

ENVIRONMENTAL ASSESSMENT REPORT CENTRAL BARANGAROO

CONCEPT PLAN MP06_0162 MODIFICATION 9

DECEMBER 2021

Prepared for:

INFRASTRUCTURE NSW



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9	December 2021	Final EAR for Lodgement

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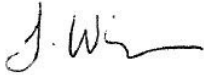


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SIGNED CERTIFICATION

Project Details	
Project name	Central Barangaroo Concept Plan Modification 9 (MOD 9) and SEPP (State Significant Precincts) 2005 amendment to support a commercial and residential mixed-use development precinct.
Application number	MP06_0162 MOD 9
Address of the land in respect of which the application is made	Lot 52 DP 1213772, Lot 1 (hotel) and 2 (residential + strata scheme) DP 1264173, Lot 205 DP 1204948, Lot 213 DP 1221076, Lot 201 DP 1204948, Lot 202 DP 1204948, Lot 203 DP 1204948, Lot 204 DP 1204948, Lot 211 DP 1217691, Lot 208 DP 1211553, SP 91649 (Strata scheme)
Applicant Details	
Applicant name	Infrastructure NSW
Applicant address	Level 27, 201 Kent St, Sydney NSW 2000
Details of person by whom this EAR was prepared	
Name and professional qualifications	<p>Sarah Horsfield (Director) Bachelor of Town Planning, University of NSW Master of Environmental Law, University of Sydney</p> <p>Samantha Wilson (Associate Director) Bachelor of Landscape Architecture, University of Canberra Diploma of Urban Planning and Environment, Royal Melbourne Institute of Technology</p> <p>Jack Kerstens (Senior Consultant) Bachelor of Regional and Town Planning (Hons), University of Queensland</p> <p>Eliza Scobie (Senior Consultant) Bachelor of City Planning (Hons), University of NSW</p>
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Signed Declaration

Declaration	<p>The undersigned declares that this EAR:</p> <ul style="list-style-type: none"> ▪ Contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the EAR relates; ▪ Does not contain information that is false or misleading; ▪ Addresses the Director General environmental assessment requirements for the project; ▪ Identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments; ▪ Contains a simple and easy to understand summary of the project as a whole, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development; ▪ Contains a consolidated description of the project in a single chapter of the EAR; ▪ Contains an accurate summary of the findings of any community engagement; and ▪ Contains an accurate summary of the detailed technical assessment of the impacts of the project as a whole. 			
Signature	 Sarah Horsfield, Director	 Samantha Wilson, Associate Director	 Jack Kerstens, Senior Consultant	 Eliza Scobie, Senior Consultant
Date	16 December 2021	16 December 2021	16 December 2021	16 December 2021

GLOSSARY AND ABBREVIATIONS

Abbreviation	Meaning
Access Strategy	<i>Sydney City Centre Access Strategy</i>
ADG	Apartment Design Guide
AGL	The Australian Gas Light Company
AHD	Australian Height Datum
AHH	Anderson Hunter Horner
AHIMS	Aboriginal Heritage Information Management Systems
Airports Act	<i>Airports Act 1996</i>
Approved Concept Plan	Current approved Barangaroo Concept Plan (as modified by MOD 11) approved 22 October 2020
AQIA	Air Quality Impact Assessment
Barangaroo Act 2009	<i>Barangaroo Delivery Authority Act 2009</i>
Barangaroo Station	Sydney Metro Barangaroo Station
BASIX SEPP	<i>State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004</i>
CB DRP	Central Barangaroo State Design Review Panel
CENSuS	Central Barangaroo Sustainability Strategy
CIV	Capital investment value
Coastal Management SEPP	<i>State Environmental Planning Policy (Coastal Management) 2018</i>
CPTED	Crime Prevention Through Environmental Design
DGRs	Director-General's Requirements (now referred to as SEARs)
DPIE	NSW Department of Planning, Industry and Environment
DNRCBR	<i>Development Near Rail Corridors and Busy Roads – Interim Guideline 2008</i>
EAR	Environmental Assessment Report
EOTF	End of Trip Facilities
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
EPIs	Environmental Planning Instruments

Abbreviation	Meaning
The Regulations	<i>Environmental Planning and Assessment Regulation 2000</i>
ESD	Ecologically sustainable development
EPA	NSW Environment Protection Authority
GANSW	NSW Government Architect's Office
GFA	Gross Floor Area
GSRP 2018	<i>Greater Sydney Region Plan 2018 'A Metropolis of Three Cities'</i>
GVA	Gross Value Added
HAIS	Heritage Assessment and Impact Statement
HIA	Heritage Impact Assessment
Infrastructure SEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i>
Infrastructure NSW	Infrastructure New South Wales (the applicant)
IPC	Independent Planning Commission
LGA	Local Government Area
MOD 9	Modification 9 to the Barangaroo Concept Plan (MP06_0162)
MP06_0162	Barangaroo Concept Plan (MP06_0162) approved in February 2007
OL	Observer Locations
PAC	Planning and Assessment Commission
RAP	Remediation Action Plan
SAR	Site Audit Report
SAS	Section B Site Audit Statement
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	<i>State Environmental Planning Policy No 55 - Remediation of Land</i>
SEPP 65	<i>State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development</i>
SOCs	Statement of Commitments
SOM	Skidmore Owings & Merrill
SIS 2018-2031	<i>NSW State Infrastructure Strategy 2018 – 2031</i>

Abbreviation	Meaning
SRD SEPP	<i>State Environmental Planning Policy (State and Regional Development) 2011</i>
SREP	<i>Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005</i>
SSD	State Significant Development
SSDAs	Future detailed Stage 2 State Significant Development Applications
SSI	State Significant Infrastructure
SSP SEPP	<i>State Environmental Planning Policy (State Significant Precincts) 2005</i>
STOP Regulation	<i>Environmental Planning and Assessment (Saving, Transitional and Other Provisions) Regulation 2017</i>
S75W	Section 75W of EP&A Act 1979
TfNSW	Transport for New South Wales
TDMP	Travel Demand Management Plan
TMAP	Transport Management and Accessibility Plan
UNSW	University of New South Wales
VVIA	View and Visual Impact Assessment

ACKNOWLEDGEMENT OF COUNTRY

We would like to acknowledge the Gadigal people who are the Traditional Custodians of this land. We would also like to pay respect to the Elders both past and present of the Eora Nation and extend that respect to all Aboriginal people.

EXECUTIVE SUMMARY

BACKGROUND

Planning for the Barangaroo site (formerly known as East Darling Harbour) commenced in 2006. It has now transformed into a globally recognised 22-hectare urban renewal precinct located on the western harbour foreshore of Sydney's CBD. Barangaroo is bound by Sydney Harbour to the north and west, and Hickson Road to the east and is divided into the following three distinct development areas known as Barangaroo South (approx. 7.5ha), Central Barangaroo (approx. 5.2ha) and Barangaroo Reserve (approx. 6.1ha).

The original Concept Plan (MP06_0162) was approved in February 2007 by the then Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979 (EP&A Act)*. To facilitate this, the land was rezoned and listed as a State Significant site via an amendment to Schedule 3 of *State Environmental Planning Policy (Major Development) 2005* (now renamed *State Environmental Planning Policy (State Significant Precincts) 2005 (SSP SEPP)*). The Barangaroo Concept Plan creates a development framework of streets and development blocks to deliver a dynamic mix of commercial, residential, tourist, retail, community and cultural uses, whilst dedicating 50% of Barangaroo as public open space, on or close to the harbour foreshore.

Over the 14 years that Barangaroo has been developed, the strategic planning direction for Greater Sydney has also evolved to focus on creating a 30-minute city, where homes are connected to jobs by efficient transport networks. The Greater Sydney Region Plan, Eastern City District Plan and State Infrastructure Strategy provide a clear direction to ensure that land use and transport planning are fully integrated.

Consistent with this strategic direction, a Metro station was announced for Central Barangaroo in June 2015 as part of the Sydney Metro CBD and Southwest project, which is currently under construction and targeted for completion in 2024. Infrastructure NSW has been closely working with Sydney Metro and development partners to ensure land use planning and infrastructure provision within the Precinct is appropriately integrated with the new Barangaroo Station. As part of the delivery of the new Barangaroo Station, Infrastructure NSW has been reviewing the Barangaroo Concept Plan to understand how the Precinct can capitalise on the once in a lifetime generational opportunity associated with the new Barangaroo Station, and to support additional activity in Barangaroo and drive higher levels of patronage on the new Metro rail.

In addition to delivering significant commercial, residential and community floor space, Barangaroo, which is Australia's first carbon neutral urban precinct, includes major new infrastructure for Sydney, including extensive new foreshore public spaces on Sydney Harbour, new public transport infrastructure such as the Barangaroo Ferry Wharves and the future Sydney Metro Barangaroo Station. Barangaroo has become an international model for Government working with the private sector to achieve exemplar outcomes in areas such as urban design, place making, environmental and social sustainability.

The approved Concept Plan and accompanying Statement of Commitments (**SOCs**) for Barangaroo has been modified ten times since 2007, to reflect contextual and strategic changes affecting the precinct. However, as the final development area to be completed within the Barangaroo precinct, Central Barangaroo has not been substantially modified since 2007. The approved Concept Plan as it currently relates to Blocks 5, 6 and 7 of Central Barangaroo does not deliver upon the extent of the urban renewal potential of this precinct and fails to optimise the extraordinary opportunity of developing government-owned assets for public benefit. It is now inconsistent with current strategic planning and if developed under the approved Concept Plan would result in a significant lost opportunity.

This application seeks to optimise the site potential and development opportunities available to increase the wealth of economic, social and environmental benefits to be delivered to the public at the completion of the project. Development of the site under MOD 9 will solidify the project as an urban renewal success and global benchmark for renewal and will deliver upon strategic priorities at a State and Regional level to provide increased employment generating floor space and associated jobs near homes, align land use and infrastructure planning priority, and elevate Sydney as 21st-Century Global City.

Accordingly, this modification application is submitted to the Department of Planning, Industry and Environment (**DPIE**) to support an amendment to the Barangaroo Concept Plan (MP 06_0162). It is noted that Director General's Requirements (**DGRs**) for the Barangaroo Concept Plan MOD 9 were issued on 15 April 2014. As the request to modify was lodged prior to the 1 March 2018 cut-off date, MOD 9 remains a transitional Section 75W (S75W) project under the EP&A Act. This pathway provides the Minister with the power to "modify the approval (with or without conditions) or disapprove of the Modification" and remains in force by operation of clause 3BA of schedule 2 of the *Environmental Planning and Assessment (Saving,*

Transitional and Other Provisions) Regulation 2017 (STOP Regulation). This Environmental Assessment Report (EAR) and appended consultant reports have been prepared to address the requirements of the DGRs and the requirements of the transitional provisions under Part 3A of the EP&A Act.

The Barangaroo Concept Plan is to be concluded with the proposed MOD 9 for Central Barangaroo submitted by Infrastructure NSW as the applicant for the proposed modification. This will be the final opportunity to align catalytic infrastructure with an appropriate density to unlock the full potential of this precinct. MOD 9 will achieve this objective whilst balancing the wide range of competing urban design, environmental, economic and social considerations, and will deliver a range of perpetual public benefits for future generations.

INFRASTRUCTURE NSW

Infrastructure NSW was established in July 2011 to assist the NSW Government in identifying and prioritising the delivery of critical public infrastructure for NSW. As of 1 July 2019, Infrastructure NSW is the State Government agency responsible for the development of Barangaroo and management of its public spaces. This involves maintaining control of the Barangaroo Concept Plan and facilitating and administering the delivery of all development contemplated by the Concept Plan.

The NSW Government was the original proponent of the Barangaroo Concept Plan, which is the approval instrument for delivering the vision for Barangaroo. It is therefore appropriate that in circumstances where changes to the Barangaroo Concept Plan (as approved) are contemplated, the NSW Government remains in control of that process as the proponent of any application(s) it deems necessary in order to holistically deliver the vision and objects of the *Barangaroo Delivery Authority Act 2009 (Barangaroo Act 2009)* (transferred to Infrastructure NSW on 1 July 2019) as set out in section 3 of the Act.

By exercising its functions under section 14 of the Barangaroo Act, Infrastructure NSW seeks to optimise the site's development potential and achieve the objects of the Barangaroo Act which seeks to "*encourage the development of Barangaroo as an active, vibrant and sustainable community and as a location for national and global business*". This will be achieved by leveraging the project's successes to date while capturing unrealised opportunity to enhance undeveloped built form.

Infrastructure NSW will continue to collaborate with its delivery partners to ensure the right outcomes for the precinct as a whole are achieved, and that density and land use is commensurate to and integrated appropriately with transport and infrastructure.

PROPOSED AMENDMENT TO CONCEPT PLAN

Summary of Modification

MOD 9 is seeking to modify the approved Barangaroo Concept Plan (MP06_0162) (MOD 9) to make amendments within Central Barangaroo and Barangaroo Reserve. For clarity it is noted that the changes proposed within Barangaroo Reserve relate to an area identified as the Cutaway only, and the minor changes proposed within Barangaroo South relate to Barton Street and Hickson Park only.

The proposed modification seeks to increase the overall quantum of gross floor area to be distributed above and below ground, within adjusted Block alignments and within amended building envelopes that have been increased in maximum building height. MOD 9 also seeks consent for amendments to the street layout and public domain arrangement, whilst principally maintaining strong permeability and emphasis on pedestrian activity within the precinct.

MOD 9 does not seek any changes to the balance of the Barangaroo project site, which will continue to have the same heights, block layouts, land uses and GFA as the approved Concept Plan.

The introduction of Urban Design Guidelines and establishment of a Design Excellence Strategy framework will guide the future development of the precinct to ensure the exceptional standard of urban design, architecture and landscaping is maintained throughout the precinct.

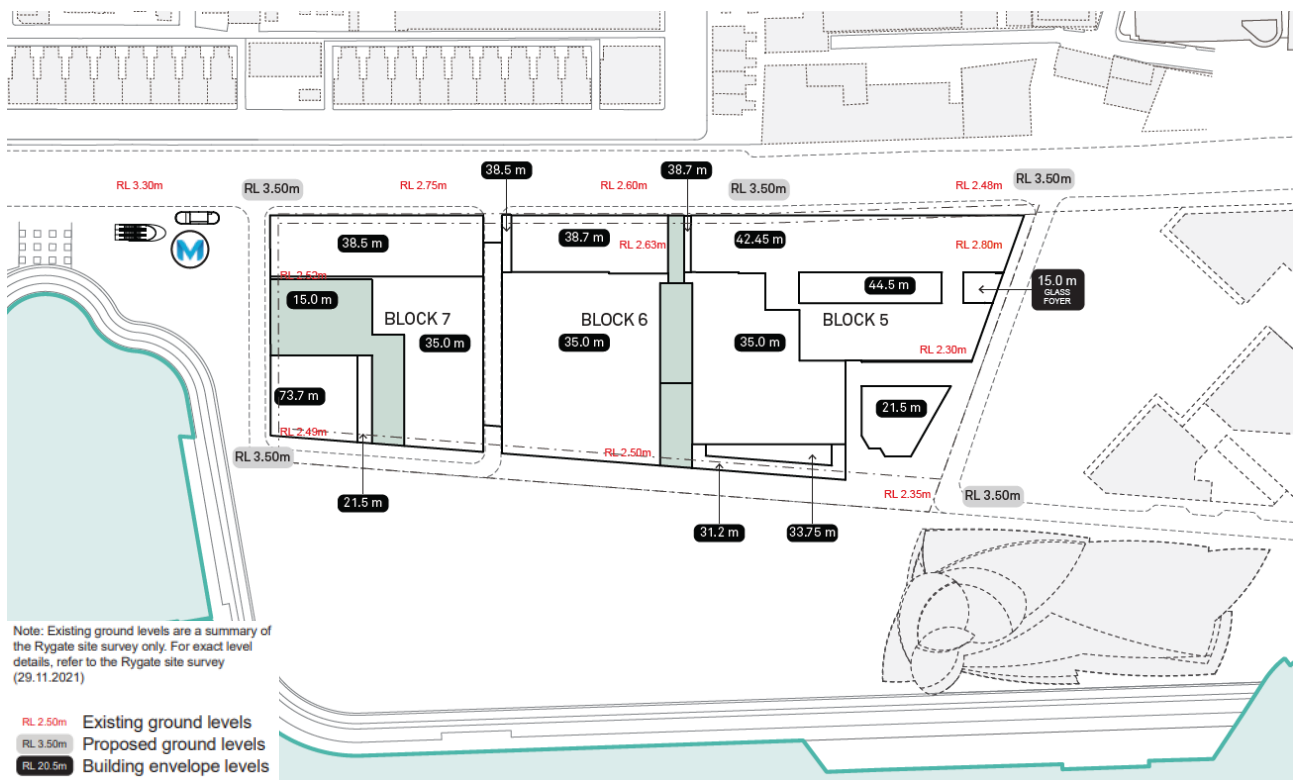
To achieve these amendments, the modification is also supported by a revised Statement of Commitments, update to the Instrument of Approval and amendment to the SSP SEPP. Specifically, this includes a revision to the applicable land zoning, height of buildings and gross floor area SSP SEPP maps and associated written instrument provisions, and insertion of three written instrument provisions that will apply to part of the site. The majority of the Barangaroo project is unchanged.

In order to support the above changes, the Concept Plan is proposed to be modified as follows:

- An increase in total permissible GFA from 602,354sqm to 708,041sqm, comprising the following proposed within Central Barangaroo and Barangaroo Reserve:
 - Up to 116,189sqm of above ground GFA, primarily within the B4 Mixed Use zone of Blocks 5, 6 and 7 (including a maximum of 28,000sqm of residential GFA);
 - Up to 28,166sqm of below ground GFA, primarily within the B4 Mixed Use zone of Blocks 5, 6 and 7;
 - A minimum of 2,800sqm of Community uses GFA within Blocks 5, 6 and 7; and
 - A minimum of 6,000sqm and maximum of 18,000sqm of Community uses GFA within the RE1 Zone of Barangaroo Reserve to allow for future community / cultural facilities located in the Cutaway.
 - An allocation of 1,000sqm GFA for potential community uses within the RE1 Zone.
- A re-adjustment of the Block 5 southern boundary and building envelope towards the previously approved alignment prior to the MOD 8 approval, whilst providing building setbacks to both Barangaroo South and Hickson Park.
- Modifications to Barangaroo’s movement network, including the removal of uncontrolled vehicular traffic from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6 (excluding controlled service vehicle access), and converting Barton Street to a permanent street connecting Barangaroo Avenue with Hickson Road, servicing the wider Barangaroo precinct.
- Modifications to the approved building envelopes of Blocks 5, 6 and 7 including additional height, block alignments, additional GFA and the distribution of GFA across the blocks.
- Introduction of Design Guidelines for Central Barangaroo to guide future detailed proposals.
- Consequential amendments to the State Significant Precincts SEPP to support modifications to the Barangaroo Concept Plan (MOD 9) for Central Barangaroo.
- Modifications to the current Instrument of Approval.
- Revisions to the Barangaroo Concept Plan Statement of Commitments.

The amendment to the alignment and maximum building heights for each Central Barangaroo development block are outlined in **Figure 1** and described further in the following subsections.

Figure 1 Proposed Barangaroo Concept Plan MOD 9 – Building Envelope Plan



Source: Hassell

Barangaroo Concept Plan Development Description

As a result of the above amendments, Condition 'A1 Development Description' the approved Concept Plan for Barangaroo (MP06_0162) will be modified as follows:

- (1) A mixed-use development involving a maximum of ~~602,354~~ **708,041** sqm gross floor area (GFA), comprised of:
 - a) a maximum of ~~191,031~~ **190,031** sqm of residential GFA of which a maximum of 162,031 sqm will be in Barangaroo South;
 - b) a maximum of 76,000 sqm of GFA for tourist uses of which a maximum of 59,000 sqm will be in Barangaroo South;
 - c) a maximum of ~~34,000~~ **71,800** sqm of GFA for retail use of which a maximum of 30,000 sqm will be in Barangaroo South;
 - d) a maximum of 5,000sqm of GFA for active uses in the Public Recreation zone of which 3,500 will be in Barangaroo South; and
 - e) a minimum of ~~12,000~~ **14,400** sqm GFA for community use.

Building Envelope

MOD 9 is seeking consent for amended building envelopes for three development blocks out of the total ten development blocks within the entire Barangaroo project.

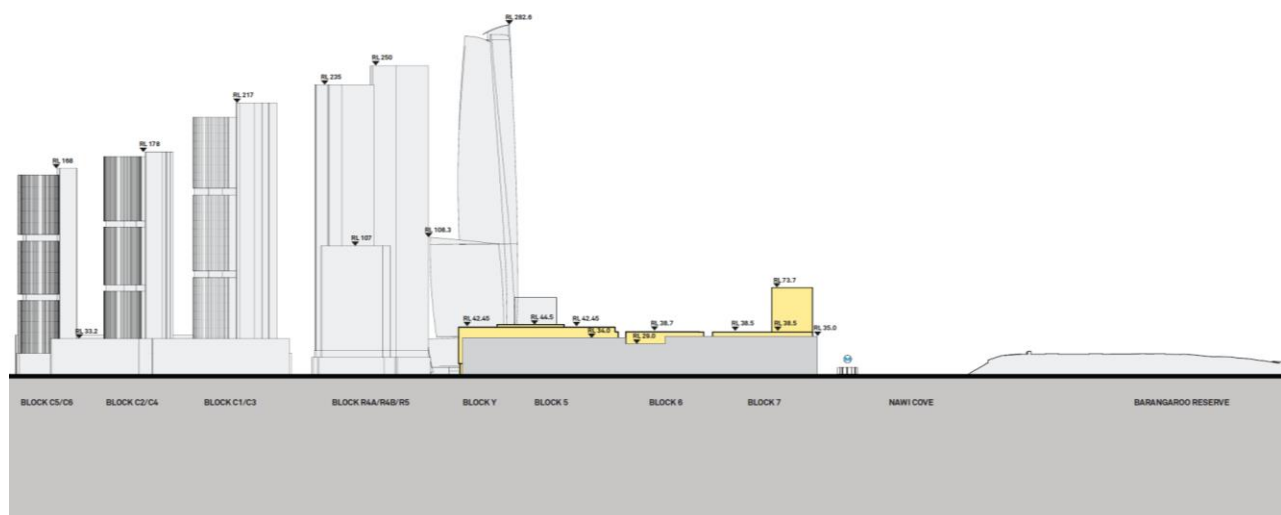
The MOD 9 Urban Design Report establishes building envelopes for each of the three development blocks (5, 6 and 7) which respond to the site analysis of constraints and opportunities. The amended building envelopes increase the overall GFA and height of the approved concept building envelope, with tower 7 proposed to have an increased height of RL 73.7. These amended building envelopes define the parameters for the building envelopes across Central Barangaroo and will set the framework within which the detailed building design can be established.

A comparison of the approved and proposed maximum building heights for each development block is provided in **Table 1**. This is also illustrated graphically in **Figure 2** relevant to Central Barangaroo.

Table 1 Approved and Proposed Building Heights in Barangaroo (highlighting Central Barangaroo)

Block	Approved Height (MOD 10/11)	Proposed Height (MOD 9)
Barangaroo South – approved Concept Plan		
Block 1	RL 25	No change.
Block 2	RL 180	No change.
Block 3	RL 209	No change.
Block 4A	RL 250	No change.
Block 4B	RL 107	No change.
Block X	RL 41.5	No change.
Block Y	RL 275	No change.
Central Barangaroo – MOD 9 proposal		
Block 5	RL 34	RL 14.95 – RL 44.5 (max)
Block 6	RL 29	RL 35 – RL 38.7 (max)
Block 7	RL 35	RL 15 – RL 73.7 (max)

Figure 2 Proposed changes to building heights across the Barangaroo precinct



Source: Hassell

Whilst there are proposed increases in height, the proposed heights will continue to provide an appropriate height in its western city edge context (with impacts limited), particularly when compared with the scale of existing and approved development in Barangaroo South (under the approved Concept Plan as modified) and recently approved and proposed development in Darling Harbour and Blackwattle Bay.

Land Uses

MOD 9 is seeking to modify the approved Concept Plan for Barangaroo to make amendments within Central Barangaroo to enable the mixed-use redevelopment of Central Barangaroo with a range of land uses. The final mix of land uses will be subject to future detailed development applications.

The proposed land use configuration is generally consistent with the approved Concept Plan and maintains the principle of a mixed-use precinct, whilst embedding flexibility to allow for resilience to market conditions and ensure viable urban design outcomes. The revised configuration also responds to the introduction of the Sydney Metro line, new Barangaroo Station and the need to deliver a public identity which leverages off the foreshore.

MOD 9 will ensure that Central Barangaroo will continue to be a significant major employment hub with the opportunity to contribute more than \$180 million to the NSW economy during construction and \$320 million during operation once complete. MOD 9 proposes to increase the amount of employment generating floor space in the form of commercial buildings largely concentrated in Blocks 5, 6 and 7 (excluding Tower 7A) and an activated retail base across the precinct (a range of shops including supermarkets, speciality retail, and food and beverage) in the basement, ground and first level to capitalise upon movement of commuters and visitors through to the new transport interchange node (Barangaroo Station). The character of the commercial buildings will comprise flexible, co-working spaces to contrast from the conventional office spaces and large floor plates provided within Barangaroo South. This will provide diversity in the market and support a variety of employment opportunities in Barangaroo and respond to market demand for more flexible types of commercial space because of the COVID pandemic.

Residential density is proposed to slightly decrease by 0.5% across the approved Concept Plan, with residential uses largely concentrated within the tower form within Block 7. The application will retain the ability to provide some residential floor space in Blocks 5 and 6, however the allocation of residential floor space in these blocks will be reduced compared to the approved Concept Plan. Despite this, MOD 9 retains a commitment to the Homes for Homes strategy, which seeks to donate 0.1% of the sale price of each residential dwelling to deliver affordable housing in a variety of locations. Further, the 28,000sqm of residential floor space permitted in Central Barangaroo under the approved Concept Plan will help activate the precinct at all hours of day (particularly outside of business hours) and also reinforce demand and critical mass to support the operation and investment in Barangaroo Station.

The proposal also seeks to amend the Concept Plan to facilitate the provision of one small pavilion structure within the RE1 zone above ground in Harbour Park by allocating GFA to accommodate community uses and small vendors such as food and beverage outlets to further activate the public realm. Other future pavilion structures within Harbour Park are contemplated as part of the overall planning process for Central Barangaroo, however, these do not form part of MOD 9 and will be articulated in future applications if pursued.

Block 5 Boundary

The June 2016 approval of MOD 8 by the Planning and Assessment Commission (**PAC**) (now the Independent Planning Commission – **IPC**) and the associated amendment to the State Significant Precincts SEPP modified the alignment of the northern boundary of Hickson Park, which was previously located entirely within Barangaroo South, into Central Barangaroo. **This determination had significant implications on the land use configuration and development outcomes of Central Barangaroo.** MOD 9 seeks to retain the objectives of this decision including solar access, key views, building separation and public accessibility, however, improve the overall function, layout and amenity of land use and publicly accessible spaces through a re-configuration of block boundaries, primarily on the southern interface of Central Barangaroo.

Specifically, MOD 9 proposes to realign the northern boundary of Hickson Park close to its original location prior to MOD 8. Crucially, reinstatement of the Block 5 boundary to be more in line with the pre-MOD 8 arrangement will continue to achieve the principles set by the PAC, will maintain the delivery of 50% of Barangaroo as public open space, and ultimately will generally achieve the objectives of the PAC decision.

Gross Floor Area

The proposal seeks to increase the total GFA permissible on Central Barangaroo and Barangaroo Reserve in response to recent infrastructure investments and contextual changes, together with the strategic opportunities afforded by the site's location. The proposed amendment to GFA includes the following key changes:

- An increase to the total GFA permissible in Block 5, Block 6 and Block 7. The proposed modification seeks to increase the GFA across Central Barangaroo by 96,667sqm from 47,688sqm to 144,355sqm. This equates to an overall increase of permissible GFA for the approved Concept Plan from 602,354sqm to 708,041sqm.

Specifically, this addition is a direct result of additional floor space in the following blocks:

- Blocks 5, 6 and 7 (above ground): An increase in GFA from 47,688sqm to 116,189sqm.
- Blocks 5, 6 and 7 (below ground): Allocate 28,166sqm GFA to below ground areas of Blocks 5, 6 and 7.
- Increasing the minimum 2,000sqm of community uses GFA within development Blocks 5 and 6 to a minimum of 2,800sqm of community uses GFA within Blocks 5, 6 and 7.
- An increase to the total permissible community and active uses GFA. The proposed modification seeks to increase the community and active uses (including the Cutaway) up to 24,000sqm GFA. This includes:
 - Allocation of up to 18,000sqm GFA for community uses to the Cutaway to allow for future development of a cultural and exhibition facility. This is a void space that currently exists within Barangaroo Reserve.
 - Provision of 1,000sqm GFA for potential community uses in the RE1 zone in addition to the community use GFA allocation for the Cutaway.
 - Retention of 5,000sqm GFA for active uses in the RE1 zone across the whole of Barangaroo, including a maximum of 3,500sqm in Barangaroo South.
- Distinction between above ground and below ground GFA to provide greater certainty and definition of the parameters for the modified concept. Below ground GFA will be located within the Central Barangaroo basement which will be situated a minimum of 1.4 metres below ground to allow deep soil planting above. The basement will extend approximately 25m from the western boundary of Blocks 5, 6 and 7 into (below) RE1 land.
- Provision of a condition of consent to enable the GFA allocated to each block to be flexibly applied, subject to remaining within the total maximum permissible GFA for the three blocks and the building envelope established for the development blocks.
- Exclusion of the calculation of 'wintergardens' from the total residential and commercial floor space, consistent with the approach for residential and tourist GFA in Barangaroo South and Condition B4(4) of the approved Concept Plan determination.
- Increase the total gross floor area permitted within Blocks 5, 6 and 7 to accommodate the indicative built form outcome set out in MOD 9.

Public Domain

MOD 9 for Central Barangaroo seeks to deliver and embellish a diversity of public domain components that have been designed to integrate with the built form, access networks and adjoining developments, including accessible urban spaces, various connecting elements and the following significant public open spaces which have already been approved such as:

- Nawi Cove – a cultural lifestyle hub and city gateway integrated with the Barangaroo Station.
- Harbour Park – an activated green park accompanying a diverse range of experiences
- Wulugul Walk – a broad public promenade along the harbour's edge.

MOD 9 proposes to modify the following public domain components of the approved Concept Plan:

- Provision of one small pavilion structure within the Harbour Park RE1 zone located along the spine of Barangaroo Avenue. The pavilion structure will support opportunities for future food and beverage offerings.
- Realign the northern boundary of Hickson Park to create a contained urban city park and green lawn which interacts with the built form. This also provides an opportunity for a public plaza space which allows the opening of sight lines from Hickson Park through to Harbour Park. The indicative reference scheme envisages this urban threshold space between Hickson and Harbour Parks as Barton Plaza.

MOD 9 also retains the commitment to deliver a pedestrian connection across Hickson Road from High Street / Millers Point to the Central Barangaroo development blocks as envisaged under the approved Concept Plan. However, this is a conceptual element and the design, exact location and function of the pedestrian bridge will be determined as part of future detailed SSDAs.

Greater modulation of the building form proposed in MOD 9 will provide opportunities for the delivery of public domain/publicly accessible space throughout the site (subject to detailed design). The Urban Design Report prepared by Hassell (refer **Appendix E**) has suggested three potential spaces (Nawi Terrace, Barangaroo Steps, Barton Plaza) that could be delivered as publicly accessible open space throughout the site. However, it is noted that MOD 9 does not seek consent for these spaces and the final quantum, form, location and function of publicly accessible spaces/public domain within the development blocks will be subject to detailed design within future SSDAs.

Importantly, MOD 9 will maintain the delivery of 50% of Barangaroo as public open space, on or close to the harbour foreshore.

Street Network and Movement

The street and movement network structure has been reconfigured as part of MOD 9 to align with the modified building envelopes proposed and to provide new and safer connections throughout the precinct for both pedestrians and vehicles with a clear access hierarchy. A summary of the street and movement network along with the justification for key changes to the streets and pedestrian connections proposed under MOD 9 is provided below.

- Barton Street – MOD 9 proposes to convert Barton Street to a permanent two-way street which connects Barangaroo Avenue with Hickson Road. This will enable the transformation of Barangaroo Avenue (north of Barton Street) into a pedestrian environment through the redirection of uncontrolled traffic onto Hickson Road, Barton Street and Barangaroo Avenue and free up other streets and pedestrian connections throughout Central Barangaroo.
- Barangaroo Avenue – MOD 9 proposes to remove vehicle traffic from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6, with limited controlled service vehicle access only. Removing vehicle traffic from Barangaroo Avenue and allowing limited service vehicle usage will facilitate a safe pedestrian environment along Barangaroo Avenue with open space to the west and retail activation to the east.
- Internal Shared Streets C and D – MOD 9 proposes minor shifts to Streets C and D to align with and frame the proposed development blocks 6 and 7.
- Laneway B – MOD 9 proposes Street B (now Laneway B) as a dedicated pedestrian laneway which dissects Block 5. Laneway B will contribute to the permeability and pedestrian orientation of Central Barangaroo by providing an activated retail link between Hickson Road, Barton Plaza and Harbour Park.
- Hickson Road – Hickson Road will remain as a boulevard that provides an address and activation for development fronting the road at a civic scale. No changes are proposed to the location or function of Hickson Road under MOD 9.

AMENDMENTS TO INSTRUMENT OF APPROVAL

The modifications to the Barangaroo Concept Plan described above require amendments to Schedules of the Instrument of Approval, including development description and conditions of consent.

The modifications to the description of development and relevant conditions of consent are outlined in **Appendix C** which includes a “marked up” version of the latest Instrument of Approval and the justification for the proposed changes.

REVISED STATEMENT OF COMMITMENTS

The Statement of Commitments (**SOCs**) which form part of the approved Concept Plan (as modified) have been refined and amended based on the outcomes of the environmental assessment. These refinements include the removal of commitments no longer relevant to the Barangaroo development and the addition of new commitments to appropriately manage and mitigate potential impacts.

The newly proposed SOC's are provided at **Appendix B** and retain relevant requirements specific to Central Barangaroo.

AMENDMENTS TO STATE SIGNIFICANT PRECINCTS SEPP

To facilitate the outcome envisaged by MOD 9, the SSP SEPP is proposed to be concurrently amended. Specifically, this includes a revision to the applicable land zoning, height of buildings and gross floor area SSP SEPP maps and associated written instrument provisions, and insertion of three written instrument provisions that will apply to part of the site. The amendment is required to:

- Amend the southern boundary of Block 5 and rezone part of Block 5 from RE1 Public Recreation to B4 Mixed Use, improving the transition, identity and character of Hickson Park to Harbour Park.
- Increase and limit the maximum total gross floor area that currently applies to Central Barangaroo.
- Impose a maximum total gross floor area permitted below ground within the Central Barangaroo basement.
- Impose varied maximum height limits across Block 5, 6 and 7 to reflect the proposed Central Barangaroo Building Envelope Plan, resulting in improved modulation of the built form and providing the opportunity to create a more visually interesting and varied built form outcome.
- Accommodate building overhangs and facade articulation elements above ground level, resulting in improved ground plane amenity and enabling the introduction of a north south through-site link and central atrium space.
- Permit limited development below ground level in the RE1 Public Recreation zone, to facilitate the integration of Barangaroo Station and supporting retail, including but not limited to a supermarket.
- Align the SSP SEPP with the Barangaroo project to which the proposed modification to the Concept Plan Approval relates.

The proposed draft SSP SEPP Amendment Discussion Paper, together with amended maps, is provided at **Appendix AA**.

PLANNING ASSESSMENT

The proposal has also been assessed in accordance with its consistency with the key planning objectives, priorities and actions outlined within relevant strategic land use, design and transport planning policies.

The Concept Plan for Barangaroo is a transitional Part 3A project and under clause 3C(1), and subject to clause 3BA of the STOP Regulation, may continue to be modified under the former Section 75W of the EP&A Act. Accordingly, MOD 9 of MP06_01620 is made under the former Section 75W of the EP&A Act.

This application seeks to modify a Concept Plan and as such does not seek consent for the carrying out of physical works on the site. Detailed development applications (**DAs**) will accordingly follow the determination of the Concept Proposal seeking approval for the detailed design and construction of specific aspects of the redevelopment.

Barangaroo is identified as a State Significant Site under Schedule 2 of the *State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP)*. Accordingly, the Minister for Planning and Public Spaces, or their delegate, is the consent authority for this application and the application is lodged with the NSW DPIE for assessment.

This EAR considers the relevant regulatory framework applicable to the site and contains an assessment of the proposal against the applicable Commonwealth and State statutory controls, environmental planning instrument and approval requirements. Statutory provisions that were applicable at the time of issue of the DGRs are included within this planning assessment for consistency and compliance with the requirements of the issued DGRs, however noting a number have since been superseded and are no longer applicable.

ENVIRONMENTAL ASSESSMENT

An environmental assessment of the proposed MOD 9 has been undertaken in accordance with the issues identified in the DGRs for the application. Key matters for consideration are discussed below.

Built Form and Urban Design

The proposed modified building envelope for each of the three development blocks (5, 6 and 7) out of the ten approved development blocks have been sensitively composed and refined at a high level of detail to balance the varying sensitivities of the precinct. The modified building envelope responds to the analysis of the site, including the identified constraints and opportunities, and over 6 years of master planning and stakeholder engagement.

MOD 9 will create three urban markers including two landmark building elements at the north-western and south-western corners, and a new pedestrian bridge over Hickson Road to connect and integrate Central Barangaroo with Milers Point and the Sydney CBD. These civic elements provide a significant benefit and will strengthen the identity and connectivity of the Central Barangaroo precinct.

The modified envelope will provide an appropriate height in its western city edge context (with impacts limited), particularly when compared with existing and approved development in Barangaroo South (under the approved Concept Plan) and recently approved and proposed development in Darling Harbour and Blackwattle Bay. The distribution of the form embraces the site's critical transition between Barangaroo South and the contrasting low-density character of the Millers Point Heritage Conservation Area and Barangaroo Reserve and achieves a modulation of urban form across the precinct which is currently absent. It also delivers equitable access to views, defines a clear street wall to activate public streets and spaces, and achieves an appropriate building separation to create a fine grain structure and capture daylight penetration.

Redefining Hickson Park

MOD 9 seeks to readjust the south-western site boundary of Block 5 to align with the boundary as it existed prior to the MOD 8 proposal and subsequent SSP SEPP amendment in June 2016. Essentially, this involves moving the B4 Mixed Use zone boundary further to the south to align with the relocated Block 5 boundary, and a reduction of the area of RE1 Public Recreation zoned land (Hickson Park).

The proposed reconfiguration of the southern boundary of Block 5 and northern boundary of Hickson Park has **demonstrable benefits** to the overall form and function of Barangaroo, including:

- Extending Harbour Park and minimising traffic impact to create a truly pedestrian orientated mixed-use precinct, adjacent to Sydney Harbour, in the heart of the Sydney CBD.
- Define the networks of parks within Barangaroo and improve the identity of Hickson Park as a distinct city scale park,
- Integrate the precincts of Barangaroo and establish a closer and stronger relationship between the Barangaroo South and Central Barangaroo.
- Improve micro-climate, wind management and thermal comfort for occupants of Hickson Park, to create a place of respite that cannot be achieved at the foreshore locations in Harbour Park or Barangaroo Reserve.

The objectives set out by the Planning Assessment Commission in their advice to the Minister regarding the June 2016 amendment to the SSP SEPP (associated with MOD 8) will be achieved despite the reconfiguration. Specifically, the public domain or plaza (contemplated as Barton Plaza) will improve the quality and amenity of Hickson Park and enable its function as a distinct city park with a strong and clear connection to Harbour Park, activated on all sides with cultural and retail offerings, the Barangaroo Station entry, and lobbies to the residential buildings. This will ensure it is activated day and night, all year round. In addition, key principles including solar access, view corridors towards Sydney Harbour and Harbour Park, pedestrian connectivity and building separation will be maintained.

Solar Access and Overshadowing

The changes to the extent of solar access as a result of MOD 9 are considered appropriate as the amenity and usability of key open space areas are retained and the envelope will ensure an average of 49.91% of Hickson Park (3,533.13sqm) will receive solar access between 12pm – 2pm on the winter solstice. This

allows for an urban parkland with an area of 3,553.13sqm that can accommodate over 883 people sitting comfortably (based on an assumption of 1 person per 4sqm).

The greater modulation of the MOD 9 building envelope will result in a shift in the shadow cast on to surrounding public domain and recreational areas, and an increase in some locations. Whilst MOD 9 will result in some additional shadowing on Harbour Park and Wulugul Walk between 9am and 10am on the winter solstice, this fast moving shadow quickly dissipates and from 12pm Harbour Park and Wulugul receives full solar access for the remainder of the day (in particular the key lunchtime period).

Between 11am – 2pm the MOD 9 envelope will result in an increase in shadows to the eastern portion of Hickson Park adjacent to the curtilage of Building R5 and Hickson Road. However, the western extent of Hickson Park (at the intersection of Barton Street and Barangaroo Avenue) will continue to receive solar access between 11am to 2pm consistent with the approved Concept Plan (with only a minor increase in shadows adjacent to Barton Street). This will ensure the amenity and usability of this space, noting that key vistas are provided within this western extent of Hickson Park through to the harbour foreshore.

It is also noted that the MOD 9 envelope provides greater solar access to some areas of Barangaroo Avenue during the summer solstice when compared to the approved Concept Plan, whilst for the remainder of the study period solar access remains largely consistent with the approved Concept Plan.

Design Excellence

In accordance with the requirements of the SSP SEPP, this application considers the exhibition of design excellence of the future built form and development at Central Barangaroo. A Design Excellence Strategy has been prepared (**Appendix Z**) which outlines a framework within which future applications will achieve design excellence in order to continue the exemplar urban design response along the western Sydney Harbour foreshore.

In respect of the site's specific bespoke nature, the highly integrated character of the broader development site including interface with a Barangaroo Station, State heritage precinct and sensitive views and sightlines, and the extensive history of the project, a hybrid approach to design excellence is proposed.

In summary, this approach will seek to establish key design principles, objectives and controls for Design Excellence (Phase 1), undertake an Alternative Design Process for the built form, retail fit-out, streets and associated public domain for Blocks 5 (including flagship), 6 and 7 (Phase 2), and maintain design excellence through the Design Integrity Process (Phase 3). Specifically, Phase 2 will involve the direct appointment of a select team of highly experienced, respected and regarded architects. The selected team will comprise of an aligned and sympathetic group of co-contributors, working both together and individually, to ensure a highly coordinated and cooperative approach to design. Phase 2 will also involve ongoing and regular review by the Infrastructure NSW Design Excellence Advisory Panel and the future submission of requests with future detailed SSDAs to waive the requirement under clause 19(3) of the Precinct SEPP to undertake a design competition for the erection of any new building greater than RL 57, or on a site greater than 1,500sqm to enable this alternative process to occur.

This approach to design excellence will achieve a fully integrated, vibrant and immersive precinct whereby the uses, architecture, art and landscape combine to create a holistic experience for residents, office workers and the public. A superior design outcome will emerge by aligning scope with strengths and capabilities, allowing individual expression to evolve under a shared architectural vision to create a cohesive master-planned precinct. It is noted this is also consistent with the approach adopted in Barangaroo South, specifically for Barangaroo International Towers (C3 Commercial Building, C4 Commercial Building and C5 Commercial Building) and Residential Building R8 and R9.

View Impacts

The built form, mass and scale of MOD 9 is considered to be visually subservient to the development within Barangaroo South. The modulated forms provide visual interest and allow for potential views to be maintained during the detailed design phase. Although the proposed height increase of the Block 7 tower disrupts some continuity of views, generally there is sufficient context either side of the tower form to maintain visual continuity of harbour and horizon views. It is noted that the MOD 9 building envelope is generally consistent with the conditions in the MP06_0162 Instrument of Approval and SOCs, as proposed to be concurrently modified, with regards to the consideration of views relevant to Central Barangaroo.

Based on the quantitative and qualitative analysis provided in the Visual and View Impact Assessment (**Appendix F**), it is considered that MOD 9 achieves a reasonable balance between the protection of and

view sharing for private and public domain views with the delivery of a new landmark urban precinct within a prominent Sydney Harbour foreshore location.

Overall, the view impacts resulting from MOD 9 (predominantly Block 7) in comparison to the approved Concept Plan, are considered acceptable in the context of the public benefits and community uses provided, as well as the need to capitalise on the introduction of Barangaroo Station in order to maximise public transport patronage and contribute to achieving strategic objectives including delivering a 30-minute city.

Sky View

There are no sky view impacts on the Sydney Observatory 'sky area of concern' resulting from the proposed increase in the maximum building height on Blocks 5 and 6. Whilst the tower building envelope on Block 7 will marginally obstruct sky views, this area is less than 10 degrees above the horizon and is too low to permit viable observing from Sydney Observatory. Therefore, there is no practical reduction in sky views associated with the proposal, with no impact on the function or activities of the proximate Sydney Observatory.

Due to the highly illuminated contextual environment of Barangaroo, there will be very little impact arising from additional light spill from Central Barangaroo. Light spill mitigation measures identified in future detailed SSDAs and compliance with Australian Standards AS4282 and the EMI-7 Green Star Light Pollution Credit, will further mitigate any impacts potentially associated with future development.

Transport Management and Accessibility

The proposed modification will generate an average addition of 28 vehicle movements during the AM peak and 19 vehicle movements during the PM peak. Despite this, the road network will continue to perform at acceptable levels with only a minor change in the operation of key intersections compared to the approved Concept Plan.

The car parking required will be increased marginally as a result of MOD 9, however, the parking rates adopted are consistent with the car parking rates outlined in Condition C4 of the Instrument of Approval. The precinct maintains a high degree of pedestrian and cyclist's connectivity and enables suitable movement throughout the precinct. The provision of new internal streets will further support internal circulation and will largely be designed as civic low-speed environments to accommodate high levels of pedestrian movement. This is in addition to dedicated pedestrian infrastructure including the proposed Barangaroo Steps (under MOD 9), and the existing Napoleon Bridge and Wynyard Walk which will ensure a high level of service for pedestrian walking conditions.

The introduction of Barangaroo Station will also provide significant benefit to future residents and workers by providing high-frequency, high-capacity public transport services in addition to the existing public transport networks within the surrounds of the site.

Heritage

The Barangaroo Precinct has a highly coloured history reflecting the evolution of Sydney's western foreshore under Aboriginal occupation, as a maritime and industrial hub, a casualty of shifting economic activities and structural transformations, and to one of the most significant urban renewal projects in the State's history.

In respect of the proposed modifications to the Concept Plan, the amendments will not increase potential archaeological impacts (Aboriginal or historical European) associated with future site development compared to the approved Concept Plan.

The proposed amendment to the building height of Blocks 5, 6 and 7 will have some level of impact on views, setting, and sense of enclosure of State and local heritage items within the Barangaroo precinct and in proximity to the site, and conservation areas located to the east and north-east to the site. However, it is noted for some of these items, this impact results from the approved Concept Plan and MOD 9 will not cause additional adverse impact. It is also noted the realignment of block boundaries and distribution of building height across the three development blocks will create shared east-west public views and reinstate historical connections between the Millers Point and Dawes Point Conservation Areas and the harbour foreshore.

Wind

Wind microclimate conditions as a result of changes to the maximum building height of Blocks 5, 6 and 7 will remain largely consistent with the approved Concept Plan. When utilising a scale model of the proposed envelopes and its surroundings in a boundary-layer wind tunnel, the envelope satisfies the wind comfort

criteria for the intended use of each area. This will be further mitigated and resolved in future detailed SSDAs, which will refine the overall built form and landscape design.

Noise

Noise and vibration impacts associated with construction and operation of MOD 9 are considered acceptable and potentially adverse impacts are capable of being mitigated at the detailed design phase through implementation of appropriate physical and management measures. This EAR includes an assessment against the *Development Near Rail Corridors and Busy Roads – Interim Guideline 2008*, Infrastructure SEPP and Apartment Design Guide, and concludes future sensitive receivers will not be significantly impacted by noise generators in the surrounding precinct.

Contamination

The site has an extensive history of contaminative activities including contamination of soil, import of impacted fill material and operation of previous land uses. A suite of geotechnical and contamination investigations has therefore been carried out across the site, and where relevant are appended to this EAR.

A portion of the site was located within the Environment Protection Authority (EPA) Declared Remediation Area (Declaration No. 21122), however on 18 June 2020, the EPA issued notice No. 20204418 advising that the declaration was no longer in force and that the EPA was satisfied the declaration area was no longer contaminated. Accordingly, subject to the development and implementation of the following documents, the site will be able to be appropriately remediated and suitable for the intended land uses:

- Remediation Action Plan and Remedial Works Plan;
- Validation Sampling and Analysis Quality Plan;
- Asbestos Management Plan; and
- Construction Quality Assurance Plan and Construction Environmental Management Plan.

The Minister can be satisfied these recommendations will be completed via a condition of Concept Plan approval which will continue to apply post the modification, and compliance with commitment 87 of the Statement of Commitments which relates to preparation and compliance with a RAP applicable to the site. This will enable the Minister to be satisfied under clause 7 of SEPP 55.

Aircraft Operation of Sydney Airport

The proposed additional height, particularly from the greatest tower height on Block 7, will not impact airspace operations as the proposed height does not penetrate any airspace protection surfaces applicable to operations at Sydney Airport. Future development will also be capable of receiving aviation approval (controlled activity approval) for crane operations associated with construction.

It is noted future development on the site will benefit from 'shielding' from the 10% downwards slope from the top of the adjacent Crown Sydney Hotel Resort and will not impose any restrictions to aircraft operation.

ESD

MOD 9 will maintain the reputation of Barangaroo as one of the world's leading sustainable urban developments. This commitment will be maintained through implementing a range of environmental and social initiatives identified in the Central Barangaroo Sustainability Strategy (CENSuS) prepared for the site and appended to this EAR within the Ecologically Sustainable Development (ESD) Summary Report. The ESD Summary Report sets out the approach for Central Barangaroo which generally aligns with the relevant SOCs.

Utilising targets and commitments distinguished under four identified pillars and supported by third party certification using internationally recognised sustainability rating tools, the CENSuS represents a unique and innovative approach to enhancing environmental sustainability within Central Barangaroo that will be further developed and carried through during the future detailed SSDAs. Future detailed SSDAs will be required to address SOCs 23 and 78-85 as they relate to ESD.

Social and Economic Considerations

MOD 9 will continue to result in positive social and economic impacts through the provision of increased employment-generating and residential density proximate to major transport infrastructure, public open space, cultural and recreational facilities.

MOD 9 will generate an additional \$188.7 million of gross state product (**GSP**) to the NSW economy during construction and an additional 1143 employment opportunities during construction compared to the approved Concept Plan. During operation, MOD 9 will generate an additional \$327.4 million GSP contribution to the NSW economy and create an additional 1176 employment opportunities compared to the approved Concept Plan. This will maximise the government return both on existing assets and on investment in transport infrastructure and increase consumer expenditure within adjacent precincts facilitated by the site's connectivity to Barangaroo Station.

The allocation of GFA to the RE1 zone for community and cultural uses sought within MOD 9 will deliver significant social benefits, particularly in addition to the Community and Cultural Spaces Strategy which will inform the future use and distribution of cultural and community floor space, thereby ensuring the needs of the resident, worker and visitor community are met.

Public Benefit

The Barangaroo project has delivered a significant range of public benefits which will only be increased and diversified through the MOD 9 application. It is the site's ability to deliver key public benefits that would otherwise not be realised and are only able to be achieved in Central Barangaroo that is the true driver for the modification to the Concept Plan.

In addition to providing jobs and housing close to transport, services and an iconic public realm, a core public benefit focus is the delivery of the 'civic heart' of Barangaroo with supporting community facilities, which will provide a new cultural focus for the Barangaroo precinct and in turn strengthen the broader social fabric within Sydney. This will be achieved in addition to the embellishment of open space resources to a world-class standard, and the opportunity to deliver additional publicly accessible open spaces throughout Central Barangaroo as a result of the modulated building envelope. This will further enhance public accessibility and a sense of ownership and connection to this iconic precinct. The Central Barangaroo Developer's Homes for Homes contribution is also a significant public benefit, and will involve the donation of 0.1% of the sale price of each residential dwelling to deliver affordable housing in a variety of locations to increase affordable housing provision. These public benefits will be delivered in addition to the broader public benefits of the approved Concept Plan.

CONCLUSION

This Section 75W modification application seeks amendments to the approved Concept Plan relating to Central Barangaroo and Barangaroo Reserve.

MOD 9 seeks to ensure the Barangaroo project and in particular the Central Barangaroo component of the project capitalises on the provision of the new transport infrastructure Barangaroo Station and the broader locational benefits of Barangaroo, consistent with strategic planning priorities of NSW Government, whilst still achieving the principles and objectives established by the initial Concept Plan and anticipated by the local and global community. Through better optimising the site potential and development opportunities available, this will increase the wealth of economic, social and environmental benefits to be delivered to the public at the completion of the project and will solidify the project as an urban renewal success and global benchmark for renewal.

MOD 9 will continue to facilitate the objectives of the overall Barangaroo development, which includes revitalisation and access to the waterfront, provision of large areas of new public open space and public domain and community uses and social programs.

The Concept Plan as modified will deliver the following:

- A suitable density of development that capitalises upon the sustainable and economic efficiencies associated with providing gross floor area adjacent to major transport infrastructure nodes. The proposed quantum of gross floor area in MOD 9 will reinforce demand and provide critical mass to support the operation of Barangaroo Station, thereby maximising public investment and the potential of the Sydney Metro network.

- The flexible distribution of gross floor area and land uses across Blocks 5, 6 and 7 will ensure future development responds to current market demand and creates a vibrant, activated precinct with high occupancy and public amenity. Facilitating a range of land uses such as commercial, retail, cultural and residential, will ensure there is a consistent population activating the site 18-hours per day.
- A modulated built form that is informed by environmental, urban and contextual attributes. The envelope delivers equitable access to views, defines and activates public streets and spaces through provision of a clear street wall, and provides opening between blocks to create a fine grain structure of laneways and facilitate daylight penetration to floor plates and the public domain.
- A robust Design Excellence Strategy that will deliver a fully integrated, vibrant and immersive precinct through a coordinated and cooperative approach to design.
- Maintain the commitment to delivery 50% of Barangaroo as public open space.
- Seamless connectivity throughout the precinct with a fine network of mid-block links, and a stronger connection between Central Sydney and the western harbour through provision of new east-west streets and the Barangaroo Steps.
- Urban Design Principles that entrench a people-first attitude with comfortable public spaces and streets acting as an extension to urban plaza and park spaces.

MOD 9 seeks to align catalytic infrastructure with an appropriate density to unlock the full potential of Central Barangaroo. Based on the environmental assessment outlined within this Environmental Assessment Report (**EAR**) and accompanying technical reports, it can be concluded that this objective can be achieved whilst balancing the wide range of competing urban design, environmental, economic and social considerations and is therefore in the public interest.

In view of the above, it is considered the modification has significant merit and should be approved by DPIE and the Minister for Planning and Public Spaces.

1. INTRODUCTION

This EAR has been prepared in support of a request to modify the Concept Plan Approval MP06_0162 for Barangaroo, which was approved on 9 February 2007 under the then Part 3A of the EP&A Act. The Concept Plan was subsequently modified ten times, and this request is Modification Application Number 9 (**MOD 9**).

Infrastructure NSW is the applicant for this application and seeks approval under the former S75W of the EP&A Act 1979 to modify the Barangaroo Concept Plan in relation to Central Barangaroo and Barangaroo Reserve (formerly Headland Park). Planning for this application initially commenced in 2014 and has been recommenced in 2020 to ensure strategic, statutory and contextual changes, as well as detailed master planning work and public consultation, are reflected within the proposed amendments.

This application is a once in a lifetime generational opportunity to complete one of the most important urban renewal projects within Sydney's history. The transformation of East Darling Harbour into Barangaroo, the westward expansion of Sydney's commercial centre and delivery of a vibrant city district within three defined precincts, is a truly unique project that will complement and enhance Sydney's global status. This renewal is currently incomplete and is unable to exhibit its true potential without the completion of the final centrepiece precinct, Central Barangaroo.

Central Barangaroo will unite Barangaroo Reserve with Barangaroo South to seamlessly connect the mixed-use neighbourhoods along the western foreshore of Sydney CBD. It is a critical component of the success of the overall Barangaroo project and will accommodate a range of housing, employment, retail and harbourfront community spaces. However, the current approved Concept Plan and planning framework does not deliver upon the extent of the urban renewal potential of this precinct and fails to optimise the extraordinary opportunity of developing government-owned assets for public benefit.

This application therefore seeks consent for modifications to the approved Barangaroo Concept Plan MP06_0162 (as modified) in relation to Central Barangaroo and Barangaroo Reserve. Specifically, this will result in modification to the Concept Plan for Blocks 5, 6 and 7, revision to the Statement of Commitments, and amendment to the SSP SEPP as it applies to Barangaroo. The intent is to provide a built form and density within an iconic harbourside location that is commensurate with Sydney's identity as a global city whilst remaining consistent with and respecting the intent, objectives and principles of the approved Concept Plan. Consideration has also been given to the key built form and urban design principles established in the Skidmore Owings and Merrill (**SOM**) Barangaroo Master Plan Framework.

The imperative to deliver Central Barangaroo as proposed to be modified under MOD 9 is driven by contextual changes including significant infrastructure investment and strategic objectives at a government level that were unknown at the initial determination of the approved Concept Plan, in addition to a holistic review of the entire Barangaroo project by Infrastructure NSW and a reflection upon the lessons learnt in the delivery of the initial precincts over the last 14 years. MOD 9 will ensure Central Barangaroo capitalises on the provision of the Sydney Metro infrastructure and the broader locational benefits of Barangaroo, consistent with strategic planning priorities of NSW Government, whilst still achieving the principles and objectives established by the initial Concept Plan and anticipated by the local and global community. Through better optimising the site potential and development opportunities available, this will increase the wealth of economic, social and environmental benefits to be delivered to the public at the completion of the project and will solidify the project as an urban renewal success and global benchmark for renewal.

This EAR has been prepared for Infrastructure NSW by Urbis Pty Ltd (**Urbis**) to support an amendment to the Barangaroo Concept Plan (MP 06_0162) and is guided by the Central Barangaroo Urban Design Report prepared by Hassell. It is noted that Director General's Requirements (**DGRs**) for the Barangaroo Concept Plan MOD 9 were issued on 15 April 2014. As the request to modify was lodged prior to the 1 March 2018 cut-off date, MOD 9 remains a transitional Section 75W (**S75W**) project under the EP&A Act. This pathway provides the Minister with the power to "modify the approval (with or without conditions) or disapprove of the Modification" and remains in force by operation of clause 3BA(3) and clauses 3C(1), of Schedule 2 of the Environmental Planning and Assessment (Saving, Transitional and Other Provisions) Regulation 2017 (**STOP Regulation**). This Environmental Assessment Report (**EAR**) and appended consultant reports have been prepared in accordance with the DGRs and pursuant to the transitional provisions of the STOP Regulation. This EAR has been prepared in accordance with DGRs issued on 15 April 2014 ((MP06_0162 (MOD 9)).

The EAR has been structured to clearly address these requirements and identifies the project history, strategic context including description of the site and its physical and strategic context, the proposed modifications to the Concept Plan and planning framework and contains an assessment of environmental

impacts resulting from the proposal. Identification of community and stakeholder engagement that has influenced this proposal is also outlined within this EAR. This EAR should be read in conjunction with the specialist consultant documentation appended to this report at **Appendix A** through to **Appendix AA**. Identification of this documentation is provided in **Section 1.3**.

1.1. PROJECT OBJECTIVES

The primary objective of MOD 9 is to ensure Central Barangaroo contributes towards strengthening the strategic planning direction of Greater Sydney Region Plan, Eastern City District Plan and State Infrastructure Strategy through the provision of increased employment generating floor space, retail space, and community space (via increased height and floor space), as well as a sweep of unique recreational and cultural facilities accessible to the public. These outcomes will be delivered in response to the provision of the Sydney Metro infrastructure at Barangaroo and the broader locational benefits of Barangaroo on the CBD's western waterfront edge (refer **Figure 3**).

In achieving this primary objective, MOD 9 also seek to ensure Central Barangaroo achieves the following overall objectives:

- Provide an appropriate density and mix of land uses in Barangaroo to integrate appropriately with the significant government investment in transport infrastructure;
- Deliver an innovative, creative and dynamic waterfront destination that is permeable and connected within the precinct and connected with the city;
- Sweep together foreshore experiences from the natural setting of Barangaroo Reserve to the busy, high rise business district of Barangaroo South. Central Barangaroo's built form will respond to and provide a visual transition from its natural northern end to the high-density development in the south, with an architecturally distinct tower at its northern edge to mark both the precinct and the Sydney Metro;
- Deliver flexible, co-working spaces to contrast from the conventional office spaces and large floor plates provided within Barangaroo South. This will provide diversity in the market and support a variety of employment opportunities in Barangaroo and responds to market demand for more flexible commercial space as a result of the COVID pandemic;
- Ensure the delivery of design excellence in the planning and built form of the precinct, creating a diverse community of architectural expression within an overall coherent urban structure;
- Deliver diversity of products and uses integrating commercial, residential, retail, community, education, civic, cultural and entertainment activities which contribute to a vibrant and active identity;
- Create and deliver a public domain that is distinct, unique and innovative and allows for range of passive and active outdoor spaces and uses that together create a new iconic visitor attraction, consistent with the Infrastructure NSW's Activation Framework;
- Deliver a balance of financial return and public benefit and amenity across the precinct;
- Deliver a culturally distinctive, locally relevant and internationally appealing canvas for appropriate facilities, experiences and public art;
- Ensure high levels of public attraction, operational serviceability, amenity and security across the precinct and during staging; and
- Extend the principles and networks of the climate positive promise in line with current world's best practice to deliver a whole of Barangaroo outcome and create projects that respond visibly to the sustainable needs of people and the planet.

Figure 3 Aerial Image of Central Barangaroo



Source: Urbis

1.2. APPLICANT DETAILS

Infrastructure NSW was established in July 2011 to assist the NSW Government in identifying and prioritising the delivery of critical public infrastructure for NSW. As of 1 July 2019, Infrastructure NSW is the State Government agency responsible for the development of Barangaroo and management of its public spaces. This involves maintaining control of the Barangaroo Concept Plan and facilitating and administering the delivery of all development contemplated by the Concept Plan.

The NSW Government was the original proponent of the Barangaroo Concept Plan, which is the material instrument for delivering the vision for Barangaroo. It is therefore appropriate that in circumstances where changes to the Barangaroo Concept Plan (as approved) are contemplated, the NSW Government remains in control of that process as the proponent of any application(s) it deems necessary in order to holistically deliver the vision and objects of the Barangaroo Act (transferred to Infrastructure NSW on 1 July 2019) as set out in section 5 of the Barangaroo Act.

It is also critical that NSW Government drive alignment between development occurring across the precinct to ensure the overarching vision and objects of the Act are realised and that consistent and holistic cross-agency coordination on the Barangaroo Concept Plan is achieved.

This application to modify the Barangaroo Concept Plan and corresponding amendment to the planning controls is made in accordance with Infrastructure NSW's functions under Section 14 of the Barangaroo Act to achieve the objects set out in section 3 of the Act:

3 Objects of Act

The objects of this Act are as follows:

- (a) to encourage the development of Barangaroo as an active, vibrant and sustainable community and as a location for national and global business,*
- (b) to create a high quality commercial and mixed use precinct connected to and supporting the economic development of Sydney,***
- (c) to facilitate the establishment of Barangaroo Reserve and public domain land,*
- (d) to promote the orderly and sustainable development of Barangaroo balancing social, economic and environmental outcomes,***
- (e) to create in Barangaroo an opportunity for design excellence outcomes in architecture and public domain design.***

14 Principal functions of Infrastructure NSW under this Act

(1) Infrastructure NSW has the following functions under this Act:

- (a) to promote, procure, facilitate and manage the orderly and economic development and use of Barangaroo, including the provision and management of infrastructure,***
- (b) to promote, procure, organise, manage, undertake, secure, provide and conduct cultural, educational, residential, commercial, transport, tourist and recreational activities and facilities at Barangaroo,***
- (c) to develop and manage the Barangaroo Reserve and public domain so as to encourage its use by the public and to regulate the use of those areas,*
- (d) to facilitate and provide for appropriate commercial activities within the Barangaroo Reserve and public domain that are consistent with their use for cultural, educational and recreational activities and the use and enjoyment of those areas by the public,*
- (e) to promote development within Barangaroo that accords with best practice environmental and town planning standards, is environmentally sustainable and applies innovative environmental building and public domain design,***
- (f) to liaise with Government agencies with respect to the co-ordination and provision of infrastructure associated with Barangaroo,***

(g) to undertake the delivery of infrastructure associated with Barangaroo or that relates to the principal functions under this Act of Infrastructure NSW.

(Emphasis added)

Infrastructure NSW will continue to collaborate with its delivery partners to ensure the right outcomes for the precinct - as a whole - are achieved, and that an appropriate density and mix of land uses is achieved in Barangaroo to integrate appropriately with the significant government investment in transport infrastructure.

1.3. SUPPORTING DOCUMENTATION

The following technical and design documentation have been prepared to accompany this MOD 9 and are provided as appendices to this EAR.

Table 2 Supporting Specialist Documentation

Document	Consultant	Appendix
DGRs	N/A	Appendix A
Revised Statement of Commitments	Urbis	Appendix B
Modification to Instrument of Approval MP06_0162	Urbis	Appendix C
Site Survey Plan	Rygate	Appendix D
Urban Design Report	Hassell	Appendix E
View and Visual Impact Assessment	AECOM & Arterra	Appendix F
Sky View Loss Assessment	AECOM & UNSW	Appendix G
Wind Impact Assessment	RWDI	Appendix H
Transport Management and Accessibility Plan	Arup	Appendix I
Social Impact Assessment	PWC	Appendix J
Economic Impact Assessment	PWC	Appendix K
Housing Strategy	Elton Consulting	Appendix L
Utilities and Infrastructure Report (including Stormwater)	ADP & CJ Arms	Appendix M
ESD Report	Cundall	Appendix N
Remediation Action Plan	JBS Environmental	Appendix O
Remediation Action Plan Suitability Statement	EDP	Appendix P
Site Audit Report & Statement	ENVIRON Australia	Appendix Q
Site Audit Statement Applicability Statement	Ramboll	Appendix R
Heritage Impact & Archaeological Assessment	GML	Appendix S
Indicative Staging Plan	Aqualand	Appendix T
Consultation Report	Elton Consulting	Appendix U

Document	Consultant	Appendix
Air Quality Impact Assessment	AECOM	Appendix V
Acoustic Assessment	Acoustic Logic	Appendix W
Preliminary Aeronautical Impact Assessment	AvLaw	Appendix X
Barangaroo Community & Cultural Strategy	JOC Consulting	Appendix Y
Design Excellence Strategy	Urbis	Appendix Z
Draft Amendment to SEPP (State Significant Precincts) 2005	Urbis	Appendix AA

1.4. DIRECTOR GENERAL'S REQUIREMENTS

The Director General's Requirements (**DGRs**) were issued on 15 April 2014 for MP 06_0162 (MOD 9) (refer **Appendix A**). DPIE confirmed that these DGRs remain relevant and have been used to guide the format and requirements of this report. Notably, the matters addressed in this EAR and supporting reports are not limited to the matters set out in the DGRs. Where relevant, additional assessment has been undertaken in order to address updated requirements or project refinements.

Table 3 below provides a summary of the DGRs and identifies the section of this EAR where the relevant requirement is addressed.

Table 3 Director General's Requirements Reference Summary

Description / Requirement	Reference
GENERAL REQUIREMENTS	
The modification application must include:	
An executive summary	Executive Summary
A description and justification of the existing and surrounding environment	Section 3.1 – Key Features of Site and Surrounds
A thorough description of the proposal, including: <ul style="list-style-type: none"> ▪ a detailed justification for the increases in GFA and additional car parking; ▪ identification and analysis of alternatives and their environmental impacts; ▪ description of the public benefits arising from the proposal; and ▪ relationship with the proposed changes to Barangaroo South. 	<ul style="list-style-type: none"> ▪ Section 7.1 – Density & Section 7.8.3 – Car Parking ▪ Section 2.4 – Analysis of Project Alternatives ▪ Section 4 – Project Description & Section 7 – Environmental Impact Assessment
Consideration of any statutory provisions (see below)	Section 5 – Statutory Context
A detailed assessment of the key issues specified below, including: <ul style="list-style-type: none"> ▪ a description of the existing environment; and 	<ul style="list-style-type: none"> ▪ Section 3.1 – Key Features of Site and Surrounds

Description / Requirement	Reference
<ul style="list-style-type: none"> ▪ an assessment of the potential impacts of the modifications, including cumulative impacts, 	<ul style="list-style-type: none"> ▪ Section 7 – Environmental Impact Assessment
<p>Consideration of previous reviews, including the Sussex Penn Review into Barangaroo, and Government responses (where relevant).</p>	<p>Section 2.2 - Background</p>
<p>An amendment to the approved Statement of Commitments.</p>	<p>Section 4.10 & Appendix B</p>
<p>A conclusion justifying the proposal, taking into consideration the environmental impacts of the proposal and the suitability of the site.</p>	<p>Section 8 – Justification and Conclusion</p>
<p>KEY ISSUES</p>	
<p>1. Relevant EPIs, Strategies, Plans and Documents</p>	
<p>Address the provisions of State environmental planning policies, strategies, plans and guidelines that would apply as if those provisions applied to the carrying out of the project, including the following:</p> <ul style="list-style-type: none"> ▪ <i>State Environmental Planning Policy (State & Regional Development) 2011</i> ▪ <i>State Environmental Planning Policy (Major Development) 2005;</i> ▪ <i>State Environmental Planning Policy No 55 - Remediation of Land;</i> ▪ <i>State Environmental Planning Policy (Infrastructure) 2007;</i> ▪ <i>Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 and Foreshores and Waterways DCP;</i> ▪ <i>NSW 2021;</i> ▪ <i>Draft Metropolitan Plan for Sydney to 2031;</i> ▪ <i>Draft Sydney City Sub-Regional Strategy;</i> ▪ <i>Sydney City Centre Access Strategy 2013; and</i> ▪ <i>Sydney's Cycling Future 2013.</i> 	<p>Section 3.2 – Strategic Framework & Section 5 – Statutory Context</p> <p>Section 5.5.2 – State Legislation</p> <p>Section 3.2 – Strategic Framework</p>
<p>2. Concept Plan and MD SEPP Modifications</p>	
<ul style="list-style-type: none"> ▪ Outline in detail the proposed changes to the terms of approval of Barangaroo Concept Plan MP06-0162 (as modified) and the MD SEPP, including heights, GFA, zoning, development blocks, permissibility, land uses, and any other relevant controls that are being sought to be amended. 	<p>Section 4 – Project Description & Appendix C.</p> <p>Section 4.11 – State Significant Precincts SEPP Amendment & Appendix AA.</p>

Description / Requirement	Reference
<ul style="list-style-type: none"> ▪ All changes to heights, GFA, blocks and zoning, and public and private open space shall be numerically quantified in table form. 	Section 4.2, Table 10 & Section 4.5
3. Urban Design, Development Controls and Land Uses	
<ul style="list-style-type: none"> ▪ Identify the alternative siting options that were considered. ▪ Prepare revised Built Form Principles and Built Form Controls. ▪ Consider land use, height, block and building footprints, density, setbacks, topography, streetscape, shadowing, view corridors, ground floor permeability and connectivity, façade design, streets and lanes, public and private open space, and road hierarchy. 	<ul style="list-style-type: none"> ▪ Section 2.4 – Analysis of Project Alternatives ▪ Section 4.9 – Concept Plan Urban Design Guidelines & Appendix E ▪ Section 4 – Project Description (throughout) & Appendix E
4. Streetscape and Public Domain	
<ul style="list-style-type: none"> ▪ Outline and justify the changes to the design and use of the streetscape and public domain. ▪ Outline and justify the changes to public spaces, streets and pedestrian connections. ▪ Outline and justify the revised access hierarchy, including the relationship between streets, footpaths and buildings. Outline how adequate permeability will be achieved through street blocks. ▪ Detail the proposed location, design, function and visual analysis of overhead pedestrian bridges, Sydney Steps, and any amendments from previous approved plans. 	<p>Section 4.6 – Street and Movement Network & Section 4.7 – Public Domain and Spaces</p> <p>Section 7.8 – Transport Management and Accessibility</p>
5. Sydney Harbour	
Detail the amendments to the foreshore promenade, including its interaction with Sydney Harbour and Barangaroo South.	Section 4.7.1 – Barangaroo Avenue Enhancing Harbour Park Experience
6. Visual Impact Assessment	
A visual impact assessment must be undertaken. Refer to the attached Plans & Documents Section.	Section 7.6 – View and Visual Impacts, Appendix E & Appendix F
7. Wind Impact Assessment	
Modelling of the effects of the changes on the wind/airflow environment must be undertaken.	Section 7.10 – Wind Impacts & Appendix H

Description / Requirement	Reference
8. Transport Management and Accessibility Impacts	
<ul style="list-style-type: none"> ▪ Undertake an assessment of future transport needs associated with Barangaroo Central and the Headland Park, including a clear understanding of the travel task for all modes at different times of the day (peak, off-peak and other peak periods relevant to differing uses) and week; and confirmation or modification (with justification) to the AM and PM peak commute mode share targets for Barangaroo as outlined in the Barangaroo Integrated Transport Plan2012. ▪ Analyse the operation of existing and future transport networks (all modes) to understand the implications for Barangaroo. The analysis of the future road network operations needs to focus on intersections in the north-west quadrant of the CBD in the vicinity of Barangaroo. In particular, address the road network in the King Street Wharf area to ensure that intersections such as Erskine Street and Lime Street and Lime Street itself are modified to cater for the different traffic demands that Barangaroo Central and the Headland Park will bring to the network. ▪ Analyse car parking provision and how traffic generation (number of vehicles and time of access) will be managed in response to capacity limitations on the road network. The car parking breakdown shall identify all approved car parking numbers, and all potential car parking numbers across the whole of the Barangaroo site. ▪ Undertake a corridor model analysis of the road network, including an analysis of traffic generation and circulation, and service vehicle arrangements as a consequence of the modification; and demonstrate the potential to accommodate additional vehicular movements (including private vehicles, buses, commercial traffic and cyclists) in the surrounding road network. ▪ Undertake an assessment of the public transport network and associated pedestrian linkages and demonstrate that additional people movements can be accommodated by the surrounding public transport network. ▪ Outline late night transport provision. ▪ Outline the timing and responsibility for delivering different elements of the transport network to serve Barangaroo Central and the Headland Park and Barangaroo in general. ▪ Outline provisions for water-based transport and outline the potential to accommodate charter vessels, water taxis and private boats for short or long stays. 	<p>Section 7.8 – Transport Management and Accessibility & Appendix I</p> <p>Section 7.8.4 – Road Network Assessment, Section 7.8.5 – Street Layout, Access and Circulation, Section 7.8.6 – Public Transport and Other Services</p> <p>Section 7.8.3 – Car Parking, Section 7.8.4 – Road Network Assessment</p> <p>Section 7.8.4 – Road Network Assessment</p> <p>Section 7.8.6 – Public Transport and Other Services & Section 7.8.7 – Pedestrian Access and Movement</p> <p>Section 7.8.10 – Timing and Delivery</p> <p>Section 7.8.6 – Public Transport and Other Services</p>

Description / Requirement	Reference
<ul style="list-style-type: none"> ▪ Prepare a comprehensive Traffic Management and Accessibility Plan, including an assessment of all of the above matters and: <ul style="list-style-type: none"> – cumulative regional traffic impacts, including but not limited to, local and regional – intersections and road improvements, and vehicular access options; – impacts from changes to Barangaroo South (MOD 8); – amendments to accommodate future bus service provision on Hickson Road (in consultation with Transport for NSW); – identify provision for taxi ranks and coach parking on site; o the timing and cost of infrastructure works and identification of funding; – package of travel demand management measures for workers, residents and visitors to the site. emergency vehicle access arrangements; and – proposed loading dock provisions and access arrangements to loading docks and car parks. ▪ Outline provisions for water-based transport. 	<p>Section 7.8 – Transport Management and Accessibility & Appendix I</p> <p>Section 7.8.6 – Public Transport and Other Services</p>
9. Pedestrian and Cycle Access	
<ul style="list-style-type: none"> ▪ Outline the future cycleway network and demonstrate direct cycle connections between Barangaroo Central and the strategic cycleway network as outlined in the Sydney City Centre Access Strategy. ▪ Outline provisions for walking and demonstrate provision for direct walking connections. 	<p>Section 4.6 – Street and Movement Network, Section 7.8.7 – Pedestrian Access and Movement, Section 7.8.8 – Cycle Access, Appendix E & Appendix I</p>
10. Land Ownership	
Detail land to be transferred/managed/owned.	Section 3.1.3 – Legal Description and Site Ownership & Appendix D
11. Social Impacts	
Outline the social benefits and disbenefits of the modification.	Section 7.18 – Social Considerations
12. Economic Impacts	
Outline the economic benefits and disbenefits of the modification, including on the economy, business and employment.	Section 7.21 – Economic Considerations

Description / Requirement	Reference
13. Housing Strategy	
An amended Housing Strategy is to be provided.	Section 7.20 – Housing Strategy for Barangaroo
14. Noise, Air and Odour Impacts	
Identify, potential air quality, noise and odour impacts and appropriate mitigation measures.	Section 7.11 – Noise and Vibration Section 7.12 – Air and Odour
15. Drainage and Stormwater	
Outline drainage and stormwater management on-site.	Section 7.14 – Stormwater and Drainage
16. Utilities	
Outline how the modification will be satisfactorily serviced for utility services.	Section 7.15 – Infrastructure and Utilities
17. ESD	
Identify how the development will incorporate ESD principles.	Section 7.17 – Ecologically Sustainable Development
18. Contamination	
Demonstrate compliance with the requirements of SEPP 55. If remediation works are required, the application must include a Remedial Action Plan (RAP).	Section 7.13 – Contamination and Remediation
19. Heritage	
Undertake an assessment of the likely impacts of the modification on heritage and archaeological items and proposed conservation and mitigation measures, including the Millers Point Conservation Special Area, Observatory Hill and Walsh Bay.	Section 7.9 – Heritage
20. Staging	
Outline the staging of construction for the Barangaroo Central and Headland Park projects.	Section 4.12 – Indicative Staging
21. Consultation	
Undertake an appropriate and justified level of consultation in accordance with Planning & Infrastructure’s Major Project Community Consultation Guidelines October 2007. In particular, you should consult with City of Sydney Council, Transport for NSW and the EPA.	Section 6 – Community and Stakeholder Engagement

Description / Requirement	Reference
22. Updated Statement of Commitments	
An updated Statement of Commitments shall be provided.	Section 4.10 – Revised Statement of Commitments & Appendix B
PLANS AND DOCUMENTS	
The following plans and relevant documentation shall be submitted:	
<p>An existing site survey plan drawn at an appropriate scale illustrating:</p> <ul style="list-style-type: none"> ▪ the location of the land, boundary measurements, area (sqm) and north point; ▪ the existing levels of the land in relation to buildings and roads; ▪ location and height of existing structures on the site; ▪ location and height of adjacent buildings and private open space; and ▪ all levels to be to Australian Height Datum (AHD). 	A Site Survey Plan has been prepared and is provided at Appendix D .
<p>A locality context plan drawn at an appropriate scale should be submitted indicating:</p> <ul style="list-style-type: none"> ▪ significant local features such as parks, community facilities and open space and heritage items; ▪ the location and uses of existing buildings, shopping and employment areas; and ▪ traffic and road patterns, pedestrian routes and public transport nodes. 	Section 3.1.1 (Figure 9) & Appendix E
<p>Drawings at an appropriate scale illustrating:</p> <ul style="list-style-type: none"> ▪ the location of any existing building envelopes or structures on the land in relation to the boundaries of the land and any development on adjoining land; ▪ detailed plans, sections and elevations of the concrete batching plant; ▪ the height (AHD) of the proposed development in relation to the land; and ▪ any changes that will be made to the level of the land by excavation, filling or otherwise. 	<p>Scaled drawings of the proposed building envelopes are provided within the Urban Design Report at Appendix E.</p> <p>Section 4.5 – Built Form and Use</p>
<p>Landscape plan illustrating treatment of open space areas on the site.</p>	An indicative Concept Landscape Plan is provided within the Urban Design Report at Appendix E .

Description / Requirement	Reference
	Section 4.8 – Landscaping
<p>Shadow diagrams showing solar access to the site and surrounding areas at summer solstice (Dec 21), winter solstice (June 21) and the equinox (March 21 and September 21 at 9.00 am, 12.00 midday and 3.00 pm.</p>	<p>Shadow Diagrams are provided within the Urban Design Report at Appendix E.</p> <p>Section – – Solar Access and Overshadowing</p>
<p>3D modelling and a physical model of the proposed modifications shall be prepared in accordance with City of Sydney's requirements</p>	<p>A physical 3D model and digital evidence of this model has been provided with MOD 9.</p>
<p>Visual Impact Assessment: The visual impact assessment, including focal lengths, must be done in accordance with Land and Environment Court requirements.</p> <p>Visual assessment methodology</p> <ul style="list-style-type: none"> ▪ The consultant's methodology should be explicit. This may include a flow-chart indicating how the analysis is to be undertaken, or a narrative description of the proposed sequence of activities. ▪ As part of the methodology, the consultant should provide, and explain, criteria for assessment relevant to the site, local context and proposed built form and public domain outcomes. A rationale should be provided for the choice of criteria. Criteria must include reference to the planning framework, ▪ Visual catchment should be defined and explained (see below). ▪ An assessment matrix should be produced including number of viewers, period of view, distance of view, location of viewer to determine potential visual impact - i.e, high, medium or low. <p>Visual Catchment</p> <ul style="list-style-type: none"> ▪ Potential visual catchments and view locations, including contours (areas from which the development is visible) should be identified. This must include, but is not limited to Hickson Road, Kent Street, Shelley Street, Lime Street Gas Lane, ▪ High Street, East Balmain, Darling Harbour, Blues Point, Millers Point, Sydney Observatory, Sydney Observatory Park, Clyne Reserve, Munn Reserve, Sydney Harbour Bridge, Pyrmont Bridge, Ballart Park Darling Island and Jones Bay Wharf Pyrmont. ▪ Categories of views (e.g. from the water, from public open space, from key streets, from main buildings and from key heritage items) should be defined. 	<p>Section 7.6 & Appendix F generally.</p> <p>Section 7.6.3 – Assessment Methodology</p> <p>Section 7.6.2 – Visual Catchment</p>

Description / Requirement	Reference
<ul style="list-style-type: none"> ▪ Photos are required for representative view categories, plotted on a map. <p>Visual material</p> <ul style="list-style-type: none"> ▪ Reference to be made to site analysis. ▪ Provide key plan indicating where viewpoints are located and narrative explaining why these have been selected, ▪ The modified and approved built form should be illustrated in the context of the visual catchment to enable assessment of the visual impact. ▪ The location of cross-sections should be clearly shown on a key plan and the choice of positions explained. The cross sections should be shown in the context of the visual catchment. ▪ Vertical exaggeration should provide an accurate rather than 'flattened' impression of buildings in the context of the visual catchment. ▪ A key plan must be provided for photomontages. In addition, the choice of locations should be explained. ▪ Photomontages should be provided for close as well as distant views. ▪ Assessment must benchmark against the existing situation and currently approved plans. ▪ Photomontages to be provided for key viewpoints from all directions, and from several positions within the visual catchment. ▪ As above, support visual evidence such as cross sections to be drawn to realistic scales and shown in context. ▪ A comparison of 'before', 'approved' and 'proposed' is fundamental to a visual impact assessment, therefore the visual impact assessment (43 in size) should be undertaken using human eye focal lengths (50mm at 35mm FX format and 460 angle of view) from long range, medium range and short range positions so that they can be assessed with respect to visibility, visual absorption capacity and visual impact rating, as well as a comparison analysis with the approved Concept Plan. 	<p>Section 7.6.1 – Visual Material</p>

Description / Requirement	Reference
DOCUMENTS TO BE SUBMITTED	
<ul style="list-style-type: none"> ▪ 1 hard copy and 1 electronic copy of all the documents and plans for the Test of Adequacy; ▪ 14 hard copies of the documents (once the application has been determined adequate); ▪ 14 hard copies of the plans at A3 and 2 hard copies of the plans at A0 or A1 (whichever is to scale); ▪ 4 copies of photomontage boards at A0 in size illustrating key visual elements of the proposal; and ▪ 14 copies of all the documentation and plans on CD-ROM (PDF format), not exceeding 5Mb in size. 	<p>Hard copies of documentation will be provided to DPIE as requested.</p> <p>Photomontages are included within a separate appendix of the Urban Design Report at Appendix E.</p>

2. BACKGROUND

2.1. BARANGAROO CONCEPT PLAN AND STATE SIGNIFICANT PRECINCTS SEPP

The Concept Plan for Barangaroo (MP 06_0162) was approved in February 2007 by the then Minister for Planning under Part 3A of the EP&A Act. Specifically, in 2007 determination was granted for:

Concept approval is granted only to the carrying out of the development solely within the concept plan area as described in the document titled "East Darling Harbour State Significant Site Proposal, Concept Plan & Environmental Assessment (Volume 1 & 2)" prepared by JBA Urban Planning Consultants & SHFA (dated October 2006) including:

(1) *a mixed use development involving a maximum of 388,300m² gross floor area (GFA), comprised of:*

(a) a maximum of 97,075m² (or 25%) and a minimum of 60,000m² (or 15%) residential GFA; (b) a maximum of 50,000m² GFA for tourist uses;

(c) a maximum of 39,000m² GFA for retail uses; and

(d) a minimum of 2,000m² GFA for community uses.

(2) Approximately 11 hectares of new public open space/public domain, with a range of formal and informal open spaces serving separate recreational functions and including a 1.4km public foreshore promenade.

(3) A maximum of 8,500m² GFA for a passenger terminal and a maximum of 3,000 m² GFA for active uses that support the public domain within the public recreation zone.

(4) Built form design principles, maximum building heights and GFA for each development block within the mixed use zone

(5) Public domain landscape concept, including parks, streets and pedestrian connections.

(6) Alteration of the existing seawalls and creation of a partial new shoreline to the harbour.

(7) Retention of the existing Sydney Ports Corporation Port Safety Operations and Harbour Tower Control Operations including employee parking.

To facilitate the redevelopment of the Barangaroo site under the Concept Plan, in October 2007 the site was listed in Part 12 of Schedule 3 of the then *State Environmental Planning Policy (Major Development) 2005 (Major Development SEPP)* (now State Significant Precincts SEPP). The State Significant Precincts SEPP zones the Barangaroo site part B4 Mixed Use and part RE1 Public Recreation. It also establishes maximum building heights and GFA restrictions for the nominated development blocks within the B4 Mixed Use zone.

The Concept Plan approval granted consent for the renewal of a 22ha precinct (formerly known as East Darling Harbour) as a new harbour precinct of Sydney, providing an extension to the Sydney CBD and a significant new public headland park. The Concept Plan relates to the three distinct precincts of Barangaroo: Barangaroo South, Central Barangaroo and Barangaroo Reserve (refer **Figure 4**).

Figure 4 Barangaroo Precincts Map



Source: Hassell

The Concept Plan has since been modified ten times, as set out in **Section 2.1.1**.

The most recent modification to the Concept Plan is MP06_0162 Modification 11 (**MOD 11**), which was approved on 22 October 2020. The MOD 11 approval made no changes to the GFA or maximum building heights, and as such the most relevant amendments to the Concept Plan are those approved under MOD06_0162 Modification 10 (**MOD 10**) on 2 September 2020. The Barangaroo Concept Plan (as modified) is described as follows:

- (1) A mixed use development involving a maximum of 602,354 sqm gross floor area (GFA), comprised of:
 - (a) a maximum of 191,031 sqm of residential GFA of which a maximum of 162,031 sqm will be in Barangaroo South;
 - (b) a maximum of 76,000 sqm of GFA for tourist uses of which a maximum of 59,000 sqm will be in Barangaroo South;
 - (c) a maximum of 34,000sqmof GFA for retail uses of which a maximum of 30,000 sqm will be in Barangaroo South;
 - (d) a maximum of 5,000 sqm of GFA for active uses in the Public Recreation zone of which 3,500 will be in Barangaroo South; and
 - (e) a minimum of 12,000sqm GFA for community uses.
- (2) Approximately 11 hectares of new public open space/public domain, with a range of formal and informal open spaces serving separate recreational functions and including an approximate 2.2km public foreshore promenade.

(3) Built form design principles, maximum building heights and GFA for each development block within the mixed use zone.

(4) Public domain landscape concept, including parks, streets and pedestrian connections.

(5) Alteration of the existing seawalls and creation of a partial new shoreline to the harbour.

(6) Construction, operation and maintenance of a concrete batching plant to supply concrete for construction of future development under this Concept Plan at Barangaroo South.

(7) No approval is granted or implied for the future use of a heliport and/or a helipad.

The GFA and building heights for each development block approved under MOD10 are identified in **Table 4**.

Table 4 Approved GFA and Heights under MOD 10

Block	GFA (sqm)	Residential GFA (Max) (sqm)	Height (max AHD)	Height above existing ground
Block 1	1,927	0	RL 25m	23 m
Block 2	197,280	0	RL 180m	178m
Block 3	129,934	10,515	RL 209m	207m
Block 4A	92,629	91,816	RL 250m	248m
Block 4B	21,508	20,637	RL 107m	173m
Block X	18,908	16,463	RL 41.5m	39.5m
Block Y	77,500	22,600	RL 275m	273m
Block 5	29,688	15,000	RL34m	32m
Block 6	3,000	0	RL 29m	27m
Block 7	15,000	14,000	RL 35m	33m
Total	587,354	191,031	N/A	N/A

2.1.1. Modifications to the Concept Plan

The Barangaroo Concept Plan MP06_0162 has been modified ten times and the Statement of Commitments provided in the approval instrument has been revised accordingly. A summary of each of the previous modifications is provided in **Table 5**.

Table 5 Summary of Concept Plan Modifications

Modification No.	Status	Scope
Modification 1	Approved - 25 September 2007	Correction of minor typographical errors in the concept plan notice of determination and rewording of design excellence modification.
Modification 2	Approved - 16 February 2009	Modification to increase the allowable commercial floor space for Blocks 2, 3, 4 and 5 by 120,000m ² .

