



Planning &
Environment

**STATE SIGNIFICANT DEVELOPMENT
ASSESSMENT REPORT:
Public Domain Works, Barangaroo South
and Central (SSD 7944)**



Environmental Assessment Report
Section 4.40 of the
Environmental Planning and Assessment Act
1979

July 2018

ABBREVIATIONS

Applicant	Lend Lease (Millers Point) Pty Ltd, or anyone else entitled to act on this consent
BCA	Building Code of Australia
CIV	Capital Investment Value
Council	City of Sydney Council
Concept Plan	Approved Barangaroo Concept Plan (MP 06_0162)
Department	Department of Planning and Environment
DPI	Department of Primary Industries
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPA	Environment Protection Authority
EPI	Environmental Planning Instrument
ESD	Ecologically Sustainable Development
GFA	Gross Floor Area
LEP	Local Environmental Plan
Minister	Minister for Planning
OEH	Office of Environment and Heritage
PNSW	Ports Authority of NSW
RMS	Roads and Maritime Services
RtS	Response to Submissions
SEARs	Secretary's Environmental Assessment Requirements
Secretary	Secretary of the Department of Planning and Environment, or delegate
SEPP	State Environmental Planning Policy
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
SSD	State significant development
TNSW	Transport for NSW
The Commission	Independent Planning Commission

Cover Photograph:

Artists impression of proposed public domain works at Watermans Cove (Source: EIS)

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EXECUTIVE SUMMARY

This report provides an assessment of a State significant development application (SSD 7944) lodged by Lend Lease Millers Point Pty Ltd (the Applicant) for public domain works within the south and central areas of Barangaroo. The proposed public domain works include the development of Hickson Park, Watermans Quay, Barangaroo Avenue, Wulugul Walk and Watermans Cove. The works include site preparation, ground treatments and finishes, landscaping, street furniture, public domain structures, lighting, wayfinding signage, civil and stormwater infrastructure and utility services.

The project has a capital investment value (CIV) of approximately \$83 million and will generate approximately 150 jobs during construction and 50 jobs during operation. The development constitutes SSD under clause 3 of Schedule 2 of State Environmental Planning Policy (State and Regional Development) 2011, as it is development at Barangaroo with a CIV of more than \$10 million.

The Environmental Impact Statement (EIS) for the proposed development was publicly exhibited from 18 May until 19 June 2017 (33 days). The Department of Planning and Environment (the Department) received nine submissions during the exhibition, including seven from public authorities and two public submissions.

The City of Sydney Council (Council) objected to the application mainly due to concerns about the design of the public domain (focusing on Hickson Park), the need for community facilities, public art and heritage interpretation and predicted wind conditions. No other public authorities objected to the proposal but raised issues regarding the design of roads and intersections, potential pedestrian hazards, management of contamination and maritime navigation and safety.

One public submission from a resident of Barangaroo objected to the proposal due to potential view loss from trees at Watermans Cove. The other public submission provided comments on the application and noted the proposal is worthy of support.

The Department's assessment has considered the merits of the proposal in accordance with relevant matters under section 4.15 and the objects of the *Environmental Planning and Assessment Act 1979*, the principles of Ecologically Sustainable Development, all issues raised in submissions and the Applicant's response to these.

The Department's assessment concludes the proposed public domain is of a high quality, has been designed by a world-renowned landscape architectural firm and is consistent with the desired future outcomes of the Barangaroo Concept Plan. The Department is satisfied the public domain exhibits design excellence and will greatly enhance the amenity and character of Barangaroo and the western edge of the CBD at significant benefit to the State. The Department has recommended conditions formalising the advice of both TNSW and RMS in relation to road/intersection design and is satisfied the proposed public domain will provide a highly accessible and safe environment for vehicles and pedestrians.

The Department is also satisfied the proposal is consistent with the strategic objectives for the area, as outlined in *A Plan for Growing Sydney and Towards our Greater Sydney 2056*, the *Greater Sydney Region Plan* and the *Eastern City District Plan*, and is consistent with the requirements of relevant environmental planning instruments and policies.

All other issues have been assessed, and appropriate conditions recommended, where necessary, to ensure the impacts of the development are appropriately mitigated and/or managed. As Council objects to the application, it is being referred to the Independent Planning Commission for determination. The Department's assessment concludes that the proposal is in the public interest, and is capable of being approved, subject to recommended conditions.

1. BACKGROUND

1.1 Introduction

This report provides an assessment of a State significant development application (SSD 7944) lodged by Lend Lease Millers Point Pty Ltd (the Applicant) for public domain works within the south and central areas of Barangaroo. The proposed public domain works cover the key areas of Hickson Park, Watermans Quay, Barangaroo Avenue, Wulugul Walk and Watermans Cove.

1.2 The Barangaroo Site

Barangaroo is located on the north-western edge of the Sydney Central Business District (CBD) and is bounded by the Sydney Harbour foreshore to the north and west, Hickson Road and Millers Point to the east, and King Street Wharf/ Cockle Bay/ Darling Harbour to the south. The 22-hectare Barangaroo precinct is divided into three distinct redevelopment areas (from north to south), comprising the Headland Park (now known as Barangaroo Reserve), Barangaroo Central and Barangaroo South (**Figure 1**). The proposed public domain works are located within Barangaroo South and southern portion of Barangaroo Central.



Figure 1: The Barangaroo Site highlighted in red (Base source: Google)

1.3 Approved Barangaroo Concept Plan

On 9 February 2007, the then Minister for Planning approved the Barangaroo Concept Plan (MP 06_0162) to guide the renewal of the Barangaroo site for a mix of uses, including residential, retail, commercial and public recreation. In summary, eight modifications have been approved since the Concept Plan was originally approved. A detailed planning history of the Concept Plan and its modifications is provided at **Appendix C**.

The Concept Plan establishes nine development blocks, gross floor area (GFA) maximums, building height limits and public open space/ public domain areas. The Concept Plan also includes a set of built form principles and urban design controls to guide development.

In its consideration and determination of the most recent modification (MOD 8), the Planning Assessment Commission (now known as the Independent Planning Commission) required the reconfiguration and enlargement of Hickson Park (partially into Barangaroo Central) and the creation of a 30 m wide foreshore promenade.

The proposed public domain works align with the layout approved under MOD 8 and are set between and around Blocks 4A, 4B and Y of the Concept Plan within Barangaroo South and on a part of the former Block 5 within Barangaroo Central (**Figure 2**).

Barangaroo South has been divided into construction Stages 1A, 1B and 1C (**Figure 2**) which have informed the staging of excavation, remediation, basement and public domain works. The Stage 1B construction area relates to residential buildings R4A, R4B and R5 and the future Hickson Park. Stage 1A relates to a mixture of commercial, residential and retail buildings and is nearly completed. Stage 1C relates to the Crown Sydney Hotel Resort which is currently under construction. A large portion of the proposed public domain works are located within the Stage 1A and Stage 1B construction areas (**Figure 2**).

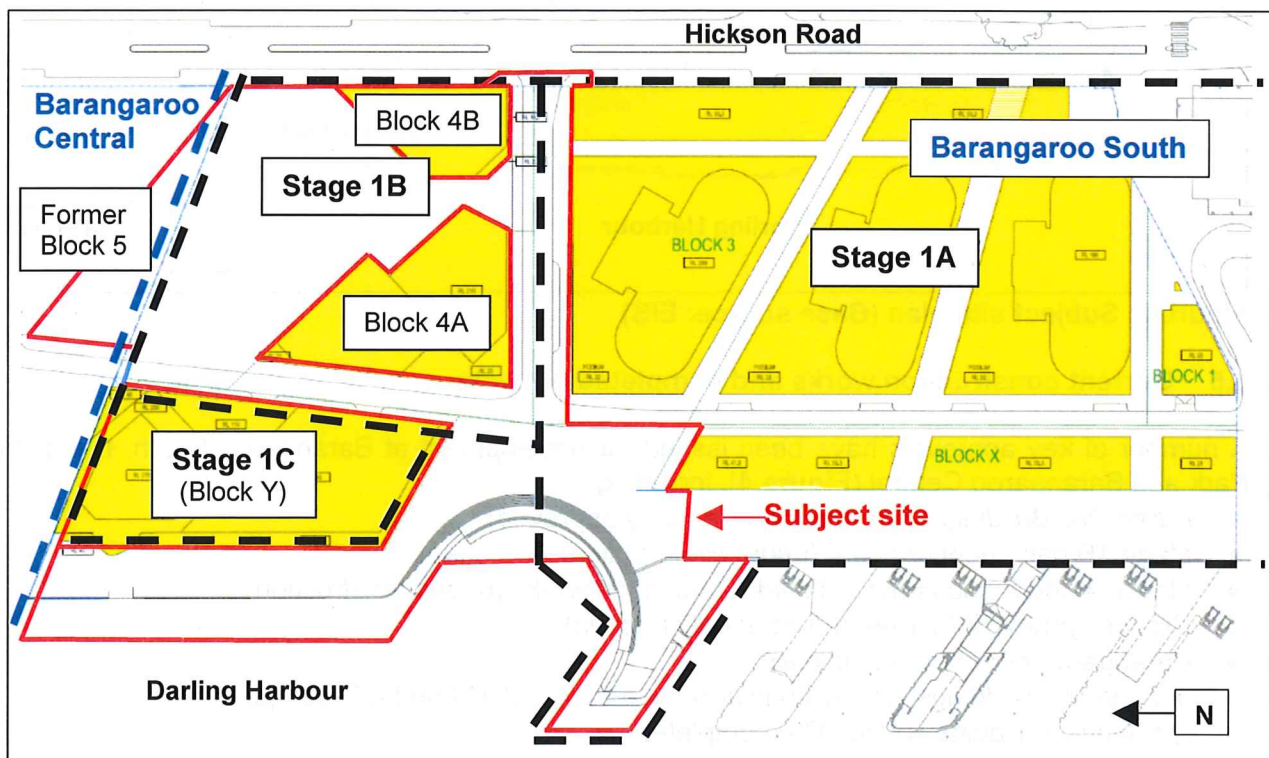


Figure 2: Barangaroo South Concept Plan blocks, construction stages and public domain site area outlined in red (Base source: EIS)

1.4 The Subject Site

The subject site forms the public domain areas in the northern part of Barangaroo South between and around Buildings R4A, R4B and R5, the Crown Sydney Hotel Resort and land to the north and west of commercial Building C3. A site plan is provided in **Figure 3**.

The subject site comprises a total area of approximately 29,500 m² and the closest residents are located approximately 20 m away to the south in residential building R8 (**Figure 3**).

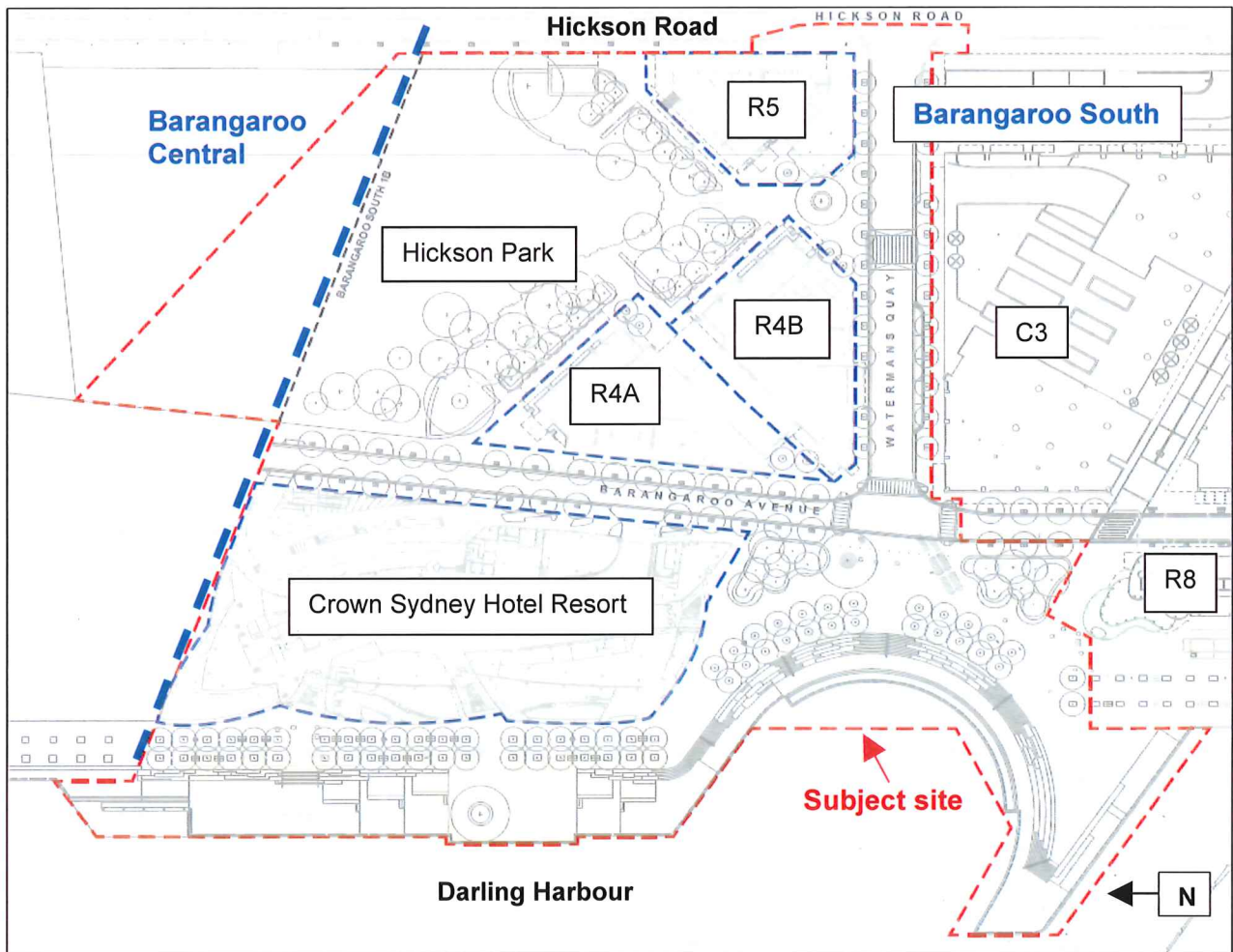


Figure 3: Subject site plan (Base source: EIS)

1.5 Current construction works and completed projects

A number of key approvals have been issued for development at Barangaroo South, Headland Park and Barangaroo Central (Figure 4), including:

- residential Buildings R4A and R4B (recently approved)
- stage 1B basement car park (under construction)
- blocks 4 and 5 and Hickson Road remediation works (under construction)
- Crown Sydney Hotel Resort (under construction)
- Barangaroo ferry hub (complete)
- commercial Buildings C1 (recently approved), C2, C3, C4 and C5 (complete)
- residential buildings R8 and R9 (complete)
- stage 1A basement car park (complete)
- stage 1A public domain works (complete)
- retail Buildings R1 and R7 (complete)
- Headland Park (complete)
- Barangaroo Central foreshore promenade (complete).

1.6 Related projects

The proposed development has been designed to integrate with the approved and constructed Stage 1A public domain works (SSD 6303). The site also has been designed to integrate with the Stage 1B basement car park (SSD 6960), Crown Sydney Hotel Resort (SSD 6957), residential buildings R4A (SSD 6964), R4B (SSD 6965) and R8 (MP11_0002) and commercial buildings C1 (SSD 8529) and C3 (MP11_0044).

