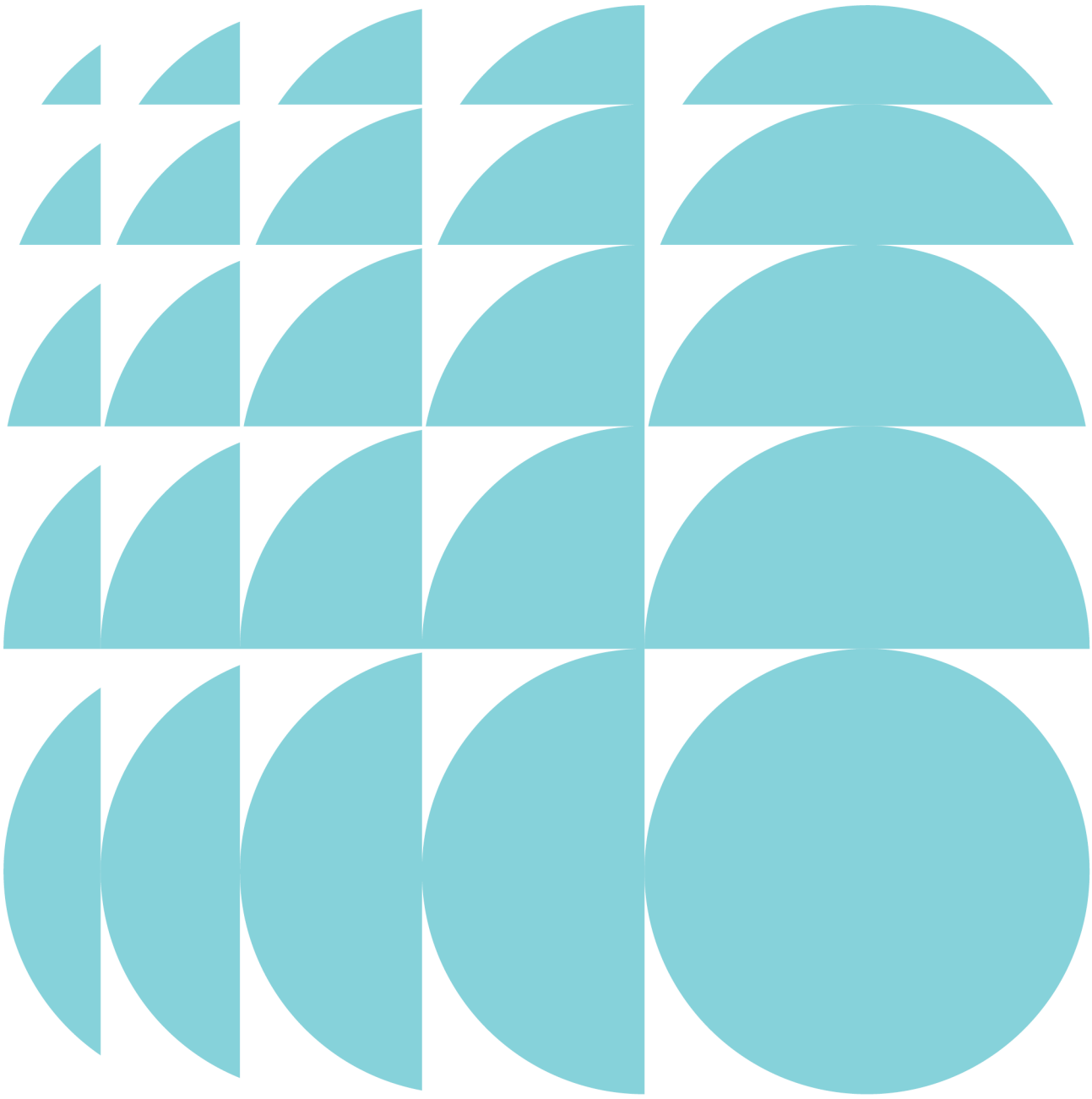
ETHOS URBAN

Response to Submissions

Building R5, Barangaroo South
SSD 6966

Submitted to Department of Planning and Environment
On behalf of Lendlease (Millers Point) Pty Ltd

28 November 2018| 10051



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Executive Summary

The Environmental Impact Statement (EIS) in support of State Significant Development Application 6966 (SSDA 6966) for the construction and use of a residential building known as R5 at Barangaroo South was publicly exhibited for a period of 44 days between 29 September 2016 and 14 November 2016, in accordance with the requirements of the *Environmental Planning and Assessment Act 1979* (EPA Act). Building R5 forms part of three residential towers in Stage 1B of Barangaroo South, which are collectively referred to as 'One Sydney Harbour'. The other two buildings, being Building R4A and Building R4B, were approved in September 2017.

Twelve 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 to be submitted prior to the final assessment of the application.

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

- Built form.
- Residential amenity.
- Key Worker Housing (KWH).

The proponent, Lendlease (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 EPA 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**.

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 R5. 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 relate to:

- Increased building height of one storey to a maximum of RL107.
- Revised distribution of gross floor area to a maximum of 19,158m^{2,} as follows:
  - Increased residential GFA from 18,249m^2 to 18,287m^2.
  - Decreased retail GFA from 909m^2 to 871m^2.
- Floorplate reconfiguration.
- Increased number of dwellings from 151 to 210.
  - Increase of 50 on-market dwellings to a total of 162.
  - Increase of 9 KWH dwellings to a total of 48.
- Revised dwelling mix to reflect the residential market and increase of KWH dwellings.
- Modifications to the proposed communal open space, comprising:
  - Relocated on-market communal open space to Level 26.
  - New Key Worker Housing communal open space on Podium Level 2.
- Façade refinements, including:
  - Inclusion of a 'notch' on the Hickson Road façade.

  - Incorporation of a step in building height.
  - Incorporation of a chamfer on the north-eastern corner, facing Hickson Park.
  - Stepped façade to Hickson Park frontage.
  - Realignment of the south-west façade to provide a greater podium setback.
- Colonnade and ground plane refinements.
- Exclusion of ground floor shop fronts.

Section 3 and **Section 4** 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 residential amenity and the visual quality 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**.

In conclusion, the proposal for the construction and use of Building R5 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

The Environmental Impact Statement (EIS) in support of State Significant Development Application 6966 (SSDA 6966) for the construction and use of a residential building known as R5 at Barangaroo South was publicly exhibited for a period of 44 days between 29 September 2016 and 14 November 2016, in accordance with the requirements of the *Environmental Planning and Assessment Act 1979* (EPA Act). Building R5 forms part of three residential towers in Stage 1B of Barangaroo South, which are collectively referred to as 'One Sydney Harbour'. The other two buildings, being Building R4A and Building R4B, were approved in September 2017.

Twelve 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 to be submitted prior to the final assessment of the application.

The proponent, Lendlease (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 EPA Act.

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

This 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 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 authorities and members of the public) can be broadly grouped into the following categories:

- Built form.
- Residential amenity.
- Key Worker Housing.

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 application and to address issues raised in submissions, a range of updated plans and documents have been prepared.

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

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

- Wind Assessment prepared by Windtech (**Appendix E**).
- Solar and Daylight Access Study prepared by Lendlease Applied Insight (**Appendix F**).

- Landscape Plans prepared by Grant Associates (**Appendix G**).
- Visual Impact Assessment prepared by Virtual Ideas (**Appendix H**).
- Overshadowing Assessment prepared by Renzo Piano Building Workshop and Lendlease Applied Insight (**Appendix I**).
- Transport Assessment prepared by Arup (**Appendix J**).
- Reflectivity Assessment prepared by Arup (**Appendix K**).
- Lighting Strategy prepared by Aurecon (**Appendix L**).
- Noise and Vibration Assessment prepared by Wilkinson Murray (**Appendix M**).
- CPTED Report prepared by Harris Crime Prevention Services (**Appendix N**).
- Waste Assessment prepared by Foresight Environmental (**Appendix O**).
- ESD Report prepared by Lendlease Applied Insight (**Appendix P**).
- BASIX prepared by Lendlease Applied Insight (**Appendix Q**).
- Construction Framework Environmental Management Plan prepared by Lendlease (**Appendix R**).
- BCA Report prepared by McKenzie Group (**Appendix S**).
- Access Report prepared by Morris Goding (**Appendix T**).
- Fire Safety Report prepared by Defire (**Appendix U**).
- Vertical Transport Letter prepared by Lendlease Applied Insight (**Appendix V**).
- Stakeholder and Engagement Strategy prepared by Lendlease (**Appendix W**).

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** and **4** 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**.

This report should be read in conjunction with the EIS prepared by JBA (now Ethos Urban), dated 16 September 2016.

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.
- Residential amenity.
- Key Worker Housing.

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 are considered at **Section 4**.

Government Agencies and Authorities

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.
- Transport for NSW.

A number of these submissions comprised the agency or authority confirming they had no comment on the application or providing guidance on recommended conditions. These included 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 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 in this section and at **Appendix A**.

Members of the Public

A total of six public submissions were received and all public submissions objected to the proposal. Submissions were received from members of the public who live, work or own property in the vicinity of Barangaroo.

These submissions raised a variety of issues including the relationship to the surrounding urban environment, impacts on existing residents, the 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 public is provided at **Appendix B**.

2.1 Built Form

2.1.1 Issue

The built form of the proposed building was raised as an issue in submissions by Council and members of the public.

The Department required that the proposal's consistency with the *Barangaroo South Built Form and Urban Design Guidelines* (the Design Guidelines) be further assessed. Council noted 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.

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

2.1.2 Proponent's Response

The Renzo Piano Building Workshop design 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 at Barangaroo South and in the Sydney CBD generally. A detailed response to the issues identified above are provided below.

Podium Design

There have been three key changes to the podium design to respond to the issues raised and improve the relationship to the public domain, being:

- Refined alignment of the colonnade on Hickson Road with the colonnade established by Building C1 and Building C2.
- Alignment of the south-western edge of the podium with Scotch Row.
- Refined chamfered corner at the north-eastern edge.

The contribution that these design changes make to an improved ground plane and their consistency with the Design Guidelines is discussed in further detail below.

Building R5 incorporates a two-storey podium that includes retail tenancies and the residential lobbies at ground level, with retail, plant and residential facilities provided above. The low-rise podium is RL 14.250 and has been designed to be within the maximum height of RL 22 set out in the Design Guidelines. The height of the podium will achieve a suitable height transition from Building C1, which is located to the south of Watermans Quay, to Hickson Park to the immediate north.

The height of the Building R5 podium is consistent with the podiums for Building R4A and Building R4B, as well as with Control 1 for Block 4A and 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 the Guidelines, whilst **Figure 2** provides a detailed diagram of the building envelope which has guided the built form.