Modification No.	Status	Scope
Modification 3	Approved - 11 November 2009	Modification to allow for a reconfigured Northern Headland and Northern Cove.
Modification 4	Approved - 16 December 2010	Modification relating to Barangaroo South to allow for a mixed-use development involving a maximum of 563,965m ² GFA within 7 development blocks, an increase in height of a number of the proposed towers within Barangaroo South, the establishment of the new ferry pier and landmark hotel extending into the Harbour; and reconfiguration and activation of the public waterfront area.
Modification 5	Withdrawn – DGR's lapsed	Modification to clarify wording within the Concept Plan relating to the distribution of total GFA within the Barangaroo site and correct typographical errors in the approval.
Modification 6	Approved - 25 March 2014	Modification relating to Barangaroo South to realign Globe Street and block boundaries, revise the urban design controls and modify numerous conditions relating to floor space and car and bicycle parking.
Modification 7	Approved - 11 April 2014	Modification to provide for the temporary concrete batching plant use on-site in association with construction of development at Barangaroo that is approved pursuant to the Concept Plan.
Modification 8	Approved - 28 June 2016	Relocation of the landmark hotel building (Block Y) from extending over the harbour onto land within the site in front of existing Blocks 4A, B and C and inclusion of the gaming facilities as part of the development. The modifications to Barangaroo South, included increases in GFA and height, increase in tourist GFA, redistribution of GFA and land uses across development blocks, modification to block and building envelopes, reduction in area of the Southern Cove and a redistribution of public domain areas. It is noted that 2,000sqm of community uses must be provided within Central Barangaroo (within Block 6 or 7) pursuant to Condition B7(3) of MOD 8.
Modification 10	Approved – 2 September 2020	Modification relating to Barangaroo South for the following amendments: <ul style="list-style-type: none"> ▪ Increase the Barangaroo South residential GFA allocation for Block 4A from 86,979sqm to 92,629sqm ▪ Increase the Barangaroo South residential GFA allocation for Block 4B from 19,158sqm to 21,508sqm ▪ Increase the maximum building height on the building envelope plan for Block 4B from RL210 to RL235

Modification No.	Status	Scope
		<ul style="list-style-type: none"> ▪ Incorporation of an additional 3-metre setback (south-west elevation) of the building envelope for Block 4B above RL209 ▪ Amend the delivery timeframe for Key Worker Housing and update the Barangaroo Built Form Principles and Urban Design controls.
Modification 11	Approved – 22 October 2020	Modification relating to Barangaroo South to allow construction and non-construction vehicles to use Barton Street, amend the timeframe for the delivery of Hickson Park to align with the current development status of surrounding buildings in Barangaroo South and Central Barangaroo, and amend the timeframe for the delivery of Barton Street development.

2.1.2. MOD 8 Implications on Central Barangaroo

The June 2016 approval of MOD 8 by the Planning Assessment Commission (**PAC**) (now the Independent Planning Commission – **IPC**) and the associated amendment to the State Significant Precincts SEPP modified the maximum GFA, mix of land uses, development block location and heights within Barangaroo South.

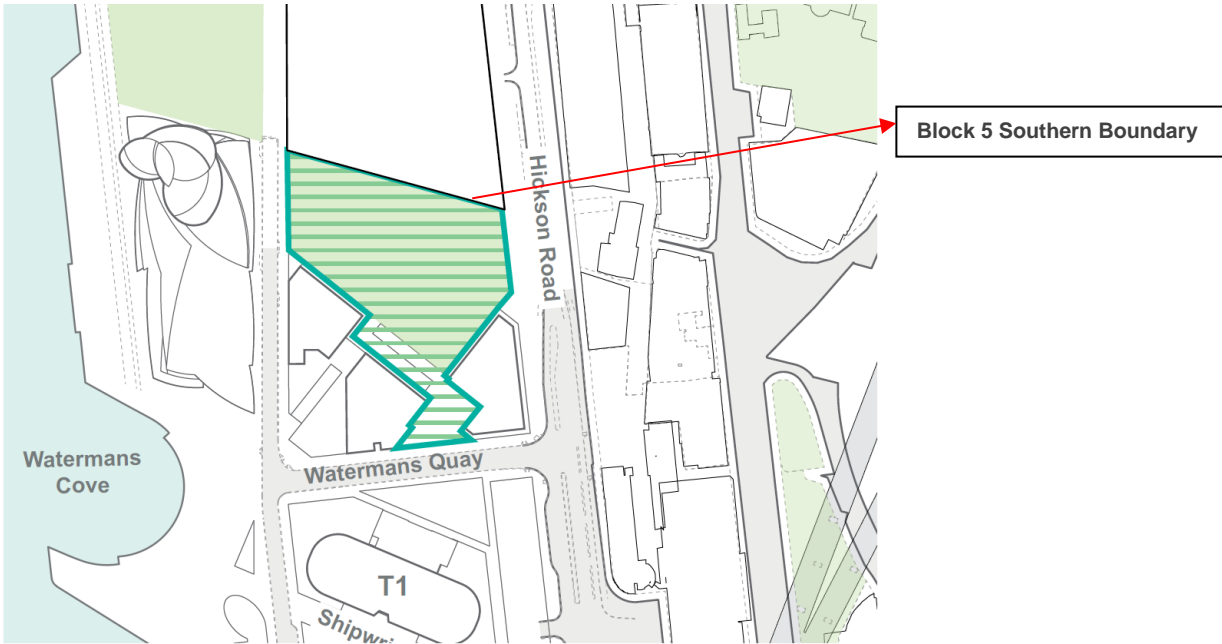
In approving MOD 8, the PAC modified the alignment of the northern boundary of Hickson Park, which was previously located entirely within Barangaroo South, into Central Barangaroo. A comparison of the original location of the Hickson Park boundary (prior to MOD 8) and the boundary approved under MOD 8 is illustrated in **Figure 5**.

This determination had significant implications on the land use configuration and development outcomes of Central Barangaroo. At the time of this determination, the PAC did not have any detail or knowledge of the vision or intent of Central Barangaroo, and thus was unaware of the significant implications of this decision on future development of the precinct. This determination was largely based on a number of principles pertaining to solar access, key views, building separation and public accessibility.

MOD 9 seeks to generally retain the objectives of this decision including solar access, key views, building separation and public accessibility, however, improve the overall function and layout of Central Barangaroo and amenity of Harbour Park through a re-configuration of block boundaries, primarily on the southern interface of Central Barangaroo.

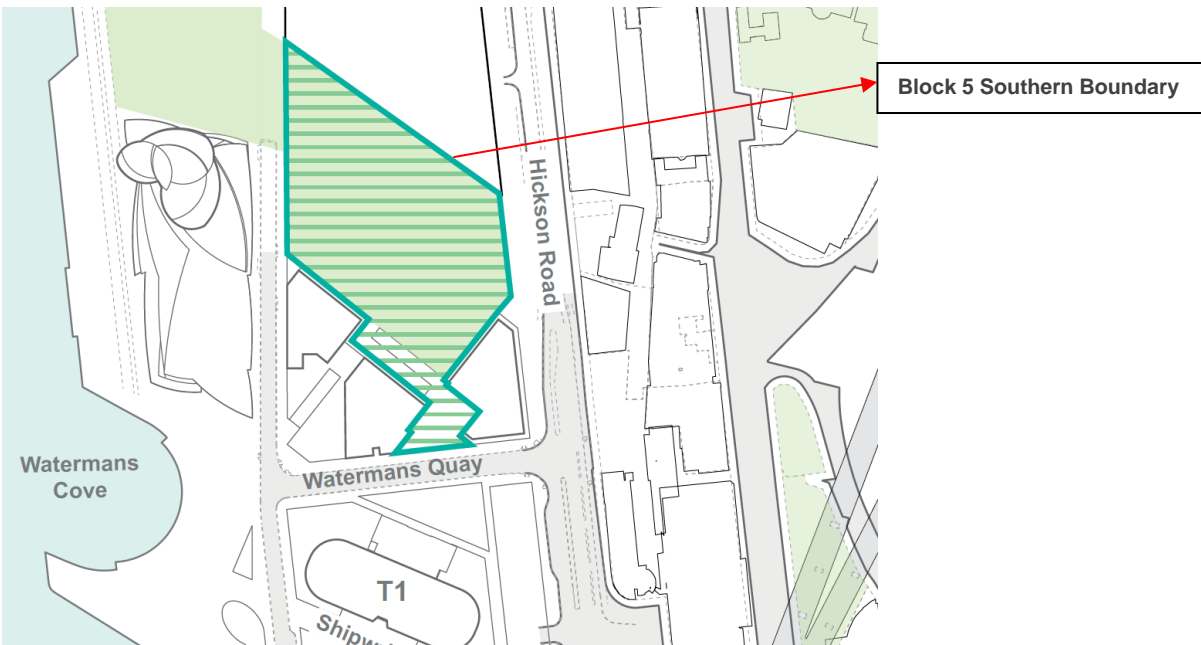
MOD 9 proposes to realign the northern boundary of Hickson Park close to its original location prior to MOD 8. Crucially, reinstatement of the Block 5 boundary to be more in line with the pre-MOD 8 arrangement will not compromise the achievement of these principles. Most importantly, it retains the delivery of 50% of Barangaroo as public open space. Further discussion on this matter is provided in **Section 7.3**.

Figure 5 Comparison of Hickson Park boundary – MOD 6 and MOD 8



Picture 1 MOD 6 – Alignment of Hickson Park

Source: Hassell



Picture 2 MOD 8 – Alignment of Hickson Park

Source: Hassell

2.1.3. Other Relevant Applications

There have been a significant number of project and development approvals at Barangaroo, which have facilitated the ongoing revitalisation of the area. The applications relevant to Central Barangaroo are summarised in **Table 6**.

Most of the development approvals across Barangaroo relate to Barangaroo South. These are considered relevant given the interrelated nature of development at Barangaroo. Overall, there is a need for integration of the built form and public domain at the interface areas between Barangaroo South and Central Barangaroo.

Table 6 Relevant Barangaroo applications

Application	Status	Scope
Sydney Metro		
SSI 15_7400 - Sydney Metro City & Southwest - Chatswood to Sydenham	Approved - 9 January 2017 Under Construction – due for completion in 2024	Construction and operation of a metro rail line between Chatswood and Sydenham, including new stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo.
Barangaroo Reserve		
MP10_0048 (as modified) - Headland Park and Northern Cove - Main Works	Opened on 22 August 2015	Main works for the creation of the Barangaroo Reserve (formerly known as Headland Park) and North Cove.
Central Barangaroo		
SSD 5374 (as modified) - Central Barangaroo Waterfront Promenade and Interim Public Domain	Approved – 7 August 2015	Construction of a permanent foreshore promenade and temporary public domain works at Central Barangaroo, and staging of up to six major public and special events with a maximum capacity of 15,000 patrons per calendar year at Barangaroo Central.
Barangaroo South		
SSD 16_7944 - Barangaroo Public Domain	Approved – 11 September 2018 Opened in 2021.	Public domain works for Hickson Park, Watermans Quay, the remaining section of Barangaroo Avenue in Barangaroo South, Wulugul Walk, Watermans Cove and the Public Pier.
SSD 15_6964 - Residential Building R4A	Approved - 7 September 2017	Residential tower of 72-storeys, comprising 327 apartments and retail uses.
SSD 15_6965 - Residential Building R4B	Approved – 7 September 2017	Residential tower of 60-storeys, comprising 297 apartments and retail uses.
SSD 15_6966 - Barangaroo Residential Building R5	Approved – 3 October 2019	Residential tower of 29-storeys, comprising 155 apartments and retail uses.

Application	Status	Scope
SSD 15_6957 - Crown Sydney Hotel Resort	Approved – 28 June 2016 Opened in December 2020	Mixed-use development comprising a 71 storey tower with residential, hotel, gaming, and retail uses.
SSD 15_6960 - Stage 1B Basement Barangaroo South	Approved – 7 March 2017	Construction of Stage 1B Basement, which will service Residential Buildings R4A, R4B and R5. Note: the basement extends beneath part of Hickson Park.
SSD 15_6960 – MOD 1 - Stage 1B Basement Barangaroo South	Approved – 5 April 2019	Amendment to the Stage 1B Basement including reconfiguration of the layout, revision to the location of the Building R5 core, removal of the back-up diesel generator and provision of 822 car parking spaces.
Remediation Works		
SSD 14_6533 - Remediation of sections of Central Barangaroo	Approved – 18 December 2015	Remediation works within and adjacent to the EPA Declaration Area (21122) at Barangaroo.
SSD 14_6617 (as modified) - Remediation of Part of Hickson Road	Approved – 25 August 2016	Remediation of part of Hickson Road, to address EPA Remediation Site Declaration 21122, in accordance with approved Voluntary Management Proposal.

2.2. PLANNING FOR CENTRAL BARANGAROO

An overview of the history of the evolution of the Central Barangaroo framework is outlined in the following timeline. Significant milestones that have informed the planning and development of Central Barangaroo are outlined in the subsequent subsections.



2.2.1. Sussex Penn Review (2011)

In May 2011 the NSW Premier announced that an independent review (the Sussex Penn Review) of compliance with the planning approval processes (and decision making in relation to such processes) would be undertaken in relation to Barangaroo.

The focus of the review was the original Design Competition and its outcomes, the Concept Plan, and subsequent Modifications 1 to 4. A series of conclusions and recommendations were derived regarding the early planning, appointment of the development partner for Barangaroo South, land use mix, affordable housing, scale and density, design excellence, transport, Headland Park (now Barangaroo Reserve), the Cruise Terminal and White Bay, contamination, public domain, and governance. Many of the recommendations made were adopted by Lend Lease and the Authority in the subsequent Concept Plan Modifications 6 and 8 (and associated revised Statement of Commitments) and the detailed Project Applications for Barangaroo South and the then Headland Park (now Barangaroo Reserve).

In 2011, in relation to Central Barangaroo, the review noted:

Barangaroo Central has had less design attention than Barangaroo South and the Headland Park and is not part of the commercial contract with Lend Lease. The planning for Barangaroo Central provides the opportunity for the O'Farrell Government to engage with the community in the planning of this area, knowing the land use mix across the rest of Barangaroo has been developed to respond to the most obvious needs for the Sydney CBD.

The potential is for a stunning public park with great architecture, exceptional public art and active, cultural or performance spaces which support the diverse population. There is scope for a visionary approach to curating grand scale public art in Barangaroo Central, which could distinguish this site and contribute to the cultural credentials of Sydney and Barangaroo.

The review highlighted the need for greater guidance regarding the future development potential of Central Barangaroo, with particular emphasis on the mix of uses, density, scale and amount of residential. The review notes that:

The area has mixed use zoning for about 60,000sqm gross floor area with a height limit of 35m, but it is mostly zoned for public recreation. The residential development is spread across Central and South Barangaroo, some in tower blocks, but mostly in low rise buildings close to the open spaces. The level of residential development proposed appears appropriate, subject to design.

The increase in GFA and building height proposed in MOD 9 is supported by the planning and transport changes since the review was completed more than 10 years ago and has not impacted on the provision of 50% of Barangaroo as public open space generally concentrated along the foreshore and headland. The proposed residential development in Central Barangaroo is proposed in Tower 7 and potentially in low rise buildings in Blocks 5 and 6 close to open space, which is generally consistent with the review.

The review acknowledged the need to consider the relationship with adjacent precincts:

It is important to ensure the three clear precincts work together as a whole, with effective physical and conceptual connections which help make the place legible and engaging, as well as ensuring clear linkages to adjacent areas and the Sydney CBD. The mix of uses across the whole of the site, and the public domain must allow Barangaroo to function as a self-contained community in terms of services and infrastructure, while also inspiring and providing a destination for visitors.

The Central Barangaroo Master Plan Framework was prepared in response to these needs and has evolved over time to respond to the ongoing changes in planning and transport infrastructure within the City and wider Western Harbour, as well as community and stakeholder consultation activities. MOD 9 will ensure that the three precincts work together as a whole, with better connectivity proposed under MOD 9 between Central Barangaroo, Barangaroo South, Harbour Park, Nawi Cove, Hickson Park, Sydney Metro and beyond.

2.2.2. Master Planning Framework for Central Barangaroo (2013 – 2014)

In January 2013, Infrastructure NSW engaged a collaborative design team, led by SOM, Andersen Hunter Horne (AHH) and Turpin Crawford, who commenced work on the Central Barangaroo Master Plan Framework.

Using the then-approved Concept Plan (at that time, MOD 4) as the foundation, the team of urban designers, architects, landscape architects and artists analysed the significant opportunities the site presents and developed strategies for the public domain and urban design development.

In November 2013, Infrastructure NSW announced the master plan vision for Central Barangaroo and its ambition to create a new vibrant, mixed use precinct on the waterfront of Sydney Harbour. The vision reflected the need for Central Barangaroo to create its own distinct character and identity, recommended an increase in GFA to allow increased activation and vibrancy, and introduced key civic features to connect the site to Millers Point and the CBD.

As part of this early process, in 2013, several rounds of public consultation were undertaken to inform the master planning framework of Central Barangaroo. The consultation comprised a public workshop, followed by a four week, interactive, on-line conversation, in addition to direct engagement with key stakeholders.

In March 2014, Infrastructure NSW requested the DGRs for a proposed modification to the Barangaroo Concept Plan that would enable the core principles of the Central Barangaroo Master Plan Framework to be realised. The DGRs were issued in April 2014 (**Appendix A**).

Building from the then approved Concept Plan (MOD 6), in 2014, SOM + AHH finalised a draft Central Barangaroo Master Plan Framework that explored opportunities to enhance the built form and public domain outcomes, as well as ensure connectivity and access across the whole Barangaroo precinct. The SOM Master Plan Framework establishes a set of key urban and civic elements for Central Barangaroo, including:

- Development massing,
- Pedestrian connectors,
- A street network,
- Development blocks and
- Public domain areas.

This framework aims to guide the vision and the delivery of an integrated urban precinct where innovation in design and adaptable use are facilitated and encouraged. The key components of the Master Plan framework are illustrated in **Figure 6** below.

Figure 6 Central Barangaroo Master Plan Framework



Source: SOM

2.2.3. Central Barangaroo Bid Process (2015 - 2018)

The Central Barangaroo Master Plan Framework informed a competitive development process undertaken by Infrastructure NSW to develop Central Barangaroo. Following the June 2015 announcement of the location of Barangaroo Station within Central Barangaroo, the NSW Government discontinued the competitive bid process then underway.

In December 2015, Infrastructure NSW commenced the Central Barangaroo development process which reflected the inclusion of the underground Sydney Metro station (to be delivered by Transport for NSW (TfNSW)). This request required that interested parties address and respond to the improved access and enhanced opportunity provided by the station through the consideration of up to 150,000sqm of above ground GFA on Blocks 5, 6 and 7. Parties were also encouraged to explore below ground opportunities to take advantage of the station connection.

In January 2018, Infrastructure NSW announced the winning consortium selected to design, develop and deliver Central Barangaroo. The consortium comprised three development parties, which was later reduced to comprise Aqualand (**Central Barangaroo Developer**) and Scentre Group (**Central Barangaroo Retail Partner**).

2.2.4. Master Planning Framework for Central Barangaroo Evolution (2019 –2021)

The Central Barangaroo Master Plan Framework has continued to evolve in response to ongoing changes in planning and transport infrastructure within the City and wider Western Harbour, as well as community and stakeholder consultation activities.

Driven by Infrastructure NSW, SOM's master planning work for Central Barangaroo recommenced in 2019 and reviewed the changed circumstances affecting Central Barangaroo, the wider Barangaroo precinct and the broader context of the Sydney CBD. The objectives developed for Central Barangaroo were reviewed and largely re-affirmed, as well as the built form and public domain outcomes.

Whilst not a statutory document or a requirement for consideration under the DGRs, MOD 9 considers the key principles in SOM's refined Master Plan Framework for Central Barangaroo, including:

- Maintain the delivery of 50% of Barangaroo as public open space;
- Development to occur generally within existing development zones, footprints and but with moderated height controls responding to contextual changes;
- Provision of alternate sites outside the development zone for the future delivery of a cultural venue;
- Connection and integration with Barangaroo South, Barangaroo Reserve, the Harbour and CBD precincts;
- A high level of flexibility allowing the range of uses to evolve over time;
- Contribution to achieving the sustainability targets and commitments established for Barangaroo;
- Design excellence in the Master Plan framework that provides opportunities for design excellence in development of built form and public domain outcomes;
- Ensuring appropriate commercial returns are delivered to the NSW Government across the Barangaroo project; and
- Provision for staging of the development including consideration of effective staged opening and operation of completed development parcels.

The Urban Design Report, which has been prepared by Hassell (**Appendix E**) to support MOD 9 builds upon these principles to ensure future development in Central Barangaroo achieves the framework principles and also capitalises on the significant Metro station investment, the strategic direction articulated in the Greater Sydney Region Plan and Eastern City District Plan, the locational benefits of Barangaroo on the western edge of Sydney CBD and responds to lessons learnt by Infrastructure NSW as Barangaroo has evolved over time since the Concept Plan was first approved in 2007.

As discussed in this EAR, the proposed modifications to the Concept Plan, SSP SEPP planning controls and the indicative concept design prepared for Central Barangaroo will deliver upon these priorities and will ensure the completion of Barangaroo to the best outcome possible for the public benefit.

2.3. REASONS FOR THE MODIFICATION

2.3.1. Strategic Vision for Greater Sydney as a 30-Minute City

Since the approval of the Concept Plan in 2007 there has been significant advances in the strategic planning framework governing Metropolitan Sydney including increased population projections (resident and worker) and a significant investment and planning of transport infrastructure. Accordingly, to align these two priorities and appropriately manage growth of the region, a new strategic vision for Greater Sydney emerged in 2018 of Sydney as a metropolis of three cities, where residents “*live within 30 minutes of their jobs, education and health facilities, services and great places*”. This vision was embedded within the applicable Greater Sydney Region Plan, Eastern City District Plan and State Infrastructure Strategy, and demonstrates a new policy direction to approach transport and land use planning.

Under the Eastern City District Plan, Barangaroo is located in the Eastern Harbour City, identified as Australia’s global gateway and financial capital where the population is forecast to grow from 2.4 million in 2016 to 3.3 million people in 2036. The importance of aligning growth with infrastructure investment is identified as a key priority, particularly within identified urban renewal areas (such as Barangaroo) to not only contribute to the liveability of the area, but also to optimise and maximum investment in infrastructure. This is further reiterated in the State Infrastructure Strategy, which seeks to ensure that additional employment opportunities and housing growth are supported by investment in transport infrastructure – which will correspondingly meet and shape future demand. This will continue to strengthen the Sydney CBD as the global headquarters for Australia’s top businesses, as well as improve liveability and sustainability.

The site has already been recognised as a highly suitable location for concentrated density and a key location where housing and employment is and can be provided in close proximity to a range of transport options that connect to other centres. The unique opportunity of the site is further reinforced by its location within the Innovation Corridor, which the District Plan identifies as a key mechanism to support the global competitiveness of the Harbour CBD.

These changes in the policy approach to transport and land use planning across Greater Sydney, together with the strategic importance of Central Barangaroo in its ability to deliver housing and jobs in a manner that integrates with catalytic transport infrastructure, provides an opportunity to revisit the approved Concept Plan and reconsider the height, density and mix of land uses across the site.

2.3.2. Sydney Metro

Sydney Metro is Australia’s biggest public transport project to be delivered by TfNSW. Sydney Metro comprises three core components: Sydney Metro Northwest (Stage 1), Sydney Metro City & Southwest (Stage 2), and Sydney Metro West (Stage 3). Services for the Sydney Metro Northwest commenced in May 2019 in the City’s North West. Metro rail will be extended into the CBD and through to Bankstown by 2024 as part of Sydney Metro City & Southwest. The Concept SSDA for Sydney Metro West was approved by the Minister on 11 March 2021 as Critical State Significant Infrastructure (reference SSI -10038). The alignment of the three core components of the Metro network are identified in **Figure 7**.

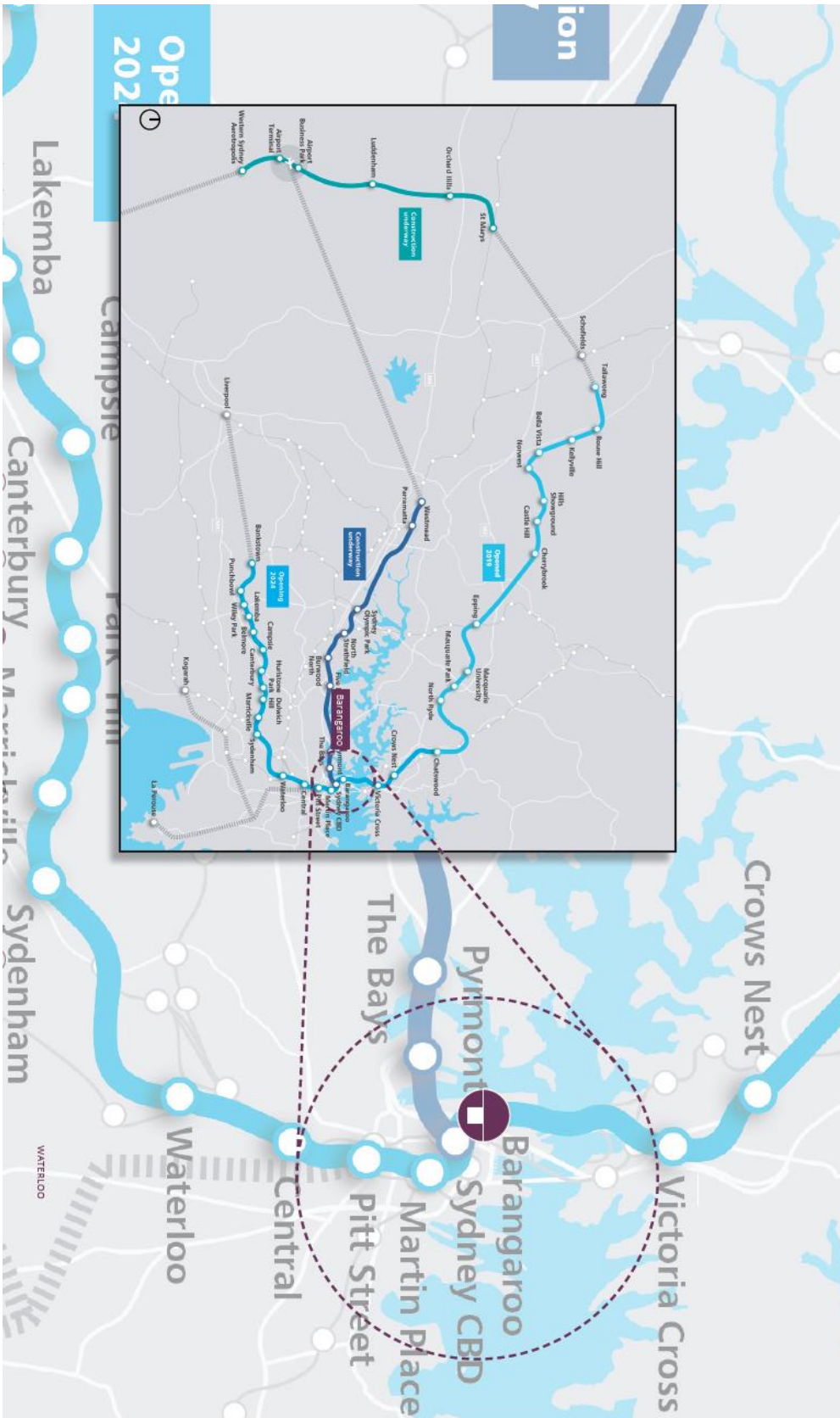
The approval granted consent for an underground Sydney Metro Barangaroo Station (**Barangaroo Station**). The station is located beneath the northern end of Hickson Road, south of Munn Street in Millers Point. Access to the station will be provided via Central Barangaroo and Barangaroo Reserve. The Barangaroo Station is being delivered by Infrastructure NSW in consultation with TfNSW, coordinated through an alternative planning pathway to the broader Barangaroo site. It is expected that the station will be operational by late 2024. Once complete, Sydney Metro will have capacity for a train every two minutes through the Sydney CBD in each direction.

Consistent with the State Infrastructure Strategy, the NSW Government has been seeking to maximise the land use opportunities associated with Sydney Metro, support additional activity in the Sydney CBD, and drive high levels of patronage on the new metro rail. In turn, this will support the strategic direction of the Greater Sydney Region Plan and Eastern City District Plan to create a 30-minute city.

To support and integrate the Barangaroo Station, Infrastructure NSW reviewed the Concept Plan in the context of accommodating additional density in Central Barangaroo in direct response to the provision of the Sydney Metro infrastructure, as well as recognising the strategic importance of Barangaroo for the Eastern

City District, as discussed above. The introduction of Barangaroo Station has been a catalyst to progress the proposed changes to Central Barangaroo via MOD 9 to maximise this significant investment in public infrastructure.

Figure 7 Sydney Metro Alignment Map



Source: Sydney Metro

2.3.3. Established Reputation of Barangaroo

Barangaroo has become an international model for Government working with the private sector to achieve exemplar outcomes in areas such as urban design, place making, environmental and social sustainability. In December 2019, the Commonwealth Government recognised Barangaroo as Australia's first Carbon Neutral precinct, further emphasising the established reputation of the place.

As stated, the State Infrastructure Strategy prioritises integration of land and infrastructure planning. The objective of this is to ensure that population growth does not erode the amenity and character of existing communities, and that investment in transport infrastructure is integrated with land use plans to ensure that housing and jobs are delivered in accessible locations. The proposed modification to Central Barangaroo to increase building height and density is entirely consistent with this direction, as it falls within a mixed-use urban renewal precinct with an established reputation to deliver additional density and height with excellent access to transport infrastructure that does not erode the amenity and character of existing communities.

2.4. ANALYSIS OF PROJECT ALTERNATIVES

In developing the proposed approach, a number of alternatives have been considered by Infrastructure NSW to ensure the investment reflects the best use of public funds and maximises the economic, social and environmental benefits for the public. In summary, four key options were considered to address the project objectives and site constraints and opportunities, including:

- Scenario 1 – 'do nothing'
- Scenario 2 – development in accordance with existing Concept Plan
- Scenario 3 – develop under alternative siting arrangements
- Scenario 4 - optimise development potential through modification to Concept Plan (proposal)

The following section provides a summary of the options considered and the process and analysis that led to the current preferred concept.

2.4.1. Do Nothing option (No Development)

The 'Do Nothing' option – to not develop Central Barangaroo – is not appropriate or a feasible option given the established need for the project. This is reflected in considerable, decade-long investment by the Government in planning and developing Barangaroo, including significant investments in public pedestrian and water transport infrastructure, and construction of Barangaroo Station, to support the Barangaroo development.

Central Barangaroo is the final piece of Barangaroo, connecting the employment-focused mixed-use neighbourhood of Barangaroo South to the open space of Barangaroo Reserve and the new Barangaroo Station. It is essential for Central Barangaroo to be completed in order to enable the completion of this globally renowned, highly awarded mixed-use waterfront precinct with some 50% of Barangaroo as public open space.

A 'Do Nothing' scenario would mean that the considerable social and economic benefits of the development, along with the significant State Government investment and strategic merit of the project, would not be realised. Specifically, the consequences of not carrying out the development under the 'Do Nothing' option would include:

- The quantum of additional commercial and retail GFA, and public domain areas would not be delivered on the site. This would leave the site under its current condition, with Barangaroo South largely completed and Central Barangaroo a large, undeveloped portion of land with a construction fence around it. This outcome significantly affects the amenity of both the resident and commercial tenants of neighbouring buildings, as well as the enjoyment of Barangaroo Reserve and Wulugul Walk by visitors and members of the public.
- Without development in Central Barangaroo, the Barangaroo Station entrances would not be activated and there would be no supporting land uses surrounding the station. This would fail to coordinate land use and transport planning, which is a key State government direction, and would not capture or optimise the significant State government investment in the Sydney Metro network.

- This scenario would not provide for an appropriate built form transition between the completed high-density towers of Barangaroo South and the low-scale form of Millers Point, Barangaroo Reserve and Sydney Observatory.
- As the original function of Central Barangaroo under the Concept Plan was to provide the 'civic heart' of the Barangaroo precinct, under the 'Do Nothing' scenario the Barangaroo precinct would fail to provide the necessary social infrastructure including community, cultural, recreational and civic land uses, and services required to support the residential and commercial population. This would diminish the social fabric of the surrounding area and heavily impact the community.
- Loss of the Homes for Homes contribution (which seeks to donate 0.1% of the sale price of each residential dwelling to deliver affordable housing in a variety of locations) and developer contributions which would be captured under completion of Central Barangaroo.
- The scenario would result in the loss of the potential economic contribution to the NSW economy as a result of delivering MOD 9, which includes \$188.70 million and 1,143 full-time employment opportunities during construction and \$327.4 million and 1,176 full-time employment opportunities during operation of MOD 9.

In summary, this scenario would not adhere to the principle of orderly planning and economic use of land as required by the objectives identified in section 1.3(c) of the EP&A Act. This option is therefore dismissed.

2.4.2. Develop under existing Concept Plan

A development scenario under the currently approved Concept Plan would be restricted in its ability to achieve the project objectives and anticipated public benefits. Following the amendments to Central Barangaroo which occurred through the MOD 8 determination, the GFA for Central Barangaroo is limited to around 47,678sqm. Development of the precinct to this scale is inconsistent with sound planning principles to ingrate land use planning and transport to create a 30-minute city and fails to achieve the extent of social, economic and environmental benefits afforded by the site's strategic location and the recent significant investment in infrastructure.

Development under the current approved Concept Plan is not considered a viable solution for the site as:

- The approved Concept Plan fails to fully meet the objectives and principles of the current strategic planning framework governing the region, which aims to ensure residents live within 30 minutes of their job, education and health facilities, services and other amenities. Integrating transport infrastructure with land use is required to enable this vision, as discussed in **Section 2.3.1**. At present, the Concept Plan does not achieve this as the land use and development plan fails to capitalise on the Barangaroo Station.
- This scenario fails to adequately respond to the State government investment in the Sydney Metro network and the location of Barangaroo Station at the northern end of Central Barangaroo. This infrastructure is a catalyst for change and is a key driver for increased scale and density on the site to maximise the co-location of employment generating and residential floor space with transport infrastructure and the associated benefits in achieving this. To not respond to this would fail to coordinate land use and transport planning, a key State government direction, and would result in a precinct that is less agile in its ability to respond to market needs and the demand for a mix of commercial and residential floor space surrounding the Barangaroo Station.
- This scenario would result in a precinct that is less agile in its ability to respond to market needs and deliver upon the increased demand for commercial and residential floor space surrounding the Barangaroo Station.
- The current permissible scale is inconsistent with the scale and intensity of built form on Barangaroo South which has been approved since the Central Barangaroo framework was previously endorsed. The resultant future-built form would not be modulated and would not provide any transition from Barangaroo South to Barangaroo Reserve, resulting in a dramatic shift in building height and scale between One Sydney Harbour and Crown Sydney Hotel Resort, Central Barangaroo, Millers Point and Barangaroo Reserve. Given the substantial visibility of the site and the significance of the overall urban renewal project, where any improvement to the urban form is available this must be explored.
- The generalised design framework applying to Central Barangaroo under current approvals does not reflect the extensive ongoing master planning work and urban design analysis completed between 2013 and 2020, both in terms of the built form, public domain and the integration with Barangaroo Station.

- Development under this scenario does not include GFA for the cultural facility within Barangaroo Reserve, resulting in a loss of social and public benefits anticipated from this facility. The proposed increased community and active uses in the public domain of Central Barangaroo could not be developed which would diminish the cultural and social benefits of Barangaroo.
- The enhanced activation and connectivity with the Barangaroo Station which MOD 9 will deliver will not be achieved under this scenario.

The modification to the Concept Plan is considered necessary to achieve the vision for Barangaroo and for these reasons above, the option of developing in accordance with the existing Concept Plan is not considered a viable option and is therefore dismissed.

2.4.3. Develop alternative siting arrangements

The general siting of the development footprint for Central Barangaroo has long been established by the existing fundamental principles and elements of the approved Concept Plan which limit the consideration of alternative siting arrangements. Due to site constraints, the only alternative siting options for the concept development of Central Barangaroo that would achieve the project objectives is the shifting of block and future building footprints towards the western portion of the site, within the currently approved area of the 'Harbour Park'. Whilst this would offer significant visual benefits to future occupants of the buildings due to the direct interface with the harbourfront, the siting of the blocks within this area would result in the following undesirable outcomes:

- The siting of development blocks on the western site edge would undermine the key urban and civic principles and established components of the approved Concept Plan. Specifically, this siting arrangement would compromise the provision of a connected network of parks including the location of Harbour Park, Hickson Park and Barangaroo Reserve, a continuous waterfront promenade and the existing foreshore walkways (including Wulugul Walk), and provision of three clear development blocks along Hickson Road. It would also undermine the operation of Barangaroo Station by not co-locating land uses immediately adjacent transport infrastructure, thus resulting in a disjointed built form outcome which does not optimise integration with transport opportunities.
- Shifting of development blocks towards the west would result in either the loss of the Harbour Park in its entirety, or alternatively the shifting of the Harbour Park to the east of the development blocks to align adjacent to Hickson Road. Neither of these alternatives are in the public interest and are likely to result in the loss of land zoned RE1. The delivery of a waterfront promenade and public space and commitment to the delivery of 50% of Barangaroo as public domain is a key principle of the Barangaroo urban renewal project and to diminish this would undermine public trust and certainty in government-led renewal projects. This alternative solution would also create an overwhelming density of development right on the foreshore, privatising public land and reducing public accessibility along the foreshore.
- This scenario would significantly impact the amenity of existing buildings and public spaces within the Barangaroo precinct. The alternative siting of development blocks would reduce the building separation between the Crown Sydney Hotel Resort, thereby impacting daylight penetration, disrupting view corridors and erode the landmark status of this building.
- Alternative siting of the development blocks would disrupt the strong grid pattern established by the strong north-south linear connections of Hickson Road and Barangaroo Avenue. Shifting the development blocks to the west would result in an 'outlier' to this strong definition and would obscure the clear distinction between the natural and built environments established by the western City Frame. This option would also undermine key pedestrian desire lines through the site and create an ineligible street layout with a lack of clear circulation and permeability.

There are considerable impacts associated with the alternative siting of the development blocks and buildings in Central Barangaroo as identified above. On this basis, shifting the development blocks to the west is not considered a feasible or reasonable alternative. As discussed, this alternative siting scenario does not deliver a positive public benefit outcome and accordingly was dismissed.

2.4.4. Concept Plan Modification 9 (proposal)

The proposed modification to the Concept Plan is the outcome of over six years of master planning, stakeholder engagement and review of alternative site development options. The history of this lengthy and iterative history is outlined in **Section 2**. MOD 9 (as proposed) has emerged as the preferred option for the site because it represents the best outcome in respect of urban design, environmental, economic and social

considerations. The proposal also generally respects the principles established for the approved Concept Plan, including those established by the PAC in the determination of the MOD 8 approval (which realigned the Block 5 boundary). The Concept Plan as modified will deliver the following:

- A suitable density of development that capitalises upon the sustainable and economic efficiencies associated with providing density in close proximity to major transport infrastructure nodes. The proposed quantum of gross floor area and building heights proposed in MOD 9 will reinforce demand and provide critical mass to support the operation of Barangaroo Station, thereby maximising public investment and the potential of the Sydney Metro network.
- The flexible distribution of gross floor area and land uses across Blocks 5, 6 and 7 will ensure future development responds to current market demand and creates a vibrant, activated precinct with high occupant and public amenity. Facilitating a range of land uses such as commercial, retail, cultural, community and residential, will ensure there is a consistent population activating the site 18-hours per day.
- A modulated built form that is informed by environmental, urban and contextual attributes. The modified envelope delivers equitable access to views, defines and activates public streets and spaces through provision of a clear street wall, and provides opening between blocks to create a fine grain structure of laneways and facilitate daylight penetration to floor plates and the public domain.
- A robust Design Excellence Strategy that will deliver a fully integrated, vibrant and immersive precinct through a coordinated and cooperative approach to design.
- A public domain contribution, maintaining the commitment to deliver 50% of Barangaroo as public open space. MOD 9 respects and enhances the public offering by providing a range of public spaces such as the modified Hickson Park, better interface with the approved Harbour Park and waterfront promenade, and opportunities for the delivery of new publicly accessible spaces throughout the development blocks (final form, location and function subject to future detailed SSDAs).
- Seamless connectivity throughout the precinct with a fine grain network of mid-block links, and a stronger connection between Central Sydney and the western harbour through provision of realigned east-west connections which address the revised block configuration and the potential for a primary east-west connector between Blocks 5 and 6, referred to as the Barangaroo Steps (noting that the location, design and function subject to future detailed SSDAs).
- Urban design principles that entrench a people-first attitude with comfortable public spaces and streets acting as an extension to urban plaza and park spaces.

MOD 9 seeks to align with the strategic vision for metropolitan Sydney and the significant investment in infrastructure (in particular Barangaroo Station) with an appropriate density to unlock the full potential of Central Barangaroo. MOD 9 is the only scenario out of all considered project alternatives that will deliver this objective, whilst balancing the wide range of competing urban design, environmental, economic and social considerations.

3. STRATEGIC CONTEXT

3.1. KEY FEATURES OF SITE AND SURROUNDS

3.1.1. The Barangaroo Precinct

The Barangaroo Precinct is a globally recognised urban renewal project located on the western harbour foreshore of Sydney's CBD. The redevelopment of Barangaroo is one of the most significant waterfront renewal projects and seeks to regenerate a once neglected and inaccessible area of the city into a new iconic western city edge of buildings, headlands and parklands. Barangaroo's public domain will strengthen Sydney's status as a harbour city by embracing the harbour's greatest assets – its green headlands and public access to the foreshore.

In accordance with the *Barangaroo Act 2009*, the Barangaroo precinct is defined as the area of land identified as the Barangaroo operational area on the "Barangaroo Operational Area Map".

The Barangaroo precinct comprises a total land holding of approximately 22ha and is located on the north-western edge of the Sydney CBD within the City of Sydney Local Government Area (**LGA**). Barangaroo runs north-south between Hickson Road and the western foreshore of Sydney Harbour, connecting the north-west edge of the city's business centre with the historic and cultural precincts of Millers Point and Walsh Bay.

The precinct is divided into three distinct development areas, as illustrated in **Figure 8** and described below:

- **Barangaroo South (approx. 7.5ha)** – Barangaroo South has been progressively completed over the last six years and includes a mixed-use neighbourhood which accommodates commercial office buildings, residential apartments, shops, cafes, restaurants, a resort hotel and community uses, as well as public open space (including the future Pier Pavilion). Barangaroo South incorporates Sydney's newest international 6-star hotel and restricted gaming facility and the recently constructed Hickson Park. Construction on the three residential towers within Block 4A and Block 4B has commenced.
- **Central Barangaroo (approx. 5.2ha)** – between the Barangaroo Reserve and Barangaroo South, Central Barangaroo will incorporate a mix of uses including commercial, retail (shops and food and beverage) and residential, creating a civic focal point for recreation, relaxation, events, festivals, entertainment and leisure activities. MOD 9 specifically relates to Central Barangaroo.
- **Barangaroo Reserve (approx. 6.1ha)** – A re-created Sydney Harbour headland comprising open space with lookouts over Sydney Harbour, extensive walking and cycling trails, idyllic coves, picnic areas and places for quiet contemplation. The reserve is located at the north-western end of Barangaroo, where the precinct meets the inner-city Sydney suburb of Millers Point. It includes the 'Cutaway', a cultural space beneath the Reserve for community uses and the Dalgety Bond Store (Moore's Wharf is situated outside the reserve but is part of the Concept Plan site). MOD 9 also relates to land located within Barangaroo Reserve.

The above results in a total area of 18.8ha. The residual 3.2ha is represented by the reshaping of the former industrial headland into Barangaroo Reserve and the creation of Nawi Cove as a substantial water body within the Barangaroo site, forming the original 22ha.

A locality context plan of Barangaroo in the context of the broader Sydney CBD is provided in **Figure 9**.

Figure 8 Barangaroo Precincts Map in Harbourside Context



Source: Hassell

Figure 9 Barangaroo Locality Context Plan



Source: Urbis

3.1.2. Site Description

3.1.2.1. Central Barangaroo

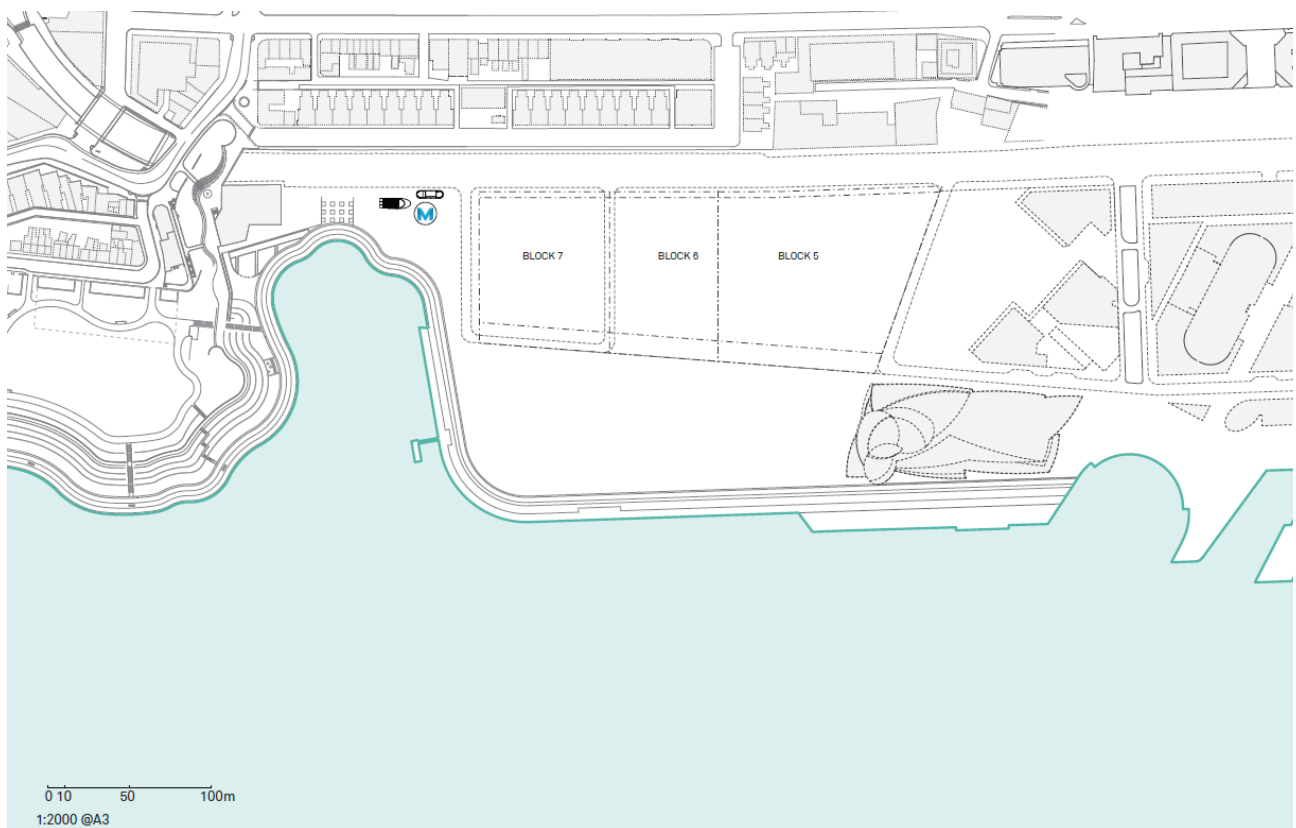
MOD 9 primarily relates to Central Barangaroo. The site is identified in the approved Concept Plan as Blocks 5, 6, and 7 with associated public domain and recreation areas. These areas are identified in **Figure 10**.

Central Barangaroo previously housed the Temporary Cruise Passenger Terminal which relocated to White Bay in April 2013, and prior to this was used as a shipping containment yard. At present, the site is occupied by temporary structures for water treatment during the construction of Barangaroo South, and more generally, as a vehicle storage and construction site. It currently features a large concrete hardstand area / construction site that is occupied by temporary structures for site preparation works, machinery, materials and vehicle parking for site workers.

In addition, the site is also subject to current improvements such as remediation works, works to facilitate the Barangaroo Station and a temporary road which runs off Hickson Road around the southern portion of the site. At the time of writing, tunnelling and excavation activities for the Barangaroo Station have been completed and construction work is currently continuing for the Barangaroo Station and crossover cavern.

A portion of Central Barangaroo is also located within the EPA Declared Remediation Area (Declaration No. 21122) relating to the former Millers Point gasworks located along the eastern edge of the site. Specifically, this area has been identified as a remediation site due to the presence of contaminated groundwater. Remediation works within the Declaration Area were completed as part of the Barangaroo South development works. On 18 June 2020, the Environment Protection Authority issued notice No. 20204418 that Declaration No. 21122 is no longer in force. The notice declared the EPA was satisfied the land was no longer contaminated. Refer to further discussion in **Section 7.13**.

Figure 10 Identification of Central Barangaroo development blocks



3.1.2.2. Barangaroo Reserve

The proposal allocates GFA to buildings in Barangaroo Reserve (formerly known as Headland Park), which is located to the immediate north of Central Barangaroo and comprises a waterfront parkland, open space and public domain. Barangaroo Reserve also includes the Cutaway cultural space, the Dalgety Bond Store and Moore's Wharf as follows:

▪ The Cutaway

- The Cutaway is a void space that currently exists within Barangaroo Reserve. It was constructed in accordance with Major Project Approval MP10_0048 which granted consent for the construction of a 'shell' for future use as a cultural facility above a public car park accommodating 300 parking spaces. The location of the Cutaway within Barangaroo Reserve is illustrated previously in **Figure 9**.
- There is no GFA currently allocated to this cultural facility under the approved Concept Plan. As such, MOD 9 seeks to allocate a minimum of 6,000 sqm and up to 18,000 sqm of floor space to enable a future application for community / cultural uses within the void.

▪ Dalgety Bond Store

- Dalgety Bond Store is located at 6-20 Munn Street and is within the Barangaroo Reserve site, however, does not form part of MOD 9. Dalgety Bond Store is a group of two warehouse buildings fronting onto what is now the Munn Reserve. The buildings feature free classical facades but illustrate two distinct phases in warehouse construction – one incorporating a timber structure, the other steel. The original detailing is largely intact, both internally and externally.
- The site is listed as a heritage item in the Major Development SEPP, a heritage site in the *Sydney Local Environmental Plan 2012* (L316), on the Infrastructure NSW S170 register and on the NSW State Heritage Register (#00526). The site is also located within the State Heritage Register conservation area for the Millers Point and Dawes Point Village precinct.

▪ Moore's Wharf

- Moore's Wharf comprises a group of three storey heritage-listed sandstone former warehouses currently located on the northern shoreline of Barangaroo on Walsh Bay at Millers Point (Town's Place/Corner Dalgety Street). The buildings were originally built from the 1830's to the late 1840's at Darling Harbour however were relocated to their current location where they reopened in 1981.
- Moore's Wharf is currently used primarily as a marine operational facility as well as general office space for the Port Authority of New South Wales. The premises accommodate marine operational staff 24 hours per day, seven days per week, providing customs and delivery offices and amenities for port workers. It consists of two floors of general office space and a third floor for multipurpose use.

3.1.3. Legal Description and Site Ownership

The site comprises a number of allotments / land titles as detailed in **Table 7**. The proposed amendments to the Concept Plan relate primarily to Central Barangaroo which is located in Lot 52 DP 1213772 (refer to the Existing Site Survey at **Appendix C**).

The Central Barangaroo site is owned by the NSW State Government through Infrastructure NSW. Arrangements for the future ownership of the Central Barangaroo site are administered through the Project Development Agreement established for the site between the Central Barangaroo Developer and Infrastructure NSW.

A summary of these arrangements are as follows:

- All future 'private' ownerships in the Central Barangaroo site are 99 year leasehold only;
- At the time of practical completion of each building, the 99 year leasehold lot specific to that building only will be transferred to the owner of the building;
- The lands that remain within a residual lot continue to be owned by the NSW State Government; and
- At the stage of all buildings being completed on the site, 99 year leasehold lots will have been established for each building. The remaining area is retained by the NSW State Government as publicly owned public domain.

Table 7 Legal Description of the Barangaroo Site

Address	Folio Identifier
24 Munn Street	Lot 6 DP 869022
25 Hickson Road (1-3 Munn St)	Lot 100 DP 838323
Headland Park and Barangaroo Central, Hickson Road, Barangaroo	Lot 52 DP 1213772
Headland Park, Hickson Road	Lot 1 DP 876514
Headland Park, Hickson Road	Lot 4 DP 876514
Tower 2, 200 Barangaroo Avenue	Lot 201 DP 1204948
Central Chilled Water Plant, 51C Hickson Rd	Lot 202 DP 1204948
Recycled Water Plant, 51D Hickson Rd	Lot 203 DP 1204948
Embedded Network Lot, 51E Hickson Road	Lot 204 DP 1204948
25 Barangaroo Ave	Lot 207 DP 1211553
R8 & R9 Retail, 51A Hickson Road, Barangaroo	Lot 208 DP 1211553
Commercial Tower 3, 300 Barangaroo Ave	Lot 211 DP 1217691
Commercial Tower 1, 100 Barangaroo Ave	Lot 213 DP 1221076
Building R1 Restaurant, 35 Barangaroo Ave	Lot 301 DP 1244221
Building R7, 35 Barangaroo Ave	Lot 302 DP 1244221
Building C2 Retail, 35 Barangaroo Ave	Lot 303 DP 1244221
Building C2 Commercial, 35 Barangaroo Ave	Lot 304 DP 1244221
Metro Lot A, Barangaroo Ave	Lot 305 DP 1244221
Metro Lot B, Barangaroo Ave	Lot 306 DP 1244221
Building C1, 35 Barangaroo Ave	Lot 401 DP 1244221
Additional C1 Lot (EOT Lobby)	Lot 404 DP 1244221
Northern Section, 51A Hickson Rd	Lot 500 DP 1264241 (part)
Adjusted Bike / Amenities Lot, 51B Hickson Rd	Lot 402 DP 1244221
Additional T1 Lot (Parking & Storeroom)	Lot 403 DP 1244221
Crown Sydney Hotel Resort, 1 Barangaroo Avenue	Lot 1 DP 1264173
One Barangaroo Crown Residences, 1A Barangaroo Avenue	Lot 2 DP 1264173
Barangaroo South Residue	Lot 500 DP 1264241 (part)

3.1.4. Surrounding Development

Sydney's growth into Australia's global gateway and financial capital has seen significant investment into the CBD and surrounding areas. This evolution has been characterised by an influx of a diversity of people, cultures and ideas that have helped shaped the city.

Sydney is defined by a strong economic core, underpinned by its radial rail network and bound by a unique natural environment, from harbour to landscape. The balance of cityscape and open space has reinforced the attractions and advantages of Sydney's quality of life.

Originally an organic shoreline form, the western edge of the Sydney CBD formed a straight concrete seawall edge, with Barangaroo predominantly located on reclaimed harbour land. The Barangaroo transformation has sought to take advantage of Sydney's physical, economic and cultural elements in order to deliver the western waterfront of Sydney Harbour back to Sydney.

Current land uses in the immediate vicinity of the site are diverse, including large commercial premises, tourist and visitor facilities, restaurant, cafes, terrace housing and residential high-rises, and public parks.

Surrounding precincts include:

- **North:** Barangaroo Reserve is located to the north of the site, providing 6ha of open space adjacent to Sydney Harbour. Construction of Barangaroo Reserve commenced in May 2012 and was completed in August 2015. Barangaroo Reserve features more than 10,000 sandstone blocks along the foreshore, which were extracted from beneath the Cutaway and the underground car park. MOD 9 seeks to allocate GFA to the Cutaway.
- **East:** To the immediate east of the site is Hickson Road, the northerly continuation of Sussex Street. Hickson Road provides a clear interface between the development of the Barangaroo precinct and the heritage character of Millers Point above. Millers Point contains many of Sydney's heritage listed building related to the area's maritime history, including small workers cottages, grand Edwardian terraces, stately homes and apartment blocks. Barangaroo Station is currently being constructed beneath Hickson Road. Further east is Observatory Hill, a State significant heritage item.
- **South:** To the south is Barangaroo South, a mixed-use neighbourhood which accommodates completed and approved commercial office buildings, residential apartments, shops, cafes, restaurants, a resort hotel and gaming facilities, and community uses, as well as public open space and transport infrastructure. This southern context includes a number of development proposals in various stages of planning, construction and operation, including the Renzo Piano towers, the dominating 270m Crown Sydney Hotel Resort and the Pier Pavilion.
- **West:** To the west of the site is the waters of Darling Harbour, and beyond this Pyrmont and Balmain East.

An image of the site within the broader Sydney context is provided in **Figure 11**.

Figure 11 Aerial image of the Central Barangaroo context



Source: Infrastructure NSW

3.1.5. Future Development

Future development within the immediately surrounding precinct is identified in **Table 8**. The potential cumulative impacts of these works and future development resulting from the Concept Plan modifications are addressed in **Section 7** where relevant in accordance with the DPIE *Assessing Cumulative Impacts* guidelines.

In summary, the urban transformation of the western harbour foreshore of the Sydney CBD with high density-urban form (which is traditionally reserved for the metropolitan centre) is a result of a number of major redevelopment projects outlined in **Table 8** and identified in **Figure 12**.

These projects demonstrate a significant shift in the evolving future character of the Darling Harbour precinct and western edge of the Sydney CBD. Particularly, the scale of the building envelopes and quantum of floor space represents a significant uplift compared to the existing site development and the current urban form, resulting in a transformation of western harbour skyline. It is evident that in order to deliver upon the strategic priorities of the NSW Government, create a globally competitive and innovative city and optimise investment in transport infrastructure, development projects with an appropriate density and building height is essential.

Table 8 Future development to be constructed

Project	Brief Description	Impact on Proposal
Sydney Metro	<p>Barangaroo Station is currently under construction and anticipated to be completed by 2024.</p> <p>Two entrances to Barangaroo Station will be completed as part of the detailed design of MOD 9, located within Central Barangaroo and Barangaroo Reserve. Construction of the station box structures</p>	<p>As construction of and demobilisation from the station box entrances is anticipated by September 2021, there will be no overlap in the construction of the station boxes and the over-station development proposed in Central Barangaroo MOD 9.</p>

Project	Brief Description	Impact on Proposal
	<p>are currently underway as of July 2021, with removal of plant and equipment and demobilisation from the site anticipated by September 2021.</p>	<p>The future detailed design of Central Barangaroo will seamlessly integrate with the interface of Barangaroo Station, in accordance with the guidelines and objectives of the Barangaroo Station Design and Precinct Plan, released in June 2021 by the NSW Government.</p>
<p>Barangaroo South – Block 4A and Block 4B</p>	<p>The Renzo Piano towers are located within Block 4A and Block 4B of Barangaroo South and comprise three residential buildings known collectively as ‘One Sydney Harbour’. The development consists of Building R4B (a 60-storey residential building comprising 297 apartments), Building R4A (a 72-storey residential building comprising 327 apartments) and Building R5 (a 29-storey mixed use building). Consent was granted for Building R4B and R4A by the Independent Planning Commission (IPC) on 7 September 2017, and subsequently for Building R5 by the IPC on 3 October 2019. MOD 10 to MP06_0162 was recently approved by the Minister for Planning on 2 September 2020 and amended the building envelopes in Block 4 providing additional GFA and height for some of the residential buildings.</p>	<p>These towers are currently under construction and are anticipated to be operational by 2024. Accordingly, there is not anticipated to be any overlap of construction activities associated with Blocks 4A and Block 4B, and Central Barangaroo.</p> <p>Construction works for Central Barangaroo will be managed via a detailed Construction Management Plan and Pedestrian and Traffic Construction Management Plan prepared and submitted within a future detailed application to mitigate any impact on the amenity of future residents at One Sydney Harbour.</p>
<p>Waterman’s Cove</p>	<p>The Pier Pavilion two-stage design competition for a new public pavilion to be designed and located on Watermans Cove has been finalised. The Pier Pavilion will be designed by Jessica Spresser and Peter Besley. A development application for the public Pier Pavilion was lodged to the City of Sydney Council on 24 September 2021.</p>	<p>It is anticipated that construction of the Pier Pavilion will commence prior to any construction works occurring on Central Barangaroo. Should there be any overlap of construction activities for these works, impacts will be managed via a Construction and Environmental Management Plan prepared and submitted within a future detailed application.</p>
<p>Cockle Bay Redevelopment</p>	<p>Cockle Bay Wharf is located on the south-eastern foreshore of Darling Harbour / Cockle Bay and comprises an area of approximately 2.5 hectares. The redevelopment of Cockle Bay is a key facilitator in driving significant change in the western Darling Harbour precinct. The recent approval of a commercial building</p>	<p>Concept Approval SSD-7864 will be followed by detailed SSDAs which will seek consent for detailed design, construction and operation of the site. While the likely timing of construction for Stage 2 is currently unknown, it is anticipated the construction of Cockle Bay will commence prior to the</p>

Project	Brief Description	Impact on Proposal
	<p>envelope on the site further demonstrates a shift in the urban form and character of the Darling Harbour precinct.</p> <p>On 13 May 2019, the IPC approved an SSD application (SSD 7684) for the redevelopment of Cockle Bay Wharf comprising a commercial building envelope with a maximum height of RL 183 and a maximum tower base and podium height of RL 29. The proposal includes a maximum commercial GFA of 89,000sqm, comprised of 75,000sqm office GFA and 14,000sqm retail GFA. The proposed maximum GFA is 80,800sqm greater than the GFA of the existing Cockle Bay Wharf development (8,200sqm). Approval was also granted for Stage 1 works for demolition of existing buildings and structures.</p> <p>An extract of the indicative reference design is provided at Figure 10. A key factor of support identified by the DPIE in the Assessment Report was the site's <i>“strategic merit, noting it will provide a significant increase to employment generating floorspace, has excellent access to public transport and is conveniently located to the CBD”</i>.</p>	<p>construction of Central Barangaroo. The redevelopment of both sites will be managed by detailed Construction and Environmental Management Plans, to mitigate associated impact. As Cockle Bay is located to the south of Central Barangaroo, and vehicular access is facilitated by traffic routes from the south and west of the Sydney CBD (rather than the primary access routes from the north for Central Barangaroo), the cumulative impact of construction vehicles can be managed.</p> <p>When comparing the maximum height of the approved Cockle Bay building envelope (RL 183), and the proposed maximum building height for the MOD 9 Concept Plan (RL73.7), with the remaining development blocks in Central Barangaroo proposed to be ranging in height from RL38.7 – RL44.5, it is considered the changes to building heights under MOD 9 is appropriate to its western CBD harbour edge context and will not detrimentally impact the visual quality or dominate the scale of development in the area. The similarities of both projects in contributing significant job creation, economic growth and public domain revitalisation are also noted.</p>
<p>Harbourside Shopping Centre</p>	<p>Harbourside Shopping Centre is located at 2-10 Darling Drive, Darling Harbour, and comprises an area of approximately 2.05 hectares.</p> <p>The recent approval of a commercial building envelope on the site further demonstrates a shift in the urban form and character of the Darling Harbour precinct in response to the vision to transform the Pyrmont Peninsula as outlined in the Pyrmont Peninsula Place Strategy.</p> <p>On 28 June 2021, the IPC granted consent to the development application SSD-7874 for the Concept Proposal and Stage 1 works for the redevelopment of Harbourside. The Concept Proposal is for</p>	<p>Concept Approval SSD-7874 will be followed by detailed SSDAs which will seek consent for detailed design, construction and operation of the Harbourside Shopping Centre. While the likely timing of Stage 2 construction is currently unknown it is anticipated the construction of Harbourside will commence prior to the construction of Central Barangaroo. The redevelopment of both sites will be managed by detailed Construction and Environmental Management Plans, to mitigate associated impact. As Harbourside is located to the south-west of Central Barangaroo, and vehicular access is facilitated by traffic routes from the south</p>

Project	Brief Description	Impact on Proposal
	<p>a residential tower, non-residential podium envelope, publicly accessible open space and public domain improvements. The approved building envelope provides a podium and tower form with a maximum height of RL 166.95 and a maximum GFA of 87,000sqm comprising 42,000sqm residential and 45,000sqm non-residential floor space. A design excellence competition will be held to inform the detailed design of the proposal. An extract of the indicative reference design is provided at Figure 10. In assessing the proposal, the DPIE noted the significant uplift in density was consistent with the “<i>emerging character within this part of Darling Harbour</i>” and sited the proposal’s consistency with the Pymont Peninsula Place Strategy vision, contribution to economic growth, job creation and improved public domain as key factors in the approval of the Concept application.</p>	<p>and west of the Sydney CBD (rather than the primary access routes from the north for Central Barangaroo), the cumulative impact of construction vehicles can be managed.</p> <p>When comparing the maximum height of the approved Harbourside envelope (RL 166.95), and the proposed maximum building height of Tower 7 in the MOD 9 Concept Plan (RL73.7), with the remaining development blocks in Central Barangaroo proposed to be ranging in height from RL38.7 – RL44.5, it is considered the proposed changes to building heights under MOD 9 is appropriate to its western CBD harbour edge context and will not detrimentally impact the visual quality or dominate the scale of development in the area. The similarities of both projects in contributing significant job creation, economic growth and public domain revitalisation are also noted.</p>
<p>Blackwattle Bay State Significant Precinct (SPP) Study</p>	<p>The Blackwattle Bay SSP Study presents the vision for the significant transformation of the precinct. The SSP was released by the NSW Government in June 2021 and exhibited until 6 August 2021. The Blackwattle Bay Study Area includes land on the western edge of the Pymont Peninsula and the water of Blackwattle Bay. The future vision for the precinct is communicated in the Blackwattle Bay Precinct Plan, which maximum heights, podium heights, setbacks and GFA for each development lot.</p> <p>The proposed renewal includes delivery of 12 building envelopes allowing for towers up to 45 storeys (RL 156), as well as a total GFA of approximately 234,000sqm comprising 48% for employment and non-residential and 52% for residential uses. Approximately 1550 dwellings for a population of up to 2800 residents is proposed. A 3D model of the proposed massing in the context of the broader context is illustrated in Figure 12. This</p>	<p>When comparing the proposed maximum height of the Blackwattle Bay Precinct (RL156m), and the proposed maximum building height for the MOD 9 Concept Plan (RL73.7), with the remaining development blocks in Central Barangaroo proposed to be ranging in height from RL 38.7 – RL44.5, the proposed changes to building heights under MOD 9 is appropriate its western CBD harbour edge context and will not detrimentally impact the visual quality or dominate the scale of development in the area. The similarities of both projects in contributing significant job creation, economic growth and public domain revitalisation are also noted.</p> <p>The Blackwattle Bay SSP Study outlines the proposed planning framework for the area. Redevelopment will be assessed under future Concept and detailed SSDAs, and as such construction timing is unknown.</p>

Project	Brief Description	Impact on Proposal
	image includes Barangaroo within the background for context.	

Figure 12 Future Development Context of Sydney’s Western Harbour Foreshore



Picture 3 Cockle Bay Redevelopment reference design

Source: DPT Operator



Picture 4 Harbourside Shopping Centre Redevelopment reference design

Source: Mirvac



Picture 5 3D Massing of Blackwattle Bay SSP

Source: NSW Government

3.2. STRATEGIC FRAMEWORK

Optimisation of the government's strategic landholdings within the Barangaroo precinct is critical to the success of the precinct's urban renewal and its contribution to the primacy and prosperity of Greater Sydney. Barangaroo is a key contributor to the identification of Sydney as a global city through the concentration of commercial, retail, residential and cultural uses on the iconic harbour foreshore. As the final centrepiece precinct, Central Barangaroo will only elevate this status and solidify Sydney's position as a global city.

The site is located in the Eastern Harbour City and falls within the "Innovation Corridor", identified as the State's greatest economic asset that is dependent upon the close proximity of employment to housing, transport and a range of cultural, entertainment and leisure activities. The following is obtained from the Eastern City District Plan:

The Eastern City District is vitally important to the success and prosperity of Greater Sydney, NSW and Australia. To remain globally competitive, we need the District to be a magnet for skilled people and innovative ideas from around the world. The District must be a powerhouse of creativity and innovation at all levels.

Evidently there is a clear strategic direction to enhance the integration of land use and transport, increase the utilisation of this infrastructure and to leverage from and develop the established reputation of the Sydney CBD as Australia's financial capital and as a global city. These priorities communicated in State policy align directly with Infrastructure NSW's identified objectives for Central Barangaroo and are the key drivers for submitting MOD 9. The proposal will provide increased employment generating floor space (commercial and retail) with residential density in proximity to existing and planned transport, as well as a sweep of unique recreational and cultural facilities accessible to all. This will boost not only the productivity of the precinct but also its high liveability, international tourist appeal and will maintain the commitment to innovation in sustainability.

The following factors contribute to the strategic need for MOD 9 and demonstrates its close alignment with Government policy:

- Ensure the development framework for Central Barangaroo builds upon the guiding design principles in the Barangaroo Concept Plan;
- Provide additional density and mix of land uses in the form of homes and additional employment generating floor space in an area that benefits from high quality amenity and significant government investment infrastructure, in particular the future Sydney Metro, as well existing train, ferry and bus connections contributing to achieving the "30 minute city".
- Provide additional density and height in an established precinct, without detracting from the existing character of the area or resulting in significant amenity impacts;
- Contribute to creating a great place at Barangaroo via increasing employment, retail and cultural opportunities alongside residential development. The amended building envelopes will allow for a number of great places such as streets for people, an activated ground plane, diversity of publicly accessible open spaces, and an architecturally distinct precinct marker near Barangaroo Station, whilst still retaining a human scale throughout Central Barangaroo;
- Create a new place to arrive in the city, seamlessly integrating Barangaroo Station with Central Barangaroo, Nawi Cove and Barangaroo Reserve and connecting the precinct to metropolitan Sydney;
- Create better activation of and integration with the approved Harbour Park (a major new foreshore public open space) and create a more intimate, urban passive open space (via the realigned Hickson Park) that contrasts to the activity and permeability of the Harbour Park, whilst maintaining the commitment to deliver 50% of Barangaroo as public open space;
- Provide sufficient density to create a genuine vibrant mixed use precinct capable of creating its own distinct identity, character and experience;
- Provide flexibility for a wide variety of future uses, including additional floor space for community and cultural uses, that can enhance the overall diversity of offering, amenity and experience of Barangaroo;
- Create additional public benefit through the public realm activation and a new cultural focus for the Central Barangaroo precinct integrated with the broader city context; and

- Further contribute to the NSW economy as a result of the \$1.4 billion investment in Central Barangaroo. The proposal will result in an additional 1143+ jobs during construction and an additional 1176 jobs during operation. The proposal will transform Central Barangaroo into a significant major employment hub with the opportunity to contribute an additional \$188.7 million to the NSW economy during construction and an additional \$327.4 million to the NSW economy during operation once complete.

Further discussion of the strategic support and alignment of the project with Government strategies, policies and plans is outlined in **Table 9**. This analysis includes the strategic policies and guidelines identified in the DGRs, as well as additional plans and policies where relevant that have since been published.

Table 9 Strategic Policy Context

Document	Guidance	Strategic Alignment
NSW 2021	N/A	The NSW Government has since released its new Premier's Priorities in June 2019 to replace NSW 2021. The proposals consistency with the priorities is detailed below.
NSW Premier's Priorities	<p><i>Greener public spaces: Increase the proportion of homes in urban areas within 10 minutes' walk of quality green, open and public space by 10 per cent by 2023</i></p> <p><i>Greening our city: Increase the tree canopy and green cover across Greater Sydney by planting one million trees by 2022</i></p>	<p>MOD 9 retains the approved Concept Plan provision of 50% of Barangaroo as public open space. This is a key tenet of the broader Barangaroo precinct development and will be maintained with the revised alignment of the Hickson Park boundary to create a more intimate, urban passive open space that contrasts to the activity and permeability of the Harbour Park. Future detailed development applications submitted in accordance with MOD 9 will ensure an extensive use of native landscaping and biophilic design is used in both the public realm and the buildings, to contribute to the amenity and quality of open space within the site.</p> <p>MOD 9 similarly retains the layout and siting of the approved Harbour Park, which as discussed in the Urban Design Report (Appendix E), will consist of a central lawn space defined by a perimeter path network and tree canopy with 'garden rooms' along the edges.</p>
NSW State Infrastructure Strategy (SIS) 2018 – 2031	<i>Infrastructure sectors: transport, culture and tourism</i>	MOD 9 seeks to capitalise on the opportunities available for the Barangaroo precinct that were not accounted for within the approved Concept Plan which predated the approval of Barangaroo Station. MOD 9 delivers on the strategic directions set out in the SIS, integrating increased density in a location with access to transport infrastructure and in an urban renewal location that does not erode the amenity and character of existing communities. MOD 9 remains consistent with these strategic directions, seeking to leverage from the existing significant infrastructure and amenity in this locality to provide increased residential and commercial density in an appropriate location.
NSW Future Transport Strategy 2056	Committed initiatives (10-year): Sydney Metro City and Southwest (including the Barangaroo)	MOD 9 responds to the enhanced opportunities available on the site provided by the Sydney Metro infrastructure. Presently, the approved Concept Plan does not respond to this opportunity and represents a misalignment with the key principle of the Transport Strategy of delivering integrated transport and land use solutions.

Document	Guidance	Strategic Alignment
	Station), Northern Beaches B-Line and South East Light Rail.	<p>MOD 9 seeks to rectify this to ensure the building envelopes, density and land uses in Central Barangaroo better align with the city-shaping significance of the Barangaroo Station infrastructure. These amendments will ensure the visitor experience envisaged for the Barangaroo precinct is commensurate with that of a true 'global city' with efficient transport options, including Barangaroo Station, as well as a walkable and pedestrian friendly public domain.</p> <p>Overall, MOD 9 delivers on the key aim of the strategy through the integration of key land uses and transport to realise the 30-minute city concept and optimise investment in key transport infrastructure.</p>
Draft Metropolitan Plan for Sydney to 2031	N/A	The GSC has since released A Metropolis of Three Cities, which is the current regional strategic plan applying to the Greater Sydney Region. The directions and objectives of the Plan relevant to the proposal is addressed below.
Greater Sydney Region Plan 2018 'A Metropolis of Three Cities' (GSRP 2018)	<i>Infrastructure and collaboration</i>	<p>The proposal will maximise the significant investment in existing and planned transport infrastructure in the Barangaroo precinct. Specifically, the proposal will maximise the site's proximity to the future Barangaroo Station to ensure the social, economic and cultural benefits of this investment is incorporated into the site and surrounding precinct. MOD 9 will ensure these benefits are delivered and that this once in a lifetime generational opportunity is optimised, in specific accordance with Objective 4 of the GSRP 2018 which states "infrastructure use is optimised".</p> <p>Similarly, the proposed provision of co-locating a mix of land uses within the site such as community, cultural, residential, commercial, retail and recreation uses will ensure the significant investment in and benefits of the Barangaroo Station transport infrastructure are realised and utilised by the broader Sydney community.</p>
	<i>Liveability</i>	Central Barangaroo seeks to deliver an iconic waterfront destination with a distinctive civic identity that will be instantly associated with the Harbour CBD and Sydney. It is noted the approved Concept Plan delivers significant improvements and benefits in accordance with the liveability priorities of the GSRP 2018. However, since the approved Concept Plan which predated Barangaroo Station, significant scope has arisen to enhance these outcomes through the provision of additional density within the site, whilst primarily retaining a human low-scale form across Central Barangaroo, with an architecturally distinct tower at its northern edge to mark both the precinct and the Sydney Metro. Specifically, MOD 9 accords with the liveability objectives of the GSRP 2018 as follows:

Document	Guidance	Strategic Alignment
		<ul style="list-style-type: none"> ▪ The proposal supports the creation of a 30-minute city by co-locating housing, employment, transport, recreation infrastructure and other services in a single location that is connected to other centres. ▪ The site is ideally located and able to accommodate increased density as it can provide housing and additional jobs in an established precinct, without detracting from the existing character of the area. ▪ The provision of an improved street network and increased amount of publicly accessible spaces as well as cultural and community uses will provide services and amenities to benefit and serve the community. ▪ The allocation of up to 19,000sqm of community uses to the RE1 Zone, including the allocation of up to a maximum of 18,000sqm (below ground) to the Cutaway, which will unlock the potential of the Cutaway as an important cultural facility. ▪ MOD 9 will strengthen the focus on employment generating and community uses in Central Barangaroo through the proposed decrease of 1,000sqm or 0.5% of the total residential GFA. Despite this, MOD 9 retains a commitment to the Homes for Homes strategy, which seeks to donate 0.1% of the sale price of each residential dwelling to deliver affordable housing in a variety of locations. ▪ It will continue the renewal of an underutilised precinct to create an iconic place for residents, employees and visitors alike. ▪ The approved Concept Plan for Barangaroo conserves and enhances heritage, and MOD 9 will continue this approach. The impact on heritage items and outlooks have been assessed as discussed in Section 9.8, which concludes the proposed modification will not adversely impact the heritage significance of heritage items in the surrounding context, ensuring the ongoing appreciation of the role environmental heritage plays in Greater Sydney.
	<p><i>Productivity</i></p>	<p>As recognised in the GSRP 2018, Greater Sydney’s international tourist appeal significantly boosts productivity through instantly recognisable icons including the Sydney Harbour Bridge and Sydney Opera House. MOD 9 seeks to positively contribute to the internationally recognised Barangaroo precinct and will ensure the harmonious integration of Barangaroo South with Central Barangaroo through to the new Barangaroo Station and the public landscape of Barangaroo Reserve and the waterfront (in particular the Harbour Park and Nawi Cove).</p>

Document	Guidance	Strategic Alignment
		<p>The delivery of additional density and building height on the waterfront as proposed within MOD 9 will reinforce the identity of Greater Sydney as a centre for economic, cultural, and social activity in an iconic setting. This will reinforce Sydney's role as a global city and strengthen the competitiveness and productivity of the Harbour CBD, in direct accordance with objective 18 of GSRP 2018. The proposed increase in building height and total GFA will deliver additional yield for a wider variety and flexibility of uses, which will accordingly provide for an increase in employment opportunities, productivity and business activity in the region's key business centre. This is a considerable outcome and benefit to Greater Sydney that cannot be missed and will help Sydney and NSW on its way to an economic recovery post the COVID pandemic as a result of the \$1.4 billion investment in Central Barangaroo. The proposal will result in an additional 1143+ jobs during construction and an additional 1176 jobs during operation. The proposal will transform Central Barangaroo into a significant major employment hub with the opportunity to contribute an additional \$188.7 million to the NSW economy during construction and an additional \$327.4 million to the NSW economy during operation once complete.</p> <p>Furthermore, the proposed modification will deliver the integration of high frequency public transport with a range of commercial, retail, community and residential land uses in a vibrant mixed-use precinct. The concept plan approval did not specifically consider the location of Sydney Metro stations within the site, which MOD 9 seeks to rectify in accordance with the '30 minute' city principles of the GSRP 2018.</p>
	<p><i>Sustainability</i></p>	<p>Sustainability is a key driver for the Central Barangaroo precinct, and it is Infrastructure NSW intention to deliver a globally recognised, exemplar sustainable urban precinct. As discussed in the ESD Strategy at Appendix N and Section 7.17, the design, construction and operation will be guided by the Central Barangaroo Sustainability Strategy (CENSuS) which provides an overarching framework for all sustainability aspects of the project. The focus of this framework is climate positive, water positive, nature positive and people positive, with a number of key sustainability initiatives proposed within these key pillars. MOD 9 retains these sustainability initiatives.</p> <p>MOD 9 retains the commitment to 50% of Barangaroo as public open space and proposes amendments that seek to improve the activation, identity and experience of parklands within the site.</p>
<p>Draft Sydney City Sub-</p>	<p>N/A</p>	<p>The Eastern City District Plan applies to the Harbour CBD (including Barangaroo), replacing the Draft Sydney Sub-Regional Strategy entirely. Therefore, the directions and planning priorities</p>

Document	Guidance	Strategic Alignment
Regional Strategy		in the Eastern City District Plan relevant to MOD 9 are addressed below.
Eastern City District Plan	<i>E1 Planning for a city supported by infrastructure</i>	<p>The site is within an area that benefits from a great network of public transport infrastructure and MOD 9 seeks to better optimise infrastructure use and investment.</p> <p>Future detailed SSDAs will also provide a physical setback to the Sydney Metro tunnel and Barangaroo Station entrances within the site, to ensure there is no physical conflict and that this transport corridor can safely operate.</p> <p>MOD 9 considers the provision of utility infrastructure such as gas, communication, water and electrical supply within the site. These utilities will be provided to appropriately balance the increased population density within the CBD with necessary infrastructure investment. Further discussion of the services and utility infrastructure is provided within the Utilities and Infrastructure Report at Appendix M.</p>
	<i>E2 Working through collaboration</i>	<p>Infrastructure NSW has demonstrated a willingness to cooperate and collaborate with stakeholders to establish appropriate site controls and accordingly develop the site to its best potential with minimal impact. This coordination will continue through assessment to achieve the most appropriate land use outcome for the site and broader Barangaroo precinct.</p>
	<i>E3 Providing services and social infrastructure to meet people's changing needs</i>	<p>The modification application seeks to allocate a minimum of 6,000sqm and up to 18,000sqm of GFA within the Cutaway for a multi-function cultural and exhibition facility. The delivery of this cultural infrastructure will support the vibrancy and activation of the precinct.</p>
	<i>E4 Fostering healthy, creative, culturally rich and socially connected communities</i>	<p>The proposed amendments to the public domain and open space component of Central Barangaroo will retain the commitment to delivery of 50% of Barangaroo as public open space. MOD 9 will provide for a range of passive and active public open spaces and publicly accessible space with a distinctive identity.</p>
	<i>E5 Providing housing supply, choice and affordability with access to jobs, services and public transport</i>	<p>MOD 9 seeks to provide flexibility in the provision and distribution of land uses within the precinct, including the provision of residential floor space within Block 7, with potential for residential in Blocks 5 and 6. This will provide for a permanent residential population within Central Barangaroo that will provide activation within the precinct through the day and evening. The provision of high-value residential development will also fund the delivery of other public benefits within Central Barangaroo, as discussed in the Housing Strategy (Appendix L).</p>
	<i>E6: Creating and renewing great places</i>	<p>MOD 9 seeks to better shape a new urban identity and character for the Central Barangaroo precinct that differs to the adjacent</p>

Document	Guidance	Strategic Alignment
	<p><i>and local centres, and respecting the District's heritage</i></p>	<p>Barangaroo South and Barangaroo Reserve. As discussed in the Urban Design Report (Appendix E), Hassell have focussed on place making and urban design to ensure the precinct functions effectively and accommodates the needs of all users. This includes consideration of the urban design of public spaces, streets and parks, and the interface of these spaces with private commercial, retail and residential land uses.</p> <p>The proposal will contribute to the high quality of architectural excellence within the District through the implementation of the Design Excellence Strategy (Appendix Z). This strategy will seek to deliver design excellence, to contribute to the architectural diversity and cultural richness of the CBD.</p> <p>The proposal also seeks to contribute to the historic layering of the streetscape and contribute to an evolving urban context. As discussed in the Heritage and Archaeological Assessment (Appendix S), the proposed concept modifications are consistent with and will not adversely affect the heritage significance of surrounding items. Refer to further discussion in Section 7.9.</p>
	<p><i>E7: Growing a stronger and more competitive Harbour CBD</i></p> <p><i>E8 Growing and investing in health and education precincts and the Innovation Corridor</i></p> <p><i>E11: Growing investment, business opportunities and jobs in strategic centres</i></p> <p><i>E13: Supporting growth of targeted industry sectors</i></p>	<p>MOD 9 is proposed in direct response to these priorities. The approved Concept Plan currently fails to capture the strategic productivity and employment opportunities available for this site. The proposed amendments to deliver additional density on the site will enhance the District's (and broader region's) economy through provision of a greater range of employment-generating land uses, services and attractions.</p> <p>The provision of additional floor space for community and cultural uses will provide an improved offering in a vibrant and accessible location and will support the prominence of the Innovation Corridor.</p> <p>The visitor economy is a targeted industry sector identified in the District Plan, contributing \$15.4 billion to the NSW economy in 2014-2015. The proposal demonstrates a significant contribution to this economy through contributing to the Barangaroo precinct, an internationally recognised urban precinct and key tourism attraction for the District.</p>
	<p><i>E10: Delivering integrated land use and transport planning and a 30-minute city</i></p>	<p>The delivery of a better integrated land use and transport solution within the site is the key driver for MOD 9. MOD 9 seeks to increase the permitted density on the site and the siting, location and massing of the building envelopes to facilitate the future integrated design and development surrounding the Barangaroo Station. This amendment will ensure the efficient and optimal use of land surrounding the future Barangaroo Station through the co-location of compatible land uses with a Metro station.</p>

Document	Guidance	Strategic Alignment
		MOD 9 will optimise public investment in transport infrastructure through supporting increased patronage of the Sydney Metro service and associated behavioural change towards public transport use, arising from the convenient proximity of the future Barangaroo Station to adjacent land uses and services.
	<i>E14: Protecting and improving the health and enjoyment of Sydney Harbour and the District's waterways</i>	MOD 9 retains an expansive public open space along the Sydney Harbour foreshore and Central Barangaroo will continue to contribute toward increasing tree canopy and access for future site users to these key areas.
	<i>E19: Reducing carbon emissions and managing energy, water and waste efficiently</i>	The site will continue to be one of the world's leading sustainable urban developments and Australia's first large-scale carbon neutral community. MOD 9 will not alter this.
NSW Public Spaces Charter	Increase the proportion of homes in urban areas within 10 minutes' walk of quality green, open and public space by 10 per cent by 2023 and will ensure an ongoing commitment to quality public space in NSW.	Central Barangaroo is an exemplar project for the Charter providing an abundance of diverse public spaces integrated with commercial, retail and residential land uses. MOD 9 retain various approved green open spaces including Nawi Cove, Harbour Park (including various pavilions), Wulugul Walk and a modified Hickson Park. Central Barangaroo also provides various opportunities for the delivery of new public domain spaces throughout the development blocks (final form, location and function subject to future detailed SSDAs). The Urban Design Report prepared by Hassell (Appendix E) outlines the reference scheme for the various public spaces and establishes design guidelines to support the future detailed design and construction of these public spaces.
Sustainable Sydney 2030	<i>Green</i>	The vision for Central Barangaroo is to be a globally recognised exemplar in sustainable urban development delivering positive outcomes for climate, water, nature and people. The development of Central Barangaroo in accordance with the CENSuS will similarly promote the sustainability leadership of the broader city and allow Sydney to be a leader in environmental and economic performance. MOD 9 does not alter this.
	<i>Global</i>	Sustainable Sydney identifies the importance of global connections, prominence, and competition to the identification of Sydney as a global city. The importance of creating the "right conditions" to compete within a global context is discussed in Sustainable Sydney as a key consideration. MOD 9 will ensure that the Central Barangaroo precinct delivers upon these opportunities and will facilitate an urban environment that is globally recognised and identifiable with Sydney. The proposed building height and density increase will allow for additional

Document	Guidance	Strategic Alignment
		<p>commercial, retail and visitor floor space within the precinct to accommodate for business interactions and commercial development opportunities.</p> <p>The proposed allocation of additional floor space within the Cutaway for a cultural and exhibition facility will ensure Sydney's cultural amenity and diversity is on par with other global cities, whilst also supporting the wellbeing of residents through cultural activity, creative expression and opportunities for participation. The provision of these uses will be informed by the Community and Cultural Spaces Strategy for Barangaroo prepared by JOC Consulting (Appendix Y), which analyses the Barangaroo community profile, future growth projections and trends, and identification of community values to ensure future uses respond to the community's need.</p>
	<i>Connected</i>	<p>Central Barangaroo will promote both inter- and intra-site connectivity to ensure the precinct is accessible and integrated with the surrounding context. MOD 9 retains this connectivity and utilises streets as visual and physical connectors to create a permeable and walkable precinct. The conversion of Barton Street to a permanent street will improve the traffic network in the entire Barangaroo precinct. The removal of uncontrolled vehicular traffic from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6 puts a greater priority on cyclists and pedestrians on Barangaroo Avenue with whilst still ensuring the precinct can be appropriately serviced with controlled service vehicle access along Barangaroo Avenue.</p>
Draft Central Sydney Planning Strategy	N/A	<p>Central Barangaroo is situated immediately to the west of Central Sydney. Central Barangaroo is governed by the SSP SEPP and therefore, is outside the scope of the draft Strategy and SLEP 2012. However, it is noted MOD 9 is in direct alignment with the objectives of the draft CSPA and the objective to unlock additional capacity for economic and employment growth, whilst retaining the amenity, heritage and character of the Sydney LGA.</p>
Sydney City Centre Access Strategy 2013	The Access Strategy seeks to connect Barangaroo to the city centre and broader Sydney transport network.	<p>MOD 9 is consistent with the Access Strategy as the proposal will benefit from several identified transport initiatives, most of which have already been constructed since the Strategy was developed and are now operational. MOD 9 will equally support the investment in the infrastructure by an increase in capacity.</p>
Sydney's Walking Future 2013	Seeks to create a culture of walking for transport by promoting walking as a viable and attractive transport choice.	<p>Consistent with the approved Concept Plan, MOD 9 seeks to deliver a user-friendly public domain that prioritises pedestrians, cyclists and visitors to the precinct. The proposed modification to Barton Street to create a permanent street will retain this priority through urban design and management strategies such as provision of a kerb and footpath on both sides of the carriageway</p>

Document	Guidance	Strategic Alignment
		<p>to define the pedestrian environment, and a slow speed traffic environment to allow for ease of pedestrian access to the adjoining Hickson Park. Further, as a result of Barton Street becoming a permanent Street, Barangaroo Avenue will become more pedestrianised with the removal of unrestricted vehicular traffic from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6. Controlled service vehicle access will be retained along Barangaroo Avenue. Built form measures such as awnings, building cantilevers and active frontages will similarly improve the amenity of the Central Barangaroo street network for pedestrians. These detailed design measures will be developed as part of subsequent detailed SSDAs, however, are considered as part of MOD 9 to demonstrate a continued commitment to pedestrians within the precinct.</p>
<p>Sydney's Cycling Future 2013</p>	<p>Seeks to facilitate improved bicycle networks as an integrated component when planning for new transport and infrastructure projects.</p>	<p>Central Barangaroo encourages cycling through the delivery of the Hickson Road bi-directional cycleway as well as Hickson Road mixed traffic cycling environment. These cycleways will be supported by bicycle parking in the public domain of Central Barangaroo as well as bicycle parking and end-of -trip facilities within the buildings (with the rates consistent with the relevant Statement of Commitments). Further details on the design of these facilities will be provided as part of future detailed applications. MOD 9 does not alter these commitments.</p>

4. PROJECT DESCRIPTION

4.1. PROJECT OVERVIEW

This modification application (**MOD 9**) seeks consent for modifications to the approved Barangaroo Concept Plan MP06_0162 (as modified by MOD 11) (**approved Concept Plan**) in relation to Central Barangaroo, Barangaroo Reserve (Cutaway only) and Barangaroo South (Barton Street and Hickson Park only). Specifically, this will result in modification to the approved Concept Plan for Blocks 5, 6 and 7, revision to the Instrument of Approval and Statement of Commitments, and concurrent amendments to the State Significant Precincts SEPP as it applies to Barangaroo.