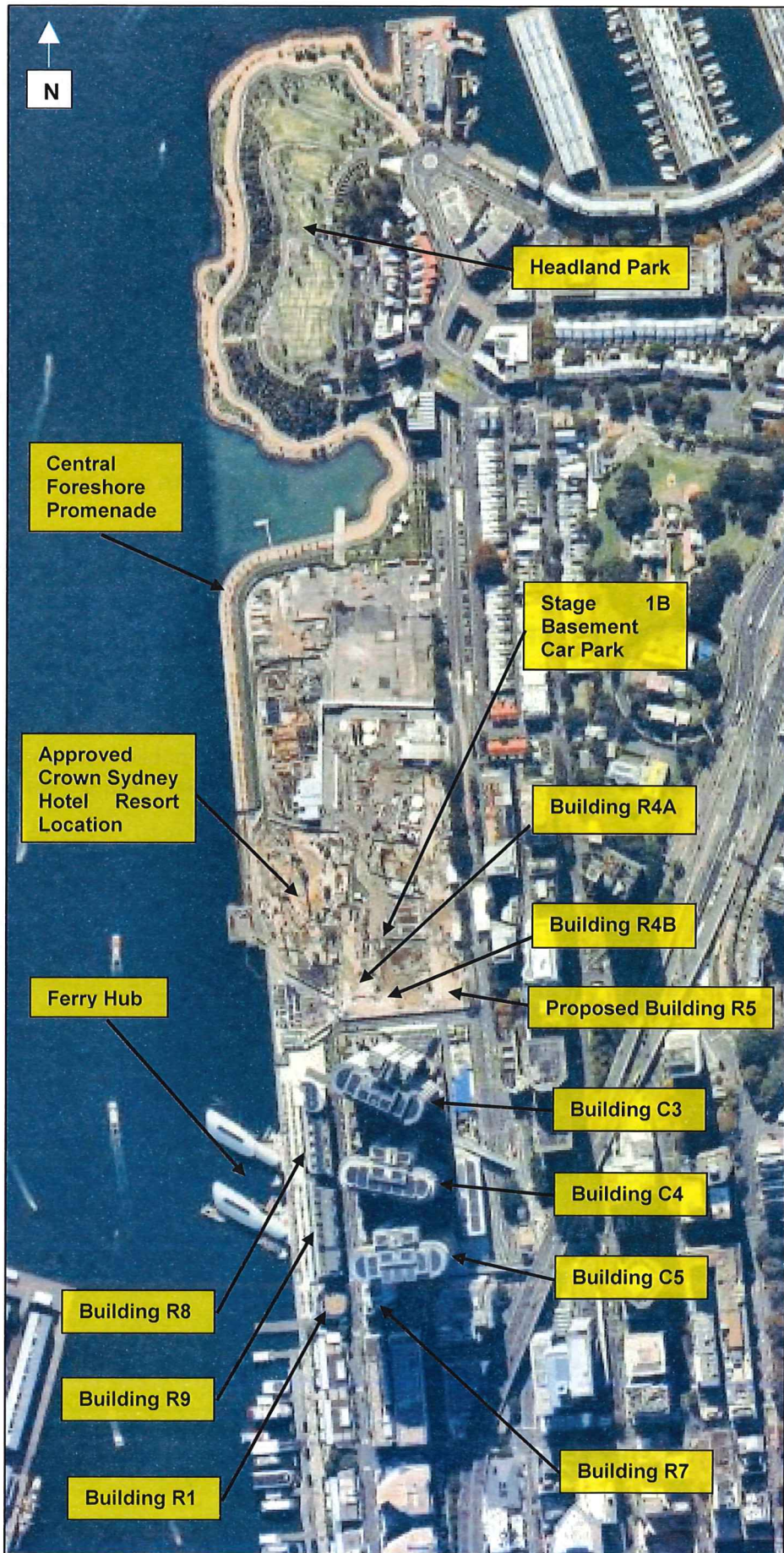


Figure 4: Barangaroo construction and completed projects plan (Base source: Nearmap)

1.7 Environment Protection Authority Declaration Area

The site incorporates part of a 'remediation site' as declared by the Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997*, (EPA Declaration Area 21122). The Declaration Area is being remediated in three stages.

Stage 1 involves the remediation of Block 4 and the adjacent public domain areas (SSD 5897) and was approved by the Department on 10 November 2014. These works are currently well advanced.

Stage 2 involves the remediation of Block 5 (SSD 6533) to the north and was approved by the Department on 18 December 2015 and works have commenced.

Stage 3 relates to the remediation of part of Hickson Road (SSD 6617) and was approved by the Department on 25 August 2016. This section of Hickson Road abuts the northern boundary of Block 4B (Building R5) to the east of the proposed buildings.

The EPA has advised the Declaration will not be lifted until the entire area has been successfully remediated.

Detailed consideration of contamination issues is provided in **Section 5** of this report.

2. PROPOSED DEVELOPMENT

2.1 Development Description

The application seeks approval for the construction and use of public domain areas. The key components of the proposed development are summarised in **Table 1** and shown in **Figure 5**.

Table 1: Key development components

Aspect	Description
Early works	<ul style="list-style-type: none"> • Site preparation. • Remediation within declaration area (Blocks 4 and 5) and outside of it.
Building	<ul style="list-style-type: none"> • 75 m² single storey public amenity and storage building within Hickson Park.
Public domain areas	<ul style="list-style-type: none"> • Hickson Park. • Watermans Quay and public pier. • Section of Barangaroo Avenue. • Wulugul Walk. • Watermans Cove and public pier. • A pedestrian colonnade to Hickson Road.
Public domain works	<ul style="list-style-type: none"> • Ground treatments and finishes. • Landscaping, including grassed areas and substantial tree planting. • Street furniture and fixtures. • Lighting. • Wayfinding signage. • Civil and stormwater infrastructure and utility services.
Construction	<ul style="list-style-type: none"> • 7 am to 7 pm (Monday to Friday). • 7 am to 5 pm (Saturday). • No works on Sundays or public holidays.
Employment	<ul style="list-style-type: none"> • 150 jobs during construction and 50 during operation.
CIV	<ul style="list-style-type: none"> • \$83 million.

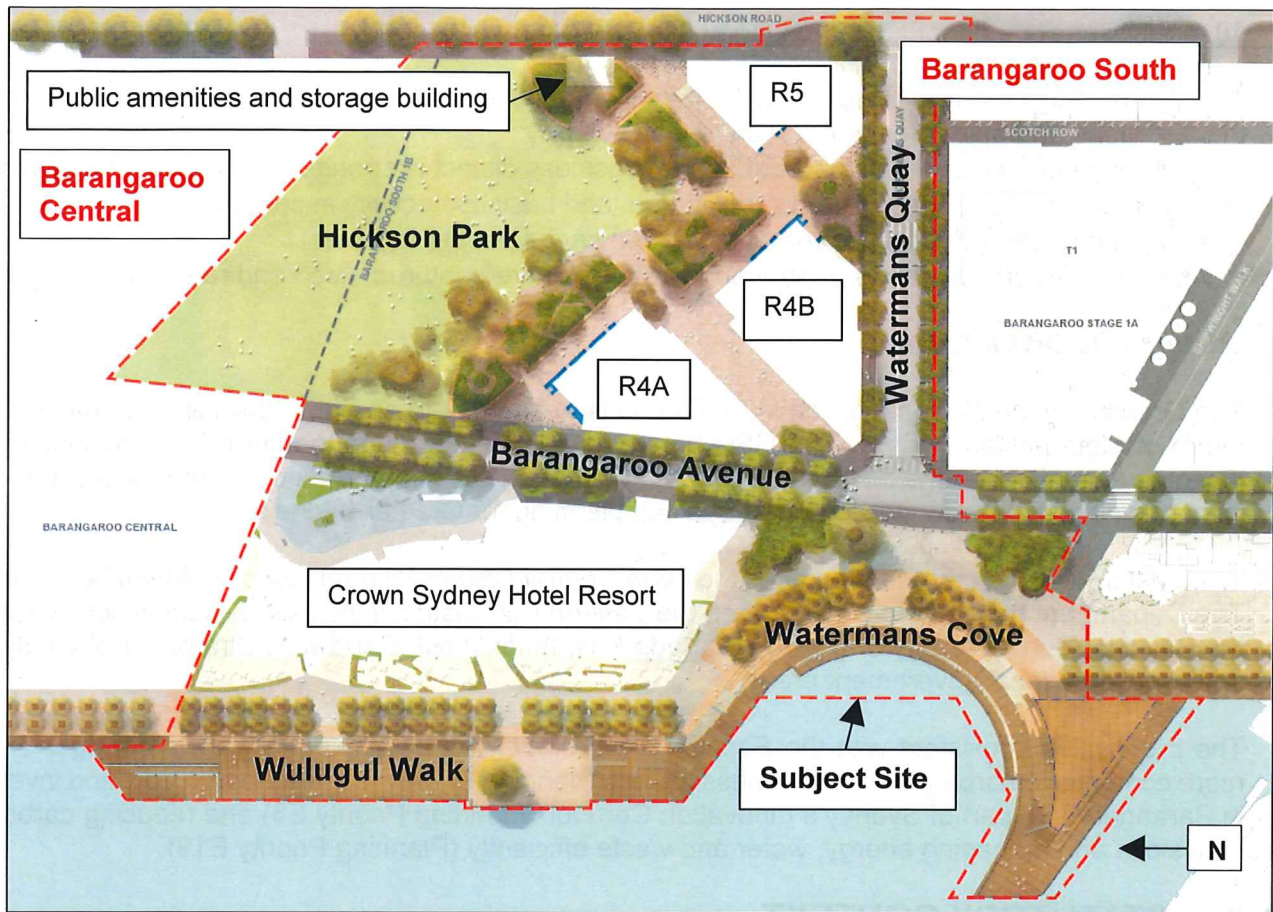


Figure 5: Public domain works overview plan (Base source: EIS)

2.2 Project Need and Strategic Context

The Applicant has advised the carrying out of the development is needed and justified for the following reasons:

- there is a strategic need to provide public domain to ensure visitors, residents and workers at Barangaroo South enjoy a high-quality environment
- the development is consistent and complies with all strategic planning documents, environmental planning instruments and Concept Plan (MOD 8)
- the development would provide a wide range of positive social and economic benefits
- it is a key part of a strategic government foreshore renewal project.

The Department has considered the project in the context of strategic planning documents below.

Greater Sydney Region Plan

Greater Sydney Regional Plan – A Metropolis of Three Cities sets out the NSW Government's 40-year vision and establishes a 20-year plan to manage growth and change for Greater Sydney and includes 10 directions. The Plan's key directions are to provide:

1. a city supported by infrastructure – infrastructure supporting new developments
2. a collaborative city – working together to grow a Greater Sydney
3. a city for people – celebrating diversity and putting people at the heart of planning
4. housing the city – giving people housing choices
5. a city of great places – designing places for people
6. a well-connected city – developing a more accessible and walkable city
7. jobs and skills for the city – creating conditions for a stronger economy
8. a city in its landscape – valuing green spaces and landscape
9. an efficient city – using resources wisely

10. a resilient city – adapting to a changing world.

The Sydney City LGA is located within the East Harbour City. The proposed development supports the directions and objectives of the Plan, in particular by:

- ensuring Greater Sydney's harbour central business district is stronger and more competitive
- ensuring Greater Sydney attracts investment and business activity in centres
- ensuring Greater Sydney is a great place that brings people together
- ensuring Greater Sydney's energy and water flows are captured, used and re-used.

Eastern City District Plan

The Greater Sydney's Commission's (GSC) role is to coordinate and align planning to shape the future of Metropolitan Sydney. The GSC has prepared District Plans to inform local council and planning and influence the decisions of State agencies. The aim of the District Plans is to connect local planning with the longer-term metropolitan planning for Greater Sydney.

The *Eastern City District Plan* replaces the *Draft Central District Plan* released in November 2016. The Department has therefore considered the Eastern City District in its assessment which covers the Bayside, Burwood, City of Sydney, Canada Bay, Inner West, Randwick, Strathfield, Waverley and Woollahra local government areas.

The proposal is consistent with the *Eastern City District Plan* by helping to grow a stronger and more competitive harbour central business district (Planning Priority E7), helping to grow and invest in Barangaroo as part of Sydney's Innovation Corridor (Planning Priority E8) and reducing carbon emissions and managing energy, water and waste efficiently (Planning Priority E19).

3. STATUTORY CONTEXT

3.1 State Significant Development

The proposal is SSD pursuant to section 4.36 (development declared SSD) of the EP&A Act as it is development at Barangaroo with a CIV in excess of \$10 million under clause 3 of Schedule 2 of State Environmental Planning Policy (State and Regional Development) 2011.

3.2 Consent Authority

In accordance with clause 8A of the State Environmental Planning Policy (State & Regional Development) 2011 and section 4.5 of the EP&A Act, the Independent Planning Commission (Commission) is the declared consent authority as Council has made an objection.

3.3 Permissibility

The site is identified as being located within the B4 Mixed Use and RE1 Public Recreation by Part 12 of Schedule 3 of the State Environmental Planning Policy (State Significant Precincts) 2005 (SSP SEPP). The proposed development is permissible with consent in both zones. Part of the western edge of the site is located within the W1 Maritime Waters zone in Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005. The proposed development is permissible in the zone.

Therefore, the Minister for Planning/Commission may determine the carrying out of the development.

3.4 Delegated Authority

Design Waiver

On 1 December 2014, the Secretary delegated her functions under Schedule 3 of the SSP SEPP and Modification C2(7) of the Concept Plan to the Executive Directors who report to the Deputy Secretary, Planning Services. This enables the Executive Director, Key Sites and Industry Assessments to waive the requirement for a design competition under Schedule 3 of the SSP SEPP and the terms of the Concept Plan. The delegation does not extend to the functions of the Commission.

Because the public amenity building is concept only it is not considered reasonable for the Executive Director, Key Sites and Industry Assessments to grant a design waiver as the Department is unable to be satisfied that the design exhibits design excellence. This is further considered in **Section 5.7**.

3.5 Environmental Planning Instruments

Under section 4.15 of the EP&A Act, the consent authority is required to take into consideration any environmental planning instrument (EPI) that is of relevance to the development the subject of the development application. Therefore, the assessment report must include a copy of, or reference to, the provisions of any EPIs that substantially govern the project and that have been taken into account in the assessment of the project. The following EPIs apply to the site:

- State Environmental Planning Policy (State and Regional Development) 2011
- State Environmental Planning Policy (State Significant Precincts) 2005
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy No. 55 – Remediation of Land
- Draft State Environmental Planning Policy for the Remediation of Land
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
- State Environmental Planning Policy (Coastal Management) 2018
- Draft Environment State Environmental Planning Policy – Environment.

The Department has undertaken a detailed assessment of these EPIs in **Appendix D** and is satisfied the application is consistent with the requirements of the EPIs.

3.6 Objects of the EP&A Act

The Objects of the EP&A Act are the underpinning principles upon which the assessment is conducted. The statutory powers in the EP&A Act (such as the power to grant consent/approval) are to be understood by powers to advance the objects of the legislation, and limits on those powers should be considered to the extent they are relevant. A response to the Objects of the EP&A Act is provided at **Table 2**.

Table 2: Consideration of the proposal against the objects of the EP&A Act

Objects of the amended Act	Consideration
(a) <i>to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources</i>	The proposal will result in the provision of high quality public domain at Barangaroo at significant benefit to the community.
(b) <i>to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment</i>	Section 3.7 of this report considers the proposal against the principles of ESD.
(c) <i>to promote the orderly and economic use and development of land</i>	The proposal is permitted with consent and is consistent with the Concept Plan. It is therefore considered the proposal represents an orderly and economic use of land.

(d) to promote the delivery and maintenance of affordable housing	The proposal does not involve the delivery or maintenance of affordable housing.
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats	The proposal will have no adverse impact on the environment, including native animals and plants, threatened species and ecological communities and their habitats.
(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)	The proposal will not adversely impact on built and cultural heritage.
(g) to promote good design and amenity of the built environment	Section 5 of this report considers the design and amenity of the proposal.
(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants	Recommended conditions would ensure the public domain is properly constructed and the health and safety of users is protected.
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State	The proposal is SSD and the Independent Planning Commission is the consent authority.
(j) to provide increased opportunity for community participation in environmental planning and assessment.	Section 4 sets out details of the Department's public exhibition of the proposal, including public submissions. The Department's consideration of key issues raised in public submissions is provided in Section 5 .

3.7 Compliance with Clause 3B of Schedule 2 of the EP&A Regulation 2017

Clause 3B(2)(d) of Schedule 2 the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* specifies that a consent authority must not grant consent under Part 4 unless it is satisfied that a development is consistent with the terms of the approval of a Concept Plan. The Department has considered the proposed development and is of the opinion the proposal is consistent with the Concept Plan as it:

- reflects the area to be designed and landscaped as public domain and is permissible with consent on the subject site
- complies with applicable requirements of the Concept Plan (**Appendix E**)
- is consistent with the key objectives of relevant built form principles and urban design controls (**Appendix E**)
- will deliver a high quality public domain at Barangaroo consistent with the desired future outcomes of the Concept Plan (**Section 5**).

3.8 Ecologically Sustainable Development

The EP&A Act adopts the definition of ESD found in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD requires the effective integration of economic and environmental considerations in decision-making processes and that ESD can be achieved through the implementation of:

- the precautionary principle
- inter-generational equity
- conservation of biological diversity and ecological integrity, and
- improved valuation, pricing and incentive mechanisms.

The proposed development proposes ESD initiatives and sustainability measures, including energy, water and waste reduction measures such as:

- recycled materials
- photovoltaics
- energy efficient light fittings
- best practice stormwater treatment
- water sensitive urban design.