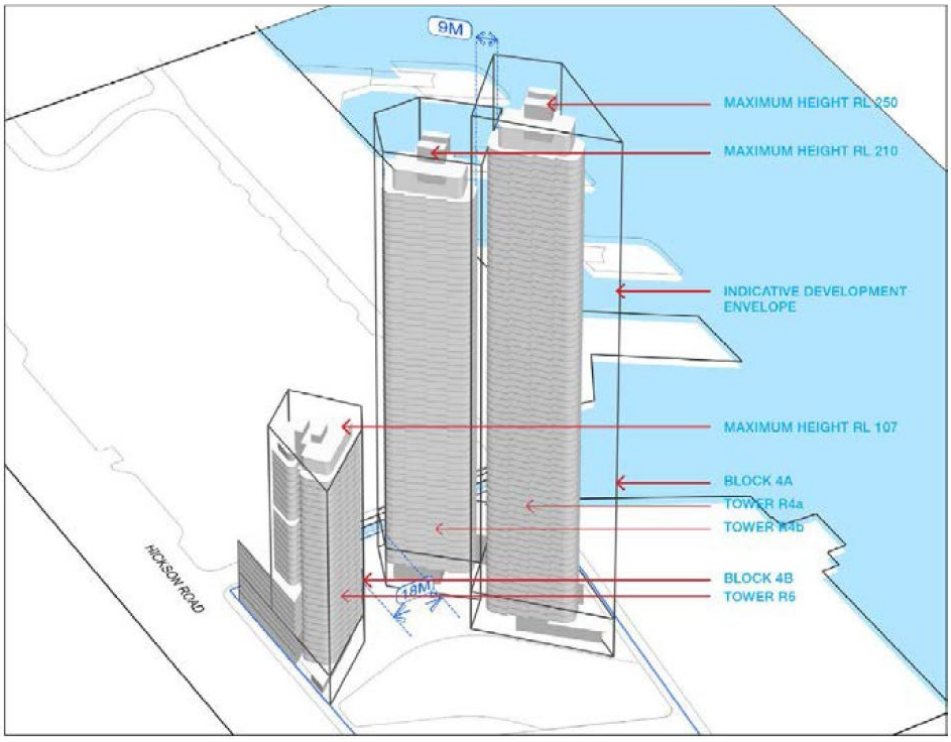

Figure 1 Design Guidelines Building Mass and Location diagram

Source: Barangaroo South Built Form and Urban Design Guidelines

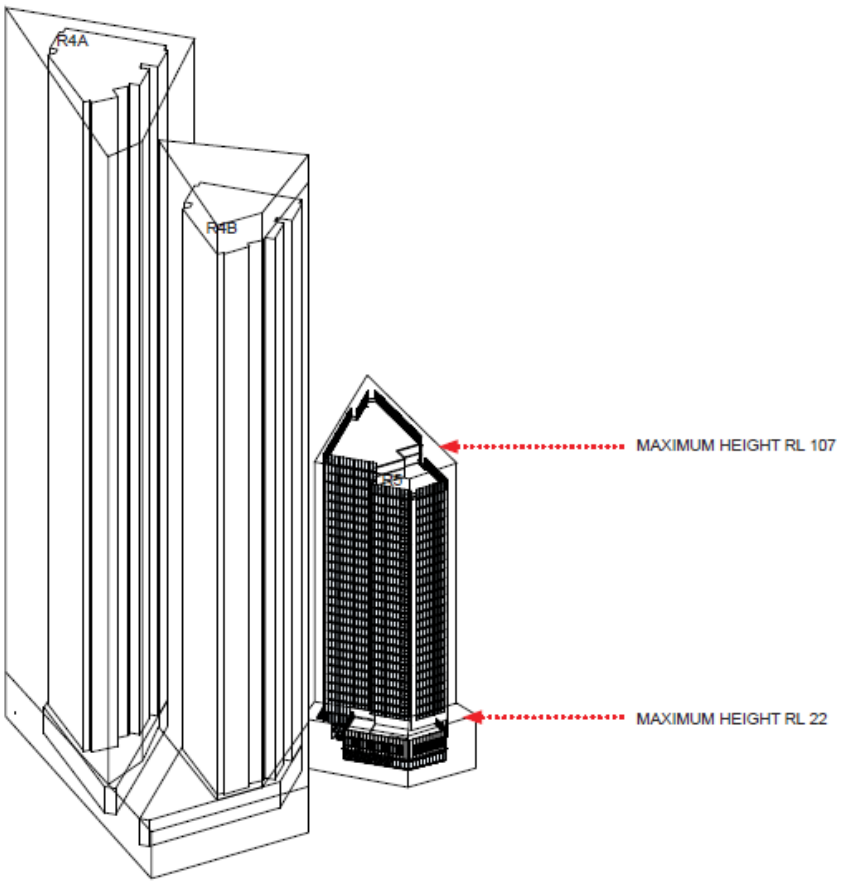

Figure 2 Detailed envelope diagram

Source: RPBW

An extract from the Design Guidelines showing the primary access routes around Block 4A and Block 4B is shown at **Figure 3**. 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.*

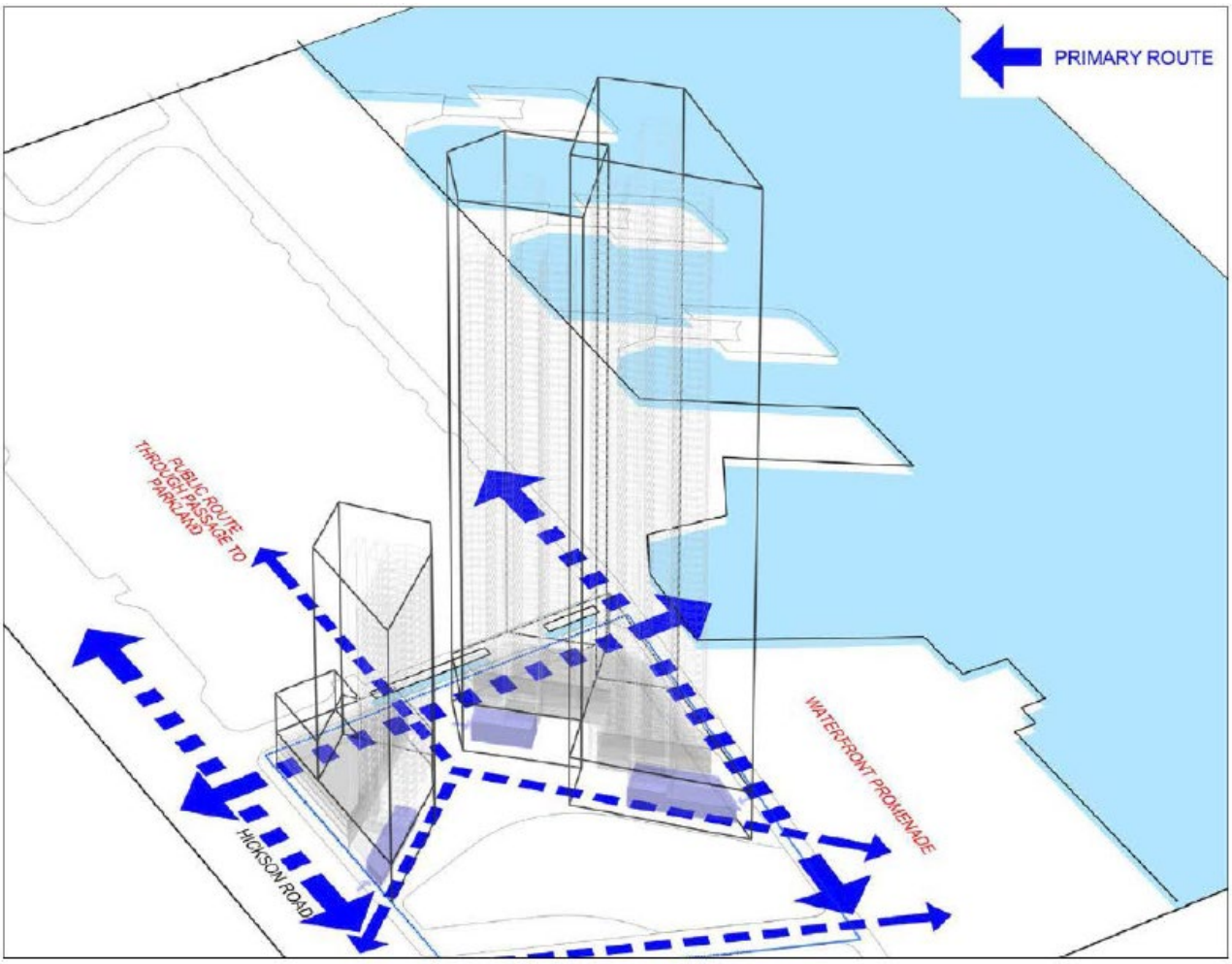

Figure 3 Ground Floor Permeability and Accessibility of Public Realm diagram

Source: Barangaroo South Built Form and Urban Design Guidelines

The primary north-south connection on Hickson Road is established through the provision of a colonnade at the base of Building R5, consistent with the standard outlined in Control 5 of the Design Guidelines. The podium provides for a pedestrian colonnade along Hickson Road, aligning with the pedestrian colonnades of Building C1, Building C2 and the Loggia. On the south western area of Building R5, the podium is now set back, improving the alignment of the ground public areas with Scotch Row opposite.

The colonnade and detailing of the façade establishes a unified street wall and creates a legible ground plane for pedestrians, continuing the north-south connection on Hickson Road established by Building C1 and Building C2. In recognition of the importance of this north-south connection for movement through the area, the colonnade provides a generous shelter for pedestrians to ensure a high quality public domain is achieved. In addition, the alignment of the western podium improves both the pedestrian and visual connection of the public area with Scotch Row opposite.

Figure 4 R5 Podium and Hickson Road colonnade

Source: RPBW

In addition to this, the secondary public route from Scotch Row through to Hickson Park has been improved by realignment of the podium façade, creating a plaza to Watermans Quay and continuity from Scotch Row. This is illustrated at **Figure 5**.