The MOD 9 proposal provides a built form and density within an iconic harbourside location that is commensurate with Sydney's identity as a global city. MOD 9 capitalises upon significant State Government investment in public transport infrastructure (Barangaroo Station) and the public benefit opportunities afforded to the site given its locational context and existing amenity on the City's western foreshore edge.

The MOD 9 proposal will ensure Barangaroo achieves the intent, principles and objectives established by the approved Concept Plan and anticipated by the local and global community.

In summary, to facilitate the development potential for Central Barangaroo, MOD 9 proposes the following amendments to the approved Concept Plan:

- An increase in total permissible GFA from 602,354sqm to 708,041sqm, comprising the following proposed within Central Barangaroo and Barangaroo Reserve (refer **Section 4.5.3**):
 - Up to 116,189sqm of above ground GFA, primarily within the B4 Mixed Use zone of Blocks 5, 6 and 7 (including a maximum of 28,000sqm of residential GFA);
 - Up to 28,166sqm of below ground GFA, primarily within the B4 Mixed Use zone of Blocks 5, 6 and 7;
 - A minimum of 2,800sqm of Community uses GFA within Blocks 5, 6 and 7; and
 - A minimum of 6,000sqm and maximum of 18,000sqm of Community uses GFA within the RE1 Zone of Barangaroo Reserve to allow for future community / cultural facilities located in the Cutaway.
 - An allocation of 1,000sqm GFA for potential community uses within the RE1 Zone.
- A re-adjustment of the Block 5 southern boundary and building envelope towards the alignment prior to the MOD 8 approval, whilst providing building setbacks to both Barangaroo South and Hickson Park.
- Modifications to Barangaroo's movement network, including the removal of vehicular traffic from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6 with controlled service vehicle access only, and converting Barton Street as a permanent street connecting Barangaroo Avenue with Hickson Road, servicing the wider Barangaroo precinct (refer **Section 4.6**).
- Modifications to the approved building envelopes of Blocks 5, 6 and 7 including additional height, block alignments, additional GFA and flexible allocation of GFA across the blocks.
- Introduction of Design Guidelines for Central Barangaroo to guide future detailed proposals (refer **Section 4.9** and **Appendix E**).
- Consequential amendments to the State Significant Precincts SEPP to support modifications to the Barangaroo Concept Plan (MOD 9) for Central Barangaroo (refer **Section 4.11** and **Appendix AA**),
- Modifications to the current Instrument of Approval (refer **Section 4.3** and **Appendix C**), and
- Revisions to the Barangaroo Concept Plan Statement of Commitments (refer **Section 4.10** and **Appendix B**).

Pursuant to clauses 3BA(3) and 3C(1), of Schedule 2 of the STOP Regulation, MOD 9 remains a modification request under Section 75W of the EP&A Act as the request to modify. Accordingly, MOD 9 of MP06_01620 is made under the former Section 75W of the EP&A Act and seeks to modify the approved Concept Plan. Future separate detailed approval will be sought for the design, construction and operation of the site. Further discussion of the proposed modifications is contained in the following sub-sections of the EAR, the Urban Design Report at **Appendix E** and the specialist consultant documentation appended to this EAR.

MOD 9 proposes amendments to the most recent Instrument of Approval and Statement of Commitments to reflect the modified Concept Plan. The proposed amendments to the Statement of Commitments is provided at **Appendix B** and the modified Instrument of Approval is provided at **Appendix C**.

4.2. PROPOSED MODIFIED PROJECT SUMMARY

An overview of the proposed modifications to the relevant components of the approved Concept Plan is summarised in **Table 10**. Refer to the modified Instrument of Approval at **Appendix C** for further details.

Table 10 Modified project numeric summary table

Component	Approved Concept Plan	Modified Project (MOD 9)
Project Area	22 ha	22 ha
Capital Investment Value	\$1.5 billion	\$7.3 billion
<u>Maximum Building Envelope Height</u>		
Block 5	RL 34	RL 14.95 – RL 44.5 (max. 10.5m increase)
Block 6	RL 29	RL 35 – RL 38.7 (max. 9.7m increase)
Block 7	RL 35	RL 15 – RL 73.7 (max. 38.7m increase)
<u>Gross Floor Area</u>		
Residential Uses	191,031sqm	190,031sqm (1,000sqm decrease)
Tourist Uses	76,000sqm	76,000sqm (no change)
Retail Uses	34,000sqm	71,800sqm (37,800sqm increase)
Active Uses	5,000sqm	5,000sqm (no change)
Community Uses (within development blocks and RE1 zone)	12,000sqm (minimum) <i>This includes 2,000sqm within Block 6 or 7 (or other block approved by the Secretary)</i>	Minimum of 14,400sqm (minimum 2,400sqm increase) <i>This includes 2,800sqm within Central Barangaroo (800sqm increase)</i>
GFA distribution	No redistribution of GFA for buildings within Blocks 5, 6 and 7	Flexible allocation of GFA permitted for buildings within Blocks 5, 6 and 7 (whether above or below ground)
Wintergardens	N/A – Blocks 5, 6 and 7 Wintergardens may be excluded from the maximum residential and tourist GFA stipulated for Blocks 4A, 4B and Block Y.	Permit wintergardens to be excluded from the maximum residential and commercial GFA for Blocks 5, 6 and 7, in addition to Blocks 4A, 4B and Block Y.

Component	Approved Concept Plan	Modified Project (MOD 9)
<u>Block and Street Alignment</u>		
Block 5 Alignment	Footprint and building envelope of Block 5 remain within the B4 zoned land	Block 5 to be within the revised boundary of the B4 Mixed Use zoned land facilitated by the proposed SSP SEPP amendment
Hickson Park	Defined by the boundaries of Block 4A and 4B, Block 5, Hickson Road, Glebe Street and Barangaroo Avenue	Redefined Hickson Park boundary to reflect the reinstatement of the Block 5 southern boundary prior to the MOD 8 approval
	Not overshadowed by built form over an average area of 2,500sqm between the hours of 12:00 and 14:00 on the 21 June each year	Not overshadowed by built form over an average area of 3,500sqm between the hours of 12:00 and 14:00 on the 21 June each year
Barton Street	Temporary road for construction and non-construction vehicles	Permanent road for public use

MOD 9 proposes modifications to increase the building envelope heights and GFA allocations, built form with respect to development block layouts / alignments and changes to the street and movement network. In addition to, and as a result of these changes to existing elements of the approved Concept Plan (primarily the modulated building forms), MOD 9 facilitates the potential to deliver new publicly accessible urban spaces and public domain areas within the development blocks (such as the Barangaroo Steps) which are subject to future detailed design and approvals.

In principle, and consistent with the approved Concept Plan, MOD 9 also retains the commitment to deliver a pedestrian bridge over Hickson Road which connects Central Barangaroo to High Street and Millers Point. The precise location, design and function of this bridge will be articulated as part of future detailed SSDAs.

The potential nature and location of these conceptual elements as envisaged under the Urban Design Report are discussed further in this section of the EAR to demonstrate how these elements could be delivered in future SSDAs.

4.3. PROPOSED MODIFIED DEVELOPMENT DESCRIPTION

The modifications to the approved Concept Plan require amendments to Schedules of the Instrument of Approval, including the development description and relevant conditions of consent. The Instrument of Approval was last modified as part of MOD 11 on 22 October 2020.

As a result of the amendments previously outlined, the Condition 'A1 Development Description' of the approved Concept Plan for Barangaroo (MP06_0162) will be modified by MOD 9, as follows:

(1) A mixed-use development involving a maximum of ~~602,354~~ **708,041** sqm gross floor area (GFA), comprised of:

- f) a maximum of ~~191,031~~ **190,031** sqm of residential GFA of which a maximum of 162,031 sqm will be in Barangaroo South;
- g) a maximum of 76,000 sqm of GFA for tourist uses of which a maximum of 59,000 sqm will be in Barangaroo South;
- h) a maximum of ~~34,000~~ **71,800** sqm of GFA for retail use of which a maximum of 30,000 sqm will be in Barangaroo South;

- i) a maximum of 5,000sqm of GFA for active uses in the Public Recreation zone of which 3,500 will be in Barangaroo South; and
- j) a minimum of ~~12,000~~ **14,400sqm** GFA for community use.

The modifications to the description of development and other relevant conditions of consent are outlined in **Appendix C** which includes a “marked up” version of the latest Instrument of Approval and the justification for the proposed changes.

4.4. URBAN DESIGN PRINCIPLES AND DESIGN STRATEGY

The planning and concept design development undertaken for Central Barangaroo, since approval of MOD 8 in June 2016, has provided a greater understanding of the site opportunities and constraints. This has enabled MOD 9 to better respond to the site constraints and opportunities, providing a more permeable precinct with a finer grain network of publicly accessible open space opportunities and a conceptual built form outcome which more appropriately responds to and is better integrated with the high frequency metro, Barangaroo Station.

As the final stage of the Barangaroo renewal project, the design strategy for Central Barangaroo has established a set of key urban design principles which build upon the planning, design, development and key principles of the approved Concept Plan. The urban design principles outlined within the Urban Design Report prepared by Hassell (**Appendix E**) are as follows:

1. *Connect with the continuous harbour foreshore walk*
2. *Create major foreshore public spaces*
3. *Establish a new city gateway and new “front doors” for Barangaroo*
4. *Establish a network of connected streets and paths*
5. *Create Hickson Road as the civic address*
6. *Create a transit enhanced precinct which optimises metro station access with new uses and activities*
7. *Create a permeable, integrated, diverse and active place*
8. *Define a distinctive city precinct, with well scaled built form response*
9. *Respect city and harbour views*

To realise these urban design principles, the MOD 9 design strategy seeks to:

- Improve the movement network and better define the network of parks,
- Provide opportunities for the creation of new publicly accessible open spaces and public domain areas within development blocks which are subject to future detailed design and SSDAs., and
- Integrate and shape the built form response.

The MOD 9 structure plan proposes improvements to the street and movement network by redirecting and reducing the impact of vehicular traffic. Primarily, this involves extending Harbour Park to the built edge of the development and removing vehicle traffic from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6 (excluding controlled service vehicle access). It also includes converting Barton Street to a permanent two-way vehicular street and realigning Streets C and D to frame the revised development block alignments.

This will create a finer grain network of activated streets and provides an enhanced pedestrian environment with greater movement, amenity and safety, allowing for the delivery of better-quality public spaces.

MOD 9 incorporates amendments to the built form, massing and modulation of the Central Barangaroo building envelopes in contrast to the solid massing under the approved Concept Plan. This will enable the provision of new street typologies, pedestrian connections, urban spaces and future buildings which are responsive to context and opportunity.

MOD 9 incorporates amendments to the built form, massing and modulation of the Central Barangaroo building envelopes in contrast to the solid massing under the approved Concept Plan. This will enable the provision of new street typologies, pedestrian connections, urban spaces and future buildings which are

responsive to context and opportunity. In particular, the modulated built form provides the opportunity for the delivery of new potential publicly accessible open space and public domain areas throughout the site. The Urban Design Report envisages how these potential publicly accessible open space elements could be potentially delivered in the form of Nawi Terrace, Barangaroo Steps and Barton Plaza. However, it is important to note that MOD 9 does not seek consent for these spaces and the final quantum of publicly accessible open space, form, location and function of publicly accessible spaces within the development blocks will be subject to detailed design within future SSDAs.

The modified building envelopes also propose increases in height and GFA. These increases seek to deliver a genuine mixed-use precinct that supports an intensity of commercial, retail, residential and community uses which capitalise on the proximity to, and integration with, Barangaroo Station, Sydney Harbour and the surrounding network of parklands.

The following sub-sections **4.5 to 4.12** provide a detailed description of MOD 9 in accordance with 'Key Issues' items 2, 3 and 4 of the DGRs, with particular regard to the urban design and built form, land uses, streetscape and public domain and future development guidelines. The description of MOD 9 with regards to these DGR items is supplemented by the assessment provided in **Section 7** of the EAR.

4.5. BUILT FORM AND USE

4.5.1. Building Envelope

MOD 9 is seeking consent for amended building envelopes in Central Barangaroo for the proposed development blocks. The MOD 9 Urban Design Report establishes amended building envelopes for each of the three development blocks in Central Barangaroo (5, 6 and 7) which respond to the site analysis, and site constraints and opportunities, leveraging off the significant once in a lifetime opportunity provided by the future Sydney Metro, Barangaroo Station. The amended building envelopes increase the overall GFA and height of the approved concept building envelopes.

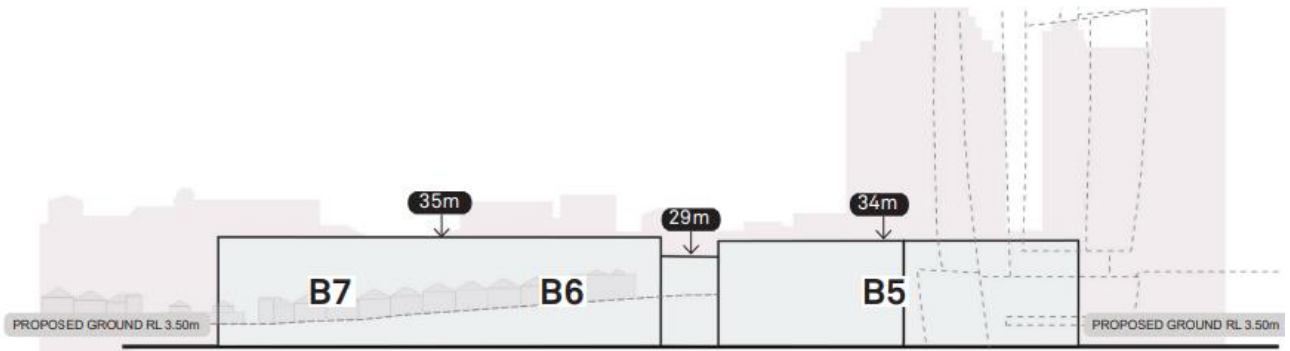
The proposed amended building envelopes will:

- Embody the principles in the approved Concept Plan and achieve the established MOD 9 urban design principles for Central Barangaroo,
- Retain the visual and physical east-west connections through the site,
- Capture the strong framing of the Harbour Park along the site's western boundary and Hickson Park along the site's southern boundary,
- Provide a distinct yet integrated address to the public domain which will blur the distinction between public and private, and invite activity into the site;
- Enable an increase in the height and commensurate floor space increase appropriate to its locational context on the western CBD edge with excellent access to public transport (including a planned high frequency Metro), shops, services and the CBD, without detracting from the existing character of the area; and
- Create landmark buildings that define the northern and southern ends of the precinct with new arrival destinations to Central Barangaroo; and
- Ensure the height of buildings in Central Barangaroo are more varied than those under the approved Concept Plan to enable better articulation in built form and massing at an appropriate scale.

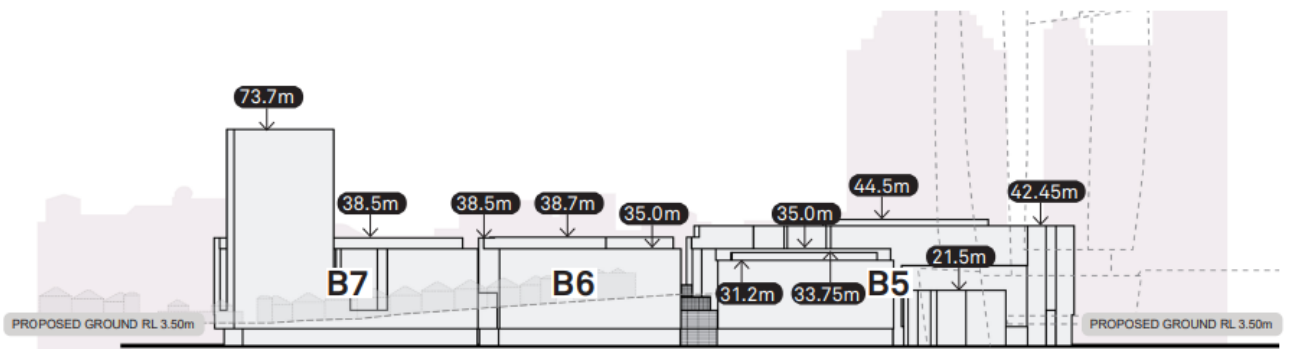
The amended building envelope has been designed to capitalise on the integration with Barangaroo Station being developed adjacent to the north of the site and to respond to the contextual setting of existing open space to the north and west (Barangaroo Reserve and Harbour Park), significant built form to the south in Barangaroo South and south-east, and lower-scale built form to the east.

A visual comparison of the approved and MOD 9 proposed building envelope for Blocks 5, 6 and 7 are illustrated in **Figure 13** below. This demonstrates the more articulated and modulated built form proposed under MOD 9, as opposed to the solid massing currently approved which provides minimal articulation in built form.

Figure 13 Comparison of approved and proposed building heights / block alignments (west section plan)



Picture 6 Approved building height Section Plan (MOD 8 approval)

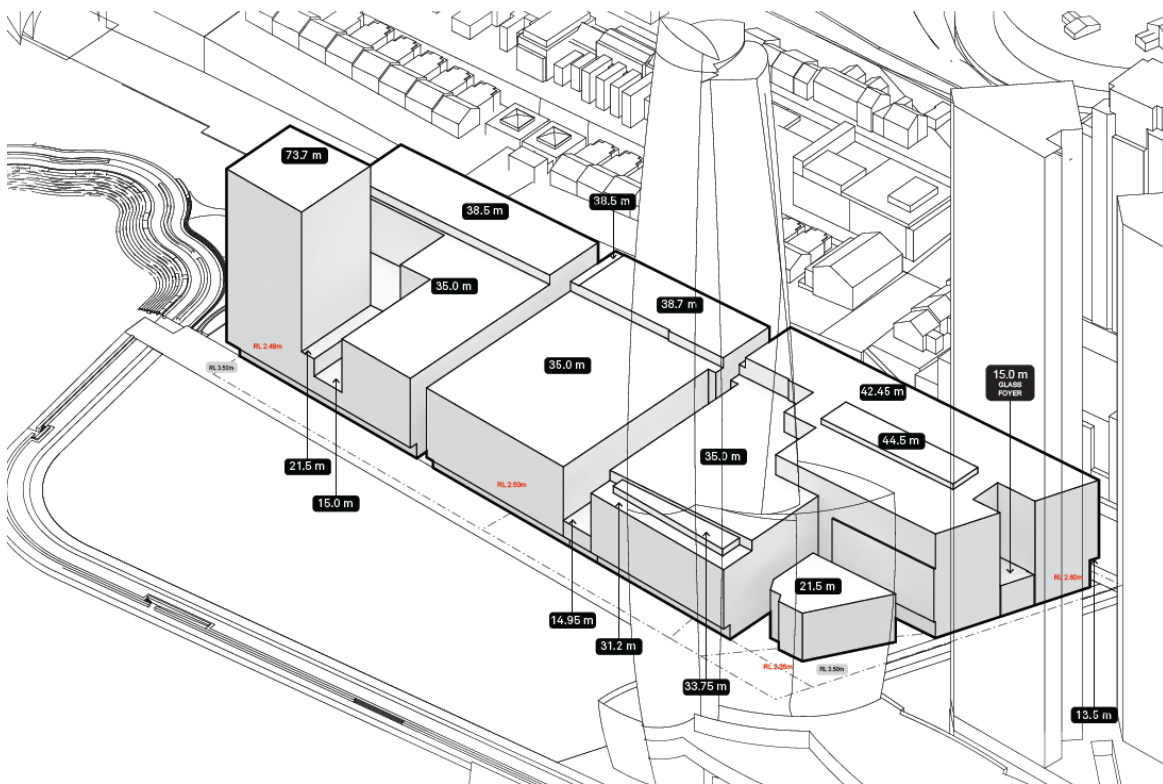


Picture 7 Proposed building height Section Plan

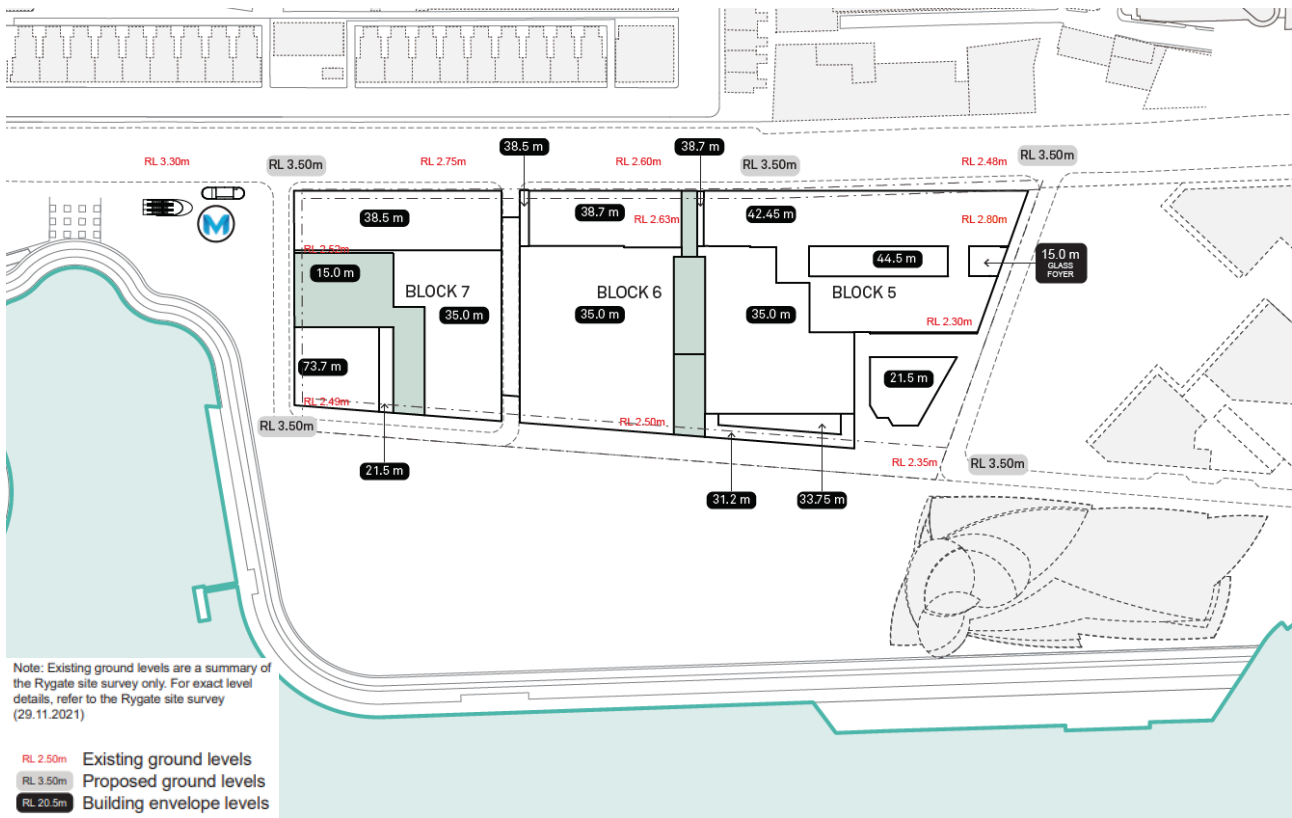
Source: Hassell

An axonometric and plan view of the amended building envelope configuration is illustrated in **Figure 14**.

Figure 14 Proposed Building Envelope



Picture 8 Axonometric view from south-west



Picture 9 Site Plan of proposed building envelope

Source: Hassell

4.5.2. Building Height and Block Alignment

Proposed Building Envelope Height Changes

The proposed building heights have been sensitively developed to preserve both public and private views, including views towards the harbour, the City, and key landmarks from surrounding buildings and public vantage points. The proposed heights seek to maintain the amenity of the surrounding area through respecting solar access and view outlook.

MOD 9 seeks to vary the buildings heights for Central Barangaroo under the approved Concept Plan and necessitates an amendment to the Barangaroo Height of Buildings Map (refer **Section 4.11**), which only allocates one maximum building height RL for each of the three development blocks, including, Block 5 – RL 34m, Block 6 – RL 29m and Block 7 – RL 35m.

A comparison of the approved Concept Plan building envelope heights and the proposed heights are outlined in **Table 11**. It is noted that the ground level is sited at RL 3.5m as outlined within the Urban Design Report.

Table 11 Summary comparison of approved and proposed building heights

Block	Approved Max Height	Proposed Max. Height (MOD 9)
Central Barangaroo		
Block 5	RL 34	RL 14.95 – 44.5 (max 10.5m increase)
Block 6	RL 29	RL 35 – 38.7 (max 9.7m increase)
Block 7	RL 35	RL 15 – 73.7 (max 38.7m increase)

The changes proposed to the building heights across Blocks 5, 6 and 7 provide a balanced response which better modulates the building envelope to guide future detailed development proposals and facilitates the pivotal role of Central Barangaroo as the final important piece of Barangaroo.

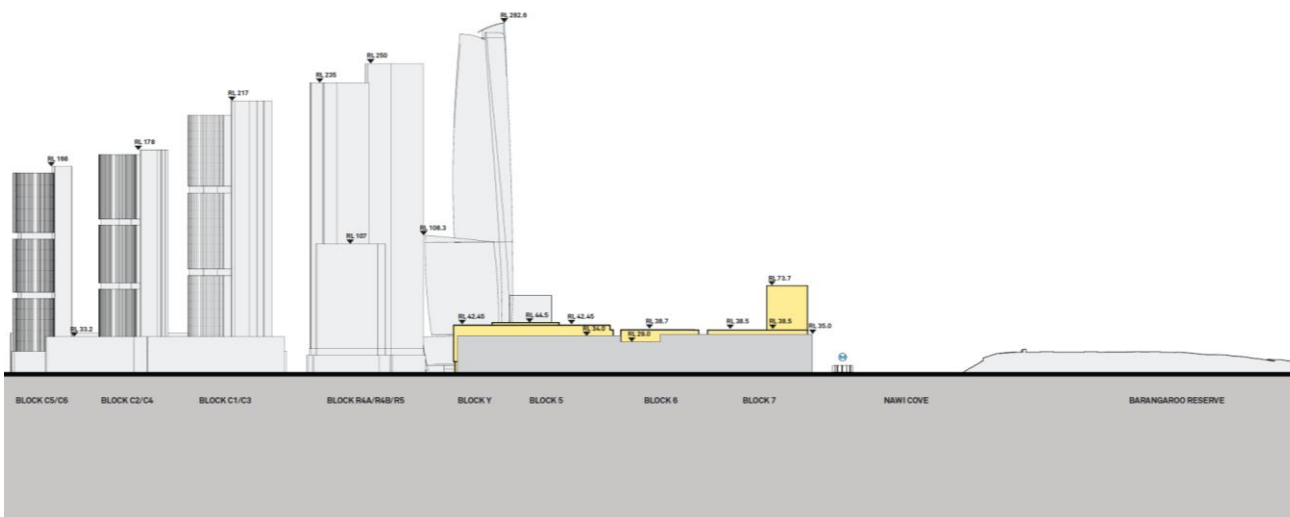
The proposed building height for Block 5 is predominantly RL 42.45m at Hickson Road, rising to a maximum of RL 44.5m in the centre of the block. The Block 5 height then steps down from Hickson Road towards Barangaroo Avenue and the foreshore to a varied height between RL 31.2m, RL 33.75m and RL 35m. The height of the retail flagship building on the south-west corner of Block 5 is reduced from 34m to 21.5m to create a landmark which respects the significance of this pedestrian gateway to and from Hickson Park and Harbour Park.

Block 6 steps down from RL 38.7m at Hickson Road towards the foreshore and Barangaroo Avenue where the approved maximum building height of RL 35m is maintained.

The most significant change to building heights occurs in Block 7 where variable building heights are proposed in response to the surrounding context and opportunities afforded to the site by the new Barangaroo Station. A slight increase in height from RL 35m to RL 38.5m is proposed along the Hickson Road frontage between Street C and D. Along the frontage with Street C and Barangaroo Avenue, the current approved height of RL 35m is maintained. The maximum building height in the centre of the block is reduced from RL 35m to RL 15m to enable the potential creation of a publicly accessible space, contemplated under the Urban Design Report as Nawi Terrace.

In the north-western portion of Block 7 at the intersection of Barangaroo Avenue and Street D, a maximum height of RL 73.7m is proposed. This facilitates a future taller built form element which defines the entrance to the site at Nawi Cove and capitalises on this location by providing an opportunity to deliver a landmark, architecturally distinctive building which will exhibit a high quality design and acts as a marker to the Central Barangaroo precinct and Barangaroo Station.

Figure 15 Proposed Changes to Building Heights Across the Barangaroo Precinct



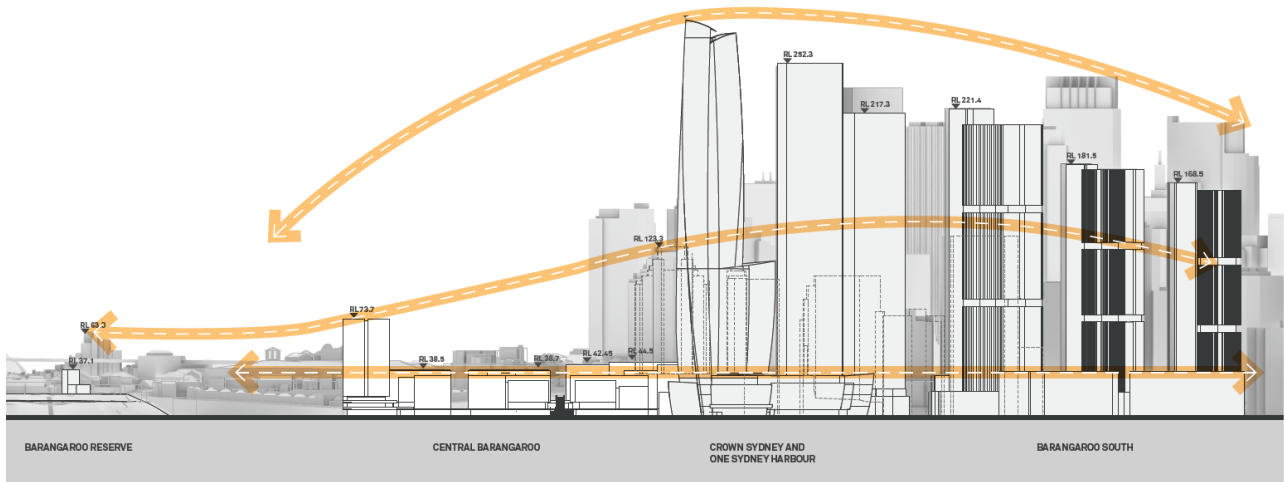
Source: Hassell

The figure below illustrates the proposed modulated building envelope in the context of surrounding built form, providing a perspective of the low-scale nature of MOD 9 within the broader locality.

As illustrated in **Figure 16** the extent of the proposed height increase in Central Barangaroo is minor in comparison to the significant scale of the surrounding precinct, particularly Barangaroo South. This is discussed further in **Section 7.2**, **Section 7.6** and the View and Visual Impact Assessment at **Appendix F**.

The amendments proposed with regards to building height necessitate an amendment to the SSP SEPP, specifically, the Barangaroo Height of Building Map (SEPP_SSP_BAR_HOB_001_20160601). This is discussed further in **Section 4.11**.

Figure 16 Central Barangaroo MOD 9 building heights in the surrounding context (elevation from the west)



Source: Hassell

Proposed Block Realignment

MOD 9 seeks to vary the approved internal alignment of boundaries between Blocks 5, 6 and 7 to ensure the development blocks align with the proposed street network and potential location for an east west connection (Barangaroo Steps). This variation to street and block alignments alters where the proposed new building heights apply.

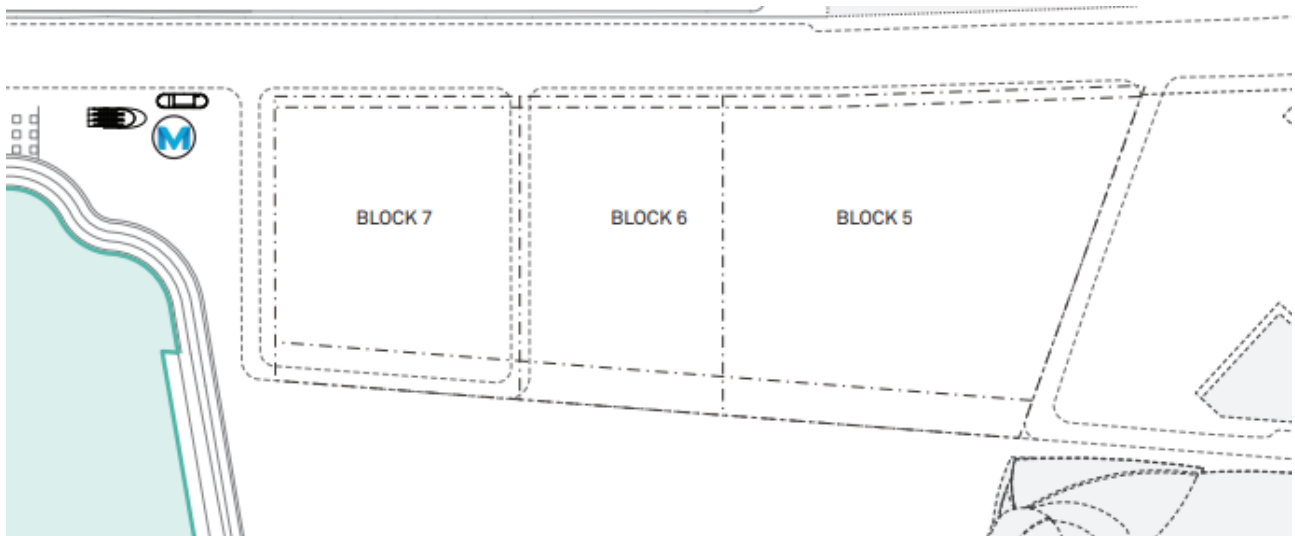
The Block 5 southern boundary aligns with Barton Street whilst the northern boundary aligns with the indicative location of Barangaroo Steps situated between Blocks 5 and 6.

The southern boundary of Block 6 aligns with the indicative location of the Barangaroo Steps and the northern boundary falls at the centre line of Street C.

The southern boundary of Block 7 aligns with Street C and the northern boundary aligns with Street D.

The proposed block alignments under MOD 9 are illustrated in **Figure 17**.

Figure 17 Proposed Block Alignment



4.5.3. Gross Floor Area

4.5.3.1. Proposed GFA Amendment

MOD 9 seeks to increase the total GFA permissible in Central Barangaroo and Barangaroo Reserve commensurate with recent significant transport infrastructure investments and contextual changes in the locality, together with the strategic opportunities afforded to the site given its location on the City's western harbour edge.

The proposed GFA amendments will activate the broader Barangaroo precinct and provides a floor space framework to attract quality commercial office and retail tenants to achieve the vision for retail on the site envisaged by the Central Barangaroo Retail Partner. The proposed amendments to the GFA for each development block include the following key changes:

1. An increase to the total GFA permissible within Blocks 5, 6 and 7 to 144,355sqm (above and below ground). This equates to an overall increase of permissible GFA for the Concept Plan from 602,354sqm to 708,041sqm.
2. Distinction between above ground and below ground GFA to provide greater certainty and definition of the parameters for the MOD 9 Concept Plan. Below ground GFA will be located within the Central Barangaroo basement which will extend approximately 25m into the RE1 zone land (below ground level). This necessitates an amendment to the SSP SEPP to permit retail development below ground level in the RE1 Zone which is discussed in further detail in **Section 4.11** and **Section 5.5.2** (refer **Table 17**).
3. Provision of a condition of consent to enable the GFA allocated to each block to be flexibly applied, subject to remaining within the total maximum permissible GFA for the three blocks and the building envelope established for the development blocks.
4. Allocation of area minimum of 6,000sqm and up to 18,000sqm within the Cutaway below Barangaroo Reserve to allow for future development of a community/cultural facility.
5. Exclusion of the calculation of 'wintergardens' from the total residential and commercial floor space, consistent with the approach for residential and tourist GFA in Barangaroo South and Condition B4(4) of the Concept Plan MOD 11 determination (discussed further below).

A comparison of the approved maximum GFA and the proposed GFA sought within MOD 9 is outlined overleaf in **Table 12**.

Table 12 Comparison of Approved and Proposed GFA

Block	Approved (sqm)	Proposed (max) (sqm)
Block 1	1,927	1,927 (no change)
Block 2	197,280	197,280 (no change)
Block 3	129,934	129,934 (no change)
Block 4A	92,629	92,629 (no change)
Block 4B	21,508	21,508 (no change)
Block X	18,908	18,908 (no change)
Block Y	77,500	77,500 (no change)
Block 5	29,688	Refer below
Block 6	3,000	Refer below
Block 7	15,000	Refer below
MOD 9 proposed GFA changes		
Block 5, 6 and 7 (above ground)	47,688	116,189 Residential (max): 28,000sqm
Block 5, 6 & 7 (below ground)	0	28,166
Community Uses <i>Minimum community uses GFA within development blocks</i>	10,000* <i>2,000sqm within development Blocks 6 and 7***</i>	Up to 19,000 (max) ** <i>2,800 within development Blocks 5, 6 & 7***</i>
Active Uses in RE1 Zone	5,000	5,000 (no change)
Total	602,374	708,041

Notes:

- * Comprises 10,000sqm of the 12,000sqm community use GFA under the approved Concept Plan, whereby the residual 2,000sqm is accounted for within the development blocks GFA.
- ** The maximum 19,000sqm includes a minimum of 6,000sqm and up to a maximum of 18,000sqm of community uses GFA within the Cutaway (below ground in Barangaroo Reserve RE1 Zone) and up to 1,000sqm for future potential community uses within RE1 Zone.
- *** Minimum community uses GFA within the development blocks in the B4 Zone are already accounted for within the development blocks GFA. MOD 9 proposes to increase this by 800sqm.

The increased GFA proposed under MOD 9 aligns with significant State government investment in transport infrastructure by co-locating additional employment generating and retail floor space in proximity to Barangaroo Station and other existing public and active transport networks. This will improve accessibility between housing, shopping opportunities and jobs, contributing towards a '30-minute City'.

The increase in commercial and retail floor space will create a genuine mixed-use precinct which will improve economic activity in the western foreshore of the CBD to stimulate the local economy and increase visitation to the site. MOD 9 will ensure a vibrant and activated precinct throughout both the day and night and encourage high public transport patronage of the future Barangaroo Station.

The additional GFA under MOD 9 will also allow for Central Barangaroo to accommodate additional community and cultural facilities in the future which will benefit and be utilised by the local and wider community.

A detailed description and justification of the benefits associated with the increased GFA proposed under MOD 9 is provided in **Section 7.1.1** of the EAR.

4.5.3.2. Calculation of GFA

Wintergardens

As outlined previously in **Section 4.2**, MOD 9 seeks to exclude the calculation of 'wintergardens' from the proposed residential and commercial GFA total for each development block in Central Barangaroo. In accordance with the definition of 'gross floor area' in the *Standard Instrument – Principal Local Environmental Plan*, enclosure of terraces and balconies by walls (or fixed louvres) greater than 1.4m high is to be included in the total gross floor area calculation. This definition applies to development under the SSP SEPP and as such applies to development on the site.

Notwithstanding this, Condition B4(4) of the approved Concept Plan determination which applies to Barangaroo South permits wintergardens to be excluded from maximum residential and tourist GFA to facilitate the provision of usable outdoor space, as provided below:

Condition B4(4)

Wintergardens may be excluded from the maximum residential and tourist GFA stipulated for Blocks 4A, 4B and Block Y in the Table above, subject to compliance with the wintergarden objectives and standards contained within the Built Form Principles and Urban Design Controls (Modification B5).

Consistent with this approach, it is proposed to exclude 'wintergardens' from the calculation of residential and commercial GFA within Central Barangaroo to similarly enable the provision of usable outdoor space without impacting the overall total of usable floor space. This will be sought through an amended condition applicable to Blocks 5, 6 and 7 where consistent with the principles and built form guidelines included within **Section 4** of the Urban Design Report submitted with MOD 9 (**Appendix E**).

Any wintergardens would be subject to a merit assessment at the detailed development application stage. The merit assessment would consider the need for wintergardens, the detailed design of the wintergardens and their impact on the building form, scale, and design excellence.

Building Cantilever and Façade Articulation

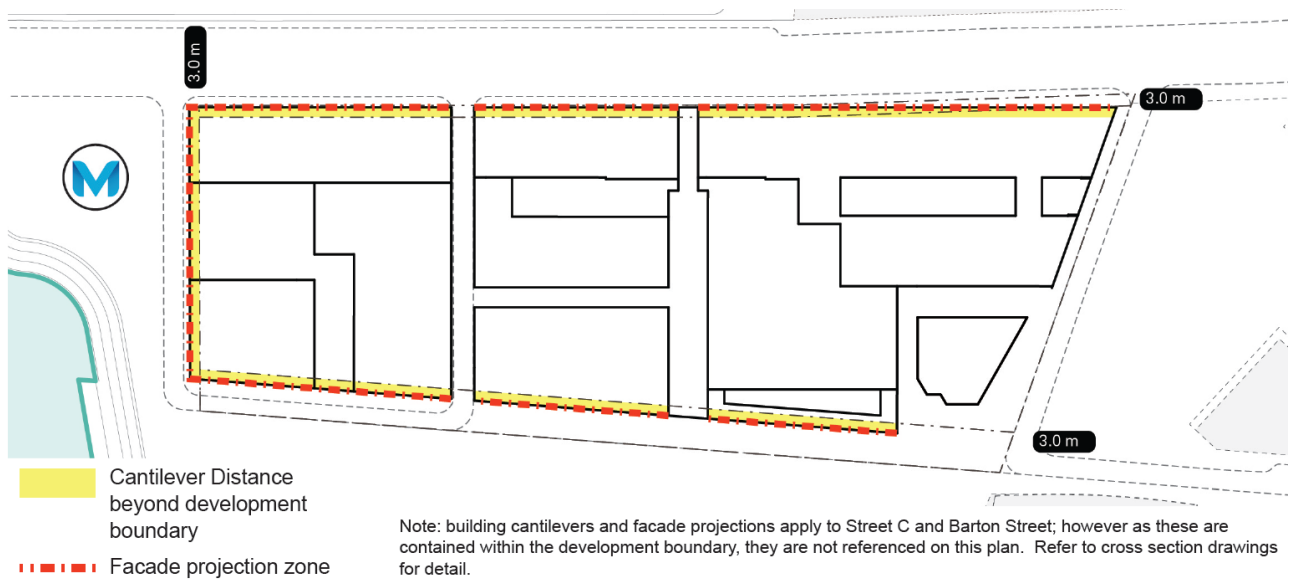
The Urban Design Report and associated urban design guidelines for Central Barangaroo identifies a 3m optional building cantilever zone over Hickson Road, Street D and Barangaroo Avenue. This indicates where the building above ground level may extend (i.e. cantilever) up to 3m beyond the development boundary.

The building cantilever will include GFA, and as such will be included within the calculation of GFA. Design of the building cantilever will be integrated into the built form language of the development and will be consistent with the urban design guidelines outlined in the Urban Design Report (**Appendix E**) and discussed in **Section 4.9**.

In addition to building cantilevers, the Urban Design Report identifies façade articulation opportunities in the same areas along the Barangaroo Avenue, Street D and Hickson Road built form interfaces. Articulated façade elements may extend a further 650mm beyond the building face, including and beyond any building cantilever. Façade articulation will not contain GFA.

The building cantilever and façade articulation zones are illustrated in the image below. As noted within the Urban Design Report, building cantilevers and façade articulation areas also apply to Street C and Barton Street. However, they are not reflected in the image below as they are contained within the development boundary.

Figure 18 Building Cantilever and Façade Articulation Zones



Source: Hassell

To accommodate these new components, it is proposed to introduce a new 'Building Overhang and Façade Articulation Map' as part of the concurrent SEPP amendment that identifies areas within Central Barangaroo where a building may extend beyond the Block boundary. This is discussed further in **Section 4.11**.

4.5.4. Land Use

The approved Concept Plan largely contemplates residential uses in Central Barangaroo, with minimal provisions for commercial and retail floor space. MOD 9 is seeking to deliver a mixed-use precinct which supports a diversity of land uses.

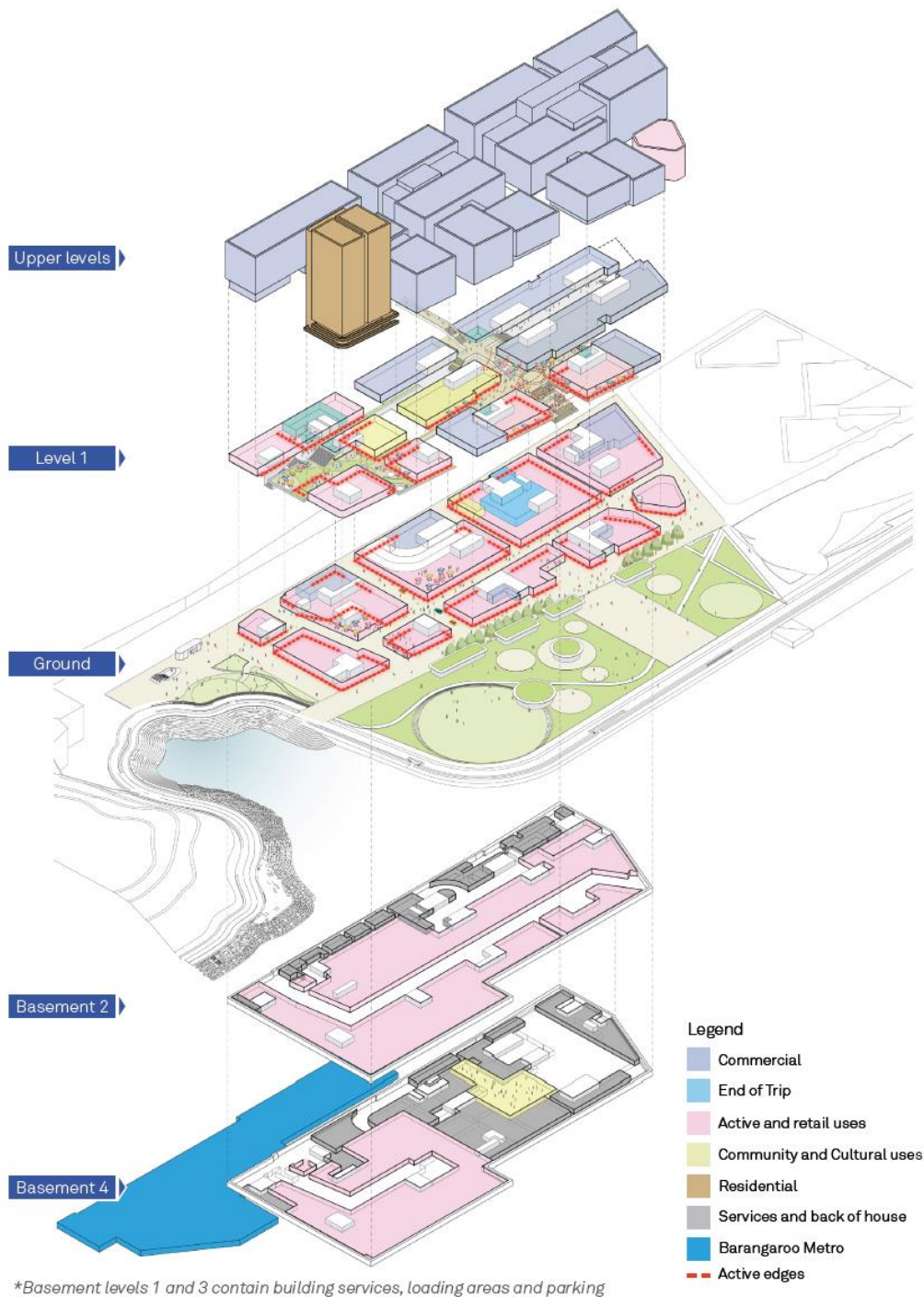
The final mix of land uses will be subject to and determined under relevant detailed SSDAs. The core principle of delivering a mixed-use precinct in Barangaroo as established in the approved Concept Plan is maintained whilst also providing for embedded flexibility within the use configuration to allow for resilience to market conditions and fluctuations. This will ensure viable, and quality urban design outcomes can be provided on the site in response to demand.

The indicative allocation and intensity of land uses have been developed in response to supporting the Barangaroo Station, and to anchor the substantial public realm along the foreshore walk and Harbour Park, providing an appropriate frame to the western harbour edge of Sydney CBD. The indicative configuration of land uses is outlined in **Figure 19** and summarised as follows:

- An active retail base extends from the basement levels to connect with Barangaroo Station, capitalising upon the movement of commuters and visitors through to this new transport interchange node.
- Retail uses are proposed underground at basement levels 2 and 4 within the B4 and RE1 Zone. The basement extends a maximum distance of 25m underground into the RE1 zone. This necessitates an amendment to the SSP SEPP which will permit underground retail in this one location so that larger retail floor plates can be provided underground to accommodate retail including potential for a supermarket, clear connections from basement level to the ground as well as vertical connection to Barangaroo Station. This is discussed in further detail in **Section 4.11**.
- Residential land uses are proposed in the tower form within Block 7 on the northern edge of the site to provide a suitable transition of land use to the residential areas of Millers Point and Walsh Bay, with the flexibility for potential residential land uses in Blocks 5 and Block 6.
- Commercial uses are proposed in Blocks 5, 6 and 7 above level 1 (excluding commercial building entries) to provide synergies with adjacent commercial development in Barangaroo South. The character of these commercial uses comprises flexible, co-working spaces to contrast from the conventional office spaces and large floor plates provided within Barangaroo South. This will provide diversity in the market and support a variety of employment opportunities.

- Community uses are proposed within development Blocks 5, 6 and 7. A small pavilion structure will also be provided within the Harbour Park RE1 zone to accommodate small-scale food and beverage uses to further active the public domain area.
- Basement levels 1 and 3 contain building services, loading areas and parking (not illustrated in **Figure 19**).

Figure 19 Land use configuration



Source: Hassell

The retail strategy seeks to deliver Sydney's western foreshore as a waterfront retail, dining, entertainment and leisure destination for future "locals", workers and visitors. It is intended that Central Barangaroo will accommodate a mix of general and high-end retail, together with waterfront dining opportunities to provide for a range of needs and experiences as part of the active retail base.

The Central Barangaroo Retail Partner (Scentre Group), is a world-leader in retail development, with a portfolio of 42 centres across Australia and New Zealand, each with strong positions in their respective local markets.

MOD 9 will deliver a minimum of 2,800sqm of community uses within development Blocks 5, 6 and 7. The intent is to provide for flexible distribution of this community use GFA. As outlined within the Urban Design Report, community and cultural facilities are anchored at the heart of the precinct and could include a large flexible multi-purpose venue in the basement levels and two adaptable spaces throughout the development blocks above ground.

Commercial office areas located above the active retail base that ends at level 1, will allow for flexible and interconnected workplaces in a sustainable campus style precinct set amongst the harbour foreshore and various public open spaces.

Future residential uses in Central Barangaroo will incorporate a range of apartment types and sizes, designed and specified for contemporary city living. The actual number, mix and size of apartments will be determined as part of future detailed proposals and will respond to market demand.

MOD 9 also proposes to realign the northern boundary of Hickson Park to generally align with the boundary as it existed prior to the most recent (28 June 2016) amendment to SSP SEPP associated with the previous MOD 8 to the Barangaroo Concept Plan. The adjusted interface to Hickson Park at Block 5 will enable the provision of additional density to create a more vibrant mixed use precinct, accommodated within amended development zone footprints creating its own distinct identity, character and experience.

Despite returning the alignment of Hickson Park to more closely align with the RE1 and B4 zone alignments that existed prior to the MOD 8 approval, MOD 9 maintains the commitment that at least 50 per cent of the Barangaroo Precinct will be open, public space.

This necessitates an amendment in Blocks 5, 6 and 7 to the SSP SEPP, specifically the Barangaroo Land Zoning Map (SEPP_SSP_BAR_LZN_001_20160601) to extend the B4 Mixed Use zone to the south, to align with the relocated Block 5 boundary which is discussed in further detail in **Section 4.11**.

4.6. STREET AND MOVEMENT NETWORK

The street and movement network structure has been reconfigured as part of MOD 9 to align with the modified building envelopes proposed and to provide new and safer connections throughout the precinct for both pedestrians and vehicles with a clear access hierarchy.

A summary of the street and movement network along with the justification for key changes to the streets and pedestrian connections proposed under MOD 9 is provided below.

- **Barton Street – MOD 9 proposes to convert Barton Street to a permanent two-way street which connects Barangaroo Avenue with Hickson Road.** Establishing Barton Street as a permanent two-way street will:
 - Allow for the majority of the precincts local vehicular movements to be redirected and concentrated onto Hickson Road, Barton Street and Barangaroo Avenue (to the south of Barton Street in Barangaroo South).
 - Provide improved pedestrian accessibility and safety from development blocks 5, 6 and 7 to key public open spaces by freeing up other streets and pedestrian connections throughout Central Barangaroo.
 - Enable the transformation of Barangaroo Avenue (north of Barton Street) into a primarily pedestrian environment that extends the edge of Harbour Park and improves the quality of this public space for the community.
- **Barangaroo Avenue – MOD 9 proposes to remove unrestricted vehicle traffic from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6, with controlled service vehicle access only.** Removing vehicle traffic from Barangaroo Avenue and allowing limited service vehicle usage will:
 - Provide a clear separation between vehicle and pedestrian usage throughout Central Barangaroo and facilitates a safe pedestrian environment along Barangaroo Avenue with open space to the west and retail activation to the east.

- Provides opportunities to create Barangaroo Avenue into a tree-lined pedestrian avenue which integrates the built form and open space, allowing greater connectivity to the north-south and east-west pedestrian connections throughout development blocks 5, 6 and 7 and the newly proposed publicly accessible open spaces, including the Barangaroo Steps, Nawi Terrace and Barton Plaza.
- **Pedestrian Bridge to High Street – MOD 9 maintains the provision of a pedestrian bridge component which will span across Hickson Road to High Street.**
 - The pedestrian bridge is proposed to be named the ‘High Street Bridge’ and will function as a pedestrian thoroughfare. This will provide connectivity to and from Central Barangaroo, High Street and Millers Point and beyond to the Sydney CBD (discussed further in **Section 4.7.2.3**). It could span across Hickson Road without any intermediate supports and the Urban Design Report envisages that it will incorporate landscaping which spills over the edge to visually integrate with the streetscape. The bridge would be constructed at a height which allows sufficient clearance for larger vehicles.
 - The Urban Design Report contemplates a potential location for the High Street Bridge which is situated at the southern interface of Block 6 and the northern interface of Block 5. It will align with the eastern extent of the development blocks and integrate directly with the western edge of High Street. However, the final location may be further to the north and closer to Barangaroo Station. The precise location, height, function and overall design of the High Street Bridge will be specified as part of future detailed SSDAs seeking consent for its construction.
- **Internal Shared Streets C and D – MOD 9 proposes minor shifts to Streets C and D to align with and frame the proposed development blocks 6 and 7.** Streets C and D are proposed as pedestrian-oriented shared environments, where slow vehicle movements are subservient to people-movement. By limiting free access for vehicles away from Street C and D to the eastern edge of Central Barangaroo on Hickson Road, all spaces, streets and movement corridors can be prioritised for pedestrians.
- **Laneway B – MOD 9 proposes Street B (now Laneway B) as a dedicated pedestrian laneway which dissects Block 5.** Laneway B will contribute to the permeability and pedestrian orientation of Central Barangaroo by providing an activated retail link between Hickson Road, Barton Plaza and Harbour Park.
- **Hickson Road** – Hickson Road will remain as a boulevard that provides an address and activation for development fronting the road at a civic scale. Areas for bus stops, taxi drop offs and parking will be integrated, whilst wide pedestrian footpaths along the western edge will link directly to Barangaroo Station. No changes are proposed to the location or function of Hickson Road under MOD 9. Infrastructure NSW are currently leading the Hickson Road design development process which will significantly influence the configuration of Hickson Road and surrounding streets.

The street structure and pedestrian connections resulting from the modifications proposed under MOD 9 are illustrated in the figure below.

Figure 20 MOD 9 Street and Movement Network



Picture 10 Street / Movement Structure



Picture 11 Pedestrian Network Connections

Source: Hassell

The key changes proposed to the street network and pedestrian connections under MOD 9 will ensure Central Barangaroo provides a high degree of adequate pedestrian permeability in both a north-south and east-west direction. Primarily, this will be achieved by converting Barton Street to a permanent two-way road which will accommodate the majority of vehicle movements and redirects vehicles away from Barangaroo Avenue (excluding controlled service vehicle access). Barangaroo Avenue is reallocated as a pedestrian oriented environment to provide an improved interface from the built form in development blocks 5, 6 and 7 to adjacent and nearby publicly accessible areas.

The pedestrian connections also frame and dissect the proposed development Blocks 5, 6 and 7 throughout the precinct to break up the built form and establish an access hierarchy with a clear relationship between pedestrian connections and built form. This network provides pedestrians with direct access to buildings, as well as existing open spaces (Harbour Park and Nawi Cove), and beyond to the Sydney CBD via the Barangaroo Steps and High Street Bridge.

MOD 9 provides for a greater permeability and pedestrian connection outcomes through a multi-layered retail network with below ground retail, an open and activated ground plane and an activated north-south pedestrian connection with an mix of community, commercial, hospitality and ancillary retail uses. This

provides vibrant pedestrian thoroughfares which offer intuitive wayfinding for improved pedestrian permeability and amenity throughout Central Barangaroo and to surrounding areas.

MOD 9 will enable direct above and below ground connections from Blocks 5, 6 and 7 to Barangaroo Station for greater pedestrian accessibility and movement to and from this key transport node.

With reference to the DGR 'Key Issues' item 5, it is noted that MOD 9 does not propose any amendments to the Wulugul Walk foreshore promenade given it has already been built. The indicative landscape concept design of Harbour Park is outlined at high-level in **Section 4.8** of the EAR and outlined in further detail in the Urban Design Report prepared by Hassell (**Appendix E**).

Cycling and other active transport modes will be encouraged by reducing vehicle speeds to create safe environments where cyclists can share spaces with pedestrians and / or vehicles. Generally, recreational cycle movement will be accommodated throughout the foreshore area and in Harbour Park. Commuter and faster moving cyclists will be encouraged to use Hickson Road and the dedicated bike lanes. Bicycle parking will be accommodated within the public domain and close to building entrances, as well as dedicated end of trip facilities (**EOTF**), to cater for future residents, workers and visitors accessing the site by bicycle. These provisions will be articulated as part of future subsequent SSDAs seeking approval for detailed design.

Future parking, loading and servicing activities are proposed within a shared basement, located beneath Blocks 5, 6 and 7. Access to the basement levels is proposed to be directly off Hickson Road so as to reduce pedestrian vehicle conflicts along Barangaroo Avenue and the various pedestrian connections throughout Central Barangaroo. Vehicle access will be provided along Barangaroo Avenue, Street C and Street D (north of Barangaroo Avenue pedestrian boulevard component). Controlled service vehicle access will be provided along Barangaroo Avenue adjacent Blocks 5 and 6 throughout specific time periods to service the public domain, cultural / community uses and the retail base.

The Urban Design Report prepared by Hassell (**Appendix E**) provides design guidelines for the abovementioned streets and pedestrian connections (including indicative plans and sections) to inform the future detailed design the street and movement network.

4.7. PUBLIC DOMAIN AND STREETScape INTERFACE

MOD 9 for Central Barangaroo seeks to deliver and embellish a diversity of public domain components that have been designed to integrate with the built form, access networks and adjoining developments, including accessible urban spaces, various connecting elements and the significant public open spaces which have already been approved such as:

- Nawi Cove – a cultural lifestyle hub and city gateway integrated with the Barangaroo Station.
- Harbour Park – an activated green park accompanying a diverse range of experiences
- Wulugul Walk – a broad public promenade along the harbour's edge.

MOD 9 proposes to modify the following public domain components of the approved Concept Plan:

- Provision of one small pavilion structure within Harbour Park (RE1 Zone) located along the spine of Barangaroo Avenue. The pavilion structure will support opportunities for future food and beverage offerings.
- Realign the northern boundary of Hickson Park to create a contained urban city park and green lawn which interacts with the built form. This also provides an opportunity for a public plaza space which allows the opening of sight lines from Hickson Park through to Harbour Park. The indicative reference scheme envisages this urban threshold space between Hickson and Harbour Parks as Barton Plaza.

MOD 9 retains the concept of a pedestrian connection across Hickson Road from High Street to the Central Barangaroo development blocks as envisaged under the approved Concept Plan. However, its final location, design and function will be subject to detailed design within future SSDAs.

Importantly, despite the realignment of the Hickson Park boundary, MOD 9 will ensure the delivery of 50% of Barangaroo as public open space, on or close to the harbour foreshore.

The design strategy seeks to establish a distinct function, identity and character for each space within Central Barangaroo to provide a network of clearly defined and diverse public spaces to support a diversity of users. The distinct identity and function of each space emphasises their sense of place and purpose. The

network of spaces will be integrated throughout the urban form and public domain through a rhythm of compression and expansion which creates a sense of arrival and defined sequence of movement.

The delivery of this public domain network will provide for an improved foreshore precinct with greater public access and will connect with the adjacent Barangaroo Reserve and at a broader level the NSW Government's Harbour Walk to create a ribbon of green infrastructure in accordance with the draft *Greener Places Guide* prepared by the Government Architect NSW.

Greater modulation of the building form proposed in MOD 9 will provide opportunities for the delivery of public domain/publicly accessible space throughout the site (subject to detailed design). The Urban Design Report prepared by Hassell (refer **Appendix E**) has suggested three potential spaces (Nawi Terrace, Barangaroo Steps, Barton Plaza) that could be delivered as publicly accessible open space throughout the site.

However, it is noted that MOD 9 does not seek consent for these spaces and the final quantum, form, location and function of publicly accessible spaces/public domain within the development blocks will be subject to detailed design within future SSDAs. The potential location of these spaces as contemplated within the Urban Design Report are illustrated in the below image.

Figure 21 Key Public Domain Elements



Picture 12 Park Spaces

Source: Hassell



Picture 13 Potential publicly accessible urban spaces and connecting elements

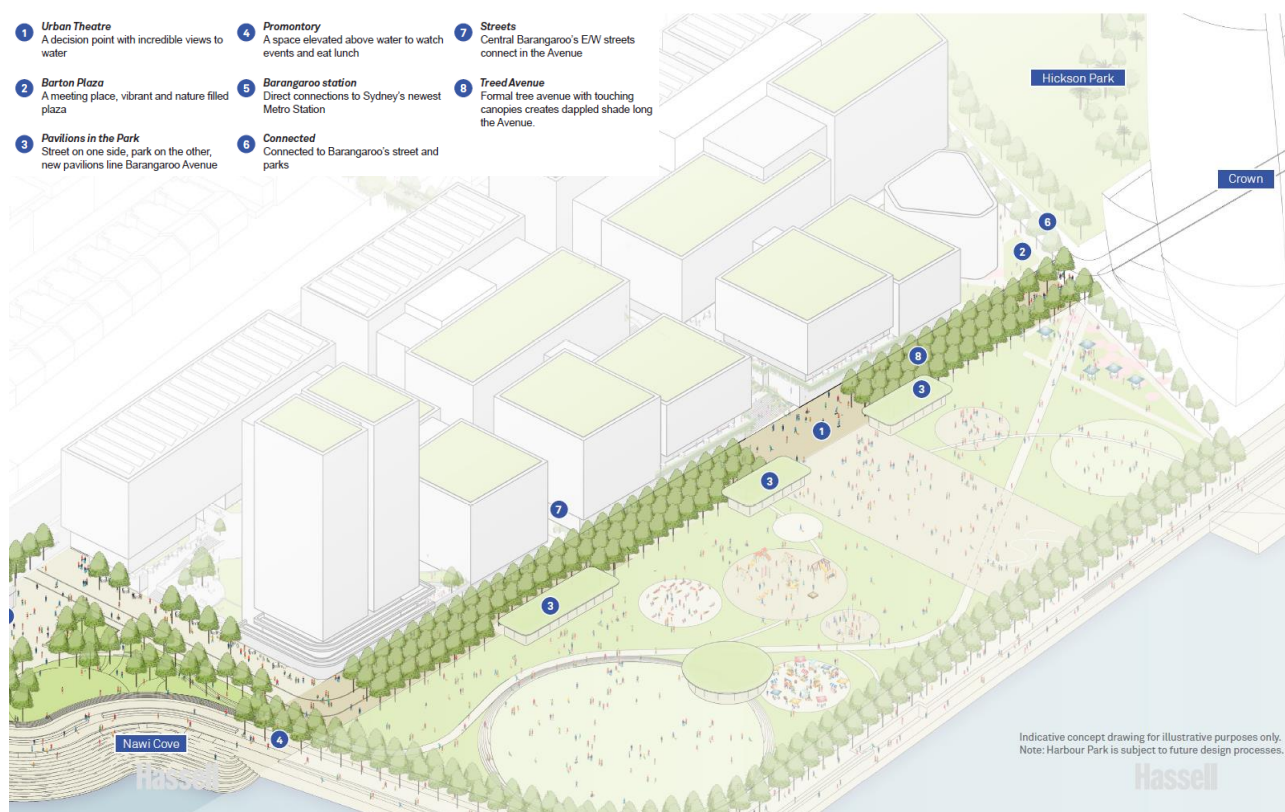
4.7.1. Barangaroo Avenue Enhancing Harbour Park Experience

Harbour Park is a key defining factor of Central Barangaroo creating a new typology of public space which compliments Sydney’s status as a global city immersed within a naturalistic planted environment. Harbour Park will accommodate a diverse range of activated spaces which support various uses, and a collection of foreshore gardens and spaces, such as Wulugul Walk.

While Harbour Park already forms part of the existing approved Concept Plan, one of the key changes proposed as part of MOD 9 will enhance pedestrian connections and integration with Harbour Park and the overall experiences for park users by removing uncontrolled vehicle traffic along Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6 (controlled service vehicle access will remain). One directional vehicle movement will occur from Street C through to Street D along Barangaroo Avenue.

Barangaroo Avenue will become a primary pedestrian thoroughfare on the western side of the built form of Central Barangaroo. Barangaroo Avenue will have an activated retail edge offering dining and retail opportunities that better connects the built form to Harbour Park enabling a greater experience for park users, and enhanced pedestrian access to other areas such as Barangaroo Station / Nawi Cove and Hickson Park.

Figure 22 Barangaroo Avenue – Illustrative Concept View



Source: Hassell

4.7.2. Opportunities for publicly accessible open space

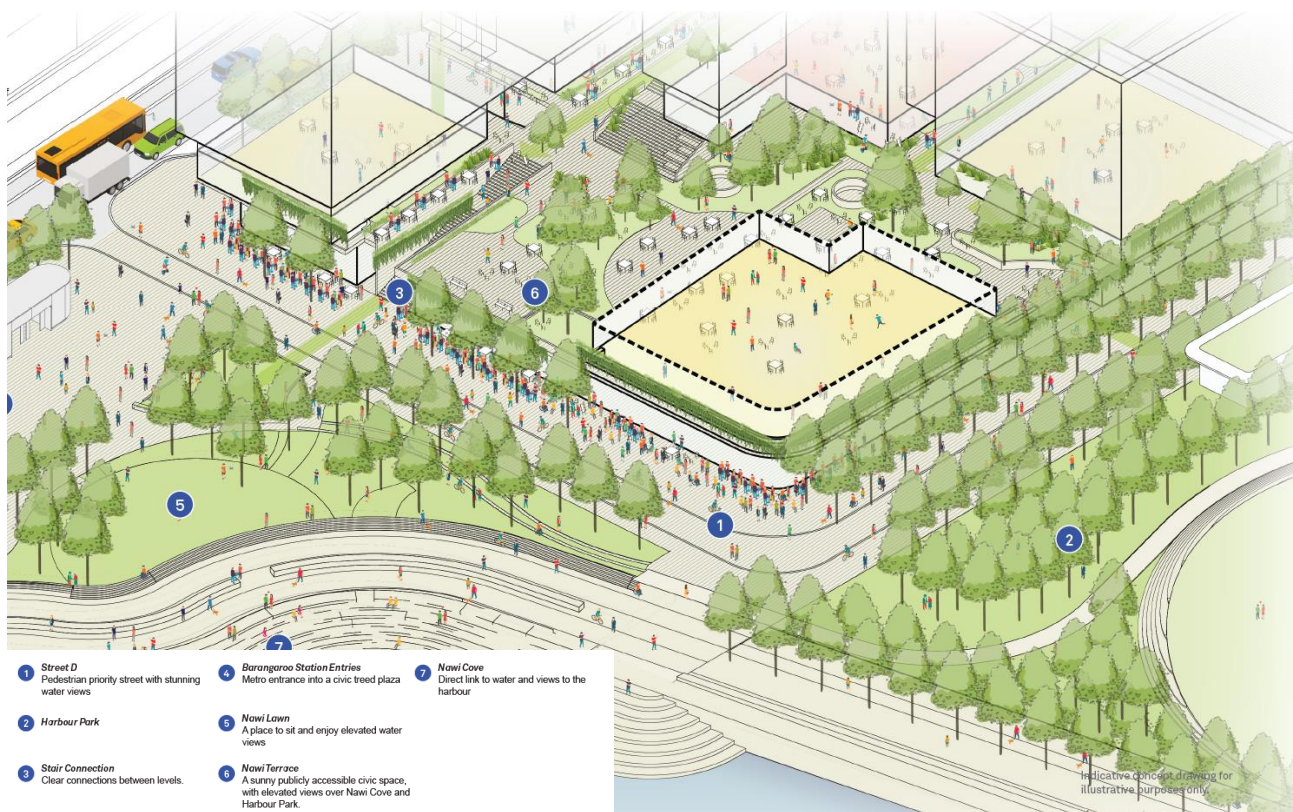
As stated above, greater modulation of the building form proposed in MOD 9 will provide opportunities for the delivery of public domain/publicly accessible space throughout the site (subject to detailed design). The Urban Design Report prepared by Hassell (refer **Appendix E**) has suggested three potential spaces (Nawi Terrace, Barangaroo Steps, Barton Plaza) that could be delivered as publicly accessible open space throughout the site. However, MOD 9 does not seek consent for these spaces and the final quantum, form, location and function of publicly accessible spaces/public domain within the development blocks will be subject to detailed design within future SSDAs. An overview of how these elements could be delivered is provided below.

4.7.2.1. Nawi Terrace

The modulated built form and building envelope within Block 7 proposed as part of MOD 9 provides potential opportunities to deliver a new publicly accessible open space area at the northern extent of Central Barangaroo. The Urban Design Report conceptualises this potential space as Nawi Terrace. Nawi Terrace would connect Block 7 to Nawi Cove and Barangaroo Station, acting as the northern gateway arrival point to the precinct. Nawi Terrace could take the form of a publicly accessible “verandah” offering elevated views to the harbour and provide retail / outdoor dining opportunities.

The final form, design, location and function of this space will be subject to detailed design within future SSDAs.

Figure 23 Nawi Terrace – Illustrative Concept View



Source: Hassell

4.7.2.2. Barton Plaza and Hickson Park Interface

The Urban Design Report accompanying MOD 9 conceptualises the potential a new publicly accessible space referred to as Barton Plaza, an interconnecting element between Central Barangaroo at Block 5, Barangaroo South, Hickson Park and Harbour Park. Barton Plaza would be defined by a flagship retail building at the south-west edge adjacent the Crown Sydney Hotel Resort that supports a link to the Sydney Metro.

The area enables high degrees of pedestrian connectivity and clear views to the harbour, whilst allowing for the provision of an urban and green “break-out” protected park for workers and residents across both Central and Barangaroo South.

For clarity, it is noted that the only changes to Hickson Park proposed as part of MOD 9 is the realignment of the northern boundary to where it existed prior to the MOD 8 approval. Hickson Park already exists under the approved Concept Plan.

Figure 24 Barton Plaza and Hickson Park Interface – Illustrative Concept View



Source: Hassell

4.7.2.3. Barangaroo Steps

The modulated building envelope proposed under MOD 9 provides an opportunity to deliver a conceptual publicly accessible space and east-west connection element envisaged as the Barangaroo Steps. The Urban Design Report contemplates the Barangaroo Steps could be located at the northern extent of Block 5 and the southern extent of Block 6, dissecting these two development blocks.

The Barangaroo Steps are envisaged to function as the civic gateway for pedestrians from the Sydney CBD and Millers Point, through Block 5 and 6 and down to the waterfront and Harbour Park via a series of elevated platforms interfacing with the adjacent building levels and lobby entrances.

The final form, function and location of the east west connection (known as Barangaroo Steps) will be subject to detailed design within future SSDAs.

The potential location of the Barangaroo Steps and High Street Bridge as envisaged within the Urban Design Report is highlighted in the figure below – noting approval is not sought for these elements.

Figure 25 Barangaroo Steps and High Street Bridge – Potential Location(s)



Source: Hassell

4.7.3. Public Art and Crime Prevention Through Environmental Design

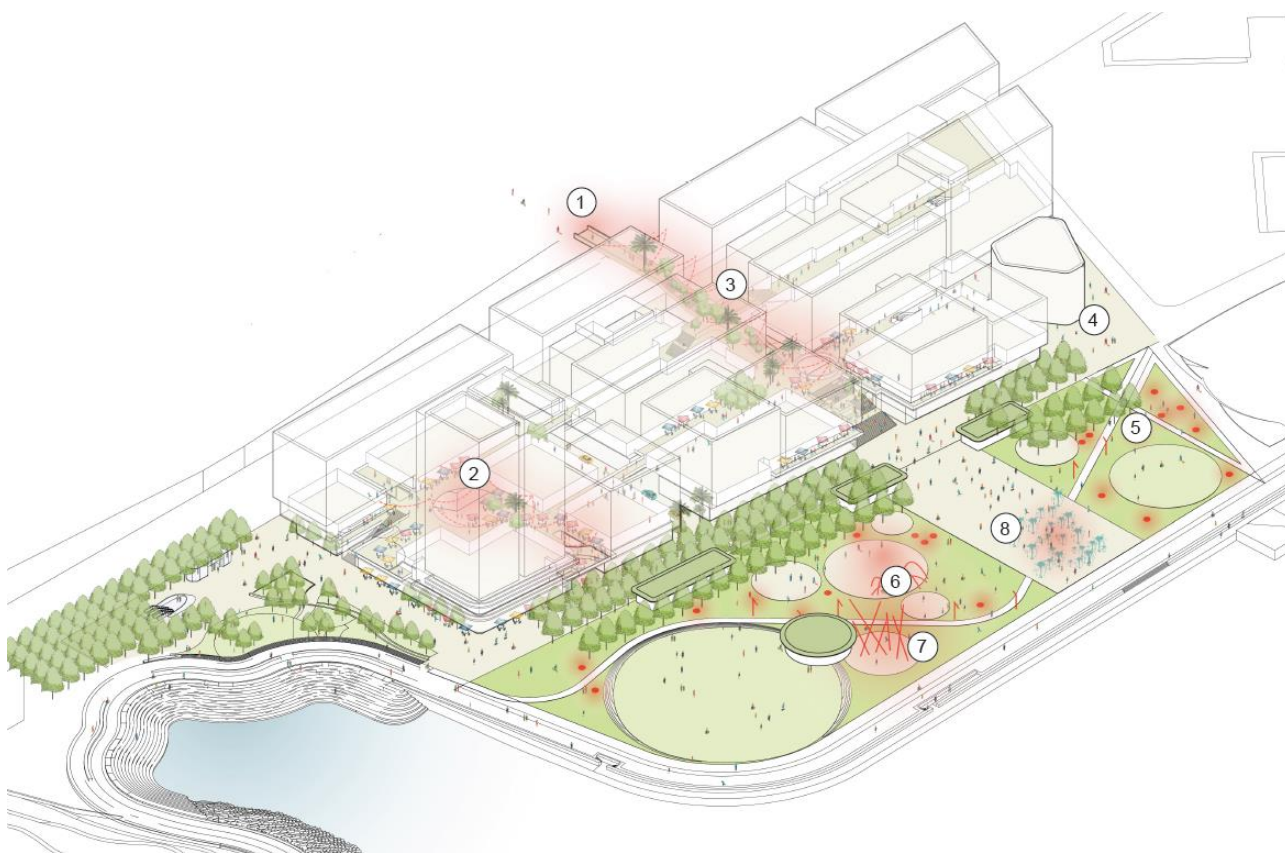
Public Art

It is intended that public art will form a key component of the place strategy for Central Barangaroo and will be incorporated into the architectural and public domain design for the precinct. Public artworks will include a range of integrated and innovative pieces at varying scales across the site to support an activated and vibrant public domain which gives back to the community and addresses the rich cultural, historical and ecological story of Central Barangaroo.

Figure 26 below provides an illustration which identifies a number of potential locations and opportunities where public art can be explored in the future. Potential locations include Harbour Park, Barton Plaza, Nawi Terrace and the Barangaroo Steps.

These locations will be further developed as part of an integrated public art strategy to ensure an outcome that is responsive to context. The public art strategy will be contemplated as part of future detailed design proposals.

Figure 26 Public Art Opportunities



Source: Hassell

Crime Prevention Through Environmental Design

MOD 9 has considered the four key principles of Crime Prevention Through Environmental Design (CPTED) as part of the overall planning concept design, including *surveillance*, *access control*, *territorial reinforcement* and *space management*.

As the design of the Central Barangaroo precinct progresses beyond MOD 9, the four CPTED 'Safer by Design' principles will continue to be applied to the planning and design development of future detailed development applications for Central Barangaroo Block 5, 6 and 7, as well as proposed foreshore open space of Harbour Park.

Refer to **Section 7.2** of this EAR and *Section 3.4.10* of the Urban Design Report (**Appendix E**) for further discussion and assessment of the design against the four key principles.

4.8. LANDSCAPING

In accordance with DGR 'Plans and Documents' item 4, Hassell have prepared a conceptual Site Landscape Plan for the reference design scheme which outlines the indicative treatment of public open space areas throughout and immediately adjoining the Central Barangaroo site (refer figure below and **Appendix E**). MOD 9 does not seek approval for any landscaping works.

Site landscaping works will be designed and defined as part of future detailed SSDAs. Future detailed SSDAs will include details on the specifications of planting species selection and maintenance. The purpose of the Site Landscape Plan is to illustrate how future landscaping may potentially be delivered across the Central Barangaroo site.

MOD 9 has been carefully formulated to allow for future detailed landscape design which compliments the proposed building envelopes and the street / movement network through the creation of landscaped public spaces and places at a human scale.

MOD 9 seeks to introduce a set of design guidelines which are contained within the Urban Design Report. The design guidelines include objectives and design guidance controls relating to components such as character and diversity, built form, environmental sustainability, wind mitigation and streetscapes. These design guidelines will assist in developing future detailed landscape design across the Central Barangaroo site that is responsive to context and the objectives seeking to be established under MOD 9.

Figure 27 Indicative Site Landscape Plan



Source: Hassell

4.9. CONCEPT PLAN URBAN DESIGN GUIDELINES

'Key Issues' item 3 in the DGRs requires the preparation of revised built form principles and controls. Unlike Barangaroo South, as there are no established built form principles and controls, MOD 9 seeks to introduce a set of built form and urban Design Guidelines (**design guidelines**) for Central Barangaroo to guide the future detailed design and development of the site. These are set out in *Section 4* of Urban Design Report at **Appendix E**. The guidelines address the following components:

- **Built form** – the principles and strategic outcomes required across each development block,
- **Streets** – the framework, character, hierarchy and intent for streets and movement corridors, and
- **Parks and public spaces** – the character and intent for parks and publicly accessible spaces

The design guidelines have been utilised to inform the reference design prepared by Hassell (**Appendix E**) which conceptually demonstrates the future development potential of the site.

4.9.1. Built Form

Key objectives to guide the built form across the site are provided in **Table 13**. This provides an understanding of the built form design objectives and principles that fed into the detailed design guidance controls which have been developed.

Further detail on the built form design guidance controls is provided in *Section 4.2* of the Urban Design Report (**Appendix E**). These controls will ensure a consistent built form outcome across the site which is responsive to context is delivered in the future.

The design guidelines include various objectives and design guidance controls for the built form of future proposals specific to Blocks 5, 6 and 7, which consider the following:

- Land use mix
- Ground level activation
- Address and access (including permeability, connectivity and Barangaroo Station considerations)
- Building lines and setbacks (including building footprints and façade design)
- Building height and distribution (including topography, development blocks and density)
- Building mass and articulation (including development blocks and density)
- View corridors
- Building overhangs

Table 13 Summary of built form objectives

Component	Objective(s)
Built Form (general)	<ul style="list-style-type: none"> ▪ Establish the maximum development parameters for each development block via building envelope controls. ▪ Inform the location of height, scale and building bulk across Central Barangaroo. ▪ Communicate a finer grain of control and guidance to inform building design and ensure the intended urban design response. ▪ Provide architecturally distinct precinct marker near Barangaroo Station, whilst still retaining a human scale throughout Central Barangaroo.
Ground Level Activation (general)	<ul style="list-style-type: none"> ▪ To allow for a vibrant mix of active uses that address the ground level of Central Barangaroo. ▪ To provide visual interest and a quality urban condition to the street level.
Land Use Mix	<p><u>Block 5:</u></p> <ul style="list-style-type: none"> ▪ To allow a mix of retail and commercial uses. <p><u>Block 5 (flagship building):</u></p> <ul style="list-style-type: none"> ▪ To contain a highly active use or mix of uses throughout the building. ▪ To create an active ground plane containing high quality retail uses. <p><u>Block 6:</u></p>

Component	Objective(s)
	<ul style="list-style-type: none"> ▪ To create next generation attractive commercial space located at a prime waterfront position within close proximity to Barangaroo Station. ▪ To create an active ground plane with a mix of retail uses. <p><u>Block 7:</u></p> <ul style="list-style-type: none"> ▪ To create a vibrant, mixed use community ▪ To increase the number of people living and working within close proximity to Barangaroo Station. ▪ To create a new retail and entertainment destination related to Barangaroo Station.
Character and Diversity	<ul style="list-style-type: none"> ▪ To promote an architectural character that is evidently ‘of Sydney and the harbour’ ▪ To demonstrate exemplary and unique design quality of an international standard, generating interesting, innovative and creative architectural expression whilst remaining respectful to the Sydney context and surrounding neighbourhoods. ▪ To ensure a diversity in design and character of architecture across the precinct. ▪ To ensure buildings provide a comfortable and amenable public environment conducive to public activity, especially at ground level.
Materials	<ul style="list-style-type: none"> ▪ To ensure a material palette that enhances the urban fabric and character of Sydney’s waterfront, and is born from the site’s context. ▪ To ensure a material palette that has qualities of permanence and durability, that stands the test of time and is climate appropriate.
Environmental Sustainability	<ul style="list-style-type: none"> ▪ To demonstrate design excellence in sustainability, meeting the sustainable design principles in terms of sunlight, natural ventilation, wind, reflectivity, visual and acoustic privacy, safety and security, and resource, energy and water efficiency ▪ To meet the sustainability requirements including: <ul style="list-style-type: none"> – Carbon neutrality; – Water positive; – Zero waste emissions; – On-site renewables; – Green certification; – Indoor environmental quality; – Biophilic design
Rooftops	<ul style="list-style-type: none"> ▪ Architectural treatment of the roof and its form is to be designed, coordinated and remain sympathetic to adjacent context. ▪ Maximise private access to rooftops and terraces where possible. ▪ Design rooftops to separate infrastructure spaces from useable spaces

Component	Objective(s)
	<ul style="list-style-type: none"> Maximise use of rooftops for stormwater management and renewable energy strategies
Wintergardens	<p>Require that the design satisfies the following:</p> <ul style="list-style-type: none"> The enclosure is designed as a balcony for use as external open space. The enclosure has adequate natural ventilation and cannot be fully enclosed. The bulk of the building would be no greater than if the balconies were not partly enclosed.
Micro-climate Wind Management and Thermal Comfort	<p>The three areas that will require specific wind mitigation include:</p> <p><u>Crown Sydney Hotel Resort / Harbour Park interface</u></p> <ul style="list-style-type: none"> To avoid uncomfortable wind conditions, the future landscape design of the south western corner of the Harbour Park should propose a mixture of tree planting and high-quality architectural canopies capable of reducing wind impact, improving pedestrian amenity, whilst complementing the north edge of the Crown Sydney Hotel Resort and the design of the Harbour Park and Wulugul Walk. <p><u>Nawi Cove, north of Block 7 taller envelope</u></p> <ul style="list-style-type: none"> To avoid uncomfortable wind conditions in the area immediately to the north of tall B7 building, the use of tree planting, comprising a mix of 5m tall palms, 3m tall trees and 2m tall shrubs, is recommended. <p><u>South of Block 7 taller envelope</u></p> <ul style="list-style-type: none"> To avoid uncomfortable wind conditions in the area immediately to the south of the Block 7 taller building envelope element, the use of both tree and garden bed planting, as well as possible architectural canopy structure.

The specific supporting design guidance controls are provided in the Urban Design Report (**Appendix E**), refer to *Section 4.2*.

4.9.2. Streets and Movement

The proposed street network for Central Barangaroo will deliver a series of active urban spaces and vibrant streets with a priority of permeable pedestrian environments. All streets will provide a different character which is responsive to adjacent built form, aspect and vehicular requirements. The location of street furniture and street tree landscaping will correspond with the intended purpose and function of each street.

Table 14 below provides a summary of the key design guidelines and objectives for each of the proposed streets in Central Barangaroo to guide future detailed design. Further design information, such as indicative layout and section plans, are provided in *Section 4.3* of the Urban Design Report (**Appendix E**).

Table 14 Summary of Street and Movement Network Design Guidelines

Component	Design Guidelines and Objectives
Barangaroo Avenue	<p>Will be characterised by the following:</p> <ul style="list-style-type: none"> Reinforcement of its role as the axial north-south connector within Barangaroo

Component	Design Guidelines and Objectives
	<ul style="list-style-type: none"> ▪ Pedestrian priority. ▪ Slow, one-way vehicular circulation within Central Barangaroo development zone in front of Block 7. ▪ Urban elements and planting arranged to define the street. ▪ Tree planting aligned to the Barangaroo South tree axis. ▪ Designed to integrate the community and retail pavilions. ▪ Ability to accommodate small events such as markets and retailer activations and performances. ▪ Planned and designed to accommodate alfresco dining and associated licensed zones.
Barton Street	<p>Will be characterised by the following:</p> <ul style="list-style-type: none"> ▪ A permanent two-directional, 7 metre vehicle carriageway connecting Barangaroo Avenue and Hickson Road. ▪ A kerb and footpath to both sides of the carriageway to define the pedestrian environment. ▪ Development on Block 5 may cantilever over the northern footpath to provide pedestrian cover and amenity. ▪ A slow speed traffic environment to allow ease of pedestrian access across to Hickson Park. ▪ A right/left-in and left-out configuration at Hickson Road. ▪ A short term loading zone within the road area. ▪ Regular street tree planting along the northern kerb / footpath.
Streets C and D	<p>East-west streets will be characterised by:</p> <ul style="list-style-type: none"> ▪ Pedestrian priority. ▪ Slow, one way vehicular circulation. ▪ Urban elements and planting arranged to promote pedestrian priority and create a shared, slow vehicle environment. ▪ Discrete areas for on street parking and drop off. ▪ Street C is proposed as a one-way 'shared street' with retail activity on both sides. ▪ Street D is proposed as a one-way 'shared street' with retail activity on one side overlooking the Nawi Cove. <p>Streets C and D should:</p>

Component	Design Guidelines and Objectives
	<ul style="list-style-type: none"> ▪ Maintain a consistent street wall at the building base that also provides for retail expression; with potential for elevated publicly accessible spaces at level 1. ▪ Enable clear pedestrian priority for access from Harbour Park and Block 7 to Nawi Cove and Barangaroo Station. ▪ Street C should accommodate a level 1 pedestrian bridge between Block 6 and Block 7. ▪ Provide adequate daylight and ventilation to streets. ▪ Maximise sunlight and views to and from all building floors. ▪ Consider western edge of building form to all blocks to minimise impact on public domain and view corridor through and over the site.
Hickson Road	<p>Will be characterised by:</p> <ul style="list-style-type: none"> ▪ A traditional kerbed road concept, where pedestrians are provided clear accessibility along the footpath. ▪ Street materiality is continuously applied across the ground plane. ▪ A consistent line of street trees providing shade and extending the concept of the 'urban room'. ▪ East-west block connections to link with the harbour. ▪ Boulevard scale of built form to Hickson Road. ▪ Any building cantilevers or façade projection will need to be considered in the overall streetscape design. ▪ Consistent weather protection provided by awnings or cantilever building elements. ▪ A strong and consistent building edge to Hickson Road. ▪ Activate the ground plane with people attractors such as retail, food and beverage uses and office lobbies. ▪ Well integrated and discrete areas for bus stops, taxi drop offs and parking. <p><i>Note: Infrastructure NSW are currently leading the Hickson Road design development process which will influence the configuration of Hickson Road. This is subject to a separate process and does not form part of MOD 9.</i></p>
High Street Bridge	<ul style="list-style-type: none"> ▪ The Concept Plan has always envisaged a pedestrian bridge connection across Hickson Road. MOD 9 maintains the commitment to provide a pedestrian bridge over Hickson Road. The final design and location will be subject to future detailed design and SSDAs. ▪ The design must be integrated with overall architectural and landscape design.

Component	Design Guidelines and Objectives
	<ul style="list-style-type: none"> ▪ The overall design and finishes of the bridge will extend into High Street to provide a clear and cohesive connection.

4.9.3. Publicly Accessible Spaces

Section 4.4 of the Urban Design Report (**Appendix E**) provides design guidance to facilitate the provision of future publicly accessible spaces including the three potential spaces: Barton Plaza, Barangaroo Steps and Nawi Terrace. However, it is noted that that MOD 9 does not seek consent for these spaces and the final quantum of publicly accessible open space/public domain, form, location and function of publicly accessible spaces/public domain within the development blocks will be subject to detailed design within future SSDAs. This publicly accessible open space will be provided in addition to the delivery of 50% of Barangaroo as public open space.

4.10. REVISED STATEMENT OF COMMITMENTS

DGR 'key issues' item 22 requires an updated Statement of Commitments (SOCs) to be provided as part of MOD 9. The SOCs relate to a range of matters such as the Design Excellence Strategy, requirements for preparation of various technical and specialist documentation, consultation and processes to follow for future detailed design / construction SSDAs, the formation of future technical working groups and ensuring the delivery of specific on-site provisions.