The Department has considered the project in relation to the ESD principles. The Precautionary and Inter-generational Equity Principles have been applied in the decision-making process by a thorough assessment of the environmental impacts of the project. Overall, the proposal is consistent with ESD principles and the Department is satisfied the proposed sustainability initiatives will encourage ESD, in accordance with the Objects of the EP&A Act.

3.9 Secretary's Environmental Assessment Requirements

On 5 October 2016, the Department notified the Applicant of the Secretary's Environmental Assessment Requirements (SEARs) for the application.

The Department is satisfied that the EIS adequately addresses compliance with the SEARs to enable the assessment and determination of the application.

4. CONSULTATION AND SUBMISSIONS

4.1 Exhibition

In accordance with Schedule 1 of the EP&A Act, the Department publicly exhibited the application from 18 May until 19 June 2017 (33 days). The application was exhibited on the Department's website, at the Department's Information Centre, and at the City of Sydney Council's office.

The Department placed a public exhibition notice in the Sydney Morning Herald, The Daily Telegraph and the Central Courier on Wednesday 17 May 2017, and notified adjoining landholders and relevant State and local government authorities in writing.

The Department received a total of nine submissions, comprising seven from public authorities and two submissions from the general public. A summary of the issues raised in the submissions is provided in **Section 4.2** and **Section 4.3** below and a link to the submissions may be viewed at **Appendix B**.

4.2 Public Authority Submissions

The Department received seven public authority submissions. The submissions from public authorities to the exhibition are summarised in **Table 3** below.

Table 3: Summary of public authority submissions

City of Sydney Council (Council)
Council objected to the application raising concerns about design of the public domain (focusing on Hickson Park), the need for community facilities, public art and heritage interpretation, predicted wind conditions, wayfinding signage, cultural and social programming, safety and crime prevention, sustainability and marine ecology and biodiversity.
Environment Protection Agency (EPA)
The EPA did not object to the application and made recommendations in relation to management of contamination.
Transport for NSW (TNSW)
TNSW did not object to the application and made recommendations in relation to intersection design and construction traffic management.
Roads and Maritime Services (RMS)
RMS did not object to the application and made recommendations in relation to regulatory maritime signage, navigation safety and vessel traffic management during construction and operation.
Heritage Division
The Heritage Division did not object to the application or raise any significant issues of concern.
Office of Environment and Heritage
OEH advised the proposal does not involve biodiversity, natural hazards or Aboriginal heritage issues.
Department of Primary Industries (DPI)
DPI requested further information on stormwater pits adjacent to Watermans Cove and along Wulugul Walk.

Port Authority of NSW (PNSW)

PNSW considered the Navigation Impact Assessment recommendations should be implemented.

Sydney Water

Sydney Water recommended standard conditions to establish if the proposal will affect its assets.

4.3 Public Submissions

Two public submissions were received during the exhibition of the application, one which objected and one which made a comment on the proposal.

A nearby resident of Building R8 objected to the application due to view loss from trees proposed along the foreshore at Watermans Cove and requested an alternative tree species be selected which, at maturity, will not impact on views to the north-east.

A public submission made comment on the application noting it is worthy of support as the design provides an attractive bookend to the Headland Park to the north. The submission also requested any future modifications of the Concept Plan treat the sun access planes of Hickson Park as an inviolable aspect of the site and the possible use of a local native Fig (*Ficus Rubiginosa*) be investigated for Wulugul Walk.

4.4 Response to Submissions

Following the exhibition of the application, the Department placed copies of all submissions received on its website and requested the Applicant provide a response to the issues raised.

The Applicant provided a Response to Submissions (RtS) (**Appendix A**) to address the issues raised in the submissions. The key design refinements made to the proposal through the RtS included:

- installation of security bollards at various places throughout the public domain
- refining the design of the extended boardwalk and floating pontoon
- replacing sandstone edging at the former Spirit of Tasmania Loading Dock with precast concrete
- addition of two trees at the southern end of Watermans Quay
- extending the paving on the western edge of Barangaroo Avenue and the interface of the Crown basement driveway at Watermans Cove
- refinement of some trees species in Watermans Cove and Hickson Park
- structural provision included within the public domain to support a future public artwork in Watermans Cove and Hickson Park
- inclusion of a universally accessible ramp to the lower section of boardwalk in Watermans Cove and the revision of the ramp to Hickson Park.

The RtS was made publicly available on the Department's website and was referred to the relevant public authorities. An additional five submissions were received from public authorities. A summary of the issues raised in the submissions is provided at **Table 4** and copies of the submissions may be viewed at **Appendix A**.

Table 4: Summary of RtS submissions

Council
Council made the following comments:
<ul style="list-style-type: none">• issues it previously raised remain unaddressed• the community uses requirements of the Concept Plan have not been met• more variation for the materials and arrangement of new bollards around the perimeter of publicly accessible areas is required (including in Hickson Park)• the soil depth for some trees in the tower interface areas of Hickson Park is inadequate• the design of the northern edge of Hickson Park remains unresolved• public art is not shown on the amended plans, cannot be assessed and should not be overly constrained

- a separate Interpretation Plan is required for the public domain separate to public art.

TNSW

TNSW advised 14.5 m buses and coaches may need to use the intersection of Hickson Road and Watermans Quay and need to be designed accordingly. TNSW recommended conditions of consent requiring the detailed design of the intersection of Hickson Road and Watermans Quay to be finalised in consultation with TNSW and preparation of a Construction Pedestrian and Traffic Management Plan.

RMS

RMS requested:

- footpath treatments be designed to meet the relevant RMS technical directions
- the impact of navigation markers on maritime users be considered
- lighting be considered as part of any safety assessment for public domain located near the water's edge
- wayfinding integrates with surrounding areas and be prepared in consultation with TNSW and RMS
- trees along Hickson Road and within the site be selected having regard to sight distance requirements
- traffic light approval and a Works Authorisation Deed be obtained from RMS prior construction
- the design of Barangaroo Avenue and Watermans Quay be finalised in consultation with the BDA, RMS and TNSW
- the relevant approvals be obtained for regulatory signs and markings and road speed limits
- the Traffic Report consider cumulative traffic impacts from more recent projects.

DPI

DPI recommended standard conditions of consent in relation to management of potential water impacts during construction and operation.

Heritage Division

The Heritage Division noted the works do not affect historic, kerbs, gutters and the like on Hickson Road and advised it has no further comments.

5. ASSESSMENT

5.1 Section 4.15(1) matters for consideration

Table 5 identifies the matters for consideration under section 4.15(1) of the EP&A Act that apply to SSDs in accordance with Section 4.40 of the EP&A Act. The table represents a summary for which additional information and consideration is provided for in **Section 5** (key and other issues) and relevant appendices or other sections of this report and EIS, referenced in the table.

Table 5: Section 4.15(1) Matters for Consideration

Section 4.15(1) Evaluation	Consideration
(a)(i) any environmental planning instrument	The proposal satisfactorily complies. The Department's consideration of the relevant EPIs is provided in Appendix D of this report.
(a)(ii) any proposed instrument	Appendix D.
(a)(iii) any development control plan	Under clause 11 of the SRD SEPP, development control plans (DCP) do not apply to SSD. However, consideration has been given to the Sydney Harbour Foreshores and Waterways Area DCP at Appendix D.
(a)(iiia) any planning agreement	Not applicable.
(a)(iv) the regulations <i>Refer to Division 8 of the EP&A Regulation</i>	The application satisfactorily meets the relevant requirements of the EP&A Regulation, including the procedures relating to applications (Part 6 of the Regulation), public participation procedures for SSD and Schedule 2 of the Regulation relating to EIS.
(a)(v) any coastal zone management plan	Not applicable.
(b) the likely impacts of that development including environmental impacts on both the natural and built environments, and social and economic impacts in the locality	Appropriately mitigated or conditioned – refer to Section 5 of this report.

(c) the suitability of the site for the development	The site is suitable for the proposed development, as discussed in Sections 3 and 5 of this report.
(d) any submissions	Consideration has been given to the submissions received during the exhibition period. Refer to Sections 4 and 5 of this report.
(e) the public interest	The proposal is considered to be in the public interest. Refer to Section 5 of this report.
The likely impact of the proposed development on biodiversity values as assessed in the biodiversity development assessment report. (Section 7.14 of the <i>Biodiversity Conservation Act 2016</i>)	Not applicable, although refer to Section 5 of this report.

5.2 Key Assessment Issues

The Department has considered the EIS, the issues raised in submissions, the Applicant's RtS and supplementary advice provided by the Applicant in its assessment of the proposal. The Department considers the key assessment issues associated with the proposal are:

- public domain
- traffic and access
- land contamination.

Each of these issues is discussed in the following sections of this report. Other issues were taken into consideration during the assessment of the application and are discussed at **Section 5.6**.

5.3 Public Domain

The application proposes to construct five key public domain areas including Hickson Park, Watermans Quay, Barangaroo Avenue, Wulugul Walk and Watermans Cove.

Council raised several concerns in relation to the general design of the public domain and interface areas and paving finishes in Hickson Park.

In its determination of MOD 8 to the Concept Plan, the Commission also set out the desired future outcomes and broader landscaping strategy for Hickson Park (with regards to view corridors, deep soil zones, overshadowing and soft landscaping) and Wulugul Walk (30 m wide promenade).

The Department's consideration of key issues raised by Council and the assessment of the design of the public domain areas (and key elements of the public domain such as plantings, materials, paving, furniture and fixtures) and consistency with key requirements of the Concept Plan is provided below.

5.3.1 Hickson Park

Hickson Park (Park) will provide a significant area of public open space approximately 11,000 m² in size with expansive grass lawn areas and substantial tree plantings in the 'tree belt' around the base of the future Stage 1B Residential Buildings (R4A, R4B and R5 – **Figure 6**).

The Park will be framed by Buildings R4, R4A and R5 to the south, future development on Block 5 in Barangaroo Central to the north, Hickson Road to the east and Barangaroo Avenue to the west.

The Park will provide a significant public amenity space for visitors, tourists, workers and residents at Barangaroo and will link the western edge of the Sydney CBD to the Sydney Harbour foreshore. The northern orientation of the Park seeks to maximise solar access and the built form around its edges will provide protection from westerly winds delivering a high level of amenity.

A wide variety of small, medium and large trees would be provided in the Hickson Park 'tree belt' such as Southern Magnolia, Saucer Magnolia, Sydney Red Gum, Water Gum and Magenta Cherry trees (**Figure 6**). These species have been chosen to mitigate downward wind generated by the Stage 1B Residential Buildings, filter views of surrounding buildings, provide distinct changes in the tree palette, take shelter and enjoy a high level of amenity afforded by the Park. These species also define the transition of the edges of the 'tree belt' to the open lawn.

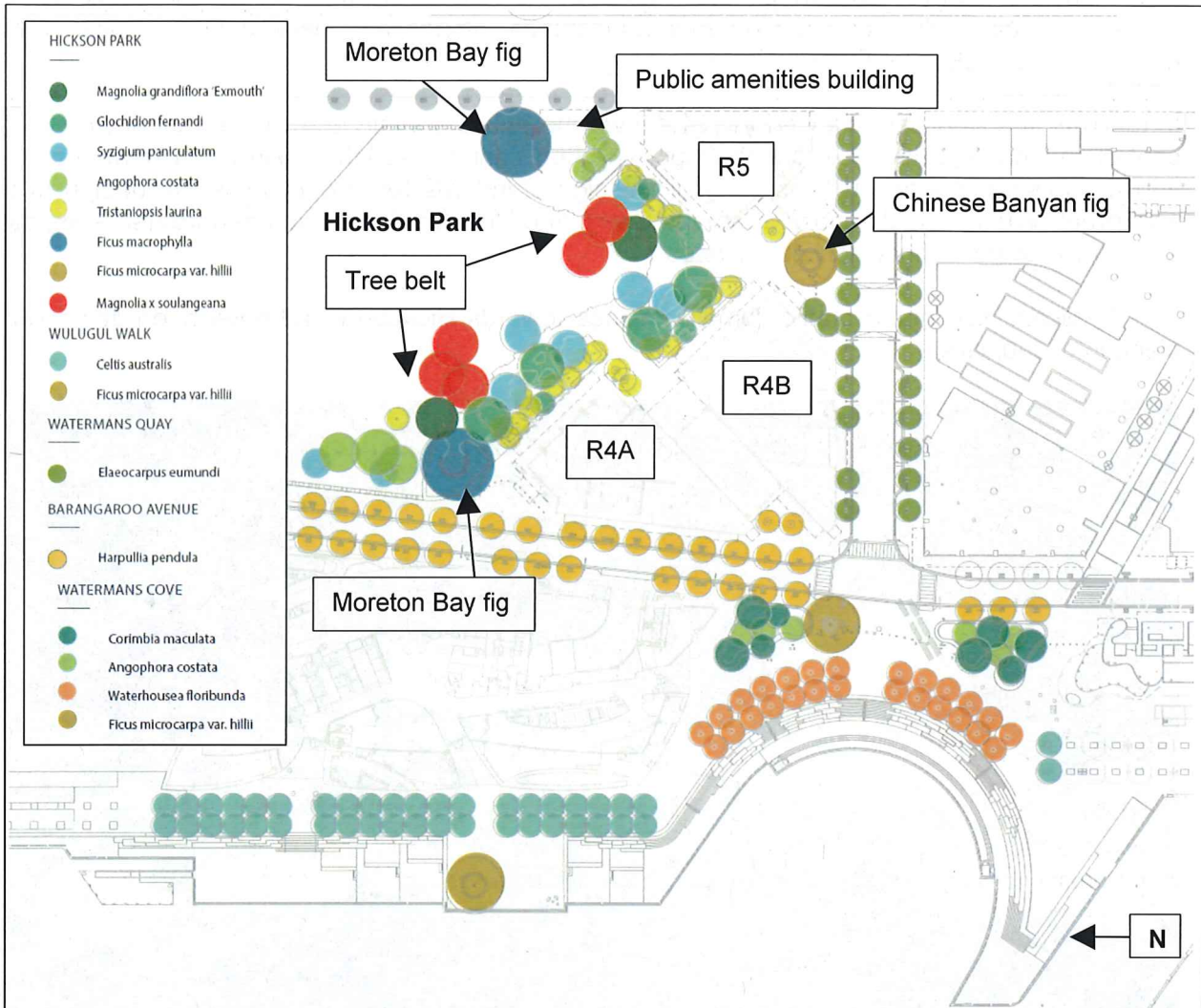


Figure 6: Public domain tree planting strategy (Source: RtS)

Signature Moreton Bay (14 m) and Chinese Banyan (15 m) fig trees in raised planter boxes would also be provided to mark the key entry and arrival points from Hickson Road, Barangaroo Avenue and Watermans Quay (through the Strada).

Porphyry paving would be used in Hickson Park as the main hard material on the ground plane to define the public domain areas surrounding the Stage 1B Residential Buildings. 'Streetscape to Park' paving would be provided to accentuate transition points between Hickson Park and key arrival points from Hickson Road, Watermans Quay and Barangaroo Avenue (**Figure 7**).

Sandstone walls and terraces would be used throughout the tree belt to provide casual seating opportunities and separate key landscaped areas from paved walkways. Two long Sandstone tables known as the 'Barangaroo Bench' and associated seating would also be provided in front of Building R4A forming an important meeting and gathering place. Brass detailing on the benches would provide a continuation of materials used in key parts of the Stage 1A area.

Other park furniture has been kept to a minimum, however regularly spaced bins would be provided throughout the Park, as well as a water bubbler. A single storey (75 m²) public amenities building is also proposed (concept only) in the Park to the west near Hickson Road (**Figure 6**).

5.3.1.1 Key issues raised by Council for Hickson Park

Future ownership of the public domain

Council requested the Applicant provide clarification on the future ownership of the public domain and ensure all public domain elements (furnishings, fittings and details) are consistent with Council's *Public Domain Design Codes*.

In the RtS, the Applicant clarified the BDA own the public domain and will be responsible for its control and management post-construction. The Applicant advised the design of Watermans Quay and Barangaroo Avenue utilises Council's design standards for streets while the design of the waterfront (Wulugul Walk and Watermans Cove) and Hickson Park have been treated separately as they would be distinct individual places.

The Applicant also noted public domain finishes towards Hickson Road have been designed to blend into Council's.



Figure 7: Artist's impression of the 'tree belt' in Hickson Park (Base source: RtS)

The Department considers it reasonable the design of the waterfront and Hickson Park be treated separately given the significance of these spaces to Barangaroo South and the Sydney CBD and considering, where possible, the edges of these areas have been treated to provide a harmonious transition to adjacent Council areas.