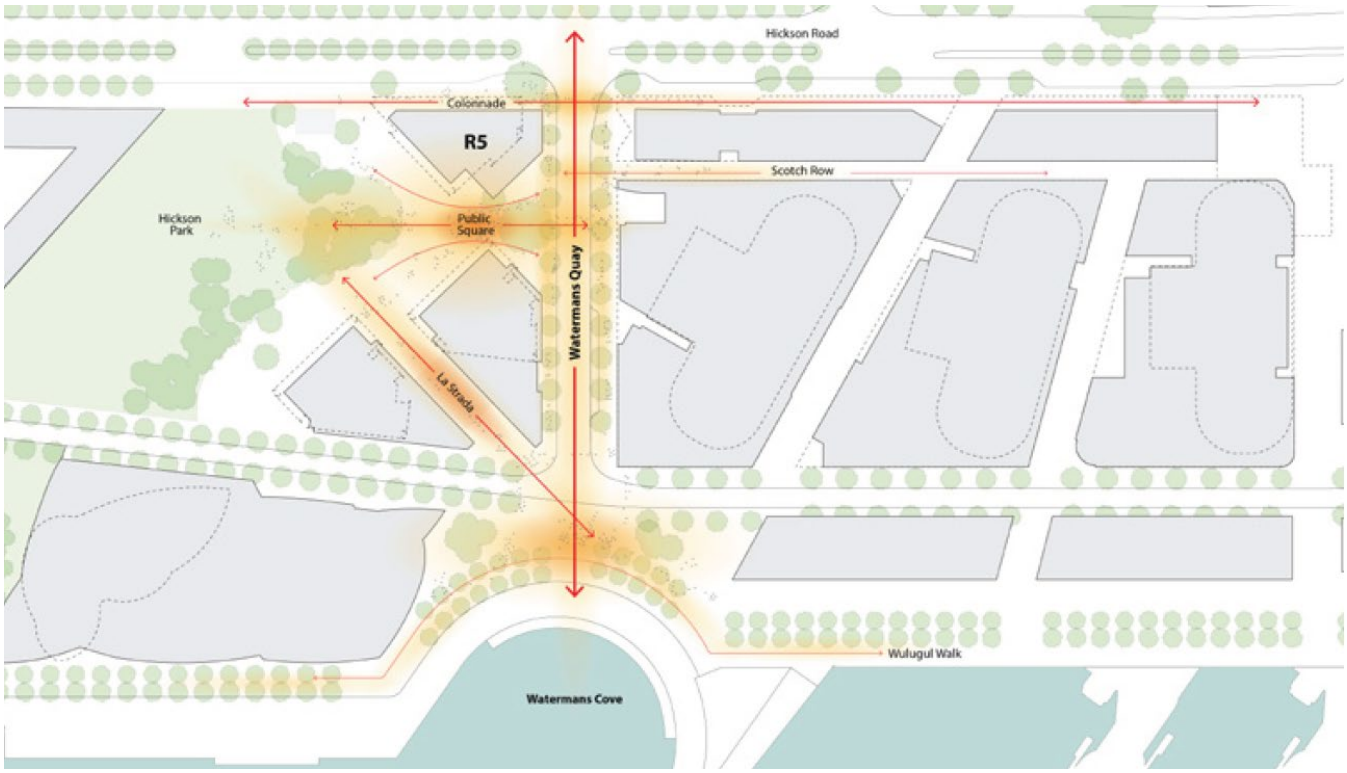

Figure 5 Modified podium building line

Source: RPBW

At ground level on Hickson Road, the Building R5 podium accommodates retail tenancies and a residential lobby.

Consistent with the other two buildings of One Sydney Harbour, the podium is defined by glass awnings and has been deliberately designed to create a human scale at street level, as outlined in the Supplementary Design Report at **Appendix D**.

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 Assessment prepared by Windtech at **Appendix E**, which finds that the design of the podiums, in combination with the separation of the towers, minimises wind impacts.

The revised design incorporates a chamfered corner at the Hickson Road interface, which opens up this part of the building to the public domain and will create an inviting pedestrian environment. This chamfered corner will create a natural transition to Hickson Park. A photomontage of the revised design is shown at **Figure 6**.

Figure 6 Illustration of chamfered edge transition to Hickson Park

Source: RPBW

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 separation between each building also providing visual connections through the public domain between Watermans Quay and One Sydney Harbour to the future Hickson Park.

The Supplementary Design Report at **Appendix D** details how the retail shopfronts (subject to separate approval) and lobbies 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.

Overall, the proposed building, in combination with the approved Buildings R4A and Building R4B which comprise One Sydney Harbour, has been 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 of the proposed building has been formulated based on 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 design has carefully considered 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 7** 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 7 Photomontage of One Sydney Harbour, including Building R5 (left)

Source: RPBW

As a result of the rigorous planning approval 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 holistic amenity for future residents, workers and visitors, Building R5 will provide for a high degree of design quality and amenity, contributing to the architectural design excellence of Barangaroo South and the quality of residential development in Sydney.

2.2 Residential Amenity

2.2.1 Issue

The Department and Council both noted that consistency with the Apartment Design Guide (ADG) requires 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 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 design criteria set out under Objective 3F-1 of the ADG and that providing building separation is important to protect visual and acoustic privacy to achieve a high level of amenity for future residents.

Other Matters

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.
- 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

Building R5 will achieve a high level of residential amenity in accordance with the design criteria recommended by the ADG. A detailed response to these matters is provided in **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 Applied Insight and is attached at **Appendix D**. This schedule demonstrates the proposal's general compliance with the key numeric criteria. In addition to the information provided in these appendices, a detailed discussion of key ADG criteria is provided below. An updated assessment of the proposal's consistency with the objectives of the ADG is provided in **Table 1**.

Table 1 Assessment against Apartment Design Guide

<table>
<tr><th>Design Criteria</th><th>Proposal</th></tr>
<tr><td colspan="2">Part 3 Siting the Development</td></tr>
<tr><td colspan="2">3D Communal and Public Open Space</td></tr>
<tr><td>Objective
An adequate area of communal open space is provided to enhance residential amenity and to provide opportunities for landscaping</td><td>✓</td></tr>
<tr><td>Design Criteria

Communal open space has a minimum area equal to 25% of the site</td><td>✓
452.5m^2, which is in excess of 25% of 1,753m^2. Further discussion is provided below.</td></tr>
<tr><td>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)</td><td>Alternative solution proposed. Further discussion is provided below.</td></tr>
<tr><td colspan="2">3E Deep Soil Zones</td></tr>
<tr><td>Objective
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.</td><td>✓</td></tr>
<tr><td>Design Criteria

Deep soil zones are to meet the following minimum requirements:
<table>
<tr><th>Site Area</th><th>Minimum Dimensions</th><th>Deep Soil Zone (% of site area)</th></tr>
<tr><td>Less than 650m^2</td><td>-</td><td rowspan="4">7%</td></tr>
<tr><td>650m^2 – 1,500m^2</td><td>3m</td></tr>
<tr><td>Greater than 1,500m^2</td><td>6m</td></tr>
<tr><td>Greater than 1,500m^2 with significant existing tree cover</td><td>6m</td></tr>
</table></td><td>Achieves intent as assessed in submitted SSDA.</td></tr>
<tr><td colspan="2">3F Visual Privacy</td></tr>
<tr><td>Objective
Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external and internal visual privacy.</td><td>✓</td></tr>
<tr><td>Design Criteria

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><th>Building Height</th><th>Habitable rooms and balconies</th><th>Non-habitable rooms</th></tr>
</table></td><td>✓</td></tr>
</table>

Design Criteria			Proposal
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			
Objective Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas			✓
Design Criteria 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			
Objective To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space			✓
Design Criteria 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.			✓ 70%
A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid winter.			✓ 12%
4B Natural Ventilation			
Objective The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents			✓
Design Criteria 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			
Objective Ceiling height achieves sufficient natural ventilation and daylight access			✓

<table>
<tr><th>Design Criteria</th><th>Proposal</th></tr>
<tr><td>Design Criteria

Measured from finished floor level to finished ceiling level, minimum ceiling heights are:
<table>
<tr><th colspan="2">Minimum ceiling height</th></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
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.</td><td>✓</td></tr>
<tr><td colspan="2">4D Apartment Size and Layout</td></tr>
<tr><td>Objective
The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity</td><td>✓</td></tr>
<tr><td>Design Criteria
Apartments are required to have the following minimum internal areas:
<table>
<tr><th>Apartment Type</th><th>Minimum internal area</th></tr>
<tr><td>Studio</td><td>35m^2</td></tr>
<tr><td>1 bedroom</td><td>50m^2</td></tr>
<tr><td>2 bedroom</td><td>70m^2</td></tr>
<tr><td>3 bedroom</td><td>90m^2</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.</td><td>✓</td></tr>
<tr><td>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.</td><td>✓</td></tr>
<tr><td>Objective
Environmental performance of the apartment is maximised</td><td>✓</td></tr>
<tr><td>Design Criteria
Habitable room depths are limited to a maximum of 2.5 x the ceiling height.</td><td>✓</td></tr>
<tr><td>In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window.</td><td>✓
Alternative solution for apartment type LA5-07 discussed below.</td></tr>
</table>

<table>
<tr><th>Design Criteria</th><th>Proposal</th></tr>
<tr><td>Objective
Apartment layouts are designed to accommodate a variety of household activities and needs</td><td>✓</td></tr>
<tr><td>Design Criteria

Master bedrooms have a minimum area of 10m^2 and other bedrooms 9m^2 (excluding wardrobe space).</td><td>✓</td></tr>
<tr><td>Bedrooms have a minimum dimension of 3m (excluding wardrobe space).</td><td>✓</td></tr>
<tr><td>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</td><td>✓
Alternative solution for apartment type LA5-07 discussed below.</td></tr>
<tr><td>▪ The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts.</td><td>✓</td></tr>
<tr><td colspan="2">4E Private Open Space and Balconies</td></tr>
<tr><td>Objectives
Apartments provide appropriately sized private open space and balconies to enhance residential amenity</td><td>✓</td></tr>
<tr><td>Design Criteria
All apartments are required to have primary balconies as follows:
<table>
<tr><th>Dwelling Type</th><th>Minimum Area</th><th>Minimum internal area</th></tr>
<tr><td>Studio apartment</td><td>4m^2</td><td>-</td></tr>
<tr><td>1 bedroom apartment</td><td>8m^2</td><td>2m</td></tr>
<tr><td>2 bedroom apartment</td><td>10m^2</td><td>2m</td></tr>
<tr><td>3+ bedroom apartment</td><td>12m^2</td><td>2.4m</td></tr>
</table>
The minimum balcony depth to be counted as contributing to the balcony area is 1m.</td><td>Achieves intent. Refer to discussion below.</td></tr>
<tr><td>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.</td><td>N/A</td></tr>
<tr><td colspan="2">4F Common Circulation and Spaces</td></tr>
<tr><td>Objective
Common circulation spaces achieve good amenity and properly service the number of apartments</td><td>✓</td></tr>
<tr><td>Design Criteria
The maximum number of apartments off a circulation core on a single level is eight.</td><td>✓</td></tr>
<tr><td>For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40.</td><td>Achieves intent. Refer to discussion below.</td></tr>
<tr><td colspan="2">4G Storage</td></tr>
<tr><td>Objective
Adequate, well designed storage is provided in each apartment</td><td>✓</td></tr>
</table>

<table>
<tr><th>Design Criteria</th><th>Proposal</th></tr>
<tr><td>Design Criteria
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>4m^2</td></tr>
<tr><td>1 bedroom apartment</td><td>6m^2</td></tr>
<tr><td>2 bedroom apartment</td><td>8m^2</td></tr>
<tr><td>3+ bedroom apartment</td><td>10m^2</td></tr>
</table>
At least 50% of the required storage is to be located within the apartment.</td><td>✓</td></tr>
</table>

Solar Access

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

> *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. The proposal for Building R5 numerically achieves both of these criteria.

A detailed Solar and Daylight Access Study has been prepared by Lendlease Applied Insight to provide additional information about solar access calculations (attached at **Appendix F**). Solar access was modelled including shadows cast by the surround buildings including the Crown Integrated Hotel Resort.