The revised Statement of Commitments (**Appendix B**) have been updated to reference the MOD 9 EAR, updated technical reports and the Urban Design Report but will continue to identify the ongoing responsibilities of the proponent to maintain the amenity of the precinct during construction and operation

4.11. STATE SIGNIFICANT PRECINCTS SEPP AMENDMENT

The Barangaroo site is listed as a State Significant Site in Appendix 9 of the SSP SEPP. Part 3 of Appendix 9 outlines the land use zones, height of buildings, gross floor area and additional relevant provisions relating to development on the site.

To facilitate the outcome envisaged by MOD 9, an amendment to the SSP SEPP is proposed to amend the maps and written instrument provisions relating to:

- Land use zoning.
- Height of buildings.
- Gross floor area.

The proposed amendment to SSP SEPP also seeks to introduce new provisions relating to:

- Development below ground level.
- Building overhangs and façade articulation zones.

The proposed SSP SEPP amendment is required to:

- 1. Relocate the boundary of Block 5 to the south, to more generally align with the Block 5 boundary as it existed prior to the June 2016 amendment to the SSP SEPP associated with MOD 8 and move the B4 zone boundary to the south, to align with the relocated Block 5 boundary.
- 2. Increase the maximum GFA allocated to Blocks 5, 6 and 7.
- 3. Differentiate between above ground and below ground gross floor area associated with Blocks 5, 6 and 7, to enable appropriate controls to be applied to the basement associated with Central Barangaroo.
- 4. Impose varied maximum height limits across Block 5, 6 and 7 to reflect the proposed Central Barangaroo Building Envelope Plan.
- 5. Accommodate building overhangs and façade elements outside the Block boundaries.

- 6. Permit limited development below ground level in the RE1 Public Recreation zone.

The proposed draft SSP SEPP Amendment Discussion Paper, together with amended maps, is provided at **Appendix AA**.

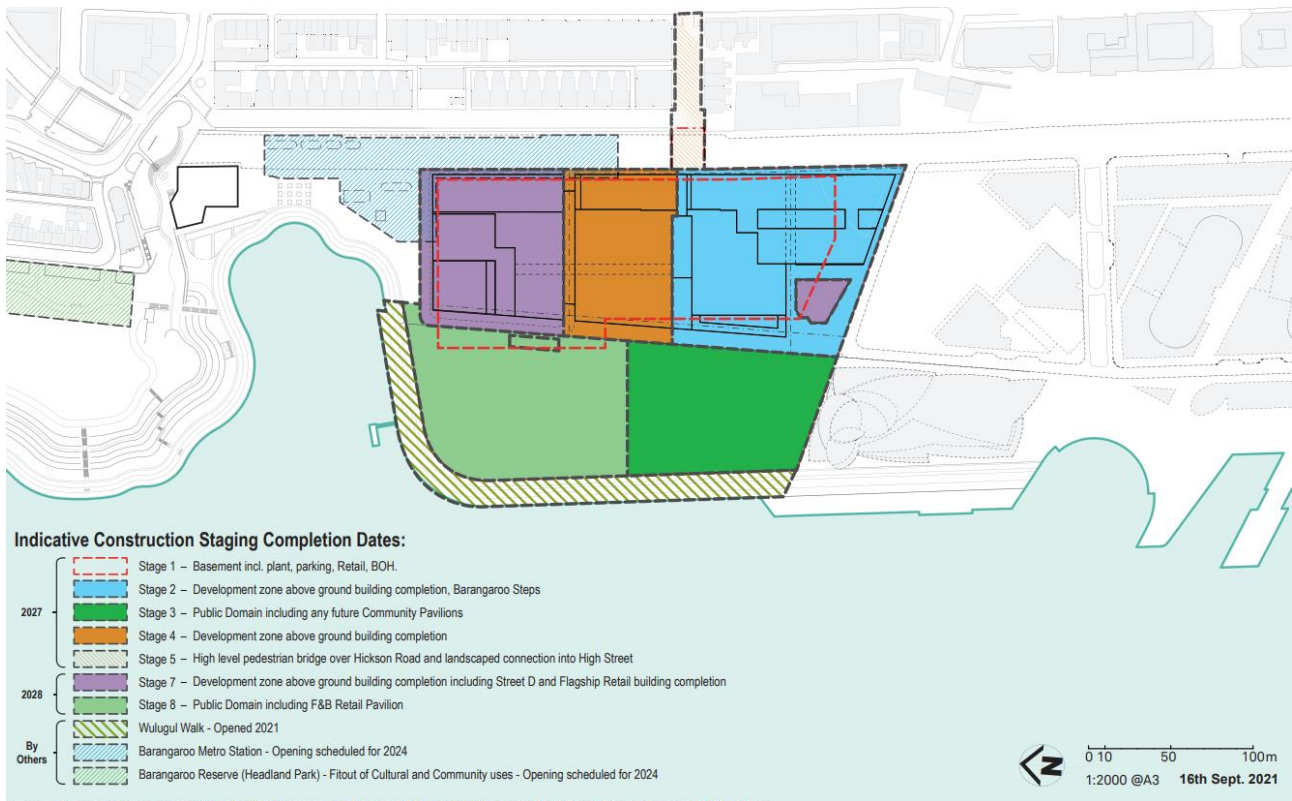
4.12. INDICATIVE STAGING

The fundamental staging principle for Central Barangaroo is flexibility in the construction, opening and operation of development parcels. This is particularly important given no construction is proposed as part of this modification, and all future detailed design and construction is subject to subsequent approval.

Future development applications will be accompanied by staging plans and it is anticipated that future conditions of development consent will require management plans to demonstrate how appropriate occupation can occur during the construction phase, having regard to other development in the locality. Where necessary, staged development will be supported by commitments to deliver stages of the foreshore public domain.

DGRs 'key issues' item 20 requires that MOD 9 outline the staging of construction for Central Barangaroo and Barangaroo Reserve. Accordingly, an indicative Construction Staging Plan for future above and below ground works has been prepared and is illustrated in the figure below and provided at **Appendix T**.

Figure 28 Indicative Staging Plan



Source: Aqualand

5. STATUTORY CONTEXT

5.1. OVERVIEW

The following section identifies the relevant statutory requirements for the project, having regard to the EP&A Act and the Regulations, applicable Commonwealth and State legislation, relevant environmental planning instruments (EPIs) and relevant approvals.

5.2. POWER TO GRANT CONSENT

5.2.1. Environmental Planning and Assessment Act 1979

Concept Development

Division 4.4 of the EP&A Act sets out the framework for concept development applications, which establish a concept proposal and for which subsequent detailed proposals are prepared and assessed in separate development applications. MOD 9 seeks to modify the approved Concept Plan MP06_0162 as outlined in **Section 4**. This modification application does not seek consent for the carrying out of physical works on the site. A subsequent detailed application will be submitted for the first stage of development and will be consistent with this application.

Part 3A Approval

As part of the repeal of Part 3A of the EP&A Act, Schedule 6A of the EP&A Act was enacted to allow the application of the repealed Part 3A provisions to certain projects that had been approved or were in the process of environmental assessment under Part 3A. These projects were known as “transitional Part 3A Projects” and enabled approved projects to be modified under the modification framework set out in the repealed section 75W of the EP&A Act, as if it were still in effect.

The Concept Plan MP06_01620 was approved on 09 February 2007 by the then Minister for Planning and is a transitional Part 3A project. Subsequent to this, the *Environmental Planning and Assessment Amendment Bill 2017* was passed by the Legislative Council and Legislative Assembly and assented to on 23 November 2017.

Arising from this, the transitional arrangements for Part 3A were moved out of the EP&A Act into a new Regulation, the STOP Regulation. Section 75W remains in force by operation of clause 3BA of Schedule 2 of the STOP Regulation.

Section 75W Modification of Concept Plan

The former Section 75W of the EP&A Act provided a mechanism by which the proponent of a Part 3A project (including transitional projects) may request the modification of, and the Minister may modify, that project.

Section 75W(2) of the EP&A Act set out the right of a proponent to request a modification:

The Proponent may request the Minister to modify the Minister’s approval for a project...

Section 75W(3) provided that:

The request for the Minister’s approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.

Section 75W(4) of the EP&A Act provided the Minister with the power to “*modify the approval (with or without conditions) or disapprove of the Modification*”.

The Concept Plan for Barangaroo is a transitional Part 3A project and under clause 3C(1), and subject to clause 3BA of the STOP Regulation, may continue to be modified under the former Section 75W of the EP&A Act.

Clause 3BA(2) of the STOP Regulation provides that an approved project or a concept plan cannot be modified under section 75W on or after the cut-off date, except as provided by clause 3BA.

However, clause 3BA(3) provides that clause 3BA(2) (and accordingly also clause 3BA(5) of the STOP Regulation), does not apply to a request to modify a transitional Part 3A concept plan under s75W which was lodged before the cut-off date of 1 March 2018.

The MOD 9 request to modify the Concept Plan was lodged prior to the 1 March 2018 cut-off date.

The MOD 9 request was lodged in March 2014, and DGRs (now SEARs) for the Barangaroo Concept Plan MOD 9 (MP06_0162 (MOD 9)) were issued to Infrastructure NSW on 15 April 2014.

Pursuant to clauses 3C(1) and clause 3BA(3), MOD 9 remains a modification request under Section 75W of the EP&A Act as the request to modify.

Accordingly, MOD 9 of MP06_01620 is made under the former Section 75W of the EP&A Act.

Substantially the Same Project

Notwithstanding, that pursuant to clause 3BA(3) of Schedule 2 to the STOP Regulation, MOD 9 is submitted and is able to be determined under the former Section 75W of the EP&A Act, for abundant caution and best practice, an assessment has also been made to demonstrate that the project as modified by MOD 9 is substantially the same project to which the Concept Plan currently relates.

This assessment is undertaken in accordance with the provisions of clause 3BA of Schedule 2 of the STOP Regulation which enables Section 75W to remain in force in a modified form for concept plans to which clauses 3BA(3) and (4) of the STOP Regulation do not apply, but for which a request to modify under s75W was lodged on or after the cut-off date of 1 March 2018.

Clause 3BA(5) of Schedule 2 of the STOP Regulation limits the powers under Section 75W to modify a concept plan to applications only where the Minister is satisfied that (emphasis added):

- (a) *the proposed modification is to correct a minor error, misdescription or miscalculation, or*
- (b) *the proposed modification is of minimal environmental impact, or*
- (c) *the project to which the concept plan as modified relates is substantially the same as the project to which the concept plan currently relates (including any modifications previously made under section 75W).***

In accordance with Section 3BA(5)(b), referred to above, the 'project to which the concept plan currently relates' refers to the Concept Plan as modified by previously approved modifications, the most recent being MOD 11.

As discussed below, the project as modified by MOD 9 is substantially the same as the project to which the concept plan currently relates and therefore would be capable of approval by exercise of the clause 3BA(5) power as well as the 3BA(3) power.

A quantitative and qualitative comparison of the approved Concept Plan and MOD 9 is provided below to demonstrate that MOD 9 is 'substantially the same'. That is, MOD 9 is essentially or materially the same as the approved Concept Plan. The qualitative and quantitative assessment includes a comparison of the environmental, strategic, and physical features of the approved Concept Plan and MOD 9.

In accordance with NSWLEC case law, in order to result in a finding that MOD 9 is "essentially or materially" the same as MP_0162 MOD 11 the qualitative and quantitative differences, and the environmental impacts of the modified development compared to the most recent Concept Plan approval, must be considered.

The Approved Concept Plan (as modified)

In determining whether the proposed modifications constitute a project that is substantially the same for which approval has been granted, it is necessary to consider the nature of the project to which the approved Concept Plan relates. That project is described in the approved Barangaroo Concept Plan in Condition A1 Development as follows:

Mixed Use Development

- A mixed-use development.

Built Form (Design Principles, Heights and GFA)

- A maximum of 602,354 sqm gross floor area (GFA), comprised of:

- a maximum of 191,031 sqm of residential GFA of which a maximum of 162,031 sqm will be in Barangaroo South;
 - a maximum of 76,000 sqm of GFA for tourist uses of which a maximum of 59,000 sqm will be in Barangaroo South;
 - a maximum of 34,000sqm of GFA for retail uses of which a maximum of 30,000 sqm will be in Barangaroo South;
 - a maximum of 5,000 sqm of GFA for active uses in the Public Recreation zone of which 3,500 will be in Barangaroo South; and
 - a minimum of 12,000sqm GFA for community uses.
- Built form design principles, maximum building heights and GFA for each development block within the mixed use zone.

Open Space

- Approximately 11 hectares of new public open space/public domain, with a range of formal and informal open spaces serving separate recreational functions and including an approximate 2.2km public foreshore promenade.

Public Domain

- Public domain landscape concept, including parks, streets and pedestrian connections.

Seawall, partial new shoreline and operations

- Alteration of the existing seawalls and creation of a partial new shoreline to the harbour.
- Construction, operation and maintenance of a concrete batching plant to supply concrete for construction of future development under this Concept Plan at Barangaroo South.
- No approval is granted or implied for the future use of a heliport and/or a helipad.

Proposed Modification

The proposed modification seeks modifications to the project to which the approved Concept Plan relates outlined above, as follows:

Mixed Use Development

- No change is proposed to the overall approved range of land uses in Barangaroo.

Built Form (Design Principles, Heights and GFA)

- A quantitative change to the maximum approved GFA, with an increase of 105,687sqm or 17.55% of the total GFA. Specifically:
 - 28,166sqm of this additional GFA (26%) will be below ground and not visible¹. The below ground GFA represents a 4.6% increase in the currently approved GFA across Barangaroo.
 - The GFA will be redistributed within Blocks 5,6 and 7 within the B4 zone (above and below ground) and will increase the amount of GFA permitted in RE1 zone for community and active uses (including the Cutaway).
- A quantitative change to the maximum approved residential GFA with a minor decrease of 1,000sqm or 0.5% of the total residential GFA.

1

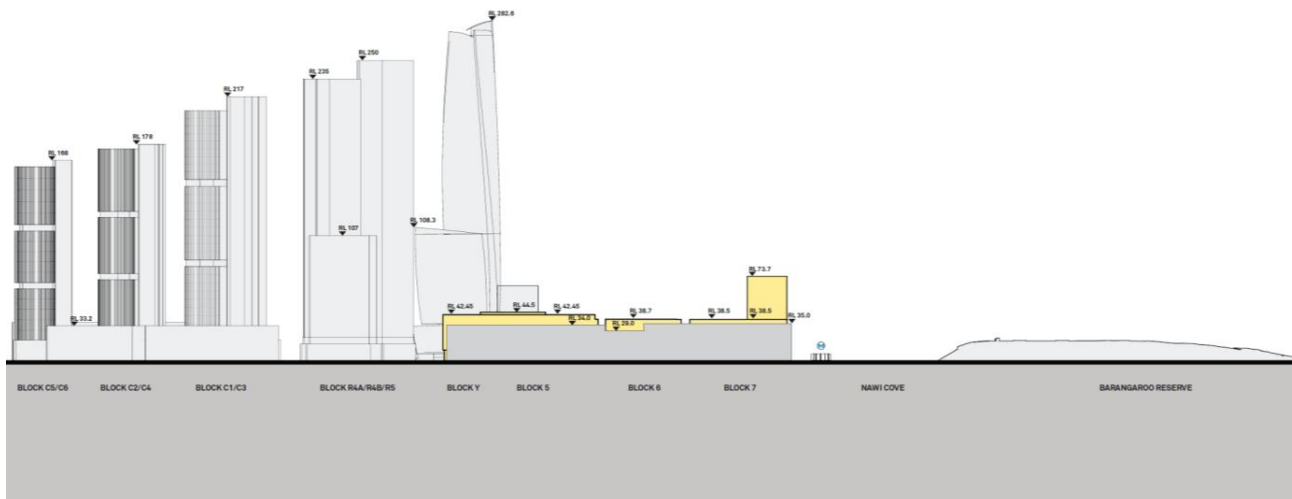
This excludes the calculation of 'wintergardens' from the total residential and commercial floor space, consistent with the approach for residential and tourist GFA in Barangaroo South and Condition B4(4) of the Concept Plan MOD 11 determination

- A quantitative change to the maximum approved retail GFA with an increase of 37,800sqm. The additional retail GFA doubles the amount of retail GFA for the project but only represents a 6% increase in the currently approved GFA across Barangaroo.

The proposed modification also seeks a quantitative change to the approved building envelopes/ maximum building heights within 3 out of 10 development blocks as follows:

- Increase in part of Block 5 by a total of 10.5 metres, or 30.8% of the original height and a decrease in part of Block 5 by a total of 19.05 metres, or 56.03% of the original height.
- Increase in part of Block 6 by a total of 9.7 metres, or 33.4% of the original height.
- Increase in part of Block 7 by a total of 38.7 metres, or 110% of the original height and a decrease in part of Block 7 by a total of 20 metres, or 57% of the original height.
- No other changes are proposed to the envelopes/heights across other Blocks in the Barangaroo project site as illustrated in **Table 15** and **Figure 29**. This figure identifies the proposed height increases in 'yellow', which as illustrated are negligible in the context of the entire Barangaroo precinct.

Figure 29 Proposed changes to building heights across the Barangaroo precinct



Source: Hassell

Table 15 Approved and Proposed Building Heights in Barangaroo (highlighting Central Barangaroo)

Block	Approved Height (MOD 10/11)	Proposed Height (MOD 9)
Barangaroo South		
Block 1	RL 25	No change.
Block 2	RL 180	No change.
Block 3	RL 209	No change.
Block 4A	RL 250	No change.
Block 4B	RL 107	No change.
Block X	RL 41.5	No change.

Block	Approved Height (MOD 10/11)	Proposed Height (MOD 9)
Block Y	RL 275	No change.
Central Barangaroo		
Block 5	RL 34	A range of heights: RL 14.95 RL 15 RL 21.5 RL 31.2 RL 33.75 RL 35 RL 42.45 RL 44.5
Block 6	RL 29	A range of heights: RL 35 RL 38.5 RL 38.7
Block 7	RL 35	A range of heights: RL 15 RL 21.5 RL 35 RL 38.5 RL 73.7

Open Space

The proposed modulation to the building envelope in MOD 9 provides potential opportunities for the delivery of additional publicly accessible open space throughout the site. MOD 9 does not seek consent for these spaces. The final quantum of open space, form and location of these spaces will be subject to detailed design within future SSDAs. Any publicly accessible open space delivered within the development blocks will be provided in addition to the approved 11 hectares of open space across the entire Barangaroo precinct.

Public Domain

MOD 9 proposes re-adjustment of the Block 5 southern boundary and building envelope towards the former alignment (prior to the MOD 8 approval), whilst providing building setbacks to both Barangaroo South and Hickson Park.

Whilst the proposal retains the street network framed by two primary streets (Barangaroo Avenue and Hickson Road) with a variety of east-west secondary streets, the function of some of the streets are proposed to change as follows:

- Remove vehicle traffic (except service vehicles) from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6.
- Amend Barton Street to function as a permanent connecting road, providing two-way vehicular access between Barangaroo Avenue and Hickson Road.
- Amend Street B to function as a pedestrian laneway (renamed Laneway B).
- Minor revisions to the location of Street C and Street D to frame and align with development blocks.
- Amend Street C and Street D to function as one-way, pedestrian oriented streets with a slow vehicle environment.

The Concept Plan has always envisaged an “in-principle” pedestrian bridge connection across Hickson Road. MOD 9 maintains the commitment to provide a pedestrian bridge over Hickson Road. The Urban Design Report envisages that the location of the pedestrian bridge is situated between the southern extent of Block 6 and northern extent of Block 5 at the western edge and will run flush with High Street at the eastern edge. However, the final location of this pedestrian connection and its and its design and function will be subject to detailed design within future SSDAs.

MOD 9 continues to embody the established and overarching built form and urban design principles for the Barangaroo precinct embedded within the approved Concept Plan, and generally those contained within the refined SOM Master Plan Framework, which include:

- Maintaining a mixed-use development.
- Ensuring the delivery of 50% of Barangaroo as public open space, is maintained;
- Development to occur generally within existing development zones, footprints and but with moderated height controls responding to contextual changes;
- Provision of alternate sites outside the development zone for the future delivery of a cultural venue;
- Connection and integration with Barangaroo South, Barangaroo Reserve, the Harbour and CBD precincts;
- A high level of flexibility allowing the range of uses to evolve over time;
- Contribution to achieving the sustainability targets and commitments established for Barangaroo;
- Design excellence in the Master Plan framework that provides opportunities for design excellence in development of built form and public domain outcomes;
- Ensuring appropriate commercial returns are delivered to the NSW Government across the Barangaroo project; and
- Provision for staging of the development including consideration of effective staged opening and operation of completed development parcels.

Whilst this modification results in a quantitative change to the approved development parameters, this change results in an increase of only 17.55% of the total approved GFA under the Concept Plan, which is not significant in comparison to the overall site GFA and the capacity of this state significant urban renewal site to accommodate development over a 14-year period. The amendments to building height of Block 5, 6 and 7, including the proposed addition of 38.7m of height to tower 7 is relatively minor in the context of the approved heights of other building within Barangaroo.

Qualitatively, the proposed modification does not change any of the essential features of the approved Barangaroo Concept Plan, as it remains a mixed-use development across eight development blocks with significant public domain. Further discussion of how the proposed modification is substantially the same is provided below.

Quantitative Assessment of the Concept Plan and Proposed Modification

In a quantitative sense, MOD 9 is substantially the same as the most recent Concept Plan modification (MOD 11) as it maintains the following physical elements of the approved Concept Plan for the Barangaroo project:

Mixed Use Development

- A mixed development. No change is proposed to the overall approved range of land uses in Barangaroo.
- B4 Mixed Use and RE1 Public Recreation zoning across the site.

Built Form (Design Principles, Heights and GFA)

- A layout derived from the long north south dimension of the project site.
- Maximum building heights and GFA for development blocks.
- The maximum building heights within Development Block 1, Block 2, Block 3, Block 4A, Block 4B, Block X, Block Y, and active uses in the public domain including a variety of small buildings and structures. providing for a high-quality urban environment and optimising amenity for workers, visitors and residents.

Open Space

- Approximately 11 hectares of new public open space, with a range of formal and informal open spaces serving separate recreational functions;
- A foreshore promenade (Wulgul Walk) 2.2km in length providing pedestrian access from Walsh Bay to King Street Wharf.

Public Domain

- A public domain framework that incorporates a foreshore promenade, a new cove, parks, squares and civic places, streets and pedestrian connections.
- A street pattern and pedestrian connectivity that integrates with Walsh Bay, Millers Point, King Street Wharf and the Western edge of the Sydney CBD.
- The introduction of harbour water into the site in the new coves modulating what was an industrial linear harbour edge.
- A street network framed upon two primary streets (Barangaroo Avenue and Hickson Road) with a variety of east-west secondary streets and laneways that prioritise movement of pedestrian and cyclists.
- A variety of pedestrian walkways that create permeability within the urban blocks between the streets.
- Active uses in the public domain including a variety of small buildings and structures. providing for a high-quality urban environment and optimising amenity for workers, visitors and residents.

The revised Statement of Commitments (**Appendix B**) have been updated to reference the MOD 9 EAR, updated technical reports and the Urban Design Report but will continue to identify the ongoing responsibilities of the proponent to maintain the amenity of the precinct during construction and operation. The Instrument of Approval (**Appendix C**) is proposed to be updated to facilitate the changes as a result of MOD 9 so that there is not a conflict between the approved Concept Plan and the conditions of consent.

The main quantitative differences from a planning perspective between the approved Concept Plan and MOD 9 are limited to the following:

- The increase in the approved maximum GFA (by 17.55%) across the Barangaroo site is not significant in comparison to the overall site GFA and the capacity of this state significant urban renewal site to accommodate mixed use development over a 14-year period. The increase in GFA also strengthens the achievement of key project objectives and alignment with the strategic planning framework as discussed previously.
- The minor decrease in the approved maximum residential GFA (by 1,000sqm, or 0.5%) across the Barangaroo site will ensure Central Barangaroo retains a strong mixed-use character with a significant focus on employment-generating uses and cultural and community facilities.
- The increase in the approved maximum retail GFA across the Barangaroo site is considered nominal compared to the approval quantum of GFA across the site. The additional retail GFA doubles the amount of retail GFA for the project but only represents a 6% increase in the currently approved GFA across Barangaroo. The proposed GFA amendments will activate the broader Barangaroo precinct and provide a floor space framework to attract quality retail tenants to achieve the vision for retail on the site envisaged by the Central Barangaroo Retail Partner (Scentre Group). The additional GFA for retail will provide an activated retail base across the precinct (to appeal to a range of shop operators and customers including large format retail tenancies, speciality retail, and food and beverage) in the

basement, ground and first level to capitalise upon movement of commuters and visitors through to the new transport interchange node (Barangaroo Station). Importantly the Barangaroo project will remain a mixed-use precinct with a significant focus on employment-generating uses.

- The amendment to building height of Block 5, 6 and 7 (refer **Appendix E**) from a maximum of RL35 to RL73.7 is very minor in comparison to the approved and largely constructed height of built form in Barangaroo South including Block Y (RL275), Block 4A (RL250) and Block 4B (RL235). Despite the 38.7m increase proposed on Block 7, MOD 9 will generally retain the largely lower-density urban character of Central Barangaroo consistent within the Concept Plan and will continue to provide an appropriate height in its western city edge context.
- The distinction between above and below ground GFA is consistent with the approach adopted in Barangaroo South to deliver below ground gross floor area (such as the construction of Barangaroo South basement below Hickson Park SSD 15_6960) and will not significantly impact or amend the overall quantum of GFA – rather it will provide additional clarity and certainty about the maximum permitted GFA within the Barangaroo precinct.
- The proposed changes to block boundaries, involving the re-adjustment of the Block 5 southern boundary and Hickson Park northern boundary generally reflects the reinstatement of the Block 5 southern boundary prior to the MOD 8 approval. Importantly, 49.91% of Hickson Park receives solar access between 12pm – 2pm on the winter solstice despite the modified building envelopes. This allows for an urban parkland with an area of 3,553.13sqm that can accommodate over 883 people sitting comfortably (based on an assumption of 1 person per 4sqm sitting comfortably). Further, the proposed modulation of the building envelopes in MOD 9 creates opportunities for the delivery of publicly accessible open space throughout the site, which re-affirms and aligns with a key principle of the Concept Plan which is deliver a range of formal and informal open spaces throughout the precinct. The final form, location and function of these spaces will be subject to detailed design within future SSDAs and will complement the approved public domain framework which features a foreshore promenade, parks, squares and civic places.

The modification retains the essential quantitative elements of the Concept Plan (as modified).

Qualitative Assessment of the Concept Plan and Proposed Modification

In a qualitative sense, MOD 9 is substantially the same as the Concept Plan (as modified by Mod 1, 2, 3, 4, 5, 6, 7, 8, 10 and 11) as it retains the essential elements, including the following key elements of the approved Concept Plan:

- The key strategic drivers and development outcome of the Barangaroo Concept Plan remains the same. As identified in the original Concept Plan (MP_0162), the vision for Barangaroo is to “*create a new civic precinct, which effects the regional and global position, economy and culture of Sydney*”. The underlying purpose of the project as a whole has not changed despite the modifications proposed in MOD 9. Rather, the proposed modifications will ensure the delivery of the strategic vision for the precinct is responsive to the emerging land use context, current planning policy and heightened connectivity as a result of Barangaroo Station. This will ensure the 14-year legacy of this unique and state significant urban renewal project is delivered successfully and as intended.
- MOD 9 retains the overall urban structure and land use concept, being the distinction of three precincts (Barangaroo Reserve, Barangaroo South and Central Barangaroo), with the central precinct providing a civic focal point for recreation, events, and community uses with commercial and residential land uses.
- MOD 9 retains the siting, development footprint and predominate form of the approved building envelope for Blocks 5, 6 and 7, being concentrated along the eastern edge of Central Barangaroo in alignment with the strong grid patterned of the western City Frame established by Hickson Road and Barangaroo Avenue. The envelopes will continue to frame a built form edge to adjacent public domain areas, providing activity and integration throughout the precinct, and will provide an appropriate visual transition to the open space setting of Barangaroo Reserve. MOD 9 will further refine and modulate the building envelope to create a positive urban design outcome and overall, generally deliver a lower-rise urban form character as intended by the Concept Plan principles.
- The core principle of a mixed-use precinct in Barangaroo is maintained whilst also providing for embedded flexibility within the use configuration to allow for resilience to market conditions and fluctuations. This will ensure viable, and quality urban design outcomes can be provided on the site in response to demand.

- MOD 9 retains sufficient housing and community and social infrastructure in the Barangaroo precinct to assist in creating a vibrant community that connects to the existing CBD.
- MOD 9 retains the public domain concept, namely 50% of Barangaroo as public open space, which is concentrated along the foreshore and headland.
- Whilst MOD 9 proposes a physical and quantitative change, the overarching objectives of the planning framework established by the approved Concept Plan are maintained, which provides for an entirely new and significant commercial precinct for the Sydney CBD with a critical mass of works and diverse types of commercial floor space that will contrast with the conventional office spaces and large floor plates provided within CBD. This will provide diversity in the market and support a variety of employment opportunities as intended by the Concept Plan and will strengthen the global economy.
- The innovative and world-class approach to environmental sustainability for the Barangaroo precinct is retained within MOD 9 and is further refined and articulated in the Central Barangaroo Sustainability Strategy.
- The introduction of the Urban Design Guidelines for Central Barangaroo represent a strengthening of the key tenants of the design principles established in the original Concept Plan, and more generally those within the SOM Master Plan Framework (although it is noted this does not contain statutory weight).

The modification retains the essential qualitative elements of the Concept Plan (as modified).

Impact Assessment

Section 7 of this EAR addresses the environmental impacts associated with the proposed modification. As concluded in this section, MOD 9 will not result in any significant impacts that were not originally contemplated and deemed suitable through the determination of the Concept Plan (as modified). In summary:

Built Form Principles

- The proposed modification respects and strengthens the key built form and urban design principles established in the original Concept Plan, and in the SOM Master Plan Framework (although it is noted this does not contain statutory weight).

Residential Amenity

- The proposed modification will allow for buildings that achieve the objectives of both *State Environmental Planning Policy 65 – Design Quality of Residential Flat Buildings (SEPP 65)* and the Apartment Design Guide.

Solar Access

- Whilst MOD 9 will result in some additional shadowing will occur on Harbour Park and Wulugul Walk between 9am and 10am on the winter solstice compared to the approved Concept Plan, this fast moving shadow quickly dissipates and from 12pm Harbour Park and Wulugul receives full solar access for the remainder of the day. This aligns with the lunch time period (12 midday to 2pm) which is associated with the likely peak demand for recreational activity in this area.
- The northern extent of Wulugul Walk and Hickson Cove remain will continue to receive solar access during the study period as per the approved Concept Plan.
- In regard to Hickson Park and Barangaroo Avenue, the extent of morning shadow cast (between 9am – 10am) is largely comparable to the shadow of the approved Concept Plan and there are no further impacts on the amenity of these areas. The MOD 9 envelope will result in an increase in shadows to the eastern portion of Hickson Park adjacent to the curtilidge of Building R5 and Hickson Road between 11am – 2pm. However, the western extent of Harbour Park (at the intersection of Barton Street and Barangaroo Avenue) will continue to receive solar access between 11am to 2pm consistent with the approved Concept Plan (with only a minor increase in shadows adjacent to Barton Street).
- Overall, MOD 9 will ensure an average of 49.91% of Hickson Park (3,533.13sqm) will receive solar access between 12pm – 2pm on the winter solstice. This allows for an urban parkland with an area of 3,553.13sqm that can accommodate over 883 people sitting comfortably (based on an assumption of 1 person per 4sqm).

View and Visual Impacts

- The built form, mass and scale of MOD 9 is considered to be visually subservient to the approved development located within Barangaroo South under the approved Concept Plan. The modulated forms provide visual interest and allow for potential views to be maintained during the detailed design phase. Although the Block 7 tower disrupts some continuity of views, generally there is sufficient context either side of the tower form to maintain visual continuity of harbour and horizon views. When comparing to the overall Barangaroo precinct, particularly Barangaroo South, the view impacts resulting from MOD 9 are considered acceptable in the context of the public benefits and community uses provided. This is further discussed in **Section 7.6** of this EAR.
- There is no sky view obstruction from the Sydney Observatory resulting from the proposed building envelopes in Blocks 5 and 6 given the low heights proposed. Only the proposed taller tower building envelope in Block 7 is high enough to obstruct sky views, however, the area of the sky obstructed is less than 10 degrees above the horizon. This area of the sky is too low to permit viable observing. Accordingly, due to the relatively low building envelope heights in Central Barangaroo and the highly illuminated environment that it will sit within, there is not expected to be significant negative impact from the Central Barangaroo development on the ability of the Observatory to view the night sky. Light spill mitigation measures are also expected to be incorporated in line with current standards. This is further discussed in **Section 7.7** of this EAR.

Environmental Impact

- There will be no change to aeronautical operations as the modified envelope will not impose any restrictions on aircraft operations.
- Contamination will be suitably addressed and remediated where required in accordance with the previous Concept Plan approval. The Minister can be satisfied the recommendations identified in the suite of geotechnical and contamination investigations relevant to MOD 9 and appended to this EAR will be completed via a condition of Concept Plan approval, and compliance with commitment 87 of the Statement of Commitments which relates to preparation and compliance with a RAP applicable to the site. This is further discussed in **Section 5.5** and **7.13** of this EAR.
- Wind microclimate conditions as a result of changes to the maximum building height of Blocks 5, 6 and 7 will remain largely consistent with the approved Concept Plan and the modified envelopes satisfies the wind comfort criteria for the intended use of each area, as discussed in **Section 7.10**.
- There will only be a marginal change in the operation of key traffic intersections, and parking and access arrangements remain satisfactory as discussed in **Section 7.8**.
- Other potential impacts related to stormwater, noise, vibration, air quality and infrastructure and services can be suitably managed.

Social and Economic Impact

- The provision of additional retail within the precinct will service the daily needs of future residential occupants, commercial tenants, and visitors, provide an activated retail base across the precinct and ensure a genuine mixed-use outcome will continue to be achieved within the Barangaroo Project.
- The modifications will not result in any significant additional social or environmental impacts as previously assessed for the approved Concept Plan.

Summary

The modification to provide additional GFA and height at Barangaroo to support and strengthen the implementation of the above parameters is within the scope of the development concept as contemplated and approved. Therefore, the actual quantum of GFA, increases in height, changes to the building envelopes and alignment of development blocks (including Hickson Park) is considered to be of lesser significance in this circumstance than is the question of whether or not the resultant development will nonetheless deliver upon the underlying objectives of the Barangaroo Concept Plan, as approved (and modified).

Having regard to the essential and material components of the approved development, and the consideration of the commonalities and differences above, we consider that the Minister can be satisfied MOD 9 is substantially the same as the Barangaroo Concept Plan (MP 10_0162) and the most recent modifications to

the Concept Plan (MP 10_0162 MOD 11 and MP_0162 MOD 10) based on a qualitative and quantitative assessment of the proposed modifications, and conclusion that MOD 9 will not result in any significant environmental, social or economic impacts over and above those previously assessed and considered suitable.

5.2.2. State Environmental Planning Policy (State Significant Precincts) 2005

The Barangaroo site is identified as a State Significant precinct within Appendix 9 of the SSP SEPP and on the land application map. Clause 6 of Part 3 of the SSP SEPP identifies that Appendix 9 applies “*whether or not the development is a transitional Part 3A project.*” The SSP SEPP therefore applies to MOD 9.

To facilitate the outcome envisaged in MOD 9, an application will be submitted concurrently with this modification application to the Minister to amend the SSP SEPP to ensure it aligns with MOD 9.

5.3. PERMISSIBILITY

MOD 9 relates to land zoned part B4 Mixed Use and RE1 Public Recreation under the SSP SEPP. MOD 9 is accompanied by a request to amend the SSP SEPP maps by relocating the boundary of Block 5 to the south, to align with the boundary as it existed prior to the most recent (28 June 2016) SEPP amendment associated with the previous MOD 8 to the approved Concept Plan. The zoning map will also be amended to extend the B4 zoning to the revised Block 5 boundary, returning it to align with the pre-MOD 8 boundary.

Clause 8(2) in Appendix 9 of the SSP SEPP states that development for any purpose may be carried out with consent on land within Zone B4 unless prohibited by subclause (3). The proposed commercial, retail, and residential land uses within Blocks 5, 6 and 7 are not listed as prohibited and are therefore permissible with development consent.

Clause 9(2) in Appendix 9 of the SSP SEPP states that development for any purpose as listed may be carried out with consent on land within the Zone RE1 Public Recreation. The one small pavilion structure within Harbour Park (RE1 zoned land) which is proposed under MOD 9 will support future food and drink premises uses which are permissible with consent.

Clause 23(3) in Appendix 9 of the SSP SEPP allows for consent to be granted for the development of land for any purpose that may be carried out in an adjoining zone, provided the development can satisfy clauses 23(3)(a) and (b). Clause 23(2) states that this applies to any land that is within 25 metres of a boundary between any two zones.

The residential and commercial uses contained within the building cantilevers and overhangs that extend over Barangaroo Avenue and Street D will extend beyond the B4 Mixed Use zone boundary and as such seek to utilise clause 23 to demonstrate permissibility. It is noted that the residential and commercial uses contained within the building cantilever and overhang that extends over Hickson Road will remain within the B4 Mixed Use zone and as such does not need to rely upon this clause for permissibility. The satisfaction of clause 23(3)(a) and (b) is discussed in further detail in **Table 17** in **Section 5.5.2**.

An amendment to the SSP SEPP is also required to permit development that is entirely below ground level (existing) on land in the RE1 Public Recreation zone, to allow for retail and business premises uses within the portion of the Central Barangaroo basement that sits below the RE1 zone.

5.4. OTHER APPROVALS

In addition to the approvals noted elsewhere in this document, other approvals will be required in the future before the development may be carried out. These approvals may include, but are not limited to, the following:

- Approvals under the *Roads Act 1993* (including Section 138 approvals) may be required. A consent under section 138 of the *Roads Act 1993* cannot be refused if it is necessary for carrying out SSD that is authorised by a development consent and any Roads Act consent must be substantially consistent with the SSD consent.
- An environment protection licence under the Protection of the *Environment Operations Act 1997*. An environment protection licence under Chapter 3 of the Protection of the *Environment Operations Act 1997* cannot be refused if it is necessary for carrying out SSD that is authorised by a development consent and any licence must be substantially consistent with the consent.

- A compliance certificate issued under Section 73 of the *Sydney Water Act 1994*.
- The Outer Horizontal Surface of the Obstacle Limitation Surface (OLS) across the site is 156m AHD. The future development and construction associated with MOD 9 includes construction crane activity to 163.7m AHD. The construction crane activity will penetrate the Sydney Airport OLS and therefore, future detailed SSDAs will require approval under the *Airports (Protection of Airspace) Regulations*. MOD 9 is accompanied by a Preliminary Aeronautical Impact Assessment to address the future OLS penetration (refer to **Appendix X**).

The above listed approvals will be sought as required in accordance with any conditions of consent associated with MOD 9, along with any other approvals required from relevant authorities.

5.5. MANDATORY MATTERS FOR CONSIDERATION

The relevant strategies, environmental planning instruments, policies and guidelines as set out in the DGRs are addressed in the following subsections. It is noted that since issue of the DGRs a number of policies have been updated and made redundant and as such are no longer relevant to the proposal. Additional policies are considered where relevant.

In accordance with Section 75R(3) of the EP&A Act, the proposal is not required to consider the *Sydney Local Environmental Plan 2012* and associated *Sydney Development Control Plan 2012*. However, the urban design, development and land uses proposed as part of this development are generally consistent with these instruments.

5.5.1. Commonwealth Legislation

Table 16 Summary of consistency with Commonwealth Legislation

Matter	Guidance
<i>Airports Act 1996</i>	Under section 183 of the <i>Airports Act 1996</i> (Airports Act), a 'controlled activity' (as defined in section 182) cannot be undertaken unless that carrying out of the activity is in accordance with an approval granted under the relevant regulations. MOD 9 seeks to increase the maximum building height on the site from RL 35 (Block 7) to RL73.7 (Block 7). MOD 9 will not result in development that impacts air turbulence or results in the significant emission of steam, gas, smoke or other particulate matter.
<i>Environmental Protection and Biodiversity Conservation Act 1999</i>	The <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) aims to provide for the protection of the environment and promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources. The future detailed SSDAs will assess and mitigate the impact of the proposal on threatened and migratory species identified in Part 13 of the EPBC Act.

5.5.2. State Legislation

Table 17 Summary of consistency with State Legislation

Matter	Guidance
<i>Environmental Planning and Assessment Regulation 2000</i>	The EAR and appended consultant reports will be placed on public exhibition in accordance with Division 5 of the <i>Environmental Planning and Assessment Regulation 2000</i> (the Regulations).

Matter	Guidance									
<p><i>Biodiversity Conservation Act 2016</i></p>	<p>The purpose of the <i>Biodiversity Conservation Act 2016</i> is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development.</p> <p>Under clause 34A of the <i>Biodiversity Conservation (Savings and Transitional) Regulation 2017</i>, Part 7 of the <i>Biodiversity Conservation Act 2016</i> does not apply to a request to modify a transitional Part 3A concept plan approval. It will apply to future development applications for building and works, where relevant, unless certification of the concept plan approval or development application is obtained as provided for under clause 34A (3), (4) or (5).</p>									
<p><i>Environmental Planning and Assessment Act 1979</i></p>	<p><u>Section 1.3 – Objects of Act</u></p> <table border="1"> <tbody> <tr> <td> <p>Section 1.3(a): Promote social and economic welfare of the community</p> </td> <td> <p>The MOD 9 proposal promotes the social and economic welfare of the community and a better environment through the provision of community, cultural and open space uses that have been designed with respect of the environmental sensitivities of the site. MOD 9 seeks to effectively manage and conserve the natural resources of the site and surrounding context in accordance with the principles of ecologically sustainable development.</p> </td> </tr> <tr> <td> <p>Section 1.3(b): Facilitate ecologically sustainable development</p> </td> <td> <p>The MOD 9 proposal facilitates ecologically sustainable development (ESD) as it aims to deliver an exemplar sustainable precinct through a range of environmental and social initiatives, with relevant economic considerations relating to the efficient use of public investment in transport infrastructure and the development of underutilised Government owned land.</p> <p>This will be achieved through the development of a sustainability framework to ensure the effective implementation of sustainability initiatives and management of natural resources, as well as certification using internationally recognised third part certification sustainability rating tools (refer Section 7.16).</p> </td> </tr> <tr> <td> <p>Section 1.3(c): Promote orderly and economic use and development of land.</p> </td> <td> <p>The MOD 9 proposal promotes the orderly and economic use of the land for mixed use purposes within a highly accessible CBD edge location, in proximity to further housing, retail facilities, employment opportunities and transport networks.</p> </td> </tr> <tr> <td> <p>Section 1.3(c): Promote the delivery and maintenance of</p> </td> <td> <p>Infrastructure NSW is delivering public benefits as a whole of precinct approach. Barangaroo South will be delivering 48 affordable housing units as Key-Worker Housing.</p> <p>While no affordable housing is proposed within Central Barangaroo, MOD 9 includes a contribution to affordable</p> </td> </tr> </tbody> </table>		<p>Section 1.3(a): Promote social and economic welfare of the community</p>	<p>The MOD 9 proposal promotes the social and economic welfare of the community and a better environment through the provision of community, cultural and open space uses that have been designed with respect of the environmental sensitivities of the site. MOD 9 seeks to effectively manage and conserve the natural resources of the site and surrounding context in accordance with the principles of ecologically sustainable development.</p>	<p>Section 1.3(b): Facilitate ecologically sustainable development</p>	<p>The MOD 9 proposal facilitates ecologically sustainable development (ESD) as it aims to deliver an exemplar sustainable precinct through a range of environmental and social initiatives, with relevant economic considerations relating to the efficient use of public investment in transport infrastructure and the development of underutilised Government owned land.</p> <p>This will be achieved through the development of a sustainability framework to ensure the effective implementation of sustainability initiatives and management of natural resources, as well as certification using internationally recognised third part certification sustainability rating tools (refer Section 7.16).</p>	<p>Section 1.3(c): Promote orderly and economic use and development of land.</p>	<p>The MOD 9 proposal promotes the orderly and economic use of the land for mixed use purposes within a highly accessible CBD edge location, in proximity to further housing, retail facilities, employment opportunities and transport networks.</p>	<p>Section 1.3(c): Promote the delivery and maintenance of</p>	<p>Infrastructure NSW is delivering public benefits as a whole of precinct approach. Barangaroo South will be delivering 48 affordable housing units as Key-Worker Housing.</p> <p>While no affordable housing is proposed within Central Barangaroo, MOD 9 includes a contribution to affordable</p>
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Matter	Guidance	
	affordable housing.	<p>housing through the Homes for Homes scheme. As part of the commitment, 0.1% of the sale price of each residential dwelling will be donated to deliver affordable housing in a variety of locations, thereby promoting the delivery of affordable housing in accordance with the object of the EP&A Act.</p> <p>In addition, Central Barangaroo and MOD 9 will provide cultural facilities and community uses to extend Sydney's cultural offering, provides opportunities to integrate built form with a variety of publicly accessible open space (maintaining 50% of Barangaroo as public open space), provides funding for the delivery of Barangaroo Reserve, and will contribute developer contributions for the Barangaroo Public Art and Cultural Plan. The provision of high-value residential development will help fund the delivery of the public benefits within Central Barangaroo.</p> <p>The Housing Strategy prepared by Elton further discusses the commitment to affordable housing contribution through the Homes for Homes scheme, as well as the various other social benefits associated with MOD 9 (refer to the Housing Strategy at Appendix L).</p>
	Section 1.3(d): Protect the environment	MOD 9 does not compromise the conservation or protection of native animal and plant species, ecological communities and their habitats. There are no known threatened species existing across the site.
	Section 1.3(e): Promote sustainable management of built and cultural heritage	MOD 9 promotes the sustainable management of surrounding built and cultural heritage as outlined in the Heritage Impact & Archaeological Assessment provided at Appendix S (discussed further in Section 7.9).
	Section 1.3(f): Promote good design and amenity of the built environment	MOD 9 seeks to promote good design and amenity through achieving design excellence via implementation of the Design Excellence Strategy included at Appendix Z . In addition, the Urban Design Report prepared by Hassell includes design guidelines to facilitate the detailed design of future subsequent SSDAs (Appendix E).
	Section 1.3(g): Promote proper construction and maintenance of buildings	N/A – MOD 9 does not seek approval for any construction works. This will be sought as part of future detailed SSDAs. An indicative Construction Staging Plan is included at Appendix T .
	Section 1.3(h): Promote the	It is noted that the Minister for Planning and Public Places, or their delegate, is the consent authority for MOD 9 as the

Matter	Guidance	
	sharing of responsibility for environmental planning and assessment	development is to be carried out by a public authority Infrastructure NSW (the applicant) on behalf of the Crown.
	Section 1.3(i): Provide increased opportunity for community participation	MOD 9 has and will continue to provide opportunity for community participation as part of the assessment of the subject application and future detailed applications for the site. Refer to Section 6.3 and Appendix U .
	<u>Section 4.15 – Evaluation</u>	
	Section 4.15(1)(a)(i): any environmental planning instruments	MOD 9 has been assessed in accordance with the relevant State and local environmental planning instruments within this Section 5 of this EAR. The assessment of this MOD 9 demonstrates the proposal accords with the objectives, priorities and actions outlined within relevant strategic land use, design and transport planning policies. A concurrent amendment to the SSP SEPP is submitted to enable the permissibility and built form of the proposal. A further comprehensive assessment of detailed design and construction of specific aspects of the redevelopment will be provided in subsequent detailed SSDAs.
	Section 4.15(1)(a)(ii): any proposed instrument	Draft environmental planning instruments are considered in Section 5.5 . The assessment of this MOD 9 demonstrates the proposal accords with the objectives and priorities of the draft instruments.
	Section 4.15(1)(a)(iii): any development control plan	In accordance with Clause 11 of the SDRP SEPP, the proposal is not required to consider the Sydney Development Control Plan 2012.
	Section 4.15(1)(a)(iv): any planning agreement	There are no planning agreements relevant to the application.
	Section 4.15(1)(a)(v): The Regulations	The EAR and appended consultant reports will be placed on public exhibition in accordance with Division 5 of the Regulations.
	Section 4.15(1a): Likely impacts of the development	MOD 9 has been assessed considering the potential environmental, economic and social impacts as outlined in Section 7 of this EAR. This EAR is supported by a range of specialist technical documentation contained with

Matter	Guidance	
		<p>Appendix A – Appendix BB. This EAR considers the impacts associated with the proposed MOD 9 amendments to the approved Concept Plan.</p> <p>The assessment demonstrates that environmental impacts associated with MOD 9 are largely comparable to the approved Concept Plan, particularly with regard to traffic, wind, noise, air quality, heritage and aeronautical considerations. Mitigation of environmental impacts associated with the proposal will be achieved through implementation of mitigation measures identified in the Statement of Commitments at Appendix B. This is in addition to the refinement and articulation of building design in future detailed SSDAs which will further mitigate any environmental impact.</p> <p>In summary impacts associated with MOD 9 are considered acceptable in respect of the significant economic and social benefits delivered by the proposal.</p>
	<p>Section 4.15(1a): Suitability of the site</p>	<p>The suitability of the site has already been established through the determination of the original Concept Plan. This suitability has only been enhanced through the introduction of Barangaroo Station which requires an appropriate density of gross floor area to capture the sustainable and economic efficiencies of integrating transport infrastructure and land use development. Whilst the site sits within an established urban context with a number of critical sensitivities including prevailing view corridors, heritage precincts and public areas, the proposed building envelopes balances these considerations with an appropriate density and height for this state significant urban renewal site.</p> <p>The unique physical, social and environmental characteristics of Central Barangaroo establish the suitability of site to accommodate MOD 9 and satisfy the requirements of section 4.15(c) of the EP&A Act.</p>
	<p>Section 4.15(1a): Any submissions made</p>	<p>Consideration will be given to submissions received during the public exhibition of the proposal.</p>
	<p>Section 4.15(1a): The public interest</p>	<p>The proposal is in the public interest as it provides significant public benefits for the local and wider community that are unable to be realised under the approved Concept Plan. Specifically, MOD 9 is within the public interest as the proposed amendment will:</p> <ul style="list-style-type: none"> ▪ Ensure the use and density on the site aligns with the strategic planning framework governing Greater

Matter	Guidance
	<p>Sydney and the significant investment in the infrastructure network surrounding the site, thereby exhibiting current land use and transport planning policy and achieving a '30-minute city'.</p> <ul style="list-style-type: none"> ▪ Provide a significant enhancement to the activation and usability of public space within Central Barangaroo. This will encourage greater use of the precinct's recreational spaces by a diversity of users. ▪ Deliver increased employment opportunities during construction and operation, including an additional 1,143 full time jobs during construction and 1,176 full time jobs during operation. ▪ Contribute an additional \$188.70 million to the NSW economy during construction and an additional \$423.40 million during operation compared to the approved Concept Plan, in addition to greater capital expenditure in other sectors. ▪ Provide a greater density of commercial and retail floor space which will create economic stimulus, as well as an appropriate proportion of residential density largely accommodated in Block 7 to encourage activation outside of traditional business hours. ▪ Deliver the 'civic heart' of Barangaroo with supporting cultural, community and public facilities which will strengthen the social fabric of the Barangaroo precinct. ▪ Maintain a continued commitment to deliver Barangaroo as a globally recognised exemplar sustainable urban precinct that is carbon neutral. ▪ Deliver the highest standard of architectural, urban and landscape design within future detailed SSDAs through the introduction of the Urban Design Guidelines and the Design Excellence Strategy framework. <p>It is in the public interest to optimise strategic government landholdings and capitalise upon the unique opportunity presented by the Barangaroo site to create a vibrant mixed-use precinct.</p>
<p><i>State Environmental Planning Policy (State and Regional Development) 2011</i></p>	<p>Barangaroo is a State Significant Site under Schedule 2 of the SRD SEPP. No changes are proposed to SRD SEPP as part of MOD 9. The relevant provisions of the SEPP, including those contained within Schedule 2 will continue to apply.</p>

Matter	Guidance	
<p><i>State Environmental Planning Policy (Major Development) 2005</i></p>	<p>The original Concept Plan (MP06_0162) was approved in February 2007 by the then Minister for Planning under Part 3A of EP&A Act. To facilitate this, the land was rezoned and listed as a State Significant site via an amendment to Schedule 3 of <i>State Environmental Planning Policy (Major Development) 2005</i> (now renamed SSP SEPP).</p> <p>The SSP SEPP is now the relevant SEPP applying to development within the Barangaroo Site. An assessment of the relevant provisions within the SSP SEPP is provided below in this table.</p>	
<p><i>State Environmental Planning Policy (State Significant Precincts) 2005</i></p>	<p>Appendix 9</p>	<p>Appendix 9 of the SSP SEPP identifies the Barangaroo site as a State Significant Precinct.</p>
	<p>Clause 7: Land use zones</p>	<p>MOD 9 relates to land zoned part B4 Mixed Use and RE1 Public Recreation.</p> <p>MOD 9 is accompanied by a request to amend the SEPP maps by relocating the boundary of Block 5 boundary to the south, to align with the boundary as it existed prior to the most recent (28 June 2016) amendment to the SEPP associated with the previous MOD 8 to the Barangaroo Concept Plan. The zoning map will also be amended to extend the B4 zoning to the revised Block 5 boundary, returning it to align with the pre-MOD 8 boundary. Refer to draft SEPP Amendment at Appendix AA.</p>
	<p>Clause 8: Zone B4 Mixed Use</p>	<p>MOD 9 remains consistent with the B4 Mixed Use Zone objectives. In particular, MOD 9:</p> <ul style="list-style-type: none"> ▪ Provides an inherently mixed-use precinct comprising a combination of compatible retail, commercial, residential, cultural and community uses which is consistent with the approved vision for the site. ▪ The integration of these uses will promote opportunities for walking and cycling within an area that has excellent existing access to public transport which will be further improved through the delivery of Barangaroo Station. ▪ Seeks to optimise the provision of commercial, retail and higher density residential development, intertwined with cultural and leisure / recreational facilities in proximity to existing and planned transport opportunities. ▪ Is the subject of a rigorous urban design exercise which has guided the built form of the buildings and their relationship to the adjacent waterfront Harbour Park and broader public domain elements. ▪ Implements sustainable development principles.

Matter	Guidance
	<ul style="list-style-type: none"> ▪ Establishes a design and approval framework which will enable amenity matters to be satisfactorily addressed in future detailed SSDAs. <p>Clause 8(2) states that development for any purpose may be carried out with consent on land within Zone B4 unless prohibited by subclause (3). The commercial, retail, and residential land uses proposed within Blocks 5, 6 and 7 are not listed as prohibited and are therefore permissible with development consent.</p>
	<p>Clause 9: Zone RE1 Public Recreation</p> <p>MOD 9 remains consistent with the RE1 Zone objectives. In particular, MOD 9:</p> <ul style="list-style-type: none"> ▪ Facilitates the delivery of future built form integrated with parkland which is to be used for a combination of purposes including open space and recreation. ▪ Integrates a range of recreational, cultural and active uses within the zone. The range of uses are complementary to and secondary to the primary use of the RE1 zoned land for the purposes of public open space and recreation uses. ▪ Seeks to protect the natural environment and maintain public access connections to and along the foreshore. ▪ Integrates car parking associated with the buildings located on the B4 zoned land beneath the public domain. <p>Clause 9(2) permits development for a range of purposes such as <i>'community facilities'</i>, <i>'food and drink premises'</i>, <i>'entertainment facilities'</i>, <i>'underground car parks'</i> and <i>'recreation areas'</i>. The food and drink premises proposed in the small pavilion structure within Harbour Park is permissible with consent.</p> <p>The extension of the above-ground cantilever into the RE1 zone will rely upon the flexibility provisions of Clause 23 of the SSP SEPP for permissibility. Future detailed SSDAs which seek consent for these uses will demonstrate the consistency of the structures with both the objectives of Zone B4 and Zone RE1.</p> <p>The provision of below ground development beneath the RE1 Zone (to enable an extension of the retail hub and to connect Barangaroo Station to Harbour Park, Barangaroo Reserve and beyond) will be permitted through a proposed amendment to the SEPP maps and instrument (Appendix AA).</p> <p>This amendment will seek to insert a clause 'Clause 23A', Appendix 9 which will permit development below ground level</p>

Matter	Guidance
	<p>(existing) in the RE1 Public Recreation Zone and that is for a purpose that may be carried out in an adjoining zone. This is consistent with the existing provisions in the Sydney LEP 2012 (clause 5.3A). Refer to further discussion in Section 7.1.3.</p>
	<p>Clause 17: Height of buildings</p> <p>MOD 9 is accompanied by a request to amend the SEPP maps and instrument, which will increase the maximum height of buildings permitted on each Blocks 5, 6 and 7, and revise the boundary lines delineating Blocks 5, 6 and 7 to reflect the indicative built form outcomes set out in MOD 9.</p> <p>The SEPP amendment (Appendix AA) also seeks to introduce a new 'Building Overhang and Façade Articulation Map' that identifies areas within Central Barangaroo (specifically along the boundary fronting Hickson Road, Barangaroo Avenue and Street D) where a building may extend beyond the Block boundary, to allow for a maximum 3 metre building overhang and 650mm façade articulation zone above ground level.</p> <p>There is not a maximum height of building control applicable to the RE1 zone. This will continue to apply as the SEPP is not proposed to be amended in relation to these matters.</p>
	<p>Clause 18: Gross floor area restrictions</p> <p>MOD 9 is accompanied by a request to amend the SEPP maps and instrument. The SEPP Amendment seeks to relocate the boundary of Block 5 to the south, allocate a maximum 'above ground gross floor area' of 116,189sqm within Blocks 5, 6 and 7 (the combined above ground GFA total), and identify an area known as 'Area 1' encompassing the proposed Central Barangaroo basement footprint beneath Blocks 5, 6 and 7 and extending a maximum of 25m beneath Harbour Park – and allocate an additional below ground level gross floor area of up to a maximum of 28,166sqm.</p> <p>Consistent with the approach for residential and tourist GFA adopted in the approved Concept Plan (specifically Condition B34(3) of MOD 8 to the Concept Plan), MOD 9 proposes to exclude the calculation of wintergardens from the calculation of residential and commercial GFA to enable the provision of usable outdoor space without impact upon the overall total usable floor space. This will be sought through an amended condition to the Instrument of Approval applicable to Blocks 5, 6 and 7, where future subsequent SSDAs for detailed design proposals can demonstrate consistency with the Urban Design Guidelines established within the Urban Design Report (refer Appendix E).</p> <p>Refer to draft SEPP Amendment at Appendix AA.</p>

Matter	Guidance
	<p>There is no maximum GFA applying to the RE1 zone within Central Barangaroo or Barangaroo Reserve. This will continue to apply as the SEPP is not proposed to be amended in relation to these matters.</p> <p>Clause 19: Design Excellence</p> <p>Clause 19(1) of Appendix 9 of the State Significant Precincts SEPP provides that consent must not be granted to development involving the erection of a new building or external alterations to an existing building unless the consent authority has considered whether the proposed building exhibits design excellence.</p> <p>While these considerations are primarily relevant to detailed development applications, it is noted that MOD 9 is an application which “involves” the erection of a building and as such these provisions are relevant to this application. This is consistent with the findings of the Land and Environment Court in <i>The Uniting Church in Australia Property Trust (NSW) v Parramatta City Council [2018] NSWLEC 15</i>.</p> <p>In response to clause 19(2) of Appendix 9 of the SSP SEPP, the proponent has considered the exhibition of design excellence in both the modified building envelopes proposed in MOD 9 and the subsequent architectural design within the parameters of these envelopes (to be completed within a future detailed DA).</p> <p>The modified building envelopes demonstrate a much more modulated built form and provide massing of an appropriate height and scale to the surrounding urban context. The amended building envelopes meet the sustainable design principles identified in clause 19(2)(c) of Appendix 9 of the SSP SEPP as:</p> <ul style="list-style-type: none"> <li>▪ The articulation of the modified building envelope through a series of east-west and north-south connections provides a fine grain permeable network at ground level will capture daylight penetration to the public domain and occupants of future development. <li>▪ The proposed breaks in the modified building envelope (compared to the solid mass of the approved Central Barangaroo envelopes) will also enable natural ventilation throughout the precinct, and a suitable pedestrian wind environment for the intended use of each area, as discussed in the Pedestrian Wind Study at Appendix H. <li>▪ The massing of the modified building envelope has been developed in regard to the principles of the ADG and will achieve adequate building separation and visual privacy for future residents. In addition, the articulation of the form

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	<p>and distribution of noise-generating uses within the form (i.e., retail uses and dining areas at ground level) will ensure acoustic privacy and amenity is maintained.</p> <ul style="list-style-type: none"> ▪ The incorporation of varying heights within the modified building envelope and the provision of a lower-scaled form within Block 5, particularly in the flagship retail building at the south-western corner of Block 5 adjacent to the intersection of Barangaroo Avenue and Barton Street, creates a human scale adjacent to Hickson Park and will improve the amenity, safety and security of the public area. ▪ The built form, mass and scale of MOD 9 is considered to be visually subservient to the development within Barangaroo South. The modulated forms provide visual interest and allow for potential views to be maintained during the detailed design phase. Although the Block 7 tower disrupts some continuity of views, generally there is sufficient context either side of the tower form to maintain visual continuity of harbour and horizon views. ▪ The proposed modified building envelope and height amendments enables the creation of two landmark building elements, the flagship building on Block 5 and the tower form on Block 7. This will create a distinct urban marker which defines the arrival experience to the site from Barangaroo Station, thereby improving the quality, amenity and identity of the public domain in Central Barangaroo. The reduction in height on Block 5 and realigned Block 5 lot boundary will contribute to the human scale of Barton Plaza and the amenity of this public area. ▪ The proposed building envelope ensures there is no further shadowing to western public areas after 10am in the midwinter period, and that the northern extent of Wulugul Walk and Hickson Cove remain will continue to receive solar access during the study period as per the approved Concept Plan. Whilst MOD 9 will increase the extent of overshadowing to the eastern portion of Hickson Park, the western extent of Harbour Park will continue to receive solar access between 11am to 2pm consistent with the approved Concept Plan (with only a minor increase in shadows adjacent to Barton Street). This will improve the amenity and usability of this space, noting that key vistas are provided within this western extent of Harbour Park through to the harbour foreshore. ▪ Overall, the analysis demonstrates an average of 49.91% of Hickson Park (3,533.13sqm) will receive solar access

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	<p>between 12pm and 2pm in mid-winter. This allows for an urban parkland with an area of 3,553.13sqm that can accommodate over 883 people sitting comfortably (based on an assumption of 1 person per 4sqm sitting comfortably).</p> <ul style="list-style-type: none"> ▪ The Urban Design Report accompanying MOD 9 has been developed through ongoing collaboration and includes a further analysis of the delivery of design excellence in the modified building envelopes and the public domain. This includes identification of the built form guidelines and the public domain design elements which have influenced the final massing of the envelopes. <p>The external appearance, architectural design, materials and detailing of the proposed modified building envelopes will be assessed within a subsequent detailed DA. In relation to clause 19(2)(a) and (b), the following considerations are made:</p> <ul style="list-style-type: none"> ▪ Infrastructure NSW and the Central Barangaroo Developer is fully committed to achieving design excellence within the Central Barangaroo precinct, to deliver the highest standard of architectural, urban and landscape design and continue the exemplar urban design response along the western Sydney Harbour foreshore. ▪ A Design Excellence Strategy has been prepared (Appendix Z) which outlines how design excellence will be achieved by subsequent detailed SSDAs. The Design Excellence Strategy relates exclusively to the Central Barangaroo development blocks, comprising Blocks 5, 6 and 7 of the approved Barangaroo Concept Plan, and is consistent with the underlying principles of the Draft Government Architect's Design Excellence Competition Guidelines, 2018. The Design Excellence Strategy describes a process that will ensure that design excellence requirements for all future detailed SSDAs at Central Barangaroo are met. The Strategy will involve the direct appointment of a select team of highly experienced, respected and regarded architects for the built form, retail fit-out, streets and associated public domain for Blocks 5 (including flagship), 6 and 7. Future SSDAs will therefore be accompanied by requests to waive the requirement under clause 19(3) of the Precinct SEPP to undertake a design competition for the erection of any new building greater than Reduced Level (RL) 57, or on a site of greater than 1,500 square metres, to enable this alternative process to occur. Refer to further discussion in

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		<p>Section 7.5 and the Design Excellence Strategy at Appendix Z. In summary, the Design Excellence Strategy for Central Barangaroo will:</p> <ul style="list-style-type: none"> – Deliver a world class design outcome, – Result in diversity in architecture to create interest, variety, and an active precinct, – Consider the specific bespoke nature and characteristics of the development, and – Consider the established design principles for the site. <ul style="list-style-type: none"> ▪ The provisions of the SSP SEPP, the consent conditions and the Statement of Commitments, all require that future SSDAs are prepared in accordance with the Urban Design Report (in particular the Urban Design Guidelines). These detailed provisions will ensure that the form and external appearance of the buildings improve the quality and amenity of the public domain and activate and integrate with the public domain in accordance with clause 19(2)(c). Refer to further discussion in Section 7.2. ▪ Sustainability and sustainable design principles are built into the MOD 9 proposal and will be incorporated into future detailed SSDAs. In those applications, a detailed assessment of matters such as sunlight access, natural ventilation, wind, reflectivity, visual and acoustic privacy, safety and security, and ESD will also be provided. <p>As outlined above, the consent authority is able to be satisfied that the MOD 9 is capable of exhibiting design excellence through the proposed urban design guidelines, and environmental and design commitments accommodated in the Statements of Commitments associated with MOD 9. Further, the frameworks established by MOD 9, SSP SEPP, Urban Design Report and Design Excellence Strategy, will ensure that future detailed SSDAs are well placed to demonstrate design excellence (refer to Section 7.5 for further discussion).</p>
	<p>Clause 21: Heritage conservation</p>	<p>Central Barangaroo does not contain any built heritage items, and it does not form part of any heritage conservation area. The Munn Street Bond Stores state heritage item is located just outside of Central Barangaroo to the north-east of Nawi Cove. In addition, the Millers Point / Dawes Point state heritage conservation area (Item C35 under <i>Sydney Local Environmental Plan 2012</i>) is in the vicinity of the site which also contains multiple individual items of state heritage significance.</p>

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	<p>A detailed assessment of impacts is contained in the Heritage Assessment and Impact Statement discussed at Section 7.9 of this EAR.</p> <p>Clause 23: Development near boundaries</p> <p>The objective of the clause is to provide flexibility where the investigation of a site and its surroundings reveals that a use allowed on the other side of a zone boundary would enable a more logical and appropriate development of the site and be compatible with the planning objectives and land uses for the adjoining zone. The clause applies to land within 25 metres of a boundary between any two zones. MOD 9 seeks to rely upon this provision to allow for proposed building overhang/ cantilevers that contain GFA and extend above ground into the RE1 zone above Barangaroo Avenue and Street D. The maximum distance of the overhang into the RE1 zone is 3m. In addition to the building overhang, façade articulation overhangs, articulated façade elements may extend a further 650mm beyond the building face, including and beyond any building overhang. Façade articulation will not contain GFA.</p> <p>Clause 23 (3) of the SSP SEPP states:</p> <p><i>Consent may be granted to development of land to which this clause applies for any purpose that may be carried out in the adjoining zone, but only if the consent authority is satisfied that—</i></p> <p><i>(a) the development is not inconsistent with the objectives for development in both zones, and</i></p> <p><i>(b) the carrying out of the development is desirable due to compatible land use planning, infrastructure capacity and other planning principles relating to the efficient and timely development of land.</i></p> <p>The cantilevers will provide shade and shelter from weather and wind, allow for undercover alfresco dining along the Street edge and provide for architectural distinction between the retail uses on ground level, and the commercial and residential uses above. Future detailed SSDAs which seek consent for the detailed design and uses within each of the cantilevers will provide further discussion on the consistency of the cantilevers with planning principles relating to the efficient and timely development of land.</p> <p>In addition, it is noted MOD 9 is accompanied by a request to amend the SEPP maps and instrument to insert a clause 'Clause 23A' which permits development below ground level in the RE1 Public Recreation Zone that is for a purpose that may be carried out in an adjoining zone. The total quantum of below ground GFA and location of the basement zone will be permitted via the proposed amendment to Clause 18 (gross floor area) of the SSP SEPP.</p>

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	<p>The consent authority will need to be satisfied the proposed development is desirable due to compatible land use planning, infrastructure capacity and other planning principles relating to the efficient and timely development of land, will not have any significant adverse effects on the environment and will not prevent any land within the Public Recreation Zone being used for recreational purposes. Refer to draft SEPP Amendment at Appendix AA.</p>
<p><i>State Environmental Planning Policy No 55 - Remediation of Land</i></p>	<p>Clause 7 of SEPP 55 provides that a consent authority must not grant consent to the carrying out of any development on land unless it has considered whether the land is contaminated and, if it is, that it is satisfied that the land is suitable or can be made suitable for the proposed development. If land requires remediation, the consent authority needs to be satisfied that the remediation will be done before the approved use begins. It also requires the consent authority to consider a preliminary contamination investigation report which has been prepared in accordance with the contaminated land planning guidelines.</p> <p>In accordance with the requirements of <i>State Environmental Planning Policy No 55 - Remediation of Land (SEPP 55)</i>, various geotechnical and environmental investigations have been undertaken to address contamination across the Barangaroo site.</p> <p>The original Concept Plan Environmental Assessment Report (MP 06_0162) was accompanied by the 'East Darling Harbour Geotechnical and Environmental Investigation' Summary of Findings Report prepared by ERM in September 2006. This document was prepared in accordance with SEPP 55 and the Contaminated Land Management Act 1997 and contained both a preliminary contamination investigation and a detailed contamination investigation. The Report concluded "<i>the site could be made suitable for the proposed future land use if appropriate remedial and validation works are undertaken</i>".</p> <p>Subsequent to this, an overarching Remedial Action Plan (RAP) was prepared in 2010 (ERM, 2010) which identified the nature of contamination across the Barangaroo site and outlined the remediation approach to address contamination issues. The 2010 RAP also referenced the preparation of specific RAPs and Remedial Work Plans for various staged developments proposed across the Barangaroo site. Two RAPs apply to Central Barangaroo:</p> <ul style="list-style-type: none"> ▪ RAP for Central Barangaroo (JBS Environmental, Rev H, May 2013); and ▪ RAP – NSW EPA Declared Remediation Site 21122 and Block 4 (Stage 1b) Development Works, Barangaroo, Millers Point, NSW (AECOM, 2013). <p>A Site Audit Report (SAR) and accompanying Section B Site Audit Statement (SAS) dated 31 July 2013 (the Central Barangaroo SAS/SAR) was previously prepared by Environ Australia Pty Ltd (Graeme Nyland) (now Ramboll Australia Pty Ltd). A comparison of the design assumptions contained in the Central Barangaroo RAP and SAS/SAR against the MOD 9 proposal has been prepared by EDP Consultants Pty Ltd (July 2021) (Appendix P), who have confirmed as follows:</p>

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	<p>“EDP considers the JBS RAP suitable to be adopted for the MOD 9 submission, with consideration given to the requirements of the existing Site Audit Statement and Site Audit Report (SAS/SAR), which provides further management detail.”</p> <p>The RAPs, SAR and SAS documents were provided to the EPA Accredited Site Auditor (Ramboll Australia) for review and a supporting statement has been prepared confirming the variations between the RAP and SAS/SAR for Central Barangaroo and the MOD 9 proposal can be adequately addressed by the detail design and additional documentation to be prepared in later Detailed development applications (future detailed design SSDAs), prior to the commencement of works (refer Appendix R). The documentation referred to above is attached to this EAR and addressed in further detail previously in Section 7.13.</p> <p>Accordingly, the site can be made suitable for the proposed modified project on Central Barangaroo following the implementation of the following recommendations:</p> <ul style="list-style-type: none"> ▪ Development and implementation of the RAP, RWP, CEMP, CQAP, VSAQP and AMP. ▪ Further assessment of contamination / remediation, including an updated HHRA and incorporation of the Block 5 former declaration area into the RWP and future site audits, within future detailed SSDAs. ▪ Satisfaction of the requirements of SEPP 55 within future detailed SSDAs. <p>The Minister can be satisfied these recommendations will be completed via a condition of Concept Plan approval which will continue to apply post the modification, and compliance with commitment 87 of the Statement of Commitments which relates to preparation and compliance with a RAP applicable to the site. This will enable the Minister to be satisfied under clause 7 of SEPP 55.</p>	
<p><i>State Environmental Planning Policy (Infrastructure) 2007</i></p>	<p>Division 11: Public Authority Precincts</p>	<p>The Barangaroo site is identified as a ‘public authority precinct’ in Division 11 of the <i>State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP)</i>. No physical works are proposed within this MOD 9; however, it is noted the proponent can undertake exempt works on the site in accordance with section 58H of the Infrastructure SEPP.</p>
	<p>Division 15: Railways</p>	<p><u>Clause 85 – Development adjacent to rail corridors</u></p> <p>Clause 85(2) requires the Minister to notify and consider any response received from Sydney Metro within 21 days after notification. Prior to determination, concurrence must be granted by Sydney Metro. Any response received from the rail authority will be considered and addressed accordingly.</p> <p><u>Clause 86 – Excavation in, above, below or adjacent to rail corridors</u></p>

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	<p>It is noted that MOD 9 does not seek consent for physical works or excavation at the site, however, MOD 9 does anticipate a basement adjacent to the underground rail corridor. For future detailed SSDAs where excavation is proposed, the Minister is required to notify and consider any response received from Sydney Metro within 21 days after notification and receive concurrence prior to determination. Any response received from the rail authority will be considered and addressed accordingly.</p> <p>The future detailed SSDAs will address the relevant matters for consideration under clause 86(4)(a) and (b) of the Infrastructure SEPP.</p> <p><u>Clause 87 – Impact of rail noise or vibration on non-rail development</u></p> <p>The impact of rail noise or vibration on the proposal (and vice versa), has been discussed in Section 7.11 of the EAR. The Acoustic Impact Assessment prepared by Acoustic Logic discusses this matter in further detail (refer Appendix W).</p> <p>Clause 87(3) of the Infrastructure SEPP requires the Minister can be satisfied that appropriate measures will be taken to ensure the noise levels in that clause will not be exceeded. As discussed in the Acoustic Impact Assessment and Section 7.11.3, the proposal and associated future residential development would not be required to incorporate additional railway vibration mitigations, as the proposed “at track” treatment proposed to be installed by the Metro development will fully mitigate ground borne vibration impacts. In regard to construction noise and operational noise associated with other land uses, mechanical plant and traffic noise, the Acoustic Impact Assessment indicates the proposal is capable of complying with the relevant noise emission criteria for all surrounding receivers through the adoption of appropriate mitigation and management measures which will be defined at detailed DA stage. Noise and vibration monitoring, reporting and response procedures will be implemented as part of future detailed SSDAs, to ensure the Minister can be satisfied that the LA_{eq} levels identified in clause 87(3) are not exceeded.</p> <p><u>Clause 88B – Development near proposed Metro stations</u></p> <p>The site is located adjacent to the CBD Metro (Zone B – Tunnel) of the Sydney Metro West and will also benefit from the delivery of Barangaroo Station being developed adjacent to the north of the site. Accordingly, the consent authority must consider the relevant requirements under clause 88B (2). The application will also be referred to Sydney Metro for</p>

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		<p>comments. Any response received from the rail authority will be considered and addressed accordingly.</p> <p>A key driver for the proposed modification to MP06_0162 stems from the 2015 NSW Government announcement of a Barangaroo Station, and the subsequent strategic need to maximise transport opportunities and optimise the surrounding built form.</p> <p>The increase to GFA within the site, and specifically in Block 7 adjacent to Barangaroo Station, will significantly increase public transport usage due to the provision of increased commercial employees, visitors and residents in the immediate surrounding vicinity. As discussed in Section 4.6 and 7.8.7, MOD 9 will improve integration, access and egress from the station to the surrounding development, Hickson Park and beyond to Barangaroo South through delivery of multiple station entrances and a variety of underground, ground plane and upper-level passages.</p>
	<p>Division 17: Roads and Traffic</p>	<p>The traffic generation of the existing and proposed development has been assessed in the Transport Management and Accessibility Plan (TMAP) prepared by ARUP and included at Appendix I. Notably, the TMAP outlines a framework to reduce road congestion throughout the site and improve pedestrian accessibility and movement throughout the site in accordance with section 104(3) of the Infrastructure SEPP. The proposed modification to Barton Street to create a permanent roadway will improve servicing of the precinct, while retaining the 'pedestrian-friendly' and 'pedestrian-priority' character of the precinct through separated walking and cycling paths. Following referral of this application to TfNSW, the proponent will consider any relevant submissions made.</p>
<p><i>Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005</i></p>	<p>Clause 20: General</p>	<p>This clause requires a consent authority for Part 4 development, to consider the matters set out in clauses 21 to 27 below.</p>
	<p>Clause 21: Biodiversity, ecology and environment protection</p>	<p>There are no works proposed as part of MOD 9 that are likely to have an impact on biodiversity and ecology beyond what has been assessed and approved. Future detailed SSDAs will incorporate appropriate stormwater quality and quantity control measures to ensure there are no adverse environmental impacts on the waterways. Refer to Section 7.14 for further discussion of stormwater catchment and quality management provisions.</p>
	<p>Clause 22: Public access</p>	<p>MOD 9 will not restrict access to and from the foreshore and waterway. MOD 9 will retain and embellish the existing</p>

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	to, and use of, foreshores and waterways.	footpath link along the entire length of Harbour Park and will provide east-west connections through the site to facilitate connections from Hickson Road and the western CBD through to Harbour Park, Wulugul Walk (which is currently open) and the foreshore.
	Clause 23: Maintenance of a working harbour	MOD 9 is consistent with the envisaged redevelopment of the wider Barangaroo precinct for mixed-use purposes as assessed and approved under the approved Concept Plan (as modified).
	Clause 24: Interrelationship of waterway and foreshore uses	MOD 9 does not change the proposal's level of compliance with this matter of consideration. The modified built form is setback from the foreshore and accordingly will not conflict with uses in the waterway.
	Clause 25: Foreshore and waterways scenic quality	<p>The assessment considers the impact of MOD 9 on the scenic quality of the foreshore or waterway. Buildings are set back from the foreshore behind a comprehensively landscaped Harbour Park.</p> <p>The scale, form, design and siting of the building envelopes has been informed by a detailed urban design analysis that has taken into account the existing and approved future character of Barangaroo as well as the adjoining locality.</p> <p>A View and Visual Impact Assessment has been prepared by AECOM and is submitted at Appendix F. AECOM have also prepared a Sky View Loss Assessment which is submitted at Appendix G. View Impacts of MOD 9 are further considered within Section 7.6 of this EAR.</p>
	Clause 26: Maintenance, protection and enhancement of views	<p>The proposed changes to the building envelopes have been informed by a detailed urban design analysis that has taken into account the existing and approved future character of Barangaroo as well as the adjoining locality. Key views include outlook to and from Millers Point and Observatory Hill, and others as outlined in the assessment.</p> <p>A View and Visual Impact Assessment has been prepared by AECOM and is submitted at Appendix F. AECOM have also prepared a Sky View Loss Assessment which is submitted at Appendix G. View Impacts of the Proposal are further considered within Section 7.5 of this EAR.</p>
	Foreshores and Waterways DCP	Future detailed SSDAs will consider the detailed design guidelines of the Foreshores and Waterways DCP where relevant.

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<p><i>State Environmental Planning Policy (Coastal Management) 2018</i></p>	<p>The site is mapped as a 'coastal environment area' and 'coastal use area', accordingly clause 13 and 14 of the <i>State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP)</i> apply. Notwithstanding, clause 13(3) and 14(2) respectively state that these clauses do not apply "...to land within the Foreshore and Waterways Area within the meaning of the <i>Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005</i>". The Sydney Harbour Catchment SREP identifies the site within the foreshore and waterways area. Therefore, clauses 13 and 14 do not apply to the site or the proposal. Clauses 15 and 16 of the Coastal Management SEPP contain general controls for development in coastal zone areas and are addressed below.</p>	
	<p>Clause 15: Development not to increase risk of coastal hazards</p>	<p>MOD 9 does not propose any changes to the foreshore therefore, there will be no impact or increased risk of coastal hazards for Central Barangaroo and surrounding sites. the Minister can be satisfied that MOD 9 is not likely to cause increased risk of coastal hazards on the Barangaroo site or any other land.</p>
	<p>Clause 16: Coastal management programs</p>	<p>Not applicable. No certified coastal management program applies to the site that the applicant is aware of.</p>
<p><i>State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004</i></p>	<p>BASIX Certificates for the residential components within Central Barangaroo will be prepared and submitted as part of future subsequent detailed development applications in line with the <i>State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 (BASIX SEPP)</i>.</p>	
<p><i>State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development</i></p>	<p>Clause 28(2a): Advice obtained from the design review panel</p>	<p>Any advice obtained from a design review panel will be considered during the assessment of future detailed SSDAs.</p> <p>Consistent with subclause (5) of clause 28, a consent authority is not required to obtain the advice of a relevant design review panel if an architectural design competition is held.</p> <p>Whilst a waiver is sought for an architectural design competition, a Design Excellence Strategy has been prepared and is submitted at Appendix Z. The Strategy sets the framework which will guide the overall detailed design process for future SSDAs. It is noted that the framework for Design Excellence includes a regular and ongoing review of the proposal by the Infrastructure NSW Design Excellence Advisory Panel, who will provide advice on the design quality of the residential development.</p>
	<p>Clause 28(2b): Design quality</p>	<p>The residential components will be designed to achieve compliance with the SEPP 65 design quality principles and the objectives/controls contained within Part 3 and 4 of the Apartment Design Guide (ADG). Future SSDAs will need to</p>

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	of the development	demonstrate consistency with the objectives/controls of SEPP 65 and the ADG.
	Clause 28(2c): Apartment Design Guide	A SEPP 65 design verification statement will accompany future development applications seeking consent for detailed design of residential components. The proposed building envelopes have been developed based on a set of built form objectives and guidelines, which have regard to SEPP 65 and the ADG. These are documented in the Urban Design Report submitted at Appendix E .
<i>Draft State Environmental Planning Policy (Environment) 2017</i>	<p>MOD 9 will align with the policy intent and the updated aims of the plan as it forms part of the broader redevelopment of Barangaroo. The modified built form and uses are consistent with the mixed-use vision for the site under the approved Concept Plan (as modified).</p> <p>The existing Harbour SREP planning policies have been considered previously in this table of this EAR.</p>	
<i>Draft State Environmental Planning Policy (Remediation of Land)</i>	<p>In January 2018, the DPIE exhibited the draft Remediation of Land SEPP, which seeks to provide an updated framework for the management of contaminated land in NSW. It is proposed that the new Remediation of Land SEPP will:</p> <ul style="list-style-type: none"> ▪ Provide a state-wide planning framework for the remediation of land. ▪ Maintain the objectives and reinforce those aspects of the existing framework that have worked well. ▪ Require planning authorities to consider the potential for land to be contaminated when determining development applications and rezoning land. ▪ Clearly list the remediation works that require development consent. ▪ Introduce certification and operational requirements for remediation works that can be undertaken without development consent. <p>Barangaroo is currently subject to remediation processes undertaken in accordance with SEPP 55. If and when the Remediation of Land SEPP comes into force, future detailed SSDAs will be required to fully comply with the new SEPP, unless exempted by transitional provisions. Refer to Section 7.13 for further discussion of the proposed remediation strategy.</p>	

6. COMMUNITY AND STAKEHOLDER ENGAGEMENT

In accordance with item 21 of the DGRs, an appropriate and justified level of consultation has been undertaken in respect of MOD 9 with key stakeholders including City of Sydney Council, Transport for NSW and the EPA. The consultation has been in accordance with Planning & Infrastructure's (now DPIE) Major Project Community Consultation Guidelines 2007.

This section outlines the engagement activities that have been undertaken during the preparation of the EAR which has enabled Infrastructure NSW to identify issues that may require action prior to determination. Following the lodgement of MOD 9, it is noted the application will be placed on public exhibition in accordance with the Regulations, during which stakeholders will have an opportunity to make submissions to the application which will be considered in the assessment process. Discussion of the pre-lodgement consultation for Central Barangaroo is contained within the Engagement Outcomes Summary Report prepared by Elton Consulting and provided at **Appendix U**.

6.1. CONSISTENCY WITH COMMUNITY CONSULTATION GUIDELINES

In accordance with the Major Project Community Consultation Guidelines 2007, a proponent is required to:

1. *Consult early, particularly where the project is likely to be contentious*
2. *Commit adequate resources to consultation*
3. *Clearly describe who has been consulted and what issues were raised*
4. *Demonstrate how the issues raised during the consultation process have been addressed in the environmental assessment and preferred project report (if required).*

Consultation has been undertaken in accordance with these requirements as follows:

- Consistent with Requirements 1 and 2, early and adequately resourced engagement is evidenced by a process of ongoing consultation that commenced in 2009 when the former BDA, and since mid-2019 Infrastructure NSW, have worked alongside development partners to engage key stakeholders, neighbours and government agencies, on the future uses and plans for Barangaroo. These activities have included technical working groups, community and stakeholder briefings, door-knocks, website updates, newsletters and notification letters. In addition, engagement with key government agencies has been undertaken.
- From 2013 – 2014, a targeted program of consultation was undertaken by the former BDA for the preparation of the Central Barangaroo Master Plan Framework by SOM. This included engagement with relevant agencies, the City of Sydney, neighbouring residents and businesses as well as the broader Sydney community. This is discussed in Section 2.3 of the Engagement Outcomes Summary Report.
- Specific to MOD 9, Infrastructure NSW and the Central Barangaroo Developer has undertaken a range of consultation activities to refine and develop the proposed modifications and the indicative reference design. These consultation activities are discussed in **Section 6.2** and the Engagement Outcomes Summary Report (**Appendix V**).
- Consistent with Requirement 3, details on the issues raised by key stakeholders is outlined in 6.2 and Section 2.4 of the Engagement Outcomes Summary Report.
- Consistent with Requirement 4, identification of the response to each of these key issues is outlined in 6.2 and Section 3 of the Engagement Outcomes Summary Report.

6.2. ENGAGEMENT CARRIED OUT

This section contains an overview of the key issues raised by stakeholders during the consultation program for MOD 9 and a response to each of the matters raised. Specifically, the following groups were consulted prior to and during the preparation of the EAR:

- DPIE on 22 December 2020 and 1 April 2021.
- Transport for NSW / Sydney Metro in June 2020 and December 2020.
- EPA in September 2021.

- NSW Government Architect during 2020 and in September 2021.
- City of Sydney Council in 2019.
- Museum of Applied Arts and Sciences in August 2021.
- Sydney Water in August 2021.
- Crown Sydney Hotel Resort and developer Lendlease from March 2020 – November 2020.
- National Trust in August 2021.
- Representatives of the Walsh Bay Precinct Management Association on 11 May 2021.
- Millers Point Residents Action Group on 8 June 2021.

This table provides a summary of the detail provided in Section 2.4 and Section 3 of the Engagement Outcomes Summary Report (**Appendix U**).

It is noted most stakeholders requested further information on the detailed design of the proposal as it is developed, in addition to involvement in ongoing consultation activities.