Interface areas of Hickson Park

Council requested the Applicant provide greater design resolution:

- on the northern interface of Hickson Park with Barangaroo Central (as it is currently shown fading out into a large expanse of lawn) and set building design parameters for future development in Barangaroo Central
- on the interface of Hickson Park and Hickson Road which has a sharp edge with the footway and no transition / control over pedestrian movement
- on the interface of Hickson Park and the base of the residential buildings as currently the entrances to the buildings are hidden by garden beds

In relation to the interface of Hickson Park and Barangaroo Central, the Applicant advised fundamental objectives for the design of Hickson Park is to (1) create a large open lawn area that provides opportunities for staging of events and passive recreation activities and to (2) maintain view lines from Hickson Road to Sydney Harbour (consistent with the requirements of the Concept Plan). The Applicant considers the alignment of these two objectives support the proposed design approach of an unencumbered space in the northern and central parts of the park. As the development outcomes of Barangaroo Central are currently unknown, the space also aims to provide the greatest flexibility possible with regards to the eventual built form and uses of adjoining land to the north.

The Department supports the design of the interface of Hickson Park and Barangaroo Central as a large open grass area that enables view corridors across Hickson Park towards the water and is consistent with the desired outcomes of the Concept Plan.

The Department also supports the design as a 'blank canvass' optimising flexibility with future uses of Hickson Park and its integration with future development to the north in Barangaroo Central.

In relation to the interface of Hickson Park and Hickson Road, the Applicant undertook further workshops with the BDA and amended the Barangaroo Avenue and Hickson Road street edges to accommodate service vehicle access for events, and a series of sandstone blocks to provide seating opportunities for park users and pedestrians and prevent hostile vehicle access.

In respect of the interface of Hickson Park and adjacent residential buildings, the Applicant also clarified the building entrances are located on the street and are not located behind garden beds.

Upon review of the RtS, Council advised it did not support proposed amendments to the interface of Hickson Park and Hickson Road and requested the Applicant adopt a range of edge treatments utilising earth mounds, shade planting and other treatments to break up the Park edges and create more meaningful spaces.

Despite Council's concerns, the Department supports the use of sandstone blocks on the interface of Hickson Park and Hickson Road noting they are high quality materials which are aesthetically pleasing, tie-in with the same materials used elsewhere in the public domain (including the Headland Park) and serve a much-needed safety and security purpose when considering the intended use of Hickson Park.

The Department also notes earth mounding of trees in this location as recommended Council may diminish the ability of the design to provide clear views from Hickson Road through to the waterfront (discussed further in **Section 5.3.1.2**) consistent with the Concept Plan and is therefore not supported.

Paving finishes in Hickson Park

Council requested the following specifically in relation to paving finishes in Hickson Park:

- reconsider the use of porphyry stone paving, particularly around the base of the residential buildings, as it will result in uneven surfaces and difficultly achieving AS 1428.1
- reconsider the use of the 'Streetscape to Park' transition paving bleeding into each other as it blurs the distinction between different areas and creates confusion over ownership.

In the RtS, the Applicant advised porphyry paving was chosen as the main hard material for the ground plane in Hickson Park as a key unifying element with Wulugul Walk, Watermans Cove and the wider precinct. The paving is also used on the Barangaroo Central waterfront promenade and in the Headland Park.

The Applicant stated the paving complies with AS 1428.1 and committed to investigating methods to ensure the most even surface treatment possible is achieved (e.g. saw cutting rather than splitting).

In relation to 'Streetscape to Park' paving, the Applicant noted this was a conscious design response to distinguish transition zones and achieve a world-class public domain. Further, it was noted the paving materials would meet the relevant codes for slip resistance.

The Department supports the use of porphyry paving as an element unifying the broader Barangaroo site and is satisfied the Applicant is committed to ensuring pavement finishes are of a high quality that comply with relevant Australian Standards and do not result in uneven surfaces.

The Department also supports the use of 'Streetscape to Park' transition paving throughout the public domain as an innovative and unique design element which accentuates key transition zones. The Department has recommended key conditions requiring paving to comply with the relevant Australian Standards for slip resistance, access and mobility.

5.3.1.2 Key requirements of the Concept Plan for Hickson Park

Deep soil zones and landscaping in Hickson Park

Key design requirements for Hickson Park imposed by the Commission through MOD 8 to the Concept Plan sought to ensure:

- provision of a deep soil zone (DSZ) to support large mature tree growth
- landscaping and soil depth outside the DSZ would support medium and large tree growth
- view corridors from Hickson Road to Sydney Harbour were provided
- the public domain is completed prior to occupation of the Stage 1B Residential Buildings (R4A, R4B and R5) and the Crown Sydney Hotel Resort
- no adverse/significant overshadowing of Hickson Park and large open areas of grass.

In particular:

- modifications B3(1)(a) and (c) of the Concept Plan set out the location of Hickson Park, requires it to provide view corridors and support large mature trees, including the provision of at least 2,000 m² of deep soil with a depth of at least 3 m
- future environmental assessment requirement C11 of the Concept Plan states that where landscaped areas involving the planting of trees are proposed above basement car parking, adequate soil depth to support medium and large trees to a height of at least 15 m must be provided
- modification B12 of the Concept Plan requires the foreshore promenade, pier, Watermans Cove and Hickson Park to be completed and publicly accessible, prior to the issue of any Occupation Certificate within Block 4A, 4B or Y
- modifications B3(1)(d) and (e) require Hickson Park not to be overshadowed more than an average area of 2,500 m² between 12 midday and 4 pm on 21 June, and be primarily comprised of soft landscaping, including extensive areas of grass.

The above matters are considered separately below.

Deep soil zones in Hickson Park

The Concept Plan requires a 2,000 m² area of deep soil with a depth of at least 3 m so that Hickson Park can support the growth of large mature trees in this area.

The Department considers a significant proportion of the larger trees proposed in Hickson Park would be located above the DSZ such that (whilst not entirely coherent) they are generally reflective of the location of the DSZ and achieve the desired outcomes of the Concept Plan.

The Applicant has provided a 2,500 m² slab set down area which accommodates a 2,050 m² deep soil zone (DSZ). The DSZ has depths ranging from approximately 2.68 m to 3.12 m (**Figure 8**). The set down is achieved by lowering (folding down) a section of the approved Stage 1B basement slab below at ground level.

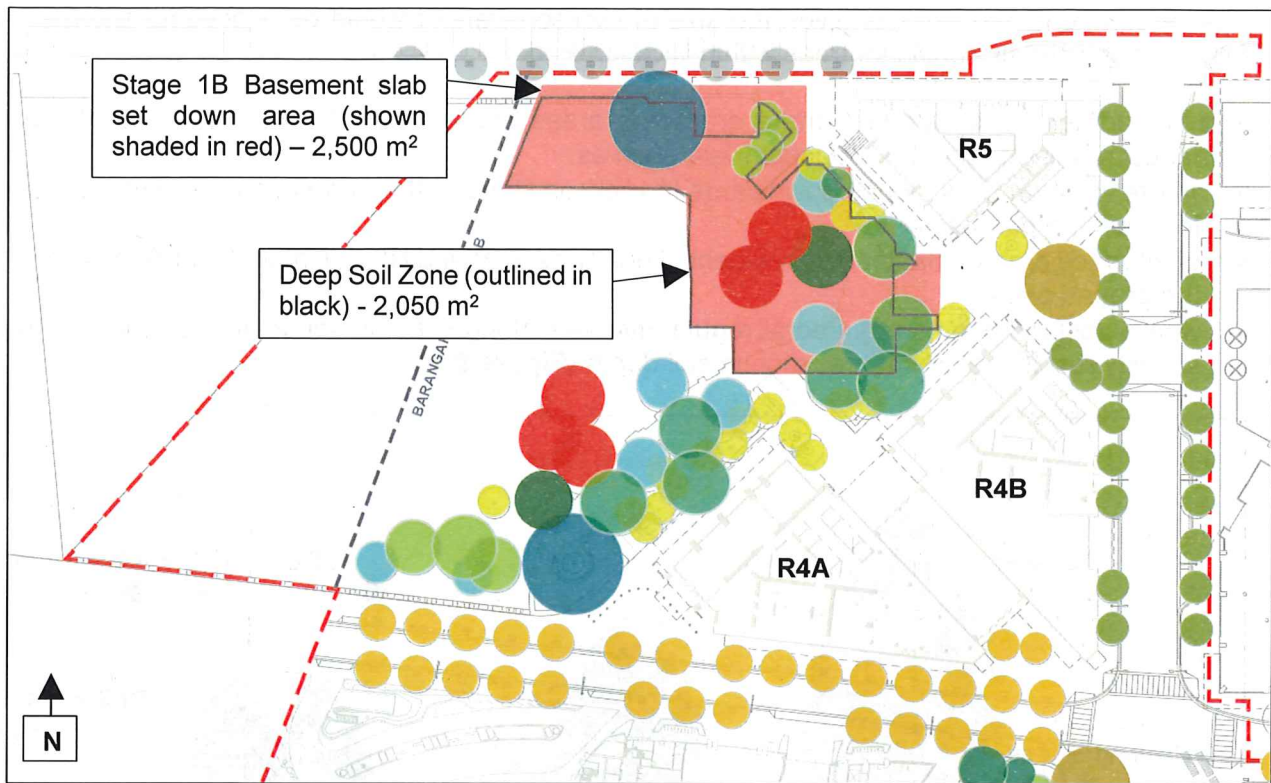


Figure 8: Proposed DSZ in Hickson Park (Source: Supplementary RtS)

The Department acknowledges the location of the DSZ does not precisely match the location of trees proposed in Hickson Park and has been designed in response to several physical constraints, including:

- the approved Stage 1B basement (SSD 6960) which is located underneath the majority of Hickson Park (excluding the north-west portion). The levels of the basement slabs have been approved and due to the clearances required to accommodate service vehicles there is an inability to relocate the current approved service vehicle loading dock
- the approved Crown Sydney Hotel Resort basement (SSD 6957) which is located underneath the north-west portion of the Park. The levels of the basement slabs have been approved and there is an inability to increase soil depth over the Crown basement because the structural design loads would be exceeded
- the mounding that would result at ground level would restrict views and accessibility across Hickson Park
- the approved Block 4 remediation works (SSD 5897) which are well advanced require the installation of groundwater retention walls with coupling points installed to match the approved Crown Sydney Hotel Resort and Stage 1B basement slab levels
- structural stability of the Crown Sydney Hotel Resort and Stage 1B basements. The basements have been designed as a single integrated structure whereby the basement levels must connect from one side to the other to ensure structural stability. This means that if the DSZ were to be relocated to better correlate with trees, it would result in the need for the depth of excavation of the Stage 1B basement to be increased. This would cause a misalignment of structural slabs and a loss of structural integrity of both basements.

The Department accepts there are several physical constraints which have contributed to the delineation of the DSZ and that increasing the area of tree planting over the DSZ would result in a number of negative impacts, namely blocking views corridor from Hickson Road through to Sydney Harbour, contrary to desired outcomes of the Concept Plan and undermining fundamental principles such as the provision of a 'tree belt', on which the landscape design for the public domain has been based.

The Department also accepts given the size of Hickson Park, it would be difficult for the DSZ to fully encapsulate all significant trees within Hickson Park.

The Department acknowledges there are some areas of the DSZ which do not meet the 3 m numerical requirement of the Concept Plan, such as:

- where Hickson Park slopes downwards to Hickson Road to the north of the Fig Tree (2.68 m) for drainage purposes
- at interface areas with adjacent residential buildings R4B and R5 (2.8 m to 2.91 m) to align with the ground plane
- where upstand beams required at regular intervals along the slab set down area for structural stability result in a 40-cm reduction in soil depth (**Figure 9**).

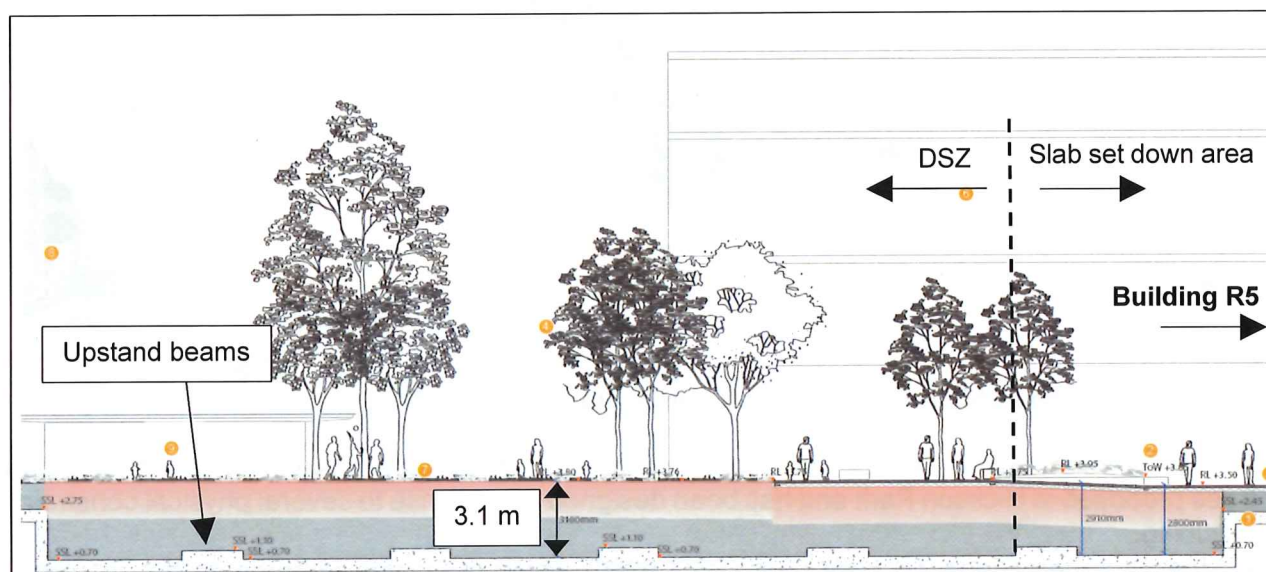


Figure 9: Cross section of slab set down area in Hickson Park (Source: RtS)

However, the Department notes there are many areas within the DSZ which are in excess of 3 m deep and considers any variation to the numerical (3 m) requirement of the Concept Plan to be insignificant because:

- depth non-compliances are marginal, ranging between 9 and 40 cm across 31% of the DSZ
- the non-compliances are required for drainage, ground floor alignment and structural integrity reasons
- the Applicant has provided expert arborist and soil scientist advice from Pittendrigh/SESL which concludes 3 m depth of soil is not necessary for the sustainable growth of the largest trees chosen for the public domain. The advice found that half this depth (1.5 m) is required for sustained growth of large Fig Trees. This is because roots typically spread horizontally along the upper 500 mm of soil and there is not enough oxygen for roots to live below 1.5 m
- interface areas between the edge of the DSZ and the slab set down area are generally in excess of 2 m deep (and in some cases, up to just under 3 m) and provide significant additional soil area (~450 m²) and volume (~1,500 m³) for tree roots within the DSZ to access. The 3 m (2,000 m²) DSZ requirement of the Concept Plan would result in a total soil volume of 6,000 m³ and the volume of soil resulting from the proposed slab set down area has been estimated at 7,500 m³, which exceeds this minimum volume by 25%
- the upstand beams result in a loss of 3.7% of the total slab set down area soil volume and are unlikely to interact with tree roots given their depth.

Council did not raise concerns about the proposed DSZ in principle except for mounding of soil in localised areas adjacent to a shared walkway to Buildings R4A and R4B in the tree belt. Council has recommended that either the sandstone wall height be increased 325 mm (to retain a higher ground level) or revision of the tree species to a small to medium sized species be considered.

The Applicant has clarified the species in these areas are in fact small and medium sized trees and have access to adequate soil depth and volume in compliance with the Pittendrigh/SESL advice (without the need for mounding). The Applicant also noted increasing the wall height would result in a number of unsatisfactory outcomes, most notably a 1.5 m high wall fronting Hickson Road, an 800 mm high wall frontage to Watermans Quay and obstruction of views (from a seated position) out into the Park from the lobbies of adjacent residential buildings.

Given the amount and height (325 mm) of mounding is limited, adequate soil depth and volume would be available for tree growth and increasing the wall height would likely result in undesirable design outcomes, the Department considers the approach acceptable.

With the above information in mind, the Department concludes the proposed DSZ is generally consistent with the prescribed requirements of Modification B3(1)(c) of the Concept Plan and more importantly, is satisfied the overarching intent of this requirement to ensure Hickson Park can support the sustained growth of large mature trees would be achieved.

Landscaping outside deep soil zones

In relation to future environmental assessment requirement C11 of the Concept Plan, a minimum of 750 mm of soil depth will be provided for trees (excluding Fig Trees) proposed in all other areas of the public domain located above basement car parking (e.g. areas of Hickson Park outside the DSZ and the portion of Barangaroo Avenue located above the Crown Sydney Hotel Resort basement).