70% of apartments in Building R5 receive direct solar access to living rooms and private open spaces between 9am and 3pm on 21 June. 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

	Building R5	
	%	Total Apartments
Living Rooms and Private Open Spaces	70%	146

Solar access modelling also considered apartments that receive no direct sunlight. 12% of apartments receive no solar access between 9am and 3pm on 21 June, which is below the recommended maximum of 15%. A summary of these results is presented in **Table 3**.

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

	Building R5	
	%	Total Apartments
Living Rooms and Private Open Spaces	12%	25

Cross Ventilation

Cross ventilation is achieved in 62.9% of apartments in the first nine levels of Building R5, consistent with the design criteria of Objective 4B-3 of the ADG.

Natural ventilation is achieved in the majority of apartments through dual aspects, whilst ventilation is achieved in other apartments through the use of ventilation ducting. Four apartment types in the Building R5 typical floor plate benefit from a dual aspect, whilst one apartment type 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 0.4m^2 to enable suitable flow within the apartment. A similar solution was provided and approved for Building R4A and Building R4B.

Figure 8 shows how cross ventilation is achieved on a typical floor plate. Further detail is provided in the Supplementary Design Report at **Appendix D**.

Figure 8 Cross ventilation on a typical floor plate

Source: RPBW and Lendlease Applied Insight

As a result of these design measures, and the optimal location of the development benefitting from natural breezes from Sydney Harbour and the public domain below, cross ventilation is achieved in accordance with Objective 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 F3-1 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 Reserve and the city surrounds.

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

The Supplementary Design Report at **Appendix D** provides detailed diagrams demonstrating the separation between each building and design measures that have been incorporated to maintain visual privacy. **Figure 9** shows the relationship of Building R5 to Building R4B and demonstrates that the recommended building separation is achieved.

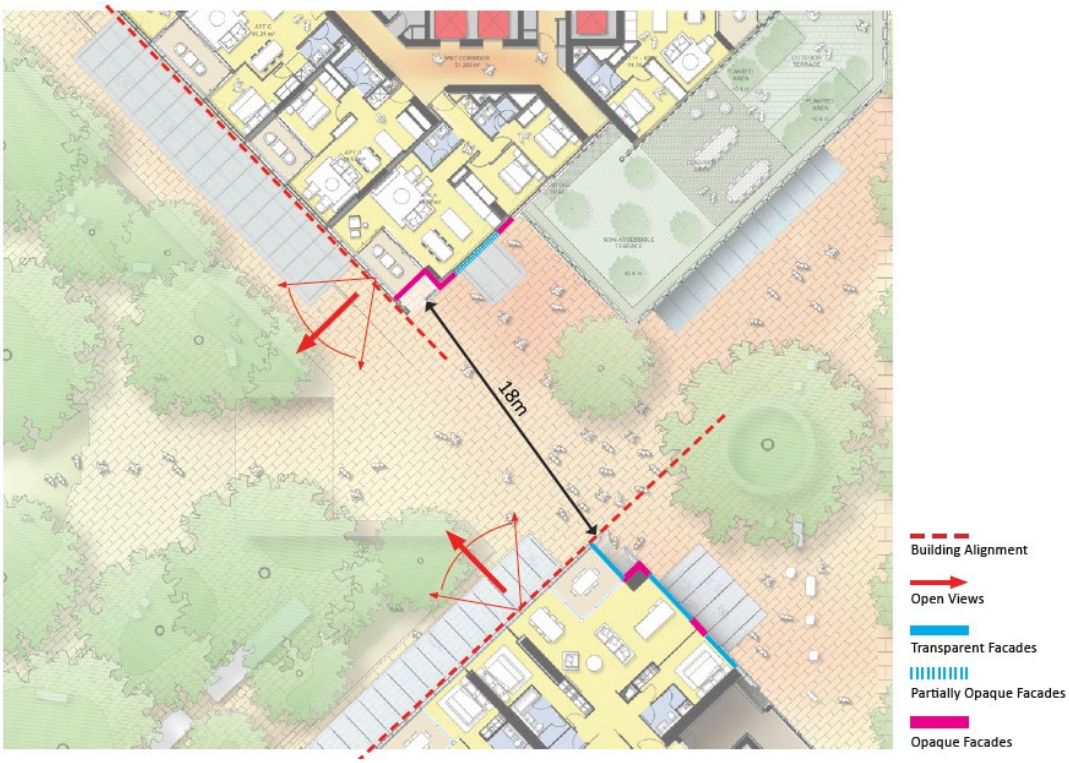

Figure 9 Building separation between R5 and R4B

Source: RPBW

The Design Guidelines approved under the Barangaroo Concept Plan (MOD 8) contain a number of standards relating to building location that have informed the proposed building separation of the site. As shown in **Figure 10**, buildings in Block 4A and Block 4B should be separated by a minimum of 18 metres.

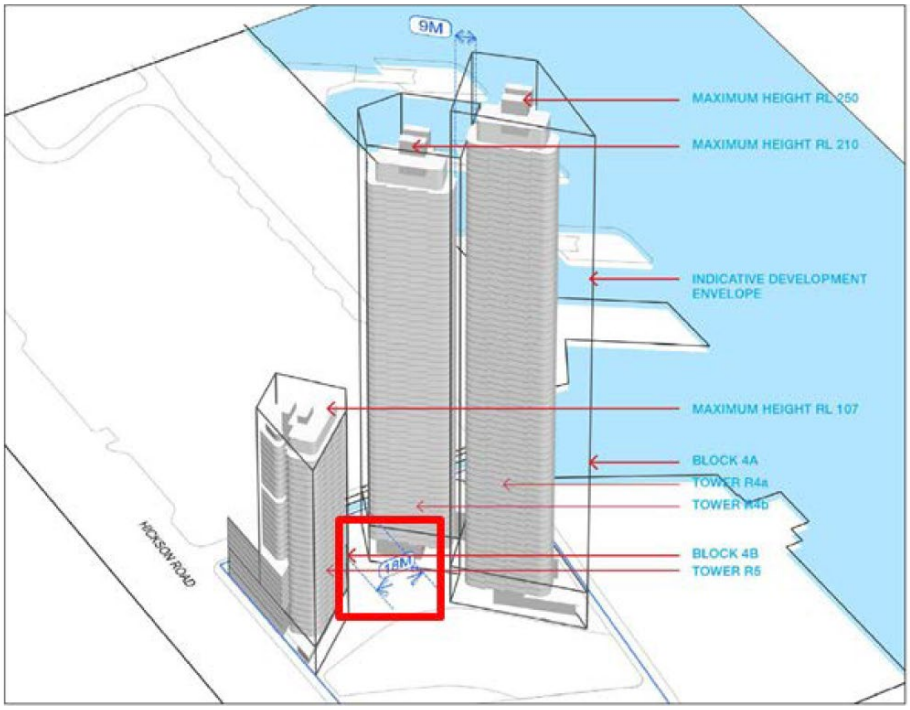

Figure 10 Building mass and location diagram, required separation outlined in red

Source: Barangaroo South Built Form and Urban Design Guidelines

The minimum separation distance between Building R5 and Building R4B is 18 metres, which is consistent with 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 results in an 18 metre 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:

- Sight lines into a living area or wintergarden / balcony from an adjacent wintergarden / balcony have been avoided through the arrangement of the floor layout of each building and apartment.
- Sight lines 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 11**, with all apartments achieving a good outlook or view depending on the position within the building.

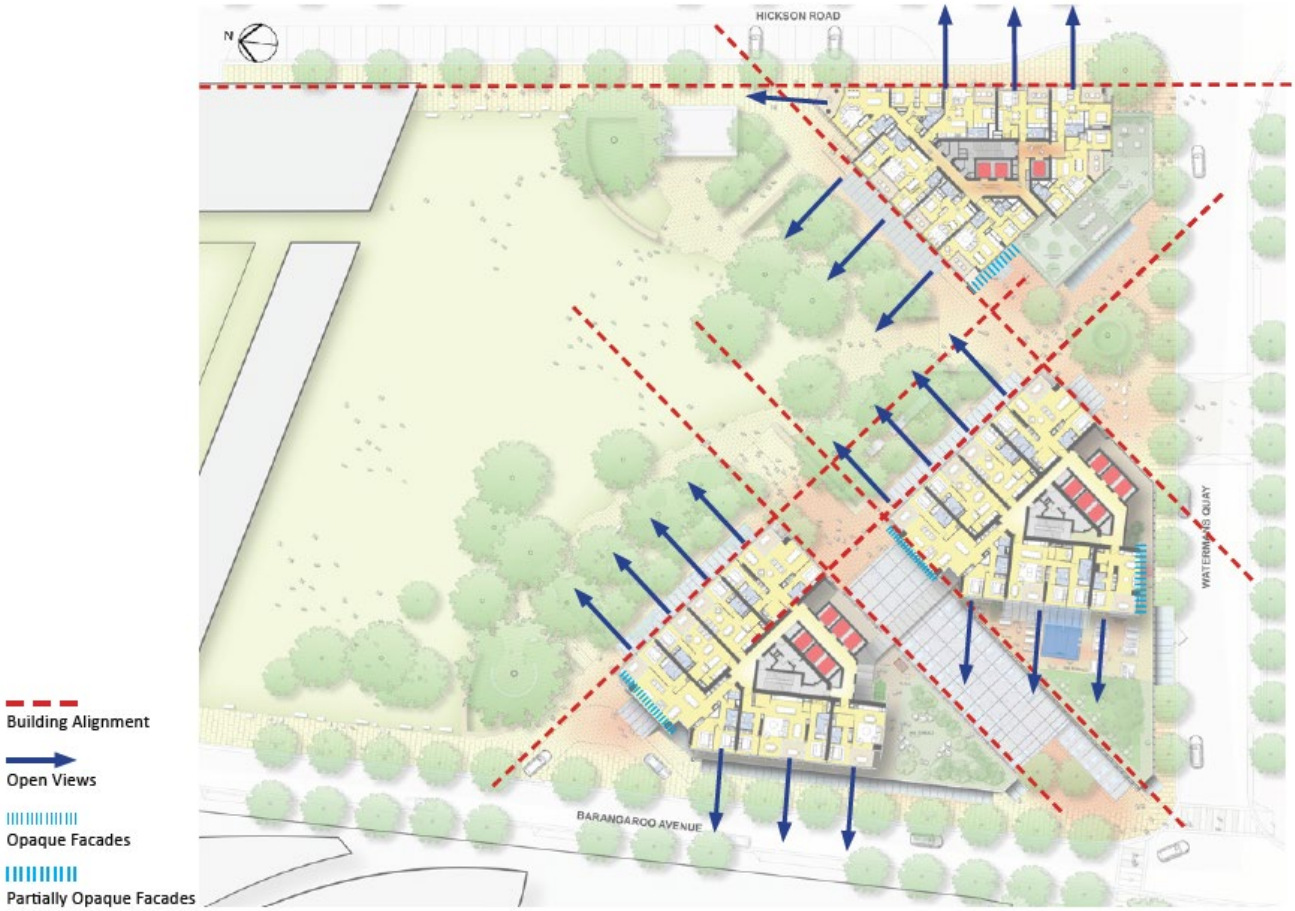

Figure 11 Orientation of apartments to primary views

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 utilisation of opaque facades, floor plan layout and the staggered arrangement of the towers on the site, a high level of 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 D** includes detailed apartment layout diagrams that show the key dimensions and areas recommended in the ADG. Three variations are proposed to the recommended design criteria for apartment layout, as detailed below:

- Apartment types LA5, MA5, LO5 and UA5 in stack 07 propose a minimum living room width of 3.278 metres, which is a minor numeric variation of 0.322 metres from the recommended 3.6 metre width for 1 bedroom living room widths. The living room width at the glazing line is 3.472 metres, which is a minor numeric variation of 0.127 metres. This minor variation is negligible and is offset in accordance with the design guidance under Objective 4D-3 by the flexible design of the space, which benefits from a direct opening onto the balcony and maximises the amount of usable floor space. In addition to this, the combined living and bedroom provides a frontage of over 7 metres to Hickson Park.
- Apartment types LA5, MA5, LO5 and UA5 in stack 07 propose a depth of 8.2 metres from the window, which is a minor variation of 200mm from the recommended 8 metres. This is acceptable on the basis that the apartment benefits from floor to ceiling heights in accordance with the design criteria recommended by

the ADG and that the primary living area is located on the external face of the building, in accordance with the design guidance under Objective 4D-2.