Table 18 Summary of issues raised during consultation and proposed MOD 9 response

Issue	Response
Environmental Assessment Report	
<p>The City of Sydney requested the EAR provide:</p> <ul style="list-style-type: none"> - Clear identification of changes proposed in the application, particularly in regard to the building envelopes, underground GFA, basements, private and public open space. - Descriptions on how GFA has been calculated, and definitions on key terminology. <p>Reservations was expressed that the waiver to complete a Design Excellence Competition may not yield the best design excellence outcome. It was also questioned whether Design with Country had been considered.</p>	<p>An identification of proposed changes is outlined in Section 4. Key terminology is identified in the Glossary and Abbreviations on page 3 of this EAR.</p> <p>The proposed Design Excellence Strategy for Central Barangaroo involves the direct appointment of architects and a robust Design Review Process. This is a widely used and accepted form of improving the design quality of projects across NSW. Specifically, the GANSW Better Placed Design Policy supports the use of Design Review Panels for large projects of significance and is an efficient way to improve design quality and create better places.</p> <p>The Urban Design Report identifies opportunities to integrate Design with Country within the design of Hickson Road. This will be explored further during subsequent Detailed SSDAs.</p>
Built form, design and scale	
<p>A number of stakeholders requested further information and discussion on the proposed building envelope and how the modified envelope responds to the surrounding context, including:</p> <ul style="list-style-type: none"> - Consideration of how Block 7 responds to Nawi Cove and Millers Point, and the heritage significance of these areas, 	<p>The proposed modification to the building envelope responds to the site analysis, constraints and opportunities, in particular leveraging the significant opportunity provided by the future Barangaroo Station. Specifically, the proposed increase in height for Block 7 to RL73.7 will mark the Central Barangaroo precinct, Nawi Cove and Barangaroo Station. This is consistent with the ‘gateways and markers’ principle, which seeks to create landmark buildings that define the precinct. MOD 9 provides an appropriate transition between the</p>

Issue	Response
<ul style="list-style-type: none"> - Rationale for the Block 7 height in respect of the surrounding area, - Whether the envelope can achieve sufficient building articulation to reduce scale from the public domain, - Use of landscaping to integrate with park areas, - Desirability of pavilions in the park area, - Design and use of Dalgety Bond. 	<p>significant height to the south (Barangaroo South and beyond) and adjacent historic areas to the north. Further, MOD 9 provides modulated buildings heights to ensure the height of buildings in Central Barangaroo are more varied than the approved Concept Plan. Further detail and discussion of this is contained in the Urban Design Report (Appendix E) and Section 7.2.</p> <p>Articulation and massing studies demonstrate how the building envelopes can be modulated to create architecturally distinct forms. These studies demonstrate that an architecturally responsive outcome to context, to place and to design quality can be achieved within the proposed modified building envelopes.</p> <p>The proposed alignment and distribution of building height across Blocks 5, 6 and 7 appropriately modulates the building envelope, creates building separation and enables daylight penetration through to lower levels. This will be further articulated through the design of buildings and incorporation of landscaping in future detailed SSDAs which will reduce the overall scale of Central Barangaroo to achieve a defined and sensitively articulated precinct.</p> <p>The indicative provision of one small pavilion structure in Harbour Park will activate the public domain and will be informed by a separate, future design excellence process to achieve a positive outcome.</p> <p>The Dalgety Bond Store is not included within the MOD 9 application.</p>
Sightlines and views	
<p>Neighbouring stakeholder groups including Crown Sydney Hotel Resort, Millers Point Residents Action Group, the National Trust and City of Sydney Council raised concerns with the impact of increased heights (specifically Block 7) on existing views and sightlines from Observatory Hill, Crown Sydney Hotel Resort and Millers Point. Consideration for alternative locations of the Block 7 tower was requested.</p>	<p>Efforts to mitigate sightline and view impacts have been considered and a view sharing approach underpins MOD 9.</p> <p>The built form, mass and scale of MOD 9 is considered to be visually subservient to the development within Barangaroo South. The modulated forms provide visual interest and allow for potential views to be maintained during the detailed design phase. Although the Block 7 tower disrupts some continuity of views, generally there is sufficient context either side of the tower form to maintain visual continuity of harbour and horizon views. Substantial harbour views are broadly retained towards the north-west of residents within Barangaroo South and Kent Street residential towers. Discussion of alternative scenarios considered by the Central Barangaroo</p>

Issue	Response
	<p>Developer prior to submission of MOD 9 are outlined in Section 2.4, however the proposed MOD 9 built form is considered the best outcome for the site and broader context.</p> <p>Further discussion of sightlines and views are discussed in Section 7.6 and the View and Visual Impact Assessment at Appendix F.</p> <p>It is noted that the proposed Block 7 tower building obstructs an area of sky that is less than 10 degrees above the horizon and occupies an area that is less than 1% of the total night sky. As such, the proposed Block 7 tower building is too low in the sky to have any impact on the quality of night-time observations from Sydney Observatory. Refer to further discussion in Section 7.7 and Appendix G.</p>
Public domain and street network	
<p>Items for consideration raised in stakeholder consultation related primarily to the operation and interface with the public domain, and how the proposal impacts movement within the pedestrian network in regard to both increased demand and amended street layout.</p> <p>The NSW Government Architect further noted the importance of considering the ground plane and public domain as ‘architecture’ and integrating with the future design of the built form.</p> <p>City of Sydney Council raised a number of questions regarding access within the public domain and publicly accessible areas. Recommendations provided included ensuring the public domain was legible, activated, clearly defined and separated from private spaces, and designed to accommodate accessible access. In addition, the role and nature of Hickson Road and the importance of activating this street was identified. City of Sydney also requested to be engaged in the design process for Harbour Park and noted in a 2019 consultation session that the pavilions should be minor in form and not have a commercial focus.</p>	<p>Greater modulation of the building form proposed in MOD 9 will allow for the delivery of publicly accessible open space throughout the site (subject to detailed design). The indicative reference scheme prepared by Hassell (Urban Design Report at Appendix F) has suggested three potential spaces (Nawi Terrace, Barangaroo Steps, Barton Plaza) that could be delivered as publicly accessible open space throughout the site, however the final form, location and function of any publicly accessible spaces within the development blocks will be subject to detailed design within future SSDAs. In addition, MOD 9 seeks to deliver a number of east-west connections through the site.</p> <p>MOD 9 represents a refined and detailed consideration of the way the built form will interact with Harbour Park and the public domain. As stated, the final form, location and function of any publicly accessible spaces and the public domain will be subject to detailed design within future SSDAs.</p> <p>The Foreshore Park will be subject to a separate Design Excellence Strategy and is not included within MOD 9. However, MOD 9 seeks the provision of a small pavilion structure within Harbour Park – which will be subject to a future, separate design excellence strategy to ensure design excellence is maintained and the form is integrated and consistent with surrounding built form.</p> <p>The basement extension still enables the capability of accommodating 1.4m deep soil areas to support mature</p>

Issue	Response
<p>Deep soil was also identified as a requirement to support the desired level of tree canopy.</p> <p>Support was provided for the Barton Street configuration and civic nature of Barangaroo Avenue, as well as the provision of an east-west direct link to provide pedestrian connections to High Street by the National Trust.</p>	<p>tree planting in this public domain area, noting it is subject to future detailed design.</p> <p>MOD 9 retains a high degree of permeability in both a north-south and east-west direction and re-allocates street space to pedestrians to provide improved public domain and pedestrian circulation outcomes. No changes to role and nature of Hickson Road are proposed in MOD 9, such that this area remains as a boulevard with an address and activation fronting the road at a civic scale. The provision of east-west connections through Central Barangaroo and a future pedestrian bridge across Hickson Road (subject to future DA and detailed design) will facilitate accessibility to Millers Point.</p>
<p>Mix of land uses</p>	
<p>Most stakeholders requested further clarity and information on the mix of land uses proposed in MOD 9.</p>	<p>MOD 9 is seeking consent for a mixed-use development to enable a range of land uses. The proposed conceptual distribution of land uses is outlined in Section 4.5 and outlined in the Reference Design provided in the Urban Design Report (Appendix E). However, the final mix of land uses will be subject to and determined under relevant detailed SSDAs.</p> <p>Critically, MOD 9 retains the general mix of land uses envisaged under the approved Concept Plan.</p>
<p>Amenity impacts</p>	
<p>Concerns regarding the impact on resident and public amenity due to the construction and operation of MOD 9 were raised, including:</p> <ul style="list-style-type: none"> - Impact of wind along the western foreshore, - Overshadowing, including on High Street, Kent Street and park areas, - Impact and timing of construction activities (raised by community groups). - Potential conflict between the residential uses and the activation of Nawi Terrace. 	<p>This EAR is appended by consultant reports which respond to and address the impact of MOD 9 on public and private amenity in the surrounding area. Specifically, it is noted:</p> <ul style="list-style-type: none"> - Wind microclimate conditions as a result of changes to the maximum building height of Blocks 5, 6 and 7 will remain largely consistent with the approved Concept Plan. - Noise attenuation measures will be proposed in detailed SSDAs. - The extent of additional overshadowing over a portion of Harbour Park and Wulugul Walk (at the worst-case at 9am on the winter solstice) due to the Block 7 height increase are considered acceptable given that the shadow quickly dissipates and there is further shadowing to western public areas after 10am in the midwinter period. Notably, this includes

Issue	Response
	<p>the key lunchtime period, where the full extent of Harbour Park</p> <ul style="list-style-type: none"> - Between 11am – 2pm the MOD 9 envelope will result in an increase in shadows to the eastern portion of Hickson Park adjacent to the curtilage of Building R5 and Hickson Road. Comparably, the western extent of Harbour Park (at the intersection of Barton Street and Barangaroo Avenue) will continue to receive solar access between 11am to 2pm consistent with the approved Concept Plan (with only a minor increase in shadows adjacent to Barton Street). This will improve the amenity and usability of this space, noting that key vistas are provided within this western extent of Harbour Park through to the harbour foreshore. Further discussion of the impact on Hickson Park is provided in Section 7.4.2. - Amenity impacts relating to construction will be addressed in future detailed SSDAs. This will include implementation of comprehensive construction management plans and supporting community engagement activities.
Community and social infrastructure	
<p>Suggestions for community and social infrastructure including co-working spaces, community spaces, health and wellbeing amenities for employees, a public pool were identified during consultation.</p> <p>The National Trust expressed support for the incorporation of cultural uses into Central Barangaroo.</p> <p>City of Sydney Council requested public art and cultural spaces are considered from the outset.</p>	<p>A Community and Cultural Spaces Strategy (Appendix Y) has been developed to inform the future use and distribution of cultural and community floor space, thereby ensuring the needs of the resident, worker and visitor community are met.</p> <p>It is noted that the indicative character of the commercial buildings will comprise flexible, co-working spaces to contrast from the conventional office spaces and large floor plates provided within Barangaroo South.</p> <p>Public art is considered in the Urban Design Report. Specific artworks will be developed using an integrated public art strategy, with artists brought into the design process to ensure a responsive and holistic outcome.</p>
Integration with public transport infrastructure	
<p>Issues identified by stakeholders (primarily Transport for NSW and DPIE) included the integration and interface of MOD 9 envelopes with Barangaroo Station, connectivity with Barangaroo Ferry Hub and the impact of patronage increase generated</p>	<p>The introduction of Barangaroo Station has acted as a catalyst for MOD 9. The proposed maximum height of Block 7 of RL73.7 provides a precinct marker to Barangaroo Station as the western harbour arrival point to the Sydney CBD. The proposed indicative design will also provide clear integration with the station including</p>

Issue	Response
<p>by MOD 9. The process of coordinating construction in areas adjacent to Barangaroo Station and detailed design of key interfaces between Central Barangaroo and the station were identified as a potential issue for resolution. The influence of interfaces on basement design were also raised.</p>	<p>clear connections and pathways from the CBD to the station and activated pathways above and below ground that encourage use of these connections to the Metro. This is discussed in Section 4.6 and 7.8.7.</p> <p>Identification of potential construction impacts associated with the construction of Barangaroo Station and MOD 9 are discussed in the Air Quality Impact Assessment and in Section 7.12.1. In summary, provided that a detailed AQIA for each individual Development Applications specific to Central Barangaroo is undertaken and appropriate project-specific mitigation strategies are implemented, no adverse effects on local air quality as a result of construction are expected to occur as a result of the proposed modifications to the Concept Plan.</p> <p>MOD 9 will support and incentivise increased use of Barangaroo Ferry Hub and Barangaroo Station. As discussed in Section 7.8 and the Transport Management and Accessibility Plan at Appendix I, these services have sufficient capacity to accommodate the projected increased patronage generated by MOD 9.</p>
<p>Environmental issues</p>	
<p>The EPA advised that due to the high-level nature of MOD 9 they could not make specific comments. However, during Detailed DAs information on excavation, remediation, spoil removal and acoustic attenuation strategies would be required.</p>	<p>Noted. Subsequent Detailed SSDAs will be referred to EPA for comment and any submissions made considered by the proponent.</p>
<p>During consultation with Sydney Water, identified issues include:</p> <ul style="list-style-type: none"> - The approach to integrated water management. - Interfaces between basement excavation and sewer pumping system. 	<p>Infrastructure NSW and the Central Barangaroo development partner agreed that they would continue to consult with Sydney Water on these matters as MOD 9 is assessed.</p>
<p>Public benefit</p>	
<p>DPIE required the EAR application to articulate the public benefit of MOD 9 in comparison to the approved Concept Plan.</p>	<p>This EAR details the significant range of public benefits that will be delivered by MOD 9 (Section 7.22). In addition to providing jobs and housing close to transport, services and an iconic public realm, a core public benefit focus is the delivery of the 'civic heart' of Barangaroo with supporting community facilities and additional publicly accessible open space which will provide a new</p>

Issue	Response
	cultural focus for the Barangaroo precinct and in turn strengthen the broader social fabric within Sydney CBD.

6.3. ENGAGEMENT TO BE CARRIED OUT

Further community and stakeholder consultation will be undertaken following lodgement of MOD 9 in accordance with the Regulations. Engagement will occur at key milestones including lodgement, statutory exhibition process, response to submissions and determination. The future engagement activities and stakeholders are identified in the Engagement Outcomes Summary Report and include:

- **Key Stakeholders:** it is proposed to consult with the following stakeholders during the post-lodgement phase of the project:
 - Agencies and authorities including City of Sydney Council, DPIE, Transport for NSW.
 - Millers Point Resident Action Group and Walsh Bay Precinct Management Association
 - Community members and interested parties
 - Broader stakeholder and communities.
- **Key Actions:** the following actions will be undertaken to consult with the stakeholders identified above:
 - Presentations to orient and familiarise relevant agencies and authorities with the detail of the application and EAR. This will occur prior to and during exhibition.
 - Presentations to the Millers Point Resident Action Group and Walsh Bay Precinct Management Association during the exhibition period, and meetings as the response to submissions is being prepared. This will seek to orient and familiarise local stakeholder groups with the detail of the application and EAR to inform their submissions and work through detailed matters raised in the submissions.
 - Information sessions and/or webinars to present place and design principals, identify relevant issues and opportunities addressed in MOD 9.
 - Newsletter to update and inform subscribers through the ‘What’s On’ newsletter in relation to the exhibition period and provide an overview of the planning process.
 - Website updates to inform on the exhibition period and provide an overview of the scheme.

These engagement activities will be complemented by a systematic approach to consultation undertaken as subsequent detailed SSDAs are prepared and assessed. As the project develops, the DPIE’s *Undertaking Engagement Guidelines for State Significant Projects July 2021* will guide consultation on future aspects of the project. The effectiveness of the engagement activities will be monitored, reviewed and adapted over time to encourage community participation and inform project outcomes.

7. ENVIRONMENTAL IMPACT ASSESSMENT

This section describes the way in which the key issues identified in the DGRs have been assessed. It provides a comprehensive description of the specialist technical studies undertaken regarding the potential impacts of the proposed development and recommended mitigation, minimisation and management measures to avoid unacceptable impacts. It also assesses and justifies the merits of MOD 9. Further detailed information to support this assessment is provided within and appended to this EAR as follows:

- DGRs compliance table identifying where the DGRs have been addressed in the EAR (**Section 1.4**),
- Statutory compliance table identifying where the relevant statutory requirements have been addressed (**Table 16** and **Table 17**), and
- Community engagement table identifying where the issues raised by the community during engagement have been addressed (**Table 18**).

The detailed technical reports and plans prepared by specialists and appended to the EAR are individually referenced within the following sections.

7.1. DENSITY

7.1.1. Floor Space Increase

Central Barangaroo will create a vibrant mixed-use precinct underpinned by a distinct identity which will include a significant new world class retail precinct, new generation commercial workplaces and residential uses in conjunction with community, cultural and civic spaces and foreshore parklands.

Since the approval of the Concept Plan in 2007 there has been significant advances in the strategic planning framework governing Metropolitan Sydney including increased population projections (resident and worker) and a significant investment and planning of transport infrastructure. Accordingly, to align these two priorities and appropriately manage growth of the region, a new strategic vision for Greater Sydney emerged in 2018 of Sydney as a metropolis of three cities, where residents “live within 30 minutes of their jobs, education and health facilities, services and great places”. This vision was embedded within the applicable Greater Sydney Region Plan, Eastern City District Plan and State Infrastructure Strategy, and demonstrates a new policy direction to approach transport and land use planning.

These changes in the policy approach to transport and land use planning across Greater Sydney, together with the recognised strategic importance of Central Barangaroo in its ability to deliver housing and jobs in a manner that integrates with catalytic transport infrastructure (Sydney Metro), provides an opportunity to revisit the approved Concept Plan and reconsider the height, density and mix of land uses across the site.

In order to capitalise on this unique opportunity, MOD 9 seeks to increase the GFA for Central Barangaroo to ensure Central Barangaroo more appropriately responds to contextual changes including significant infrastructure investment and strategic objectives at a government level that were unknown at the time of the initial determination of the approved Concept Plan. The proposed increase in GFA is required to be measured against the GFA in the approved Concept Plan, rather than the original 2007 Concept Plan which has evolved significantly over 14 years.

The proposed density of the overall Barangaroo site and the Central Barangaroo site through the increase in floor space across Blocks 5, 6 and 7 and allocation of below ground GFA is considered acceptable in respect of the strategic context, configuration of the built form and corresponding architectural and urban design, and impact of the density on environmental amenity and infrastructure. The additional density is strategically justified in this location in accordance with the following considerations:

- It will optimise the significant government investment in transport infrastructure with the future Barangaroo Station and deliver upon strategic priorities at a State and Regional level to provide increased employment generating floor space and associated jobs near homes, align land use and infrastructure planning, and elevate Sydney as 21st-Century Global 30 Minute City.
- It will support a greater mix of land uses to support additional activity in Barangaroo throughout both day and night, which will drive higher levels of patronage on the new Metro rail.
- The additional density will create a vibrant mixed-use precinct, accommodated within development zone footprints creating Central Barangaroo’s own distinct identity, character and experience.

- It will create a distinct destination for employment generation and economic activation as part of a broader revitalisation of the western waterfront edge of the CBD. The additional commercial floor space will enable the provision of flexible, co-working spaces in contrast to the conventional office spaces and large floor plates provided within Barangaroo South. This will provide diversity in the market and support a variety of employment opportunities in Barangaroo and responds to market demand for more flexible commercial space as a result of the COVID pandemic.
- The additional retail floor space will support a variety of retail offerings that will stimulate the local economy, increase visitation of the general public to this unique city landmark and capitalise upon movement of commuters and visitors through to Barangaroo Station.
- Whilst MOD 9 seeks to reduce the total residential GFA delivered in Central Barangaroo by 1,000sqm, consistent with the approved Concept Plan a permanent residential community will continue to be delivered to activate the precinct for 18-hours per day and reinforce critical mass. This community will benefit from the proposed retail, community and active uses, as will the residents in surrounding residential buildings along Kent Street and residents in Millers Point.
- The allocation of up to 19,000sqm of community uses within the RE1 Zone (including a maximum of up to 18,000sqm allocated to the Cutaway) will activate the public realm and reinforce the destination aspiration of Central Barangaroo as the 'civic heart' of the Barangaroo precinct. This allocation will also support uses that encourage visitors, residents and employees to visit and remain in Central Barangaroo through to the evening and night-time, facilitating the late-night economy along the western harbour foreshore.
- The appropriateness of the resultant built form has been carefully considered, having regard to potential impact of the floorspace such as, traffic generation, amenity impact and demand on existing/future infrastructure. The amendments to building envelope (to accommodate increased height and GFA) would not have significant adverse visual or amenity impacts. The resulting development is of an acceptable overall design and would not have adverse amenity impacts in terms of visual, solar or wind impacts. The proposal is unlikely to cause traffic impacts and has excellent access to existing and planned public transport including the new Barangaroo Station.
- The proposal provides for additional commercial, retail and community/cultural floor space within an established precinct within a number of taller buildings, specifically in Block 7, and would not detract from the character of the area.
- The proposed modification will not give rise to excessive bulk or scale and will continue to achieve design excellence. The bulk and scale will be commensurate with surrounding development within the Barangaroo site, as well as development adjacent to the site.
- The proposal appropriately balances the social, economic and environmental outcomes on the site.
- The additional GFA can suitably be accommodated within an appropriate building envelope that is contextually responsive, enhances the amenity through the provision of increased publicly accessible spaces and delivers a more considered ground plane and public domain layout (refer **Section 7.2**).
- A component of the increased overall density (28,166sqm) will be located wholly below ground and as such will not contribute to a perceived or actual increase in bulk and scale of building envelopes at Central Barangaroo. As discussed further in **Section 7.1.2**, this below ground GFA will enable an extension of the retail hub and provide for access from Barangaroo Station through to Barangaroo Reserve, Harbour Park and Barangaroo South.

The proposed increase in overall density within the Barangaroo precinct from 602,354sqm to 708,041sqm is justified.

7.1.2. Above and Below Ground GFA

A basement will be constructed at Central Barangaroo, providing a direct pedestrian connection from the Barangaroo Station through Central Barangaroo's below ground retail hub and beyond to Barangaroo Reserve, the Harbour Park and Barangaroo South. The basement will also accommodate car parking, loading and servicing, and plant.

The basement will extend up to 25 metres (approximately) from the western boundary of Blocks 5, 6 and 7 within land zoned RE1 Public Recreation – predominantly below Barangaroo Avenue. Because of this, there

is the need to allow for separate maximum below and above ground gross floor area associated with the development of Blocks 5, 6 and 7.

The justification for separating below and above ground gross floor area is as follows:

- The allocation of below-ground GFA will enable the creation of a world class retail hub and pedestrian thoroughfare to Barangaroo Station, providing an interconnected below ground domain between Nawi Cove, Harbour Park and Barangaroo South.
- The provision of GFA below the B4 Mixed Use and RE1 Public Recreation zones will enable flexibility in the future detailed design and planning of these spaces.
- In line with the definition of GFA under the SSP SEPP, only part of the floor space within the basement will be classified as GFA. Areas to be used for retail, pedestrian access, and circulation (habitable rooms) will count towards the maximum GFA allowable. Whereas areas to be used for carparking, loading, servicing, back of house areas and plant will not.
- The differentiation between above ground and below GFA associated with Blocks 5, 6 and 7 will enable appropriate controls to be applied to the basement associated with Central Barangaroo. This approach will provide greater clarity and certainty about the maximum permitted GFA across Central Barangaroo to guide future detailed development proposals.

Overall, the separation of above and below ground GFA will provide greater clarity and certainty about the maximum permitted GFA across Central Barangaroo, and the GFA accommodated within the building envelopes of Blocks 5, 6 and 7, to guide future detailed development proposals.

7.1.3. Development below ground level in the RE1 Public Recreation zone

Central Barangaroo will deliver retail GFA at ground and within the basement levels. The retail floor space within the basement levels plays a crucial role in connecting the Barangaroo Station to Central Barangaroo, Harbour Park, Barangaroo Reserve and beyond. The retail hub will be developed by the Central Barangaroo Retail Partner (Scentre Group), who have a demonstrated ability to create extraordinary places, which connect and enrich communities, in partnership with Infrastructure NSW. This will:

- Activate the basement and ground level with retail floor space and/or lobbies and access corridors.
- Provide vertical connections between Barangaroo Station and retail at basement and ground level.
- Provide visual connections from basement to ground and level one at multiple locations.
- Provide natural light through level 1 and ground to the retail basement levels.

The basement will extend 25m from the western boundary of Blocks 5, 6 and 7, predominately below Barangaroo Avenue, which is zoned RE1 Public Recreation. Whilst an underground car park is permitted in the RE1 zone, retail premises is a prohibited use. Accordingly, it is proposed to amend SSP SEPP to insert a clause 'Clause 23A', Appendix 9 which permits development below ground level in the RE1 Public Recreation Zone. The clause will apply to development that is entirely below ground level (on land zoned RE1 Public Recreation) and that is for a purpose that may be carried out in an adjoining zone. The draft clause is as follows:

23A Development below ground level in Zone RE1

(1) This clause applies to development—

(a) that is entirely below ground level (existing) on land in Zone RE1 Public Recreation (the Public Recreation Zone), and

(b) that is for a purpose that may be carried out in a zone that adjoins the Public Recreation Zone.

(2) Despite any other provision of this Plan relating to the purposes for which development may be carried out, development consent may be granted to development to which this clause applies if the consent authority is satisfied that—

(a) the carrying out of the development is desirable due to compatible land use planning, infrastructure capacity and other planning principles relating to the efficient and timely development of land, and

(b) the development will not have any significant adverse effects on the environment and will not prevent any land within the Public Recreation Zone being used for recreational purposes.

The wording of proposed Clause 23A reflects the long-accepted wording of Clause 5.3A of the Sydney LEP 2012. Specifically, this will:

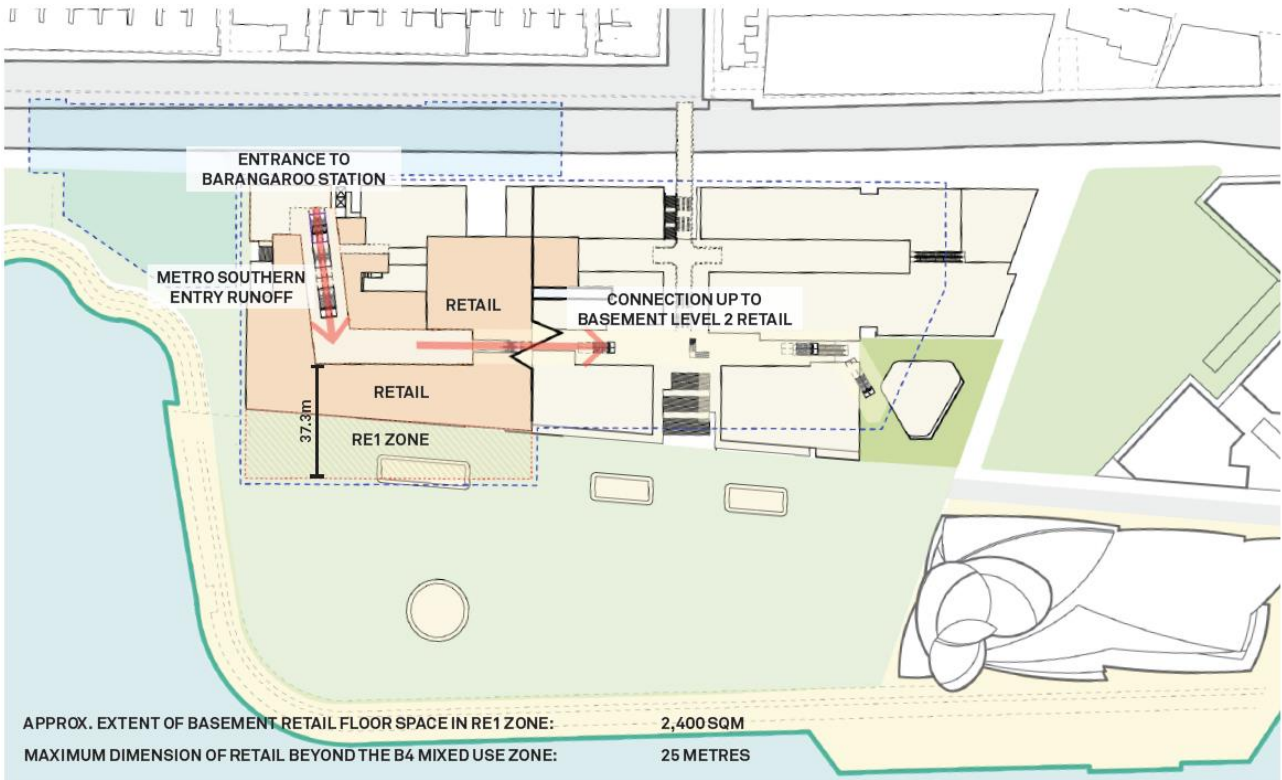
- Allow for a more efficient basement layout, which can accommodate parking, loading, servicing, plant and other uses.
- Allow for the effective integration of the Barangaroo Station with Central Barangaroo and beyond.
- Allows for an efficient and effective retail floor plate, which will be able to accommodate a range of shops including, but not limited to a full-line supermarket (a land use lacking in this area, which will serve existing and future communities), speciality retail, and food and beverage.
- Reduce the extent of excavation required, resulting in reduced impacts on the locality.
- The basement will also accommodate car parking, loading and servicing and plant equipment.

Importantly, the underground retail will:

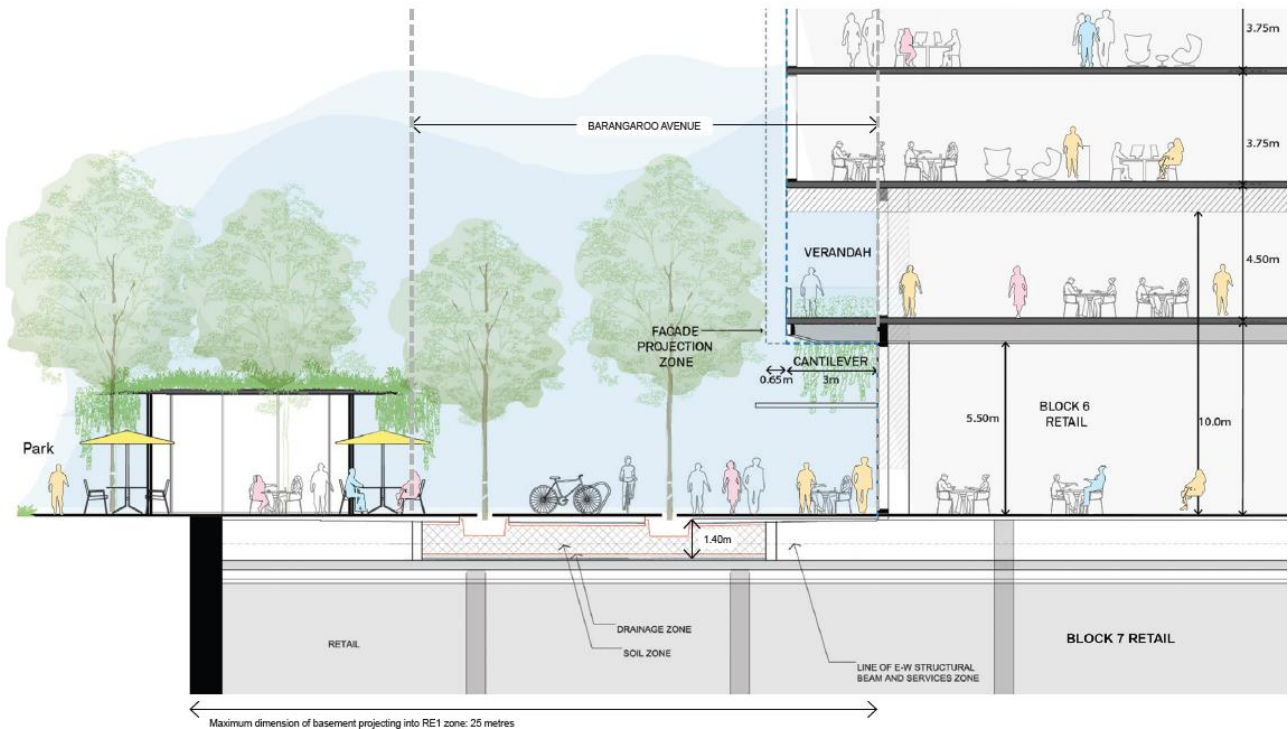
- Have no discernible urban design impacts to the public domain areas at ground level and is primarily below Barangaroo Avenue.
- Enable the provision of sufficient space and soil depths (minimum 1.4m) to support mature tree planting throughout the public domain.
- Not prevent the above land from being used for recreational purposes.

As illustrated in the figure below, the below ground retail space extending in the RE1 zone will not impact on the ability of the land within the RE1 zone to be used for public open space or recreation purposes or on the recreational settings and activities undertaken on the RE1 zoned land above. In fact, the majority of retail floor space is primarily below Barangaroo Avenue. In any case, the basement extension still enables the provision of sufficient space and soil depths (1.4m) in the RE1 zone above to support mature tree planting throughout this area of the public domain.

Figure 30 Proposed below ground retail within the RE1 zone



Picture 14 Site Plan extract illustrating proposed below ground retail in RE1 zone



Picture 15 Section A Plan

Source: Hassell

7.1.3.1. Precedents

The provision of below ground GFA under the RE1 Public Recreation zone will not cause adverse impacts on the amenity or use of Harbour Park. Basement structures below RE1 Public Recreation zoned land are not uncommon in Barangaroo or the Sydney Local Government Area. Notable examples include:

- **Hickson Park:** the Barangaroo South Stage 1B basement (SSD 15_6960 - approved March 2017) is to be constructed below Hickson Park and will contain four levels of parking, plant rooms, loading docks, amenities, waste rooms, and storage areas, as well as the allocation of 26m² of GFA for end of trip facilities, dock masters and security offices.
- **Barangaroo Reserve (formerly Headland Park):** located within the void space of the newly created Barangaroo Reserve is a public car park accommodating 300 parking spaces, as well as a 'shell' for future use as a cultural facility (known as the Cutaway) (MP 10_0048 – approved March 2011).
- **Wynyard Park:** originally dedicated as a recreation ground in 1875, it was almost completely dug up in 1925 to build the city circle rail line and Wynyard Station. It is understood Transport for NSW are proposing to undertake further upgrades to Wynyard Station as part of the Sydney Metro. Note: major rail and road infrastructure also sits beneath **The Royal Botanic Garden, Hyde Park, Belmore Park and Martin Place.**
- **The Domain:** the 34-hectare park provides sports fields and large open spaces often used for special public occasions and events at ground level, and more than 1100 car parking spaces below ground.
- **Cook and Phillip Park:** provides grassed areas, water features, and an urban plaza at ground level, and a public car park, aquatic and fitness centre, and café below ground.

In all these examples, the ground plane has been carefully designed and constructed to ensure the occupant is largely unaware of the structures and uses contained below ground. This is achieved through appropriate placement of hard and soft materials and provision of adequate soil depth and drainage conditions, which ensure there is capacity to sustain a variety of plants including significant trees and that there is no impact on the use and amenity of the open space.

The same approach is proposed at Central Barangaroo. As stated above and as detailed in the Built Form and Public Domain Guidelines contained in the Central Barangaroo - Urban Design Report, a minimum of 1.4m deep soil is to be provided above the basement retail and car park within the RE1 zone to allow sufficient soil depths for substantial tree plantings and drainage, particularly along Barangaroo Avenue.

7.2. BUILT FORM AND URBAN DESIGN

This section has been prepared to outline and justify the modifications to the built form and urban design of Central Barangaroo as proposed in MOD 9. The discussion has been informed by the Urban Design Report prepared by Hassell (**Appendix E**), as well as the suite of technical documentation appended to this EAR.

It is noted that the proposed building envelope has been assessed separately in response to the DGRs with regard to other potential impacts which may arise from the built form, including:

- Density (above and below ground GFA) – discussed further in **Section 7.1.**
- Solar access impact – discussed further in **Section 7.4.**
- View and visual impacts – discussed further in **Section 7.6** and **Section 7.7.**
- Traffic and movement considerations – discussed further in **Section 7.8.**
- Heritage impact – discussed further in **Section 7.9.**

7.2.1. Overview

As a result of ongoing design development of the concept scheme for Central Barangaroo, MOD 9 seeks to modify the approved building envelope through varying the approved maximum building heights and block alignments for Blocks 5, 6 and 7 to accommodate a modulated building form. The proposed building envelope provides an appropriate urban form for the City's western edge which mediates the diversity of scale and character within the surrounds. MOD 9 will ensure Central Barangaroo can define, frame and activate adjacent public open spaces and civic spaces, and provides a framework to achieve design excellence.

The increased building envelope heights and block alignments are strategically justified in this location given MOD 9 proposes an urban built form, scale and modulated massing that:

- Is commensurate with the site's iconic location on the western foreshore. MOD 9 capitalises on significant State government investment in public transport infrastructure (Barangaroo Station). The

proposal demonstrates strategic merit by co-locating additional employment generating floor space, retail, residential, community and entertainment uses in proximity to planned transport, thus, maximising public transport patronage of Barangaroo Station as well as other existing networks.

- Capitalises on the public benefit opportunities afforded to the site given its locational context and existing amenity on the City's western foreshore edge. MOD 9 will embellish the western foreshore and surrounding public open space areas through the provision of a true mixed-use precinct with an activated ground plane offering retail opportunities, community uses and publicly accessible spaces for the benefit of the local and wider community,
- Responds to the established principles for the Barangaroo precinct embedded within the approved Concept Plan to deliver an integrated mixed use precinct outcome which minimises adverse impacts to the surrounding urban environment (such as view sharing and solar access) and provides an activated public domain with opportunities for a network of new highly accessible public spaces,
- Is consistent with, and visually subservient to, the existing and emerging character along the western foreshore of the City, notably Barangaroo South, as well as the wider evolving future character of the Darling Harbour precinct and western edge of the Sydney CBD, including the Cockle Bay redevelopment, Harbourside Shopping Centre and the Blackwattle Bay State Significant Precinct (**SSP**) Study,
- Allows for the potential delivery of new publicly accessible spaces within development blocks 5, 6 and 7 which would integrate the precincts and break up the built form. The Urban Design Report has contemplated three potential spaces including Nawi Terrace, Barangaroo Steps and Barton Plaza. It is noted that MOD 9 does not seek consent for these spaces and the form, location and function of potential spaces will be subject to future detailed design and SSDAs,
- Allows for the establishment and implementation of the Urban Design Guidelines developed by Hassell (refer to *Section 4* of **Appendix E**), and
- Facilitates future high-quality urban design outcomes whereby future development proposals will undertake an iterative design process to ensure built form outcomes demonstrate design excellence.

7.2.2. MOD 9 Built Form and Massing

The approved Concept Plan and associated building envelope only allocates one maximum building height RL for each of the three development blocks, including, Block 5 – RL 34m, Block 6 – RL 29m and Block 7 – RL 35m. This presents as a solid mass which features little to no articulation in built form and will likely result in a visually uninteresting urban design outcome with minimal opportunities for architectural expression.

Conversely, MOD 9 proposes a highly modulated built form and massing at an appropriate scale which provides a visual transition from the open space setting of Barangaroo Reserve and Nawi Cove situated to the north, to the high-rise and dense scale of commercial and residential development in Barangaroo South.

East-west pedestrian connections will be delivered throughout Central Barangaroo. The indicative reference scheme prepared by Hassell (Urban Design Report at **Appendix F**) has suggested Barangaroo Steps as a potential opportunity for this connection. However, the final location, design and function will be subject to detailed design within future SSDAs.

Notably, these connections will provide a finer grain permeable pedestrian environment at the lower levels, accommodate the modified street network, and break up the built form massing of the building envelope when viewed from surrounding viewpoints. These viewpoints include both buildings situated to the north and east of the site, as well as key public domain areas to the north (Nawi Cove and Barangaroo Reserve), south (Hickson Park) and west (Harbour Park) of Blocks 5, 6 and 7.

The breaks and overall articulation in the built form massing allows for the potential creation of new publicly accessible spaces as part of future detailed design SSDAs, including Nawi Terrace in Block 7, the Barangaroo Steps which dissect Blocks 5 and 6 and Barton Plaza in Block 5. These publicly accessible spaces would better integrate the development blocks within Central Barangaroo whilst reducing the overall massing as they have a low-rise scale. It is reiterated that MOD 9 does not seek consent for the delivery of these spaces, but rather, the modulated building envelope provides opportunities to deliver these spaces.

The MOD 9 building envelope incorporates varied building heights that step down from a maximum height of RL 44.5m at Hickson Road along the eastern boundary towards Harbour Park situated to the west with a low point height of RL 31.2m, thus, enabling good solar access to this key open space area. Similarly, the

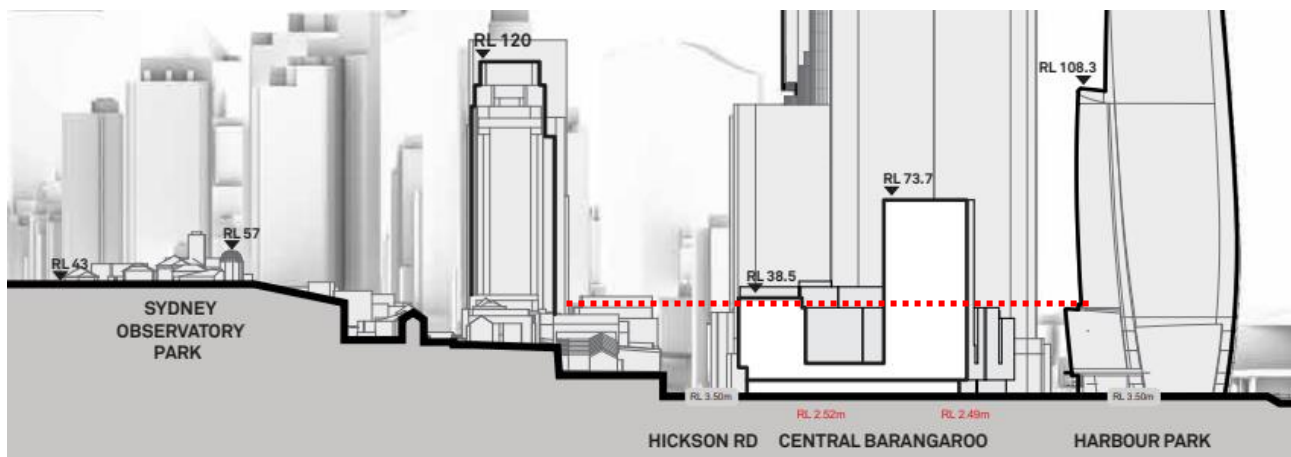
proposed building heights step down to a maximum height of RL 21.5m at the south-west corner of the site where the Block 5 'flagship' building sit at the junction of Barton Road, Barangaroo Avenue, Hickson Park and the Crown Sydney Hotel Resort (in Barangaroo South). The stepped building heights to south-west corner of Block 5 respect and signal the significance of this junction and allows for good solar access to Hickson Park and view outlook towards the harbour.

Whilst MOD 9 seeks to amend the maximum building height permitted on Blocks 5, 6 and 7, a large portion of the proposed height plane is comparable to the existing maximum height limits under the approved Concept Plan and SSP SEPP height controls.

With the exception of Tower 7, the proposed building envelope height plane of Block 7 (ranging between RL15 – RL38.5) is generally consistent with the existing, approved maximum height of RL35. In addition, the modification to the Block 5 height plane will result in a signification reduction in height at some points (such as RL21.5 at the Block 5 'flagship' retail building) when compared to the existing, approved maximum height of RL34. The proposed heights also continue to provide an appropriate height in the context of the western edge of the city edge, particularly when compared to the scale of constructed buildings and approved development in Barangaroo South, as well as recently approved and proposed development in Darling Harbour and Blackwattle Bay.

The overall built form massing and consistent street wall height proposed under MOD 9 generally respond to the podium datums in Barangaroo South to cohesively extend the massing language through to Central Barangaroo. The massing along Hickson Road has been designed to create a consistent street wall height and provide a civic address along the eastern boundary of Central Barangaroo which better interacts with development on the other side of Hickson Road. This massing relationship is illustrated in the figure below.

Figure 31 Hickson Road Massing Relationship with Barangaroo South and High Street (North Elevation)



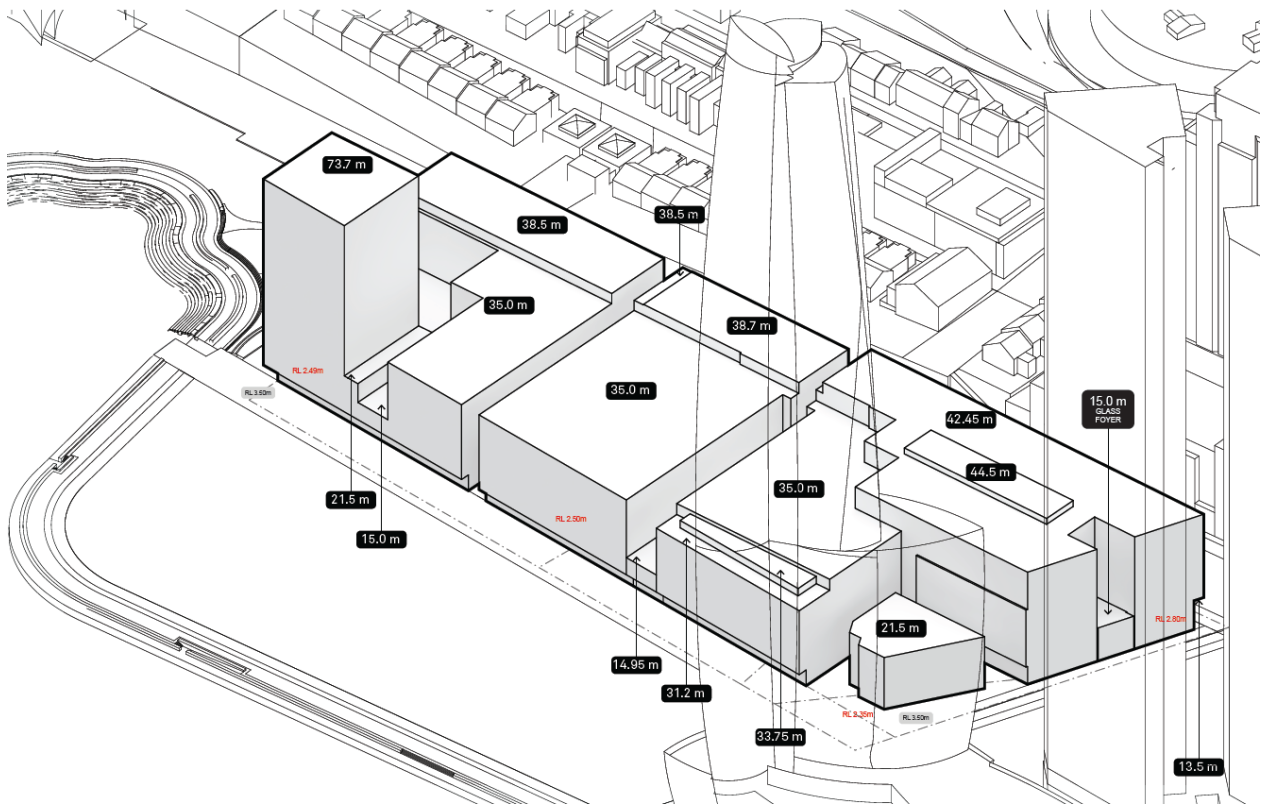
Source: Hassell

The proposed stepped building heights and massing of the Block 5, 6 and 7 (southern portion) building envelope provide an appropriate lower-scaled built form towards Barangaroo Avenue and Barton Street to accommodate an activated street frontage, framing a built form edge to Harbour Park and Hickson Park. The building envelope base is recessed to facilitate future active retail edges which provide a human scale.

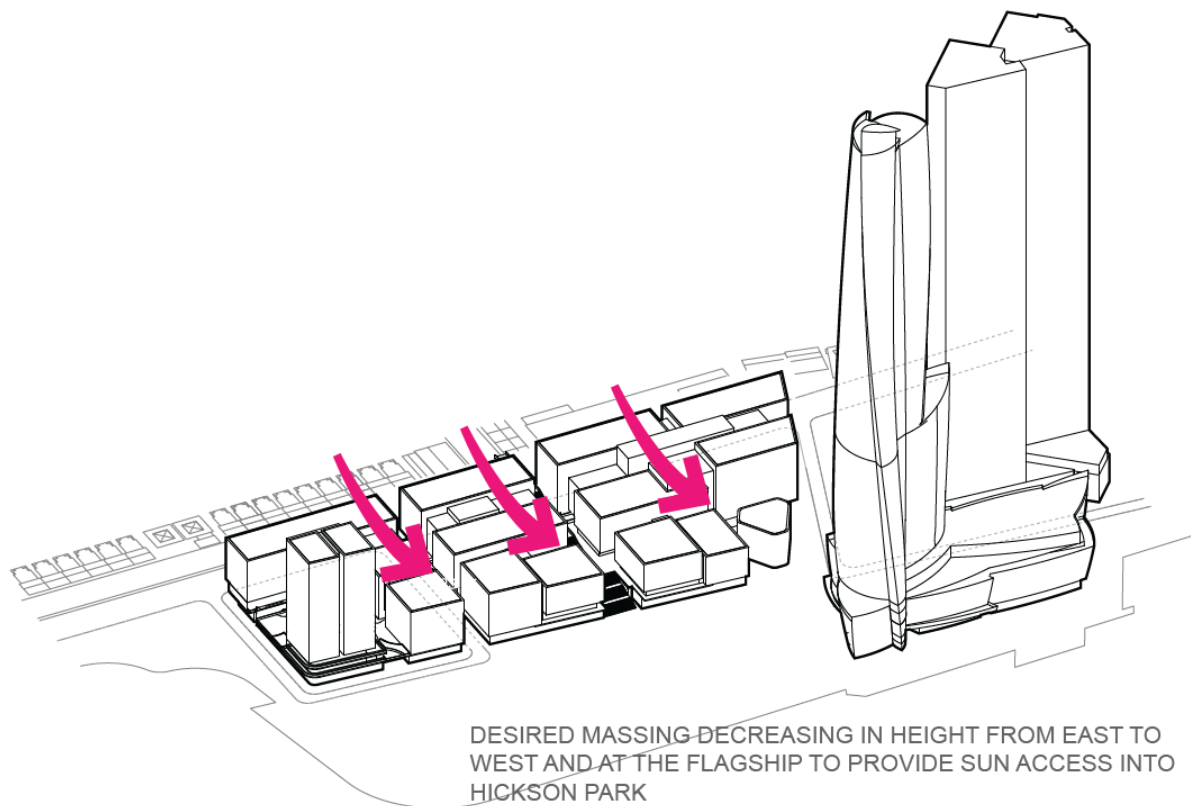
Figure 32 over the page illustrates the overall built form proposed under MOD 9 and how the building envelopes have been modulated to break up the scale of massing. Whilst the proposed building envelope heights are higher than that of the approved Concept Plan, the MOD 9 built form and massing is articulated by the east-west and north-south street and pedestrian connections, as well as the refined urban form and distribution of height within the overall building envelope.

The reference scheme (Picture 17) demonstrates how the building envelope can be further articulated through future detailed SSDAs. In particular, this can be achieved through emphasising and widening the Barangaroo Steps, as well as refining the massing proportions to reduce façade lengths and stepping the massing proportions within each development block to further break up the built form and scale.

Figure 32 Proposed built form and massing – articulation and transition in building heights



Picture 16 Proposed MOD 9 building envelope illustrating stepped building heights



Picture 17 Built form of indicative reference scheme illustrating stepped building heights and massing articulation

Source: Hassell

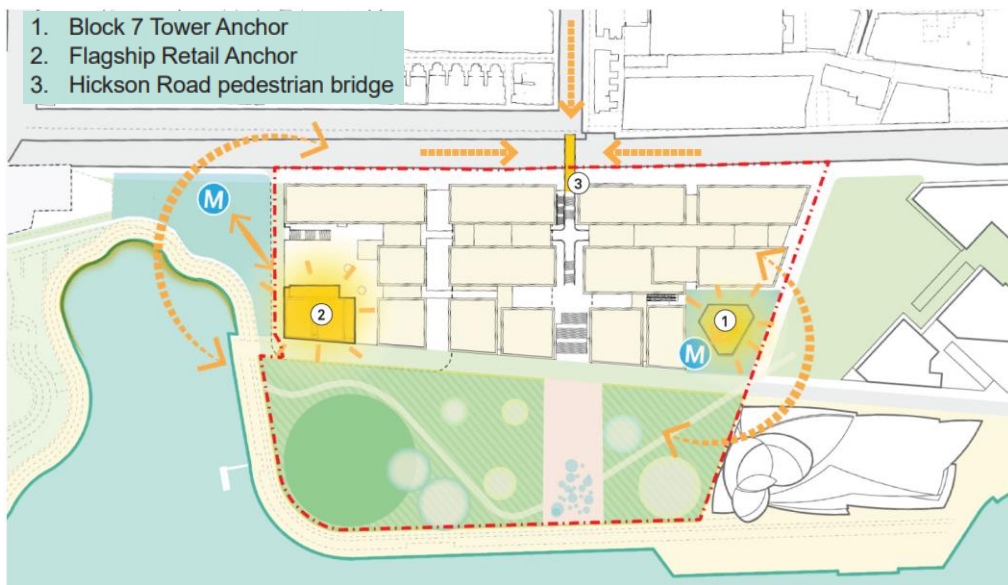
Landmark Built Form Elements

The proposed MOD 9 building envelope provides opportunities to create and design two future landmark building elements at the north-eastern corner and the south-eastern corner of the built form. These include:

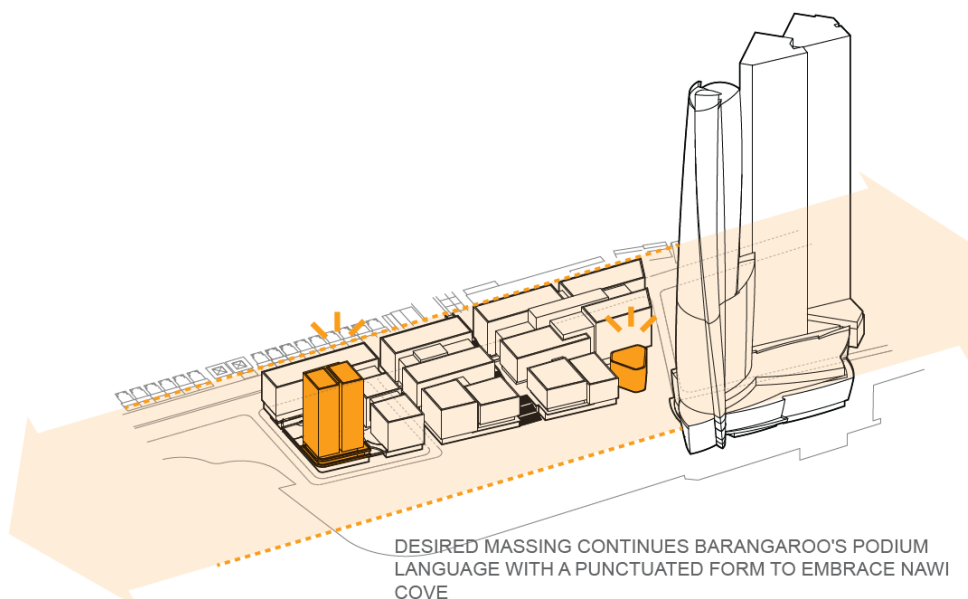
- The 'flagship' building in Block 5 at the south-eastern corner, and
- The proposed tower form in Block 7 at the north-eastern corner.

Consistent with the approved Concept Plan, MOD 9 maintains the commitment to an "in-principle" pedestrian connection over Hickson Road along the eastern edge of the site to connect and integrate Central Barangaroo with development situated to the east in Millers Point and beyond to the Sydney CBD. These three urban markers are illustrated in the figure below. However, it should be noted that the location of the pedestrian connection over Hickson Road is indicative only and the precise location, design and function will form part of future SSDAs.

Figure 33 Central Barangaroo urban markers and landmark built form elements



Picture 18 Map illustrating locations of the urban markers



Picture 19 3D illustration of the two punctuated landmark built form massing elements at the northern and southern extent of the development blocks

The Block 5 flagship building is situated at the south-western corner of Block 5, anchoring Barton Plaza at the intersection of Barangaroo Avenue and Barton Street. MOD 9 proposes to reduce the building envelope height from RL 34m to RL 21.5m and provides increased built form setbacks to Hickson Park and Harbour Park to facilitate the future landmark building and signal the significance of this junction. This contributes to create a human scale for Barton Plaza as it presents to surrounding public domain areas.

The reduced scale and articulated massing proposed maintains good solar access and amenity to the western portion of Hickson Park throughout the year (discussed further in **Section 7.4.2**) and opens up view corridors to Harbour Park and the harbour.

One of the most significant changes proposed under MOD 9 is the increased building envelope height from RL 35m to RL 73.7m at the north-western corner of Block 7 to accommodate a future tower form. Whilst this is a notable increase in height, the Block 7 tower form creates an opportunity to provide a distinct urban marker which frames the Central Barangaroo developments interface with Nawi Cove and signals the arrival experience and gateway to the site from Barangaroo Station.

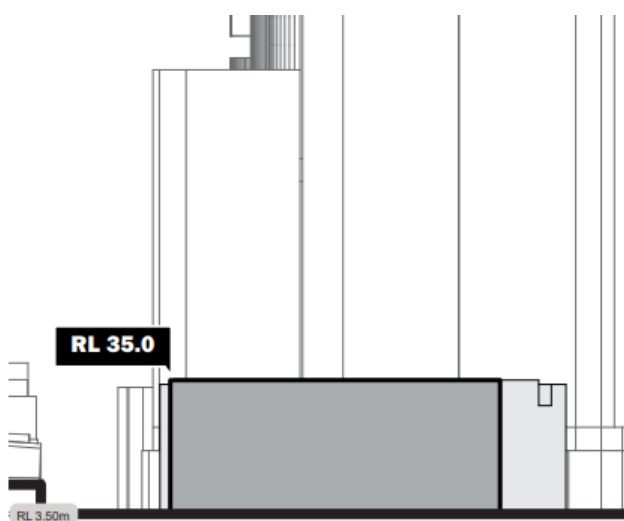
Barangaroo Station brings a new civic role to this portion of the western harbour and alters the balance of activity and movement as a new gateway to the City. This appropriately scaled landmark will reinforce a clear sense of identity, improve legibility to and from Barangaroo Station and Nawi Cove, and define the northern termination of the north-west edge of the Sydney CBD.

The current approved Block 7 building envelope includes an overall continuous street wall height of RL 35m at the interface with Hickson Road to the east, Nawi Cove to the north and Barangaroo Avenue and Harbour Park to the west.

By comparison, the MOD 9 building envelope for Block 7 proposes a modulated built form massing and building height. The proposed building envelope retains a relatively consistent street wall height to Hickson Road with a minor increase in height of 3.5m from RL35 to RL38.5. The new tower form with a height of RL 73.7 is proposed in the north-west corner of Block 7 and is significantly separated by 28.5m from the street wall massing on Hickson Road. This provides a clear physical separation between the two built form elements which breaks up the scale and massing to provide visual relief to the adjacent public domain areas and clearly defines the tower form.

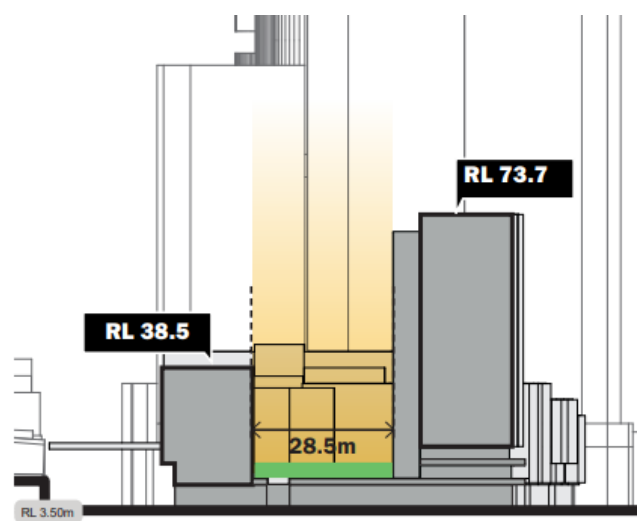
This enables the opportunity to create a new publicly accessible space (Nawi Terrace) that would feature as an elevated verandah that sits at a reduced height of RL 15m and wraps around the tower form from Nawi Cove to Barangaroo Avenue. It would provide pedestrian connectivity, visual relief and a suitable transition from the built form within Block 7 down to Nawi Cove and Barangaroo Station to create a human scale. It is reiterated that MOD 9 does not seek consent for the delivery of any publicly accessible spaces, but rather, the modulated building envelope provides opportunities to deliver these spaces, which will be subject to detailed design and future SSDAs.

Figure 34 Comparison of Block 7 approved and proposed building envelope



Picture 20 Approved Block 7 building envelope

Source: Hassell



Picture 21 Block 7 building envelope (reference design)

Consistency with Existing and Emerging Built Form Character

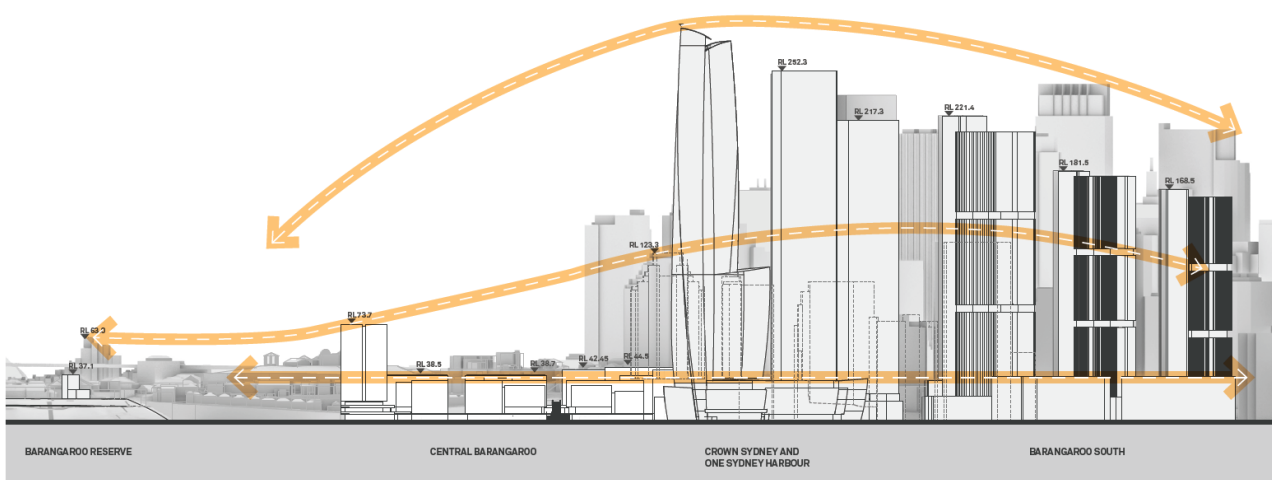
MOD 9 seeks to deliver a built form and massing outcome which is consistent with the existing and emerging built form character along the western foreshore and western edge of the Sydney CBD. **Section 3.1.5** of the EAR outlined the emerging and future development context of the surrounds. In summary, this includes:

- **Barangaroo South (Block 4A and 4B)** – recent approval consisting of Building 4A (a residential apartment building comprising 327 apartments) with a maximum height of RL 250, Building R4B (a residential apartment building comprising 297 apartments) with a maximum height of RL235, and Building R5 (a 29-storey mixed use building) with a maximum building height of RL 107.
- **Cockle Bay redevelopment** – recent approval comprising a commercial building envelope with a maximum height of RL 183 and a maximum tower base and podium height of RL 29. The proposal includes a maximum commercial GFA of 89,000sqm, comprised of 75,000sqm office GFA and 14,000sqm retail GFA.
- **Harbourside Shopping Centre** – recent approval for a building envelope which provides a podium and tower form with a maximum height of RL 166.95 and a maximum GFA of 87,000sqm comprising 42,000sqm residential and 45,000sqm non-residential floor space.
- **Blackwattle Bay SSP Study** – NSW government released the significant transformation for the precinct in June 2021 which includes delivery of 12 building envelopes allowing for towers up to 45 storeys (RL 156), as well as a total GFA of approximately 234,000sqm comprising 48% for employment and non-residential and 52% for residential uses.

The proposed maximum building height for the MOD 9 Concept Plan (RL 73.7), with the remaining development blocks in Central Barangaroo proposed to be ranging in height from RL 38.7 – RL44.5, are significantly lower than the approved and proposed building heights of the above listed developments. In addition, the proposed building envelope is significantly lower than the scale of some taller buildings situated to the east and south-east of the site (near the Hickson Road and Barton Street intersection), some of which are at a height of RL 120. As such, the MOD 9 modulated building envelope heights are compatible with the existing and emerging character in the surrounds and will sit appropriately within the built form context of the western harbour edge of the CBD. **Figure 35** below illustrates the MOD 9 built form in the context of immediate surrounding development.

MOD 9 will not detrimentally impact the visual quality or dominate the scale of development in the area or the skyline. The proposal responds to the strategic planning context providing a significant increase in employment generating floorspace which is strategically located with great access to existing and future planned public transport and is conveniently located in proximity to the CBD. MOD 9 will support a diversity of uses and various public benefits, including the provision of a vibrant public domain, which will bring activation to the site and enable integration with future built form.

Figure 35 MOD 9 building envelopes in the context of immediate surrounding development



Picture 22 West elevation showing the proposed built form at Central Barangaroo in the context of the immediate surrounds



Picture 23 Artist's impression of the reference scheme – view looking south-east

Source: Hassell

7.2.3. Urban Design Guidelines and Design Review Process

Urban Design Guidelines

As discussed in **Section 4.8**, MOD 9 seeks to establish a new set of carefully considered Urban Design Guidelines and built Form controls for Central Barangaroo which will guide future development proposals across the site and provide certainty for the expected future built form. These Urban Design Guidelines will supplement the maximum three-dimensional volume of the modified building envelope which future detailed design will be contained within. The Urban Design Guidelines include objectives and detailed design guidance controls relating to the following components:

- **Built form** – the principles and strategic outcomes required across each development block (objectives and controls relating to land use mix, ground level activation, address and access, building lines and setbacks, building height and distribution, building massing and articulation, providing view outlook, and building overhang),
- **Streets** – the framework, character and intent for streets and movement corridors, and
- **Parks and public spaces** – the character and intent for parks and publicly accessible spaces

The Urban Design Guidelines have informed the reference design prepared by Hassell (**Appendix E**) which conceptually illustrates the future development outcome with regards to variations in building form, bulk, scale and articulation within the building envelope and also the achievable GFA.

In accordance with the provisions of the consent conditions and the Statement of Commitments (as amended), future detailed SSDAs will be required to demonstrate compliance with the established Urban Design Guidelines to ensure future detailed design is consistent with the Concept Plan, as modified by MOD 9, and the future expected urban design and built form.

The form and external appearance of the future buildings will be required to improve the quality and amenity of the public domain, activating and integrating with the public domain in accordance with the detailed provisions of the Urban Design Report and relevant Urban Design Guidelines (refer to **Appendix E** for further details).

Design Excellence and Design Review Process

Clause 19 in Appendix 9 of the SSP SEPP states that consent must not be granted to development involving the erection of a new building or external alterations to an existing building unless the consent authority has considered whether the proposed building exhibits design excellence. Whilst this is primarily a consideration for future detailed SSDAs, the matters in clause 19(2) of the SSP SEPP have been considered in the concept design development and assessment of MOD 9.

A Design Excellence Strategy has been prepared to accompany MOD 9 (**Appendix Z**), specifically for development Blocks 5, 6 and 7. The Design Excellence Strategy outlines how design excellence will be achieved by future detailed SSDAs and is described in further detail in **Section 7.5**.

In conjunction with the established Urban Design Guidelines, the Design Excellence Strategy sets out the detailed design development and iterative design review process which ensures that all future detailed SSDAs will meet the design excellence requirements.

7.2.4. Crime Prevention Through Environmental Design

Crime Prevention through Environmental Design (**CPTED**) or Safer by Design is a socio-scientific approach to planning, designing and managing the built environment to ensure it can passively assist public safety, crime prevention and detection of crime and support the feeling of safety within a community. At a conceptual level, the four key CPTED principles of *surveillance*, *access control*, *territorial reinforcement* and *space management* have been applied throughout developing the built form and urban design of MOD 9. These are identified and discussed in the Urban Design Report (**Appendix E**).

The CPTED principles and conceptual design elements developed will continue to be applied and further developed throughout the future detailed design development of Blocks 5, 6 and 7 as part of future SSDAs.

7.3. REDEFINING HICKSON PARK

MOD 9 seeks to relocate the southern B4 Mixed Use zone boundary further to the south, to more generally align with the Central Barangaroo Block 5 development boundary as it existed prior to the June 2016 amendment to the SSP SEPP associated with MOD 8.

The June 2016 amendment to the SSP SEPP (associated with MOD 8) changed the northern boundary of Hickson Park to widen the aperture of the park along Barangaroo Avenue. This widened threshold, whilst connecting Hickson Park to Harbour Park, forces a blended character of the two proposed public spaces, limits the potential to create two distinct park experiences, impacts pedestrian and vehicle circulation, and limits the ability to create a positive urban space connection between Central Barangaroo and Barangaroo South.

The proposed amendment will generally restore the original configuration of public open space in this part of the Barangaroo site, with the consequence that the area of RE1 Public Recreation zoned land (Hickson Park) will be reduced.

The proposed reconfiguration of the southern boundary of Block 5 and northern boundary of Hickson Park has **demonstrable benefits** to the overall form and function of Barangaroo, which can be summarised as follows:

- **Extending Harbour Park and minimising traffic impact.** The proposed amendment will:
 - Transform Barangaroo Avenue by removing unrestricted vehicle traffic from Barangaroo Avenue north of Barton Street adjacent to Blocks 5 and 6, with limited controlled service vehicle access only to create a tree lined pedestrian avenue and enable Harbour Park to extend eastwards between Hickson Park and Street C.
 - Redirect Barangaroo Avenue's north south vehicular traffic along Barton Street to Hickson Road, with Barton Street as a two way and permanent connection.
 - Concentrate broader Barangaroo precinct vehicular movements onto Barangaroo Avenue (South), Barton Street and Hickson Road.
 - Create a truly pedestrian orientated mixed-use precinct, adjacent to Sydney Harbour, in the heart of the Sydney CBD.
- **Better defining the networks of parks.** The proposed amendment will:

- Better define Hickson Park as a distinct city scale park, framed and activated by iconic buildings and acting as a key green space mediating between the city and Barangaroo and the harbour foreshore.
- **Integrating the precincts.** The proposed amendment will:
 - Establish a closer and stronger relationship between the Barangaroo South and Central Barangaroo precincts (refer **Figure 36**).
 - Create Harbour Park and Hickson Park as public open spaces of distinct character.
 - Provide opportunities for the provision a finer grain network of additional publicly accessible spaces, connecting through Blocks 5, 6 and 7 of Central Barangaroo.

Figure 36 Interface between Central Barangaroo and Barangaroo South



Source: Hassell

- **Improved amenity of Hickson Park.** The proposed amendment will:
 - Improve micro-climate, wind management and thermal comfort for occupants of Hickson Park. As a direct result of reducing the aperture between Crown and Block 5, Hickson Park will be protected from the strong westerly winds and will become a place of respite that cannot be achieved at the foreshore locations in Harbour Park or Barangaroo Reserve.

Notwithstanding the proposed reconfiguration of the southern boundary of Block 5 and northern boundary of Hickson Park, the objectives set out by the Planning Assessment Commission in their advice to the Minister regarding the June 2016 amendment to the SSP SEPP (associated with MOD 8) are met. Specifically:

- **Maintain 50% of Barangaroo as public open space.** Since the original Concept Plan was approved in 2007, a key commitment of the Barangaroo Concept Plan has always been to ensure 50% of the site is made available as public open space/public domain. Importantly, the proposed amendment to the SSP SEPP will not impact the provision of 50% of Barangaroo as public open space, which is generally concentrated along the foreshore and headland.
- **Retain the quality and amenity of Hickson Park.** Notwithstanding the proposed amendment to SSP SEPP the quality and amenity of Hickson Park will be retained - whilst also providing a better planning outcome for the broader Barangaroo precinct.
 - Defining Hickson Park. The proposed amendment will allow Hickson Park to function as a distinct city park with a strong and clear physical and visual connection to Harbour Park. It will be activated on all

sides with cultural and retail offerings, the Barangaroo Station entry, as well as lobbies to the residential buildings, ensuring it is activated day and night, all year round. Hickson Park will continue to serve as an 'urban room' away from the overtly programmed spaces of Harbour Park and Barangaroo Reserve. The proposed amendment will not alter the landscape design, soil depths, number of trees, amount of soft landscaping or lawn space of Hickson Park as currently constructed.

- Pedestrian connectivity to the harbour foreshore. The changed alignment of the northern boundary of Hickson Park provides greater legibility of access from the City through Gas Lane to Barton Street and the harbour beyond. In addition to maintaining pedestrian connectivity between Hickson Road and Harbour Park, the changed configuration will draw pedestrians through Hickson Park into Central Barangaroo and beyond to Barangaroo Station, Nawi Cove and Barangaroo Reserve via the north-south through site link (refer **Figure 37**).
- Adequate separation distance between Block Y and Block 5. The minimum separation distance between Block Y (Crown Sydney Hotel Resort) and the pavilion building within Block 5 is 28 metres. This ensures Hickson Park will continue to be physically and visually connected to Harbour Park and the foreshore, whilst establishing a closer and stronger relationship between the Barangaroo South and Central Barangaroo precincts.

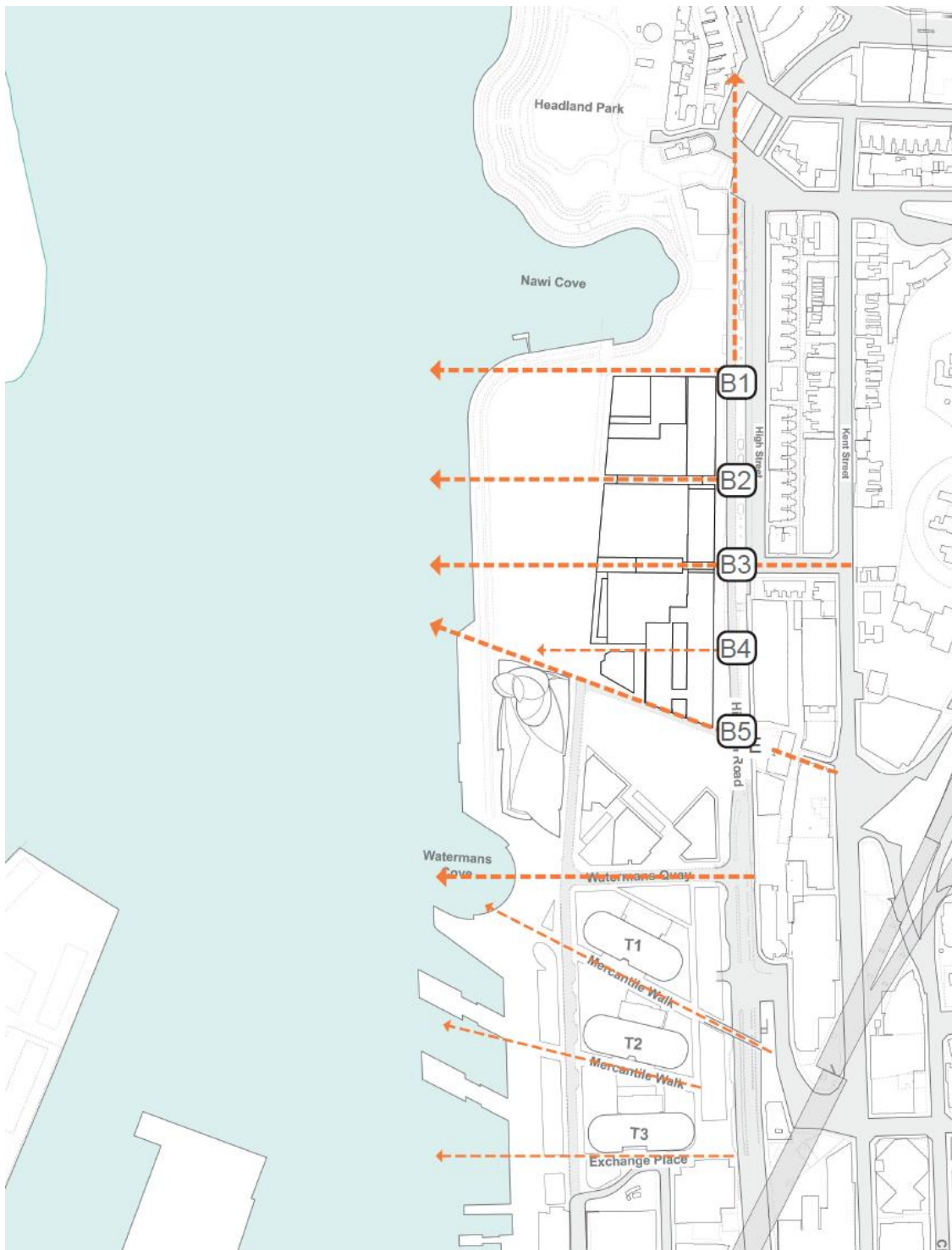
Figure 37 Improved pedestrian connectivity between Barangaroo publicly accessible spaces



Source: Hassell

- View corridors from Hickson Road to Sydney Harbour. Views from Hickson Road to Harbour Park and Sydney Harbour are maintained from various vantage points. In addition, new view corridors are established throughout Central Barangaroo providing unique views of Harbour Park and Sydney Harbour from the east (Hickson Road and High Street) at Barton Street, Laneway B, Street C and Street D, as well as from within Block 5, 6 and 7. This is illustrated in **Figure 38**.

Figure 38 View Corridors created by MOD 9



Source: Hassell

- Solar access to Hickson Park. Overshadowing analysis (refer **Section 7.4.2**) demonstrates an average of 49.91% of Hickson Park will receive solar access between 12pm and 2pm in mid-winter. This will provide for an urban parkland with an area of 3,553.13sqm that can accommodate over 883 people sitting comfortably (based on an assumption of 1 person per 4sqm).

The proposed reconfiguration of the southern boundary of Block 5 and northern boundary of Hickson Park has demonstrable benefits to the overall form and function of Barangaroo. Crucially, reinstatement of the Block 5 boundary to be more in line with the pre-MOD 8 arrangement will provide a superior outcome for Central Barangaroo whilst generally retaining the principles set by the PAC. Importantly, it will also maintain the delivery of 50% of Barangaroo as public open space and improve the amenity and identity of the different public open spaces within the Barangaroo precinct.

7.4. SOLAR ACCESS AND OVERSHADOWING

Hassell have prepared Shadow Diagrams to illustrate the solar access to the site and surrounding areas at the summer solstice (December 21), winter solstice (June 21) and the equinoxes (March 21 and September 21) at hourly intervals from 9am – 4pm. These diagrams are provided at Appendix B to the Urban Design Report (**Appendix E**) and discussed further below.

The Solar Access Study provided at **Appendix E** details the shadow cast by the proposed MOD 9 envelope in 'blue'. This is compared to the approved Concept Plan envelope in 'orange' and the reference design in 'green'. Shadowing from existing buildings is shown in 'grey'.

It is noted the overshadowing of the entire building envelope represents a conservative and maximum assessment of impact, as future detailed SSDAs and regard to the Design Guidelines proposed as part of this application (refer **Section 4.8**) would refine the development within the envelope.

7.4.1. Solar Access Study

Winter Solstice

The greater modulation of the MOD 9 building envelope will result in a shift in the shadow cast on to surrounding public domain and recreational areas, and an increase in some locations. An extract of the shadow cast on the winter solstice between the key period of 11am – 2pm is provided in **Figure 39 – Figure 42**.

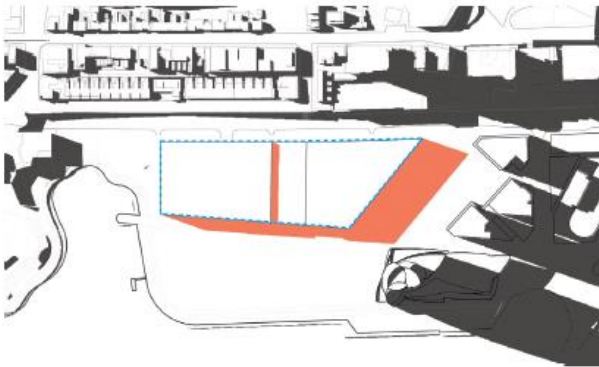
Whilst MOD 9 will result in some additional shadowing on Harbour Park and Wulugul Walk between 9am and 10am on the winter solstice, this fast-moving shadow quickly dissipates and from 12pm Harbour Park and Wulugul receives full solar access for the remainder of the day. This aligns with the lunch time period (12 midday to 2pm) which is associated with the likely peak demand for recreational activity in this area. Further, the northern extent of Wulugul Walk and Hickson Cove remain will continue to receive solar access during the study period as per the approved Concept Plan.

In regard to Hickson Park and Barangaroo Avenue, the extent of morning shadow cast (between 9am – 10am) is largely comparable to the shadow of the approved Concept Plan and there are no additional impacts on the amenity of these areas at these times as illustrated in **Figure 39** and **Figure 40**. Between 11am – 2pm the MOD 9 envelope will result in an increase in shadows to the eastern portion of Hickson Park adjacent to the curtilage of Building R5 and Hickson Road. Comparably, the western extent of Harbour Park (at the intersection of Barton Street and Barangaroo Avenue) will continue to receive solar access between 11am to 2pm consistent with the approved Concept Plan (with only a minor increase in shadows adjacent to Barton Street). This will improve the amenity and usability of this space, noting that key vistas are provided within this western extent of Harbour Park through to the harbour foreshore. Further discussion of the impact on Hickson Park is provided in **Section 7.4.2**.

As the day progresses, the extent of additional shadow from the MOD 9 building envelope at 3pm is over commercial buildings along Hickson Road and some residential terraces along High Street. The additional shadow cast on these properties is negligible and it is noted these dwellings already receive solar access for more than 2 hours, between 11am – 2pm.

Figure 39 Comparison of shadow cast by approved Concept Plan and MOD 9 - 11am on winter solstice

Approved Envelope



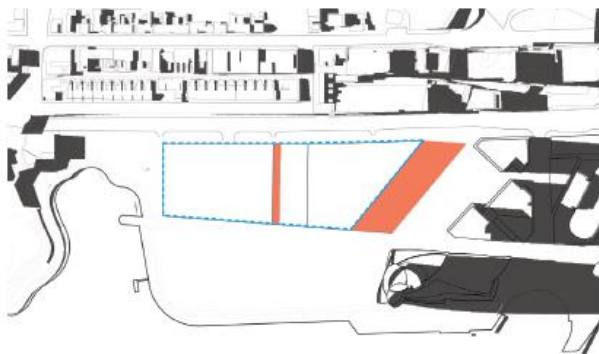
Proposed Envelope



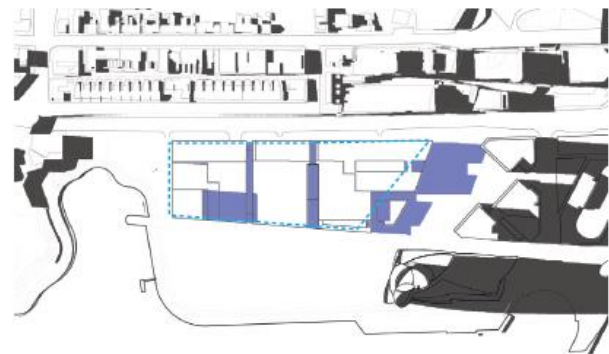
Source: Hassell

Figure 40 Comparison of shadow cast by approved Concept Plan and MOD 9 – 12pm on winter solstice

Approved Envelope



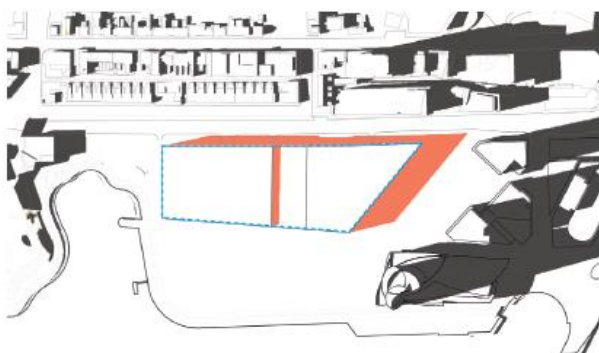
Proposed Envelope



Source: Hassell

Figure 41 Comparison of shadow cast by approved Concept Plan and MOD 9 – 1pm on winter solstice

Approved Envelope



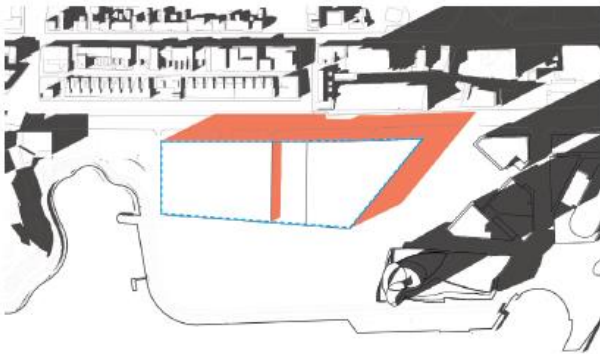
Proposed Envelope



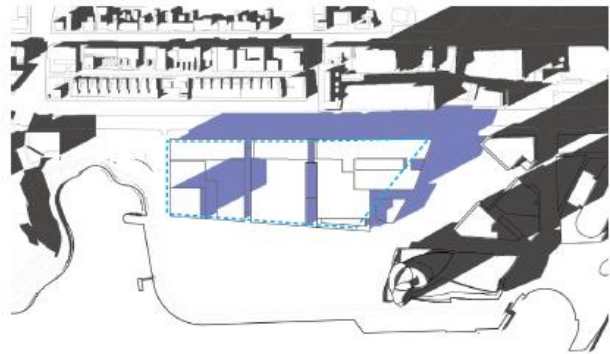
Source: Hassell

Figure 42 Comparison of shadow cast by approved Concept Plan and MOD 9 – 2pm on winter solstice

Approved Envelope



Proposed Envelope



Source: Hassell

21 March - Equinox

The shadow analysis indicates that between 9am and 10am some additional shadowing will be cast adjacent to the Block 7 envelope within Harbour Park. However, this is dissipated quickly and by 11am the full extent of Wulugul Walk, Nawi Cove and Harbour Park will receive solar access for the remainder of the day (consistent with the winter solstice period).

Some areas of minor additional shadowing over Hickson Park between 10am – 3pm will result from the proposed MOD 9 envelope. However, consistent with the winter solstice shadow impact, the extent of additional shadow generally falls on the eastern extent of Hickson Park (adjacent to Building R5) and the western extent of Hickson Park (which benefits from views towards Harbour Park and the western foreshore) will continue to receive solar access, consistent with the approved Concept Plan.

The varying degree of shadow throughout Hickson Park is consistent with the identify of this area as an 'urban parkland' and will offer respite from the adjacent Harbour Park, which as noted above will receive full solar access from 11am for the remainder of the day. Further discussion of the impact on Hickson Park is provided in **Section 7.4.2**.

21 December - Summer Solstice

Consistent with the winter solstice analysis, the greater modulation of the MOD 9 building envelope will result in a shift in the shadow cast and a resulting increase of solar access to some areas of the surrounding public domain and recreational areas.

The summer solstice diagrams illustrate a marginal increase to shadow directly adjacent to Block 7 between 9am – 10am within Harbour Park as a result of the increased building height proposed on this block on 21 December. However, the shadow cast is marginal and ensures the majority of Harbour Park and the full extent of Wulugul Walk receive morning sun. In addition, in this morning period the MOD 9 building envelope creates additional solar access to some areas along Barangaroo Avenue, thereby improving the amenity of this key pedestrian corridor.

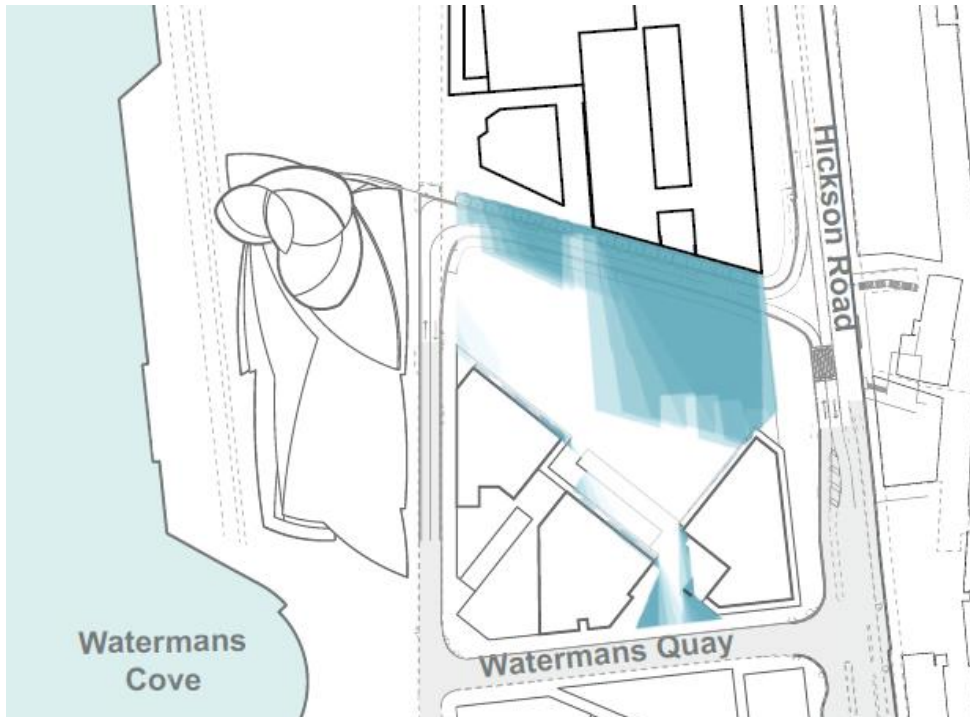
For the remainder of the study period, the shadow is largely consistent with the approved Concept Plan, with the exception of a minor increase to shadow which will fall on the Barton Street road corridor and a small portion to the northern extent of Hickson Park. However, as discussed further in **Section 7.4.2**, Hickson Park will remain largely within sun from 11am – 1pm on the summer solstice consistent with the approved Concept Plan.

It is noted that whilst shadows fall within Hickson Park from 2pm on the winter solstice, this is solely due to the Crown Sydney Hotel Resort and there is minimal impact on solar access to Hickson Park as a result of MOD 9 during the afternoon period.

7.4.2. Solar Access Study of Hickson Park

The impact of overshadowing caused by the MOD 9 building envelopes on the modified Hickson Park area has been assessed by Hassell. As illustrated in **Figure 43**, the MOD 9 building envelope provides an average of 49.91% of Hickson Park (3,533.13sqm) with solar access between 12pm – 2pm on the winter solstice.

Figure 43 Solar Access to Hickson Park between 12pm – 2pm on winter solstice



Source: Hassell

In regard to the solar access to Hickson Park, the following is noted:

- The modified building envelope allows solar access to be achieved in a more 'usable' portion of Hickson Park on the western edge of the park at the intersection of Barangaroo Avenue and Barton Street, which is closer to the western foreshore and benefits from key vistas to Harbour Park and through to the harbour foreshore.
- Generally half of Hickson Park will receive solar access between 12pm-2pm when assessing both the MOD 9 building envelope and the reference design study. This allows for an urban parkland with an area of 3,553.13sqm that can accommodate over 883 people sitting comfortably (based on an assumption of 1 person per 4sqm).
- As discussed in the proceeding sub-section, Hickson Park has been designed as an urban park with variation in light, shade, activity and intensity of use throughout the day. This is consistent with design precedents such as Bryant Park in New York which receives variation in solar access throughout the day.
- The impact illustrated in the reference design represents the worst-case impact of shadow within this area. The following amendment to the Instrument of Approval is proposed to identify the quantum of solar access to Hickson Park in Condition B3:

B3 Future Built Form and Public Domain

Hickson Park is:

d) not to be overshadowed by built form over more than an average area of 3,300 sqm between the hours of 12:00 and 14:00 on the 21 June each year;

This condition amendment will ensure future detailed development applications do not further increase overshadowing of Hickson Park.

7.4.3. Summary

Overall, it is considered that the shadow impacts associated with MOD 9 are acceptable given that:

- The extent of additional overshadowing over a portion of Harbour Park and Wulugul Walk (at the worst-case at 9am on the winter solstice) due to the Block 7 height increase are considered acceptable given that the shadow quickly dissipates and there is further shadowing to western public areas after 10am in the midwinter period. This aligns with the lunch time period (12 midday to 2pm) which is associated with the likely peak demand for recreational activity in this area. These impacts are further offset by the opportunity to deliver additional publicly accessible open space throughout Central Barangaroo as a result of the envelope modulation, and the provision of additional density surrounding Barangaroo Station, commensurate with the strategic opportunity afforded by this infrastructure investment.
- The northern extent of Wulugul Walk and Hickson Cove will continue to receive solar access during the study period as per the approved Concept Plan.
- In regard to Hickson Park and Barangaroo Avenue, the extent of morning shadow cast (between 9am – 10am) is largely comparable to the shadow of the approved Concept Plan and there are no further impacts on the amenity of these areas.
- Between 11am – 2pm the MOD 9 envelope will result in an increase in shadows to the eastern portion of Hickson Park adjacent to the curtilage of Building R5 and Hickson Road. However, the western extent of Harbour Park (at the intersection of Barton Street and Barangaroo Avenue) will continue to receive solar access between 11am to 2pm consistent with the approved Concept Plan (with only a minor increase in shadows adjacent to Barton Street). This will retain the amenity and usability of this space, noting that key vistas are provided within this western extent of Harbour Park through to the harbour foreshore.
- Overall, the analysis demonstrates an average of 49.91% of Hickson Park (3,533.13sqm) will receive solar access between 12pm and 2pm in mid-winter. This allows for an urban parkland with an area of 3,553.13sqm that can accommodate over 883 people sitting comfortably (based on an assumption of 1 person per 4sqm sitting comfortably).
- Properties to the east along Hickson Road and High Street are largely unaffected and are not expected to receive any additional impact to solar access during the morning period between 11am – 2pm when compared to the approved Concept Plan.
- Greater solar access is provided to some areas of Barangaroo Avenue during the summer solstice, whilst for the remainder of the study period solar access remains largely consistent with the approved Concept Plan.
- The extent of additional shadowing from the MOD 9 building envelope demonstrates the maximum area within which shadows may potentially be cast by buildings within the block control envelope within the proposed modification to the Concept Plan. When comparing to the shadow cast by the reference design prepared by Hassell (green), it is evident that in all instances the real impact will enable greater solar access and penetration to key streets, public domain areas and future built form.
- A modification to Condition B3 of the Instrument of Approval is proposed to identify the required quantum of solar access to Hickson Park on the winter solstice, thereby ensuring that future detailed SSDAs do not further reduce solar access to this area. This will maximise the amenity of the park for users, consistent with the intent of the approved Concept Plan and generally the principles of the PAC MOD 8 determination.