This complies with the expert arborist and soil scientist advice provided by the Applicant from Pittendrigh/SESL which recommends a minimum soil depth of 750 mm for medium trees 10 to 20 m in height. Three large Fig trees (15 m to 30 m in height) are also proposed in raised planter boxes at Wulugul Walk, Watermans Cove and Watermans Quay (between Buildings R4B and R5).

For the large Fig trees, the Pittendrigh/SESL advice recommends an optimal soil depth of 1,500 mm and a minimum soil volume of 100 m³. The Watermans Quay fig tree complies with the Pittendrigh/SESL requirements. However, the Fig trees proposed in Wulugul Walk and Watermans Cove have a soil depth of 1400 mm and 1000 mm respectively.

In relation to the Wulugul Walk Fig tree, the Department recognises the 100 mm non-compliance with the Pittendrigh/SES advice is marginal (6.7%) and that substantially more soil volume 225 m³ would be available to this tree than recommended to ensure sustainable growth. This is not the case for the Fig tree proposed in Watermans Cove which only provides soil volume of 100 m³. The Department has therefore recommended a condition requiring the Applicant to increase the soil depth to 1,500 mm at Watermans Cove.

The Department acknowledges the soil depth and volume requirements recommended by Pittendrigh/SESL are not entirely consistent with those in the Department's *Apartment Design Guide 2015* (ADG). For example, the ADG recommends a minimum soil depth of 1,200 mm and a minimum soil volume of 150 m³ mm for large trees 12 m to 18 m in height.

However, the Department notes the ADG provides guidance for residential apartment buildings whereas Pittendrigh/SESL has provided advice tailored to the specific tree species proposed in the public domain. This advice is also based on successful tree plantings at the Headland Park and other metropolitan projects at Sydney Olympic Park, Darling Harbour and Pyrmont and concludes the soil depths and volumes recommended will enable the establishment and development of well-formed trees.

The Department is satisfied the adoption of the Pittendrigh/SESL soil depth and volume requirements would ensure sustainable mature tree growth in the public domain. With recommended conditions in place, the Department concludes all other areas of the public domain

located above basement car parking would have adequate soil depth to support medium and large trees to achieve compliance with the Concept Plan.

View corridors

The Concept Plan requires the design of Hickson Park to provide view corridors from Hickson Road through to Sydney Harbour. This requires the levels/contouring of Hickson Park to be low enough so views to the harbour from Hickson Road are not blocked.

The Department has reviewed the levels on Hickson Road (RL 2.50 to RL 2.70) when compared to the highest level of Hickson Park (RL 4.1) and is satisfied it provides a ground plane (i.e. up to 1.6 m of contouring) that would allow for views to be enjoyed to the north-west across the Park from Hickson Road, beyond the Crown Sydney Hotel Resort, and towards the water (**Figure 10**).

The Applicant has advised the contouring is required so stormwater run-off drains from Hickson Park towards Hickson Road and Barangaroo Avenue. This removes the need for drainage pits in the centre of Hickson Park which would reduce amenity and available lawn area for future users. The Department considers this represents very gentle grading across the 100 m (approx.) expanse of Hickson Park and is typical for a city park.

The Department concludes the design of Hickson Park would provide view corridors/connections across to Sydney Harbour and would achieve the desired outcomes of the Concept Plan. The Department also recognises that contouring is an essential part of landscape design for any park (drainage, natural seating etc) and that without it the amenity and future usability of the Park may be diminished and compromised.

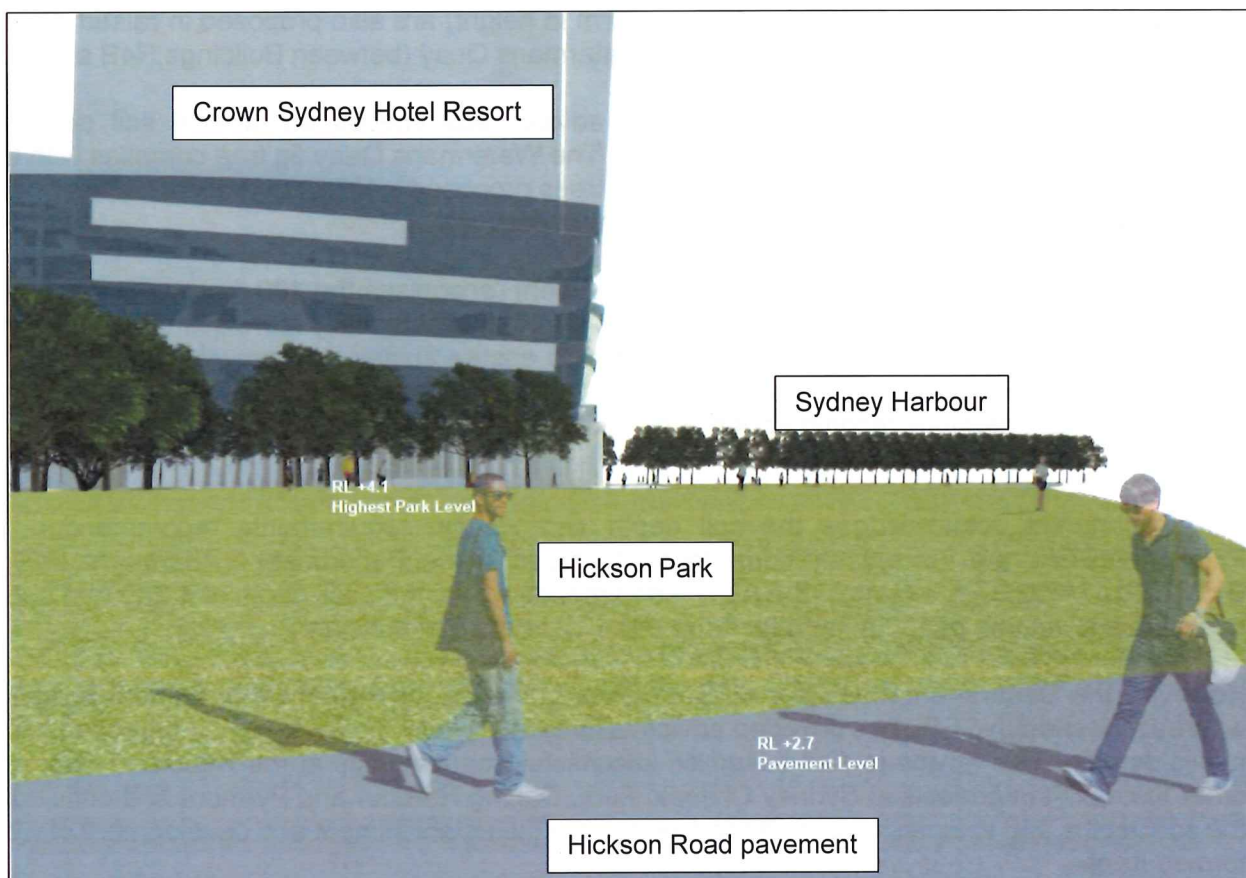


Figure 10: View looking north-west across Hickson Park from Hickson Road (Base source: RtS)

Staging

The application proposes construction exclusion zones located around the base of buildings R4A, R4B and R5. These zones also partially occupy the southern edge of Hickson Park (**Figure 11**).

The Applicant has advised the construction exclusion zones are necessary for public safety and construction logistics, and is seeking their retention for the duration of the construction of buildings R4A, R4B and R5.

The Commission's determination of MOD 8 imposed specific construction staging requirements for the foreshore promenade, pier, Watermans Cove and Hickson Park to be completed and publicly accessible, prior to the issue of any Occupation Certificate for buildings R4A, R4B (known as One Darling Harbour), R5 or the Crown Sydney Hotel Resort.

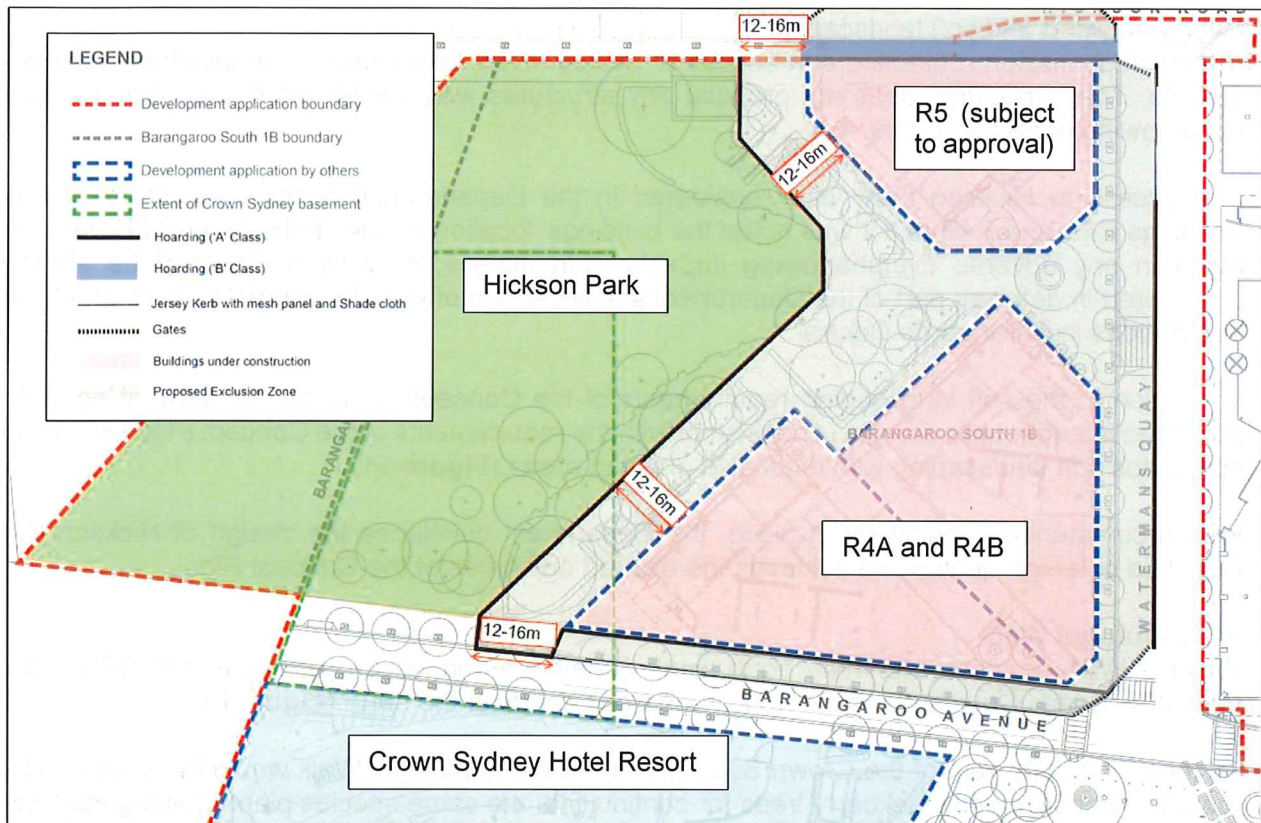


Figure 11: Indicative construction exclusion zones shown in grey around Stage 1B Residential Buildings (Base source: RtS)

The Applicant has advised buildings R4A, R4B and potentially R5 (if approved) are likely to remain under construction for some time after the Crown Sydney Hotel Resort has been completed. The retention of the construction exclusion zones during this time would result in this part of Hickson Park not being completed nor publicly accessible by the time Crown Sydney Hotel Resort is ready to be occupied.

The Applicant contends the proposed retention of the construction exclusion zones meets the intent of the Concept Plan requirement as it allows for the delivery of Hickson Park as far as reasonably practicable. The Applicant also notes the proposal will deliver 85% of the total public domain area prior to the expected issue of the first Occupation Certificate for the Crown Sydney Hotel Resort and is therefore generally consistent with the Concept Plan requirement.

The Department recognises the establishment and retention of the construction exclusion zones within Hickson Park for the duration of the construction of R4A, R4B and R5 may give rise to a scenario in which the Crown Sydney Hotel Resort is complete but cannot be occupied. As a result,

the Commission's staging requirement provided in the Concept Plan that Hickson Park is to be completed and publicly accessible would not strictly be met.

In the likelihood that this scenario will eventuate, the Applicant may need to relocate the proposed construction exclusion zones to alternative locations outside of Hickson Park to allow for its completion. The Department therefore considers that it is prudent for the Applicant to consider alternative future construction exclusion zones outside of Hickson Park in association with the construction of buildings R4A, R4B and R5, to ensure Hickson Park can be completed and accessible. The Department has recommended a condition to this effect.

Alternatively, a modification to the Concept Plan may be sought to clarify the precise construction staging requirements for this part of Barangaroo, however this remains a matter for the Applicant.

Overshadowing and soft landscaping

A public submission requested sun access to Hickson Park be treated as an inviolable aspect of the site. The application does not propose any structures with the potential to cause significant overshadowing of Hickson Park.

Sun access to Hickson Park was considered in the Department's assessment of Residential Buildings R4A and R4B and it was noted the buildings' location relative to Hickson Park would not result in any adverse overshadowing impacts. Sun access to Hickson Park will be similarly considered in detail as part of the Department's assessment of Residential Building R5 and future applications in Barangaroo Central.

In relation to the soft landscaping requirements of the Concept Plan, the Department notes the proposed interim public domain is consistent with the requirements of the Concept Plan as it mainly comprises soft landscaping with extensive grassed areas (**Figure 11**).

With recommended conditions in place, the Department concludes the design of Hickson Park would be of a high quality and achieves the desired outcomes of the Concept Plan.

5.3.2 Wulugul Walk

Wulugul Walk provides a primary north-south pedestrian connection (approximately 30 m wide) from Watermans Cove in the south to Barangaroo Central in the north (**Figure 5**).

To the immediate west of the Crown Sydney Hotel Resort, Wulugul Walk would be lined with two rows of Mediterranean Hackberry trees for continuity of the same species planted along the Stage 1A foreshore area (**Figure 12**).

The proposed furniture palette also incorporates the same lighting, bins, bubblers and seats as Stage 1A. The main pathway would be finished with precast unit pavers with porphyry paving and sandstone edges providing a unified material treatment to the Headland Park.

Sandstone terraces and stone steps would be used to transition from the upper section of Wulugul Walk down to the extended timber boardwalk. On the boardwalk, timber ramps and terraces would lead up to the former Spirit of Tasmania loading dock site as the main focal point. This site would be raised to sit flush with the upper section of Wulugul Walk and would be finished with porphyry paving and a signature Chinese Banyan Fig tree to reference its former maritime use.

The northern section of the boardwalk incorporates a floating pontoon for water taxi pick-up and drop-off. Council did not raise any specific concerns in relation to Wulugul Walk. RMS Maritime and Ports Authority noted potential maritime navigation and safety issues and these are considered in detail in **Section 5.7**.

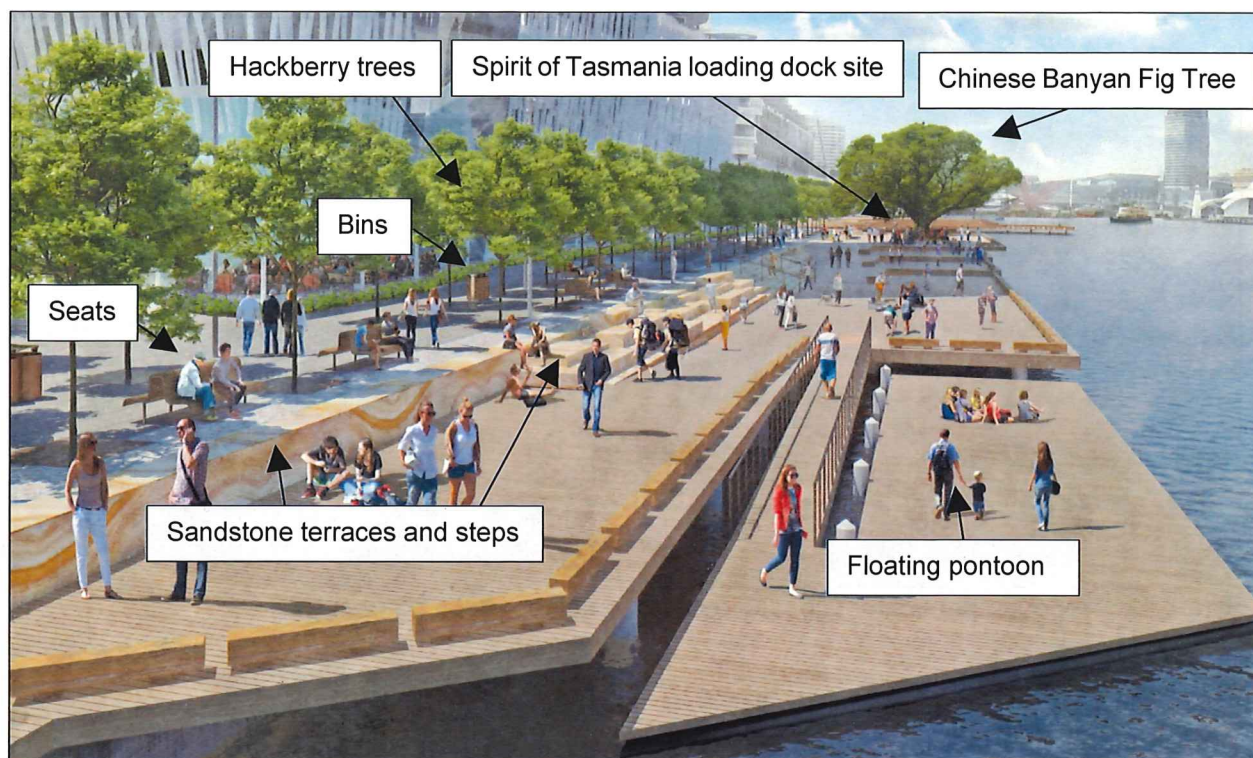


Figure 12: Artist's impression of Wulugul Walk (Source: RtS)

The Department supports the design of Wulugul Walk as it would provide a continuation of hardscaping elements from Stage 1A and the Headland Park, suitably interprets the former Spirit of Tasmania loading dock site and provides varied opportunities for visitors to enjoy views of the harbour. The Department concludes Wulugul Walk is well designed and is a generous public open space, reinforcing its purpose as a primary north-south pedestrian corridor.

