies, environmental planning instruments, plans and guidelines;
- achieve consistency with the Barangaroo Concept Plan (MOD 8) and the *Barangaroo South Built Form and Urban Design Guidelines*;
- provide increased dwellings in the City of Sydney LGA, across a range of apartment types;
- create a high quality public realm that facilitates pedestrian connections throughout the Barangaroo precinct; and
- complement existing and future development at Barangaroo by providing increased amenity and activation throughout the neighbourhood.

In conclusion, the construction and use of Building R4A represents a key component of the Barangaroo urban renewal project that will have significant public benefits for Sydney. The design excellence of the proposal in combination with the high level of amenity it provides for future residents, workers and visitors will complement the ongoing development of the Barangaroo precinct and support Sydney's reputation as a global city.