7.5. DESIGN EXCELLENCE

The SSP SEPP (clause 19 of Appendix 19) requires development involving the erection of new buildings within the Barangaroo Precinct to exhibit design excellence in accordance with the following parameters:

(a) whether a high standard of architectural design, materials and detailing appropriate to the building type and location will be achieved,

(b) whether the form and external appearance of the building will improve the quality and amenity of the public domain,

(c) whether the building will meet sustainable design principles in terms of sunlight, natural ventilation, wind, reflectivity, visual and acoustic privacy, safety and security and resource, energy and water efficiency,

(d) if a design competition is required to be held in relation to the building, as referred to in subclause (3), the results of the competition.

The urban design analysis undertaken to inform the proposed modification to the building envelopes and design guidelines has acknowledged the key relevant matters for consideration identified above.

The framework within which the Central Barangaroo Developer will achieve design excellence is defined within the Design Excellence Strategy prepared by Urbis and provided at **Appendix Z**. The Strategy describes a process that will ensure that design excellence requirements for future SSDAs at Central Barangaroo are met. The objective of the Strategy is to deliver the highest standard of architectural, urban and landscape design and continue the exemplar urban design response along the western Sydney Harbour foreshore. The Design Excellence Strategy for Central Barangaroo will:

- Deliver a world class design outcome.
- Result in diversity in architecture to create interest, variety, and an active precinct.
- Consider the specific bespoke nature and characteristics of the development.
- Consider the established design principles for the site.

An overview of the Design Excellence Strategy is provided below:

1. Phase 1 – Establishing Design Excellence

The Urban Design Report prepared by Hassell identifies key design principles, objectives and controls for the site, and the MOD 9 application (this application) identifies building envelopes, site layout, and conditions for statutory compliance. In addition, regular review by Infrastructure NSW Design Excellence Advisory Panel (**Infrastructure NSW DEAP**) are conducted.

2. Phase 2 – Alternative Design Excellence Process

An Alternative Design Process will be undertaken for the built form, retail fit-out, streets and associated public domain for Blocks 5 (including flagship), 6 and 7. This involves the direct appointment of a select team of highly experienced, respected and regarded architects. The selected team will comprise of an aligned and sympathetic group of co-contributors, working both together and individually, to ensure a highly coordinated and cooperative approach to design.

Formal reviews of the design will be conducted by the Infrastructure NSW DEAP at key phases of design (Concept Design, Schematic Design and Developed Design). This allows for ongoing engagement during this process and for the architects to work closely with the Infrastructure NSW DEAP to progressively consider and integrate the feedback provided.

The approach will consequently require the future submission of requests to waive the requirement under clause 19(3) of the Precinct SEPP to undertake a design competition for the erection of any new building greater than Reduced Level (RL) 57, or on a site of greater than 1,500 square metres, to enable this alternative process to occur.

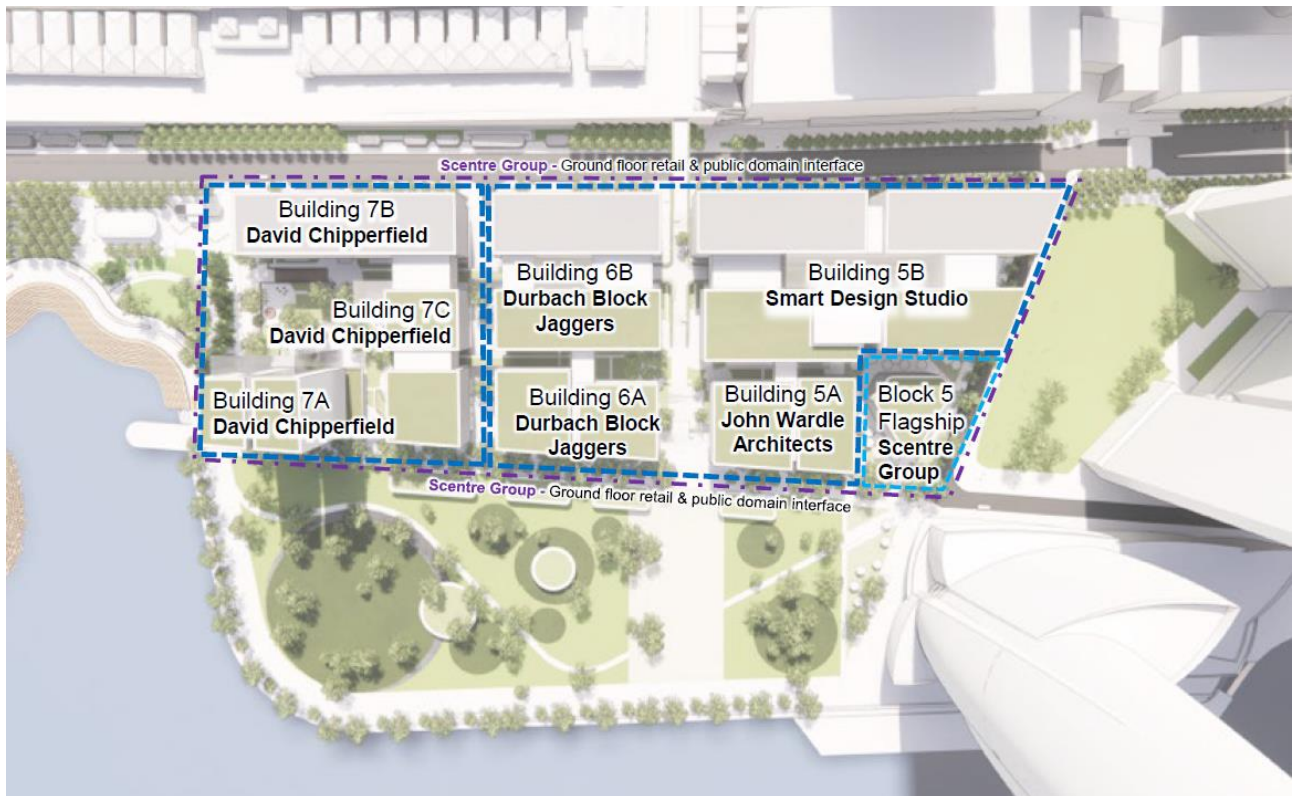
3. Phase 3 – Design Integrity

Retention of the nominated architects to play a lead role throughout the design development, post-determination and construction process. In addition, the Infrastructure NSW DEAP will review the application during design development until lodgement of the application, as well as throughout the assessment of the application in response to any design amendments and recommendations proposed by relevant authorities.

In addition to the above, it is noted the design of the basement shell (design by Central Barangaroo Developer) is excluded from the design excellence process. In the event there is a need to change the architects or appoint additional architects as the stages progress, there is scope within this Strategy to do this, provided the objectives of the Design Strategy are met.

Identification of the proposed architect selection within the Alternative Design Process is identified in **Figure 44**.

Figure 44 Identification of proposed architects for Central Barangaroo Design Excellence Strategy



Source: Aqualand

The proposed Alternative Design Excellence Process is the most suitable method of achieving design excellence in Central Barangaroo.

The approach responds to the unique, complex and highly restricted nature of the Central Barangaroo built form and design guidelines to achieve a coordinated design outcome across the precinct. Central Barangaroo is a complex and highly integrated precinct with a very specific building envelope in response to a very constrained brief. An architectural design competition within this brief would result in a competition that applies primarily to the façade ‘skin’ of the blocks with limited scope for exploration by the architectural teams. This is considered unnecessarily restrictive that would degrade the purpose and diversity of outcomes of the competition for all involved. This complexity may also be difficult for the architect to fully appreciate and respond meaningfully to during the limited competition timeframe, which may result in inferior design development outcomes on the site.

The proposed approach of a Design Review Panel has previously proved successful for State and precinct-level projects and has been adopted throughout the Sydney Metro OSD projects. The Government Architect NSW’s *Better Placed Policy 2018* supports the use of Design Review Panels for large projects of significance and is an efficient way to improve design quality and create better places. It is also consistent with precedent established for other significant projects including the following applications within the Barangaroo precinct (such as Barangaroo International Towers and Residential Building R8 and R9), as well as recent major city shaping projects (such as the Sydney Metro Martin Place Over Station Development and Victoria Cross).

In summary, the requirement for an architectural design competition would unreasonably constrain the opportunity to deliver an integrated yet architecturally diverse precinct in Central Barangaroo. It would also undermine and diminish the robust design review and development process previously undertaken for the precinct, jeopardising the critical significance and complexity of the Central Barangaroo precinct. The proposed Design Excellence Strategy for Central Barangaroo (**Appendix Z**) will deliver and continue to maintain a high standard of architectural design, materials and detailing throughout the Barangaroo precinct.

7.6. VIEW AND VISUAL IMPACTS

A View and Visual Impact Assessment Report (VVIA) (**Appendix F**) has been prepared by AECOM in accordance with 'Key Issues' item 6 and 'Plans and Documents' item 7 of the DGRs, as well as the relevant conditions of the Instrument of Approval. The following is noted with regards to the DGRs:

- The VVIA has been prepared in accordance with relevant Land and Environment Court (LEC) requirements, including the **focal lengths in photomontages** and other **visual material** utilised and presented in the assessment (refer Section 7.6.1 below).
- The VVIA identifies the **visual catchment** and view locations (including contours). The VVIA also defines the **view categories** which are supported by photos and appropriately plotted on the maps and figures throughout the report (refer Section 7.6.2 below).
- The **visual assessment methodology** undertaken provides a clear explanation and rationale for the criteria adopted in the assessment relevant to the site, local context and the proposed built form and public domain outcomes in MOD 9. The assessment matrix within the VVIA outlines the number of viewers, period and distance of view and location of the "viewer" to determine the visual impact and subsequent rating (refer Section 7.6.3 below)

The VVIA provides a comparison of the 'existing' (before), 'approved' (approved Concept Plan MOD 11 scheme) and 'proposed' (MOD 9) built form in the context of the surrounding visual context from 32 view locations within the public and private domain to enable an assessment of the visual impact of MOD 9.

It is noted that the assessment assumes that all approved development within Barangaroo South has been completed, considering the delivery of MOD 9 will come after this construction has been completed.

7.6.1. Visual Material

The VVIA has been prepared in accordance with the DGRs, relevant LEC requirements and case law, and relevant planning policies. The focal lengths in the photomontages provided include existing photographs for all view locations with wire frame overlays (included within the appendices of the VVIA) which accurately depict the 2D and 3D data utilised.

The VVIA provides a key plan indicating the 32 view locations and the photomontages included for all close and distant views, with a clear rationale of the locations chosen. The assessment illustrates both approved and modified built form in the context of the visual catchment which benchmarks off the existing situation (no development). Other supporting visual evidence includes cross-section diagrams which clearly show the locations from which they are derived to accurately depict the vertical exaggeration of the MOD 9 built form in the context of the visual catchment, rather than a "flattened" expression.

The comparative assessment of the 'existing' (before), 'approved' (approved Concept Plan MOD 11 scheme) and 'proposed' (MOD 9) has been undertaken using human eye focal lengths from close, medium and long range view distances to ensure the visibility, visual absorption capacity and subsequent visual impact ratings can be appropriately assessed.

The VVIA provides an assessment of public domain views in accordance with the planning principle established in the case *Rose Bay Marina Pty Limited vs Woollahara Municipal Council and anor [2013] NSWLEC 1046* (paragraphs 39 – 59), as well as views enjoyed from private property as set out within *Tenacity Consulting v Waringah [2004] NSWLEC 140*.

Refer to the VVIA provided at **Appendix F** for further details on the visual material presented.

7.6.2. Visual Catchment

AECOM's VVIA and the visual material presented within has been prepared with regards to an analysis of the site and its context within the surrounds in order to establish the visual catchment. The overall Barangaroo site is a long north-south site generally bound by Sydney Harbour to the north, State Heritage listed precincts of the Walsh Bay Wharves and Millers Point to the east, the high-rise CBD to the south-west and mid-rise King Street Wharf Precinct to the south, and Darling Harbour to the west. The context for the Central Barangaroo site is closely defined by the high-rise environment of Barangaroo South and the naturalistic forested Barangaroo Reserve to the north.

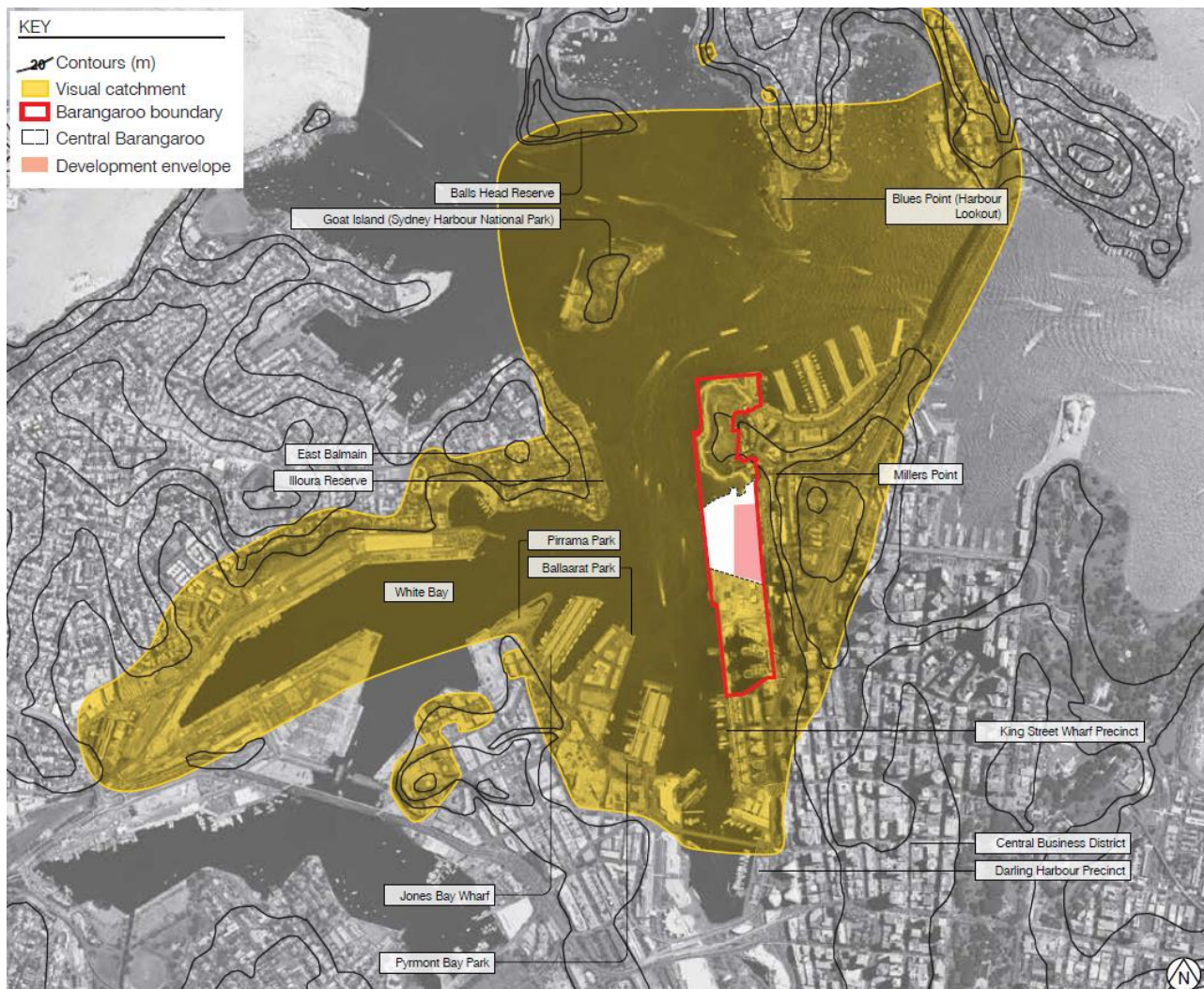
AECOM's site analysis has identified other significant areas within the surrounds including the Pyrmont Point precinct, White Bay precinct, Balmain precinct, Goat Island, Ball Head Reserve and Blues Point Reserve.

In accordance with DGR 'Plans and Documents' item 7, AECOM have defined the visual catchment area for Central Barangaroo and provided a rationale for the visual catchment boundary. As illustrated in **Figure 45** below, the visual catchment identifies key public domain locations, view corridors and vantage points (including contours) within the surrounding area.

The visual catchment generally extends from Ball Head Reserve and Blues Point in the north, the Millers Point Precinct and the western portion of the CBD in the east, Darling Harbour and the Pyrmont Point precinct in the south and White Bay and East Balmain in the west.

The visual catchment includes areas such as Hickson Road, Kent Street, Shelley Street, Lime Street Gas Lane, High Street, East Balmain, Darling Harbour, Blues Point, Millers Point, Sydney Observatory, Sydney Observatory Park, Clyne Reserve, Munn Reserve, Sydney Harbour Bridge, Pyrmont Bridge, Ballarat Park, Darling Island and Pirrama Park (replaced Jones Bay Wharf Pyrmont).

Figure 45 Visual Catchment Map



Source: AECOM

View Categories

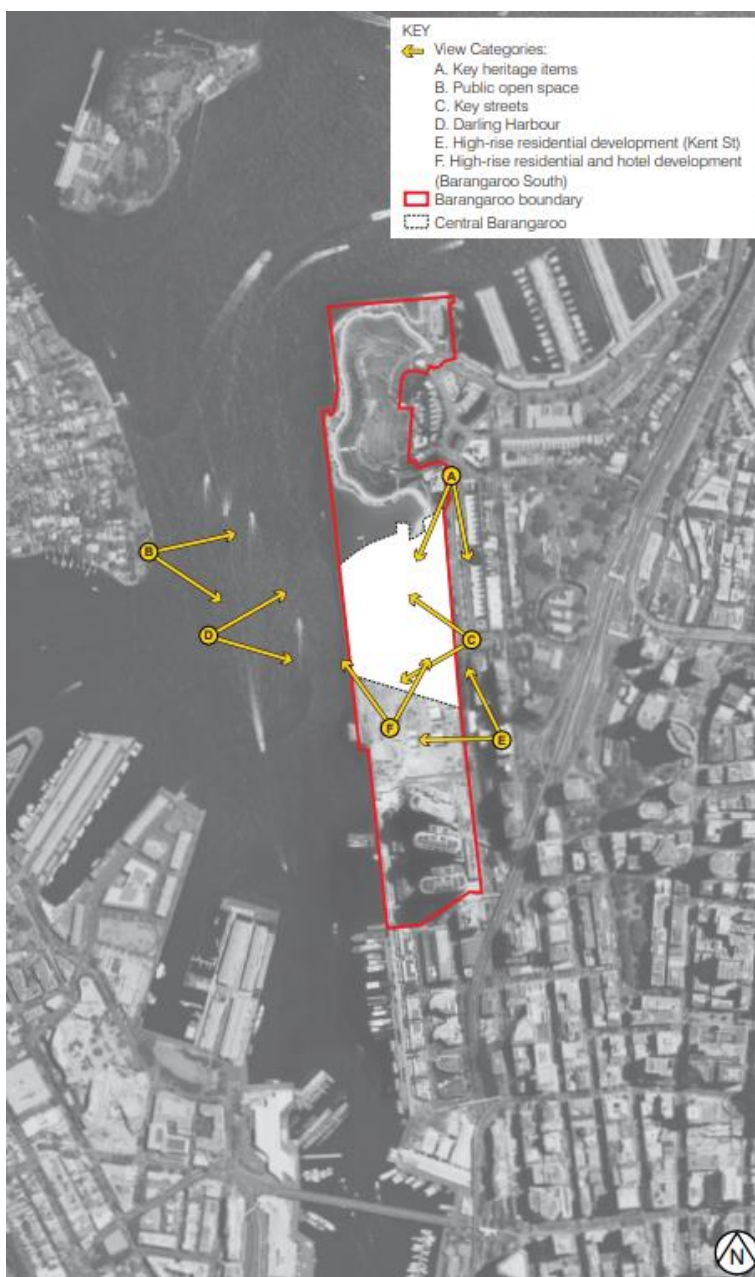
Figure 46 illustrates the categories of locations from which significant views towards Central Barangaroo are obtained within the visual catchment. These include:

- **A. Key Heritage Items** – the key heritage items relevant to views associated with Central Barangaroo comprise views to and from the Millers Point Conservation Area.
- **B. Public open spaces** – key views to the Central Barangaroo site are available from public open space to the west for Pyrmont Point and East Balmain, and from Munn Street Park above Hickson Road. Views are also available from Barangaroo Reserve within Barangaroo itself.

- **C. Key streets** – streets from which views are available to Central Barangaroo comprise High Street, Munn Street and Hickson Road within the Millers Point Conservation Area.
- **D. Darling Harbour (from the water)** – detailed views of Central Barangaroo are available from watercraft on Darling Harbour. For the purposes of this report, the views from Pyrmont Point eastern waterfront and Illoura Reserve in East Balmain are considered representative of views from the harbour.
- **E. High-rise residential development (Kent Street)** – the north-western edge of the CBD and the western area of Pyrmont Point comprise the key high-rise development locations from which significant views across Central Barangaroo are available.
- **F. High rise residential and hotel development (Barangaroo South)** – The northern development of Barangaroo South comprises key high-rise development locations from which significant views across Central Barangaroo are also available. In particular, views from the Crown Sydney Hotel Resort.

The VVIA provides photos which represent the view categories identified and defined above (refer *Section 2.2.2 of Appendix F*).

Figure 46 Map of View Categories

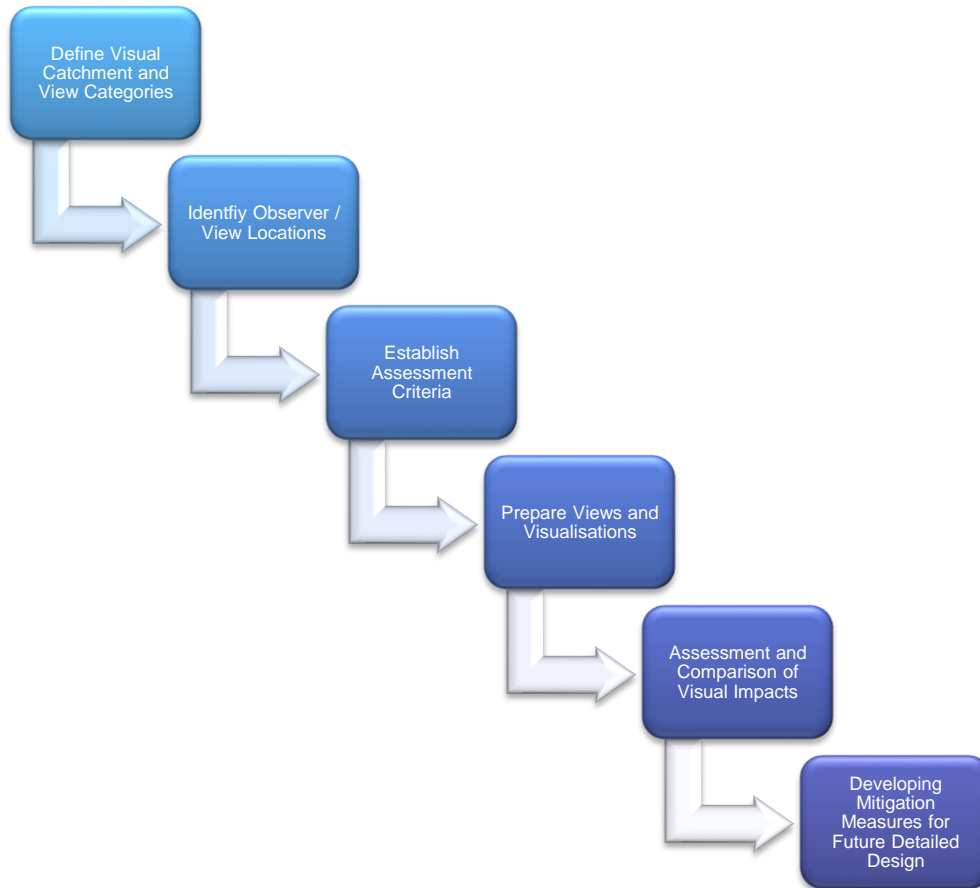


Source: AECOM

7.6.3. Assessment Methodology

This section provides an overview and description of the visual assessment methodology adopted by AECOM in the VVIA, including the criteria utilised in the assessment and the rationale for the criteria chosen with regards to the relevant planning framework. A summary of the visual assessment methodology is illustrated in the figure below.

Figure 47 Summary of Visual Assessment Methodology



Key steps in the visual assessment methodology are discussed in further detail below and a detailed description of the methodology is outlined in *Section 5* of the VVIA provided at **Appendix F**. The visual catchment and view categories have been discussed previously in **Section 7.6.2** of the EAR.

Observer Locations

The VVIA has identified a total of 32 observer locations in accordance with the requirements of the DGRs and the analysis of the site, visual catchment and key views previously discussed (refer **Figure 48** below). The view locations identified below include:

- 01: Sydney Observatory Hill Park
- 02: Sydney Observatory
- 03: High Street (South)
- 04: Munn Reserve
- 05: Clyne Reserve
- 06: Barangaroo Reserve - Wulugul Walk
- 07: Barangaroo Reserve - Stargazer Lawn
- 08: Hickson Road

- 09: Gas Lane
- 10: Ballaarat Park
- 11: Pirrama Park
- 12: Balmain East -Illoura Reserve
- 13: Balls Head Reserve
- 14: Blues Point
- 15: Sydney Harbour Bridge
- 16: 'Langham Hotel' - Level 03
- 17: Highgate Residential Tower Level 15
- 18: Highgate Residential Tower Level 25
- 19: The Georgia Residential Tower - Level 15
- 20: The Georgia Residential Tower - Level 25
- 21: Stamford Marque Residential Tower - Level 15
- 22: Stamford Marque Residential Tower - Level 25
- 23: Stamford on Kent Residential Tower - Level 15
- 24: Stamford on Kent Residential Tower - Level 25
- 25: 189 Kent Street Apartments – Level 15
- 26: One Sydney Harbour Residential Tower – Level 9
- 27: Crown Sydney Hotel Resort – Level 13
- 28: Crown Sydney Residential Apartments – Level 34
- 29: Shelley Street (from King Street Bridge)
- 30: Lime Street
- 31: Darling Harbour (Pyrmont Bridge)
- 32: Darling Harbour - Australian National Maritime Museum (North)

Figure 48 Map of 32 Observer Locations



Source: AECOM

Section 5.1.1 of the VVIA provides a rationale for the observer locations chosen. The observer locations have been selected with regards to the site analysis, local context and the proposed built form and public domain outcomes. The observer locations have also been identified following an extensive review of documentation such as previous background studies, relevant court cases and planning policies and the SOM Masterplan Framework. As noted in the VVIA:

- **The DGRs identified the requirement to assess the following locations:** Hickson Road, Kent Street, Shelley Street, Lime Street, Gas Lane, High Street, East Balmain, Darling Harbour, Blues Point, Millers Point, Sydney Observatory, Sydney Observatory Hill Park, Clyne Reserve, Munn Reserve, Sydney Harbour Bridge, Pymont Bridge, Ballarat Park Darling Island and Jones Bay Wharf Pymont.
 - All of the above locations were assessed except for Jones Bay Wharf Pymont. Instead, the nearby Pirrama Park was assessed given it accommodates for a significantly larger number of recreational users of this space and is considered a similar vantage point location.
- **Barangaroo South:** Approved developments within Barangaroo South (including the Crown Sydney Hotel Resort and One Sydney Harbour) would enjoy sweeping harbour views once complete. Central Barangaroo lies adjacent to these developments and would comprise a good portion of the foreground of views to the north. The preservation of views from these developments to the Sydney Harbour Bridge and Opera House was agreed stemming from the court case *Crown Sydney Property v Barangaroo Delivery INSW; Lendlease (Millers Point) v Barangaroo Delivery INSW [2018] NSWSC 1931*.
- **Goat Island:** Goat Island was not included because it is now part of Sydney Harbour National Park and is not readily accessible to the public other than by means of formal guided tours or special events. Additionally, given the location of the island situated to the north and north-west of Barangaroo, views to

Central Barangaroo are partially obscured due to screening by Barangaroo Reserve. Further, between the views assessed from Illoura Reserve and Balls Head Reserve, the view from this location can be reasonably inferred.

In addition to the above, certain observer locations have also been determined based on the conditions contained within the Instrument of Approval. Notably, addressing the requirements of Condition C1 with regards to future buildings / built form within Block 5.

Several more distant view locations were also considered such as Gladesville Bridge, North Sydney CBD, Opera House forecourt, Cremorne Point and Watsons Bay. These were not included however as they were generally deemed to be located too far from the site considering the scale of the project, were seen within the context of the approved Concept Plan and CBD backdrop or the associated land uses of buildings that would observe the proposal (as was the case for North Sydney CBD where MOD 9 would be viewed by larger commercial office developments/uses).

Preparation of Views and Visualisations

The technical aspects of preparing views and visualisations for publicly accessible and non-publicly accessible observer locations are outlined in detail within Section 5.6 and Section 5.7 of the VVIA (refer to **Appendix F**). It is noted that this included preparing on-ground photographs, creating panoramas, preparing and development the 3D model, virtual camera placement, rendering and finalising composition of the images.

Assessment Criteria

The 32 observer locations were assessed against the criteria outlined below to determine and understand the extent of any visual impacts that may occur as a result of MOD 9.

General Criteria

In accordance with the DGRs, the following general assessment criteria have been defined:

- Distance to view,
- Observer type (e.g. tourist, other recreational user, resident),
- Number of observers,
- Duration of observation,
- Visibility of Central Barangaroo, and
- Visual absorption capacity.

These criteria have been applied to the changes resulting from MOD 9 for each observer location, aside from 'visibility' and 'visual absorption capacity', where assessments of both MOD 11 and MOD 9 are considered.

'Visual absorption capacity' is defined in the VVIA as:

The measure of an area's ability to accommodate changes while maintaining the existing landscape character or the composition of the view. The visual prominence of a proposal will be minimised when seen against a backdrop with a high visual absorption capacity to that change.

Refer to further discussion in the VVIA at **Appendix G**.

View Sharing Criteria

View sharing criteria stems from NSW Land and Environment Court cases where planning principles have been established with regard to view sharing. It also takes guidance from the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (SREP 2005)*. The notion of view sharing is invoked when a private property or an area of the public domain enjoys an existing view (refer *Section 5.2 of Appendix F*) and a proposed development would share that view by taking some of it away for its own enjoyment. The planning principles:

- consider the acceptability of the impact of the proposed development on the views enjoyed from private property in the vicinity of a proposed development (*Tenacity Consulting v Warringah, 2004. NSWLEC 140*), and;

- consider the acceptability of the impact of private developments on views from the public domain in the vicinity of the proposed development (*Rose Bay Marina Pty Limited v Woollahra Municipal Council and anor, 2013. NSWLEC 1046*).

View sharing from private properties has considered a four-step assessment process as part of the overall assessment criteria (*Tenacity Consulting v Warringah, 2004. NSWLEC 140*) to determine whether the proposed view sharing is reasonable. This includes:

1. **Assessment of the view to be affected:** Water views are valued more highly than land views. Iconic views, e.g. the Harbour Bridge and Opera House are valued more highly than views without icons. Whole views are valued more highly than partial views, e.g. a water view in which the interface between land and water is visible, is more valuable than one in which it is obscured.
1. **Consider from what part of the property the views are obtained:** For example, the protection of views across side boundaries is more difficult than the protection of views from front and rear boundaries. Sitting views are more difficult to protect than standing views.
2. **Assess the extent of the impact:** For example, the impact on views from living areas and kitchens would typically be more significant than from bedrooms or service areas.
3. **Assess the reasonableness of the proposal:** A development that complies with all planning controls would be considered more reasonable than one that breaches them.

View sharing considerations from the public domain has considered a two-part process as part of the assessment where the nature and scope of existing views from the public domain were initially identified in the first stage. An analysis of impacts was then undertaken to determine a rating based on an evaluation of the quantitative / qualitative criteria. Please refer to *Section 5.3* of the VVIA for further discussion.

Analysing Visual Impacts

The assessment compares views of the existing situation as it exists today and the built form under approved Concept Plan against those resulting from the proposed built form under MOD 9.

Sensitivity and Magnitude

Visual impact assessment relies on linking judgements about the sensitivity of the observer, and about the magnitude of the effects to arrive at conclusions about the significance of effects. These judgements take into consideration both the findings of the above general and view sharing assessment criteria, and the 'sensitivity' and 'magnitude' criteria.

The sensitivity of visual receptors comprises both the susceptibility of visual receptors to change in views and the value attached to views. These two components are combined to produce a sensitivity assessment that ranges from 'Negligible' to 'High'.

The magnitude of visual impacts is comprised of the size or scale of the change, the geographical extent of impacts, and the duration and reversibility of the impacts.

Once the sensitivity of the observer to visual change and the magnitude of changes in the content and character of views have been determined, a matrix is used to determine an overall rating on the level of significance of the impact, described as being Negligible, Low, Moderate to Low, Moderate, High to Moderate, or High.

Assessment Matrix

The visual impact assessment of visual changes between the approved Concept Plan and the MOD 9 proposal for each observer location were analysed to determine the potential 'visual impact rating'. This involved inputting the results into a series of assessment matrices in relation to:

- The general assessment criteria,
- The view sharing assessment criteria, and
- The overall visual impact assessment and subsequent rating (i.e. 'high to moderate').

An example of the general assessment criteria matrix contained within the VVIA for 'Observer Location 1: Sydney Observatory Hill Park' is provided in the figure below.

Figure 49 General Assessment Criteria Matrix – Observer Location 1: Sydney Observatory Hill Park (excerpt)

Criteria	Rating				Comments
	H	M	L	N/A	
Distance to view				●	Between 180 m and 380 m, with MOD 9 seen in a high level of detail.
Observer type				●	View from open space - general park users, exercise groups and special events such as weddings.
Number of observers		●	●		Anticipated be low for much of the week and moderate to infrequently high on weekends.
Duration of observation		●	●		Relatively Moderate to Low duration with people strolling through the park over relatively short periods, and sitting for longer durations, e.g. eating their lunch during the week or picnicking on the weekend.
Visibility	●				High
Visual absorption capacity		●			The northern tower within Block 7 projects well above the horizon and is seen in high contrast against the sky, however, the Proposal is generally proportional to the surrounding built form and therefore has a moderate level of visual absorption capacity. The projecting element is visually subservient to the scale of the development within Barangaroo South (Blocks 4 and Y).

Source: AECOM

Please refer to Section 6 of the VVIA for the five assessment matrices for each of the 32 observer locations.

7.6.4. Assessment of Visual Impacts

Section 6 of the VVIA provides a detailed assessment of the 32 observer locations. Figure 50 below provides a summary of the visual impact “significance” ratings for the 32 identified observer view locations.

Figure 50 Summary of visual impact at the identified observer locations

	OBSERVER LOCATION	SENSITIVITY*	MAGNITUDE**	SIGNIFICANCE OF VISUAL IMPACT+
PUBLIC DOMAIN	OL 1 - SYDNEY OBSERVATORY HILL PARK	HIGH	MODERATE	HIGH-MODERATE
	OL 2 - SYDNEY OBSERVATORY	HIGH	MODERATE	HIGH-MODERATE
	OL 3 - HIGH STREET (SOUTH)	LOW	MODERATE	MODERATE-LOW
	OL 4 - MUNN RESERVE	HIGH	LOW	MODERATE
	OL 5 - CLYNE RESERVE	HIGH	LOW	MODERATE
	OL 6 - BARANGAROO RESERVE - WULUGUL PARK	HIGH	HIGH	HIGH
	OL 7 - BARANGAROO RESERVE - STARGAZER LAWN PARK	HIGH	MODERATE	HIGH-MODERATE
	OL 8 - HICKSON ROAD	LOW	MODERATE	MODERATE-LOW
	OL 9 - GAS LANE	LOW	LOW	LOW
	OL 10 - BALLAARAT PARK	HIGH	MODERATE	HIGH-MODERATE
	OL 11 - PIRRAMA PARK	HIGH	MODERATE	HIGH-MODERATE
	OL12 - BALMAIN EAST - ILOURA RESERVE	MODERATE	LOW	MODERATE-LOW
	OL13 - BALLS HEAD	MODERATE	LOW	MODERATE-LOW
	OL14 - BLUES POINT	MODERATE	LOW	MODERATE-LOW
	OL15 - SYDNEY HARBOUR BRIDGE	LOW	LOW	LOW
PRIVATE DOMAIN	OL16 - LANGHAM HOTEL - LEVEL 3	HIGH	MODERATE	HIGH-MODERATE
	OL17 - HIGHGATE - LEVEL 15	HIGH	HIGH	HIGH
	OL18 - HIGHGATE - LEVEL 25	HIGH	MODERATE	HIGH-MODERATE
	OL 19 - THE GEORGIA - LEVEL 15	HIGH	HIGH	HIGH
	OL 20 - THE GEORGIA - LEVEL 25	HIGH	MODERATE	HIGH-MODERATE
	OL 21 - STAMFORD MARQUE - LEVEL 15	HIGH	HIGH	HIGH
	OL 22 - STAMFORD MARQUE - LEVEL 25	HIGH	MODERATE	HIGH-MODERATE
	OL 23 - STAMFORD ON KENT - LEVEL 15	HIGH	HIGH	HIGH
	OL 24 - STAMFORD ON KENT - LEVEL 25	HIGH	MODERATE	HIGH-MODERATE
	OL 25 - 189 KENT STREET - LEVEL 5	HIGH	MODERATE	HIGH-MODERATE
	OL 26 - ONE SYDNEY HARBOUR - LEVEL 9	HIGH	HIGH	HIGH
	OL 27 - CROWN SYDNEY HOTEL - LEVEL 13	HIGH	HIGH	HIGH
	OL 28 - CROWN SYDNEY APARTMENTS - LEVEL 34	HIGH	MODERATE	HIGH-MODERATE
PUBLIC DOMAIN	OL 29 - SHELLEY STREET (FROM KING STREET BRIDGE)	N/A	N/A	N/A
	OL 30 - LIME STREET	N/A	N/A	N/A
	OL 31 - DARLING HARBOUR (PYRMONT BRIDGE)	N/A	N/A	N/A
	OL 32 - DARLING HARBOUR - AUSTRALIAN NATIONAL MARITIME MUSEUM	LOW	NEGLIGIBLE	NEGLIGIBLE

Source: AECOM

A summary of AECOM's comparative assessment for the existing (or 'before'), approved and proposed views is provided in the following table. This summary only includes those locations which received a significance impact of 'Moderate' and higher.

Table 19 Assessment Findings of Visual Impacts from 32 Observer Locations

Observer Location	Summary Comparison of Findings for MOD 9
01. Sydney Observatory Hill Park	<p>Significance Impact – 'Moderate to High'</p> <p>Aside from the tower in Block 7, the proposed envelope results in a minor increase in height resulting in a visually consistent height for the majority of the rectangular form. Generally, the form, mass and scale of the proposal is considered to be visually subservient to the development within Barangaroo South. The new elements do not remove any more of the harbour view than obscured with the Concept Plan approval.</p> <p>Blocks 5 and 6 do not remove significant components of the view. Block 7 interrupts the view to the horizon, but retains a sufficient amount of the view across the middle of the block to maintain visual continuity with the horizon north of Block 7.</p>
02. Sydney Observatory	<p>Significance Impact – 'Moderate to High'</p> <p>The proposal marginally increases the general height of the Central Barangaroo development envelope across all three blocks. The Block 7 tower is seen in high relief against the sky, interrupting the view to the horizon. This is mitigated by the adjacent tree canopy which already disrupts the horizon view.</p> <p>The form, mass and scale of the proposal is considered to comprise visually subservient built form elements to the development within Barangaroo South, particularly the tall and slender Block Y and Block 4 towers.</p> <p>The new elements effectively remove the remaining small section of the water view within White Bay. Block 7 further interrupts an already narrow view to the horizon, impacting the ability of the observer to visually interpret the continuity of the flat Sydney Basin horizon line north of Block 7.</p>
04. Munn Reserve	<p>Significance Impact – 'Moderate'</p> <p>Blocks 5 and 6, and the Hickson Road high point of Block 7 can be seen to have increased in height, however the additional height relative to the adjacent High Street terraces is considered to be acceptable given the 40m separation distance. The height of the north-eastern corner of Block 7 is similar to that of the approved Concept Plan. The Block 7 tower will remove some sky view, however the bulk of the form is obscured behind the Dalgety Bond Store and viewed against the backdrop of the substantial Block Y tower and podium in Barangaroo South.</p> <p>For the most part the additional building envelope height has little visual impact on this view location as the bulk / massing is set against the King Street Wharf Precinct and Barangaroo South development. The envelope form provides a contrast which transitions from Barangaroo South. The Block 7 tower would comprise a modern element in contrast to the heritage building of the Dalgety</p>

Observer Location	Summary Comparison of Findings for MOD 9
	Bond Store in front, however the contrast is considered to be partially moderated by the backdrop of the modern Block Y tower and podium.
05. Clyne Reserve	<p>Significance Impact – ‘Moderate’</p> <p>The proposal has a high to moderate level of visual absorption capacity in the context of Barangaroo South. Block 7 tower is the main visible change at the end of the street, removing a small portion of sky view, however, this is again set amongst a backdrop of significantly taller built form elements. From this view perspective, the MOD 9 envelope highlights the highly valued characteristics of the Merriman Street streetscape.</p>
06. Barangaroo Reserve – Wulugul Park	<p>Significance Impact – ‘High’</p> <p>The proposed building envelopes are quite different compared to those of the approved Concept Plan from this viewpoint, in particular the north-western corner where the Block 7 tower is located.</p> <p>The proximity of the observer location, the level from which the view is taken (in this case near sea level), and subsequent perceived increase in height and sense of perspective further emphasises the mass of the Block 7 tower compared to the approved Concept Plan composition. However, the visual mass is relatively low for the rest of the envelope due to its highly modulated form in contrast to the solid mass of the approved Concept Plan envelope.</p>
07. Barangaroo Reserve – Stargazer Lawn	<p>Significance Impact – ‘Moderate to High’</p> <p>From this viewpoint, the proposed building envelopes comprise a visually different form to that of the approved. The proposed envelopes are highly modulated in contrast to the approved Concept Plan. The Block 7 tower is an additional element that sits comfortably within this view. The composition of Block 7 gradual steps to provide a visual transition which assists with the integration of building heights in the Block 4 and Block Y towers. The visual composition of this grouping of development envelopes is seen to be preferable to that of the approved Concept Plan.</p>
10. Ballaarat Park	<p>Significance Impact – ‘Moderate to High’</p> <p>The proposal comprises a larger, but more modulated form. The envelopes at their apex are broadly similar in height to the Neighbouring Block Y podium and appear to integrate well into the existing/future built form environment. Generally, the building envelope is relatively low north of this, with a moderately sized, elevated block book ending the form adjoining its northern edge. This element further reduces the view to the Harbour Bridge by half from that of the approved Concept Plan Notwithstanding this, the view of Harbour Bridge was already diminished and comprises a relatively small component of the broader view. This element is also viewed at a moderate viewing distance.</p>
11. Pirrama Park	<p>Significance Impact – ‘Moderate to High’</p> <p>The compositional mass, scale and highly modulated form of Blocks 6 and 7 are considered to provide a contrasting yet complimentary form to the surrounding built form landscape. Block 7 provides an appropriate book end to</p>

Observer Location	Summary Comparison of Findings for MOD 9
	the Barangaroo development. It is considered that the proposed envelopes visually 'anchor' Central Barangaroo when compared to that of the approved and have more affinity with the visual composition of Barangaroo South.
16. Langham Hotel (Level 3)	<p>Significance Impact – 'Moderate to High'</p> <p>Both the approved and proposed building envelopes effectively remove the view outlook from this perspective. Despite the increased scale and proportion of the view, the proposed building envelopes provide a more dynamic composition of built form and greater visual interest when compared to the approved. It is acknowledged that the approved building envelopes are set at a similar level with the podium form of Block Y in Barangaroo South.</p>
17. Highgate (Level 15)	<p>Significance – 'High'</p> <p>Both the approved and proposed building envelopes interrupt the view from this location. The approved Concept Plan comprises a relatively visually recessive form that facilitates an extensive view across the north-west quadrant of Sydney Harbour and the Sydney Basin beyond. By comparison, the MOD 9 proposal provides a more visually dynamic, highly modulated composition. This encroaches to a greater extent on the harbour view than the approved, including breaking the continuity of that view. Notwithstanding these impacts, the proposal still retains the majority of the view to the north-west.</p>
18. Highgate (Level 25)	<p>Significance – 'Moderate to High'</p> <p>The Block 6 envelope retains the majority of the view to Darling Harbour North. The tower in Block 7 interrupts the view to the south-western corner of the Barangaroo Reserve and the continuity of the Harbour View between Barangaroo Reserve and Goat Island. However, the articulated form of Block 7 (step down) reveals a portion of Nawi Cove that was not visible under the approved envelope. Overall, the proposal provides a more visually dynamic, highly modulated composition.</p>
19. The Georgia (Level 15)	<p>Significance – 'High'</p> <p>The proposal obscures the waterfront edge and land interface. The Block 7 tower interrupts the view to Sydney Harbour between Goat Island and Barangaroo Reserve, disrupting the view to the horizon. Despite this, the proposal provides a more visually dynamic and highly articulated building envelope, retaining the majority of the view to the harbour.</p>
20. The Georgia (Level 25)	<p>Significance – 'Moderate to High'</p> <p>The proposed built form responds to the podium context of Block Y in Barangaroo South. Whilst the tower in Block 7 disrupts the continuity of the view to the harbour, it is considered to provide a more modulated composition when compared the MOD 10 approved scheme and maintains clear views to the harbour and foreshore.</p>
21. Stamford Marque (Level 15)	<p>Significance – 'High'</p>

Observer Location	Summary Comparison of Findings for MOD 9
	<p>The proposal further obscures the waterfront edge and land interface. The Block 7 tower interrupts the view to Sydney Harbour between Goat Island and Barangaroo Reserve, disrupting the view to the horizon. Despite this, the proposal provides a more visually dynamic and highly articulated building envelope, retaining the majority of the view to the harbour and Sydney Basin. In addition, the building envelopes broadly respond to the context of the adjacent Block Y podium in Barangaroo South. In comparison to the approved Concept Plan, MOD 9 presents as part of a dynamic connected composition of development envelopes addressing Darling Harbour, Barangaroo Reserve and the Hickson Road frontages.</p>
<p>22. Stamford Marque (Level 25)</p>	<p>Significance – ‘Moderate to High’</p> <p>The proposed built form generally responds to the podium context of Block Y in Barangaroo South. Whilst the tower in Block 7 obscures part of the view to the south-west and disrupts the continuity of the harbour view, it is considered to provide a more modulated composition when compared the approved Concept Plan and maintains clear north-west views to the harbour and foreshore.</p>
<p>23. Stamford on Kent (Level 15)</p>	<p>Significance – ‘High’</p> <p>The MOD 9 proposal reduces the view corridor from Hickson Park to the foreshore, however, a clear view corridor is still maintained. The tower in Block 7 disrupts the continuity of the north-west harbour view. Notwithstanding the above impacts arising from MOD 9, a substantial view towards the north-west would still be retained, and a large uninterrupted expanse of the water view would still be seen between Goat Island and McMahons Point.</p>
<p>24. Stamford on Kent (Level 25)</p>	<p>Significance – ‘Moderate to High’</p> <p>As discussed above.</p>
<p>25. 189 Kent Street (Level 15)</p>	<p>Significance – ‘Moderate to High’</p> <p>The approved Concept Plan provides a bigger opening of the view from Hickson Park to the land/water interface which is reduced in width as a result of MOD 9. The Block 7 tower somewhat disrupts the continuity of the north-west view to the harbour. Despite this, the proposal provides a more articulated built form massing and maintains a substantial view towards the north west up the Parramatta River. In addition, a smaller water view is still provided between Goat Island and McMahons Point.</p>
<p>26. One Sydney Harbour (Level 9)</p>	<p>Significance – ‘High’</p> <p>Both the approved and proposed building envelope schemes screen views to Nawi Cove and result in some loss of view to the southern slope of Barangaroo Reserve. However, the extensive Sydney Harbour and northern suburbs view to the north remain. MOD 9 provides a contrasting-built form with Block 5 stepping down to the ground level and clear articulation of Blocks 6 and 7 to break up massing. The Block 7 tower interrupts the view to the</p>

Observer Location	Summary Comparison of Findings for MOD 9
	horizon and landscape behind, however, a substantial northern view is retained.
27. Crown Sydney Hotel Resort (Level 13)	<p>Significance – ‘High’</p> <p>As stated above, the MOD 9 proposal provides a highly articulated built form. The Block 7 tower interrupts the continuous view of the harbour and horizon, including Blues Point and the northern Sydney suburbs. Notwithstanding, a substantial northern view is retained, and large uninterrupted water views are available to the west of the development, east of Walsh Bay and east of the Harbour Bridge. Notably, the MOD 9 proposal retains views to Sydney Harbour Bridge.</p>
28. Crown Sydney Apartments (Level 34)	<p>Significance – ‘Moderate to High’</p> <p>The MOD 9 proposal is significantly more articulated than the approved Concept Plan and appropriately responds to built form elements situated to the east. The eastern portion of MOD 9 is slightly taller than the approved Concept Plan building envelope, screening views to some of High Street and Hickson Road. The proposed Block 7 tower screens views to the eastern portion of Nawi Cove, some of Millers Point and the Dalgety Bond Store.</p> <p>The tower is seen against the landform of Millers Point. However, the view to the horizon remains uninterrupted, as does the view to the waterways, the Sydney Harbour Bridge and Opera House</p>

Section 7.2 of the VVIA provides an analysis of the “ratings” determined and key findings with regards to sensitivity, magnitude and significance of visual impact for the 32 observer locations in both the public and private domain. **Overall, the key driver for high and high to moderate significance ratings was the sensitivity of visual receptors to proposed change, rather than the magnitude of change.**

The pre-Barangaroo development setting effectively provided unimpeded views to and from the Millers Point Heritage Conservation Area, Darling Harbour and the inner western suburbs.

The approved Concept Plan comprises significantly taller towers within Barangaroo South, and contemplates a long, relatively low scale building envelope for Central Barangaroo which extends north to the low point in High Street and above the height of the High Street and Kent Street terraces. This effectively resulted in the full loss of views from these terraces to Darling Harbour, and conversely, full view loss from locations along the western foreshore to the terraces and southern end of the Millers Point Heritage Conservation Area.

Parts of the private domain which are most likely to have views impacted by MOD 9 are the buildings directly east of Central Barangaroo on Kent Street. Typically, views from these locations include valuable elements such as sweeping harbour views from Darling Harbour north towards the Harbour Bridge, unbroken views to the horizon north of Block Y in Barangaroo South, and landmarks such as the ANZAC Bridge, Harbour Bridge and the North Sydney CBD. Views from these properties were typically visible from balconies and living areas of apartments and hotel rooms.

Existing views from Langham Hotel to the west were effectively lost as a result of the approved Concept Plan, therefore, subsequent view sharing due to the MOD 9 changes were considered reasonable given the limited change to the view between the modifications. Further, views from the Kent Street residential towers were substantially or fully lost to the south-west as a result of the Barangaroo South towers approved in MOD 10, with the views to the north-east quadrant broadly being conserved.

MOD 9 results in some marginal further disruption to view corridors in comparison to the approved Concept Plan due to the minor increase in height across all blocks. The Block 7 tower envelope results in some view disruption to the north-west. Notwithstanding, the Block 7 tower only comprised a very small portion of the

overall view, and although compositionally altered, the majority of the view remained unchanged. Thus, view sharing due to MOD 9 is considered reasonable within this context.

With regards to the public domain, AECOM identified that the following elements of MOD 9 are considered to facilitate view sharing:

- The gap in building envelope to allow views along High street from east to west, which allows contextual reference to the Harbour.
- The gap between Blocks 6 and 7, which allows east - west views.
- The set down in Block 7 which promotes glimpse views of Nawi harbour which were obscured by the Approved Concept Plan from locations to the south east.
- Articulation of the southern edge of the building envelope of MOD 9, which allows views into the proposed public park, providing interest.
- The set back to the ground level of the building envelope along Hickson Road provides a dynamic view along the road corridor from the public domain.

Overall, the modulated forms of MOD 9 provide visual interest and allow for potential views to be maintained during the detailed design phase. Although the Block 7 tower disrupts continuity of views, generally there is sufficient context either side to maintain visual continuity of harbour and horizon views

Further discussion and comprehensive view imagery comparisons are provided within *Section 6* and *7* of the VVIA provided at **Appendix F**.

7.6.5. Mitigation Measures

AECOM have proposed the following mitigation measures that should be considered as part of future detailed SSDAs submitted for development across Central Barangaroo:

- *The MOD 9 development envelope for Central Barangaroo necessarily has sharp edges and pointed tips at the corners of steps. The visual softening of these elements through architectural articulation has the potential to reduce the visually contrasting nature of the envelope with existing adjacent elements. This softening effect has the potential to be further reinforced through the application of rooftop greening as currently proposed, particularly with regard to species choice for Block 7, which could provide complementary forms and colour with the Sydney Observatory Park landscape, assisting the visual integration of the project with this important landscape heritage element.*
- *Consideration of rooftop greening along the western edge of the building envelope would potentially have the effect of 'greening' the land / water interface seen from higher vantage points in private domain to the east of MOD 9.*
- *For Barangaroo Avenue-facing (i.e. facing the harbour) façade treatments between RL 35.00 and RL 42.00, consider reflecting the strong podium line of Block Y (in Barangaroo South) to provide visual continuity between the MOD 10 and MOD 9 developments.*
- *Consider creating sufficient visual contrast between the northern end wall of Block 7 and the heritage backdrop of the Millers Point Conservation Area, to provide clear delineation between the two, thereby highlighting the historic landscape and architectural qualities of the Conservation Area, e.g. as seen from Balmain East.*
- *Consider landscape treatments between Block 7 and Barangaroo Reserve that conserve views through it, sufficient to reveal Barangaroo Cutting.*
- *The MOD 9 development envelope for Central Barangaroo shows a narrow gap for the location of the proposed Barangaroo steps. In the further development of the built form design it would be beneficial to open the view through this area of the development, to protect the existing compelling harbour views seen when walking down the Agar steps and along High Street. Keeping the view open to the sky – by avoiding enclosing elements and visual clutter in this space – would also support the harbour view as a singular focus, enticing users into Central Barangaroo to have a larger view revealed.*
- *The southern and northern edges of MOD 9 interface with green / blue public open spaces. Further articulation or reduction of the building envelope at those interfaces would be beneficial to the integration of the development into the parkland setting and to the view seen by observers to the east.*

- *Varying the architectural forms within the envelope would help break up the building mass when viewed from observer locations to the north and west of Central Barangaroo.*

Where appropriate, the above mitigation measures have been incorporated into the proposed design guidelines contained within Section 4 of the Urban Design Report (refer **Appendix E**). Future detailed SSDAs will need to consider how the mitigation measures and design guidelines can be addressed to further improve potential view impacts through design refinement.

7.6.6. Summary

In summary, AECOM have concluded the following:

- Overall, the modulation of MOD 9 over that seen within the Approved Concept Plan building envelope was considered to be a positive change with regards to visual amenity of the proposal and surrounds.
- The key driver for high to moderate ratings for the identified observer locations was the sensitivity of visual receptors to proposed change rather than the magnitude of change proposed under MOD 9.
- View sharing impacts for the Barangaroo South observer locations and the Kent Street residential towers (particularly for the Level 15 residences) are predominantly high. However, substantial harbour views are broadly retained towards the north-west for these residences.
- MOD 9 is generally seen to exhibit a High to Moderate level of visual absorption capacity compared with the approved Concept Plan (MOD 11) due to the compositional form, scale, line and massing of the three development blocks, relative to that of towers within Barangaroo South.
- The majority of views looking east toward Darling Harbour and beyond from Millers Point, and views looking west from Pyrmont and Balmain East back towards Millers Point have already been lost by the approved Concept Plan (MOD 11). For the most part, MOD 9 only marginally increases the extent of view lost due to the minor increase in the maximum building envelope height across all blocks.
- Extensive harbour views are still available north of Central Barangaroo from sensitive viewing locations within Millers Point including from Observatory Hill Park, High Street, Merriman Street (north end), and Dalgety's Road. A substantial and visually cohesive component of the Millers Point Heritage Conservation Area remains visible from two of the three identified key observer locations along the western shore of Darling Harbour.

The built form, mass and scale of MOD 9 is considered to be visually subservient to the development within Barangaroo South. The modulated forms provide visual interest and allow for potential views to be maintained during the detailed design phase. Although the Block 7 tower form disrupts some continuity of views, generally there is sufficient context either side of the tower form to maintain visual continuity of harbour and horizon views. Block 7 provides an opportunity to deliver a landmark building which will exhibit design excellence, acting as an urban marker and gateway from Barangaroo Station. It also enables the provision of publicly accessible spaces in the form of Nawi Terrace which will offer elevated views in a unique harbourside setting on the western edge of the CBD.

It is noted that the MOD 9 building envelope is generally consistent with the conditions of consent MP06_0162 and Statement of Commitments, as proposed to be concurrently modified, with regards to the consideration of views relevant to Central Barangaroo.

Based on the quantitative and qualitative analysis of the view impacts provided in Section 6 and 7 of the VVIA, it is considered that MOD 9 achieves a reasonable balance between the protection of private and public domain views with the delivery of a new landmark urban precinct within a prominent Sydney Harbour foreshore location. Overall, the view impacts resulting from MOD 9, predominantly Block 7, in comparison to the approved Concept Plan are considered acceptable in the context of the public benefits and community uses provided. In addition, the proposal demonstrates strategic merit and delivers on the State governments strategic objectives by contributing towards a '30-minute city' through co-locating employment generating floor space, retail offerings, residential housing and cultural uses in proximity to planned transport to maximise public transport patronage.

For the most part, the additional view impacts are marginal and do not outweigh the benefits and strategic merit demonstrated by the MOD 9 proposal. Future detailed SSDAs will further consider the mitigation measures established by AECOM in the VVIA to further ameliorate potential view impacts.

7.7. SKY VIEW IMPACT

In accordance with DGR item 6 and the 'key issues' of the MOD 8 DGRs, a Sky View Impact Assessment has been prepared by AECOM (including a technical report prepared by University of NSW – Unisearch Expert Opinion Services) and is provided at **Appendix G**. The assessment provides an analysis of the potential sky view loss and resultant impacts associated with the building envelopes proposed under MOD 9, and any consequential impacts on the functioning of the Sydney Observatory astronomical sightlines.

Sydney Observatory indicated previously in a submission to DPIE that their sky area of concern covers the azimuth angle between 210° and 225°, and between 236° and 303°. Accordingly, the sky view analysis considers two key view corridors from Sydney Observatory to maintain a clear view to the western sky (Azimuth 210-225° and Azimuth 236-303°) and potential lighting impacts from the future development of Central Barangaroo.

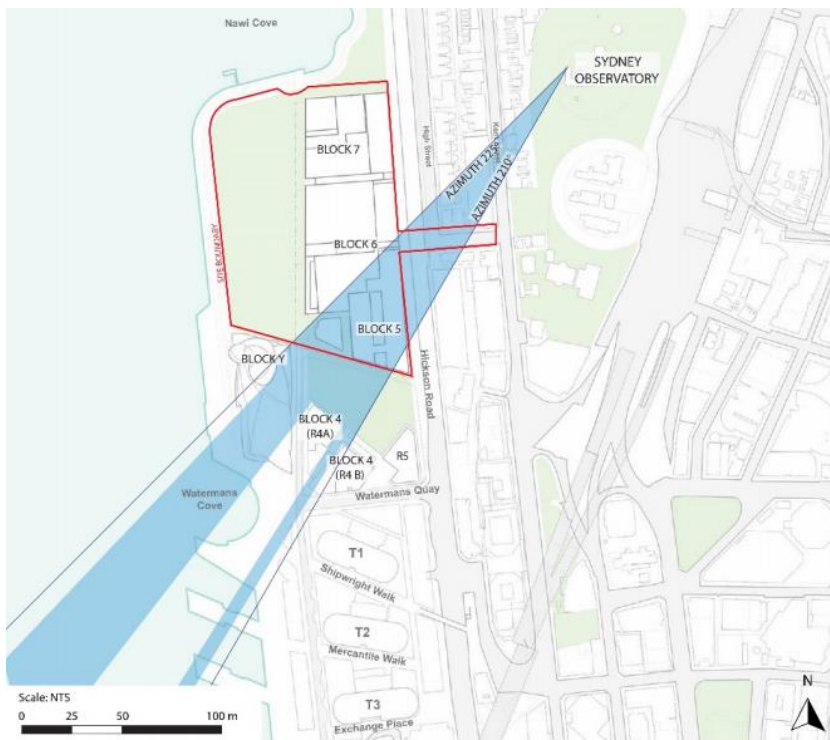
7.7.1. Assessment of Sky View

Clear View Requirements Azimuth Corridor 210° to 225°

Figure 51 below illustrates the extent of the clear view azimuth corridor 210° to 225° and the built form obstructions from constructions that have occurred at Barangaroo South. As can be seen, the azimuth range crosses over Block 5 and a small portion of the Block 6 building envelope. The view corridor does not cross Block 7 and is therefore not considered as part of this assessment.

The Sydney Observatory north dome sits at an RL of 54m and therefore only building envelopes above RL 54m and within this azimuth corridor would be considered for assessment. The highest building envelope in Blocks 5 and 6 is RL 44.5m. Therefore, the proposed MOD 9 to Central Barangaroo will not impede views from the north dome of the Sydney Observatory.

Figure 51 Azimuth clear zone range 210° to 225°



Source: AECOM and Hassell

Clear View Requirements Azimuth Corridor 236° to 303°

As previously stated, there are no building envelopes in Block 6 with an RL high enough to impede views from the Sydney Observatory northern telescope. Block 7 however sits at a maximum RL of 73.7 metres and has been assessed accordingly.

Figure 52 below shows in plan view the azimuth angle projected from the tallest building envelope extremities in Block 7 when viewed from the Sydney Observatory south dome (including a 3° margin to allow for the effects of finite telescope field of view and light spillage).

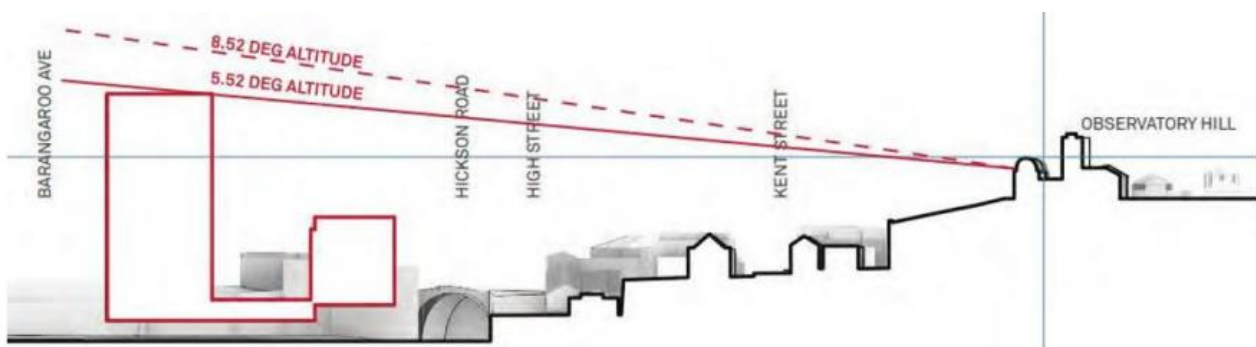
Figure 52 Plan view of tallest element in Block 7 envelope when viewed from Sydney Observatory



Source: AECOM / UNSW

Figure 53 below demonstrates that the viewing angle to the highest building envelope within Block 7 is 8.52°.

Figure 53 Sectional plan of sight line from Sydney Observatory to Block 7



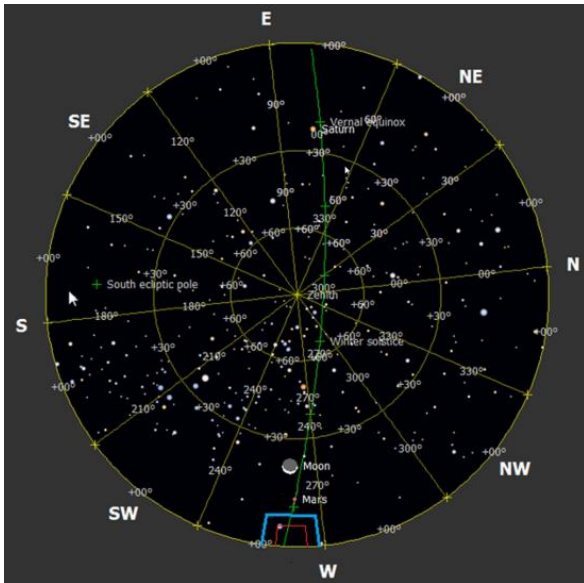
Source: AECOM / UNSW

Both these figures indicate that the sky view obstruction area for the tallest Block 7 building envelope element is 8.5° in altitude, and 255° to 269° in azimuth angle, including a margin of 3°.

The technical report prepared by UNSW (included in the AECOM Sky View Impact Assessment at **Appendix G**) states that the “practical lower altitude limit” to effectively view the night sky is 10°.

The figure below shows the entire night sky and the obstructed area from the Block 7 tower envelope (illustrated by the blue rectangle). This demonstrates that the obstructed area is very small and estimated to an area representing less than 1% of the total night sky. Furthermore, the obstructed area created by the taller tower form sits at less than 10° above the horizon, in the area where observing is not viable.

Figure 54 Star chart for the entire night sky showing obstructed area (in blue)



Source: AECOM / UNSW

The assessment has therefore confirmed that the tower envelope in Block 7 will have no adverse impact on the sky view from the Sydney Observatory for this view angle.

7.7.2. Assessment of Lighting

It is noted that Sydney Observatory no longer functions as a professional observatory, but rather, a museum that provides astronomy education and public sky viewing.

The location of the Sydney Observatory - in the middle of a densely populated city – places limitations on astronomical observations. Light glare, cloud cover, smog, pollution and built form all serve as factors that diminish the ability of the Observatory to view the night sky.

Due to the highly illuminated environment within which the Central Barangaroo built form would sit, it is unlikely that the proposal will contribute significantly to the light spill already affecting the Sydney Observatory. Furthermore, the viewing angle from the Sydney Observatory to Blocks 5, 6 and 7 in Central Barangaroo MOD 9 are less (8.52° and lower) than the 10° “practical lower altitude limit” for effective viewing of the night sky.

The Sky View Impact Assessment for Barangaroo South outlined the following specific mitigation measures for managing potential light spill:

- *Brightly lit surfaces are kept to a minimum;*
- *Luminaires will have glare shields;*
- *3000 degrees K is used for the majority of light sources;*
- *Up lighting has been kept to a minimum (by not exceeding a 5% Upward Light Output Ratio or by not exceeding 0.5 Lux for any initial point of illuminance to the site boundary and no greater than 0.1 Lux to 4.5 metres beyond the site into the night sky);*
- *Light sources are down facing, the proposed blue lights along the shore line play through trees and illuminate grey paving with no light trespass and/or light pollution;*
- *Light levels decrease on approach to the water's edge, and;*
- *Light levels are provided for pedestrian safe movement.*

It is anticipated that similar light spill mitigation measures would be incorporated in future detailed design SSDAs for Central Barangaroo and MOD 9.

The Central Barangaroo development blocks will seek to minimise light spill in accordance with AS4282 and the requirements of EMI-7 Green Star Light Pollution Credit. A detailed lighting strategy will be prepared to support each subsequent Stage 2 detailed Development Application.

7.7.3. Summary

In summary, the assessment concludes that the proposed MOD 9 to Central Barangaroo will not result in any adverse effects on the sky view from Sydney Observatory. In particular, the following is noted:

- There is no sky view obstruction from the proposed building envelopes in Blocks 5 and 6 given the low heights proposed.
- Only the proposed taller tower building envelope in Block 7 is high enough to obstruct sky views, however, the area of the sky obstructed is less than 10 degrees above the horizon. This area of the sky is too low to permit viable observing.
- Of the sky objects stated as being of interest to Sydney Observatory, only the planets and the Moon can potentially pass through the obstructed area of sky, and for all of these, observing is not viable due to them being too close to the horizon at the times when they are visible during Observatory opening hours.
- Due to the relatively low building envelope heights in Central Barangaroo and the highly illuminated environment that it will sit within, there is not expected to be significant negative impact from the Central Barangaroo development on the ability of the Observatory to view the night sky. Light spill mitigation measures are also expected to be incorporated in line with current standards. This will further reduce any possible impact.

As such, the proposal will have no practical reduction in sky views and very little impact arising from additional light spill, of which will be managed through future detailed DA assessments in accordance with AS4282 and the requirements of EMI-7 Green Star Light Pollution Credit.

7.8. TRANSPORT MANAGEMENT AND ACCESSIBILITY

DGRs items 8 and 9 require the consideration of transport management and accessibility impacts and pedestrian and cycle access with regards to the proposed modification. Accordingly, a Transport Management and Accessibility Plan (TMAP) has been prepared by ARUP and is included at **Appendix I**.

The TMAP addresses the changes as a result of the proposed modifications to GFA, adjustments to the road network layout, and the general changes to future public transport plans announced by the NSW Government (i.e. introduction of Barangaroo Station). The TMAP provides an assessment of the traffic generation and resulting road network operation, in order to understand the capacity of the surrounding road network to accommodate additional vehicle movements as a result of MOD 9.

In comparison to the MOD 8 and MOD 10 TMAP assessments, the TMAP also includes an analysis of the expected car parking required at Central Barangaroo to support MOD 9, an analysis of the changes to the street layouts with respect vehicular, pedestrian and cycling access and circulation arrangements, as well as the operation of existing public and other transport services within the surrounds.

MOD 9 proposes a flexible approach to the future mix of land uses at Central Barangaroo and the actual mix of uses is not yet known, hence these will be assessed in detail as part of future detailed SSDAs. For the purposes of MOD 9, the TMAP assesses the transport, traffic and access implications of the highest traffic generation scenario, which is represented by a mix of uses that optimises future potential residential use in Blocks 5, 6 and 7.

7.8.1. Assessment Methodology

The TMAP has undergone various iterations and updates throughout the ongoing Barangaroo Concept Plan process and several subsequent modifications (refer **Table 5**). The following provides a summary of previous transport assessment methodologies:

- TMAP September 2008 (MOD 2) – this was derived from the iterative process which commenced in 2006. It facilitated the more detailed assessment of transport and access matters in a series of supporting studies including detailed Paramics modelling. These provided the basis for the TMAP September 2008. This previous work has informed this TMAP report.

- TMAP August 2015 (MOD 8) – the study reiterated the transport principles outlined in the TMAP September 2008 report as a basis for the analysis of the traffic impacts for the modification. The 2015 study also considered an updated road network layout for the precinct and the likely public transport provision, including a potential Metro Station at Barangaroo and a ferry hub at Barangaroo.
- TMAP December 2019 (MOD 10) and TMAP July 2020 (MOD 11) – MOD 8 has since been modified further by the MOD 10 and MOD 11 applications to the Barangaroo Concept Plan. Two supplementary TMAPs were prepared by JMT Consulting for each MOD.
- The MOD 10 TMAP related specifically to Barangaroo South and showed that MOD 10 had an improved level of traffic flows compared to MOD 8.
- The MOD 11 TMAP related to a minor modification specifically to Barton Street and Hickson Park and did not change GFA or building height. The TMAP noted minimal changes in future traffic outputs compared to MOD 8 and traffic modelling focused on the current condition. MOD 11 is not used as the basis of comparison for the MOD 9 TMAP as it considers the temporary and not the final traffic arrangements.

The MOD 9 TMAP compares the traffic modelling undertaken for the MOD 8 TMAP as amended for the revised traffic generation forecasts in the MOD 10 supplementary assessment. The MOD 9 traffic modelling methodology used the software SIDRA Network 8.0 as it is the preferred modelling tool advised by TfNSW. A network model was created in SIDRA and calibrated against the LinSig model used previously for MOD 8.

The service principles of Barangaroo with regards to mode split targets, opportunity to create a transport hub and provide good access to public transport remain largely unchanged from that described in the September 2008 TMAP.

7.8.2. Mode Share Targets

The original Concept Plan for Barangaroo was based on the principle of achieving high usage of public transport, walking and cycling as a method of travel to work. Journey to work mode share by car is targeted at 4% which will be achieved through minimal on-site parking and promotion of travel demand management plans. These mode split targets were adopted in the *Barangaroo Integrated Transport Plan*.

The transport assessment submitted with MOD 11 (prepared by JMT Consulting July 2020) indicated minimal changes in future traffic outputs, and therefore, MOD 11 is expected to have similar mode share targets with MOD 8. It is noted that the MOD 10 or 11 TMAPs did not change the mode split assumptions.

The overall mode share targets adopted for the MOD 9 TMAP are consistent with those established in the MOD 8 TMAP (supplemented by the MOD 10 TMAP), as they're considered the latest and most relevant targets. However, the MOD 9 TMAP now further considers the metro network operation, which forecasts that the travel demand will be split evenly between heavy rail (Wynyard Station) and Barangaroo Station.

The adopted journey to work mode share targets for MOD 9 are illustrated in the table below. The increase in the number of trips associated with the mode share targets considers the changes proposed under MOD 9. Arup outlines that the mode of travel for the AM and PM peaks will be the same as the majority of the trips are return journeys to and from work.

Table 20 Proposed Mode Share Targets for MOD 9

Mode	MOD 8/10 TMAP (AM & PM Peak)		MOD 9 TMAP (AM & PM Peak)		Difference Between MOD 9 and MOD 8/10
	Target	No. of Trips	Target	No. of Trips	
Car (drive / passenger)	4%	775	4%	868	93
Bus / Light Rail	19%	3,681	19%	4,123	442
Metro	0%	0	31%	6,727	6,727
Train	61%	11,817	30%	6,510	-5,307

Mode	MOD 8/10 TMAP (AM & PM Peak)		MOD 9 TMAP (AM & PM Peak)		Difference Between MOD 9 and MOD 8/10
	Target	No. of Trips	Target	No. of Trips	
Ferry	4%	775	4%	868	93
Other (pedestrian, cyclists, motorcycle, taxi)	12%	2,325	12%	2,640	315
Total	100%	19,372	100%	21,701	2,329

7.8.3. Car Parking

Arup have undertaken a car parking analysis based on the parking rates utilised in the 2008 and 2015 TMAP (approved Concept Plan consent) to present the potential future parking needs for MOD 9. The car parking rates utilised in Arup's assessment are consistent with the relevant conditions of the Instrument of Approval. Actual parking numbers may vary from those presented in the TMAP. Future detailed SSDAs will identify and assess the proposed car parking provisions for each future development proposal.

The proposed parking provisions presented in the TMAP are nominal numbers extrapolated from the assumed GFA, land use mix and indicative dwelling mix associated with and contemplated under MOD 9.

As indicated in the figure below, the TMAP outlines that MOD 9 would result in an increase in total parking requirements from 3,602 to 3,768 spaces (166 spaces). Specifically, based on the approved rates specified under Condition C4 of the Instrument of Approval, MOD 9 results in an increase of required car parking provisions, including, 18 commercial spaces, 65 retail spaces and 184 residential spaces (based on the optimised indicative residential scenario). In addition, there would be a reduction of 105 on-street parking spaces along Hickson Road (based on the draft Hickson Road masterplan – which is subject to change) and a reduction of 15 on-street parking spaces within the Barangaroo site.

Car parking for all future uses within Central Barangaroo will be accessed via the basement ramp located directly off Hickson Road beneath Block 6.

Figure 55 Car Parking Rates Associated with MOD 9

Land Use and Activity	Parking Rate	Parking spaces with MOD 8/10	Parking spaces with MOD 9
Commercial	1 space / 600m ² GFA	571	599
Retail	Estimated on the City of Sydney LEP2012 rates for 'other' uses.	48	113
Residential*	Bedsitter: 0.5 spaces / dwelling 1 bed: 0.5 spaces / dwelling 2 bed: 1.2 spaces / dwelling 3 bed: 2.0 spaces / dwelling 3+ bed: 2.0 spaces / dwelling	2,018	2,202
Hotel	n/a	500	500
Hickson Road on-street parking**	n/a	125	20
On-Street parking within Barangaroo	n/a	40	25
Barangaroo Reserve parking	n/a	300	300
Total		3,602	3,768

Source: Arup

The reason for the increase in required parking provisions for Central Barangaroo is due to the overall increase in 105,687sqm of GFA proposed under MOD 9 which accommodates additional commercial, retail and community uses. The reduction in on-street parking along Hickson Road is based on the draft Hickson Road masterplan. The reduction in on-street parking within Barangaroo is attributed to the changes to the street and movement network proposed under MOD 9 where Barangaroo Avenue, Street C and Street D are proposed to become increasingly pedestrianised.

While the proposed increase in GFA under MOD 9 may potentially provide for more car parking on site, MOD 9 has not resulted in a significant increase in traffic generation in the vicinity of the site. The traffic generation of MOD 9 and how this will be accommodated by the surrounding road network is discussed in further detail in *Section 5.2* and *6* of the TMAP (**Appendix I**) and **Section 7.8.3** of this EAR.

On-Street Parking

It is envisaged that only a small number of on-street parking bays will be provided within Central Barangaroo, in keeping with the overall strategy for Barangaroo of reducing car dependency and enhancing the movement of pedestrians and cyclists. It is noted that publicly accessible car parking is available in the 300-space car park under Barangaroo Reserve, as well as various other parking areas within the precinct.

The on-street parking provided within the Central Barangaroo street network would be provided in indented parking bays for passenger drop-offs and disabled parking. The anticipated number of on-street car parking spaces with Central Barangaroo is approximately six. It is likely that these spaces will be available for short stay purposes only, in line with restrictions that have been implemented across the wider Barangaroo precinct.

It is also expected that approximately 20 on-street parking spaces are to be provided in Hickson Road in line with the latest draft Hickson Road masterplan.

Loading and Servicing

Access to loading docks, temporary tradesman parking and servicing areas will be provided from Hickson Road to the basement levels of Block 6. Internal turning facilities would be provided to enable large refuse and delivery vehicles to enter and leave in a forward movement. As per the Statement of Commitments for the approved Concept Plan:

- All building servicing & loading facilities are to accord with City of Sydney Council's rates
- All service/delivery areas to accord with AS2890. 2:2002 subject to driveways complying with City of Sydney Council's requirements

Loading and servicing access will be provided 24 hours a day in the basement for the retail tenants within Central Barangaroo.

In addition, it is noted the section of Barangaroo Avenue between Street C and Barton Street, adjacent Blocks 5 and 6, will accommodate controlled service vehicles only during specific times to service future retail uses.

7.8.4. Road Network Assessment

Traffic Generation

As previously highlighted, the forecasted traffic generation and car parking rates are derived from the 'maximum residential scenario' reference scheme and informs the TMAP assessment. The following assumptions have been used, consistent with the MOD 8 TMAP:

- 1 residential unit provides an average of 100m²
- Commercial and public trips split 80% in / 20% out during AM and 80% out / 20% in during PM
- Residential trips split 80% out / 20% in during AM and 80% in / 20% out during PM
- Public use parking at Barangaroo Reserve assumed to generate at retail rate during PM peak hour and at 10% of that level during AM peak hour

Key changes to the traffic generation assumptions since the MOD 8 TMAP are primarily focused around forecasted bus numbers and minor parking changes.

Currently 12 buses in each direction during the peak hour travel along Hickson Road. As a conservative assumption, it has been assumed there will be 18 buses an hour in each direction on Hickson Road in future, which is a 50% increase from the current situation. This is however significantly less than the predicted bus numbers assumed in the MOD 8 TMAP as supplemented by MOD 10.

The existing public transport services considered as part of MOD 9 remain unchanged from those used in the assessment of MOD 8. It is noted that the introduction Barangaroo Station will support the additional residential demand.

The TMAP 2008 (and subsequent MOD 10/11 TMAPs) adopted traffic generation rates for the residential component of the development of 0.14 and 0.09 in the AM and PM peak hours respectively. These rates have been adopted.

Arup have forecasted the peak traffic generation of light and heavy vehicles and buses for MOD 8/10 (based on the assumptions in the respective TMAPs) and the MOD 9 proposal for each land use. The comparison of traffic generation rates, based on the MOD 8 TMAP (as amended by the MOD 10 supplementary TMAP) and MOD 9 is outlined in **Table 21** below.

Table 21 Traffic Generation Comparison from MOD 8/10 to MOD 9

Time Period	Direction	MOD 8/10	MOD 9	Change
AM Peak Hour	In	346	356	+10
	Out	355	373	+18
	Two-way	701	730	+28
PM Peak Hour	In	415	413	-2
	Out	395	416	+21
	Two-way	810	830	+19

MOD 9 will result in a slight increase in the total volume of traffic generated by the precinct due to the increase in residential GFA and the revision in future bus numbers on Hickson Road. It should be noted that the volume of traffic forecast under the proposed modification is commensurate with that forecast under the MOD 2 TMAP. This is important to note as the traffic modelling and road network analysis contained in the MOD 2 TMAP underpinned the development of the 4% car mode share for the site.

Peak / Off-Peak Traffic Generation

The TMAP outlines the travel task generated by the entire Barangaroo development at different times of a typical weekday and different times of the week (including Saturday), in order to understand the subsequent road network operation and analyse the capacity to accommodate additional vehicle movements as a result of MOD 9.

The mix of land uses proposed within Barangaroo will generate trips during both the traditional commuter peak hours (i.e. 7am-10am and 4pm-7pm) and other times of the day (e.g. lunchtime peak, evening peak and weekend peak). The TMAP demonstrates that traffic generated during the lunchtime and evening peak hours is expected to be less than that in the commuter peak hours. Evening peak hour traffic is forecast to be less than half of that the PM commuter peak hour.

The weekend traffic volumes (Saturday peak hour) are comparable to that during the AM and PM weekday periods. While the traffic generated by the commercial uses at Barangaroo is reduced compared to the weekday peaks, the residential and retail uses are expected to generate higher levels of traffic movements on weekends.

The weekend Saturday peak hour from a road network operations perspective in the Sydney CBD is not as critical when considered in the context of the level of background traffic on key roads. The TMAP identifies reduced activity on the weekend given the background traffic on a Saturday is 15% lower compared to the weekday PM peak hour and 20% lower compared to the weekday AM peak hour, given commercial office

uses are not operating. As a result, there is no traffic impact on the wider area during these time periods and nearby intersections in Barangaroo operate with spare capacity and may accommodate the forecast levels of traffic generated by the precinct.

Road Network Modelling and Operation

The future operation of the road network following development of Barangaroo (including MOD 9) has been modelled by Arup using SIDRA software as a network model. Arup's corridor modelling analysis of the road network considered the existing traffic data and future modelling outputs to demonstrate how the traffic generation previously forecasted can be managed as a consequence of MOD 9.

Existing Traffic

Existing traffic data collected on Thursday 10 May 2018 for AM and PM peak periods was used as the basis of the traffic modelling. This date is considered acceptable as the traffic data was taken prior to Covid-19, which would impact the traffic volumes. The data was collected at the following intersections in Barangaroo:

- Hickson Road / Watermans Quay
- Hickson Road / Napoleon Street / Sussex Street
- Sussex Street / Erskine Street
- Kent Street / Napoleon Street / Margaret Street

The results of existing traffic counts are illustrated in *Section 5.5.2* of the TMAP. The traffic associated with new development has been distributed across the road network based on 'Journey to Work' Census data (refer to Table 10 of the TMAP). The key approach and departure routes are consistent with previous Concept Plan modifications and those illustrated in the in the *Barangaroo Integrated Transport Plan*.

Future Traffic Modelling

A corridor traffic model (using the SIDRA 8 software package) was developed to assess the future road network performance arising from the currently approved Barangaroo Concept Plan MOD 9. This allows intersections to be modelled in a single network and provides the ability to forecast future traffic conditions within Barangaroo.

Within the SIDRA model, lane capacity at a number of locations was manually reduced to reflect queue spillback from downstream and upstream intersections that currently occurs during peak hours. The capacity adjustments to the intersections applied in the model are consistent with those assumed in the MOD 8 TMAP.

The DGRs request that the road network in the King Street Wharf area be addressed to ensure that intersections such as Erskine Street and Lime Street and Lime Street itself are modified to cater for the different traffic demands that Central Barangaroo and the Barangaroo Reserve will bring to the network.

As outlined in the TMAP, traffic distribution focuses the forecasted traffic generated primarily onto Hickson Road, Sussex Street and Napoleon Street as the key access road. As Barangaroo Avenue is closed to vehicle traffic north of Watermans Quay, Lime Street and Erskine Street are not directly connected to Central Barangaroo and drivers are not expected to travel to Central Barangaroo via these streets. On this basis, minimal impacts on the King Street Wharf area are expected from Central Barangaroo.

Road Network Operation / Capacity Assessment and Results

The road network performance has been measured against the following three parameters:

- Level of Service (LoS) – measured A (very good) to F (over capacity with significant delays).
- Degree of Saturation (DoS) – overall measure of capability to accommodate additional traffic.
- Average Vehicle Delay (AVD) – measured in seconds.

The performance of intersections in an urban environment is measured in terms of its Level of Service (LOS). Levels of service ranges from A (very good) to F (over capacity with significant delays). Across the Sydney CBD road network, it is not uncommon for intersections to operate at Level of Service E or F (at capacity) during commuter peak hours.

Another common measure of intersection performance is the degree of saturation, which provides an overall measure of the capability of the intersection to accommodate additional traffic. A DOS of 1.0 indicates that an intersection is operating at capacity.

Arup's traffic modelling considered two scenarios:

- Operation of the road network using the land use and traffic generation assumptions from the August 2015 TMAP (MOD 8)
- Operation of the road network based on the proposed amendment to the approved Concept Plan (MOD 9), using the traffic generation assumptions detailed in *Section 5.2.1* of the TMAP.

The future traffic flows at the intersections assessed in the TMAP reflect "full" development of Barangaroo traffic under MOD 9.

It should be noted that under both scenarios, traffic generated by Barangaroo (as at May 2018) has been discounted from the overall traffic generation forecasts, as this traffic is already included in the existing traffic counts. Reductions have been applied to the volume of traffic generated by the Barangaroo South development (approximately 70% occupied as at May 2018), on-street parking in Barangaroo South and traffic from the Barangaroo Reserve car park.

The results of the traffic modelling for key intersections, as a consequence of MOD 9, are presented in the table below (refer to the full set of the results in **Appendix I**).

Table 22 Summary of Road Network Operation Traffic Modelling Results

Peak	Intersection	MOD 8/10			MOD 9		
		LOS	DOS	AVD (sec)	LOS	DOS	AVD (sec)
AM	Sussex Street / Erskine Street	B	0.60	27	C	0.91	37
	Hickson Road / Napoleon Street	E	1.0	69	E	1.01	63
	Hickson Road / Watermans Quay	B	0.62	16	B	0.54	19
	Kent Street / Margaret Street	B	0.77	26	C	0.88	30
PM	Sussex Street / Erskine Street	D	0.97	55	C	0.94	42
	Hickson Road / Napoleon Street	D	0.92	43	C	0.76	34
	Hickson Road / Watermans Quay	A	0.47	11	A	0.81	14
	Kent Street / Margaret Street	B	0.75	23	C	0.90	29

As shown in **Table 22** above, the traffic modelling results forecast that there will be minimal changes in the operation of key intersections as a result of MOD 9 when compared to the road network performance MOD 8 (including the supplementary MOD 10 assessment). Changes in vehicle delays are relatively minor in both the AM and PM peak commuter periods.

The road network can therefore accommodate the cumulative development outcome and additional vehicular movements associated with MOD 9, with performance remaining at acceptable levels. This implies that the additional trips generated by the increase in GFA is offset by lower traffic generation rates for the residential uses and reduction in bus volumes along Hickson Road.

DGRs 'key issues' item 8 requires consideration of how vehicular traffic will be managed in response to capacity limitations on the road network. Arup have indicated that the assessment provided within the TMAP considers the cumulative regional traffic impacts of the area. Whilst the modelling of the local road network has indicated the acceptable performance will be achieved, the intersections are approaching the capacity and the wider road network providing the connection to the precinct is generally constrained.

The limited amount of car parking provided and good accessibility to public transport effectively limits the traffic generation to be within the capacity of the road network.