5.3.2.1 Key requirements of the Concept Plan for Wulugul Walk

In its determination of MOD 8 to the Concept Plan, the Commission recommended a 9 m to 14 m westward extension of the waterfront promenade to ensure a full 30 m promenade (known now as Wulugul Walk) is provided directly to the west of Block Y (i.e. the Crown Sydney Hotel Resort) to be read as public open space.

The Concept Plan requires this area to be designed, constructed and landscaped to its western most extent (as mapped in the SSP SEPP), as public open space and include mature tree plantings and other soft landscaping elements.

The Department has reviewed the proposed public domain plans for Wulugul Walk in detail (Figure 12 and 13) and is satisfied it complies with the Concept Plan because:

- it has been designed and landscaped to its western most extent to provide a waterfront promenade of at least 30 m and a boardwalk over the water
- the area predominantly comprises a large tree lined avenue with a substantial open expanse of timber boardwalk along the waterfront which reads as public open space
- the tree avenue includes mature trees and a signature Fig tree at the former Spirit of Tasmania loading dock site
- it includes formal and informal areas (timber seating, raised sandstone seating, sandstone sitting terraces and the like) which would allow people to enjoy the natural amenity of the promenade and Sydney Harbour.

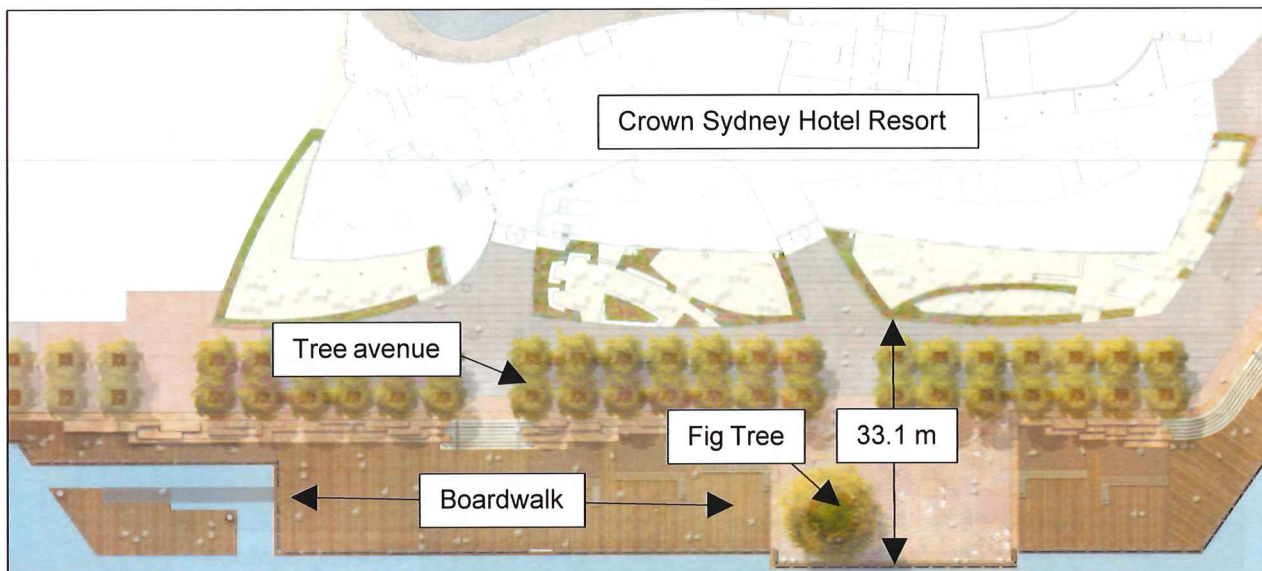


Figure 13: Proposed public domain plan for Wulugul Walk (Base source: RtS)

The Department acknowledges there is the potential for the pontoon and gangway at sea level to be read as a private mooring facility. However, the Department considers the pontoon is acceptable as it would not be blocked to the public and makes up a small portion of the overall waterfront promenade. It also would function as a water taxi pick-up/drop-off area, with no private vessel berthing and a maximum signposted berthing time of 15 minutes. Further consideration of marine navigation and safety is provided at **Section 5.7**.

5.3.3 Watermans Quay

Watermans Quay would be a 23.25 m wide road reserve comprising 11.5 m wide carriageway (one lane in each direction), a 4 m wide footpath to the north and a 7.75 m wide footpath to the south. Watermans Quay connects Hickson Road in the east to Barangaroo Avenue in the west. Both sides of Watermans Quay would be evenly lined with Smooth Leaved Quandong trees which have a dense upright character (**Figure 14**). Paving, materials and street furniture are consistent with Council's standard palette (e.g. granite footpath paving, smart pole lights and benches) and have been chosen to reflect the adjacent Stage 1A public domain (e.g. cast-iron tree grates).

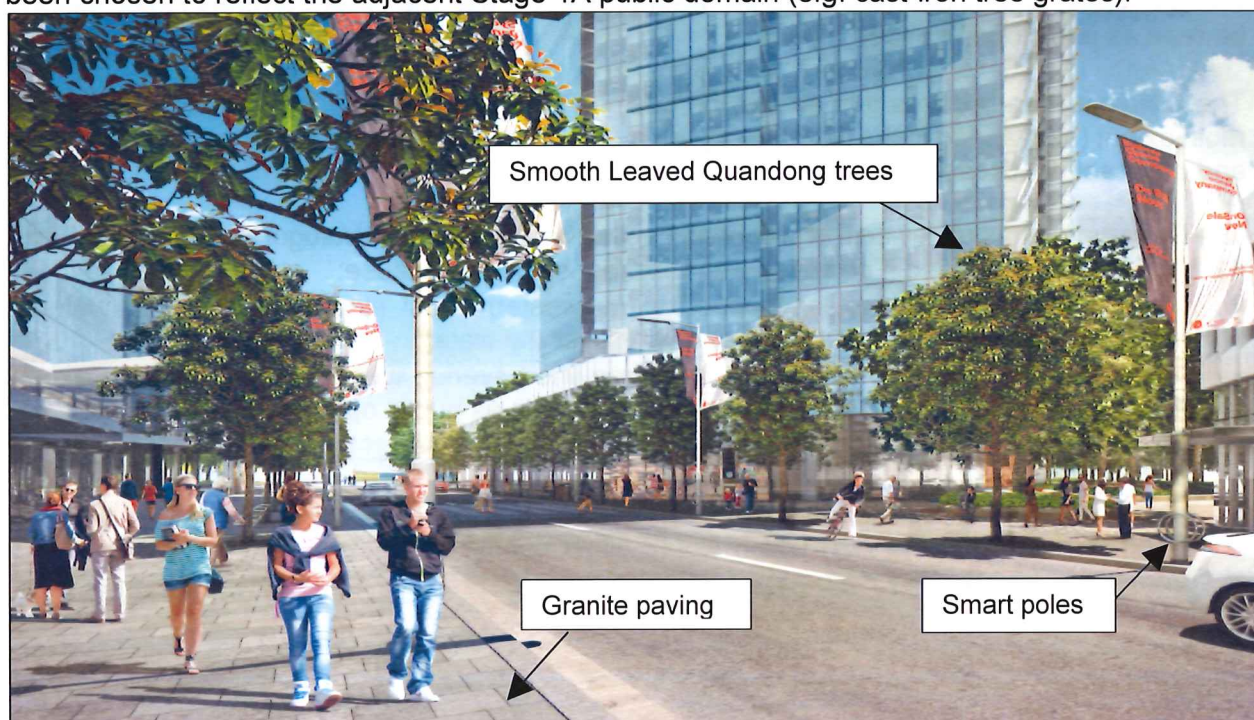


Figure 14: Artist's impression of Watermans Quay (Source: RtS)

The Department supports the design of Watermans Quay as it suitably integrates with the adjacent Stage 1A public domain and provides a generous tree-lined boulevard reinforcing the main east-west movement corridor within Barangaroo South.

5.3.4 Barangaroo Avenue

Barangaroo Avenue would be a 16.25 m wide road reserve comprising a 7 m wide carriageway (one lane in each direction), a 3.85 m wide footpath to the west and a 5.4 m wide footpath to the south. Barangaroo Avenue connects the Stage 1A area in the south to the future Barangaroo Central in the north.

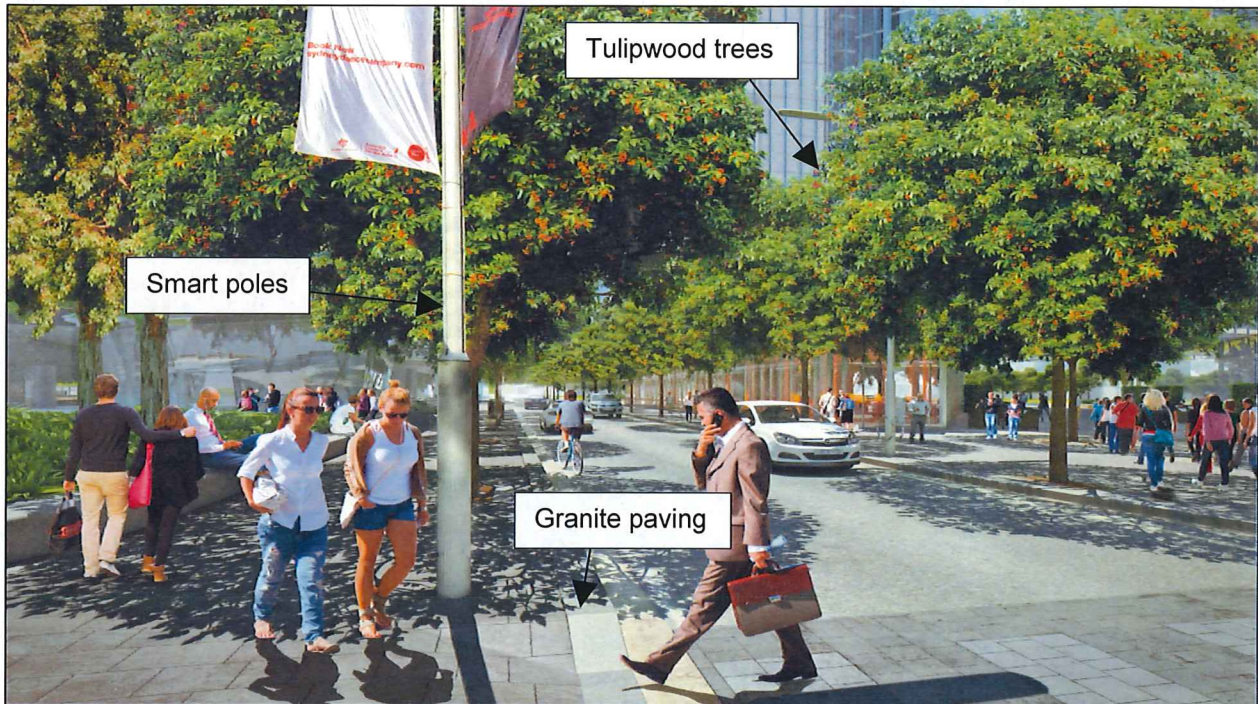


Figure 15: Artist's impression of Barangaroo Avenue (Source: RtS)

Both sides of Barangaroo Avenue would be evenly lined with Tulipwood trees, the same trees planted along this street within the adjacent Stage 1A area (Figure 15). Paving, materials and street furniture are consistent with Council's standard palette (e.g. granite footpath paving, smart poles, bike loops and benches) and have also been chosen to reflect the adjacent Stage 1A public domain.

The Department supports the design of Barangaroo Avenue as a uniform extension of this street from the Stage 1A area, reinforcing its role as the main north-south movement corridor connecting Barangaroo South to Barangaroo Central.

5.3.5 Watermans Cove

Watermans Cove provides the 'southern cove' and public pier envisaged under the Concept Plan which links the Stage 1A waterfront promenade to the south to Wulugul Walk and Barangaroo Central to the north.

Spotted Gum Eucalypts (in planter boxes) would be planted on either side of the western edge of Watermans Cove along with a statement Chinese Banyan Fig tree. These trees have a mature height up to 15 m and have been selected to demarcate the key arrival point to Watermans Cove from the west. Weeping Lilli Pilli trees would define a dense green avenue around the semicircular shape of the Cove and create a natural amphitheatre conducive to holding outdoor events (subject to separate approval).

Watermans Cove forms an extension of the paving, materials and street furniture used in Wulugul Walk (Figure 16). Varied casual and formal seating opportunities are provided to allow users to

appreciate views across the water. To the south, a public pier and platform for the future community facility is provided.

The Department supports the design of Watermans Cove as it would provide trees which are well suited to the scale of adjacent buildings and define it as a distinctive place and delineate key pedestrian arrival points.

Its design would also provide a continuation of hardscaping elements from the adjacent Stage 1A, the Headland Park and Wulugul Walk and create a multi-function space with varied opportunities for visitors to enjoy views of the harbour.



Figure 16: Artist's impression of Watermans Cove (Base source: RtS)

The Department concludes Watermans Cove is well designed and would allow the continuation of a generous foreshore promenade and primary pedestrian corridor.

5.4 Traffic, Vehicular and Pedestrian Access

Submissions regarding traffic and access were received from public authorities raising key concerns about the design of roads and intersections and potential pedestrian hazards at vehicle crossovers on footpaths. These issues are considered separately below.

5.4.1 Traffic

The submitted TA calculates the Stage 1B development (i.e. Building R4A, Building R4B and proposed Building R5) will generate a total of 109 vehicle movements in the AM peak hour and 70 vehicle movements in the PM peak hour.

The TA assessed the impact of these movements on the performance of key intersections surrounding the site, including the future signalised intersection of Hickson Road/Watermans Quay. The TA found all key intersections surrounding the site would operate at an acceptable level of service (LOS) A to E.

TNSW advised 14.5 m buses and coaches may need to use road intersections which need to be designed accordingly. RMS requested the design of Barangaroo Avenue and Watermans Quay be resolved further in consultation with the BDA, RMS and TNSW to ensure it is safe for vehicles and pedestrians, does not result in traffic congestion and noted relevant approvals must be obtained for traffic lights, a Work Authorisation Deed (WAD), regulatory signs and markings.

Upon review of the RtS, the RMS raised a new issue that it considered the operational traffic modelling to be optimistic and requested the model and assumptions.

The Applicant noted the traffic modelling outputs are consistent with the approved Barangaroo Concept Plan (MOD 8) and applications for the Stage 1B area (e.g. R4A and R4B) which have been previously reviewed by RMS and considered acceptable. The Applicant also noted the public domain itself will not generate additional traffic movements.

The Department accepts the traffic impacts of the Stage 1B development area have already been considered and deemed acceptable as part of multiple previous applications, including the Concept Plan. Consistent with the findings of the Concept Plan modelling, the TA modelling for this application concludes the increased traffic movements generated by the operation of the Stage 1B development would have minimal impact on the operation of the local road network.

The Department has recommended conditions formalising the recommendations of both TNSW and RMS in relation to road/intersection design, traffic lights, WAD and other approvals.