Common Circulation

Three lifts are provided in Building R5 to service a total 210 apartments. 48 KWH apartments will use one lift, whilst 162 on-market apartments will use two lifts. Whilst the design criteria of Objective 4F-1 of the ADG recommends that a maximum of 40 apartments are serviced by a single lift in buildings 10 storeys and over, advice provided by Lendlease Applied Insight (**Appendix V**) confirms that the design and speed of the lifts to be installed will be able to comfortably accommodate residents movements. In the event that the KWH lift is not operational, access will be provided to the northern lift bank for use by the KWH residents.

Private Open Space and Balconies

One apartment types LA5, MA5, LO5 and UA5 in stack 06 (25 apartments in total) propose a balcony of 9.2m^2, which is a variation of 0.8m^2 to the area recommended under Objective 4E-1. This minor variation is considered acceptable as the apartment benefits from an internal area that is in excess of the size recommended by the ADG, the balcony configuration is regularly shaped to allow flexibility and increase useability and the variation in size is unlikely to be perceptible to future residents. In addition to this, future residents will have access to a range of communal spaces within the One Sydney Harbour development as well as additional public open space throughout Barangaroo South.

Communal Open Space

Building R5 provides 452.5m^2 of communal open space, as shown at **Figure 12**. Plans illustrating the area and dimensions of the communal open space are provided in the Supplementary Design Report at **Appendix D**. The total amount of communal open space includes useable and landscaped open space, in accordance with the approach adopted and approved for Building R4A and Building R4B.

Figure 12 R5 communal open space – Podium Level 2 (top) and Level 26 (bottom)
Source: RPBW

Two communal open space areas are provided in Building R5.

On Podium Level 2, 247.4m^2 of communal open space will be dedicated to Key Worker Housing residents. This space incorporates landscaping and outdoor furnishings for passive recreation, as well as a semi-enclosed area that can be used for gatherings and other activities.

On Level 26, a 205.1m^2 communal open space area is provided for residents of the on-market apartments and will incorporate planting and outdoor furniture. This area is protected from wind conditions by a step in the building height. Through payment of levies and maintenance costs, residents of the on-market apartments will also benefit from access to the shared communal facilities provided throughout the three One Sydney Harbour buildings. Public amenities will be accessible to all residents across One Sydney Harbour, providing residents with a variety of spaces to gather and interact.

In addition to this, all residents will benefit from access to the amenity provided by the significant amount of open space in the wider Barangaroo precinct. **Figure 13** demonstrates the amount of open space provided throughout Barangaroo and its proximity to Building R5.

Figure 13 Open space throughout Barangaroo

Source: RPBW

One of the design criteria under Objective 3D-1 recommends that a minimum of 50% direct sunlight be provided to the principal usable part of the communal open space for a minimum of 2 hours between 9am and 3pm on 21 June. Whilst the two communal areas provided with Building R5 propose a variation to this criteria, the communal areas benefit from a high level of amenity as they have been designed to include a variety of design features, including a mix of covered and open air spaces, landscaped areas and views over the surrounding public domain and the Sydney CBD. Detailed solar access modelling has been prepared by Lendlease Applied Insight, which illustrates that both communal areas benefit from a significant amount of solar access during the summer months. The results of this solar access modelling are set out in **Table 4** below and are discussed in detail at **Appendix F**.

Table 4 Communal open space solar access results

Area	Minimum Hours of Direct Sunlight Exposure	% of Area exposed to sunlight for the listed hours			
		Winter 9am to 3pm	Winter All day	Summer 9am to 3pm	Summer All day
Level 26 Terrace	2 hours	10.7%	32.1%	89.4%	98.8%
	1 hour	47.3%	51%	92.4%	99.2%
P2 Terrace (Common Area)	2 hours	0.2%	0.2%	33.7%	62.6%
	1 hour	39.2%	39.2%	47.5%	63.9%

Where the design criteria cannot be met, the ADG provides Design Guidance to achieve the Objective. As the design criteria of 50% of direct sunlight to the principal usable part of the communal spaces for a minimum of 2 hours between 9am to 3pm on 21 June is not achieved, an assessment against the Design Guidance is therefore provided in **Table 5** below. In summary the proposal satisfies the Design Guidance

Table 5 Assessment against design guidance for communal open space

Design guidance	Level 26 Terrace	P2 Terrace	Compliance ✓ / ✖
Communal open space should be consolidated into a well designed, easily identified and usable area.	The communal open space for on-market apartments is located in a single location on the rooftop, which residents will be able to access via the lift and use for passive recreation and gathering. The design of the space includes landscaping and a terrace area to allow the area to be used flexibly by residents.	The KWH communal open space is consolidated in a single location on Podium Level 2 and features a terrace area, landscaping and a sheltered area for the flexible use of residents.	✓

Design guidance	Level 26 Terrace	P2 Terrace	Compliance ✓ / ✖
Communal open space should have a minimum dimension of 3m, and larger developments should consider greater dimensions.	The Level 26 terrace exceeds the 3m minimum dimension.	The Podium Level 2 communal open space area exceeds the 3m minimum dimension.	✓
Communal open space should be co-located with deep soil areas.	Due to location and design of the development, communal open space cannot be co-located with deep soil areas.	Due to location and design of the development, communal open space cannot be co-located with deep soil areas.	N/A
Direct, equitable access should be provided to communal open space areas from common circulation areas, entries and lobbies.	Direct and equitable access is provided via the lift from all levels of the building.	Direct and equitable access is provided via the lift from all KWH levels of the building.	✓
Where communal open space cannot be provided at ground level, it should be provided on a podium or roof.	The communal open space is located at roof level.	The communal open space is located on the podium.	✓

Design guidance	Level 26 Terrace	P2 Terrace	Compliance ✓ / ✖
Where developments are unable to achieve the design criteria, such as on small lots, sites within business zones, or in a dense urban area, they should: - Provide communal spaces elsewhere such as a landscaped roof top terrace or a common room. - Provide larger balconies or increased private open space for apartments. - Demonstrate good proximity to public open space and facilities and/or provide contributions to public open space.	Building R5 is located within a high density, inner-city area and the design of the communal open space responds to this urban environment. A landscaped roof top terrace is provided to residents of the on-market housing. In addition to this, residents will be able to access other communal open space areas provided in Buildings R4A and R4B. The majority of apartments are provided with larger balconies than the minimum area recommended, with the exception of 25 apartments discussed under 'Private Open Space and Balconies' above. This is demonstrated in the ADG compliance schedule at **Appendix D**. The proposed building benefits from being located directly on Hickson Park, whilst Barangaroo Reserve is located nearby and is accessible via pedestrian paths. A significant amount of public domain is also provided throughout Barangaroo South, including Wulugul Walk along the Sydney Harbour foreshore. These significant areas of public open space surrounding the site all benefit from high levels of solar access during both winter and summer.	Building R5 is located within a high density, inner-city area and the design of the communal open space responds to this urban environment. A landscaped podium communal open space area is provided for residents of the KWH. The majority of apartments are provided with larger balconies than the minimum area recommended, with the exception of 25 apartments discussed under 'Private Open Space and Balconies' above. This is demonstrated in the ADG compliance schedule at **Appendix D**. The proposed building benefits from being located directly on Hickson Park, whilst Barangaroo Reserve is located nearby and is accessible via pedestrian paths. A significant amount of public domain is also provided throughout Barangaroo South, including Wulugul Walk along the Sydney Harbour foreshore. These significant areas of public open space surrounding the site all benefit from high levels of solar access during both winter and summer.	✓

In addition to the high level of amenity that has been incorporated into the design of the communal areas, this variation to the design criteria for solar access to communal open space is considered acceptable due to the high level of amenity provided throughout the Barangaroo South precinct. Hickson Park is located immediately adjacent to the building, which provides a significant amount of open space for future residents. This is in addition to Barangaroo Reserve and the public domain provided along the foreshore and throughout Barangaroo South. These significant areas of public domain surrounding the site all benefit from high levels of solar access during winter and summer.

2.3 Key Worker Housing

2.3.1 Issue

The Department has sought clarification on the integration of Key Worker Housing (KWH) units within Building R5, as well as access to communal open space and confirmation on the strategy for providing no car parking spaces to KWH apartments. The Department also requested further information about the provision of off-site KWH.

2.3.2 Proponent's Response

In response to these issues, eleven additional Key Worker Housing dwellings have been provided and a dedicated communal open space area is provided at Podium Level 2.

Lendlease has consulted with a number of community housing providers to determine the most suitable design for Building R5, taking into account the operational requirements of a community housing provider.

A key factor in KWH delivery and management is that rents are typically below market rates. In order for the provision of community housing to be viable, community housing providers deliberately minimise operational costs to ensure that affordable housing can be provided for residents at the best possible rate, whilst still achieving an appropriate amenity.

To ensure ease of management and maintenance, community housing providers prefer that KWH dwellings are provided with a dedicated access point to enable efficiencies in servicing, cleaning and maintaining the properties. Community housing providers seek to minimise costs associated with maintenance which is critical to ensuring that costs borne by the provider are minor and that rent charged for KWH remains affordable.

The communal open space provided at Podium Level 2 will accommodate landscaped areas in raised planter beds, outdoor furnishings and a semi-enclosed communal area for meetings and gatherings. The rooftop area will provide a space for passive recreation and will provide additional amenity for residents. Residents will also benefit from amenity in the surrounding neighbourhood, including Hickson Park and Barangaroo Reserve.

The location of the KWH in Building R5 will benefit from a high level of amenity. Residents of the KWH will be able to access dedicated communal open space on the podium, as well as the open space provided in the future Hickson Park, at Barangaroo Reserve and along the foreshore in addition to being located in close proximity to a range of public transport options and other services.