7.8.5. Street Layout, Access and Circulation

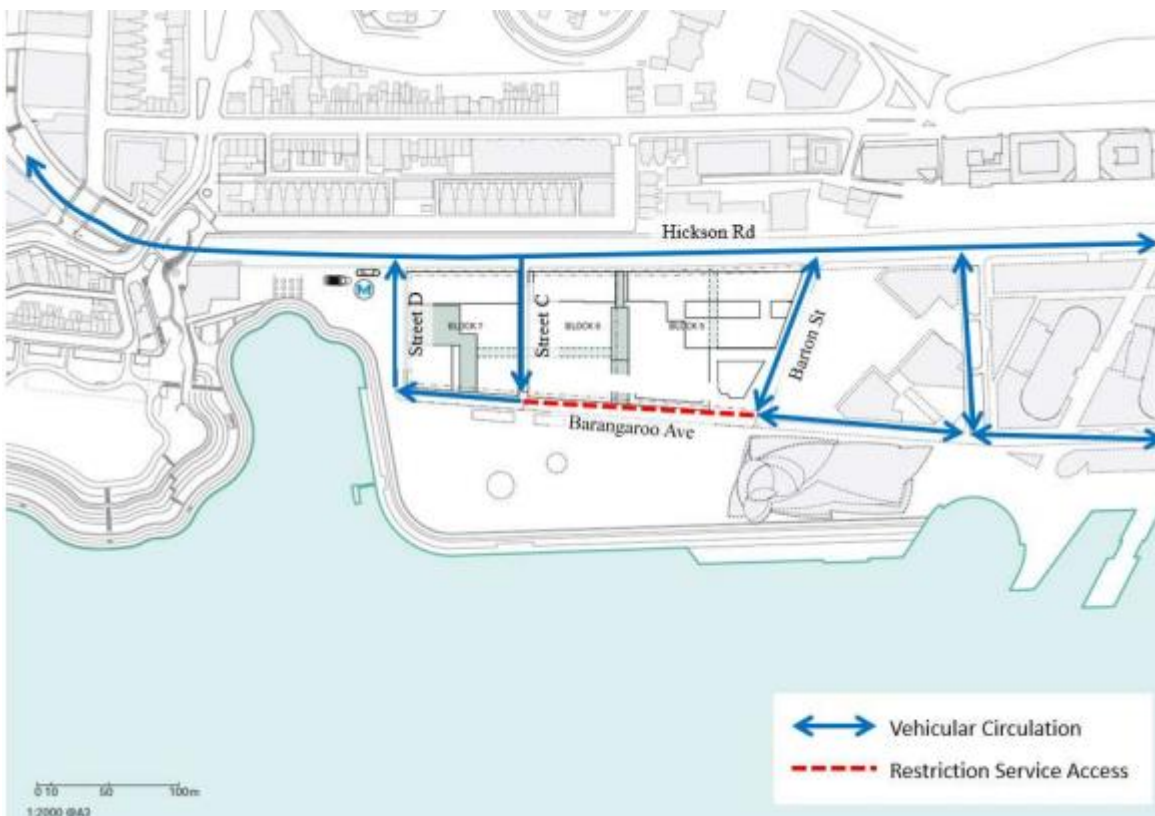
The site access and circulation arrangements for MOD 9 include the following key features:

- One-way (clockwise) vehicle circulation around Block 7. A one-way system is proposed to reduce street widths and minimise conflicts with pedestrians. This circulation route covers Street D, Barangaroo Avenue and Street C and will be shared streets where pedestrians are prioritised, which makes this loop a Civic Place in the Movement and Place classification.
- A Barton Street connection between Barangaroo Avenue and Hickson Road linking Barangaroo South and Central Barangaroo, serving the function of a Local Street in the Movement and Place classification.
- The section of Barangaroo Avenue between Street C and Barton Street will become a pedestrian priority zone making this street a Civic Place and will be used by service vehicles only during specific times (limited controlled access). These streets are not expected to carry through traffic from Hickson Road and will carry relatively low traffic volumes accessing the adjacent developments.

Access to the Central Barangaroo basement car park and servicing area is proposed to be directly off Hickson Road. All turning movements will be permitted at this driveway. Internal Central Barangaroo streets are not expected to carry through traffic and will carry relatively low traffic volumes accessing the adjacent developments.

There is a planned taxi rank and Kiss and Ride area on Hickson Road for station users located between Blocks 6 and 7.

Figure 56 Central Barangaroo Circulation Strategy



Source: Arup / Hassell

The proposed streets within Central Barangaroo will be designed as low speed shared zone environments suitable for high levels of pedestrian movements with a high place value and pedestrian based move level. The proposed changes to the street and movement network under MOD 9 (previously discussed in **Section 4**), are intended so that the street network will provide clarity and delineation for pedestrian, bicycle, and vehicle movement within Central Barangaroo and to the surrounding areas, as well as waterfront pedestrian access.

The driveway access point into the basement car park will be via Hickson Road. The number of driveways will be minimised to limit the interaction between pedestrians and vehicles within the precinct. It is envisaged all turning movements will be permitted at these driveway access points, however, this will be determined as part of future detailed SSDAs.

The internal roads within Central Barangaroo will be designed to accommodate the turning requirements of a 12.5m long service vehicle, as well as NSW Fire Brigade aerial appliance. This will also preserve options to get trucks to/from the central event space within the public domain.

Emergency Vehicles

Emergency vehicles will also be able to enter via Barton Street from Hickson Road to access the southern end of Central Barangaroo. The pedestrian priority section of Barangaroo Avenue between Street C and Barton Street can also be accessed by emergency vehicles. Emergency vehicle routes into the public open space and along the foreshore walk will be planned to ensure the site has adequate access. Any bollards that are used to define the laneway area will include removable bollards to enable access for emergency vehicles.

These paths through the public open space will be coordinated with the event transport plans to provide the necessary access for ambulances and Police vehicles.

7.8.6. Public Transport and Other Services

MOD 9 supports various public transport opportunities to and from Barangaroo throughout both day and night periods. The key changes to the street and movement network proposed under MOD 9 throughout Central Barangaroo will enable new and improved legible access for workers, residents and visitors to and from the site.

It is noted that given the conceptual nature of MOD 9 and ongoing design development work of infrastructure within the surrounds (driven by Infrastructure NSW and TfNSW), many aspects of the public transport and other services will be determined in the future through subsequent detailed design DAs and finalisation of design development (for infrastructure projects).

Rail

MOD 9 provides direct integrated connections from Central Barangaroo to the future Barangaroo Station which will improve convenient pedestrian access to and from the site, for workers, residents and visitors. Specifically, Barangaroo Station and Central Barangaroo will provide accessibility to other key strategic and commercial and retail centres, and more broadly to residential suburbs throughout Sydney.

The Wynyard Walk is a direct pedestrian link connecting the Wynyard Interchange to Barangaroo. The Wynyard Walk helps provide an efficient and fast connection between the site and Wynyard Station, with a typical walking time from the Central Barangaroo to Wynyard Station of approximately ten minutes.

The opening of the CBD and South East Light Rail in 2019 has improved public transport accessibility and further increased the attractiveness of public transport as a means of access to Central Barangaroo. Light rail services travel between the Sydney CBD and Moore Park approximately every four minutes, and approximately run every eight minutes between Moore Park and Kingsford.

For Barangaroo, light rail offers the opportunity of a high-frequency service that can provide a quicker journey than walking to some destinations. The Grosvenor Street stop is the most convenient for passengers from Central Barangaroo taking a walking time of 10 minutes, with access via the new pedestrian bridge over Hickson Road, Kent Street and Grosvenor Street. During inclement weather, the route via Wynyard Walk to the Wynyard stop may be preferable.

Bus

In July 2015 the NSW Government announced a series of bus routes will directly service Barangaroo. These services all run along Hickson Road adjacent to Central Barangaroo, terminating at Walsh Bay, and include:

- Route 311
- Route 324
- Route 325

These stops take 4-10 minutes walking time from Central Barangaroo.

Wynyard Walk will provide the main pedestrian link between Barangaroo and bus and rail services in Wynyard. The focus for bus services to and from Barangaroo are therefore focused on accommodating frequent connection to the City Centre, where connections with bus services to the east, south and west and with rail services at Town Hall Station.

Based on the Barangaroo Integrated Transport Plan and current planning for Hickson Road, two north bound and two south bound bus stops would be provided on Hickson Road to serve Barangaroo South and Central Barangaroo/Barangaroo Reserve.

Infrastructure NSW are currently leading the Hickson Road Design Development process which will significantly influence the configuration of Hickson Road and surrounding streets including the layout of bus stops. Accurate information on these facilities can only be provided upon resolution of this process.

Water-Based Transport

The Barangaroo Ferry Hub opened to the public in June 2017. The new ferry hub connects Central Barangaroo to Circular Quay and other stops along the Paramatta River route. It also reduces capacity constraints on the Circular Quay terminal and brings additional ferry services and routes directly to Barangaroo. It will provide a viable and convenient mode of travel to Central Barangaroo, with pedestrian access to the ferry wharf via the foreshore walk.

A summary of the current Sydney ferry routes and frequency of these services from Barangaroo Ferry Wharf includes:

- F3 Circular Quay to Parramatta River – Service operates Monday to Friday every 30 minutes in the morning (8am to 9am) and every 15 minutes in the evening (5pm to 6pm). Weekend services operate throughout the day.
- F3 Parramatta River to Circular Quay – Service operates Monday to Friday every 15 minutes in the morning (8am to 9am) and every 45 minutes in the evening (5pm to 6pm). Weekend services operate throughout the day in both directions.
- F4 Circular Quay to Pyrmont Bay – Service operates Monday to Friday every 20 minutes in the morning (8am to 9am) and every 20 minutes in the evening (5pm to 6pm). Weekend services operate throughout the day.
- F4 Pyrmont Bay to Circular Quay – Service operates Monday to Friday every 20 minutes in the morning (8am to 9am) and every 20 minutes in the evening (5pm to 6pm). Weekend services operate throughout the day.

Taxis, Ridesharing and Coach

Taxis and ride-sharing services (e.g. Uber) play an important role in assisting Barangaroo to meet its mode share targets. While they make up only 1% of the target mode share, they reduce the need for residents and workers to own/use their cars.

A number of taxi ranks are proposed throughout Barangaroo to serve the commercial, resident and visitor population. These will be strategically located to serve major buildings including the hotel, residential buildings and commercial towers, in line with the objectives outlined in the Barangaroo Integrated Transport Plan. Taxis will form an important component of the transport network serving Barangaroo, particularly for tourists and those departing the precinct late at night.

On street valet drop off and pick up will be provided within Central Barangaroo. Taxi ranks will be provided on Hickson Road adjacent to the precinct and/or on internal streets. The size and location of these ranks will be detailed further as planning for the precinct progresses.

The types of events held at Central Barangaroo Waterfront Park, Nawi Cove and Barangaroo Reserve could attract tourist coaches. Allocation of kerbside space in the vicinity of the Central Barangaroo, on Hickson Road, for coach set down / pick up is planned within the currently approved Concept Plan. This will service tour groups travelling to and from the precinct to other areas of Sydney.

Similar to the provision of accommodating future bus provisions on Hickson Road, Infrastructure NSW are currently leading the Hickson Road design development process which will significantly influence the

configuration of Hickson Road and surrounding streets including the layout of taxi ranks. Accurate information on these facilities can only be provided upon resolution of this process.

Late Night Transport

Given the nature of Barangaroo as a mixed-use precinct, it will generate activity at all hours of the day including the evening period and late at night. The TMAP highlights a number of transport alternatives available during the late-night period, including:

- Train services from Wynyard which run until 1am on weeknights on several routes, resuming again at 4.30am. On weekends the last train service departs Wynyard at 1.41am.
- Ferry services at the Barangaroo Ferry Hub run until midnight seven days a week.
- Services on the future Sydney Metro line are expected to run into the early hours of the morning seven days a week.
- Taxi services and rideshare operators such as Uber and Ola will provide an important form of late-night transport for users, as they currently do at King Street Wharf. Taxis will be available at all hours of the night at the strategic taxi ranks identified previously. These ranks will likely be managed during busy periods to accommodate the increased demands expected in the evening.

Most of the late-night traffic is expected to be generated by the Crown Sydney Hotel Resort in Barangaroo South. Access to the hotel for taxis and private vehicles will be available through Watermans Quay or Barton Street.

Overall, late-night traffic is expected to have minimal effect on Central Barangaroo given the time of day it will occur.

7.8.7. Pedestrian Access and Movement

Pedestrian Movement

Arup have undertaken a high-level analysis of pedestrian movement throughout Central Barangaroo to ensure the precinct can cater for future flows without result in adverse congestion. Peak pedestrian flows within Central Barangaroo are expected to occur during the peak passenger demand associated with the future Barangaroo Station. These flows were obtained from the 2017 Sydney Metro Stage 1 Design Pedestrian Modelling Report prepared by Metron.

It is expected that the future AM flows will most likely affect Hickson Road and Barangaroo Avenue as they provide the most direct pathways to the south. As illustrated in the table below, both footpaths will operate at a Level of Service B, which are considered to be acceptable walking conditions.

Table 23 Footpath Level of Service for 2056 AM Peak Metro Pedestrian Demand

	Percentage Split	Flow (pedestrian / minute)	Width of footpath	Flow rate (pedestrian / minute / metre)	Level of Service (walkways)
Barangaroo Avenue	75%	270	9m	30	B
Hickson Road	25%	90	4m	22.5	B

Pedestrian Access

Central Barangaroo will be serviced by a number of key pedestrian connections, including a widened pedestrian footpath on the western side of Hickson Road (to be determined as part of the Hickson Road design development process and not MOD 9), as well as a greatly improved permeable internal pedestrian network. In addition, the wide foreshore walk connects Barangaroo Reserve and Central Barangaroo to the south to Darling Harbour via King Street Wharf and Barangaroo South.

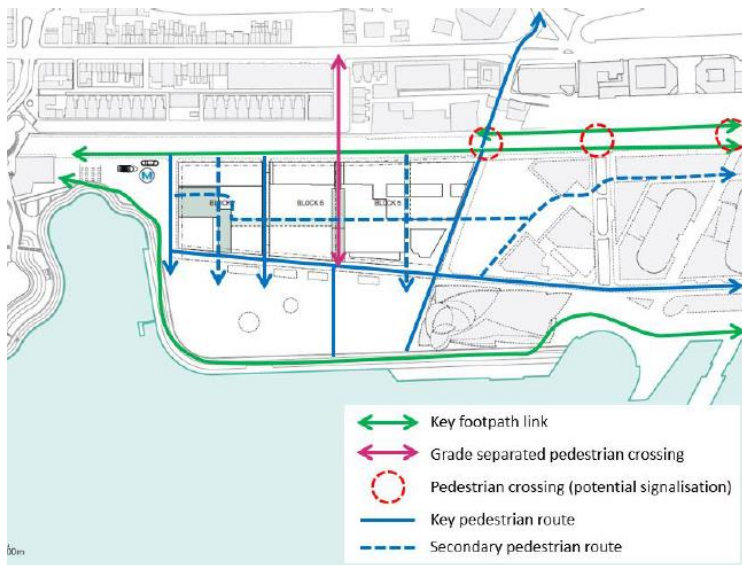
Formal pedestrian crossings are provided at the Hickson Road / Napoleon Street intersection, as well as the future signalised Hickson Road / Watermans Quay intersection and Hickson Road / Barton Street intersection.

The signalised intersection at Barton Street will assist in the key pedestrian movement east-west from Gas Lane to Harbour Park via Barton Street. The signalised intersection at Barton Street would also allow pedestrians to cross both sides of Barton Street and is likely to prevent a mid-block crossing being required to access Hickson Park.

Dedicated pedestrian infrastructure servicing the wider Barangaroo precinct include the following:

- Barangaroo Steps – the Barangaroo Steps will provide a grade separated crossing of Hickson Road, linking Central Barangaroo to a new pedestrian bridge connection to High Street in Millers Point (High Street Bridge). This will provide a civic connector that extends through the site.
- Napoleon Bridge – pedestrian link bridge over Sussex Street located close to the intersection of Hickson Road and Napoleon Street linking into Wynyard Walk. This will act as one of the key pedestrian routes for those travelling between Central Barangaroo and Wynyard transport interchange.
- Wynyard Walk – direct pedestrian link connecting the Wynyard Interchange to Barangaroo.

Figure 57 Pedestrian Routes Servicing Central Barangaroo



Source: Arup / Hassell

MOD 9 proposes key changes to the street network and new pedestrian connections which will provide a higher degree of permeability in both a north-south and east-west direction. This is largely achieved by dedicated Barton Street as a permanent two-way road which will accommodate most of the vehicle movements and redirects vehicles away from Barangaroo Avenue. In turn, Barangaroo Avenue is reallocated as a dedicated pedestrian environment to improve integration with the built form, active retail edge and adjacent public open space and the new publicly accessible spaces (Nawi Terrace, Barangaroo Steps and Barton Plaza).

Whilst shared streets, Streets C and D will be predominantly pedestrianised with minimal service vehicle movements only.

In addition, the changes to pedestrian connections are improved through the provision of High Street Bridge and a multi-layered network of activated below ground retail, ground plane retail edge and elevated uses at level 1 which both dissect and integrate with Blocks 5, 6 and 7 to provide a vibrant pedestrian network with greater permeability and enhanced circulation outcomes.

7.8.8. Cycle Access

Central Barangaroo is proximate to major cycle routes from the north into the CBD and the City of Sydney cycle network. The cycle network servicing Central Barangaroo includes (refer **Figure 41**):

- Hickson Road two-way segregated cycleway on the eastern side of Hickson Road (up to Watermans Quay)
- Hickson Road slow speed traffic environment (between Watermans Quay and Barangaroo Reserve)
- Napoleon Street – cycle lane uphill (eastbound) plus cycle path mixed with traffic downhill (westbound) to connect to Kent Street cycleway.
- Foreshore Walk – shared pedestrian and cycle path.
- Kent Street two-way segregated cycleway
- Slow speed, shared traffic environments on streets within Central Barangaroo precinct

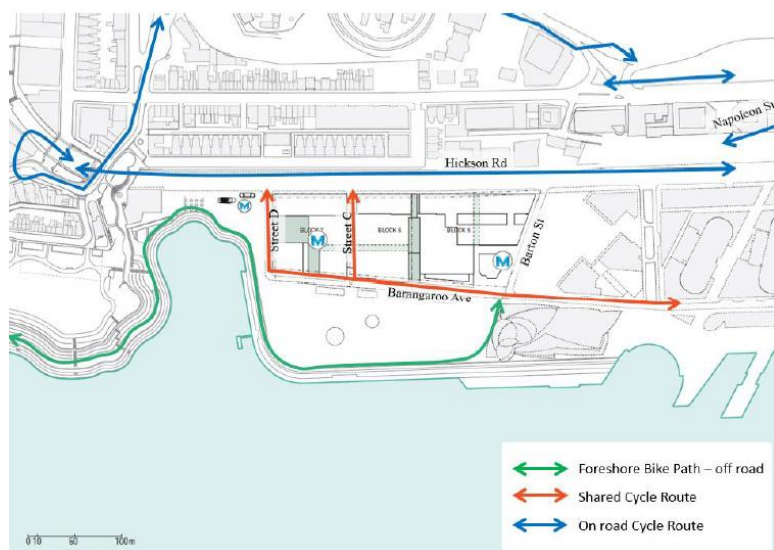
Future detailed design and development in Central Barangaroo support the high usage of bicycles through the provision of bicycle locking/parking facilities within public spaces for visitors, retail customers and tourists, end of trip facilities (**EOTF**) for future workers and bicycle parking for residential apartments.

Bicycle parking and EOTF will be provided within the basement in line with the following minimum rates (derived from the SOC requirements):

- Residential: One space per dwelling (may be provided within the dwelling's basement storage area).
- Commercial: the number of bicycle spaces shall be 4% of the commercial GFA/20 m² (i.e. one per 250 m²). The minimum number of showers shall be one for every 10 bicycle spaces.
- Other uses: Six bicycles for every 100 other uses car parking spaces.

Some visitor bicycle parking will be provided within the public domain areas and monitored as required throughout future detailed SSDAs to ensure a sufficient amount is accommodated.

Figure 58 Supporting Cycle Network



Source: Arup / Hassell

7.8.9. Mitigation Measures

A Travel Demand Management Plan (**TDMP**) will need to be prepared as part of the future development applications for Central Barangaroo. The TDMP will outline measures to encourage future tenants, residents and visitors to support sustainable modes of travel to Barangaroo and reduce car dependency.

Arup have provided a number of recommendations to support the future development and implementation of the TDMP, relating to staff induction and encouraging walking, cycling and high public transport patronage.

Following the implementation of the TDMP, the report recommends that a travel survey is conducted at least 12 months post-occupation and periodically thereafter to assess the effectiveness of the travel plan against the mode share targets. Based on the survey results, the TDMP will be adjusted to promote non-car related travel and review the administrative procedures to ensure an efficient approach.

7.8.10. Timing and Delivery

Section 8 of the TMAP outlines the proposed and supporting transport management measures for MOD 9 including the responsible agency for delivery and the estimated timing for when this will occur.

7.8.11. Summary

MOD 9 will result in a minor increase in the volume of traffic generate when compared to MOD 8 / 10. This is largely due to the adjustment of traffic generation rates associated with the additional GFA and the revision in future quantities of buses along Hickson Road. The traffic modelling undertaken determined that the road network can accommodate MOD 9 with performance remaining at acceptable levels.

The off-street car parking is consistent with that applied to previous modifications to the approved Concept Plan and a reduction in the number of on-street parking bays along Hickson Road is proposed in comparison to the MOD 8 arrangement.

The precinct maintains a high degree of pedestrian and cyclist's connectivity and enables suitable movement throughout the network. Specifically, MOD 9 includes new internal streets which will be designed as civic low-speed environments to encourage and accommodate high levels of pedestrian movement. MOD 9 aretain the "in-principle commitment to provide a pedestrian bridge over Hickson Road (High Street Bridge), which will provide a civic connector, in conjunction with the Barangaroo Steps, that extends through the site in an east-west direction through to a public plaza adjacent to the waterfront.

The introduction of Barangaroo Station will improve public transport access for people travelling to and from the precinct by providing an accessible, high-capacity alternative to Wynyard Station. Three main entry points to Barangaroo Station provides users with a high capacity, high-frequency public transport service integrated with the mixed-use precinct.

7.9. HERITAGE

DGRs item 19 requires the EAR to undertake an assessment of the likely impacts of the proposed modification on heritage and archaeological items including the Millers Point Special Conservation Area, Observatory Hill and Walsh Bay. Where appropriate, the DGRs require identification of the proposed conservation and mitigation measures.

A Heritage Assessment and Impact Statement (**HAIS**) has been prepared by GML Heritage (**Appendix S**) in response to this requirement. The HAIS considers the heritage values of the Central Barangaroo site, including Aboriginal and historical archaeology and built heritage values, and evaluates the potential impacts that development in line with the proposed modification may have on these values.

7.9.1. Historical Development

The historical development of the broader Barangaroo site is largely related to maritime industries, including wharves, shipbuilding, and associated commercial and industrial enterprises. The historical development of the broader Barangaroo site included the following phases:

- **Phase 1** – Aboriginal occupation: Aboriginal people occupied the Sydney Harbour foreshore areas to access terrestrial and marine resources.
- **Phase 2** – Private Ownership 1788-c1870: Millers Point and Darling Harbour were in the early phases of development, with maritime and shipping industries along the foreshore. The Australian Gas Light (**AGL**) Company established gasworks at Darling Harbour during the 1830s. The northern part of the AGL site extended into the area of Central Barangaroo. Most of the foreshore between Dawes Point and Darling Harbour had been modified by quarrying, reclamation or the construction of seawalls, with the area almost entirely occupied by wharves, stores and commercial properties by 1870.
- **Phase 3** – Intensive Development and Decline c1870-1901: Many facilities became dilapidated during this time and changes in shipping technology rendered some of the wharf and jetty facilities unsuitable and in need of upgrading. As part of the government's renewal of the area, most of the wharves and

other structures were demolished and redevelopment commenced. Redevelopment during this period had a profound effect on the character and form of the area.

- **Phase 4 – Renewal 1902-2010:** As part of the renewal of the area, the wharves around Millers Point were entirely removed and new finger wharves were constructed to accommodate new ship berths. Wharves in the southern part of Barangaroo were also repaired and altered. A government announcement in 2003 of the re-development of the wharves area into a new urban precinct represented a significant shift in the land use and development of the area. An overview of the development is outlined in **Section 2**.

7.9.2. Aboriginal Archaeology

GML have assessed the potential occurrence of archaeological evidence associated with Aboriginal occupation and habitation within the site in accordance with Heritage NSW Guidelines *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW 2010*.

The assessment is informed by previous investigations undertaken on the site in 2012 and 2014 undertaken by GML and Casey & Lowe respectively, as well as a search of the Aboriginal Heritage Information Management Systems (**AHIMS**) database to identify any Aboriginal archaeological sites registered since completion of these reports.

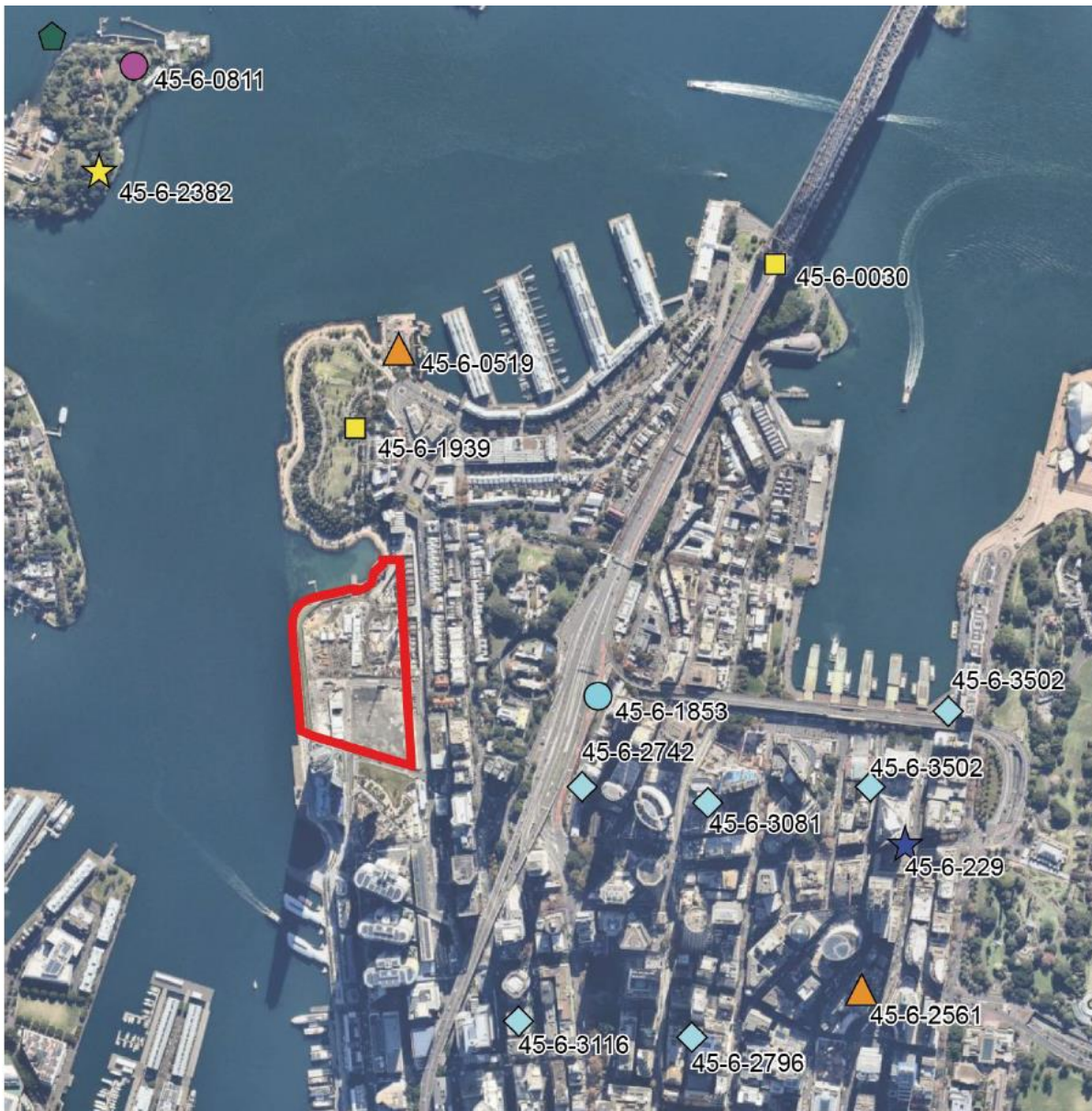
Identification of Aboriginal Archaeological Potential

Following a review of the AHIMS database and State Heritage Register, GML confirm the site contains no previously identified Aboriginal sites or places.

Within a 1km buffer area of the site, 20 Aboriginal sites were identified as illustrated in **Figure 59** and summarised as follows:

- Two Aboriginal sites (45-6-0519 and 45-6-1939) are recorded to the north of the study area, within the Barangaroo Reserve precinct (both 'destroyed'),
- Two others (45-6-1853 and 45-6-2742) are located on the sandstone ridge outside of the Barangaroo site, now the location of the freeway onto the Harbour Bridge.
- Other recorded Aboriginal sites are located elsewhere in the CBD, within different landforms to those surrounding the current study area and some distance away.

Figure 59 Identification of Aboriginal sites proximate to the site



Source: GML

GML note that owing to the natural topography of the foreshore, it is likely much of the study area would *not* have been utilised by local Aboriginal peoples. Any evidence of Aboriginal use of the area is likely to have been disturbed or removed by subsequent historical use and substantial development of the site, including maritime industries, land reclamation along the foreshore of Cockle Bay, and construction of Hickson Road (c.1912). It is also recognised that as the study area would have been below the high-water mark (c.1788), the effect of wave action and daily water level rises and falls on any archaeological deposits within the tidal inundation zone would have been substantial and result in their erosion and consequential loss.

Accordingly, the HAIS concludes that Central Barangaroo is assessed as having nil potential to contain in-situ Aboriginal archaeological evidence.

Assessment of Impact on Aboriginal Archaeology

MOD 9 will not result in any additional impact on Aboriginal archaeology beyond those in the approved Concept Plan as the site has nil potential to contain in-situ Aboriginal archaeological evidence.

Mitigation Measures

Mitigation measures proposed by GML to mitigate impact on Aboriginal archaeology largely pertain to the construction phase of the indicative built form, for which approval will be sought in future SSDAs.

Recommendations include:

- In the event that any Aboriginal archaeological evidence or objects were to be discovered at the site, all works in the affected area/s must cease, Heritage NSW must be notified under Section 91 of the NPW Act, and a suitable procedure for investigation must be negotiated. Further assessment or documentation may be required before site works could recommence in the affected area/s.
- In the unlikely event that human remains are discovered at the site, the findings should immediately be reported to the NSW Police and the NSW Coroner's Office. If the remains are suspected to be Aboriginal, Heritage NSW should also be contacted, and a specialist consulted to determine the nature of the remains.

In addition, GML confirm the future redevelopment could commence without the need for further Aboriginal archaeological assessment or physical archaeological investigation of the site.

7.9.3. Historical Archaeology

GML have assessed the potential for the site to contain archaeological evidence associated with the historical use and development of the study area. The assessment is informed by previous investigations undertaken in 2010, 2012 and 2018 prepared by Austral Archaeology, GML and Casey & Lowe respectively.

Identification of Historical Archaeological Potential

The historical development of the Barangaroo site is characterised by the development of maritime and wharf industries, reclamation along the Sydney Harbour foreshore, association with numerous important people, and as a place that has hosted important historical and political events. This is summarised in **Section 7.9.1** and discussed further in the HAIS.

Based on this historical overview, GML conclude the potential for historical archaeological at the site is as follows:

- Nil to low potential to contain historical archaeological remains associated with late eighteenth or early to mid-nineteenth century historical development and occupation of the site.
- Nil to low potential to contain archaeological evidence on the north-eastern part of the study area associated with the operations of Cuthbert's shipyard, including working surfaces, remnant seawalls, jetties and wharf structures.
- Moderate potential to contain historical archaeological evidence associated with maritime-related development during the mid to late nineteenth century in the north-eastern part of the study area, which may include structural supports for wharves/jetties, remnant seawalls, and other infrastructure. GML note that remains associated with mid to late nineteenth-century maritime and industrial development and operation of the site would be of local significance and have some archaeological research potential.
- High potential to contain historical archaeological evidence associated with redevelopment of the area during the early to mid-twentieth century. This evidence may include structural supports for wharves/jetties and associated infrastructure, as well as fill deposits introduced for progressive reclamation of the site. The study area may also include evidence of the impact of large-scale resumption, demolition, reclamation and redevelopment on the remains of earlier development.
- Any remains of unregistered shipwrecks or scuttled boats could be of local or state significance.
- Any remains associated with late nineteenth to twentieth-century reclamation and redevelopment of the site would have little or no archaeological significance or research potential.
- While the south-eastern part of the study area included the former AGL gasworks, which extended into the study area in the mid to late nineteenth century, this area falls within a zone identified as contaminated (DECCW Declaration Area N21122) and as such any surviving archaeological remains in the contaminated zone should have been removed during soil remediation works. Should evidence of the gasworks exist outside of the contaminated area, this would be of state significance.

In summary, GML conclude any evidence would likely be located along the eastern, northern or southern portion of the site, and would be of local significance and limited research potential. As geotechnical evidence indicates the site is covered by extensive fill, any remains are likely to be 0.5-4m below the existing surface.

Assessment of Impact on Historical Archaeology

Based on a review of the site's historical archaeological potential and its significance, GML have assessed the impact of MOD 9 on historical archaeology.

In summary, the relocation of the Block 5 boundary in the south-eastern corner of Central Barangaroo would have no direct impact on any surviving remains of the former gasworks or any other remains in the declared area of contamination, as these would have been previously removed as part of the remediation of this area.

Whilst excavation beneath Blocks 5, 6 and 7 adjacent to Hickson Road coincides with areas of potential archaeological remains associated with maritime-related wharves, the disturbance or removal of these wharves would have little or no historical archaeological impact. It is also noted that the approved Concept Plan has always envisaged development along Hickson Road and this is not a change proposed in MOD 9.

Accordingly, GML conclude MOD 9 should not result in additional historical archaeological impacts than those previously approved under the Concept Plan. The likelihood of exposing archaeological deposits as a result of MOD 9 is nil to low.

Mitigation Measures

Similar to the mitigation measures proposed by GML relating to Aboriginal archaeology, the measures recommended to mitigate impact on historical archaeology largely pertain to the construction phase of the indicative built form, for which approval will be sought in future SSDAs. Recommendations include:

- A suitably qualified archaeologist with experience in Sydney maritime archaeology should be on call for any unexpected archaeological finds across the site.
- All contractors should undergo a heritage briefing to understand the potential for, and significance of, archaeological finds within Central Barangaroo. Areas of specific caution include the north-eastern corner of the site, where Cuthbert's shipyard may have extended, and the south-eastern corner of the site, where the AGL gasworks was located.
- If any unexpected historical archaeological remains are discovered in the north-eastern or south-eastern areas of the site, works in the affected area/s should cease and the on-call archaeologist and Heritage NSW should be notified under Section 146 of the Heritage Act. Further assessment may be required before site works could recommence in the affected areas.
- Proposed excavation or subsurface disturbance in other parts of Central Barangaroo could be undertaken without the need for archaeological investigation or recording.
- If archaeological relics are encountered, the approach and methodology for investigation would be determined by the proposed works in this area.
- If any historical archaeological relics are uncovered, opportunities for interpretation of these remains should be considered as part of the broader Barangaroo site.

7.9.4. European Heritage

To inform an understanding of the site's heritage values, GML conducted a site inspection in October 2018 and February 2020 and completed a desktop analysis of the site's physical location, character and built heritage context. In addition, GML reviewed previous heritage investigations undertaken in 2006 prepared by City Plan and Paul Davies, as well the View and Visual Impact Report prepared by AECOM and appended to this EAR at **Appendix F**.

This methodology has enabled an assessment of the built heritage significance of the site and surrounding area, and an analysis of the impact on the proposed modification on these heritage values.

Identification of Heritage Items

An identification of items and areas of heritage significance in the broader Barangaroo precinct is provided in **Table 24**. It is noted that **none of these items are within Central Barangaroo**.

Table 24 Identification of heritage items in the Barangaroo precinct

Item	Type	Listing	Location
Dalgety Bond Store	Heritage Item	Identified as a heritage item in the State Environmental Planning Policy (Major Development) 2005, Sydney LEP 2012, and NSW State Heritage Register	Located within Barangaroo Reserve (north Barangaroo), immediately to the north of the Central Barangaroo site.
		Located within the SHR conservation area listing for the Millers Point and Dawes Point Village Precinct	
		Infrastructure NSW S170 Heritage and Conservation Register	
Munn's Slipway	Heritage Item	Infrastructure NSW S170 Heritage and Conservation Register	Located within Barangaroo Reserve in Nawi Cove
SPS 14 – Sewage Pumping Station No. 14	Heritage Item	Infrastructure NSW S170 Heritage and Conservation Register	Located within Barangaroo Reserve at 4 Towns Place, Barangaroo

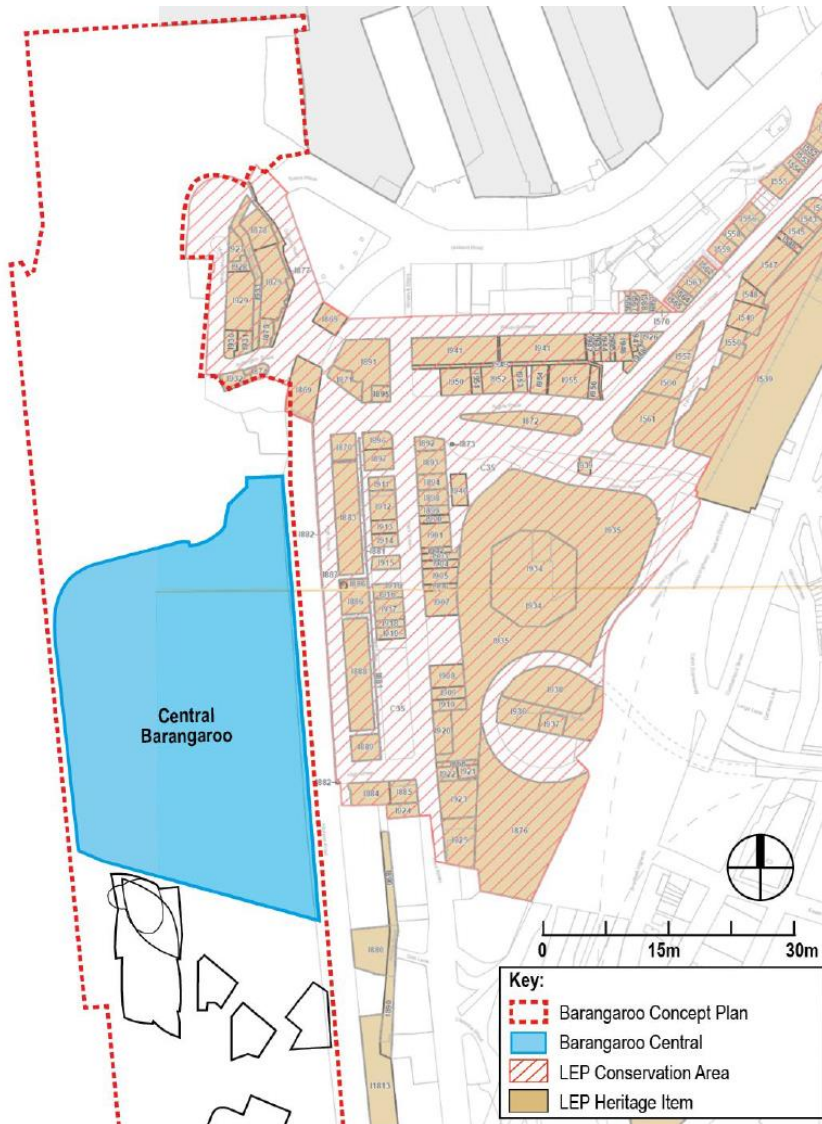
The following conservation areas are located in the vicinity of the Barangaroo precinct:

- Millers Point & Dawes Point Village Precinct – State Heritage Register (Listing No. 01682)
- Millers Point Heritage Conservation Area (**HCA**) – State Heritage Register (Listing No. 00884) and Schedule 5 of the Sydney LEP 2012 (CA35)
- Walsh Bay Wharves Precinct – State Heritage Register (Listing No. 00559)

In addition to the above, there are approximately 26 heritage listed items (including both State and local listed items) located in the vicinity of Central Barangaroo. A complete list of these items including detail on the listing is provided in the HAIS and illustrated in the heritage map provided at **Figure 55**.

In addition, there are a number of significant views and vistas to, from and across the site, in particular from High Street south and north, which demonstrates the historical relationship between the housing along High Street and the former wharves of Darling Harbour, and from Observatory Hill west over the conservation area to the harbour. The visual relationship connecting the residential areas of Millers Point to the former industrial wharves and the harbour provides evidence of their significant historical connection and is an important part of the setting of the High Street Terraces and the state significant Millers Point/Dawes Point Village Precinct. Significant views from the state significant Sydney Observatory telescopes (trajectory view skywards), and other telescopes, views to and from the Observatory time ball tower and Signal Station sight lines are of cultural and scientific value to NSW. These views are further identified in **Section 7.6** of this EAR.

Figure 60 Map of heritage items in the surrounding context



Source: GML

Assessment of Impact on Built Heritage

GML have assessed the impact of the proposed MOD 9 modifications on:

- Heritage conservation areas,
- Heritage items within the Barangaroo site,
- Heritage items in the vicinity of the site, and
- Heritage significant views.

These impacts are summarised in the following subsections, and primarily relate to impact on existing view corridors and the setting of heritage items or conservation areas.

Conservation Areas

GML have assessed the impact of MOD 9 on the Millers Point & Dawes Point Village Precinct conservation area, the Millers Point conservation area and the Walsh Bay Wharves precinct. In summary, GML consider the impact on the conservation areas will remain generally consistent with the previously approved Concept Plan in regard to the following considerations:

- MOD 9 will have no physical impact to the conservation areas.

- MOD 9 will have a positive impact on the Millers Point and Dawes Village Precinct and HCA through the articulation and separation of Blocks 5, 6 and 7 which will provide view corridors and vistas to and from the conservation areas.
- The additional height of the Block 7 tower will result in some additional impacts on the setting of the Millers Point and Dawes Village Precinct and HCA and impact some of the views to and from Millers Point. GML note that the proposed Block 7 tower may represent a greater level of impact depending on the viewpoint from Millers Point. However, the perceived height and bulk of MOD 9 is mitigated to some degree by the physical separation of approximately 40m between the High Street buildings and the proposed built form at Central Barangaroo.
- The amendment to the maximum building heights under MOD 9 will result in some increase in the sense of enclosure of some of the High Street terraces (southern section) but will not further increase harbour view loss to and from this western edge of the precinct.
- The loss of views and vistas to and from High Street, its terraces, and the pedestrian High Steps will not be further impacted through the increased heights proposed in MOD 9.
- The historical visual connection between the southern portion of the Millers Point and Dawes Village Precinct and HCA at High Street (south) to the harbour will be improved by MOD 9 through the opportunity for shared public views from the Agar Steps, on axis along High Street, across Hickson Road by the bridge and Barangaroo Steps between Block 5 and 6 to the harbour.
- The key vista north–south along High Street would not be further impacted by MOD 9. However, there will be a minor further increase in the sense of enclosure along the High Street terraces.
- Historical pedestrian links through the Millers Point and Dawes Village Precinct and HCA to the harbour (Central Barangaroo) will be enhanced through the introduction of an east-west connection between Blocks 5 and 6 and Millers Point.
- No view loss or change in the harbour connection is anticipated for the Walsh Bay Wharves precinct. The built form envisaged by MOD 9 would not intrude into the curtilage of the precinct or be visible from it.

Heritage Items within the Barangaroo site

In regard to the three heritage items located within the Barangaroo precinct (however not within the Central Barangaroo site), GML have assessed the heritage impact associated with MOD 9 as follows:

- MOD 9 will have no physical impact on the heritage items.
- The additional height of the Block 7 tower will have an additional impact on the setting and context of the heritage-listed Dalgety Bond Store. However, it is noted Block 7 is a sufficient distance from the heritage item (and across Nawi Cove), and as such the level of impact will be largely comparable to the approved Concept Plan and approved height on Block 7.
- Impacts on the heritage significance of Munn’s slipway and SPS 14 – Sewage Pumping Station No. 14 are not likely as a result of MOD 9.

Heritage Items in the vicinity of the site

The impact of MOD 9 on heritage items in the vicinity of the Central Barangaroo site and their heritage significance, including items associated with Observatory Hill, and the Walsh Bay Wharves Precinct, have been assessed by GML.

In summary, the main impacts on heritage items in the vicinity are impacts on views to and from the harbour and public foreshores. The impacts associated with MOD 9 range from positive, neutral and increased adverse heritage impacts. The proposed MOD 9 has been assessed to have little or no adverse impact on the continued use of the Observatory for astronomical observations or on the continued use of the Signal Station for signalling operations.

The key findings of the GML assessment are as follows:

- Observatory Hill level heritage items:
 - No physical impact as a result of MOD 9.

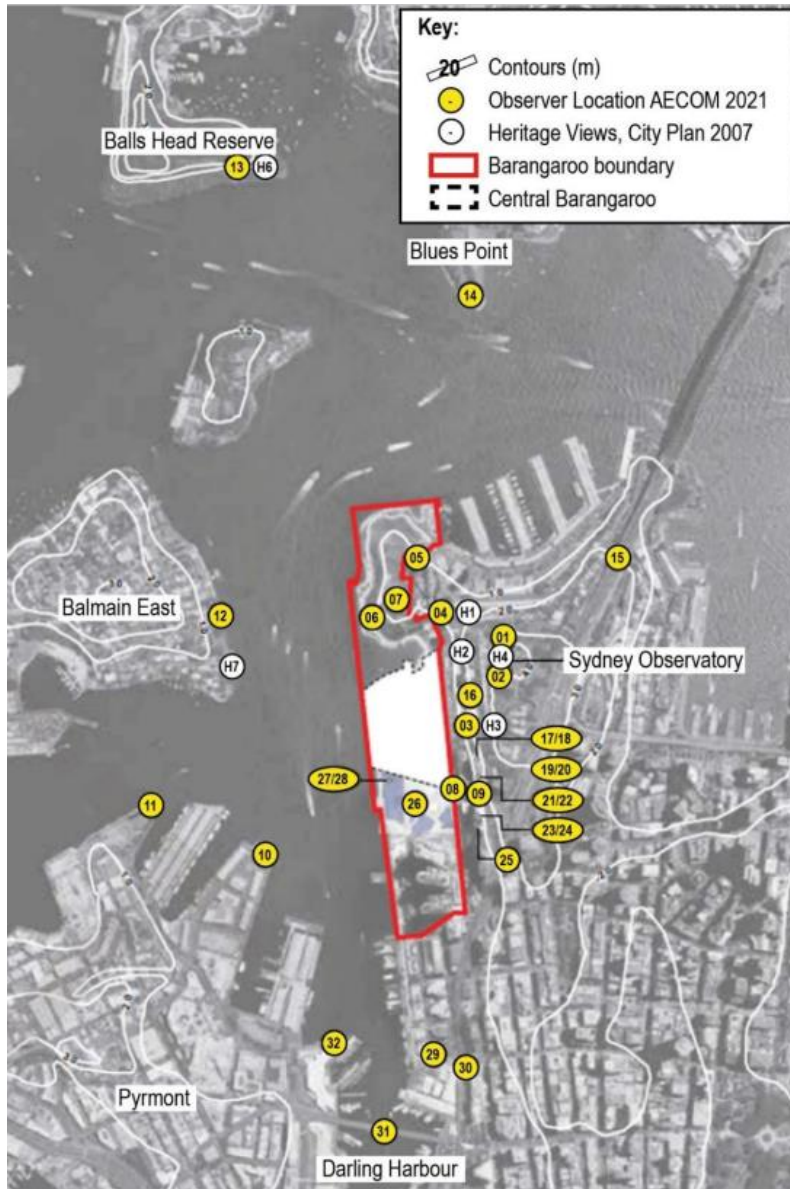
- There will be some additional adverse impact on the panoramic view shed to and from the central, western and south-western parts of Observatory Park, the Fort Street Primary School site, the upper levels of the Bureau of Meteorology and the Agar Steps (predominately due to the proposed additional height of the Block 7 tower).
- Panoramic harbour views to the northwest, north and north east of Observatory Park will not be impacted by MOD 9.
- The Messenger's Cottage does not have a westerly aspect so views would not be impacted by MOD 9.
- There will be little or no adverse impact on the continued historical use of the Sydney Observatory for astronomical observations. There will be no sky view obstruction in a designated azimuth range from the north dome by the proposed additional height of the built form of Blocks 5 and 6 of MOD 9. The proposed additional height of the Block 7 tower, which is higher than the north dome, will have no practical impact on sky views from the dome.
- There will be little or no adverse impact on the continued use of the Signal Station for signalling operations which relate to South Head to the east or northwest toward Hunters Hill.
- The introduction of an east-west connection will provide an opportunity for shared public views from Agar Steps, on axis along High Street, across Hickson Road and to the harbour foreshore.
- High Street and Kent Street level heritage items:
 - MOD 9 proposes additional views/vistas through the built form of Blocks 5, 6 and 7, which will have positive impacts compared with the approved Concept Plan for items along High Street including the 'Terrace Duplexes' (High Street Terraces including interiors).
 - Additional height will potentially increase the sense of enclosure surrounding the heritage items along High Street from the additional height of MOD 9 overall - however, the height will not further impact views to and from these items due to the introduction of east-west views through the building envelope.
 - The additional height of MOD 9 Blocks 5 and 6 will not further impact views to and from Tennis Court and Pavilion, the Carlson Terrace, including interior, or the Richmond Villa, including interior. However, there will be some increase to the loss of sky aspect from these items.
 - The indicative east-west connection would have a positive impact on the Palisade Fence and High Steps as this will strengthens existing pedestrian access from Millers Point and Observatory Hill to the foreshore at Central Barangaroo and provides a visual connection to the water. It is noted that there are a number of existing and former bridge connections over Hickson Road, and as such there is precedent for a pedestrian bridge along this stretch of Hickson Road / High Street.
 - However, the construction of the east-west connection has the potential to adversely impact the significant fabric of the Palisade Fence and High Steps, and could adversely impact use of the High Steps. It is noted that the final form, location and function of this connection will be subject to detailed design within future SSDAs. Further details of the connection will be required at future design development stages to assess and minimise heritage impacts to the Palisade Fence. Potential adverse impacts could be mitigated at design development stage and additional heritage guidance would be required – however, the use of part of the High Street Gardens land would be required.
- Gas Lane level heritage items:
 - Views from Gas Lane (above Hickson Road) of the western part of Sydney Harbour would be further impacted (marginally) with the proposed massing of MOD 9 rather than the approved Concept Plan. There would be loss of sky view from this viewpoint, but some sky view to the western harbour would be retained.
 - The additional height of MOD 9 Blocks 5, 6 and 7 will result in a sense of enclosure of the MSB stores, including interiors. The additional height may also increase the loss of sky aspect from these items.
- Walsh Bay heritage items:

- No view or connection loss with the harbour from the Moore's Wharf building is anticipated with the approved Concept Plan or the proposed MOD 9. The proposed built form of Central Barangaroo will not impact the setting of this building given its siting and the curve of Hickson Road.

Heritage Significant Views

GML have undertaken an assessment of the impact of MOD 9 on 15 x key heritage significant views surrounding the precinct. These generally aligned with the observer location views in the AECOM Views and Visual Impact Report 2021 (**Appendix F**). The views are identified in **Figure 61**.

Figure 61 Identification of Heritage Significant Views



Source: GML

GML have assessed the potential heritage impact on each of these heritage views in the HAIS, and a summary of this is provided below:

- Consistent with the findings above, GML concluded there will be some level of impact on key heritage views due to the introduction of the Block 7 tower, particularly views with a westerly orientation such as from Sydney Observatory North Tower (View 2). This would result in the loss of a narrow section of the horizon, water and harbour views to the southwest.
- The introduction of the tower would also result in some additional setting impact on the Dalgety Bond Store from views from the Munn Street Reserve (View 4) and on the heritage Millers Point and Dawes Point Village Precinct from Balmain East (View 12) and Balls Head (View 13).

- It is however noted heritage views from Barangaroo Reserve (View 6 and View 7) are improved through the proposed Block 7 tower which will result in a more articulated tower form that will contribute to views of the city skyline when viewed from the immediate north of the site. There is no additional heritage view loss from these areas.
- MOD 9 will have an additional minor adverse impact from views along Hickson Road (View 8). This will result in the loss of open sky view at a low level and loss of distant views of the Dalgety Bond Store. The proposed increased height of Blocks 5 and 6 in MOD 9 would result in some additional sky view loss, and a sense of enclosure of Hickson Road and the Palisade Fence and High Steps (and concrete wall).
- When viewed from High Street South (View 3), MOD 9 will not further increase view loss to the harbour headlands (as this is already disrupted by the approved Concept Plan), however the additional height would result in an additional sense of enclosure. In addition, the opportunity for public access and shared public views between Blocks 5 and 6 is a positive impact on this viewpoint.
- Heritage views from the west of the site with an easterly orientation such as from Ballarat Park (View 10) and Pirrama Park (View 11) are already impacted by view loss to the conservation area, Observatory Park, Palisade Fence (wall) and the High Street Terraces under the Concept Plan. This will remain to the same extent under the Concept Plan, with minor additional losses due to the Block 7 tower. MOD 9 will retain distant views to the north dome over Blocks 5 and 6. The height of the Block 7 tower would not additionally impact views of the Sydney Observatory from this viewpoint.
- GML consider the impact on views from the north of the site with a southerly orientation such as from Blues Point (View 14) and Sydney Harbour Bridge (View 15) will have a negligible impact.

The HAIS also considers the heritage impact of MOD 9 on sky view loss to the Sydney Observatory. The HAIS relies upon the expert findings of the Sky View Impact Report (**Appendix G**) which concludes there will be no practical impact on sky views from the dome as a result of the additional heights proposed. Therefore, MOD 9 will not adversely impact the heritage significance of the Sydney Observatory as the 'longest serving early scientific building in the State' and there will be very limited to no impact arising from additional light spill.

Mitigation Measures

GML recommend the following mitigation measures to minimise impact on heritage items (within the site and in the vicinity of), conservation areas and key heritage views:

- The potential adverse physical impact on the Palisade Fence and High Steps could be mitigated through the following recommendations:
 - Restricting removal of the Palisade Fence to the modern infill section at the southernmost end. Part of the High Street garden land would also be required to avoid impact on the significant fabric of the Palisade Fence and High Steps and allow for its continued public use connecting Hickson Road to High Street. The proposed east-west connection could remain visually aligned with High Street.
 - Considering the viability of re-establishing the central location of the original bridge connection over Hickson Road along High Street, which existed from c1920s to c1960s, or the northernmost section of the fence at the former northern steps, as locations for connections from Central Barangaroo to High Street. Evidence of these connections remains in the form of gate posts and an infill panel.

This will require heritage advice to ensure minimal adverse impact to significant heritage fabric of the High Street Palisade fence, the Hickson Road Wall and the High Steps (and their ongoing use) that all form the western edge of the Millers Point and Dawes Point Village Precinct.

- The final built form of Central Barangaroo should seek to optimise views to and from High Street and the Millers Point/Dawes Point Village Precinct to the harbour. This could be achieved by further modulating the built form (from that indicated by the proposed building envelopes of MOD 9, to optimise views to the harbour. GML note this will require specialist heritage advice to ensure the architectural features of Blocks 5, 6 and 7 (and in particular the corner tower) are designed to minimise visual impacts on the Millers Point and Dawes Point Village Precinct.
- AECOM Sky View Loss Report 2021 and the appended Unisearch Sky View Impact Report 2021 should be reviewed by the Sydney Observatory, Museum of Applied Arts and Sciences (MAAS) to review findings.

- The heritage impacts of any future SSDAs for Central Barangaroo should be reviewed, and detailed heritage guidance and heritage impact assessments should be prepared, as part of any future development applications for the site. This should include:
 - The urban and architectural design development for the proposed Blocks 5, 6 and 7.
 - The east-west connection to High Street.
- The heritage impacts of any specific development proposals relating to the cultural and exhibition facility in the existing Cutaway beneath Barangaroo Reserve should be reviewed as part of any future development applications for the site.

7.10. WIND

Item 7 of the DRGs requires an assessment of MOD 9 on the pedestrian wind environment and airflow movement surrounding the site. RWDI have prepared a Pedestrian Wind Study in response to this requirement as provided at **Appendix H**.

The report provides a quantitative assessment of the wind speed measurements on a scale model of the proposed envelope and its surroundings in a boundary-layer wind tunnel, to provide an assessment of pedestrian wind safety and comfort. The assessment focused on critical pedestrian areas at ground level, adjacent streets and footpaths, as well as elevated areas of the proposal.

Three scenarios were tested in the assessment including the existing site with existing surrounds, the MOD 9 scheme and the MOD 9 scheme with an indicative landscape concept design.

7.10.1. Assessment Methodology

RWDI have established pedestrian wind criteria in their assessment as outlined in the figure below. The following is noted with regards to the wind criteria established:

- Instead of standard four seasons, two periods of summer (November to April) and winter (May to October) are adopted in the wind analysis, because in a moderate climate such as that found in Sydney, there are distinct differences in pedestrian outdoor behaviours between these two time periods.
- Nightly hours between midnight and 6 AM are excluded from the wind analysis for comfort since limited usage of outdoor spaces is anticipated, while wind safety analysis is conducted for a 24- hour period.
- A 20% exceedance is used in these criteria to determine the comfort category, which suggests that wind speeds would be comfortable for the corresponding activity at least 80% of the time or four out of five days

Figure 62 Pedestrian Wind Assessment Criteria

Comfort Category	GEM Speed (km/h)	Description
Sitting	≤ 10	Calm or light breezes desired for outdoor restaurants and seating areas where one can read a paper without having it blown away
Standing	≤ 14	Gentle breezes suitable for main building entrances, bus stops, and other places where pedestrians may linger
Strolling	≤ 17	Moderate winds that would be appropriate for window shopping and strolling along a downtown street, plaza or park
Walking	≤ 20	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
Uncomfortable	> 20	Strong winds of this magnitude are considered a nuisance for all pedestrian activities, and wind mitigation is typically recommended

Notes:
 (1) GEM speed = max (mean speed, gust speed/1.85); and,
 (2) GEM speeds listed above are based on a seasonal exceedance of 20% of the time between 6:00 and 23:00. Nightly hours between 0:00 and 5:00 are excluded from the wind analysis for comfort since limited usage of outdoor spaces is anticipated.

Safety Criterion	Gust Speed (km/h)	Description
Exceeded	> 90	Excessive gust speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is typically required.

Notes:
 (1) Based on an annual exceedance of 9 hours or 0.1% of the time for 24 hours a day; and,
 (2) Only gust speeds need to be considered in the wind safety criterion. These are usually rare events, but deserve special attention in city planning and building design due to their potential safety impact on pedestrians.

Source: RWDI

7.10.2. Assessment

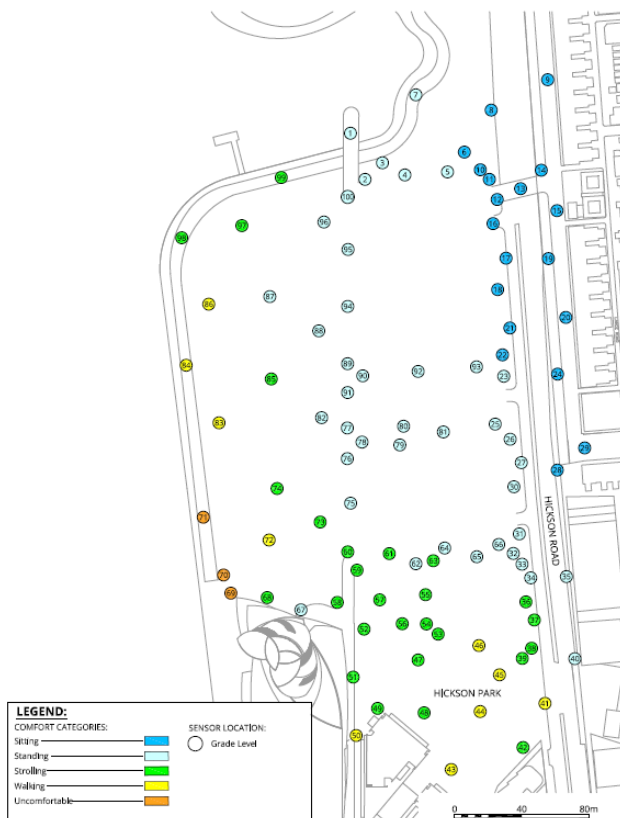
The following provides a detailed summary of the findings of the assessment for the three tested scenarios. It is noted that only the proposed massing has been assessed given the nature of the proposal being a concept scheme. As such, exact locations of entrances and terraces are not known at this stage and will be determined and assessed in further detail in subsequent proposals. However, the wind conditions observed will provide guidance for future proposals in terms of identifying suitable locations for these building elements.

Existing Site

Generally, the existing wind conditions in and around the site are expected to be appropriate for the intended uses throughout the year, as demonstrated in Figure 63 which illustrates the existing pedestrian wind comfort conditions. Specifically, the following is noted:

- Calmer wind conditions are predicted to the east of the site and are suitable for sitting and standing.
- Windier conditions suitable for walking are likely in the western portion of the site near Wulugal Walk and Barton Plaza, adjacent to Crown Sydney Hotel Resort. This is due to the exposure of prevailing winds from the waterfront and within Hickson Park, and the interaction with taller built form to the south.
- Wind speeds at six measurement locations 43 and 51 in Hickson Park and 69, 70, 72 and 74 in the Urban Theatre and Wulugal Walk at the northern aspect of Crown Sydney Hotel Resort, are expected to exceed the safety threshold in the existing configuration.

Figure 63 Existing Pedestrian Wind Comfort Conditions



Source: RWDI

MOD 9 Proposal

The wind microclimate conditions within and around the site when considering the MOD 9 proposal will remain largely consistent with the existing environment and within the range suitable for sitting through to strolling uses, with some achieving the walking criteria or resulting in uncomfortable conditions.

However, windier conditions are predicted at localised areas at the southwest corner of the site near Barangaroo Avenue. Again, this is due to the interaction with the Crown Sydney Hotel Resort and One Sydney Harbour developments.

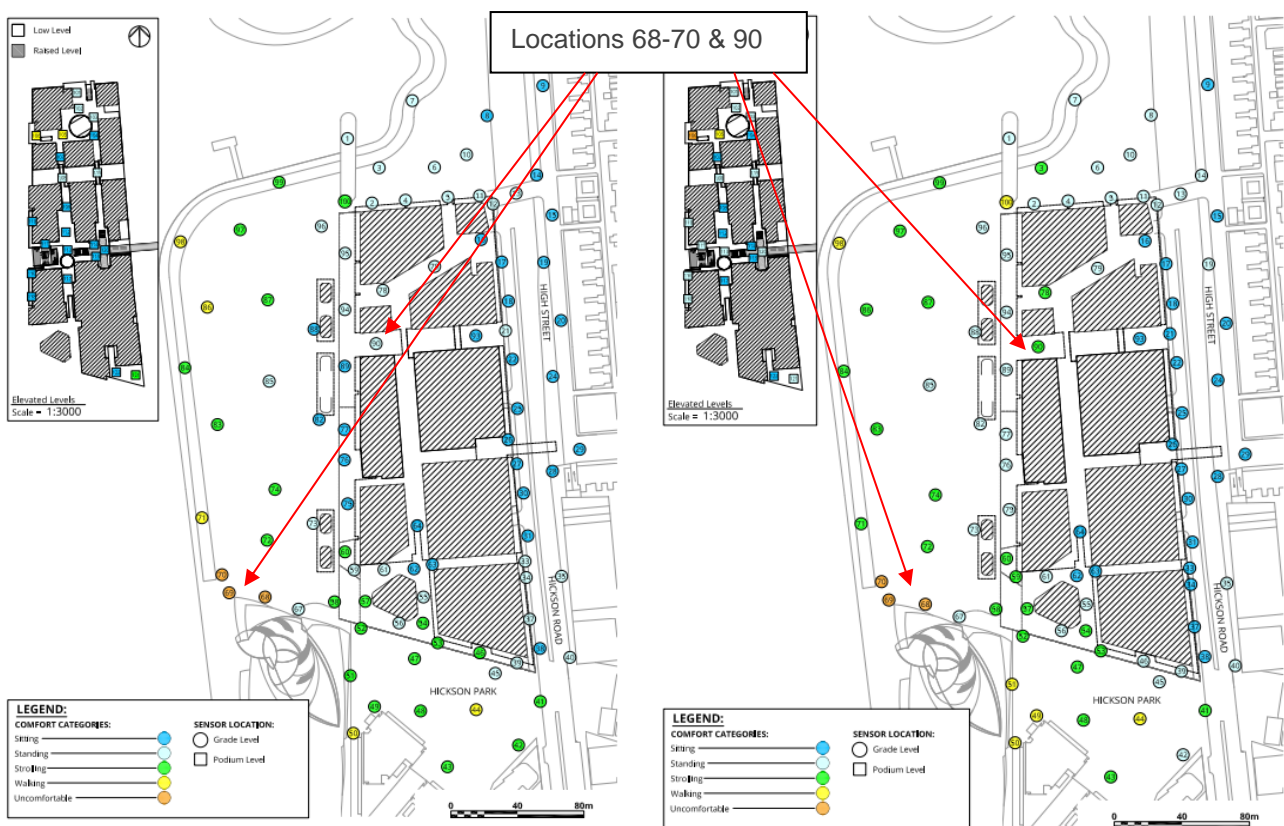
In summary, the following is noted from the assessment:

- Footpaths:
 - Sitting or standing wind conditions are predicted immediately surrounding the proposed massing.
 - Some locations were observed to achieve walking conditions to the south, west and north of the proposed massing. However, these wind conditions are acceptable for the intended pedestrian use.
 - Some uncomfortable wind conditions are predicted along Barton Street and Wulugal Walk near the corner of Crown Sydney Hotel Resort (notably locations 68, 69 and 70). These are primarily due to wind accelerating around corners of Crown Sydney Hotel Resort similar to the existing conditions.
- Entrances:
 - The exact location of entrances is not known at this stage. However, from the wind microclimate assessment, RWDI have determined that wind speeds in most areas along the building perimeter are expected to be comfortable for sitting or standing use which is appropriate for building entrances.
- Public Parks:
 - The wind conditions in Harbour Park to the west are predicted to be comfortable for standing use toward building envelopes and strolling and walking use closer to the waterfront, throughout the year.

- Hickson Park would have a mix of strolling and walking wind conditions throughout the year. Conditions suitable for strolling or walking are considered too windy for the intended use of longer duration stay activities.
- Elevated Level(s):
 - Wind conditions on the elevated levels are predicted to be acceptable (sitting or standing wind conditions) at the majority of the locations.
 - There are some locations at the west side of the elevated level where windier than desired conditions (measurement locations 105, 106) are predicted throughout the year.

Overall, when considering the MOD 9 proposal, the safety exceedances identified in the existing scenario for locations in Hickson Park and near the “Urban Theatre” will be mitigated. However, wind conditions at measurements location 70 on Wulugul Walk (pre-existing), two new measurement locations 68 and 69 (Barton Street walkway), and location 90 at the western edge of Street C, are expected to exceed the safety threshold (refer figure below).

Figure 64 Proposed (no landscaping) Wind Conditions Showing Exceedance Locations



Picture 24 Proposed (no landscaping) Summer

Source: RWDI

Picture 25 Proposed (no landscaping) Winter

Source: RWDI

MOD 9 Proposal with Landscaping

In order to demonstrate that MOD 9 can achieve appropriate wind comfort and safety levels throughout the year, the MOD 9 envelopes with the inclusion of the indicative conceptual landscaping scheme as outlined within Section 4.2.11 of the Urban Design Report (refer **Appendix E**) has been tested. With the addition of landscaping features such as 3 to 5 metre high trees and the potential inclusion of canopies/trellis’ to 3 metres in height, reduced wind speeds are expected across the site. The MOD 9 scheme including landscaping will result in calmer wind conditions throughout the year in most locations. For clarity, the indicative landscape scheme contained within the Urban Design Report is illustrated below.

Figure 65 Indicative Landscaping Arrangement for Wind Mitigation



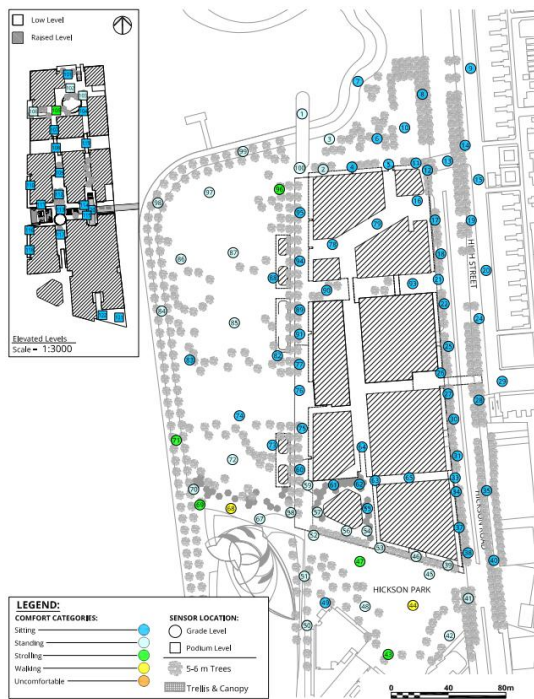
Source: Hassell

It should be noted that landscaping arrangement is conceptual only and subject to future detailed design.

In summary, the following is noted:

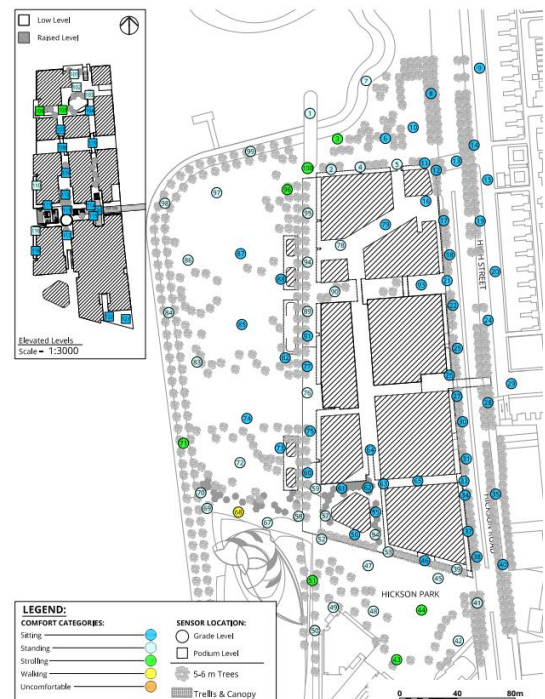
- The majority of the strolling wind conditions expected to the south of the proposed massing on Barton Street and Hickson Park, would become either suitable for sitting or standing use, with a few additional strolling wind conditions at localised areas.
- The notably windy conditions on the Barton Street Walkway and Wulugul Walk, close to Crown Sydney Hotel Resort are improved considerably.
- The majority of locations along Barangaroo Avenue are suitable for sitting and standing throughout the year.
- Wind conditions on the elevated levels including on the Barangaroo Steps linking to High Street are predicted to be calm throughout the year and suitable for passive occupant use.
- Wind conditions in Hickson Park are found to be comparable or improved when compared to the existing configuration.
- The majority of the safety exceedances expected at the proposed configuration are mitigated with the addition of the landscaping features.

Figure 66 Wind Conditions for the MOD 9 Scheme (including landscaping)



Picture 26 Wind Conditions During Summer

Source: RWDI



Picture 27 Wind Conditions During Winter

7.10.3. Mitigation Measures

RWDI has recommended the following with regards to future detailed design considerations:

- Proposing entrances close to locations where strolling or walking wind conditions are predicted should be avoided.
- The indicative landscaping scheme improves wind conditions of affected areas throughout the precinct. This strategy should be refined throughout future detailed design stages to further improve wind conditions.
- Given the sites exposure to prevailing winds from the waterfront and the localised downwashed winds from the MOD 9 massing, Crown Sydney Hotel Resort and One Sydney Harbour, the consideration for both vertical and horizontal elements to enhance the wind conditions for the affected areas within Central Barangaroo should be considered.

7.10.4. Conclusion

Overall, the Pedestrian Wind Environment Study prepared by RWDI outlines that MOD 9 is predicted to satisfy the wind comfort criteria for the intended use of each area, subject to implementation of the proposed mitigation measures. In particular, the overall built form and landscape design will be further refined throughout the detailed design phase and subsequent future SSDAs to further improve wind conditions. Future detailed SSDAs will be required to submit detailed wind assessments to support future proposals.

7.11. NOISE AND VIBRATION

An Acoustic Impact Statement has been prepared by Acoustic Logic (**Appendix W**) in response to Item 14 of the DGRs which requires an assessment of the potential noise impacts and identification of relevant mitigation measures. The Acoustic Impact Statement has been prepared in accordance with the *NSW EPA Noise Policy for Industry*, the *Road Noise Policy*, *Interim Noise Construction Guideline* and *Development Near Rail Corridors and Busy Roads – Interim Guideline 2008*. The NSW Independent Liquor and Gaming Authority, Infrastructure SEPP and the ADG have also been considered in the assessment.

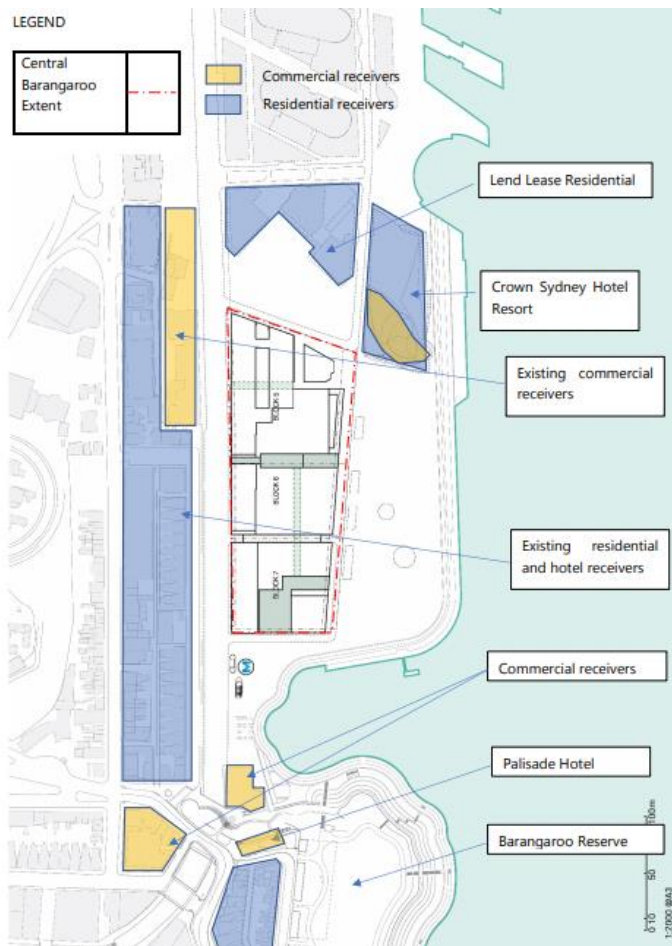
The report addresses both the intrusion of external noise sources into future land uses, as well as the acoustic impact of noise generated by the proposal on the surrounding environment including operational noise, traffic noise, mechanical plant and equipment, and construction noise and vibration.

7.11.1. Existing Noise Environment and Sensitive Receivers

Central Barangaroo is surrounded by the following existing sensitive noise receivers (**Figure 67**):

- Public domain and Barangaroo Reserve to the north (including Hotel and residential properties),
- Crown Sydney Hotel Resort to the south-west (including residential receivers),
- Darling Harbour and Balmain to the west,
- To the south – Hickson park, passive recreational public domain, Lendlease residential developments, and Commercial towers beyond, and
- To the east – residential dwellings on Hickson Road and High Street, commercial and hotel development along Hickson Road and Kent Street beyond, residential dwellings and serviced apartments on Kent Street.

Figure 67 Surrounding Sensitive Receivers



Source: Acoustic Logic

Noise monitoring has been undertaken in and around the Barangaroo areas as part of the approved Concept Plan and subsequent modifications. Baseline noise levels have been adopted from the previous noise report for 'One Sydney Harbour Residential Building R4A – Construction and Operational Noise Report' dated 28 July 2016.

These noise levels were established prior to significant works being undertaken as part of the Barangaroo precinct and therefore are not impacted by construction noise which currently exists. **Figure 68** below outlines the relative noise levels at locations within proximity to the site. These locations were identified as they represent the existing ambient and background noise environment.

Figure 68 Historical Noise Monitoring

Logging Site	Monitoring Location	Rating Background Noise Level, dB(A) L ₉₀				Equivalent Continuous Sound Level dB(A) L _{eq}				Consultant
		Day	Evening	Night	Saturday	Day	Evening	Night	Saturday	
1	Level 4, The Bond 30-38 Hickson Road	53	53	49	51	62	61	57	60	Arup
2	Middle of Barangaroo South Site	52	50	45	50	56	54	50	56	Arup
3	Adjacent to Sussex Street and Shelley Street	60	59	49	57	67	66	62	66	Arup
4	Adjacent to King Street Wharf Boulevard	52	60	46	48	60	62	60	60	Arup
5	3 High Street, Millers Point	47	44	41	45	58	55	51	55	WM
6	18 Merriman Street, Millers Point	46	44	40	46	58	55	50	56	WM
7	25 Edward Street, Balmain East	49	45	40	46	67	51	47	56	WM
8	3 Darling Island Road, Darling Island	47	44	39	50	54	49	46	56	WM

7.11.2. Assessment

Noise Intrusion from Existing Sources

Acoustic Logic have assessed environmental noise sources on the amenity of future occupants of Central Barangaroo (post MOD 9) with reference to the following standards and guidelines:

- Infrastructure SEPP
- *Development Near Rail Corridors and Busy Roads - Interim Guideline (DNRCBR)*
- AS NZS 2107-2016 Acoustics - Recommended design sound levels and reverberation times for building interiors
- *NSW Apartment Design Guide (ADG)*

Traffic Noise

Potential traffic noise impacts on future residential components of the proposal have been assessed 'in-principle' to confirm that MOD 9 is capable of complying with the relevant noise amenity criteria. Future detailed SSDAs will assess traffic noise impacts in further detail to ensure compliance.

A summary of the internal noise level criteria for future residential uses within the site where windows are closed is provided in the figure below. This incorporates the requirement of relevant legislation previously mentioned.

Figure 69 Project Traffic Noise Assessment Criteria for Future Residential Uses

Space /Activity Type	Internal Use	Assessment Criteria *
Residential	Bedrooms	35 dB(A)L _{eq(9hr)}
	Other Habitable Rooms Living rooms	40 dB(A)L _{eq(15hr)}
Child Care Centres	Child Care Centre	40 dB(A)L _{eq(15hr)}

* Where noise levels exceed the tabled values by more than 10 dB(A) with ventilation openings to 5% of the floor area, provide a ventilation system that complies with BCA with windows closed.

Source: Acoustic Logic

Traffic noise impacts from the following roadways have been considered:

- Western Distributor / Bradfield Highway, and
- Hickson Road

The Western Distributor / Bradfield Highway has been assessed based on existing traffic volumes during peak free flowing periods. Traffic volumes utilised in the assessment for Hickson Road have been adopted from the Transport Management and Accessibility Plan (TMAP) (Appendix I). The highest noise levels will occur along the eastern facades, primarily due to the high volume of traffic along Hickson road, as well as the Western Distributor at higher levels of the built form.

The predicted traffic noise levels are relatively moderate with the worst case noise levels of west facing facades being 66-67dB(A). The corresponding night-time level would be 61-62dB(A) and the corresponding daytime level would be 65-66dB(A). Overall, traffic noise intrusion into the residential components of Central Barangaroo could be mitigated with moderate acoustic treatments to the respective façades, such as medium to heavyweight single glazing.

Assessment of traffic noise intrusion into the commercial component of the development will be addressed as part of the specific design and development of each development block to enable suitable internal acoustic amenity is reflective of the use.

The Infrastructure SEPP contains provisions for internal noise levels under natural ventilated conditions, whereby, the allowable internal noise goal is permitted to be 10dB(A) higher than when windows are closed. Acoustic Logic have indicated that a 10dB(A) reduction across the façade is typically achieved with windows open which is sufficient to satisfy the BCA (i.e. 5% of floor area). Thus, the external criteria effectively become 60dB(A) for living areas and 55dB(A) for bedrooms. Where the external traffic noise level exceeds these values, alternative sources of ventilation may be required.

Acoustic Logic have recommended the incorporation of wintergardens as these provide an additional noise buffer between the external façade and windows facing onto the wintergardens, even where the wintergarden facades remain partly open. This should be considered on facades impacted by significant external noise sources without having to introduce mechanical ventilation.

An 'in principle' assessment of potential noise impacts from entertainment and community activities within the waterfront public domain area (Harbour Park) has also been provided. It is noted that noise from this public domain area will be controlled in accordance with its own specific management plan. Acoustic Logic have anticipated that the requirements of the City of Sydney Council 'Event Guidelines' (February 2018) would be adopted for this space. This nominates the following criteria:

54. Noise from any amplified music or notification system used at the event must not exceed 65 LAeq 15 minute when measured [at the nearest affected receiver].

With regards to future residential receivers, it has been assumed that these events will be relatively infrequent and time limited to between 7am and 10pm, the adoption of a noise level criterion 5 dB(A) higher than the 40 dB(A) Leq (15hour) traffic noise criterion would be reasonable. The most impacted facades would need to provide 20 dB(A) noise reduction, which would typically be provided by a standard façade.

Metro Noise & Vibration Impacts

As Barangaroo Station will be completed prior to the occupation of any development at Central Barangaroo, only operational noise and vibration impacts have been considered. Barangaroo Station is situated underground in the vicinity of the precinct, as such, the impacts are limited to ground-borne vibrations and ventilation openings.

Noise and vibration impacts from Barangaroo Station have been assessed as part of the CSSI approval for station and tunnelling works (CSSI 7400). This assessment established noise and vibration criteria for the project that are broadly in accordance with relevant guidelines.

Sydney Metro have advised that the track in the vicinity of Barangaroo be provided with "high attenuation" track and that all relevant receivers have been considered when assessing noise/vibration levels. With these high attenuation treatments in place, Acoustic Logic have determined that residential receivers above the railway track at Barangaroo will be subject to noise and vibration levels below the assessment criteria.

On this basis, the proposal does not need to incorporate any additional noise or railway vibration mitigation measures as the "at track" treatments proposed by Sydney Metro will fully mitigate ground borne vibration impacts. It is recommended that future acoustic assessments accompanying subsequent detailed SSDAs confirm the findings of previous assessment through additional measurements to ensure vibration and structure-radiated noise levels comply with the DNRCBR guideline.

When future detailed SSDAs are prepared for particular stages of Central Barangaroo, the relevant acoustic assessment should be made to inform the design and assessment of the proposal. Any residual impacts from the railway can be addressed as required to maintain an appropriate level of amenity for the future uses.

Operational Noise Generation

Potential noise sources would include activity-based noises such as retail food and beverage uses, entertainment outlets and plant and equipment emissions. The development will also generate minor additional vehicle movements on the adjacent road network. These operational noise generation sources have been assessed in accordance with the EPA Noise Policy for Industry (**NPfI**) guidelines and the NSW Liquor and Gaming requirements, where relevant.

Retail and Commercial Uses

The proposal includes a mix of commercial development including office, general retail and food and beverage uses. General retail and office related uses will likely generate low environmental noise impacts limited to deliveries and movement of materials which would occur within an enclosed basement. Primarily, the food and beverage and entertainment uses will potentially generate higher levels of noise, typically from patrons utilising outdoor dining areas. Licensed premises will be required to comply with the noise requirements of the NSW Liquor and Gaming.

Future Residents Within Central Barangaroo

External dining areas will likely have noise impacts on future residents within Central Barangaroo. Outdoor dining areas will generally be located on the ground floor and awnings or structures will provide a level of acoustic screening for residents. Mitigation of noise impacts would involve the implementation of various physical treatments and management practices (discussed later in this section of the EAR). Future SSDAs will be required to undertake detail acoustic assessments that will accompany the relevant applications.

Existing Residents Outside the Development Site

The residential receivers on High Street and north of the Hotel Palisade, and the future residential occupants of the Crown Sydney Hotel Resort and Lendlease developments would be the most impacted receivers in respect of noise emissions from food and beverage outlets. The cumulative noise emissions to these receivers should fully comply with criteria established using NPfI guidelines, as well as complying with licencing conditions imposed on the tenancies.

Noise from external dining areas has been assessed in-principle based on indicative seating areas. The likely cumulative noise impacts of the development are therefore determined based on the following:

- A sound power level per patron of 74dB(A) Leq or 77dB(A) L10 with 1 in 2 talking at any one time. This noise level would be representative of vocal effort within a loud outdoor dining area.
- Noise breakout from internal areas can be mitigated via acoustic treatments and management controls and as such will be minimal in comparison with outdoor patrons.
- Noise emissions associated with outdoor patrons has been provided in principle. The proposed numbers are not reflective of the final or proposed patron volumes but are included for insight into patron capacities. The assessment has been based off 1 patron per sqm of outdoor space.
- The model assumes that all outdoor dining areas are licensed.

However, it should be noted that:

- Actual numbers would depend on distribution along length of the site, size of premises and final background noise level.
- Not all tenancies will necessarily operate into the evening period,
- Not all tenancies will incorporate outdoor seating, and
- Not all tenancies will be licensed.

A detailed assessment of outdoor dining areas will be undertaken as part of future subsequent SSDAs and in accordance with the development of a plan of management as recommended.

Traffic Noise Generation on Existing Roads

The potential for traffic generation on existing roads has been assessed using the ARUP Transport Management and Accessibility Plan – MOD 9 (**TMAP**). The TMAP concludes that the total volume of traffic generated across Barangaroo will be slightly lower than that previously assessed in the MOD 8 TMAP.

In this regard Acoustic Logic notes that:

- The potential for traffic noise generation has been assessed under previous modifications and found not to produce any adverse impacts.
- MOD 9 results in minimal increase in traffic generation when compared to the previous MOD 8 and is considered not sufficient to produce any audible difference in traffic noise.

On this basis, Acoustic Logic confirmed that the potential for additional traffic noise generation under this modification will be negligible and as such compliant with the Road Noise Policy.

Mechanical Plant

The proposal will include mechanical services equipment, however, as it relates to the Concept Plan, detailed plant selections and locations are unknown. As such a detailed assessment will be carried out as part of future detailed SSDAs. the cumulative noise emission levels from all plant and equipment should be designed to comply with the relevant *Noise Policy for Industry (NPfI)* guidelines.

Construction Noise and Vibration

The Acoustic Report has evaluated construction activities and developed a management plan for noise and vibration. The in-principle assessment outlines relevant noise and vibration objectives for which future construction activities should be managed, in accordance with the EPA's *Interim Construction Noise Guideline (ICNG)*. Effective mitigation measures have been recommended where possible to ensure noise and vibration objectives are achieved and impacts are minimised.

Construction noise impacts will be addressed in detail with future SSDAs, which will include assessment of individual activities/construction methods.

Excavation Works

Excavation works are expected to have no greater impact on surrounding receivers than the existing site works. Notwithstanding, it is expected that rock excavation using hydraulic hammers would likely exceed the residential noise management levels and should be managed in accordance with the management plan.

General Construction Works

The following noise levels are predicted for construction works:

- During erection of structure, it is the use of hand tools (angle grinders etc.) and concrete pumps which are the loudest typical activity (sound power levels of approximately 105dB(A)Leq(15min)).
 - Construction noise levels from concrete pumps and the like may marginally exceed the EPA “Noise Affected”/“Background+10dB(A)” management levels at residential receivers. Exceedances of the “Highly Noise Effected” level of 75dB(A) will be typically unlikely.
 - Noise levels at commercial receivers across Hickson Road are unlikely to exceed the 70dB(A) “Noise Affected” level.
- Noise from construction vehicles and material handling are unlikely to exceed the EPA “Noise Affected”/“Background+10dB(A)” management level. Exceedances of the “Highly Noise Effected” noise level are unlikely to occur.
- Slab finishing works (use of helicopter floats or similar) may potentially extend into the evening depending on the size of the slab and weather conditions. Where structure levels are at similar height to the High Street receivers, exceedances of the “Noise Affected”/“Background+10dB(A)” may occur. Exceedances of the “Highly Noise Effected” level of 75dB(A) at the residences would be unlikely to occur.
- Once construction of the building shell is complete, noise from hand tools will be relatively low, as the new building façade will provide considerable noise attenuation. Once the building shell is largely

complete, use of hand tools in internal areas is unlikely to exceed EPA recommended levels at any sensitive receiver locations.

Construction Vibration

With the exception of Barangaroo Station, given the proximity to surrounding receiver locations, there will be no significant vibration impact associated with the construction works. Construction activities will occur above Barangaroo Station and management of certain activities (particularly demolition and excavation) will be required in order to protect these assets.

7.11.3. Mitigation Measures

Noise Intrusion

Traffic noise intrusion into Central Barangaroo from Hickson Road and the Western Distributor is capable of being mitigated by adopting appropriate façade constructions and providing alternative ventilation of habitable spaces (i.e. wintergardens) in accordance with the criteria from the DNRCBR, Infrastructure SEPP and the ADG.

With regards noise and vibration impacts from Barangaroo Station, the proposal and associated future development would not be required to incorporate additional railway vibration mitigations, as the proposed “at track” treatment proposed to be installed by the Metro development will fully mitigate ground borne vibration impacts.

Operational Noise Emissions

Operational noise emissions have been assessed with regards to retail food and beverage tenancies (including consideration of licensed premises), mechanical plant and equipment, and traffic noise generation on public roads.

The preliminary assessment undertaken indicates the proposal is capable of complying with the relevant noise emission criteria for all surrounding receivers through the adoption of appropriate mitigation and management measures which will be defined at detailed DA stage, noting:

- Placement of outdoor dining spaces where they can be screened from the residential dwellings. Typically they would be located under solid awnings or set back within building overhangs.
- Use of absorptive linings to surfaces where practical to prevent excessive reverberation.
- Limiting of outdoor music noise levels, whether recorded or live.
- Time/external patron/activity restrictions.
- Façade and wintergarden treatments, and the adoption of “windows closed” criteria to the proposed dwellings may be employed to further reduce noise intrusion into habitable spaces of apartments above.
- A management plan should be developed to regulate noise from food and beverage outlets (particularly external dining and licensed premises) to ensure adequate acoustic amenity for existing and future receivers. It should consider any façade treatments and recommend noise emission limits for each tenancy.
- Noise emissions from plant and equipment is capable of being fully mitigated through appropriate siting, selection and acoustic treatments (e.g. silencers and barriers).
- The increase in vehicle movements is minor and would not result in adverse impacts, thus not requiring mitigation.

Construction Activities / Phases

For general construction works, Acoustic Logic have recommended the following:

- Location of concrete pumps such that they are screened from residential receivers where practical. Where concrete pumps cannot be screened, maximum proximity to residential receivers should be maintained as practical.
- Concrete agitator trucks should not arrive at the site outside of the approved construction hours.

- For activities where acoustic controls and management techniques still cannot achieve the “Noise Management”/“Background+10dB(A)” noise levels, implement a notification process whereby nearby development is made aware of the time and duration of noise intensive construction processes.
- In any case, close consultation with residential stakeholders should be undertaken to ensure that noise associated with concrete pours and intense construction works is managed accordingly.