The Department's supports the findings of the TA and with recommended conditions in place, concludes the existing and proposed road network will have sufficient capacity and will be suitably designed to safely accommodate the traffic movements generated by the Stage 1B development.

5.4.2 Vehicular Access

During operation, the primary vehicle access route to and from the site would be via Sussex Street, Hickson Road, Watermans Quay and onto Barangaroo Avenue (**Figure 17**).

To facilitate vehicular access, the application proposes the construction of a north-south extension of Barangaroo Avenue (7 m wide road carriage way with kerbs for two-way traffic) from the Stage 1A area to the southern boundary of Barangaroo Central.

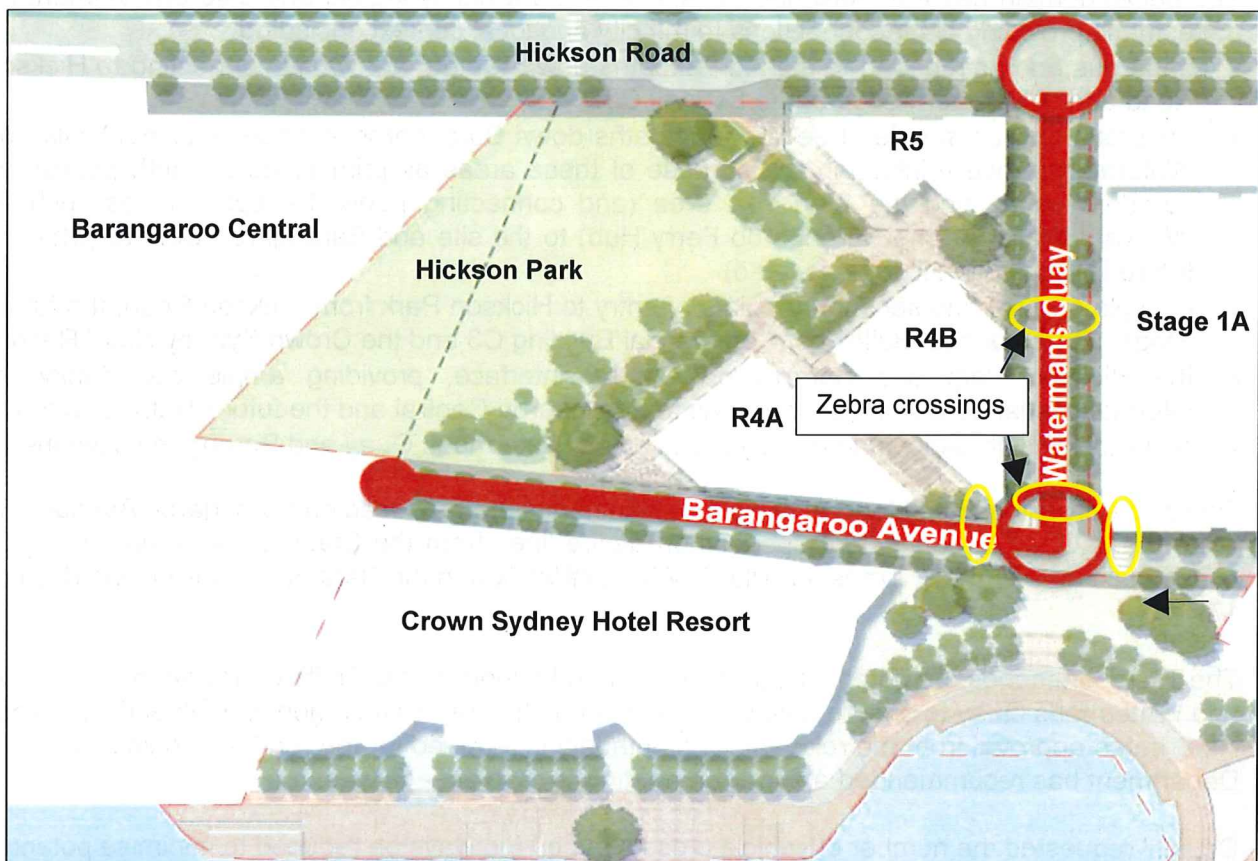


Figure 17: Road infrastructure plan (Base Source: EIS)

Watermans Quay, an east-west road connecting Barangaroo Avenue to Hickson Road (11.5 m wide road carriage way with kerbs for two-way traffic and an indented taxi bay on the southern side) will also be constructed. These roads would predominantly service the Stage 1B residential buildings and the Crown Sydney Hotel Resort.

Two intersections are proposed to be constructed as part of this application, at the junctions of Hickson Road/Watermans Quay and Watermans Quay/Barangaroo Avenue.

As previously noted, the detailed design of these intersections, including traffic control measures, phasing and lane arrangements, will be subject to further consultation with TNSW and RMS and will be approved by the relevant road authority.

Traffic signals will be installed at the intersection of Hickson Road/Watermans Quay upon completion of the Stage 1B developments (i.e. Building R4A, Building R4B, Building R5 and the subject works) to improve traffic circulation subject to RMS requirements. The northern end of Barangaroo Avenue (north of the Crown Sydney Hotel Resort) will be closed to traffic with a small turning head provided to facilitate vehicle turnarounds, although this will be extended in the future as part of a separate public domain application.

The Department supports the findings of the TA and with recommended conditions in place, concludes vehicular access and the traffic movements generated by the Stage 1B development are acceptable.

5.4.3 Pedestrian Access

The public domain is expected to accommodate a significant amount of pedestrian foot traffic consistent with that of a busy urban environment from visitors and tourists, as well as workers and residents at Barangaroo.

The public domain has therefore been designed to be a highly legible and safe environment for pedestrians providing clear connections to the city and local context, including:

- generous and unimpeded tree lined footpaths down Watermans Quay connecting to Hickson Road and the western edge of the Sydney CBD
- generous and unimpeded tree lined footpaths down Barangaroo Avenue, Wulugul Walk and Watermans Cove reinforcing the purpose of these areas as primary north-south pedestrian corridors connecting the Stage 1A area (and connecting public transport nodes such as Wynyard Walk and the Barangaroo Ferry Hub) to the site and Barangaroo Central (where a future Metro Station is to be located)
- multiple primary and secondary points of entry to Hickson Park from Hickson Road, the future Stage 1B Residential Buildings, Commercial Building C3 and the Crown Sydney Hotel Resort
- the Hickson Park and Barangaroo Central interface, providing ample opportunity for informal/casual pedestrian connections to Barangaroo Central and the future Metro Station
- provision of high pedestrian activity areas along Watermans Quay and Barangaroo Avenue.

Two zebra crossings (total four) at key pedestrian nodes are proposed on Barangaroo Avenue and Watermans Quay to connect key pedestrian desire lines from the Stage 1A area and transport nodes such as City Walk, Transport Place, Wynyard Walk and the Barangaroo Ferry Hub (**Figure 17**).

The TA recommends the potential introduction of 40 km/hour speed limits on Barangaroo Avenue and Watermans Quay to ensure a safe and pedestrian friendly environment in high activity areas. RMS noted approval from the relevant road authority is required for the road speed limits and the Department has recommended a condition relating to road speed limits.

Council requested the number of vehicle crossovers on footways be reduced to minimise potential pedestrian hazards.

In the RtS, the Applicant noted all driveway crossovers have been approved as part of separate applications for the Stage 1B basement entrance (SSD 6960), the R4A Porte Cochere (SSD 6964) and the Crown Sydney Hotel Resort Port Cochere and basement entrance (SSD 6957). The Applicant considered the number of crossovers to be minimal and rationalisation unnecessary, noting they had been designed with safety and view lines in mind.

The Applicant has also advised driveways would be designed so they are integrated with the adjoining footpath with a consistent pavement material provided at one continuous level (with delineation of vehicles paths), improved lighting and signage emphasising pedestrian priority in these areas.

The Department acknowledges the driveway crossovers have been approved, agrees their numbers are not excessive and based on the Applicant's response is satisfied they would be designed to prioritise safe pedestrian movement.

To ensure safe and efficient pedestrian movement, the Department has recommended key conditions requiring the final design of driveways and zebra crossings to be in accordance with the relevant road safety guidelines. The Department has also recommended the Applicant to obtain separate approval from RMS for road speed limits, for the final design of roads (and intersections) to adopt the recommendations of a Road Safety Audit and for a Wayfinding and Signage Strategy to be prepared in consultation with Council, RMS and TNSW.

The Department considers the design provides excellent ground floor permeability and connectivity which effectively links to the Stage 1A area and Barangaroo Central (and connecting public transport nodes) and reinforces the role of primary thoroughfares identified in the approved Concept Plan.

The Department concludes the public domain would provide a highly accessible and safe environment for pedestrians.

5.5 Land Contamination

The site is located both within (Blocks 4 and 5) and adjacent to the Declaration Area (as discussed in **Section 1.7**) and is contaminated with pollutants because of its previous use as a gasworks and port. Additional contamination may also be present as a by-product of historic land reclamation / uncontrolled filling of the site.

The proposal seeks approval for remediation works to ensure the site is suitable for public domain use and is supported by a contamination assessment prepared by AECOM.

A large portion of the proposed public domain would be located above the approved Stage 1B (SSD 6960) and Crown Sydney Hotel Resort (SSD 6957) basements. These works are well underway and remediation works are being undertaken in these areas to facilitate the public domain works.

However, there are five key areas outside Stage 1B basement and Crown basement footprints which may require remediation. A summary of the Remedial Action Plans (RAPs) applying to these key areas of the site is provided in **Table 6** below.

As summarised in **Table 6**, the contamination assessment found some remediation works would be required for a portion of Watermans Quay. The contamination assessment recommends additional validation sampling be undertaken to confirm the presence of contaminated material in remaining areas. Contingent on the results, these areas may require remediation in accordance with the preferred strategy in the applicable RAPs (**Table 6**) which would make the areas suitable for public domain use. The scope of validation sampling works and remediation (if required) would be determined in consultation with a NSW EPA Accredited Site Auditor.

Table 6: Summary of RAPs applying to key areas of the site requiring potential remediation

Site Area	Applicable RAP/s	Public domain use proposed and assessed	Remediation required?
Watermans Quay	Declaration Area RAP and Watermans Quay RAP Addendum	Yes	Yes for a portion within the Declaration Area. Remainder subject to additional validation sampling of soils as detailed in the RAP Addendum
Watermans Cove	Amended OWWS Area RAP and Addendum and Stage 1B Waterfront Public Domain RAP and Addendum	Yes	Subject to additional validation sampling of soils as detailed in the RAP
Wulugul Walk	Stage 1B Waterfront Public Domain RAP and Addendum	Yes	Subject to additional validation sampling of soils as detailed in the RAP
Southern portion of Barangaroo Avenue	Crown RAP	Yes	Subject to additional validation sampling of soils as detailed in the RAP
Northern portion of Hickson Park in Block 5 – Barangaroo Central	Block 5 Public Domain RAP	Yes	Subject to additional validation sampling of soils as detailed in the RAP

The contamination assessment (as amended by the RtS) concludes the proposed public domain works are consistent with the land uses detailed in the RAPs and can be appropriately managed. Further, it is concluded the RAPs contain suitable contingency measures to deal with any unexpected contamination finds encountered during the public domain works.

A NSW EPA-accredited Site Auditor has issued a Section B Site Audit Statements for each of the RAPs referred to in **Table 6** verifying the nature and extent of the contamination has been appropriately determined and the RAPs would ensure the area is made suitable for the intended future uses of the land.

The Site Auditor has also reviewed the findings of updated contamination information provided in the RtS and concluded the site can be made suitable for the proposed public domain uses, subject to:

- implementation of existing RAPs applying to the site
- additional validation sampling and assessment and implementation of the relevant RAPs
- implementation of contingencies where required in accordance with the relevant RAPs
- implementation of an Unexpected Find Protocol (UFP).

The EPA noted the proposal is subject to a range of RAPs approved by an accredited Site Auditor which include contingency and management measures for dealing with unexpected contamination finds. The EPA also noted staging of works is necessary to minimise the risks of contamination exposure and recommended conditions formalising commitments made in the contamination assessment relating the staging of works, further contamination investigations and remediation.

The Department has formalised the recommendations of the Site Auditor and the EPA into recommended conditions of consent. The Department notes a large portion of the public domain works would be located above the approved basement structures and no remediation works are required in these areas.

While potential remediation works in the residual areas do present some risk of harm to human health and the environment, the Department's assessment concludes the remediation

documentation and recommendations of the contamination assessment can be relied upon to ensure that where land is contaminated, it would be remediated in accordance with the requirements of SEPP 55 so the land is made suitable for its intended future uses.

The Department has recommended the imposition of key conditions requiring the Applicant to:

- prepare a Construction and Remediation Staging Plan which has been endorsed by an EPA-accredited site auditor and reviewed by the EPA to ensure no construction works take place on contaminated parts of the site prior to remediation
- undertake additional sampling and analysis of potentially contaminated soils prior to construction (consistent with the recommendations of the contamination assessment)
- where required, ensure contaminated soils are remediated in accordance with a RAP
- outline contingency measures and the procedures to be followed in the event unexpected finds of contamination are encountered during works.

With these conditions in place, the Department concludes suitable management strategies would be in place for progressively confirming remediation is complete prior to undertaking works and suitable contingency measures are in place in the event residual contamination is exposed during the works. Where required, contaminated material would be successfully remediated and validated in accordance with the relevant legislation.

5.6 Other Issues

Other relevant matters for consideration are addressed in **Table 7**.

Table 7: Other matters for consideration

Issue	Consideration	Conclusion / Recommendation
Community Facilities	<ul style="list-style-type: none"> • Council raised concern the Applicant had not provided any community facilities at Barangaroo. • The Department notes that no community facility building is proposed as part of the public domain application. 	<ul style="list-style-type: none"> • The Department acknowledges Council's concern, however notes the existing Concept Plan (Modification B10) ensures a community facility is provided on the public pier and given the significance of this facility, it should be the subject of a separate future application to the relevant consent authority.
Design Excellence and Design Competition	<ul style="list-style-type: none"> • The SSP SEPP and Concept Plan requires consent must not be granted for the erection of a new building unless the consent authority has considered whether the proposed building exhibits design excellence. • To ensure design excellence is achieved, the SSP SEPP and Concept Plan contains provisions requiring an Applicant to undertake an architectural design competition if a building is higher than RL 57 m, or the area of the site on which the building is to be erected is more than 1,500 m². • It also provides the requirement for a design competition does not apply if the Secretary certifies in writing that the development exhibits design excellence on the basis that: 	<ul style="list-style-type: none"> • The Department recommends development consent not be granted to the public amenities building and be subject to a separate development application.

Issue	Consideration	Conclusion / Recommendation
	<ul style="list-style-type: none"> ○ satisfaction that the architect responsible for the design has an outstanding reputation in architecture, and ○ necessary arrangements have been made to ensure the proposed design is carried through to completion of the development. • The application proposes a single-storey public amenities and storage building (75 m²) within Hickson Park and the site is greater than 1,500 m². • The design excellence provisions therefore apply to this element of the application. • However, the design of the proposed public amenities and storage building is indicative at this stage. • Given the design details are not yet resolved, the Department is unable to be satisfied that the building achieves design excellence thus it is also unable to support the Applicant's waiver to conduct a design competition. • The public amenities building is therefore not recommended for approval as part of this application and a separate development application would have to be lodged with the relevant consent authority. 	
Construction Noise and Vibration	<ul style="list-style-type: none"> • The following construction hours are proposed: <ul style="list-style-type: none"> ○ 7 am to 7 pm (Monday to Friday) ○ 7 am to 5 pm Saturdays • Construction noise was not an issue of concern raised in public submissions, including the EPA. • However, the Department is aware of community concerns regarding construction noise at Barangaroo. • The EIS includes a Construction Noise Report (CNR) which found construction noise associated with the public domain works would be negligible and can be managed by standard mitigation and management measures. • Worst-case impacts during the Watermans Cove works would be short-term (for 4 to 8 months) and the CNR outlines suitable mitigation measures to manage impacts on the nearest residences (e.g. noise barriers, letterbox drops prior to works, and real-time monitoring). • The Department also notes construction hours between 7 am and 7 pm Monday to Friday are typical for the CBD and align with current construction hours for R4A, R4B and C1. • The CNR found construction traffic and cumulative noise and vibration would be negligible. 	<ul style="list-style-type: none"> • The Department considers the potential construction noise and vibration impacts to be acceptable, subject to conditions requiring the Applicant to: <ul style="list-style-type: none"> ○ prepare and implement a Construction Noise and Vibration Management Sub-Plan incorporating the specific noise and vibration controls outlined in the CNR ○ comply with standard construction hours ○ ensure noisy activities are restricted to the EPA's standard construction hours.
Construction Traffic	<ul style="list-style-type: none"> • The TA found typical daily construction activity is estimated to average 4 truck movements an hour, or 40 a day. This represents a negligible 1% increase on existing levels. • During construction, the TA found cumulative traffic generation would peak at 378 traffic movements during the AM peak hour (8 am to 9 am) which will have a negligible impact on network performance. • RMS raised concern the cumulative construction traffic assessment had not considered all nearby projects such as the South East Light Rail (SELR), 	<ul style="list-style-type: none"> • The Department is satisfied the construction traffic impacts of the proposed development would be minor and can be effectively managed, subject to the Applicant preparing a CPTMP in consultation with TNSW and RMS, prior to the commencement of works.