In accordance with the strategy of minimising costs for community housing providers, no car parking is proposed in association with the KWH apartments. This is consistent with the approach to the delivery of community and key worker housing that is adopted in other key worker housing developments, where car parking provision is minimised to reduce operation and maintenance costs.

An independently administered Expression of Interest will be run to determine a suitable location for the provision of KWH off-site. This strategy is consistent with the requirements of Condition B11 of the Concept Plan (as modified). Overall, providing housing for key workers in the CBD location is considered to provide a significant benefit and will contribute to the overall provision of affordable housing throughout Central Sydney.

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 Applied Insight at **Appendix D**.

The following section presents a brief updated description (where relevant) of the modified development for which approval is sought. As illustrated in the description of refinements at **Section 3.1**, the overall changes are minor and will deliver an improved design outcome. Accordingly, and as detailed at **Section 4**, the changes do not result in any significant alteration to the environmental assessment of the potential impacts considered as part of the original development application.

3.1 Overview of Changes

The following amendments are sought to the proposal as exhibited.

- Increased building height of one storey to a maximum of RL 107 .
- Revised distribution of gross floor area to a maximum of 19,158m^{2,} including:
  - Increased residential GFA from 18,249m^2 to 18,287m^2.
  - Decreased retail GFA from 909m^2 to 871m^2.
- Floorplate reconfiguration, including:
  - Relocation of the core.
  - Revised dwelling sizes and layouts.
- Increased number of dwellings from 151 to 210, comprising:
  - Increase of 50 on-market dwellings to a total of 162.
  - Increase of 9 KWH dwellings to a total of 48.
- Revised dwelling mix to reflect the residential market, comprising:
  - On-market:
    - 1BR: 42%
    - 2BR: 38%
    - 3BR: 19%
    - 4BR: 1%
  - KWH:
    - 1BR: 71%
    - 2BR: 29%
- Modifications to the proposed communal open space, comprising:
  - Relocated on-market communal open space to Level 26.
  - New KWH communal open space on Podium Level 2.
- Façade refinements, including:
  - Inclusion of a ‘notch’ on the Hickson Road façade.
  - Incorporation of a step in building height.
  - Refined chamfer on the north-eastern corner, facing Hickson Park.

- Colonnade and ground plane refinements, including:
  - Realignment of colonnade on Hickson Road.
  - Adjustment of the podium building line to align with Scotch Row.
  - Removal of retail inter-tenancy walls and shopfronts (subject to separate approval).

3.2 Detailed Description of Proposed Changes

3.2.1 Building Height

The height of the residential tower has been increased by one storey, from RL101.140 to RL105.65. The architectural roof feature rises to a height of RL 107, consistent with the maximum height of RL107 set under the Concept Plan (MOD 8). This increase in height allows for the accommodation of 3 bedroom, split-level apartments to accommodate families and contribute to a diversity of dwelling types. These dwellings types replace the penthouse that were proposed as part of the exhibited application. An illustration of the revised building height is shown at **Figure 14**.

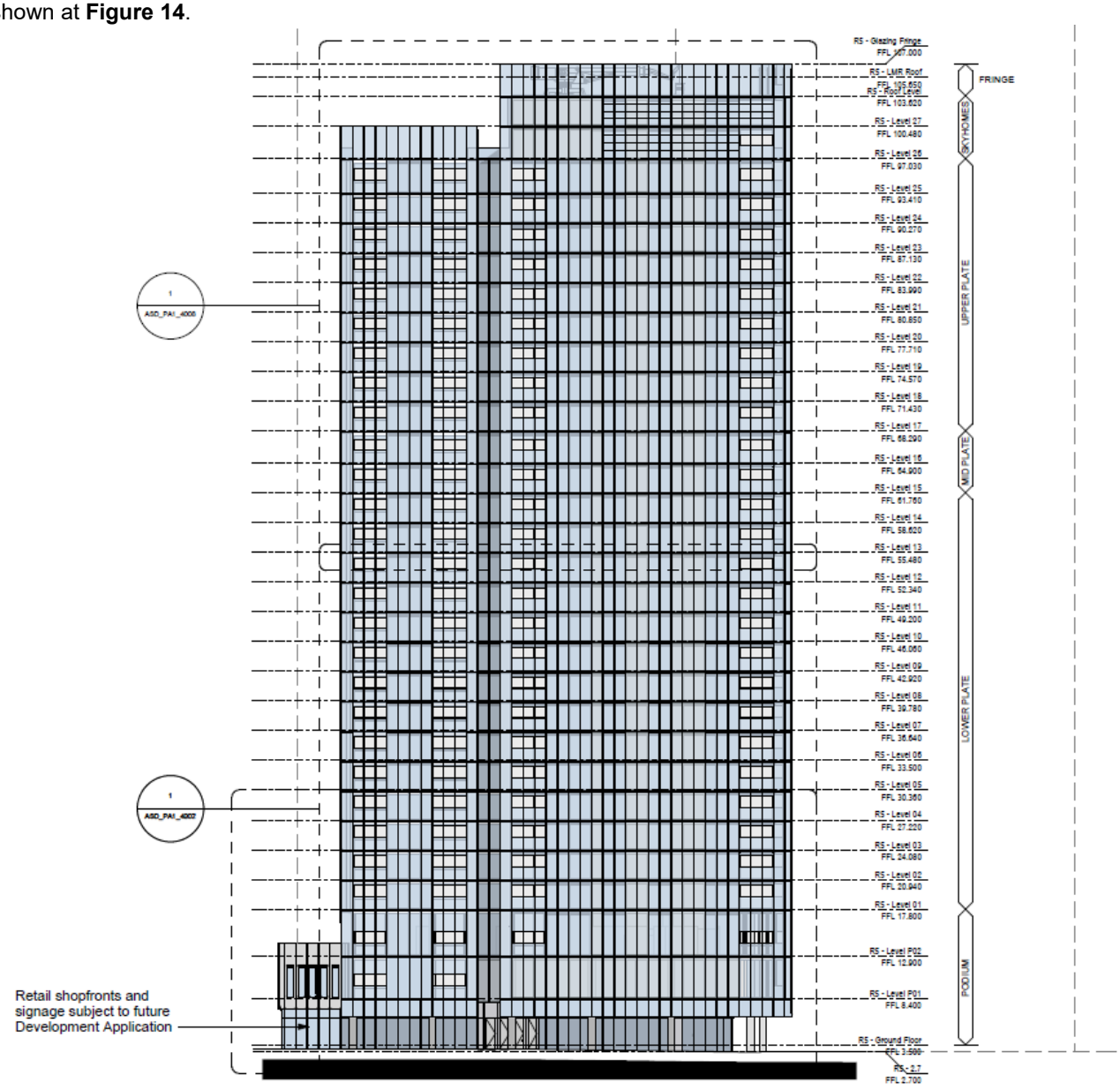

Figure 14 Revised building height (refer to Architectural Drawings at Appendix D for further detail)

Source: RPBW

3.2.2 Gross Floor Area

The distribution of gross floor area has been revised, as set out in **Table 6.**

Table 6 Gross floor area breakdown

GFA	Exhibited	Proposed
Residential	**18,249**	**18,287**
On-market	*14,894*	*14,986*
Key Worker Housing	*3,355*	*3,301*
Other	**909**	**871**
Total	**19,158**	**19,158**

3.2.3 Floorplate Reconfiguration

The floorplate has been reconfigured to relocate the core centrally within the building, as shown in **Figure 15**.

Figure 15 Relocated core

Source: RPBW

The relocation of the core has resulted in revised dwelling sizes and layouts, permitting a maximum of eight dwellings per floor. This is an increase from the maximum of six dwellings per floor that was originally proposed and has also enabled a change in the dwelling numbers and mix, as described at **Section 3.2.4** below. The typical floorplate for the lower and upper levels remains consistent with Objective 4F-1 of the ADG and an illustration of these floorplates is shown at **Figure 16** and **Figure 17**.

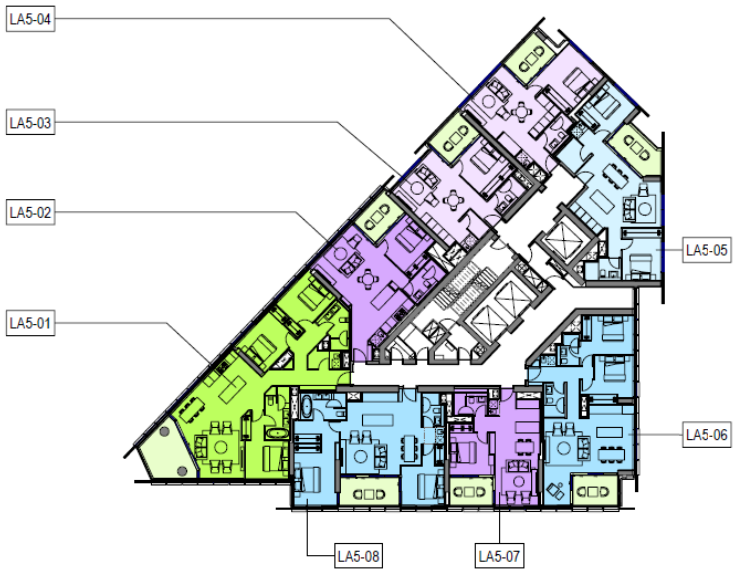

Figure 16 Lower level floorplate

Source: RPBW

Figure 17 Upper level floorplate

Source: RPBW

3.2.4 Total Number of Dwellings and Dwelling Mix

The total number of dwellings and dwelling mix has changed due to the revised floorplate reconfiguration. This modification supports the delivery of additional KWH dwellings and allows a diversity of housing types to be provided that respond to market demand. A comparison of the total number of dwellings and mix against the original proposal is provided at **Table 7** and **Table 8**.

Table 7 Number of Dwellings

Dwelling Type	Exhibited	Proposed	Change
On-market			
1BR	22	69	+47
2BR	63	62	-1
3BR	26	30	+4
4BR	1	1	No change
Subtotal	*112*	*162*	*+50*
Key Worker Housing			
1BR	26	34	+8
2BR	13	14	+1
Total	**151**	**210**	**+59**

Table 8 Dwelling Mix

Dwelling Type	Exhibited	Proposed	Change
1BR	33%	49%	+16%
2BR	49%	36%	-13%
3BR	17%	14%	+2%
4BR	0%	1%	+1%
Penthouse	1%	0%	-1%

3.2.5 Façade and Design Refinements

Four key changes have been made to the overall tower design, as illustrated at **Figure 18** and as outlined below.