During the construction activities/phases, noise and vibration monitoring, reporting and response procedures will be implemented as part of future detailed SSDAs. Noise and vibration monitoring may either consist of manned and/or unmanned measurements in the event complaints are received during construction work phases. The following process should be considered:

- Determining the offending plant/equipment/process
- Locating the plant/equipment/process further away from affected receiver(s) if possible
- Implementing additional acoustic treatment in the form of localised barriers, silencers etc.
- Selecting alternative equipment/processes

Where potential noise exceedances occur, noise and vibration mitigation and management measures will be considered for implementation where feasible and required, including:

- Selection of alternate appliance or process
- Acoustic barriers or silencing devices
- Treatment of specific equipment
- Establishment of site practices
- Developing a noise and vibration management plan in accordance with ICNG guidelines.

7.11.4. Conclusion

Overall, noise and vibration impacts are considered acceptable and potentially adverse impacts are capable of being mitigated at the detailed design phase through implementation of appropriate physical and management measures. Noise and vibration impacts will be further assessed as part of future detailed SSDAs which will incorporate specific mitigation measures where required.

7.12. AIR AND ODOUR

An assessment of air and odour impacts associated with the proposed modification, and identification of relevant mitigation measures, is required in accordance with Item 14 of the DGRs. Accordingly, AECOM have prepared an Air Quality Impact Assessment (**AQIA**) of air quality and odour impacts with the construction and operation associated with future development that would be facilitated by MOD 9 and is provided at **Appendix V**. It is noted that noise impacts and mitigation measures are assessed in **Section 7.11** of the EAR.

The report contains a qualitative impact assessment to identify the likely potential impacts to air quality (including odorous air pollutants) at nearby existing and future sensitive receptors during construction and operation. These have been assessed in accordance with the relevant assessment criteria established in the AQIA based on the EPA *Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales* and other relevant policies.

7.12.1. Assessment of Air Quality (Including Odorous Air Pollutants)

Consistent with previous air quality impact assessments conducted by AECOM for Barangaroo South, the following pollutants have been considered for the assessment of Central Barangaroo (noting many pollutants will not be present due to completion of remediation):

- Total suspended particulates (TSP);
- Particulate matter equal to or less than 10 microns in diameter (PM10);
- Particulate matter equal to or less than 2.5 microns in diameter (PM2.5);

- Oxides of Nitrogen (NO_x);
- Benzene, toluene, ethylbenzene, and xylenes (collectively as BTEX);
- Phenol;
- Heavy metals (cadmium, chromium VI, copper, lead, mercury, nickel, zinc) attached to TSP;
- Benzo(a)pyrene;
- Naphthalene; and
- Odour.

7.12.1.1. Construction Impacts

AECOM have identified potential air quality and odour impacts from the construction phase, including:

- Dust emissions from excavation, materials handling and land forming activities;
- Heavy metals detected within the soil may be released to the air attached to the dust;
- Combustion emissions from mobile and plant equipment during construction; and
- Odour impacts from exposure of soil contaminants during excavation activities and treatment of contaminated ground water during excavation

Potential Heavy Metals and PAH Impacts from Dust Emissions

The greatest potential air quality impacts on nearby receptors during construction, particularly during excavation activities, are dust generating impacts (and associated minor impacts from soil contaminants). There is also the potential for minor cumulative impacts associated with construction of Barangaroo Station and other development projects within Barangaroo. Dust generating impacts would need to be assessed in detail as part of future SSDAs in accordance with relevant policy requirements.

Based on previous studies undertaken for Barangaroo South, the potential for soil contaminants such as heavy metals, PAHs, and cyanide are relatively low. Previous air quality impact assessments undertaken over the Barangaroo South site have predicted relatively low ground concentrations at sensitive receptors which were predicted to be well below the relevant EPA criteria. These results are further supported by monitoring data conducted at Barangaroo South for 24 hours every six days during 2017 which indicated:

- All monitoring results for both total PAHs (as Benzo(a)pyrene) and Benzo(a)pyrene were found to be below the limit of detection (<3ng/m³ and <2ng/m³ respectively) and below the 1-hour average criterion for Benzo(a)pyrene of 0.4 µg/m³;
- The annual average concentration for lead was found to be 0.00495 µg/m³ which is well below the annual average criterion of 0.5µg/m³;
- Small traces of chromium, cobalt, manganese, nickel, tin and vanadium were well below the relevant 1-hour air quality criteria; and
- Concentrations of all other metals monitored were below the relevant limit of detection

Provided heavy metal proportions are similar or lower to those reported in Barangaroo South, no significant impacts to ambient air quality from heavy metals are anticipated at Central Barangaroo.

Potential Combustion Impacts

The works will primarily use electrical and diesel and/or petrol-powered plant and equipment. The combustion of diesel fuel generates a range of pollutant emissions, primarily oxides of nitrogen (NO_x) and particulate matter (including PM₁₀ and TSP), as well as volatile organic compounds (VOCs) (particularly benzene, toluene, ethylbenzene, and xylenes, which are known collectively as BTEX). Other minor emissions, such as carbon monoxide and sulfur dioxide, are also emitted from combustion engines, but are considered to be lower risk than particulate and NO_x emissions due to their generally higher trigger values. Should onsite diesel generators be required, air quality impacts will need to be assessed for combustion emissions as part of future detailed SSDAs.

Potential impacts from combustion emissions during construction can be managed and reduced through implementing the proposed mitigation measures outline in **Section 7.12.2**.

Potential Odour Impacts

During construction related activities there is the potential for odour emissions from excavation, soil and onsite treatment of groundwater. Excavation of contaminated material within the EPA Declaration area is being undertaken as part of the Barangaroo South works. If any contaminated material is encountered during excavation of the basement there is potential to generate gaseous emissions from contaminants and associated odours.

There is also the potential to generate odour emissions from the operation of the proposed onsite water treatment plant which would be used to treat groundwater from the site during excavation. Ground water sampling undertaken from six onsite wells by SESL Australia at Block 7 in June 2017 detected no potential contaminants of concern. One sample, however, was found to contain a sulphurous odour, which indicates there may be the potential for odour emissions during operation of the water treatment plant.

A water treatment plant for treating groundwater during excavation was employed at Barangaroo South. It is intended to utilise a similar operation for Central Barangaroo. Water modelling for water treatment plant activities was undertaken by AECOM in 2014. This predicted odour emissions at nearby sensitive receptors were well below relevant odour criteria. As such, based on adopting similar operations undertaken at Barangaroo South, the potential for significant offsite odour impacts is considered unlikely.

Future detailed SSDAs may need to consider potential odour impacts to account for additional sensitive receptors within the Barangaroo South development, Block Y and Barangaroo Station (once operational).

7.12.1.2. Operational Impacts

AECOM have identified potential air quality and odour impacts during the operational phase of the development from the following sources:

- Increased vehicle combustion emission from traffic generating development
- Minor air emissions from commercial businesses
- Beneficial air quality impacts from inclusion of green roofs

Emissions from Traffic Generating Development

Changes to traffic movements along Hickson Road and the newly proposed Barangaroo Avenue would result in changes to motor vehicle emissions from fuel combustion, fluid evaporation, brake and tyre wear, and re-suspended road dust. Emissions from motor vehicles would comprise mainly hydrocarbons, PM10, PM2.5, CO, NOx and SO2.

While MOD 9 would result in a slight increase in traffic volumes; changes to associated vehicle emission rates between approved Concept Plan and MOD 9 would be relatively minor based on the proposed forecast traffic volumes. In addition, MOD 9 proposes to redirect and reduce the impact of vehicular traffic by removing vehicular traffic from the western side of Block 5 and 6. This would aid in limiting vehicle emissions at these locations.

The dispersion of vehicle emissions is less affective when development along a road corridor is confined, restricting the airflow which would typically disperse and transport air pollutants from vehicles away from the source area (urban canyon effects). To this point, MOD 9 includes the following design components which have the potential to minimise adverse air quality impacts on sensitive receivers from vehicle emissions:

- Variations in building heights within Blocks 5, 6 and 7 and interspersions with cross streets between Blocks 6 and 7 to minimise the formation of urban canyons.
- The proposed modifications to the street network through redirecting and reduce vehicular impacts from the west side of Blocks 5 and 6 is expected to remove potential vehicle emissions at this location.
- The tallest building envelope component on the northwest corner of Block 7 is setback from Hickson Road and is largely surrounded by open space which would facilitate the dispersion of emissions.
- Open areas of landscaped public domain at the north and south ends of the 3 blocks (Nawi Cove and Hickson Park) will facilitate dispersion and contribute to improved air quality, along with the extension of Harbour Park.

- Public and community facilities would largely be sited within the proposed Harbour Park area to the west of Block 5, 6 and 7 away from Hickson Road.
- Landscaping and the provision for green roofs would aid in maintaining ambient air quality.

Emissions from Commercial Activities

MOD 9 provides for various commercial and retail uses within Central Barangaroo. Specific uses in the commercial tenancies are unknown and will be determined as part of future detailed SSDAs. Potential air emissions may include sources such as food product manufacture, laundries and dry cleaners, and printing, publishing and recorded media establishments.

Overall, emissions from future commercial uses will only contribute a minor proportion of air emissions to the Sydney region when compared to other major sources such as vehicle and industrial emissions. Commercial activities typically do not require environmental protection licences (**EPL**) under the NSW *Protection of the Environment Operations Act 1997 (POEO Act)*. As such no significant air quality emissions are anticipated from the operation of commercial facilities within the development area at this stage.

Beneficial Impacts

MOD 9 makes provisions for the future incorporation of various green roof spaces that would be specified, designed and delivered as part of future detailed SSDAs. Green roofs which include appropriate planting would provide a number of environmental benefits including improving air quality and overall amenity, whilst also improving local aesthetics. The provision for greens above Blocks 5, 6 and 7 may incorporate intensive and/or extensive designs including a mix of trees, shrubs and grasses which could abate potential pollutants.

The strategic placement of green infrastructure (**GI**) such as open space and vegetation areas, including streetscape landscaping, will need to be carefully considered as part of future detailed SSDAs, given they can potential disrupt the dispersion of air pollution.

AECOM have provided recommendations for future GI along Hickson Road which would be classified as a 'deep street canyon'. As such, AECOM recommend the provision of green walls only and avoiding trees, hedges and shrubs along the Hickson Road streetscape to mitigate potential restrictions to the dispersion of air pollutants.

7.12.1.3. Cumulative Impacts

Cumulative impacts to air quality may occur where construction of Central Barangaroo coincides with the construction works associated with the adjoining Barangaroo Station. However, it is noted that major dust generating works such as tunnelling and excavation activities have now been completed.

Construction periods for both Central Barangaroo and Barangaroo Station are expected to overlap between 2021 and opening of Barangaroo Station in 2024. Specifically, early staging works in Central Barangaroo including remediation and some excavation of basement structural works. Whilst the early stages of basement work for Central Barangaroo have been identified as notable dust generating activities, the coinciding station fit out works for Barangaroo Station are unlikely to result in any significant dust generating activities. As such cumulative impacts associated with construction of Barangaroo Station and enabling works for Barangaroo Central are likely to be minor in nature.

AECOM have also considered potential cumulative impacts from the concurrent construction of development in Barangaroo South. Given development works in Barangaroo South are largely complete, no significant cumulative air quality impacts are anticipated.

SSDAs for the excavation of Blocks 5, 6 and 7 should assess the cumulative potential air quality impacts on nearby sensitive receptors.

7.12.2. Mitigation Measures

Whilst additional air quality impacts are not considered likely in the construction of Central Barangaroo, the following mitigation measures should be applied during construction and should be detailed in the site Construction Environmental Management Plan (**CEMP**):

- Implement an Air Quality Monitoring Program, similar to air quality monitoring practices undertaken for the Barangaroo South; particularly for site excavation works.
- The program should include air monitoring locations along the southern and eastern boundaries.

- Watering of stockpiles, exposed areas and roads when required to maintain a moisture content that minimises dust generation;
- Use water sprays and/or surfactants wherever and whenever necessary.
- Promptly removing and disposing of spilled materials which may cause a dust nuisance.
- Restrict vehicle movements to within designated access paths; and minimise haul road lengths where possible;
- Ensure machinery is working correctly.
- Remove excavated material and any dust generating materials from site as soon as possible, unless being reused onsite.
- Dust suppression of exposed areas and stockpiles would be undertaken as required using a water cart or equivalent piece of equipment.
- Erect windbreak barriers at the site boundary if required.
- Implement site speed limits
- Cover loads during transport.
- Maintain the complaints management system.
- Adjust work practices (as required) based on wind observations and real time monitoring results.
- Undertake good housekeeping practices to minimise dust on hardstand areas.
- Implementation of any additional mitigation options as required by the Project's Environmental Manager or as identified in future development applications

In terms of mitigating potential operational impacts, detailed design proposals for Blocks 5, 6 and 7 will further explore the incorporation of green roof spaces which have the potential to reduce air pollutant concentrations through both direct and indirect pathways.

Planning and design considerations outlined in Section 6.3 of Appendix V should also be considered as part of future detailed SSDAs to avoid, minimise and manage vehicle emissions from Hickson Road. Further, future detailed SSDAs will be required to identify and assess potential air quality impacts associated with future construction and operational activities.

7.12.3. Conclusion

Overall, provided that a detailed AQIA for each individual Development Applications specific to the Central Barangaroo is undertaken and appropriate project-specific mitigation strategies are implemented, no adverse effects on local air quality are expected to occur as a result of the proposed modifications to the Concept Plan.

7.13. CONTAMINATION AND REMEDIATION

DGRs item 18 requires that the proposal demonstrate compliance with SEPP 55 and contain an assessment and quantification of soil and groundwater contamination. Where required, the DGRs note that a Remediation Action Plan (**RAP**) must be prepared in accordance with SEPP 55 and guidelines produced under section 105 of the *Contaminated Land Management Act 1997*.

A suite of geotechnical and contamination investigations have been carried out across the site since the broader Barangaroo project inception in 2009 due to the site's history of soil contamination, import of impacted fill material, and previous land uses. Documents relevant to MOD 9 and submitted as appendices to this EAR include:

- Remedial Action Plan (**RAP**) prepared by JBS (dated May 2013) (**Appendix O**),
- Remediation Action Plan (**RAP**) Suitability Letter prepared by EDP (dated July 2021) (**Appendix P**),
- Current Site Audit Report (**SAR**) prepared by Environ Australia and accompanying Section B Site Audit Statement (**SAS**) obtained from the NSW EPA (dated July 2013) (**Appendix Q**), and

- Site Audit Statement (**SAS**) Applicability Letter prepared by NSW EPA accredited Contaminated Sites Auditor Ramboll (dated July 2021) (**Appendix R**).

It is noted that a summary assessment of MOD 9 against SEPP 55 has been provided previously in **Table 17**. An overview and assessment of the conclusions of the above-mentioned reports and supporting documentation is provided in the following subsections.

7.13.1. Assessment

Remediation Action Plan (RAP) Suitability

To support the contamination assessments previously undertaken, EDP have prepared a letter (**Appendix P**) which assesses the suitability of the existing and approved RAP prepared by JBS (May 2013) (**Appendix O**). Both these documents have been provided to the appointed NSW EPA Site Auditor (Ramboll) who has provided a supporting statement to accompany MOD 9 (refer **Appendix R**). The key findings of the Site Auditor's review are provided further below in this section of the EAR.

EDP have noted that the SAR and accompanying Section B SAS (dated July 2013) requires the preparation of additional plans for the management of remediation. These plans will apply the framework of the RAP to the final design and construction program and will include a Remedial Works Plan (**RWP**), Validation Sampling and Analysis Quality Plan (**VSAQP**), Construction Quality Assurance Plan (**CQAP**), Construction Environmental Management Plan (**CEMP**) and Asbestos Management Plan (**AMP**). These additional plans will become the primary actionable plans during construction, designed to supplement the RAP with additional detail.

The RAP is considered generally in accordance with Managing Land Contamination, Planning Guidelines, SEPP 55 - Remediation of Land 1998 and Guidelines produced or approved under section 105 of the Contaminated Land Management Act 1997 in force at the time of writing. EDP have stated that Consideration of the amended SEPP 55 (2020) does not present any additional considerations necessary to be addressed as part of the remediation strategy.

EDP have provided a comparison of the design assumptions contained in Section 5.2 of the RAP and SAS/SAR with the MOD 9 concept basement design (refer **Table 25** below). Generally speaking, the proposed basement design and construction will comply with all relevant Australian Standards.

The RAP only requires the basement design assumptions to be applied as they relate to the 'southern basement' (when two separate basements were envisaged previously), given Block 5 extends into the current declaration area.

It is noted that the declaration has since been lifted in June 2020, with significant areas of the Block 5 portion of the declaration area remediated.

Table 25 Comparison of RAP Assumptions and MOD 9 Basement Concept Design

No.	JBS RAP Assumptions (Section 5.2)	MOD 9 Concept Design
1	A high-density residential building is proposed to be constructed on the eastern portion of the site and be underlain by two basements constructed to a depth of 10 m below the current ground levels. The southern basement is partially located within the Central Barangaroo Site and also extends into the Declaration Area.	A mixed-use commercial, residential and retail with multiple buildings, underlain by a single consolidated basement constructed to a nominal depth of RL -12.2m below the current ground levels. The southern end of the basement (Block 5) extends into a portion of the former Declaration Area that has been remediated and validated.
2	Design requirements for at least the southernmost basement to control potential exposures to infiltrating seepage water. This includes the incorporation of groundwater control walls into the basement structure.	The proposed basement is to be constructed below the standing water table, requiring design requirements to control infiltration seepage. The proposed design considers groundwater control via perimeter retention wall, slab specification and wall cavity/plenum design.

No.	JBS RAP Assumptions (Section 5.2)	MOD 9 Concept Design
3	Two basement levels are proposed: upper and lower parking.	<p>The concept plan proposes four (4) basement levels, extending the equivalent of five (5) basement depths, with basement levels 1 and 3 being mezzanine levels. The proposed mixed use of basements is to include parking, plant rooms, retail and precinct managers office. Proposed basement uses include:</p> <ul style="list-style-type: none"> ▪ Level B1: Void over retail, loading dock, plant rooms ▪ Level B2: Retail mall – vaulted, plant rooms ▪ Level B3: Void over retail, plant rooms ▪ Level B4: Retail mall - vaulted, loading dock, plant rooms ▪ Level B5: Parking and plant rooms
4	<p>The perimeter walls of the basement groundwater retention wall system will include: Diaphragm walls, extending to and keyed into bedrock and generally constructed around the southern, western and northern boundary; and A secant pile or equivalent walls, extending to and keyed into bedrock and generally constructed along the eastern boundary. Where basement excavations extend into bedrock, exposed bedrock surfaces will be covered with shotcrete. Perimeter walls (diaphragm / secant piles) will be constructed with a minimum thickness of 600 mm and will be keyed into the bedrock (irrespective of the depth of the basement that will be constructed within them)</p>	<p>The perimeter walls of the basement groundwater retention wall system will be consistent with the RAP assumptions, with the following amendments: Perimeter walls (diaphragm) will be constructed with a thickness of ~1,200 mm and will be keyed into the bedrock (irrespective of the depth of the basement that will be constructed within them). Secant piles will be adjacent the sandstone in the east and south east and typically 900 mm in thickness. This is considered an equally acceptable construction method.</p>
5	In some areas a secondary reinforced concrete wall (treated with chemical additives for improved waterproofing) will be constructed within the perimeter walls as the internal car park basement wall.	Where excavation is into rock, following shotcrete, a secondary reinforced concrete wall will be constructed. Additional waterproofing will be considered only if required.
6	<p>A sealed plenum will be constructed by a 200 mm thick block work wall (bagged to provide a relatively air tight zone) immediately inside the reinforced concrete car park basement wall. The sealed plenum will be configured to: Collect and drain seepage water that may permeate through the perimeter and basement car park walls. Seepage water (if any) will</p>	<p>Carparks have a minimum of 600 mm plenum void, formed with 140 mm blockwork. Retail space is proposed to have a minimum 300 mm cavity, formed with 190 mm blockwork. The plenum is not proposed to have any additional sealant applied.</p> <p>Drains will be in place to collect and drain seepage water (if any) to a drainage sump</p>

No.	JBS RAP Assumptions (Section 5.2)	MOD 9 Concept Design
	<p>drain via a dish drain to a drainage sump located at the lowest basement level (away from the lift wells) from where it will be appropriately disposed of; and Vent vapours from seepage water that may permeate through the perimeter and basement car park walls. Vapour will be vented via a passive pipe riser to the height of the roof level of the above buildings. A second plenum, referred to as a ventilation plenum, is proposed to be constructed adjacent to and inside the sealed plenum as part of the car park ventilation system.</p>	<p>located in the lowest basement plant rooms (away from lift wells) where it will be appropriately disposed.</p> <p>No additional ventilation plenums are proposed, though pipe risers for passive venting are being considered along with the potential for mechanical ventilation. As seepage water is not to be captured or retained behind plenums, vapour risk is minimised.</p>
7	<p>The air exchange rate within the basement car park is maintained at least at 4 volume changes per hour.</p>	<p>Air exchanges in the proposed basement are expected to maintain a minimum of 4 volume changes per hour. Designed to meet or exceed Australian Standards.</p>
8	<p>Tar should be removed from the immediate vicinity of outer basement walls to the extent practicable, and basement designs and engineering controls should ensure that tar seepage into basements does not occur.</p>	<p>Regions of known tar in Block 5 have been remediated and validated by others, although it is expected that some minor localised tar deposits may still be present. Should additional investigation work during detailed design stages identify other areas of tar, these will be remediated in accordance with the JBS RAP and Remedial Works Plan currently in development.</p>
9	<p>Construction of compartments in the overall basement with each compartment adjacent to basement areas leaving a maximum of 2 exposed walls in contact with contaminated soil / groundwater.</p>	<p>Further design development will be undertaken post the Mod 9 application in relation to the detailing of all internal wall partitions. It is anticipated that large compartments will be created that may have up to 3 exposed external walls, though each will have plenums, and seepage drainage installed. These are anticipated to include compartments such as carparking levels, and retail floors. Each will have ventilation and/or air conditioning to ensure appropriate volume changes are achieved.</p>
10	<p>The basement groundwater retention walls system to comprise a secant pile wall, extending to and keyed into bedrock, with a reinforced concrete basement wall, constructed on the inside. A sealed plenum constructed immediately inside the reinforced concrete basement wall to include (a) passive ventilation to the atmosphere; and (b) dish drains that will drain any seepage.</p>	<p>Groundwater retention walls are to include a combination of diaphragm and secant walls. All walls will be keyed into bedrock. Reinforced concrete basement walls are only proposed where exposed bedrock forms the basement wall. Plenums are proposed for all external basement walls, and will include drains as a minimum, though passive ventilation is being considered as part of the design development.</p>

No.	JBS RAP Assumptions (Section 5.2)	MOD 9 Concept Design
11	Basement design plans to include engineering controls to ensure that contaminated groundwater does not accumulate in compartments which are ventilated to basement airspaces.	The perimeter drains proposed will be connected to a seepage collection network and a sump. The details of this system and the sump location are yet to be determined. Further detailed design will ensure no groundwater will accumulate in compartments that are ventilated to basement airspaces.
12	Basement levels should be maintained at lower pressure than occupied areas in accordance with AS1668.2 (Standards Australia 2002).	Further design development will be undertaken in relation to the basement pressure in accordance with the relevant Australian Standards. The mixed use for basement levels reduces the efficacy of this assumption as a management strategy, though positive pressure is expected from retail and office space due to air conditioning.
13	Sump rooms should be placed as far as possible from lift wells.	The location of sump rooms will be placed as far as possible from lift wells.

The MOD 9 basement concept design varies from the assumptions of the existing RAP, particularly with regards to changes relating to an increased basement depth, mixed use within the basement levels and enhance wall construction detail. The majority of RAP design assumptions are unchanged.

The design changes will be addressed through the development and implementation of the RAP, RWP, CEMP, CQAP, VSAQP and AMP. In addition, future SSDAs will provide further assessment, including an updated human health risk assessment (HHRA) and incorporation of the Block 5 former declaration area into the RWP and future site audits. Future SSDAs will also be required to demonstrate that the requirements of SEPP 55 are met.

Overall, EDP considers the RAP suitable to be adopted for MOD 9, with consideration to the requirements of the SAS/SAR which provide further details on management of contamination and remediation.

Site Audit Statement Applicability

Ramboll have assessed the suitability of the JBS RAP and SAR/SAS for the site with respect to the requirements of SEPP 55, having taken over the role as the NSW EPA accredited Contaminated Site Auditor in 2018. Ramboll have also considered EDP's assessment of the RAP and the implications of MOD 9 on the proposed site remediation strategy.

As previously discussed, MOD 9 comprises a series of mixed use buildings, new streets and public spaces over a common basement which spans across Blocks 5, 6 and 7 in the east of the site. The basement is designed to a nominal depth of 15m below ground level.

With regards to EDP's review of the RAP and the proposed MOD 9 concept design, Ramboll have concluded the following:

- The implications of variations in basement design and public domain development plans can be adequately addressed by the detailed design and additional documentation to be prepared (and approved by the Site Auditor) prior to the commencement of works. A further risk assessment to address retail and commercial usage within basements is also required.
- The JBS RAP (Rev H, May 2013) and the Central Barangaroo SAS/SAR (GN439B-5, 31 July 2013) are considered applicable to MOD 9 for the relevant area assessed in the RAP and SAS/SAR.
- The RAP and Central Barangaroo SAS/SAR did not address the portion of Block 5 located within the Declaration Area, which is included within the footprint of the proposed MOD 9 basement. Consistent with the findings of the Central Barangaroo SAS/SAR, it is recommended that remediation planning

documentation be prepared, and a site audit review of the proposed remediation be conducted, for the Declaration Area portion of the basement. Preparation of the additional documentation and completion of the audit review as part of future detailed SSDAs would be appropriate.

7.13.2. Conclusion

Overall, subject to implementation of the following recommendations the site will be able to be appropriately remediated and suitable for the intended land uses proposed under MOD 9:

- Development and implementation of the RAP, RWP, CEMP, CQAP, VSAQP and AMP.
- Future detailed SSDAs will need to provide further assessment of contamination / remediation, including an updated HHRA and incorporation of the Block 5 former declaration area into the RWP and future site audits.
- Future detailed SSDAs will be required to demonstrate that the requirements of SEPP 55 are met.

7.14. STORMWATER AND DRAINAGE

Item 15 of the DGRs requires that the MOD 9 outlines the proposed drainage and stormwater management on the site. ADP Consulting have prepared a Utilities and Infrastructure Report which outlines the integrated water management strategy and stormwater quality and drainage strategy for Central Barangaroo (**Appendix M**).

7.14.1. Integrated Water Management Strategy (IWMS)

The hydraulic and civil design for Central Barangaroo will incorporate water efficiency and conservation measures. The following initiatives have been identified as integral components of the IWMS:

- Best practice in demand reduction, water efficiency, metering and controls to reduce the water footprint of the buildings and the precinct.
- Harbour heat rejection avoiding water consuming heat rejection equipment such as cooling towers.
- Climate-appropriate landscaping and water sensitive irrigation techniques.
- Rainwater from non-trafficable roofs to be collected separately and used for irrigation and other non-potable uses.
- All stormwater leaving the site to comply with the Sydney Development Control Plan (**DCP**) 2012 stormwater pollution reduction targets.
- Best practice Water Sensitive Urban Design principles will be applied, including raingardens and biodiverse swales, where appropriate, to treat stormwater run-off
- Recycled water reticulation infrastructure for all non-potable water uses connected to on-site and off-site recycled water supply infrastructure.
- Investigate options to invest in regional water projects (similar in principle to carbon offsets and biodiversity offsets) to support water infrastructure in water stressed areas of regional NSW.

These initiatives will be further developed throughout the ongoing detailed design phase of the project in relation to future detailed SSDAs.

7.14.2. Stormwater Drainage

Stormwater drainage for Central Barangaroo is to be designed to enable rainfall runoff from and across the site to be safely and effectively managed and treated by appropriately sized drainage systems. Stormwater drainage is to comply with the the Sydney Development Control Plan (**DCP**) 2012 and 'City of Sydney Interim Floodplain Management Policy' requirements.

The external drainage system needs to cater for all flows up to and including the 1 in 100 year average recurrence interval (**ARI**) event for the associated catchments. The external catchments and the impact of any drainage flows from these catchments are to be separated from the internal catchments of Central Barangaroo. These external catchment flows need to be diverted around the Central Barangaroo development.

There are five existing 600 mm diameter pipe networks within the project boundary that currently convey stormwater drainage from the High Street area, Hickson Road, and Central Barangaroo through Central Barangaroo directly into Sydney Harbour. These existing pipe networks in Hickson Road within the Metro Station box area have been removed (in part) and replaced by an alternative stormwater drainage diversion system as part of the Barangaroo Station works.

External Catchment Areas

ADP identifies that there are two main catchments directly in relation to Central Barangaroo, including the Kent Street and Hickson Road catchments. The Kent Street catchment sits to the east of the site, is approximately 4.5 hectares and is characterised by residential areas and road reserves, flowing towards Hickson Road. The Hickson Road catchment is adjacent the site, approximately 0.92 hectares and is to be diverted to an external pipe network, which with the Kent Street catchment which in principle will discharge north west of Central Barangaroo into the harbour.

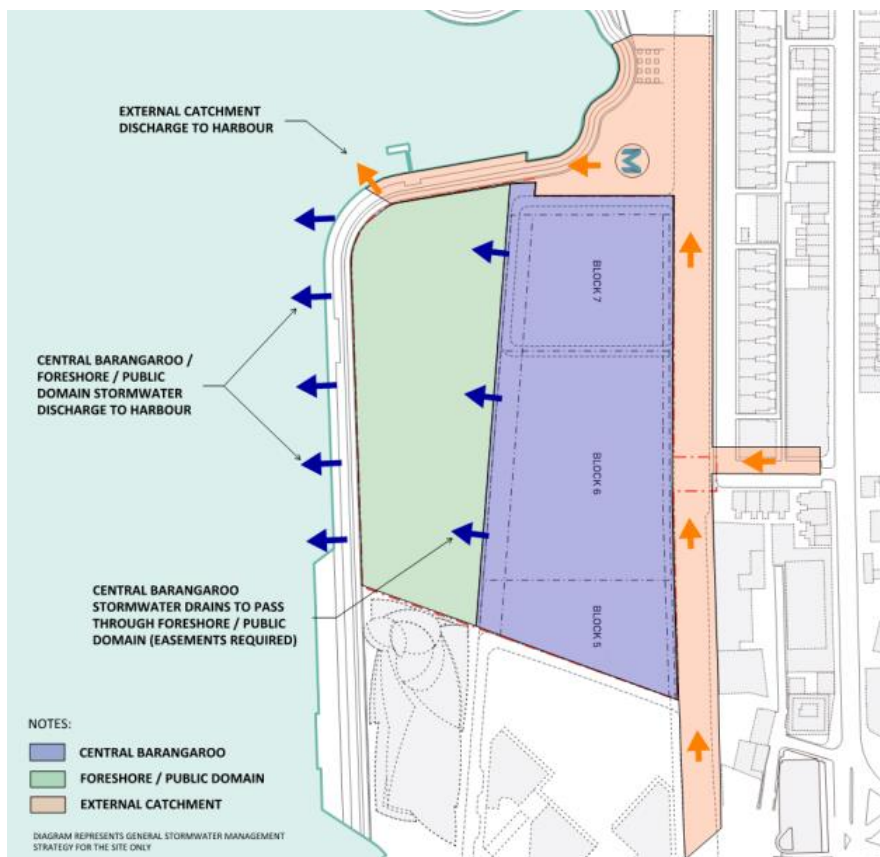
Internal Catchment Area

Due to the proposed locations internal roads and the public domain under MOD 9, Central Barangaroo is to be divided into three internal sub-catchments which are loosely defined by development blocks 5, 6 and 7. The drainage strategy for the internal catchment areas involves stormwater being drained independently of the external catchment areas in accordance with the beforementioned City of Sydney requirements.

The internal drainage strategy will make use of the 5 existing pipes and outlets that currently discharge directly into the Harbour. Central Barangaroo rainwater and stormwater runoff will be either captured and recycled or discharged directly towards the harbour in a westerly direction following appropriate treatment as required and is therefore not reliant on the north western pipe outfalls or Hickson Road drainage systems.

The drainage strategy and catchment areas for Central Barangaroo (including external catchments) is illustrated in the figure below.

Figure 70 Catchment drainage strategy for Central Barangaroo



Source: ADP / Hassell

The stormwater drainage design includes a conventional gravity system for the collection of all rainwater from roofs, podium, hardstand areas, laneways and roads, carpark areas, roads, landscaped areas and

terraces within the development. Stormwater from Central Barangaroo will either be captured for re-use in line with the overall Integrated Water Management Principles or discharge in a westerly direction with the public domain drainage to the harbour, through the series of existing 600mm diameter pipes, which will be replaced or augmented as required subject to a condition and capacity assessment of the existing outfall drains.

Proposed Flood Planning Levels

The proposed ground floor level for development blocks 5, 6 and 7 are a minimum of RL 3.5m AHD. The northern most point at the High Street steps will be raised slightly to RL 3.6m AHD. All minimum finished floor levels for Central Barangaroo reflect the PMF flood levels as indicated in the Hickson Road flood study undertaken previously by GRC (refer **Appendix M**).

7.14.3. Water Sensitive Urban Design

The Central Barangaroo public domain includes various landscape areas, interactive water features and a waterfront promenade which connects the site and built form to the harbour. This will maximise the visual and recreational amenity of Central Barangaroo and provides opportunities to incorporate vegetated Water Sensitive Urban Design (**WSUD**) elements.

The treatment strategy includes:

- Rainwater harvesting from building roofs, and stormwater collection from podium hardstand and laneways/roads, with reuse for toilet flushing and public domain irrigation,
- Active distribution of collected stormwater through integrated treatment swale and water features, and
- Overflow from the rainwater collection system combined with low flow runoff from the public domain passively dispersed through a series of stormwater treatment zones across the public domain (tree pits and raingardens).

Stormwater treatment for Central Barangaroo will comply with the stormwater pollution reduction targets outlined in the SDCP 2012, including:

- Total Suspended Solids (TSS) – 85%
- Total Phosphorus (TP) – 65%
- Total Nitrogen (TN) – 45%
- Gross Pollutants (> 5 mm) – 90%

Initial MUSIC modelling for the preliminary treatment strategy and WSUD measures for the site indicates that the proposal will achieve a high level of treatment in accordance with the SDCP 2012 pollution reduction targets.

7.14.4. Climate Change Considerations

ADP outlines the recent project climate trends both globally and across Australia. They also acknowledge how critical it is to the predicted increases in peak flows, storm surge and sea level rise across the site are considered and accommodated within the civil and stormwater design for Central Barangaroo. This will be achieved through careful consideration of appropriate flood levels and a factor of safety above the design flood levels (freeboard), and allowance within onsite detention and storage systems.

The potential impacts of climate change on the project are being addressed through:

- Installing site stormwater discharge points at a level to allow gravity discharge of stormwater to the Harbour;
- Design of stormwater systems to incorporate partial inundation from tide flows;
- Specification of materials to marine grade to prevent accelerated degradation;
- Use of tidal flaps on stormwater discharge points;
- Employing overland flow paths across the site to retain flow above the ground as much as possible and enabling runoff drainage even if discharge points are inundated; and.

- Employing a range of water sources such that sole reliance is not placed on rainwater or stormwater collection for use in the development

7.15. INFRASTRUCTURE AND UTILITIES

In response to item 16 of the DGRs, a Utilities and Infrastructure Report has been prepared by ADP Consulting and is included at **Appendix M**. The Report outlines the existing and proposed connections to services required to support the MOD 9 proposal, including, stormwater, potable water, wastewater, recycled water, electrical, telecommunication and natural gas. Thus, demonstrating how MOD 9 will be satisfactorily serviced for utility services.

7.15.1. Potable Water

Proposed

Subject to confirmation from Sydney Water, potable water for Central Barangaroo is proposed to be supplied from the existing 300mm Sydney Water main located within Hickson Road. The original water supply scheme identified three separate water supply tapping locations to service each of Blocks 5, 6 and 7. The water supply tapping locations will need to be adjusted for the revised concept scheme based on layout, staging and titling arrangements.

The potable water supply will service all indoor uses aside from toilet flushing and will be reticulated throughout the site for connection to each area of the site, including residential, commercial and retail uses.

Sydney Water records indicate that a proposed 250mm potable water supply is to be reticulated on the southern side of Barton Street as part of the associated works. For Central Barangaroo, a separate water supply tapping point is to be proposed which connects to this water main to provide the potable water supply for public domain components.

7.15.2. Wastewater

Proposed

Subject to confirmation with Sydney Water, wastewater from Central Barangaroo (including public domain areas) will be collected and discharged into the existing 375mm sewer pipe in Hickson Road. Wastewater from public open space areas will discharge to the Central Barangaroo wastewater system. As outlined in the Integrated Water Management strategy (**IWMS**), wastewater generated from within the site, will be collected, treated, and re-used for non-potable uses such as irrigation and toilet flushing.

Three new gravity sewer connections are proposed for Central Barangaroo. The connections will be utilised as required to allow discharge during construction, commissioning and operation and to accommodate the required staging of the project.

7.15.3. Recycled Water

Wastewater Recycling

Recycled Water will be generated, imported and/or exported in line with the overall Central Barangaroo Sustainability Strategy (CENSus) (refer **Appendix N**). Wastewater will be treated in accordance with the *Australian Recycled Water Guidelines*. To reduce the demand for potable mains water, recycled water infrastructure will be included within future detailed design(s) for all non-potable water uses, toilet flushing and irrigation. The system will be designed and configured to support the overall IWMS for the site, with any excess recycled water generated available for export for offsite areas, such as the Barangaroo Reserve.

Rainwater Harvesting

The Central Barangaroo concept design includes infrastructure that captures rainfall runoff from the building roofs, podiums, and the laneways and roads that surround each building. Rainfall from building roofs will be collected and stored separately from the podium and ground level runoff. Collected rainwater will be stored, treated, and made available for irrigation throughout the entire development, including the public domain. Water treatment infrastructure will include filtration and disinfection apparatus, designed to ensure a fit for purpose supply in line with local, state and national regulations. This infrastructure provisions will be further development and implemented throughout the ongoing detailed design phase of the project.

7.15.4. Electrical

The electrical supply for Central Barangaroo is proposed to be connected to the existing Ausgrid 11kV network. Central Barangaroo will include four CBD Triplex chamber substations to provide electrical capacity. Ausgrid CBD electricity substations and transformers are proposed to be located within first level of the underground basement area and integrated within the buildings. Ausgrid owned assets will be maintained by Ausgrid and will require the establishment of lease-hold, easements and right-of-way's (ROWs) over the public domain and roadways for unimpeded HRV truck access to the substations from Hickson Road.

The final arrangement of the electrical substations will be subject to a separate application for connection to Ausgrid will be detailed further in future SSDAs.

7.15.5. Telecommunications

Sydney Metro has relocated telecommunications services within the Hickson Road Barangaroo Station Box Works area. All existing telecommunication infrastructure within the development footprint is to be removed and capped off at the boundary.

Central Barangaroo development may be serviced by a number of existing telecommunication network providers within Hickson Road. Future detailed SSDAs will confirm the availability and exact location of telecommunication service alignments.

7.15.6. Natural Gas

The aspiration of the precinct is to minimise the use of natural gas and maximise the use of alternative clean energy sources. To future proof the site a connection off the existing 110mm low pressure 7kPa nylon gas main service the Central Barangaroo development with a gas meter room proposed at ground level in Block 7. The gas supply will be metered and reticulated to each of the separable portions of the site in accordance with Jemena requirements. The DBYD (14/02/2020) has identified future proposed works in Hickson Road in front of Central Barangaroo which indicates a new 32mm 7kPa Nylon gas main.

7.15.7. Chilled Water

As part of the Central Barangaroo development, it is proposed to construct a separate centralised HHR system to service the commercial, retail and residential developments of Central Barangaroo. High efficiency water-cooled chillers will be located in the basement plantroom area, supplying 23MW of cooling capacity to Central Barangaroo.

It is proposed these chillers will operate in a series-counterflow arrangement, designed to maximise operating efficiencies and supply a wide range of chilled water (CHW) temperatures for different uses across the site. Heat will be rejected from the chillers using sea water from Darling Harbour.

7.15.8. Summary

The proposed infrastructure connections for Central Barangaroo are summarised below:

- **Stormwater** - drainage generally in westerly direction to Sydney Harbour via existing 600mm pipes, with notable quality management systems:
 - New rainwater harvesting for reuse in toilet flushing and public domain irrigation.
 - Active distribution via integrated treatment swale
 - Overflow in new passively dispersed stormwater treatment zones
- **Potable Water** – existing 300mm Sydney water main in Hickson Road and a proposed 250mm Sydney water main on Barton Street for public domain areas
- **Wastewater** – existing 375mm Sydney Water sewer main on Hickson Road and an existing 375mm Sydney Water sewer main
- **Recycled Water** – proposed new on-site filtration and disinfection equipment for integration
- **Electrical** – existing Ausgrid 11kV network from City North zone substation and existing Barangaroo Reserve 800A supply for public domain areas

- **Telecommunication** – options from existing network providers on Kent Street, Hickson Road and Napoleon Street
- **Natural Gas** – existing capped 110mm LP 7kPA gas main to the west of Hickson Road
- **Chilled Water** – new stand-alone centralised Harbour heat rejection, 23MW

The proposed utility and infrastructure services provisions will be further developed throughout the detailed design phases of the project.

7.16. AERONAUTICAL IMPACT

Avlaw Aviation Consulting have prepared a Preliminary Aeronautical Impact Assessment to assess the impact of the proposed increase to the maximum building height for development within Blocks 5, 6 and 7 of Central Barangaroo on the safety of the Sydney Airport airspace.

To assess the proposed modification, Avlaw Aviation reviewed satellite imagery, OLS requirements, PANS-OPS limitations as well as radar terrain clearance chart stipulations in respect of Part 12 of the *Airports Act 1996* and the *Airports (Protection of Airspace) Regulations 1996*. The current airspace protection surfaces affecting the site are as follows:

- Obstacle Limitation Surfaces: 156m AHD
- Procedures for Air Navigation Services - Aircraft Operations: 320-330m AHD
- Radar Terrain Clearance Chart: 335m AHD

In summary, the assessment concludes:

- The greatest proposed building height within Central Barangaroo is on Block 7, at a maximum height of RL 73.7 AHD. This remains well below the OLS height of 156m AHD. The proposed tallest block height will therefore not be considered an obstacle from an aviation perspective as it does not penetrate any airspace protection surfaces applicable to operations at Sydney Airport.
- The proposed height of Block 7 will also benefit from “shielding” from the 10% downward slope from the top of the adjacent Crown Sydney Hotel Resort. Future development within Block 7 (or any development on other blocks below the maximum height of Block 7) will therefore not impose additional restrictions to aircraft operations.
- Future development within Central Barangaroo will require erection of cranes up to a height of 163.7m (at its maximum, on Block 7). The construction crane height will penetrate the 156m AHD OLS and will therefore require a “temporary” controlled activity approval to be sought during the detailed development application. Whilst future approval will be sought from Sydney Airport Corporation Limited, CASA and Air Services Australia in regard to the controlled activity, Avlaw notes that the principle of “shielding” will still apply with respect to the crane as it falls in the shadow of the Crown Sydney Hotel Resort. Erection of the crane will therefore not adversely affect the safety, efficiency or regulatory of operations at Sydney Airport.
- This will be further discussed, and formal controlled activity approval sought within future detailed SSDAs.

In conclusion, Avlaw identify no aeronautical impact or issues associated with the proposed height increase of Blocks 5, 6 and 7 of Central Barangaroo.

7.17. ECOLOGICALLY SUSTAINABLE DEVELOPMENT

An Ecologically Sustainable Development (ESD) Summary Report has been prepared by Cundall in response to item 17 of the DGRs. The ESD Summary report is included at **Appendix N**. The ESD Summary Report describes the sustainability principles, initiatives and commitments that are to be incorporated within the Central Barangaroo precinct and considers the changes proposed under MOD 9. The ESD Summary Report sets out the approach for Central Barangaroo which generally aligns with the relevant SOCs.

Central Barangaroo’s vision is to deliver a globally recognised exemplar sustainable urban precinct through implementing a range of environmental and social initiatives. The design, construction and operation will be guided by the Central Barangaroo Sustainability Strategy (**CENSuS**) which provides an overarching framework for all sustainability aspects of the project.

The CENSuS comprises four pillars, including:

- **Climate Positive** – addresses one of the Barangaroo precinct’s core sustainability commitments of carbon neutrality and zero waste emissions.
- **Water Positive** – addresses one of the Barangaroo Precinct’s core sustainability commitment for Water Positive and reducing water pollution.
- **Nature Positive** – focuses on the importance of minimising impacts on natural resources, increasing biodiversity, and reducing heat island effect through the incorporation of trees and green spaces. Combined with the Water Positive pillar it delivers best practice in Blue-Green Infrastructure design.
- **People Positive** – addresses the Barangaroo Precinct’s core sustainability commitment for Community Wellbeing. It also covers Health and Wellbeing, Social Sustainability and Cultural Heritage.

These pillars align with Infrastructure NSW’s core sustainability commitments for the Barangaroo Precinct to be carbon neutral and water positive, to create zero waste emissions, and to contribute to community wellbeing. The pillars expand on these core commitments with further commitments related to nature and people.

Figure 71 Summary of Central Barangaroo Sustainability Strategy (CENSuS)



Source: Cundall

The CENSuS strategy outlines the targets and initiatives for the pillars, supported by third party certification using internationally recognised sustainability rating tools in design, construction and operation. The key sustainability commitments to be incorporated for Central Barangaroo are summarised in **Table 26** below.

Table 26 Central Barangaroo Sustainability Commitments (summary)

Sustainability Pillars	Key Sustainability Commitments
Climate Positive	<ul style="list-style-type: none"> ▪ Low energy buildings through a combination of passive design, energy efficiency, smart controls and energy performance monitoring against energy intensity targets. ▪ Minimise use of fossil fuels on site including no natural gas for domestic hot water and space heating and domestic cooking.

Sustainability Pillars	Key Sustainability Commitments
	<ul style="list-style-type: none"> ▪ Shared energy infrastructure including central sea water heat exchangers and heat recovery systems. ▪ On-site renewable energy to generate electricity for the Central Waterfront Park, Barangaroo Reserve and on-site water treatment, and reticulation systems. ▪ Carbon Neutral in operation for the duration of the 99-year lease and reporting greenhouse gas (GHG) emissions annually. The precinct will be included in the Barangaroo precinct's annual Climate Active Carbon Neutral certification. ▪ A minimum of 90% of waste generated during construction will be diverted from landfill. ▪ Zero waste emissions – waste generated during the operation of the precinct will be reduced through a combination of waste minimisation and avoidance and at least 70% of the waste remaining will be diverted from landfill. The GHG emissions associated with the waste treatment and disposal will be included in the carbon neutral certification. ▪ Low Global Warming Potential (GWP) refrigerants will be selected for all chillers and heat pump systems. ▪ Engagement with the supply chain and designing with and specifying materials and products with a low carbon footprint and seeking to reduce embodied carbon during construction.
Water Positive	<ul style="list-style-type: none"> ▪ Water efficiency, sea water cooling and native planting to reduce the demand for water. ▪ Recycled water infrastructure provided for non-potable uses to reduce the demand for potable mains water. ▪ Rainwater collected and used for non-potable uses. ▪ Recycled water to be generated, imported and/or exported to support the Barangaroo Precinct's site wide strategy for Water Positive. ▪ Best practice Water Sensitive Urban Design principles will be applied, including raingardens and biodiverse swales where appropriate, to treat stormwater run-off.
Nature Positive	<ul style="list-style-type: none"> ▪ Create a new 2.6 Hectare public park (Harbour Park) on reclaimed industrial land with native gardens and an abundance of nature. ▪ Green landscaping, green walls and green roofs incorporated into the built areas. ▪ Extensive planting and tree canopy cover to reduce heat island effect. ▪ Native raingardens and vegetated swales to treat a proportion of the stormwater prior to discharge. ▪ Designing to dark sky principles to reduce night sky pollution. ▪ Preference for materials with reduced environmental impacts and third-party environmental certification.

Sustainability Pillars	Key Sustainability Commitments
<p>People Positive</p>	<p><u>Health and Wellbeing:</u></p> <ul style="list-style-type: none"> ▪ Best practice in indoor environment quality including the application of the ten WELL Building Standard principles to workplaces. ▪ Strong connection to nature and application of best practice biophilic design principles. ▪ Provide a variety of outdoor spaces to support active lifestyles, relaxation, and community gatherings. ▪ Prioritise walking and cycling throughout the site. ▪ Implement best practice safe by design principles. ▪ Implement mental health programs during construction. <p><u>Community and Culture:</u></p> <ul style="list-style-type: none"> ▪ Provide 2,800 m2 of GFA for a range of community uses. ▪ Create connected harbour foreshore parklands including a new 2.6 ha public park (Harbour Park). ▪ Apply Universal Design principles to ensure places and buildings more inclusive and easily accessible for everyone. ▪ Implement a Placemaking and Activation Plan including curation of public events. ▪ Prepare and implement a Heritage Interpretation Plan to acknowledge and interpret the significant history of the site. ▪ Active engagement with relevant stakeholders. ▪ Curate a public art program. <p><u>Social Procurement:</u></p> <ul style="list-style-type: none"> ▪ Develop a Social Sustainability Plan. ▪ Donate to Homes for Homes charity. ▪ Set targets for employment of disadvantaged groups during construction. ▪ Set targets for Aboriginal procurement during construction. ▪ Support of local SMEs and disadvantaged local residents including indigenous enterprise and employment. ▪ Preference materials with transparent social impacts in the supply chain.

As outlined within the ESD Report, the CENSuS strategy aligns with the following policies and strategies:

- UN Sustainable Development Goals.
- The Green Building Council of Australia’s seven megatrends in sustainability
- City of Sydney’s Sustainable Sydney 2030 strategy

- Planning Priority E19 of the Eastern City District Plan
- NSW Government's Net Zero Plan Stage 1: 2020–2030
- NSW Water Strategy
- NSW Waste and Sustainable Materials Strategy 2041 Stage 1: 2021-2027
- NSW Plastics Action Plan 2021

The project will achieve third party certification by seeking to use the following rating tool commitments and targets for the design, construction and operation which are widely recognised in Australia as benchmarking international best practice:

- Project Design and Construction:
 - 6 star – Green Star Communities v1.1 – formal certification will be obtained within 24 months of Practical Completion of the Precinct.
- Building Design and Construction:
 - 6 star – Green Star Design and As-Built v1 (commercial, retail and residential) – formal Green Star certification will be obtained within 18 months of practical completion of each building. NatHERS and BASIX for residential components will be delivered in accordance with Construction Certificate and Certificate of Occupancy requirements.
- Building Operation:
 - 5 star NABERS Energy for offices (base building) excluding green power and 6 star NABERS Energy for offices (base building) including green power – the NABERS rating will be undertaken within 18 months of the issue of an Occupation Certificate provided 75% occupancy has been achieved or within 2 years as per the 'NABERS Energy and Water for Offices: The Rules' (Version 3.2 – September 2018).

The sustainability commitments previously outlined under the four pillars (refer **Table 26**) will be further developed during the detailed design process to contribute towards delivering an overall *Climate, Water, Nature* and *People* positive sustainability strategy. Future detailed SSDAs will be required to address SOCs 23 and 78-85 as they relate to ESD commitments.

7.18. SOCIAL CONSIDERATIONS

PWC have prepared a Social Impact Assessment for the proposed modification in response to item 11 of the DGRs, which requires the EAR to “*outline the social benefits and disbenefits of the modification*”. This report is provided at **Appendix J**.

7.18.1. Assessment Methodology

The SIA outlines the social benefits and identifies mitigation measures where any disbenefits are associated with the proposal. The report includes an assessment of the nature, scale and mitigation of social impacts within the following defined categories:

- Way of life: factors such as residential housing, employees' working conditions, access to employment and recreation activities
- Community: including its composition, cohesion, character, how it functions and sense of place
- Access to and use of infrastructure, services and facilities: whether provided by government or other organisations, for example public transport
- Culture: including shared beliefs, customs, connects to land places and buildings (including Aboriginal culture)
- Health and wellbeing: including mental and physical health
- Surroundings: including access to and use of ecosystem services, public safety and security, access to and use of the natural and built environment, and its aesthetic value and/or amenity
- Other impacts: any other project specific social impacts.

7.18.2. Assessment

An assessment of the positive and negative social impacts associated with the proposed modification is outlined in **Table 27**. This has been adapted from the Social Impact Assessment prepared by PWC.

Table 27 Assessment of social impacts of proposed MOD 9

Benefit/ Disbenefit	Discussion
Way of Life	
Benefit	<p>Increased quantity and access to employment and training opportunities. MOD 9 will support the generation of an additional 1,143 full-time employment opportunities during construction and an additional 1,176 full-time employment opportunities during operation compared to the approved Concept Plan. This will provide enhanced community wellbeing from increased jobs and business opportunities, support less commuting due to the provision of jobs within proximity to homes</p> <p>MOD 9 will provide additional commercial and retail floor space to facilitate enhanced business competition within the site and the broader CBD precinct. The improved economic performance of business within the precinct and surrounding area will create enhanced community wellbeing from economic generation.</p> <p>Social inclusion through employment, training and education associated with increased employment opportunities and additional business opportunities on the site. This will lead to improved individual self-worth, sense of dignity and stronger ties within the community.</p> <p>Provision of residential dwellings within Central Barangaroo, in proximity to employment opportunities and community facilities. This will provide for an improved quality of life for residents employed within Central Barangaroo or the proximate Sydney CBD through reduced travel times, and access to a wealth of public transport options including the future Barangaroo Station, Wynyard train station and bus services. Residents will also benefit from convenient access to community facilities as proposed within this MOD 9 – resulting in increased civic participation and social inclusion and overall greater wellbeing.</p>
Disbenefit	<p>PWC identify the potential for overdevelopment of the site due to the large influx of visitors to the high-density precinct. This may result in changes to the land use character and function of Central Barangaroo, as well as people’s sense of place within the precinct. Refer to mitigation measure identified in Section 7.18.3.</p> <p>PWC identify there is a risk that the balance of housing types provided is not at an optimal level and does not respond to housing demand. This may exclude particular demographics from living within Central Barangaroo, resulting in alienation and isolation. Refer to mitigation measure identified in Section 7.18.3.</p>
Community and Culture	
Benefit	<p>MOD 9 seeks to deliver up to 19,000sqm of community uses GFA in the RE1 zone, which includes an allocation of up to a maximum of 18,000sqm of GFA to the Cutaway and 1,000sqm for potential community uses within the RE1 zone. In addition, MOD 9 seeks to increase the provision of community GFA provided within Blocks 5, 6 and 7</p>

Benefit/ Disbenefit	Discussion
	<p>from 2,000sqm (under the approved Concept Plan) to 2,800sqm to facilitate additional community uses throughout Central Barangaroo.</p> <p>PWC note that the provision of additional community floor space will provide a stronger sense of place and community cohesion through shared community infrastructure and the availability of these spaces for civic engagement.</p> <p>A financial commitment to the Homes for Homes scheme is proposed in MOD 9, which aims to increase the supply of social and affordable housing for homeless and vulnerable Australians. The Housing Strategy (Appendix M) discussed this further and notes:</p> <p><i>“This innovative market-driven affordable housing initiative places a caveat on the title of each dwelling sold, and will enable 0.1% of the gross realisation is donated to the Homes for Homes charity that delivers affordable housing in a variety of locations.”</i></p> <p>This could support social inclusion and increase the supply of housing available for disadvantaged communities.</p> <p>The adoption of the CPTED principles within the Concept Plan and compliance with principles in future detailed SSDAs will provide improved public safety, in addition to increased passive surveillance from the additional floor space. This will result in an improved perception of safety, community wellbeing and a stronger sense of place and belonging.</p> <p>The precinct-based approach to Central Barangaroo and provision of a range of uses within a safe, central location could encourage the night-time economy and provide opportunities for social recreation. This will result in enhanced community wellbeing from job opportunities within expanded hospitality and retail hours, social development and community cohesion.</p>
Disbenefit	<p>The mixed-use nature of Central Barangaroo will result in a diverse mix of residents, employees and visitors to the precinct – which may result in anti-social behaviour and conflict. This could result in decreased amenity for residents and employees, and potential safety impacts may arise. Refer to mitigation measures identified in Section 7.18.3.</p>
Access to and use of infrastructure, services and facilities	
Benefit	<p>MOD 9 represents a direct consideration of the Barangaroo Station and the significant improvement in accessibility and connectivity of the precinct. Consideration of this in the Master Plan will deliver enhanced community wellbeing from less commuting due to with improved connectivity of the site.</p>
Disbenefit	<p>PWC identify a potential strain on public infrastructure including transport, social resources and local services due to the increase gross floor area proposed under MOD 9. This change may result in insufficient access to services and facilities, which may disrupt and undermine social cohesion and wellbeing of the community. Refer to mitigation measure identified in Section 7.18.3.</p>

Benefit/ Disbenefit	Discussion
Health and Wellbeing	
Benefit	<p>MOD 9 maintains the commitment to deliver 50% of Barangaroo as public open space. Access to open space will deliver improved public health and wellbeing, including reduced stress levels and reduced rates of depression. The open space will provide opportunities for social interaction, engagement and planned and incidental physical activity.</p> <p>The MOD 9 proposed provision of 19,000sqm community uses GFA in the RE1 zone and 2,800sqm community GFA within Blocks 5, 6 and 7 will provide for a flexibility of social and community uses to adapt and respond to changing social needs in the future, and future development will deliver a stronger sense of place and community cohesion through shared infrastructure and a dedicated place for cultural events. Refer to the Community and Cultural Strategy at Appendix Y.</p> <p>The Urban Design Guidelines prioritises pedestrian and cycling movement will be prioritised through slow vehicle speeds, wide footpaths and cycle lanes, landscaping and public domain elements. Refer to Section 5.4.3. These guidelines will contribute to improving the overall wellbeing of community through incidental physical activity, reduced carbon emissions and positive impacts on air quality. The implementation of pedestrian priority areas and reduced speed limits in areas of high pedestrian activity will also contribute to improving the overall safety in public areas.</p>
Disbenefit	<p>PWC identify the potential exclusion of vulnerable groups in the community (such as the elderly and people with disabilities) if the public domain envisaged in MOD 9 is not designed to facility all-ability access. Where the design of the precinct does not accommodate all users, this may result in alienation and prevention of affected individuals from participating in Central Barangaroo. Refer to mitigation measure identified in Section 9.17.3.</p>
Surroundings	
Benefit	<p>The developer is fully committed to delivering a globally recognised sustainable precinct that achieves carbon neutrality through implementation of the CENSuS, as discussed in Section 7.16. This will contribute to an improved environment</p> <p>An increased population of employees and visitors, driven by the completion of the Barangaroo precinct, could increase patronage and surrounding transport facilities, particularly during the night-time. This will deliver improved casual surveillance and reduce the likelihood of crime in the Central Barangaroo precinct.</p> <p>An increased population of visitors and residents, driven by the completion of the Barangaroo precinct, could increase patronage and surrounding transport facilities, particularly during the night-time. This will deliver improved casual surveillance and reduce the likelihood of crime in the Central Barangaroo precinct.</p>
Disbenefit	<p>Significant construction works are required for the completion of future detailed SSDAs in accordance with the reference plan under MOD 9. This could have negative impacts</p>

Benefit/ Disbenefit	Discussion
	on the local community and environment. Refer to mitigation measure identified in Section 7.18.3.

7.18.3. Mitigation Measures

Mitigation measures proposed by PWC to mitigate impact of potential social disbenefits largely pertain to the construction and operation of the site, for which approval will be sought in future detailed SSDAs. These include:

- Encouraging public transport use through reduced car parking provision and design and construction of active transport connections between key areas and transport nodes.
- Designing an inclusive and accessible space for all through connectivity to transport infrastructure, community facilities, open spaces, and consideration of CPTED principles in future detailed SSDAs.
- Preserving the site's history through careful consideration of the indigenous heritage of the site.
- Create cultural awareness and sense of place through the provision of community facilities.
- Ensure accessibility for all through an effective built form and public domain design.
- Implementation of environmental impact mitigation strategies to reduce the short-term effects of construction

7.18.4. Summary

On balance, the proposal will deliver a greater number of positive social impacts than negative associated with the modification to the approved Concept Plan proposed under MOD 9. Where negative social impacts are identified, mitigation measures are proposed to alleviate this impact. These measures will be incorporated during the detailed design and operational phase of future SSDAs.

7.19. COMMUNITY AND CULTURAL SPACES STRATEGY FOR BARANGAROO

A key component of MOD 9 seeks to increase the amount of community and cultural floor space as follows:

- MOD 9 seeks to deliver up to 19,000sqm of community uses GFA in the RE1 zone, which includes an allocation of up to a maximum of 18,000sqm of GFA to the Cutaway and 1,000sqm for potential community uses within the RE1 zone.
- MOD 9 seeks to increase the provision of community GFA provided within Blocks 5, 6 and 7 from 2,000sqm (under the approved Concept Plan) to 2,800sqm.

The greater modulation of the building envelope proposed in MOD 9 will also create the opportunity to deliver publicly accessible open space throughout the site (the final form, location and function of which will be subject to detailed design within future SSDAs).

To inform the use and distribution of cultural and community floor space, JOC Consulting have prepared a Community and Cultural Spaces Strategy (**Appendix Y**) for the Barangaroo Precinct. The Strategy seeks to ensure the Concept Plan considers the cultural and community needs of the community and is informed by relevant policy, including the Cultural Infrastructure Strategy 2016 and the State Infrastructure Strategy 2018 – 2038. The Strategy focuses specifically on the allocation of uses for the 2,800sqm (minimum) of community uses within Blocks 5, 6 and 7 of Central Barangaroo and up to 19,000sqm of community uses within the RE1 Zone and will inform future detailed SSDAs for these areas.

7.19.1. Assessment Methodology

In order to determine the cultural and community needs of the community, JOC Consulting have undertaken an analysis of the Barangaroo community profile, future growth projections and trends, and identification of community values for both the resident and worker population, and visitor population. This is undertaken

through a review of census data, review of the City of Sydney LSPS and City of Sydney community strategic plan.

In addition, JOC Consulting prepared a spatial analysis of existing community and cultural facilities in Barangaroo and the surrounding precinct to inform a gap analysis of lacking facilities. In summary, facilities and spaces that are currently lacking for future resident, worker and visitor communities in Barangaroo include a community hall and creative spaces, indoor performance theatre and entertainment venues, cinemas, rehearsal spaces and sports courts, in addition to others identified in the Strategy.

This has informed JOC Consulting's recommendation of the following cultural and community facilities within Central Barangaroo:

- *Community centre (mid-sized, flexible, multi-purpose space)*
- *Small performance theatre (200 – 300 seating capacity)*
- *Basement live performance or dance club*
- *Small cinema/ theatre*
- *Performing art studio*
- *Artsy community makerspace*
- *Covered or rooftop outdoor facilities and spaces (such as outdoor meeting spaces and amenities within Harbour Park)*

In relation to the community GFA allocated to the Cutaway at Barangaroo Reserve, JOC Consulting recommend the provision of the following facilities:

- *Major cultural exhibition venue Education and cultural space*
- *Performing art studio*
- *Artsy community makerspace*

Dedication of the community floor space to specific facilities will be considered during the detailed design of future SSDAs.

7.19.2. Summary

In summary, the proposed increase to community GFA to a total of 2,800sqm in Blocks 5, 6 and 7, and up to 19,000sqm in the RE1 zone will respond to the needs of the resident, worker and visitor community.

The Community and Cultural Strategy will provide guidance for the typology, location and distribution of community and cultural facilities within future detailed SSDAs for Central Barangaroo and Barangaroo Reserve.

7.20. HOUSING STRATEGY FOR BARANGAROO

Item 13 of the DGRs requires an amended Housing Strategy to be prepared relevant to the proposed modification. Accordingly, Elton Consulting have prepared a revised Barangaroo Housing Strategy 2021 (**Housing Strategy**) which is provided at **Appendix L**.

This is an update to the previously issued 2018 version.

7.20.1. Overview

The Housing Strategy identifies that a key objective for the Barangaroo precinct is to “*encourage land uses that provide the best economic, social and environmental outcomes for the broader State, considering the importance of the strategic location, particularly in the context of the public benefit Central Barangaroo will provide*”.

The Housing Strategy outlines how housing fits into the land use priorities across the Barangaroo precinct. Elton Consulting note that housing delivery must be seen in the broader strategic context of delivering employment opportunity at the economic heart of Sydney and Australia's global economic gateway.

Specifically, it is noted that the delivery of housing is increased within Barangaroo South (which has a focus of residential, commercial and tourism uses), whilst housing delivery is limited in Central Barangaroo (due to the focus on social opportunity and community activity) and Barangaroo Reserve (focus on open space delivery). Notwithstanding this, MOD 9 seeks to retain and enhance the public benefits delivered in Central Barangaroo and Barangaroo Reserve to support the broader residential, cultural and economic growth in the Sydney CBD.

7.20.2. Land Use Planning and Public Benefit Approach

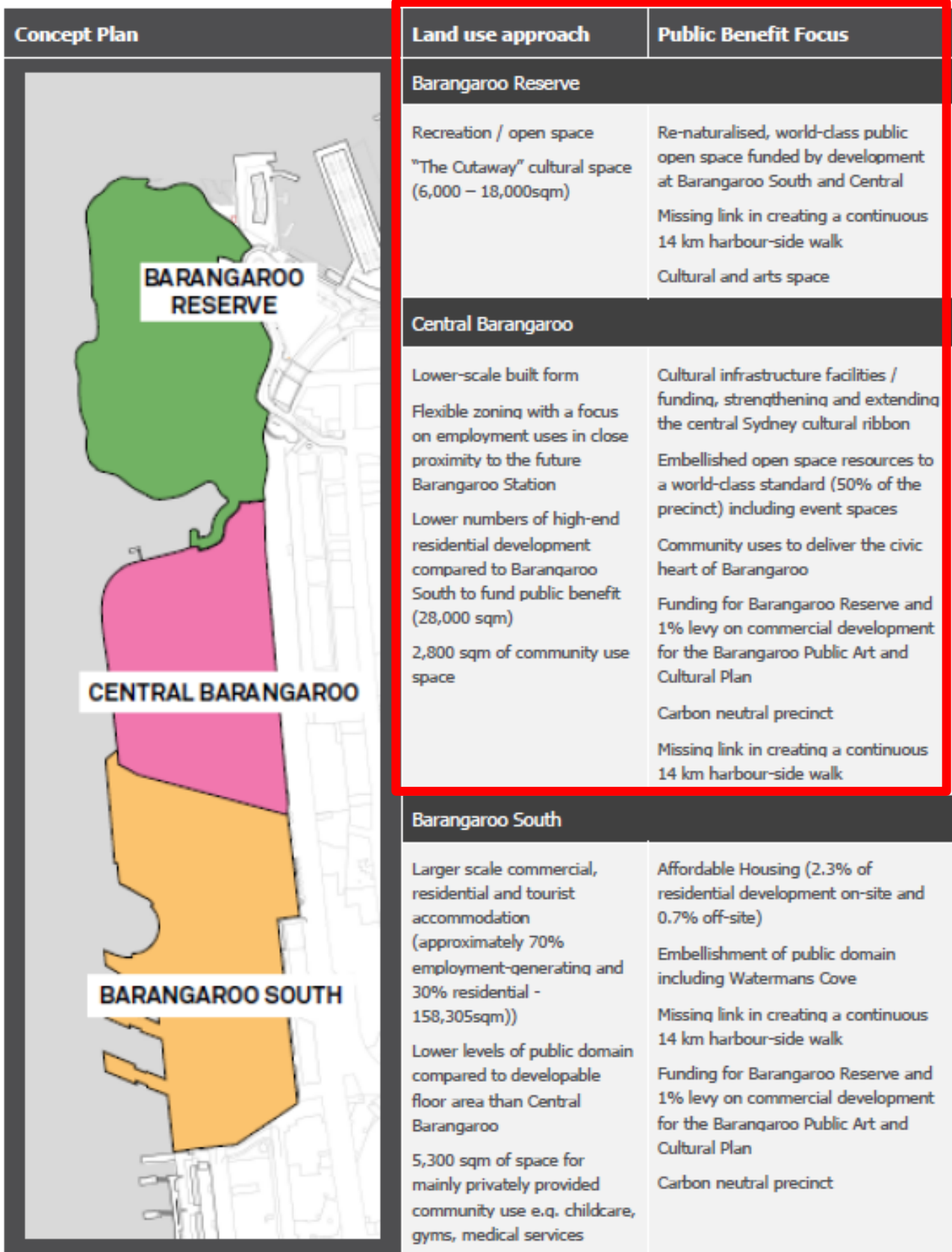
The Housing Strategy for Barangaroo is founded upon the identified of specific land use approaches and public benefit focuses for each precinct (Barangaroo South, Central Barangaroo and Barangaroo Reserve) to shape the delivery of public benefits. This ensures that the public benefits delivered across Barangaroo are responsive to the context and opportunities of each precinct.

An extract of the land use and public benefit approach for Barangaroo is provided in **Figure 72**, with the focus for Central Barangaroo and Barangaroo Reserve highlighted in 'red'. This summary demonstrates that MOD 9 will deliver a range of public benefits to complement those already delivered in Barangaroo South, and will primarily focus on cultural and social opportunities driven by the delivery of community uses and public open space.

The following key considerations of the Housing Strategy are noted:

- The key principles of the revised Housing Strategy have been informed by a review undertaken by Elton Consulting of the strategic planning framework, including the GSRP 2018, Eastern City District Plan and the City of Sydney Local Strategic Planning Statement.
- Central Barangaroo will act as the centre point of social opportunities and community activities at Barangaroo. Specifically, MOD 9 proposes up to 19,000sqm of community GFA within the RE1 zone, and up to 2,800sqm of community uses in Blocks 5, 6 and 7.
- The provision of a maximum of 28,000sqm of residential land uses within Central Barangaroo will be high-end residential development to fund public benefit.
- The Housing Strategy retains the focus on Barangaroo South as a key contributor to affordable housing delivery through the delivery of 3% of the residential floor space as affordable housing (including 2.3% onsite (50 dwellings) and 0.7% offsite (which has already been delivered)).
- Central Barangaroo will be providing a substantial and comparable level of monetary contributions toward cultural and arts facilities. This will be comparable, if not greater, than the monetary value of affordable housing at Barangaroo South despite the range in development potential of Central Barangaroo.
- In addition to the significant public benefit provision provided by Central Barangaroo, the Central Barangaroo Developer has committed to an affordable housing initiative – Homes for Homes. This places a caveat on the title of each dwelling sold, and 0.1% of the gross realisation is donated to the Homes for Homes charity that delivers affordable housing in a variety of locations. This will also encourage market contribution to affordable housing on an on-going basis each time the residential properties at Central Barangaroo are sold.

Figure 72 Land Use and Public Benefit Approach for Barangaroo



Source: Elton Consulting

In summary, the level of public benefit proposed in MOD 9 is significant, especially when considering the lower scale of development provided in Central Barangaroo.

Housing delivery will be limited at Central Barangaroo, ensuring housing does not compromise the strategic employment-generating land uses, yet providing sufficient activation of key public domain interface areas. Central Barangaroo and Barangaroo Reserve will retain a core public benefit focus on the delivery of the 'civic heart' of Barangaroo with supporting cultural, community and public facilities, including allocation of up to 18,000sqm for the Cutaway. This will become an important part of strengthening the social fabric in Sydney.

7.21. ECONOMIC CONSIDERATIONS

PWC have prepared an Economic Impact Assessment for the proposed modification in response to item 12 of the DGRs. Item 12 requires the assessment to “*outline the economic benefits and disbenefits of the modification, including on the economy, business and employment*”. In accordance with this, the report provides an analysis of the economic benefit and disbenefits of the modification, including the impact on the economy, business and employment. The report is provided at **Appendix K**.

7.21.1. Assessment Methodology

The total net economic impact of MOD 9 was modelled using CGE modelling, which stimulates the annual effect on the economy as a result of a policy change or development. Specifically, the Victoria University Regional Model (**VURM**) was adopted. This assessed both direct and indirect effects of the proposed modification and simulated the impact it may have on changes to tax contributions and visitations to Barangaroo. Impacts were modelled in two phases, the construction and operational phase. The construction phase was defined as 2022- 2029 and the operational phase was defined as 2028 – 2037.

Two scenarios were modelled as part of this assessment, as outlined below.

- Baseline scenario: This scenario assumed that the approval of MOD 9 is not granted, and construction proceeds as per the approved Concept Plan (MOD 11).
- MOD 9 scenario: This scenario assumes that the MOD 9 is approved and proceeds as proposed and models the economy with higher construction activity during construction years and economic activity once the site is fully operational.

The estimated additional economic impacts were determined by calculating the differences in economic outcomes between the MOD 9 and baseline scenarios for the NSW economy.

7.21.2. Assessment

Economic Benefits

Anticipated economic benefits delivered during the construction of MOD 9 include:

- Contribution of an additional \$188.70 million to the NSW economy during construction phase compared to the approved Concept Plan. This will result in a total contribution to the NSW economy of \$265.4 million from construction of the Concept Plan (as modified). The gross value add will largely be realised within the construction industry, in addition to sectors that support the construction industry through the supply chain including business services and trade.
- Creation of an additional 1,143 full-time employment opportunities during construction compared to the approved Concept Plan. This will result in the creation of a total 1,493 jobs during construction of the Concept Plan (as modified). Additional jobs are largely created within the construction, business services and trade sectors.
- Additional capital expenditure in other employment sectors upstream and downstream of the construction sector.

Anticipated economic benefits delivered during the operation of MOD 9 include:

- Contribution of an additional \$327.4 million to the NSW economy during operation compared to the approved Concept Plan. This will result in a total contribution to the NSW economy of \$423.4 million from operation of the Concept Plan (as modified). The gross value add will largely be realised within the

business services, trade, accommodation and food service sectors, largely due to the proposed increase in retail and commercial floor space in MOD 9.

- Creation of an additional 1,176 full-time employment opportunities during operation compared to the approved Concept Plan. This will result in the creation of a total 1,493 jobs during construction of the Concept Plan (as modified). Additional jobs are largely created within the business services, accommodation and food service sectors.
- Additional capital expenditure in other employment sectors upstream and downstream of the business services sector.

Overall, MOD 9 will result in a net-benefit to the NSW economy. This is primarily focussed within construction, business services, trade and accommodation and food services with increases in both gross value added and employment provision.

Economic Disbenefits

PWC have identified that the additional demand for labour and inputs during construction of MOD 9 may raise local prices for resources, deteriorate the competitiveness of local industries and cause adverse impacts in other industries. These implications can cause negative impacts for trade-oriented industries such as agricultural and mining.

However, the modelling of MOD 9 indicated a less than 1% negative impact on current GVA in the coal and metal products sectors and as such this impact is considered negligible in comparison to the significant range of economic benefits associated with MOD 9.

Retail Impact Assessment

MOD 9 proposes an active retail base extends from the basement levels to connect with Barangaroo Station and through to level 1, capitalising upon the movement of commuters and visitors through to this new transport interchange node. Key considerations of the market feasibility and broader economic impact of this retail provision identified by PWC include:

- *The scale of the retail and hospitality activity proposed for Central Barangaroo is based upon development industry research projections of growth and change in the retail and hospitality industry. This growth is reflective of demand in the local Barangaroo area but also of growth in total market size.*
- *The proposed retail centre at Central Barangaroo is well located to serve the changing north west quarter of Sydney CBD and will have easy direct access to Barangaroo Station, as one of four new CBD metro stations. The proposed retail centre is considered wholly consistent with the NSW Government's long-standing policy of locating and consolidating investment, business and retail activity in centres and close to transit infrastructure.*
- *The combination of strong transport infrastructure and commercial floor space make Central Barangaroo a potential high transit point, where the catchment area for retailers could go well beyond their immediate surroundings.*

Accordingly, PWC conclude the proposed retail provision is suitable for the site.

In addition to the above, it is noted Statement 41 and Statement 42 of the revised Statement of Commitments relate to the provision of retail at Central Barangaroo. These are extracted below:

41. A Retail Management Plan(s) is to be prepared to guide and encourage right mix of retail to establish Barangaroo as a distinctive retail precinct. The Plan will include innovation management strategies, foster design leadership & encourage originality and differentiation.

42. The Retail Management Plan(s) is to be drafted to adapt to retail trends and changes over time by having in place a set of coordinated retail management guidelines for the site that will refresh the offerings yet ensure consistency of vision and connection between the office and residential blocks, while maintaining an appropriate mix and market positioning of the Barangaroo retail precinct.

The commitments made by the proponent as outlined above will ensure an appropriate retail offering is provided, and that the retail provision is activated, relevant, adaptable and compatible with the surrounding commercial and residential land uses.

7.22. PUBLIC BENEFITS

The Concept Plan (as modified) will deliver a range of public benefits that are unable to be achieved by the current determination. MOD 9 will deliver the following specific public benefits:

- Increased employment opportunities during construction and operation, including an additional 1,143 full time jobs during construction and 1,176 full time jobs during operation.
- Contribution of an additional \$188.70 million to the NSW economy during construction and an additional \$327.4million during operation compared to the approved Concept Plan, in addition to greater capital expenditure in other sectors.
- Provision of a greater density of commercial and retail floor space which will create economic stimulus, as well as an appropriate proportion of residential density largely accommodated in Block 7 to encourage activation outside of traditional business hours.
- An appropriate increase in commercial and worker density where the site is best accessed to public transport, reflecting land use and transport integration. This will optimise the significant government investment in transport infrastructure with the new Barangaroo Station and deliver upon strategic priorities at a State and Regional level.
- Delivery of up to 19,000sqm of cultural and community GFA in the RE1 zone, which includes an allocation of up to a maximum of 18,000sqm of GFA to the Cutaway and 1,000sqm for potential community uses park structures within the RE1 zone. In addition, MOD 9 will increase the provision of community GFA provided within Blocks 5, 6 and 7 from 2,000sqm (under the approved Concept Plan) to 2,800sqm. This will strengthen the social fabric of the Barangaroo precinct and reinforce the destination aspiration of Central Barangaroo as the 'civic heart' of Barangaroo.
- The Central Barangaroo Developer's Homes for Homes contribution (which seeks to donate 0.1% of the sale price of each residential dwelling to deliver affordable housing in a variety of locations) will improve and increase affordable housing provision.

MOD 9 will continue to facilitate the broader public benefits of the approved Concept Plan, a selection of which include:

- Delivery of 50% of the overall 22-hectare precinct for open space and public recreation uses.
- Regeneration of a dilapidated waterfront site, inclusion of public art, provision of community and retail uses.
- Provision of extensive areas of new public open spaces including Barangaroo Reserve, Waterman's Cove, Wulugul Walk waterfront, Mercantile and Shipwright Walks, Exchange Place, Hickson Park and Public Pier
- Creation of significant employment opportunities within a new mixed-use community adjacent to the Sydney CBD.
- Flooding and drainage infrastructure including the construction of major trunk drainage in Hickson Road (which is now complete).

Central Barangaroo will create a vibrant mixed-use precinct underpinned by a distinct identity which will include a significant new retail precinct, world-class, new generation commercial workplaces and residential uses in conjunction with community, cultural and civic spaces and foreshore parklands. MOD 9 will ensure the once in a generation public benefits available on this site are optimised and delivered for future residents, employees and visitors.

8. JUSTIFICATION AND CONCLUSION

This Section 75W modification application MOD 9 seeks consent to modify the Concept Plan Approval MP06_0162 in relation to Central Barangaroo and Barangaroo Reserve. Specifically, this will result in an amendment to the approved Concept Plan for Blocks 5, 6 and 7, revision to the Instrument of Approval and Statement of Commitments, and amendment to the State Significant Precincts SEPP as it applies to Barangaroo.

The MOD 9 proposal seeks to deliver a built form and density within an iconic harbourside location that is commensurate with Sydney's identity as a global city, whilst remaining generally consistent with and responding to the intent, objectives, and principles of the original Concept Plan. The principal driver of the proposed modification is to align with the strategic planning framework governing Greater Sydney and the significant investment in the infrastructure network (specifically the introduction of Barangaroo Station) surrounding the site. These factors have evolved since the determination of the Concept Plan in 2007 and are no longer reflected within the approved building envelopes and density on Central Barangaroo.

An extensive history of community and stakeholder engagement undertaken prior to lodgement of this application has enabled Infrastructure NSW to identify issues that may require action prior to determination, ensure the proposal aligns with community expectations and determine measures to mitigate associated amenity impacts. This engagement will continue through to the public exhibition of the proposal in accordance with the Regulations, with all submissions addressed by Infrastructure NSW and considered by the DPIE in the assessment process. This programme of engagement activities and Infrastructure NSW's extensive history of working with the public to inform outcomes will ensure the engagement is meaningful and productive – noting the significance of the site's location and proposed scope.

MOD 9 has been assessed in accordance with the relevant environmental planning instruments in accordance with the assessment requirements of section 4.15(1)(a) of the EP&A Act. The assessment of this MOD application demonstrates that the proposal accords with the objectives, priorities and actions outlined within relevant strategic land use, design and transport planning policies. A concurrent amendment to the SSP SEPP is submitted to revise the applicable land zoning, height of buildings and gross floor area SSP SEPP maps and associated written instrument provisions, and insertion of additional written provisions that will apply to part of the site. A further comprehensive assessment of detailed design and construction of specific aspects of the redevelopment will be provided in subsequent detailed SSDAs.

The suitability of the site has already been established through the determination of the original Concept Plan. This suitability has only been enhanced through the introduction of Barangaroo Station which requires an appropriate density of gross floor area to capture the sustainable and economic efficiencies of integrating transport infrastructure and land use development. Whilst the site sits within an established urban context with a number of critical sensitivities including prevailing view corridors, heritage precincts and public areas, the proposed modified building envelopes balances these considerations with an appropriate density. The unique physical, social and environmental characteristics of Central Barangaroo establish the suitability of site to accommodate MOD 9 and satisfy the requirements of section 4.15(c) of the EP&A Act.

Having regard for the biophysical, economic and social considerations, including the principles of ecologically sustainable development, MOD 9 is justified and considered to be in the public interest for the following reasons:

1. The MOD 9 building envelope has been sensitively composed and refined at a high level of detail to balance the varying sensitivities of the precinct. The modified envelopes for 3 development blocks (Block 5, 6 and 7) out of 10 blocks, responds to site analysis, identified constraints and opportunities, the established principles for the Barangaroo precinct embedded within the original approved Concept Plan, and over 6 years of master planning and stakeholder engagement for Central Barangaroo. The proposed modified building envelope will create urban markers including two landmark building elements at the north-eastern and south-eastern corners of Central Barangaroo. These built form elements will strengthen the identity and connectivity of the Central Barangaroo precinct.

The modified building envelope will provide an appropriate height in its western city edge context (with impacts limited), particularly when compared with the scale of development approved and currently proposed in South Barangaroo, Darling Harbour (Cockle Bay and Harbourside), and Blackwattle Bay. The distribution of the form embraces the site's critical transition between Barangaroo South and the contrasting low-density character of the Millers Point Heritage Conservation Area and Barangaroo Reserve and achieves a modulation of urban form across the precinct which is currently absent. It also delivers equitable access to views, defines a clear street wall to activate public streets and spaces, and

achieves an appropriate building separation to create a fine grain structure and capture daylight penetration.

2. The proposed quantum of additional gross floor area proposed in MOD 9 will reinforce demand and provide critical mass to support the operation of Barangaroo Station, thereby maximising significant government investment and the potential of the Sydney Metro network. Further, the flexible distribution of gross floor area across Blocks 5, 6 and 7 will ensure future development responds to current market demand and creates a vibrant, activated precinct with high occupant and public amenity.
3. The distinction of above and below ground GFA will provide greater clarity and certainty about the maximum permitted GFA across the Central Barangaroo to guide future detailed development proposals. The allocation of below-ground GFA will enable the creation of a world class retail hub and Metro pedestrian thoroughfare, providing an interconnected below ground domain between Nawi Cove, Harbour Park and Barangaroo South.
4. The extension of the retail basement floor plate into the RE1 Zone underground area will have no discernible urban design impacts and will not impact the growth or maturity of tree plantings throughout the public domain. This change will deliver a significant benefit, through the creation of an efficient and effective retail floor plate and a stronger integration and pedestrian connection of Barangaroo Station with Central Barangaroo. This is consistent with the accepted approach at Wynyard Park, The Domain and Cook and Phillip Park.
5. The proposed land use configuration is generally consistent with the Concept Plan approval and maintains the principle of a mixed-use precinct for the Barangaroo project. MOD 9 will ensure Central Barangaroo remains a significant major employment hub through an increase to employment generating floor space, whilst balancing this with residential uses to activate the precinct 18-hours per day and reinforce critical mass within the precinct. The provision of community and cultural uses responds to the need to deliver a public identity and a 'civic heart' within Barangaroo and represents a major public benefit.
6. The improved alignment and definition of public open spaces proposed by MOD 9 will encourage greater uses of the precinct's recreational spaces by a diversity of users. Ensuring each public space has a distinct yet complementary character will create a range of recreational experiences across throughout Central Barangaroo for the direct benefit of the public.
7. The Design Excellence Strategy and introduction of Urban Design Guidelines will deliver a fully integrated, vibrant and immersive precinct through a coordinated and cooperative approach to design.
8. MOD 9 maintains the commitment across Barangaroo to create a globally recognised exemplar sustainable urban precinct. The CENSuS defines targets and seeks to utilise third-party certification to ensure objectives are carried through to project completion. This will deliver direct ecological benefits within the precinct such as reducing and offsetting energy use, recycled water usage and zero waste emissions, as well as exhibiting global leadership in ecological sustainable development delivered by the private sector.
9. The proposed reconfiguration of the southern boundary of Block 5 and northern boundary of Hickson Park has demonstrable benefits to the overall form and function of Barangaroo. This will extend Harbour Park and create a truly pedestrian orientated mixed-use precinct, better define the networks of parks within Barangaroo, improve the identity and amenity of Hickson Park as a distinct city scale park, and integrate the precincts of Barangaroo and establish a closer and stronger relationship between Barangaroo South and Central Barangaroo.
10. The objectives set out by the Planning Assessment Commission in their advice to the Minister regarding the June 2016 amendment to the SSP SEPP (associated with MOD 8) will be achieved despite the reconfiguration of Hickson Park. Specifically, the proposal will enable the function of Hickson Park as a distinct city park with a strong and clear connection to Harbour Park, with an identity as an 'urban room' away from the overtly programmed spaces of Harbour Park and Barangaroo Reserve. This will ensure it is activated day and night, all year round. Key principles including solar access, view corridors towards Sydney Harbour and Harbour Park, pedestrian connectivity and building separation will also be maintained.
11. The changes to the extent of solar access as a result of MOD 9 are considered appropriate as the amenity and usability of key open space areas are retained, the modulated envelope offers an opportunity to deliver additional publicly accessible open space throughout Central Barangaroo, and the additional density will surrounding Barangaroo Station will capitalise upon the strategic opportunity

afforded by this infrastructure investment. Critically, MOD 9 will ensure an average of 49.91% of Hickson Park (3,533.13sqm) will receive solar access between 12pm – 2pm on the winter solstice. This allows for an urban parkland with an area of 3,553.13sqm that can accommodate over 883 people sitting comfortably (based on an assumption of 1 person per 4sqm).

12. Specialist consultant reports have determined that amenity impacts associated with MOD 9 are largely comparable to the approved Concept Plan, particularly with regard to traffic, wind, noise, air quality, heritage and aeronautical considerations. Mitigation of environmental impacts associated with the proposal will be achieved through implementation of mitigation measures identified within the respective consultant reports (where necessary), the Statement of Commitments (**Appendix B**) and during the refinement and articulation of building design in future detailed SSDAs. These impacts are considered acceptable in respect of the significant economic and social benefits delivered by the proposal.
13. The site is able to be remediated to ensure its suitability for the proposed land uses, subject to development and implementation of environmental management plans and a subsequent assessment of contamination in future detailed SSDAs.
14. MOD 9 has been informed by the preparation of specialist strategies relating to land use, public benefit and community and cultural spaces. These strategies have informed the use and distribution of floor space within Central Barangaroo, to ensure the Concept Plan addresses the needs of the future employee, visitor and resident community.
15. Infrastructure and utility services including telecommunications, gas, water and electrical services are able to be accommodated on the site to respond to demand and will be further developed throughout the detailed design phases of the project. In addition, the concept civil and stormwater design identifies preliminary considerations to mitigate the impacts of climate change and to be further explored in future applications.
16. The Concept Plan (as modified) will deliver a range of public benefits that are unable to be achieved by the current determination. The public benefits resulting from the proposal include:
 - Increased employment opportunities during construction and operation, including an additional 1,143 full time jobs during construction and 1,176 full time jobs during operation.
 - Contribution of an additional \$188.70 million to the NSW economy during construction and an additional \$327.4million during operation compared to the approved Concept Plan, in addition to greater capital expenditure in other sectors.
 - Provision of a greater density of commercial and retail floor space which will create economic stimulus, as well as an appropriate proportion of residential density largely accommodated in Block 7 to encourage activation outside of traditional business hours.
 - An appropriate increase in commercial and worker density where the site is best accessed to public transport, reflecting land use and transport integration. This will optimise the significant government investment in transport infrastructure with the new Barangaroo Station and deliver upon strategic priorities at a State and Regional level.
 - The opportunity to provide a range of publicly accessible open spaces, integrated with appropriate surrounding uses to enliven these spaces (the final form, location and function of which will be subject to future SSDAs). This is a significant public benefit which will add diversity and interest to the wider open space network, and will complement Harbour Park, Hickson Park and Nawi Cove.
 - Delivery of up to 19,000sqm of cultural and community GFA in the RE1 zone, which includes an allocation of up to a maximum of 18,000sqm of GFA to the Cutaway and 1,000sqm for potential community uses within the RE1 zone. In addition, MOD 9 will increase the provision of community GFA provided within Blocks 5, 6 and 7 from 2,000sqm (under the approved Concept Plan) to 2,800sqm. This will strengthen the social fabric of the Barangaroo precinct and reinforce the destination aspiration of Central Barangaroo as the ‘civic heart’ of Barangaroo.

When considered on balance, MOD 9 to the Barangaroo Concept Plan is in the public interest, will achieve the project objectives and will optimise strategic government landholdings for public benefit. Any residual impacts of the proposal can be appropriately managed and will be refined through subsequent detailed SSDAs, ensuring the proposal would not result in any long-term adverse or irreversible effects. Having considered all relevant matters, we conclude that the proposed development is appropriate for the site and approval is recommended.

9. DISCLAIMER

This report is dated 16 December 2021 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd (**Urbis**) opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of Infrastructure NSW (**Instructing Party**) for the purpose of Environmental Assessment Report (**Purpose**) and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

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All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

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DESIGN EXCELLENCE STRATEGY

APPENDIX AA

EXPLANATION OF INTENDED EFFECT – PROPOSED AMENDMENT TO SEPP (STATE SIGNIFICANT PRECINCTS) 2005