Issue	Consideration	Conclusion / Recommendation
	<p>Walsh Bay Arts Precinct, Westpac Plaza or from the Overseas Passenger Terminal (OPT).</p> <ul style="list-style-type: none"> The Applicant has clarified the modelling either considers traffic from these projects, or would not be significant enough to affect the findings of the TA. TNSW recommended a condition requiring the Applicant to prepare a Construction Pedestrian and Traffic Management Plan (CPTMP). 	
View Impacts	<ul style="list-style-type: none"> The EIS includes a view and visual impact analysis of the proposed public domain works which found the works will not be visible from most key vantage points assessed in the Concept Plan and will greatly enhance the visual character of the site. A resident of Building R8 objected to the application due view loss from Anter tree planting proposed at Watermans Cove and requested alternative tree species be selected. In the RtS, the Applicant provided a view analysis from R8 with mature trees showing they would not cause significant view blocking for most of the residences (i.e. except the lowest levels) and would improve visual amenity from the existing situation. To address resident concerns, the Applicant also replaced some species proposed in the raised planters along Watermans Cove with predominantly <i>Angophora Costata</i> (Smooth-barked Apple), a local native characterised by relatively limited foliage and a spread-out crown to provide filtered views to the north-east. Given the purpose of the trees is to provide shade, shelter, and establish tree avenues with a high level of amenity for public domain users, the Department considers the trees chosen achieve a good balance between satisfying public and private interests. 	<ul style="list-style-type: none"> The Department accepts the conclusions of the view and visual impact analysis that the proposed public domain works will greatly enhance the visual character of the site and views impacts are minimal.
Navigation and Safety	<ul style="list-style-type: none"> During construction piling for the waterfront promenade and public pier, a barge (54 m by 24 m) would be oriented north/south in Darling Harbour. During operation, the waterfront promenade would incorporate a floating pontoon for water taxi pick-up/drop-off only, no boats would be permitted in Watermans Cove and the public pier would not cater for berthing or vessel pick-up/drop-off. The EIS contains a Navigation Impact Assessment (NIA) which found the proposed development would have no adverse impact on safe navigation in Sydney Harbour, provided existing navigation controls are observed and the recommendations of the NIA are implemented. The Port Authority of NSW considered the recommendations of the NIA should be implemented. RMS made several recommendations in relation to navigation and safety, including the requirement for a Construction Vessel Traffic Management Plan to be prepared in consultation with RMS. The Department has recommended conditions where relevant, formalising advice from PNSW and RMS. 	<ul style="list-style-type: none"> The Department is satisfied potential navigation impacts would be acceptable, subject to conditions requiring the Applicant to: <ul style="list-style-type: none"> ensure the public pier is constructed at a sufficient distance from the adjacent ferry hub implement the recommendations of the NIA prepare a Construction Vessel Traffic Management Plan and an Operational Vessel Traffic Management Plan in consultation with RMS and the Port Authority of NSW.

Issue	Consideration	Conclusion / Recommendation
Marine Ecology and Structures	<ul style="list-style-type: none"> • The EIS contains Marine Ecology (ME) and Seawalls and Over-Water Structures (SWOWS) impact assessments for water-based demolition and piling works required to construct the waterfront promenade and pontoon at Wulugul Walk and the waterfront promenade and public pier at Watermans Cove. These assessments found: <ul style="list-style-type: none"> ○ pile installation would displace some marine fauna but due to a high presence of similar habitat in Sydney Harbour, the impacts would be negligible ○ new over-water structures would increase the surface area available for marine fauna ○ the proposed works are not expected to have a significant impact on any threatened or protected species of flora or fauna ○ during operation, new structures would not shade sensitive habitat, would not restrict fish passage or significantly alter tidal currents. • DPI did not raise any concerns in relation to marine ecology or structures. • Council requested clarification on the positive biodiversity benefits of marine structures, selection of eco-friendly materials and how non-indigenous species will be mitigated on pontoons. • The Applicant advised the Sydney Institute for Marine Science (SIMS) are advising on the detailed design (specific features, materials etc) of marine structures to ensure they result in improved biodiversity in Darling Harbour. 	<ul style="list-style-type: none"> • The Department considers the proposed development is unlikely to result in adverse marine ecology impacts, subject to conditions requiring the Applicant to: <ul style="list-style-type: none"> ○ ensure the detailed design and construction of the development incorporates the recommendations and mitigation measures outlined in the ME and SWOWS impact assessments ○ consult with DPI and SIMS to ensure the detailed design of marine structures incorporate eco-friendly materials and results in positive biodiversity impacts ○ ensure on-going measures are in place to remove pest species from marine structures.
Water Quality	<ul style="list-style-type: none"> • During construction, erosion and sediment control measures would be implemented in accordance with Landcom's <i>Blue Book</i>. • The EIS contains a MEIA which found that as piling works would be intermittent and temporary, disturbed contaminated marine would re-settle locally and no significant impacts on water quality are expected. • The MEIA recommends silt curtains be installed and monitoring be undertaken during these works to ensure satisfactory water quality is maintained. • Due to the shallow depth of excavation, no adverse groundwater impacts are expected. • During operation, surface water quality would be managed by measures (e.g. local tree pits, pipe drainage and gross pollutant traps) which would connect to approved truck infrastructure provided as part of the Stage 1B Basement (SSD 6960). • DPI has recommended standard water management conditions which the Department has incorporated (where relevant) into the recommended conditions. 	<ul style="list-style-type: none"> • The Department is satisfied potential impacts on water quality would be acceptable, subject to conditions requiring the Applicant to: <ul style="list-style-type: none"> ○ implement erosion and sediment controls in accordance with Landcom's <i>Blue Book</i> ○ implement the construction mitigation measures outlined in the MEIA ○ prepare a Water and Stormwater Management Sub-Plan in consultation with the EPA and DPI ○ ensure water quality discharges comply with the EPL for the site.
Wind	<ul style="list-style-type: none"> • The EIS contains a wind study which found wind conditions in the public domain would be suitable for intended uses. 	<ul style="list-style-type: none"> • The Department recognises Hickson Park is exposed to wind due to its harbour location and

Issue	Consideration	Conclusion / Recommendation
	<ul style="list-style-type: none"> • Council considered Hickson Park should comply with the Draft Sydney Development Control Plan 2012 (DCP) wind criteria (4m/s) and the probability of exceedance should not exceed 5% (once a week). • The current design targets a maximum wind speed of 7.5m/s for trafficable areas on streets and in Hickson Park. This is categorised as being acceptable for comfortable walking and main public access ways. • In the RtS, the Applicant included a supplementary wind assessment in the RtS adopting a lower wind comfort criterion of 5.5m/s ('short exposure') for Hickson Park which found the probability of exceedance would increase from 12% to 15%. • The study also found the future landscaping and development of Barangaroo Central is likely to reduce the exceedance of the 5.5m/s criterion to 5% for the majority of Hickson Park. • As such, the Applicant considered that whilst the proposed 7.5m/s wind criterion is acceptable for the intended use of Hickson Park, wind conditions in the public domain are likely to improve with the development of Barangaroo Central in the future. 	<p>the absence of development in Barangaroo Central.</p> <ul style="list-style-type: none"> • The Department therefore considers the 7.5m/s criterion to be acceptable over the short-term until the development of Barangaroo Central occurs, after which wind conditions in the public domain should improve significantly.
<p>Design for Crime Prevention</p>	<ul style="list-style-type: none"> • Council requested the Crime Prevention Through Environmental Design (CPTED) Report in the EIS be revised to include additional details about site-specific crime data, how the design responds to local crime issues and security guards. • Council also requested the design of the amenities block in Hickson Park be reconsidered to deter anti-social behaviour and consider hostile vehicle access prevention measures. • The Applicant provided a revised CPTED Report in the RtS, including security design improvements (e.g. installation of CCTV cameras, provision of trees with high canopies for sightlines and bollards to prevent vehicle access). • The Applicant also advised security guard arrangements will be the on-going responsibility of the BDA as the site owner. • The Department is satisfied the public domain has been designed to minimise opportunities for crime and ensure a safe, secure environment. 	<ul style="list-style-type: none"> • The Department has recommended conditions requiring the Applicant to: <ul style="list-style-type: none"> ○ seek separate approval for the public amenities building ○ ensure the detailed design of the development incorporates all crime mitigation measures identified in the revised CPTED Report.
<p>Sustainability</p>	<ul style="list-style-type: none"> • The EIS includes a Sustainability Report (SR) which outlines all ecologically sustainable development (ESD) measures to be incorporated into the public domain works to achieve sustainability targets established for Barangaroo South. • This includes measures such as use of recycled timber, use of low energy lighting, recycling construction waste and use of native flora in landscaping. • Council requested the Applicant commit to adopting recommendations of the SR relating to use of sustainable timber furnishings/boardwalks, use of LED lighting, sustainable cement and local waste disposal. 	<ul style="list-style-type: none"> • The Department has recommended conditions requiring the Applicant to ensure the detailed design of the development incorporates all measures identified in the SR.

Issue	Consideration	Conclusion / Recommendation
Signage	<ul style="list-style-type: none"> • The EIS contains a Wayfinding Strategy (WS) for signage proposed in the public domain. • The signage forms part of a coordinated strategy for wayfinding throughout the Barangaroo site and represents a unified extension of existing signage systems implemented in Stage 1A (i.e. Council's system) and the Headland Park (i.e. BDA's system). • Eight different types of wayfinding signage are proposed within the site. Signage plans, identifying the types, locations and messaging for the signage proposed are included in the Wayfinding Strategy. • Council supported the use its wayfinding signage and requested messaging and detail be coordinated with Council. • RMS requested wayfinding be developed in consultation with RMS and TNSW. • The Department supports the proposed WS as a cohesive extension of existing signage systems implemented elsewhere on the Barangaroo site. 	<ul style="list-style-type: none"> • To ensure the signage is high quality and compatible with the surrounding area, the Department has recommended conditions requiring the Applicant to finalise the WS in consultation with Council, RMS, TNSW and the BDA, prior to issue of the relevant Construction Certificate.
Lighting	<ul style="list-style-type: none"> • The EIS contains a Lighting Plan (LP) which provides a consistent approach to integrated lighting installed in the Stage 1A area. The LP proposes key lighting types such as: <ul style="list-style-type: none"> ○ council 'Smart Poles' for street lighting in Barangaroo Avenue and Watermans Quay ○ lighting poles in key areas including the waterfront promenade and in Hickson Park ○ linear lighting integrated into benches and steps ○ directional festoon lighting in trees (e.g. figs) ○ spike mounted up-lights for trees ○ recessed lighting into timber baulks • RMS requested appropriate lighting be provided for safety. • The Department supports the LP as a cohesive extension of lighting installed in the Stage 1A area. 	<ul style="list-style-type: none"> • The Department has recommended conditions requiring the Applicant to: <ul style="list-style-type: none"> ○ finalise the LP in consultation with Council, TNSW, RMS and the Sydney Observatory, prior to issue of the relevant Construction Certificate ○ ensure lighting complies with the Australian Standards for control of obtrusive effects.
Public Art	<ul style="list-style-type: none"> • The EIS includes a copy of the Barangaroo Public Art and Cultural Plan (BPACP) prepared by Lend Lease and the BDA in 2015 which provides the strategic approach to delivering public art throughout Barangaroo. • Council considered concept designs for public art should be considered in this application so future detailed applications can be better integrated into the design of the public domain. • The Applicant noted the public domain has been flexibly designed so there is ample opportunity for the integration of artistic and interpretative elements in the future. The application already includes public art interpretation such as the 'Barangaroo Bench' in Hickson Park. • The Applicant advised a major public art proposal within Barangaroo South is being developed in consultation with key stakeholders which commenced in July 2015 and involves collaboration between the artist and the public domain landscape architects to ensure effective integration. • The BPACP identifies major public art works would be provided at Watermans Cove and/or Hickson Park. 	<ul style="list-style-type: none"> • The Department is satisfied the public domain has been designed to incorporate suitable opportunities for future public art integration/provision in line with the BPACP. This art would be provided as part of separate future applications.

Issue	Consideration	Conclusion / Recommendation
	<ul style="list-style-type: none"> To accommodate these major artworks, the Applicant amended the proposal through the RtS to make structural provision to support a future artwork in Watermans Cove and Hickson Park. 	
Heritage Interpretation	<ul style="list-style-type: none"> Council noted the BPACP identifies indigenous and cultural interpretation would be integrated into the public domain and requested an Interpretation Strategy (IS) be prepared in accordance with the objectives of the BPACP. In the RtS, the Applicant noted interpretation has been included in all facets of the design of Barangaroo South and cited examples such as the 'Shellwall' (artwork), 'The Beacon' (poem display) and other temporary displays exhibited throughout the broader site. The Applicant noted the BPACP applies to the entirety of Barangaroo (South, Central and the Reserve), and considered any IS prepared under the plan should be similarly holistic. The Applicant also considered any interpretive elements would be informed by the design of the public domain. 	<ul style="list-style-type: none"> The Department agrees interpretative devices should be considered holistically across the entire site and is satisfied they would be delivered by an IS prepared in accordance with commitments made in the approved Concept Plan and the BPACP.
Events	<ul style="list-style-type: none"> Council requested the Applicant identify areas for cultural and social programming (i.e. events) and prepare infrastructure and management plans to support these uses. No events are sought for approval as part of this application. The Applicant has consulted with the BDA and accommodated its infrastructure needs for key event locations in the public domain design (e.g. by providing water and power outlets in Hickson Park, along Wulugul Walk and in Watermans Cove). 	<ul style="list-style-type: none"> The Department concludes events are outside the scope of the application and is satisfied suitable infrastructure provision has been made in the public domain design to accommodate potential future events (subject to separate approval).
Bicycle Parking	<ul style="list-style-type: none"> One hundred (100) visitor bicycle parking spaces, comprising standard Council bicycle racks or spaces mounted on smart poles (along Watermans Quay and Barangaroo Avenue), will be provided throughout the public domain. The proposed number of spaces is based on 4% of expected visitors to the Barangaroo South precinct travelling by bicycle as identified in the TA. This requires a total of 240 spaces (including 103 within the Stage 1A public domain and 37 in vicinity of the Crown Sydney Hotel Resort). Council and TNSW did not raise any issues relating to bicycle parking. The Department considers the quantum of proposed bicycle parking to be suitable as it aligns with the targets identified in the established Transport Management and Access Plan for Barangaroo South. 	<ul style="list-style-type: none"> The Department has recommended conditions requiring the Applicant to construct a minimum of 100 bicycle parking spaces.

6. CONCLUSION

The Department has reviewed the EIS, RtS and supplementary advice provided by the Applicant for the application and duly considered advice from public authorities, including Council, TNSW and RMS. Issues raised in public submissions have been considered and all relevant environmental issues associated with the proposal have been thoroughly assessed.

The proposed public domain is of a high quality, has been designed by a world-renowned landscape architectural firm and is consistent with the desired future outcomes of the approved Concept Plan. The Department is satisfied the public domain exhibits design excellence and will greatly enhance the amenity and character of Barangaroo and the western edge of the CBD at significant benefit to the State.

The Department has recommended conditions formalising the advice of both TNSW and RMS in relation to road/intersection design and is satisfied the proposed public domain will provide a highly accessible and safe environment for vehicles and pedestrians.

All other issues associated with the proposal have been assessed, and appropriate conditions recommended, where necessary.

The Department is satisfied the proposal is consistent with the strategic objectives for the area, as outlined in *A Plan for Growing Sydney and Towards our Greater Sydney 2056*, the *Greater Sydney Region Plan* and the *Eastern City District Plan*, and is consistent with the requirements of relevant environmental planning instruments and policies.

The proposal would result in a wide range of positive social and economic impacts, including helping to grow a stronger and more competitive central business district, helping growth and investment in Barangaroo and providing improved public domain outcomes which will benefit residents, workers and visitors.

The Department concludes the development is in the public interest and is capable of being approved.

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