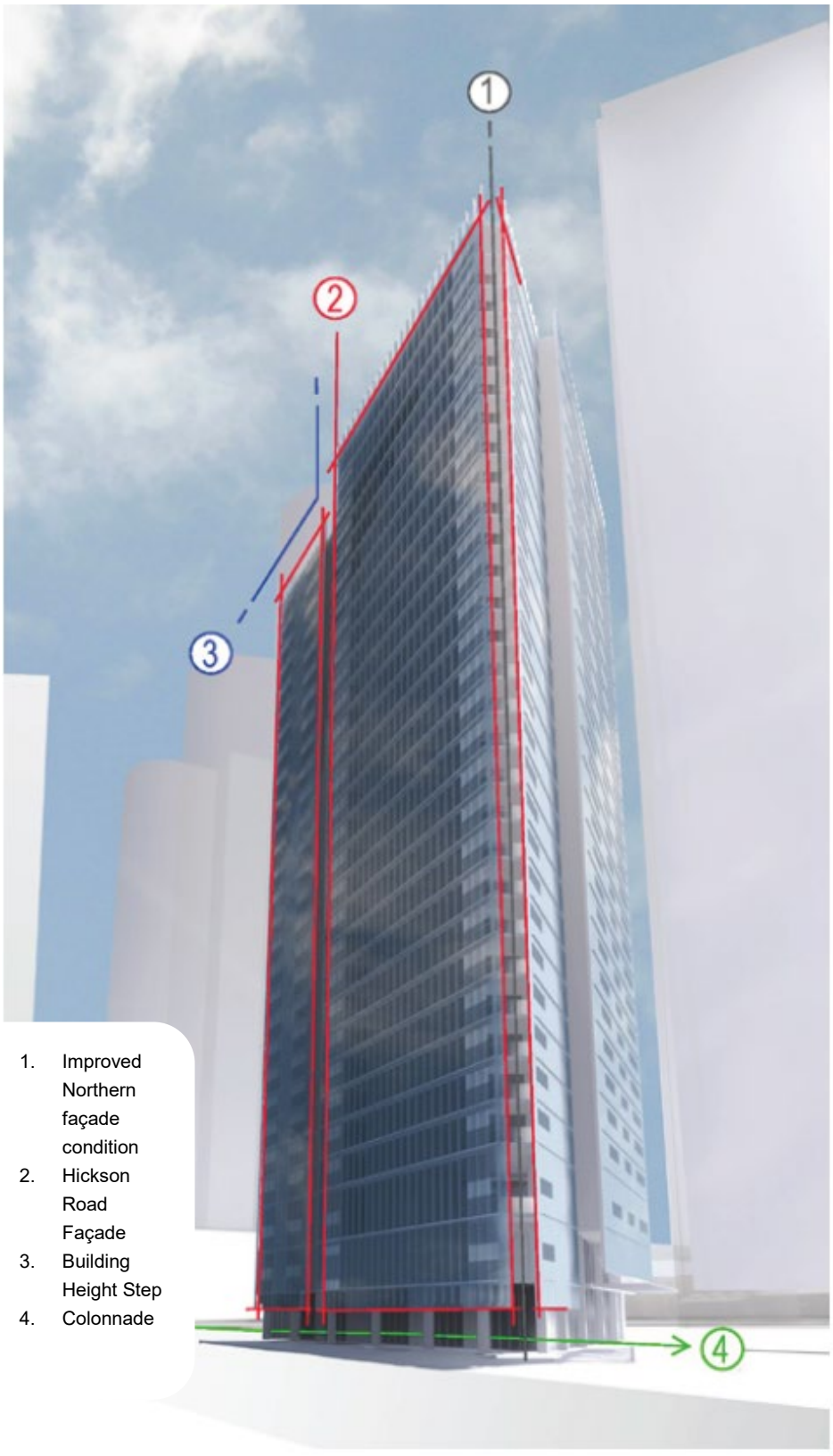

Figure 18 Key facade and tower design changes

Source: RPBW

1. Improved Northern Façade Condition

The northern corner of R5 has been refined through the extension of the floor plate to the north creating a well proportioned meeting of the Hickson Road and Park front facades. Further, at the ground floor, the refined chamfered corner at the corner of Hickson Road and Hickson Park creates a smooth transition to Hickson Park and results in an improved response to the public domain, as illustrated in **Figure 19**.

Figure 19 Chamfered corner

Source: RPBW

2. Hickson Road Façade

A 'notch' has been incorporated into the Hickson Road façade, as illustrated in **Figure 18**. This notch modulates any perception of building bulk and creates two distinguishable elements to the building form.

3. Building Height Step

The stepped building height at the upper levels enhances the modulation of the façade created by the 'notch' and creates a protected area for the communal open space on Level 26. Together with the 'notch' in the Hickson Road façade, the stepped building height provides for emphasis to Watermans Quay and creates an address for this street corner.

4. Colonnade

The alignment of the columns has been refined, improving the expression of the colonnade along Hickson Road. When viewed in context with the colonnades of Building C1 and Building C2, the colonnade will present as a continuous form. Refer to further detail at **Section 3.2.7**.

3.2.6 Communal Open Space

Communal open space for on-market residents has been relocated to Level 26, whilst dedicated communal open space for KWH residents will be provided on Podium Level 2.

The communal open space on Podium Level 2 will provide a landscaped area, including outdoor furniture and plantings, and a semi-enclosed area for meetings and gatherings.

The communal open space area on Level 26 will provide a passive recreation space for residents with raised lawns and planters. Due to the design refinements to provide a step in the building height, this area will be protected from any potential wind impacts.

The proposed communal open space is illustrated on the Landscape Plans prepared by Grant Associates at **Appendix G**.

3.2.7 Colonnade and Ground Plane

Amendments have been made to the colonnade to improve the relationship to the surrounding public domain. As outlined at **Section 3.2.5** above, the colonnade on Hickson Road has been refined to align with the colonnade established by Building C1 and C2 to create a natural continuation of the pedestrian thoroughfare.

In addition to this, the building line of the podium has been modified to align with Scotch Row, providing a link to the pedestrian thoroughfare through Barangaroo South and into Hickson Park. The revised podium and its relationship to Scotch Row is illustrated at **Figure 20**.

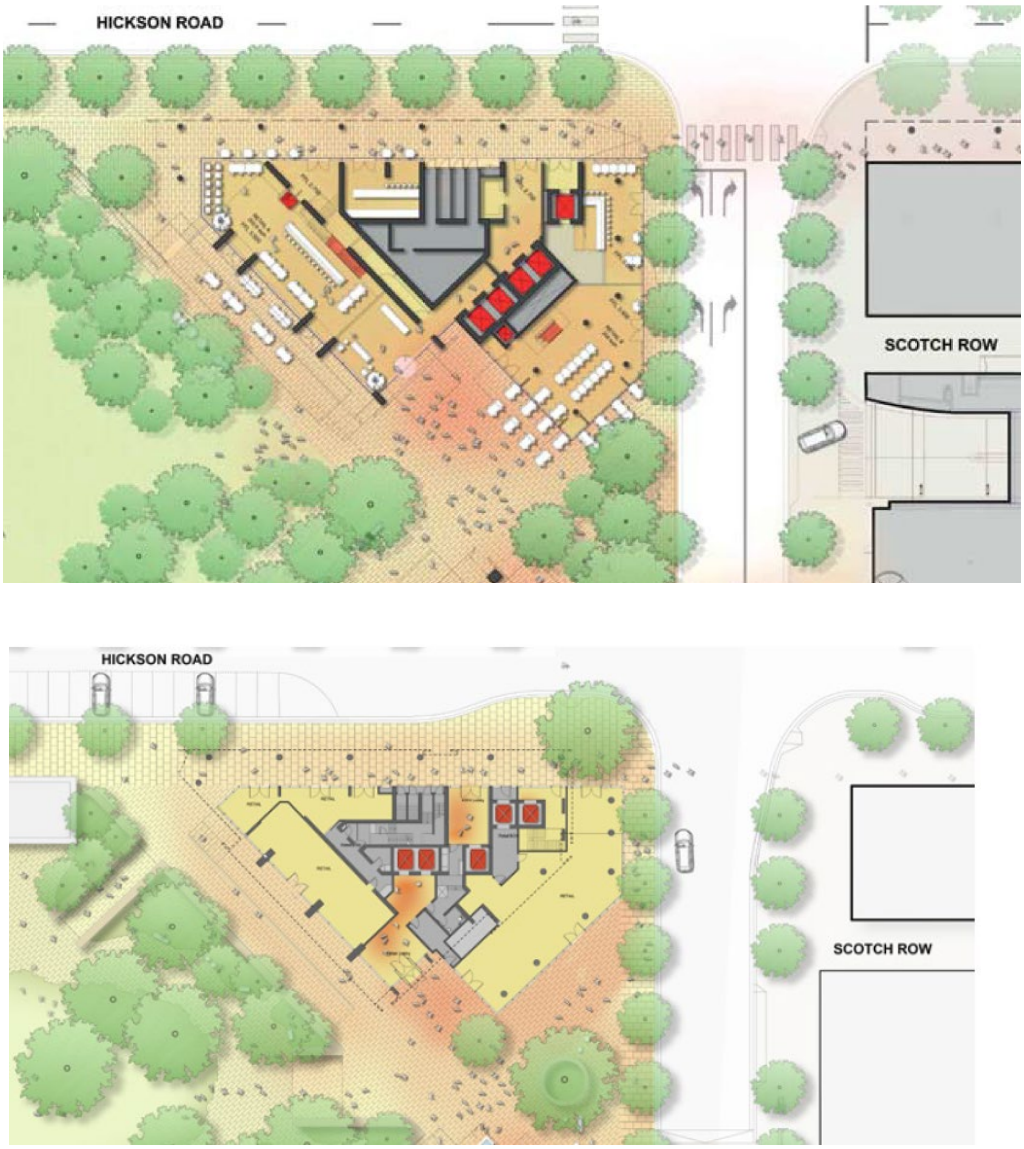

Figure 20 Relationship between podium and Scotch Row – exhibited (top) and as proposed be amended (bottom)

Source: RPBW

Retail intertenancy walls and shopfronts have been excluded from the design of the tower and will be subject to future separate approval.

3.3 Overview of Proposal (as amended)

This application seeks approval for the construction, use and fit-out of a 30 storey residential building (to a maximum height of RL 107) known as Building R5. Building R5 comprises 18,287m^2 of residential floor space, with 871m^2 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 SSD15_6960) to accommodate 143 residential car spaces, 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 paving immediately surrounding the building and landscaping on Podium Level 2 and Level 26.
- Two signage zones to accommodate building identification signage on Watermans Quay and Hickson Road (subject to Secretary's approval).

The relocation of the Building R5 core will require a modification to the Stage 1B Basement. A modification will be progressed concurrently to amend the basement design to align with the design of Building R5.

3.4 Numeric Overview (as amended)

Table 9 below provides the key numeric information of the proposed amended development.

Table 9 Key development information

Component	Amended Proposal		Change
GFA	19,158m^2		No change.
Apartments	210, including 48 Key Worker Housing dwellings		+59
Maximum height	Top of Roof Level	RL 103.6	Addition of one residential storey.
	Top of Architectural Roof Feature	RL 107	
	Top of Stationary Building Maintenance Unit	RL 105.6	
	Metres (to top of roof)	103.5 metres	
	Storeys	30	
Total proposed car parking spaces to be allocated within Stage 1B basement	Maximum of 143 residential spaces.		-27

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:

- Heritage.
- Contamination.
- Infrastructure provision.
- Construction staging.
- Air quality and odour.
- Water, drainage and stormwater.
- Tree removal.
- Structural engineering.
- Sea level rise.

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 the number of dwellings has increased, this is as a result of the optimised floorplate design and revised dwelling mix and results in an increase in height of only one storey.

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 Barangaroo Concept Plan MP0_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 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 4B.

4.3 SEPP 65 and Apartment Design Guide

An updated assessment against the key design criteria of the ADG is provided at **Section 2.2**. This assessment demonstrates that the proposed amended development is consistent with the majority of the key design criteria contained in the ADG. Where the numeric standards of the recommended design criteria are not achieved, the variation is minor and design measures have been taken to ensure that a wholistic level of amenity is achieved.

4.4 Visual and View Impacts

An updated Visual Impact Assessment has been prepared by Virtual Ideas to assess the impact of the development as proposed to be amended (refer to **Appendix H**). Minor changes are proposed to the building envelope and external appearance of the building, resulting in minimal change to the visual and view impact assessment undertaken as part of the original application.

Updated photomontages have been prepared for 22 public domain views and vantage points. As Building R5 is within the Block 4B envelope set by the Concept Plan (MOD 8), the consideration of potential visual and view impacts associated with the proposal should be read in conjunction with the Visual and View Impact Analysis submitted as part of the Concept Plan (MOD 8).

4.4.1 Visual Impacts

The minor design changes to the tower design will not result in any adverse visual impacts. The original assessment found that Building R5 will not affect the relevant and appropriate visual impact objectives approved under the Concept Plan and the development as amended will result in an improved visual impact, as detailed at **Section 2.1.2**. The modulation of the façade through the incorporation of the 'notch' and step in building height is intended to modulate any perception of building bulk and the visual impact assessment at **Appendix H** illustrates that Building R5 is complementary to Building R4A and R4B and the other buildings at Barangaroo South. In particular, the 'notch' reduces the length of the Hickson Road façade, further modulating the building. An extract from the visual impact assessment showing Building R5 in the context of approved buildings at Barangaroo South and in the surrounding area is shown at **Figure 21**.

Figure 21 Visual impact of Building R5

Source: Virtual Ideas

4.4.2 View Impacts

The proposed modifications to Building R5 will result in minor changes to the view impacts of the building that was assessed as part of the original application. Whilst the development, as proposed to be amended, incorporates one additional storey, it remains within the building envelope approved by the Concept Plan (MOD 8). The proposed building has been designed in accordance with the approved Concept Plan (MOD 8), which considered view impacts on surrounding areas. Building R5 is consistent with the view and visual impact assessment submitted as part of the Concept Plan (MOD 8) and the updated Visual Impact Assessment at **Appendix H** demonstrates that the proposed building will have a limited impact on significant views. Where there is a view impact, the design and siting of Building R5 and the entire One Sydney Harbour development has responded to the principle of view sharing, where view corridors are provided through the buildings to maintain views to Sydney Harbour and the surrounding area.

4.5 Overshadowing

An updated Overshadowing Assessment has been prepared by Virtual Ideas, based on Renzo Piano Building Workshop and Lendlease AI architectural models, (refer to **Appendix I**) and demonstrates that overshadowing impacts as a result of the revised design are minor. The assessment shows that shadow cast by Building R5 remains within the extent of building envelope shadows that were assessed and approved as part of the Concept Plan (MOD 8).

4.6 Traffic and Parking

Traffic

An updated Transport Assessment has been prepared by Arup (refer to **Appendix J**), which finds that the additional traffic generated as a result of the increased dwelling numbers is negligible in the context of future traffic volumes at Barangaroo. Specifically, the development as proposed to be amended will generate the following traffic volume:

- 8 vehicles during the AM peak hour.
- 5 vehicles during the PM peak hour.

As a result, the recommendations of the traffic and transport assessment submitted as part of the original application remain unchanged.

Parking

Parking has been provided in accordance with parking rates set out in the Concept Plan (MOD 8), as outlined in **Table 10** below.

Residential Parking

Table 10 Assessment against Concept Plan car parking rates

Dwelling Type	Parking Rate	No. Of Units	Total Permissible	Total Provided
1BR	0.5 space / unit	69	34.5	7
2BR	1.2 spaces / unit	62	74.4	74
3+BR	2.0 spaces / unit	31	62	62
Sub-total		*162*	*170.9*	*143*
KWH 1BR	0.5 space / unit	34	17	0
KWH2BR	1.2 spaces / unit	14	16.8	0

Retail Car Parking

No retail car parking is proposed to be provided in associated with R5. This has been informed from market feedback and the requirement to keep retail operating expenses and outgoings low.

4.7 Reflectivity

An updated Reflectivity Assessment has been prepared by Arup (refer to **Appendix K**), which finds that the proposed modifications to the design of Building R5 do not produce reflections in excess of the limits of acceptability according to the Hassall methodology adopted in the original assessment. Specifically, the assessment considers changes to reflective façade planes and adjustments in the orientation of chamfers. As a result, the recommendations of the original assessment remain unchanged.

4.8 Lighting Impacts

An updated Lighting Assessment has been prepared by Aurecon to assess the external lighting impacts from Building R5 (refer to **Appendix L**). The updated assessment finds that any potential impacts can be mitigated by incorporating the following design measures:

- Keeping brightly lit surfaces to a minimum.

- Fitting luminaires with light shields.
- Keeping the colour temperature of light sources low.
- Minimising the amount of upward directed lighting.

These mitigation measures will be further developed and considered through design development. The assessment notes that no more than 3% of output from any external light fitting can be directed above the horizontal plane due to the Green Star target for Building R5 and that no external up-lighting is proposed. As a result, the findings of the original assessment remain unchanged.

4.9 Noise

Wilkinson Murray have reviewed the original Noise and Vibration Assessment (refer to **Appendix M**) to assess any potential noise and vibration impacts arising from the revised design of Building R5. The Noise and Vibration Assessment confirms that procedures and mitigation measures will be implemented, where practicable, in the case of any emergency works. Overall, given that the height of the building and footprint remain generally unchanged from the original assessment, no additional impacts are identified and there is no change to the recommendations of the original assessment.

4.10 Wind

Windtech have reviewed the original Pedestrian Wind Environment Study Assessment (refer to **Appendix E**) to assess any potential wind impacts as a result of the revised design of Building R5. The assessment notes that the amendments to the ground plane and façade will not significantly affect wind conditions around the building. The assessment finds that treatments recommended as part of the original application remain relevant and that there are no additional wind mitigation measures required as a result of the revised design. Portable café screening will be subject to future approval for retail fit-out and use and associated outdoor seating.

4.11 Crime Prevention Through Environmental Design

An updated CPTED Report has been prepared by Harris Crime Prevention Services (refer to **Appendix N**) to assess the revised design of Building R5. It is found that the revised design will not result in any additional anti-social or criminal behaviour risks that cannot be mitigated. The report recommends that the surveillance network is reviewed and modified as necessary to respond to the revised lobby design. This recommendation has been incorporated into the mitigation measures at **Section 5**.

4.12 Waste

Foresight Environmental have reviewed the exhibited Waste Strategy and have provided an updated Waste Assessment (refer to **Appendix O**). This updated assessment outlines the anticipated waste generation as a result of the proposed development and the proposed collection frequency. The assessment confirms that there are adequate storage areas within the basement to accommodate the required waste storage. The recommendations of the report are included in the mitigation measures at **Section 5**.

4.13 Ecologically Sustainable Development

An updated Ecologically Sustainable Development Report has been prepared by Lendlease (refer to **Appendix P**) and outlines the measures to be adopted to ensure that Building R5 achieves a 5 Star Green Star Design and As-Built rating. The project will benefit from the Barangaroo South precinct-wide sustainability initiatives, including the district cooling plant, on-site renewables strategy and precinct recycled water plant. Specifically, Building R5 will:

- Reduce use of mains water.
- Minimise greenhouse gas emissions.
- Minimise and recycle waste where possible.

Updated BASIX certificates have also been completed and are attached at **Appendix Q**. Building R5 achieves:

- Energy: 24.
- Thermal Comfort: Pass.

- Water: 46.

4.14 Construction Management

An updated Construction Framework Environmental Management Plan (CFEMP) has been prepared to respond to Building R5 as proposed to be amended (refer to **Appendix R**). The CFEMP includes the following sub-plans:

- Water & Stormwater Management.
- Noise & Vibration Management.
- Air Quality & Odour Management.
- Acid Sulfate Soil Management.
- Spoil & Waste Management.

The measures outlined in these reports for mitigating construction impacts remain generally unchanged from the original assessment and will be supplemented and updated as appropriate prior to construction. The Community and Stakeholder Engagement Strategy at **Appendix W** provides additional information and protocols to be implemented during construction.

4.15 Building Code Compliance

The following reports confirm that the development, as proposed to be amended, is capable of achieving compliance with the requirements of the Building Code of Australia (BCA) and other relevant codes and standards:

- BCA Report prepared by McKenzie Group (**Appendix S**).
- Access Report prepared by Morris Goding (**Appendix T**).
- Fire Safety Report prepared by Defire (**Appendix U**).

5.0 Final Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Table 11** below. These measures replace those outlined in the original EIS.

Table 11 Final mitigation measures

Mitigation Measures
Air and Odour
The Building R5 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 of the submitted SSDA.
Reflectivity
All glazing and materials must not exceed 28% reflectivity.
Wind
– Strategic planting, in the form of densely foliating trees, will be incorporated at ground level around the site. These trees should be capable of growing to a height of approximately 5m to 6m, with a canopy diameter of approximately 4m to 5m. – Portable café screening will be incorporated on the north-western aspect of Building R5 where required (to be controlled by the operator) to provide suitable conditions for patrons during adverse wind conditions.
Traffic and Parking
– A Travel Demand Management Plan, prepared in accordance with the TMAP by ARUP and dated July 2016, 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 July 2016: - 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.
Construction Framework Environmental Management Plan
The CFEMP should be implemented into the construction phase of the development.
Waste Management
Waste will be managed in accordance with the Waste Management Plan prepared by Foresight Environmental, and dated July 2018.
ESD
Building R5 will be designed and constructed to achieve 5 Star Green Star – Multi Unit Residential v1 Tool Design and As- Built ratings.
Crime Prevention Through Environmental Design
Review and modify the surveillance network, as necessary, to ensure that each residential lobby benefits from an appropriate amount of technical surveillance.

6.0 Conclusion

The proponent, Lendlease (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.
- Deliver a building that accommodates Key Worker Housing in consultation with community housing providers.
- Create a high quality public realm that facilitates pedestrian connections throughout the Barangaroo precinct.
- Complement existing and future development at Barangaroo by providing increased amenity and activation throughout the neighbourhood.

In conclusion, the construction and use of Building R5 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.